F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

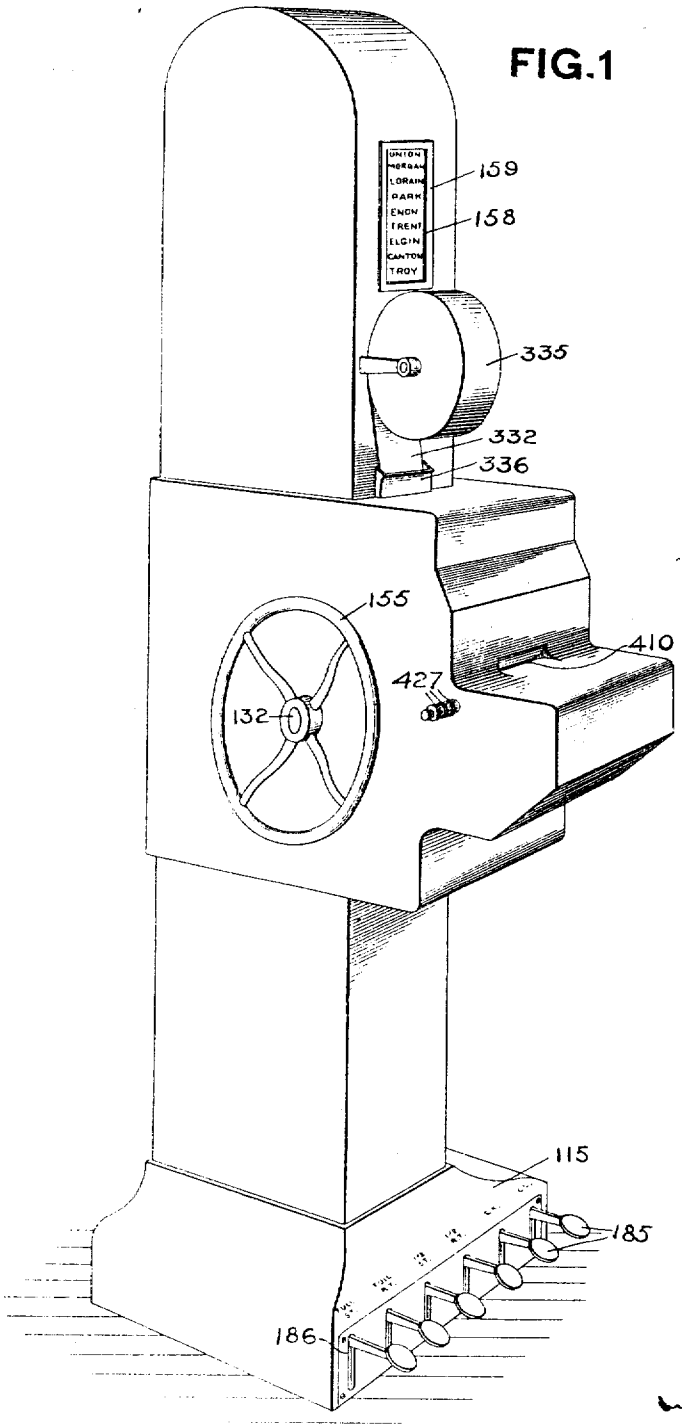
APPLICATION FILED OCT. 27, 1916.

1,382,637.

Patented June 28, 1921.

23 SHEETS—SHEET 1.

FIG.1



Inventor

FREDERICK L. FULLER

by R. Chase

Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISS[illegible]NG RAIL[illegible]Y TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 2.

FIG. 2

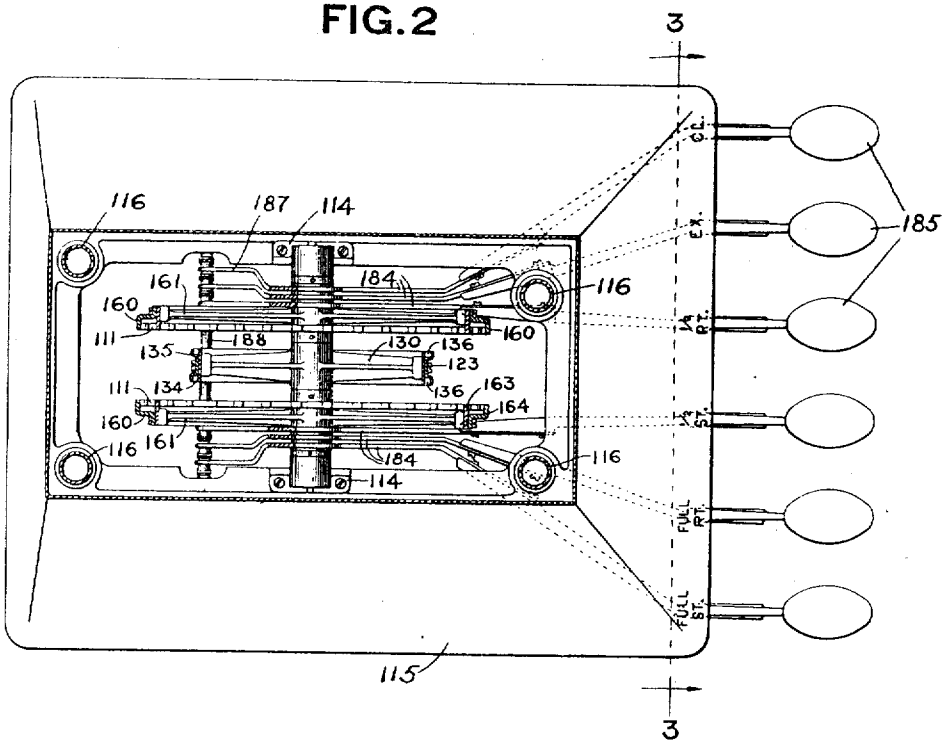


FIG. 3

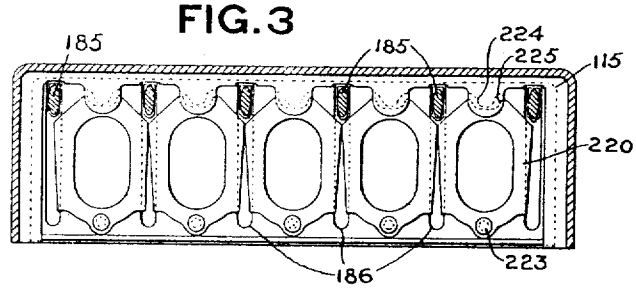


FIG. 4

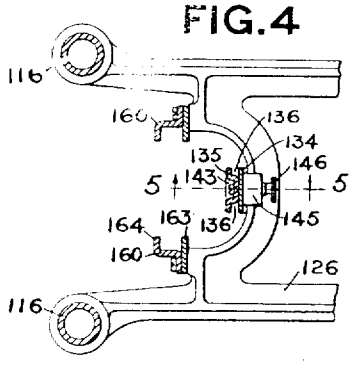
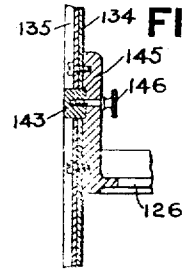


FIG. 5



Inventor
FREDERICK L. FULLER
by R. Sloan
Attorney

F. L. FULLER.

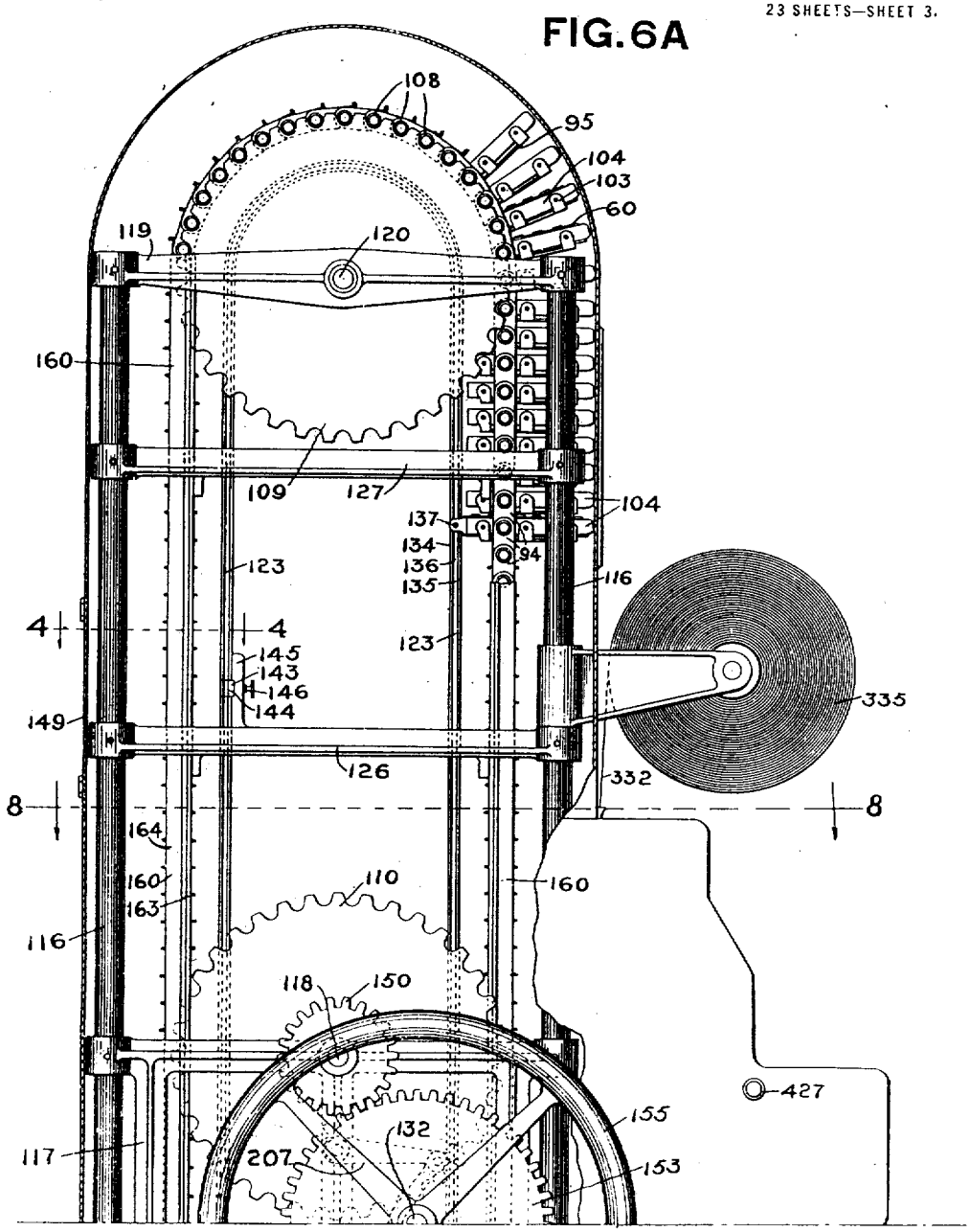
MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 3.

FIG. 6A



Inventor

FREDERICK L. FULLER

by R. Rhead

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F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637.

Patented June 28, 1921.

23 SHEETS—SHEET 4.

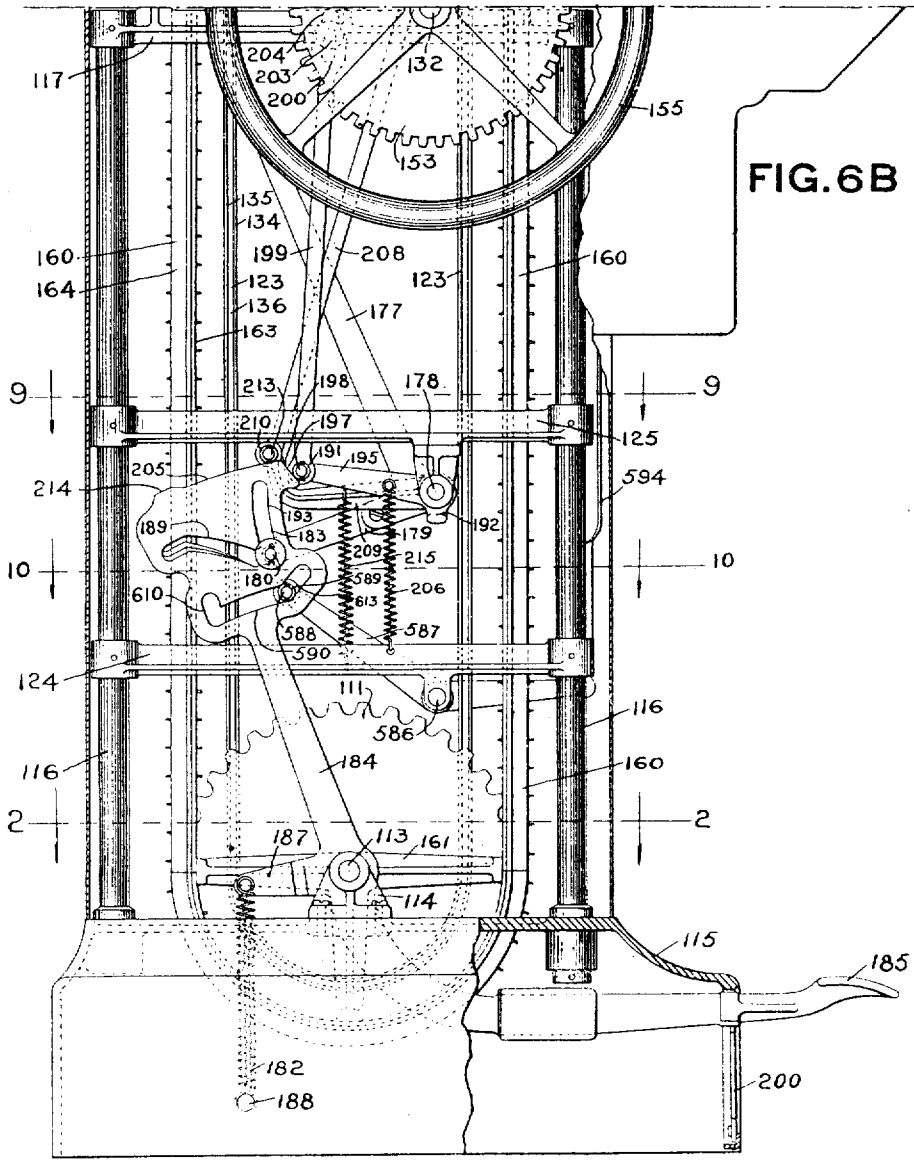


FIG. 6B

Inventor

FREDERICK L. FULLER

by Rehlaen

Attorney

F. L. FULLER.

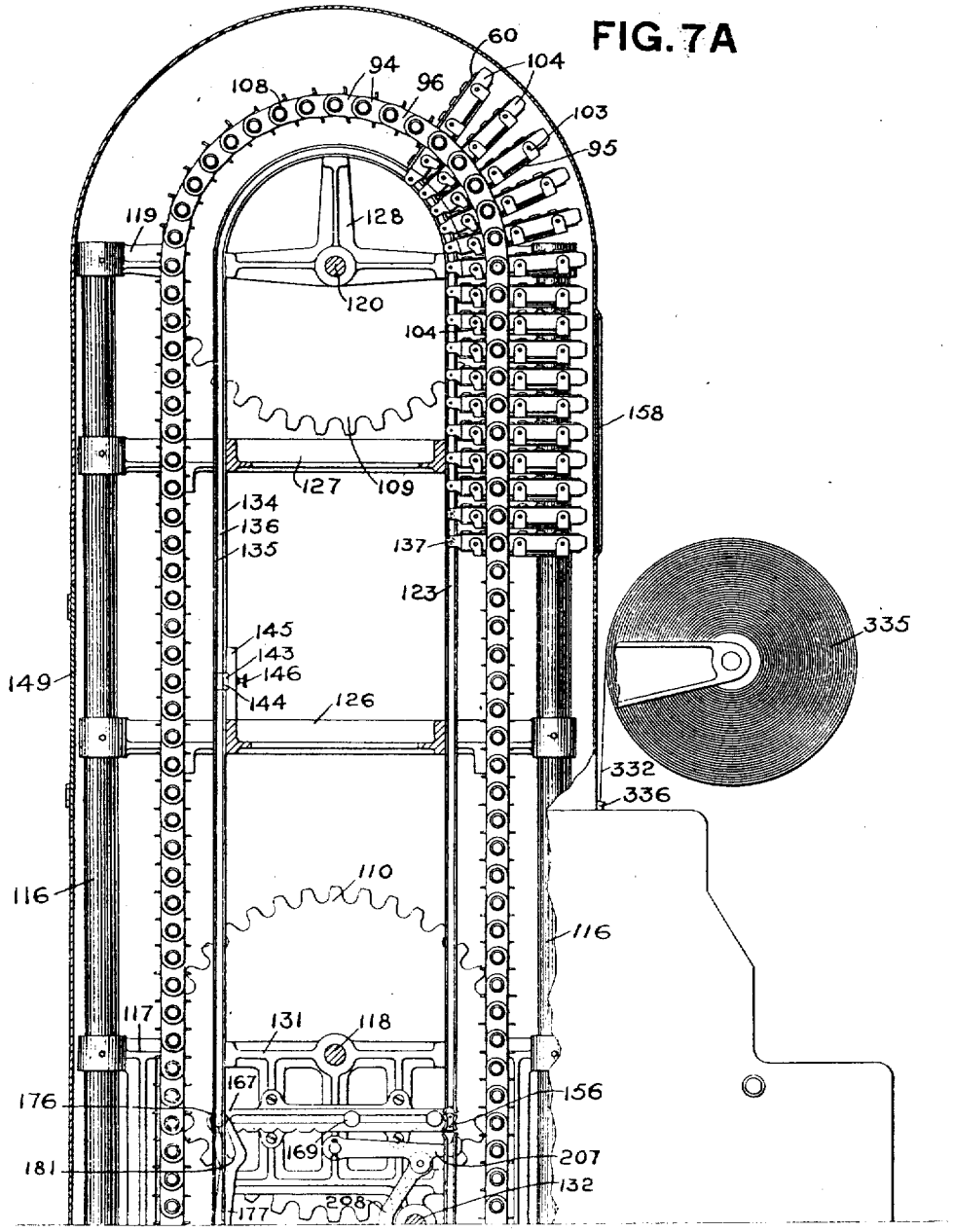
MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 5.

FIG. 7A



Inventor

FREDERICK L. FULLER

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MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 6.

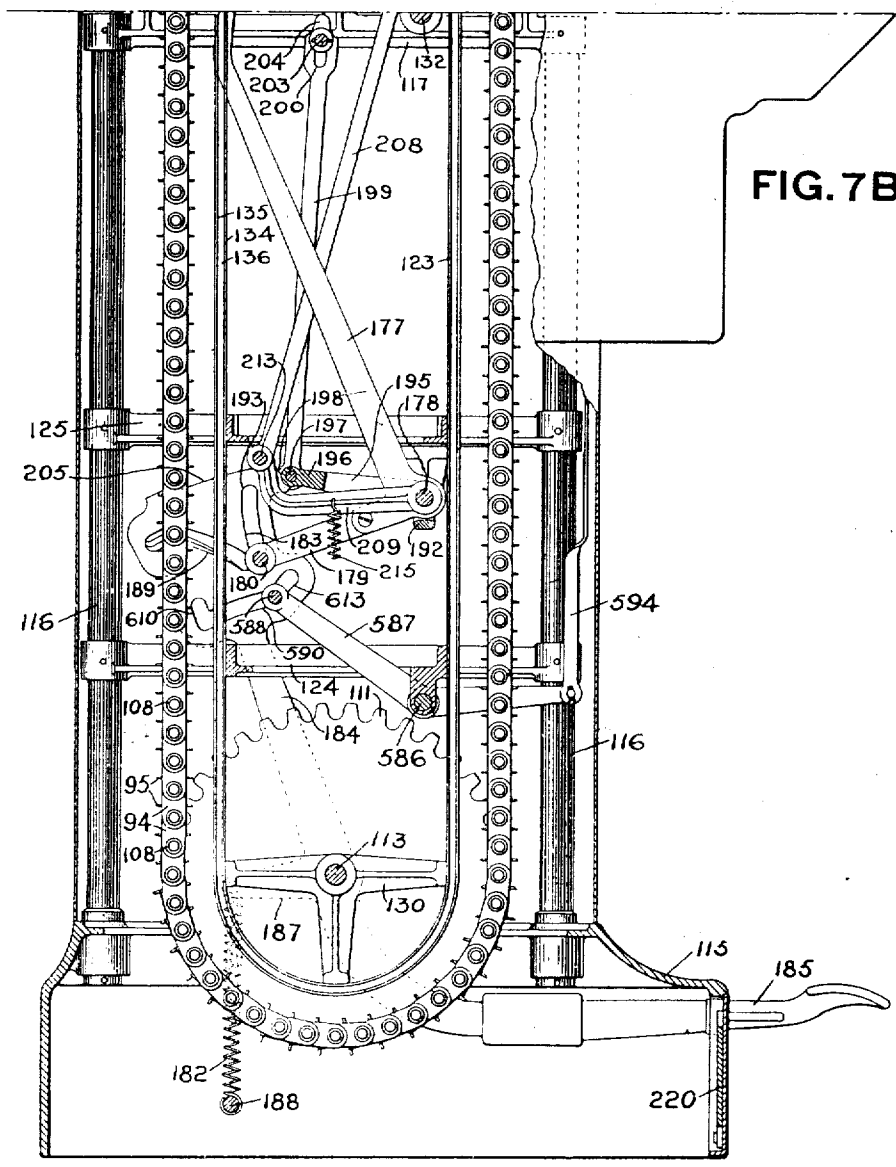


FIG. 7B

Inventor
FREDERICK L. FULLER
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Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 7.

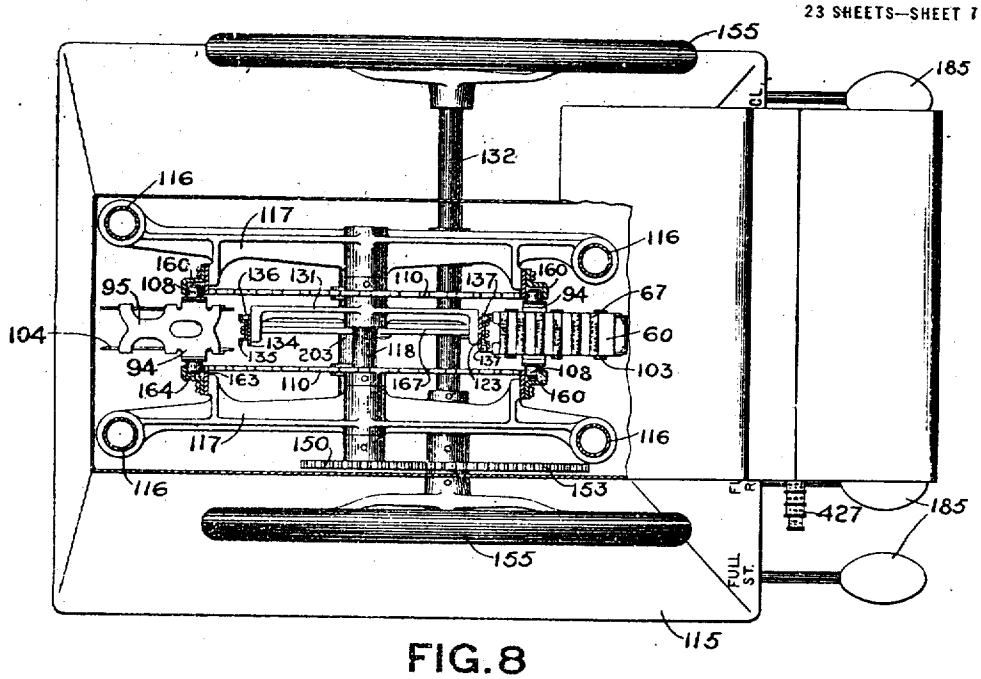


FIG. 8

FIG. 9

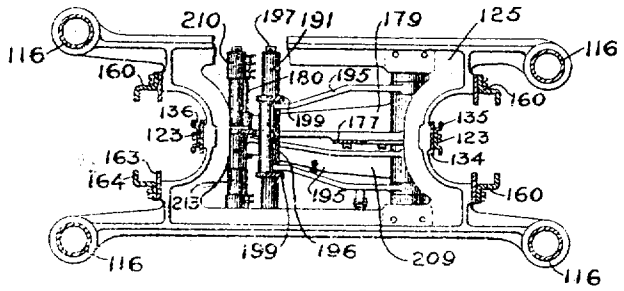
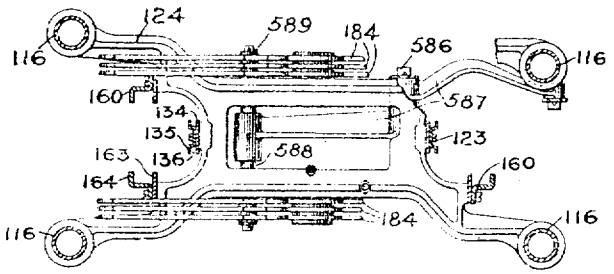


FIG. 10



Inventor
FREDERICK L. FULLER
by R. C. Lorenz
Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637.

Patented June 28, 1921.

23 SHEETS—SHEET 8.

FIG.11

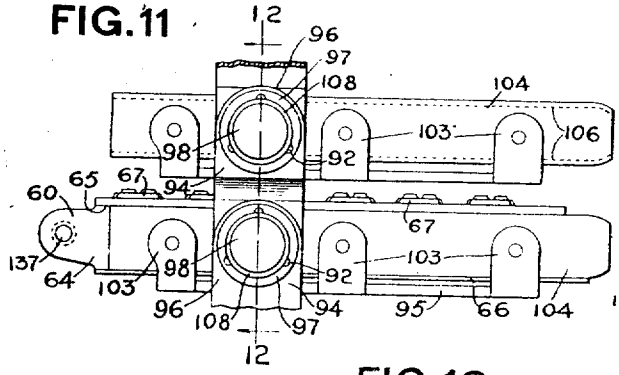


FIG.12

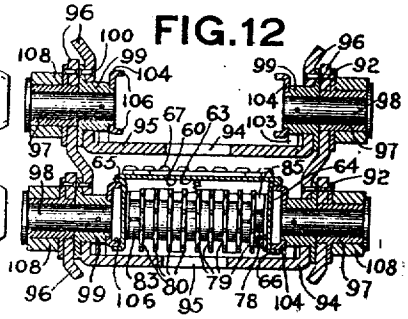


FIG.13

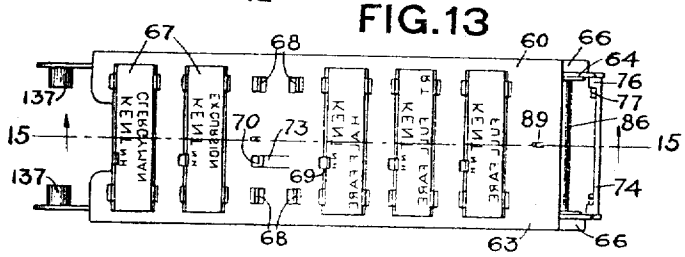


FIG.14

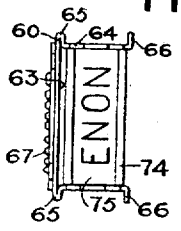


FIG.15

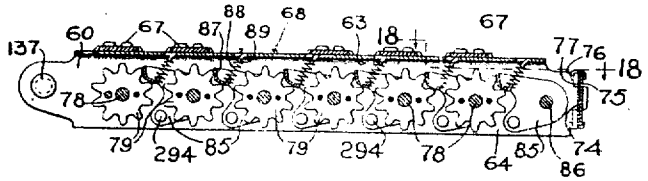


FIG.16

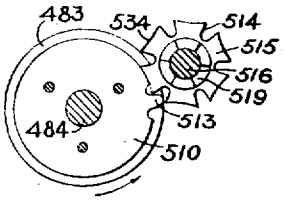


FIG.17



FIG.18

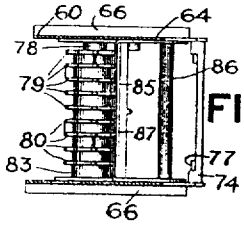


FIG.19

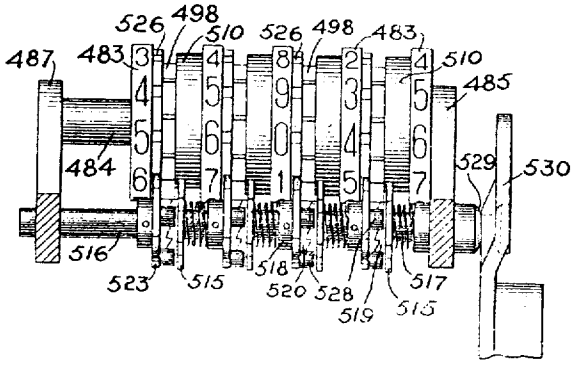
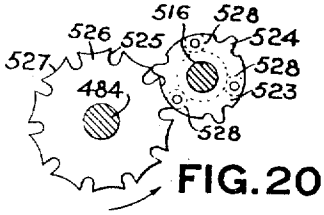


FIG.20



Inventor

FREDERICK L. FULLER

by Richards

Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637.

Patented June 28, 1921.

23 SHEETS—SHEET 9.

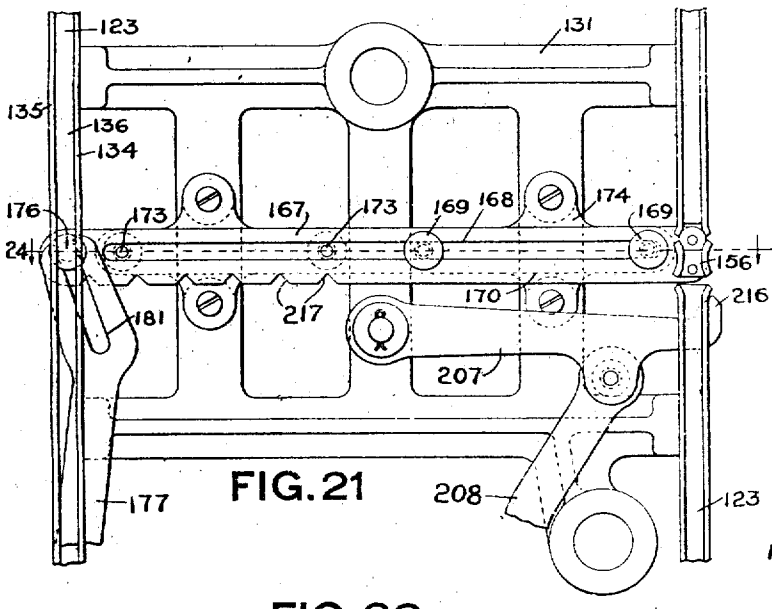


FIG. 21

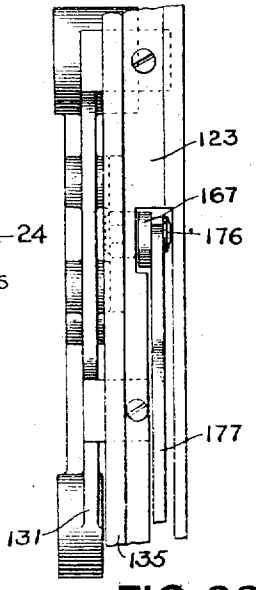


FIG. 22

FIG. 23

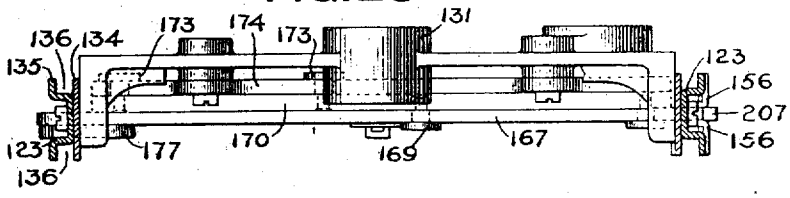


FIG. 24

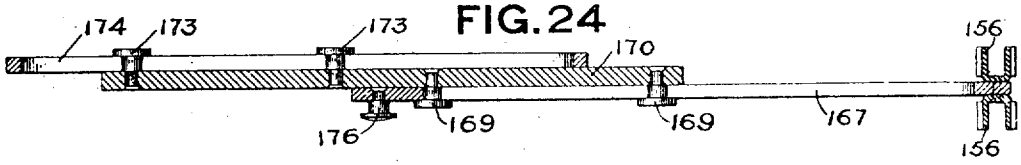
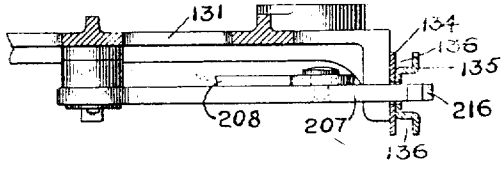


FIG. 25



Inventor

FREDERICK L. FULLER

by R. C. Glass

Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637.

Patented June 28, 1921.

23 SHEETS—SHEET 10.

FIG. 26

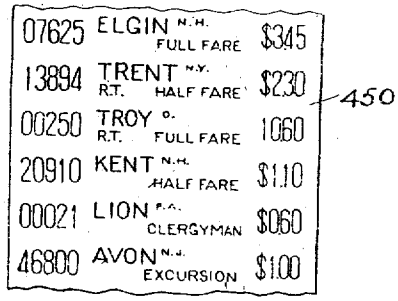


FIG. 27

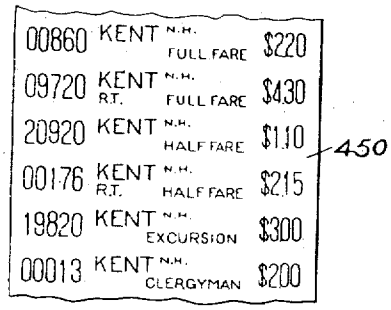


FIG. 28

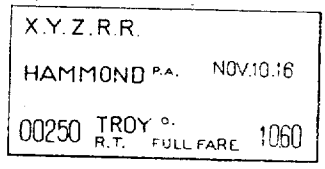
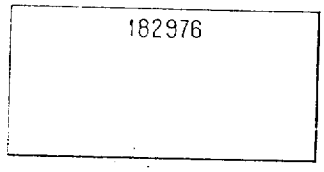


FIG. 29



Inventor

FREDERICK L. FULLER

by R. Chilson

Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

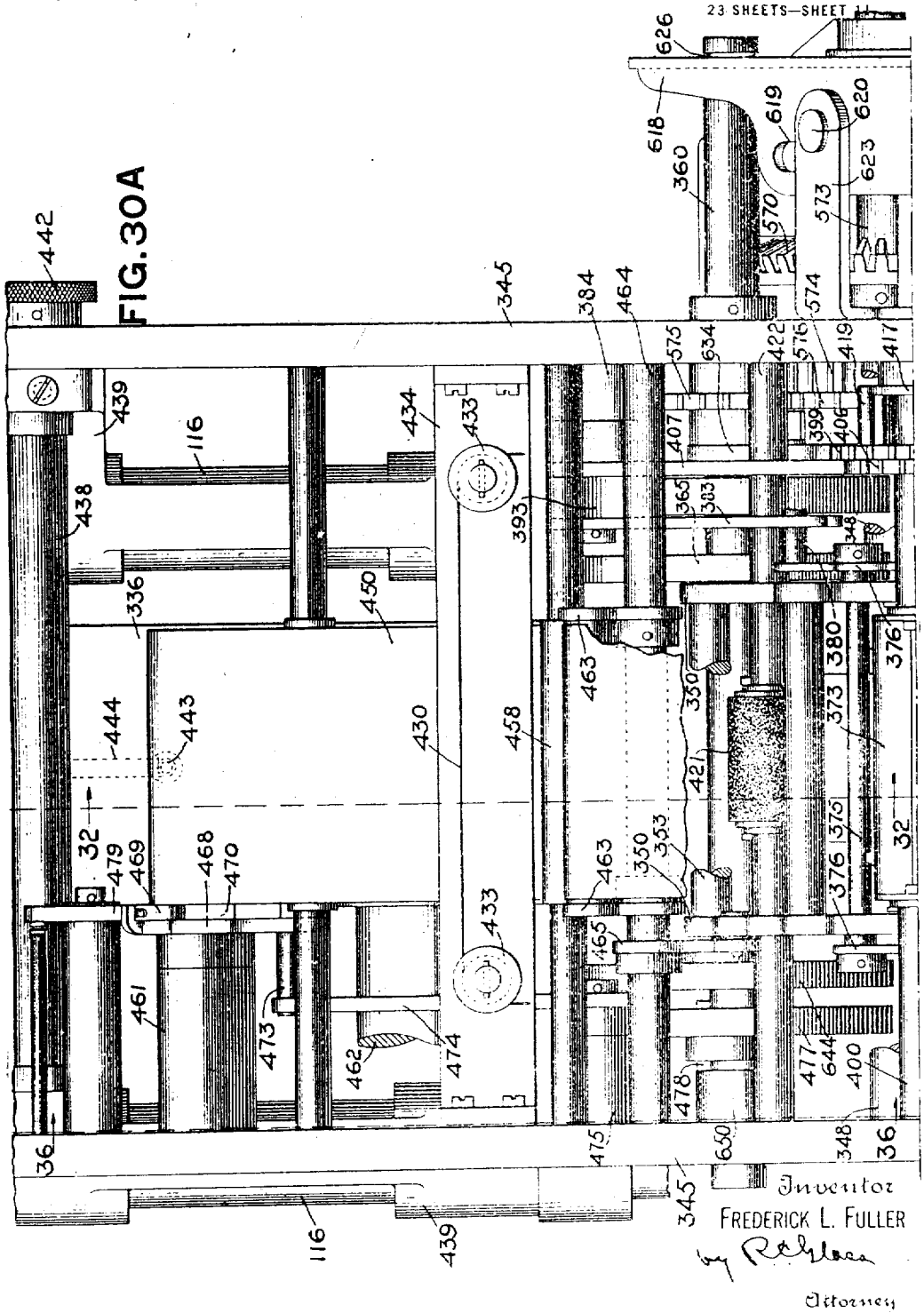
APPLICATION FILED OCT. 27, 1916.

1,382,637.

Patented June 28, 1921.

23 SHEETS—SHEET 11.

FIG. 30A



Inventor

FREDERICK L. FULLER

by Rabbee

Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637.

Patented June 28, 1921.

23 SHEETS—SHEET 12.

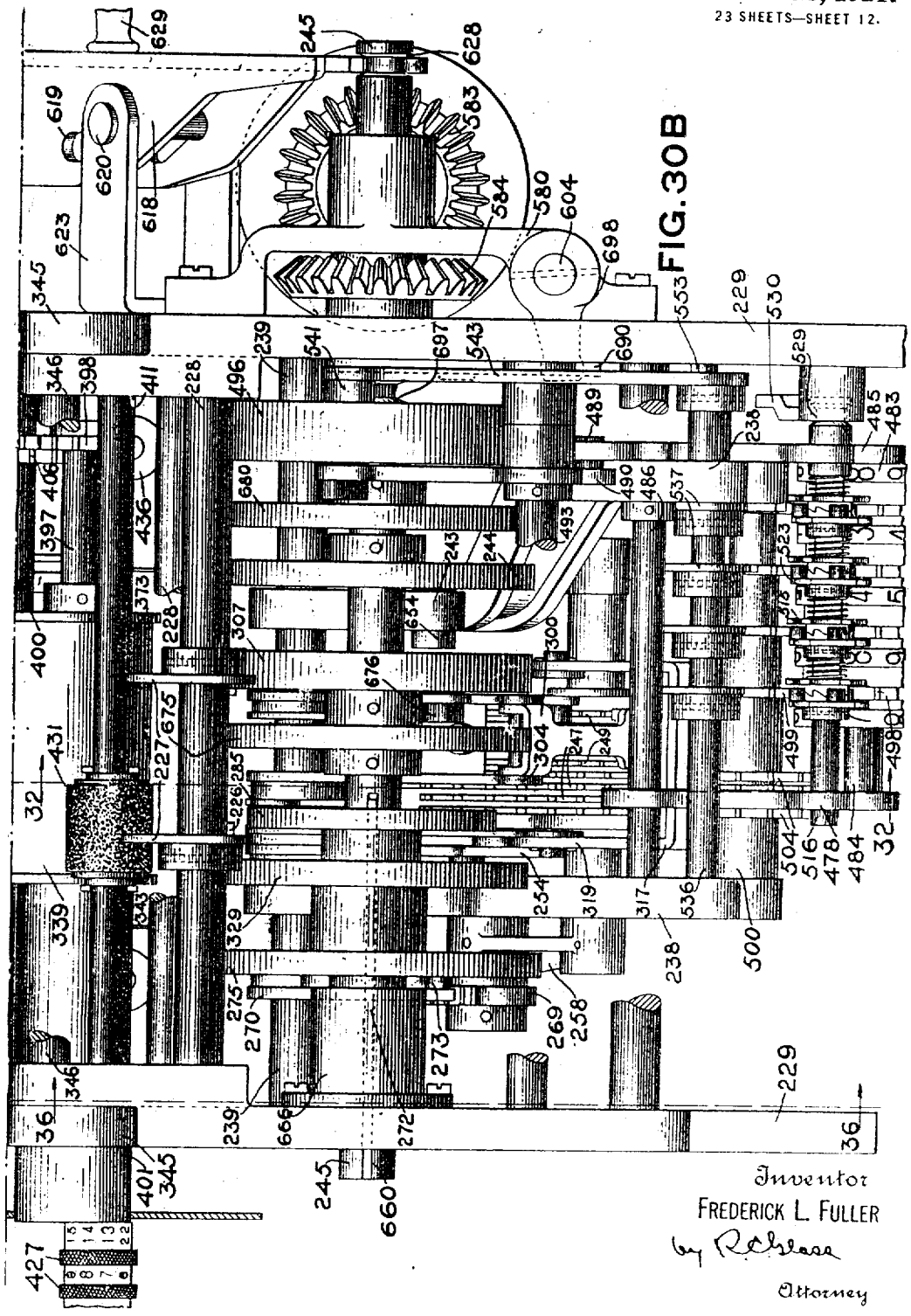


FIG. 30B

Inventor

FREDERICK L. FULLER

by R. C. Lee

Attorney

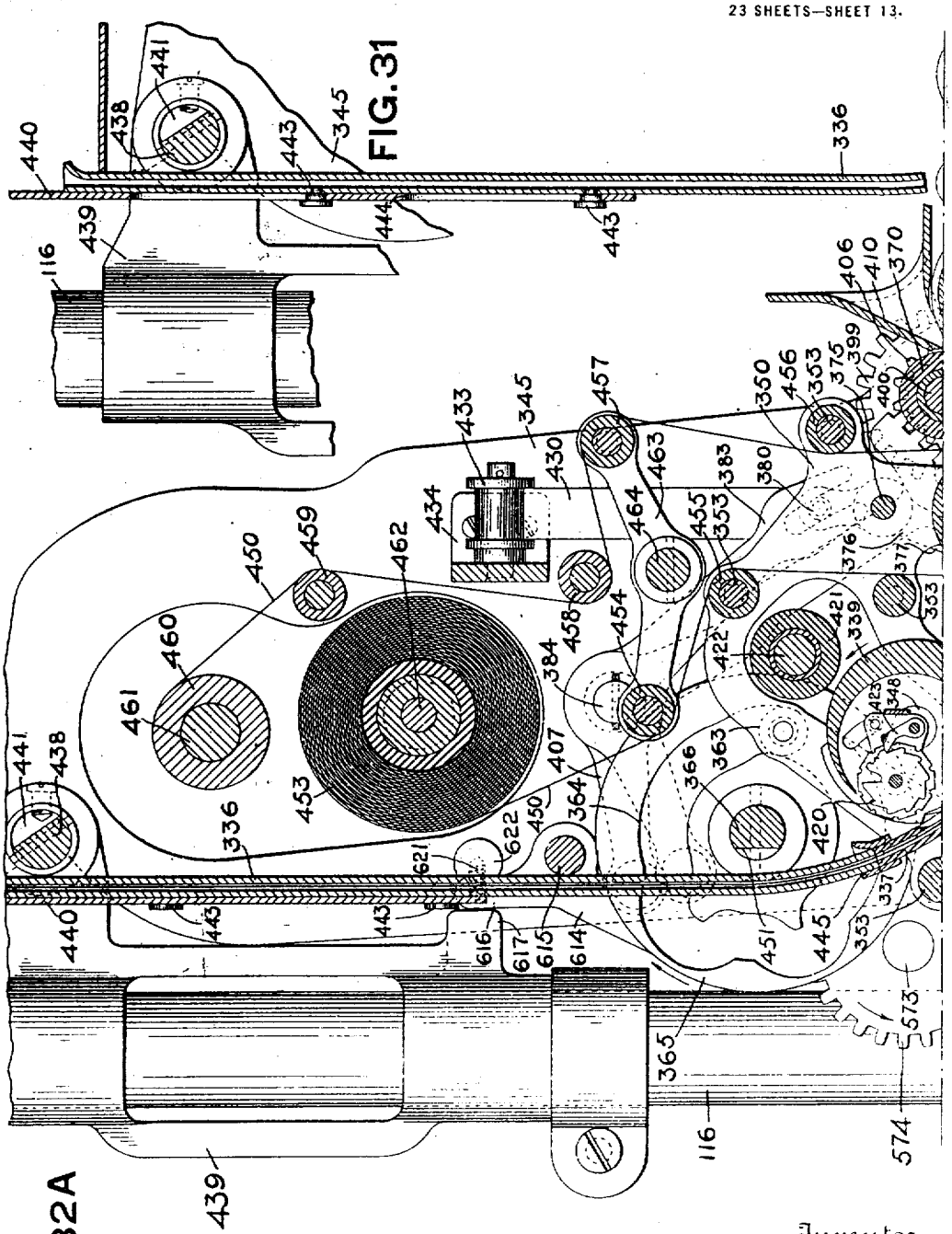
F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 13.



Inventor

FREDERICK L. FULLER

by R. C. Lean

Attorney

F. L. FULLER.

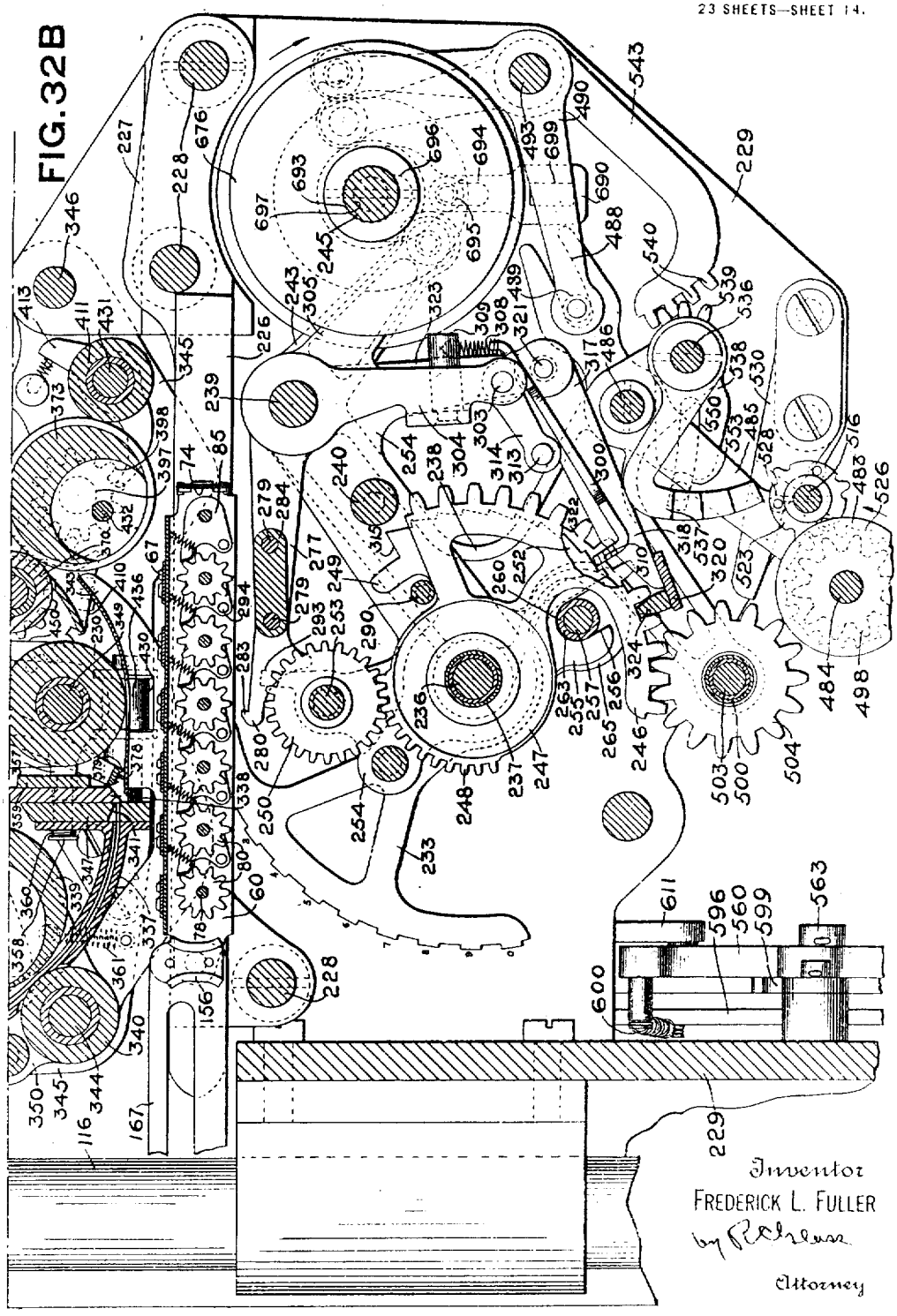
MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 14.

FIG. 32B



Inventor
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by R. A. Lewis
Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 15.

FIG. 33

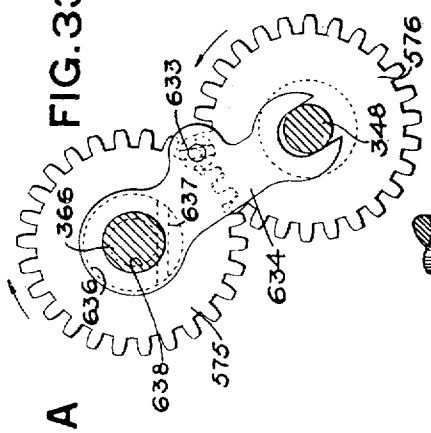


FIG. 34

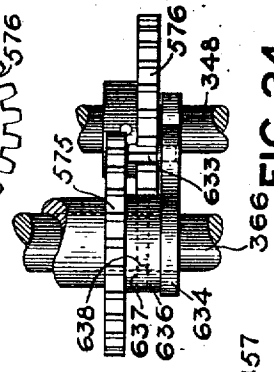
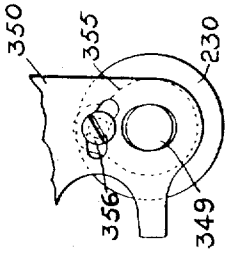


FIG. 36A

FIG. 35



Inventor
FREDERICK L. FULLER
by Rehlen
Attorney

F. L. FULLER.

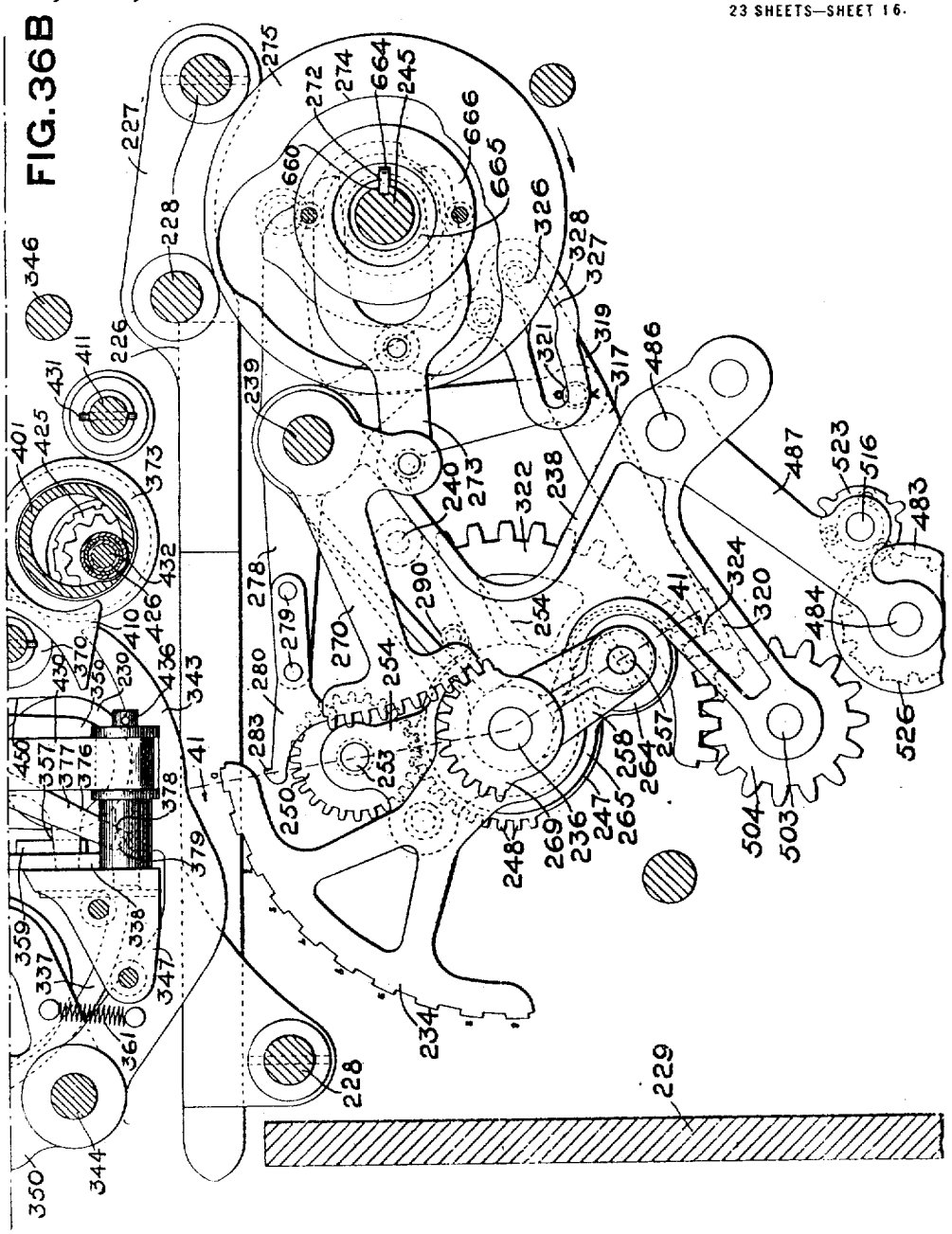
MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 16.

FIG. 36B



Inventor

FREDERICK L. FULLER

by R. A. Sloss

Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 17.

FIG. 37

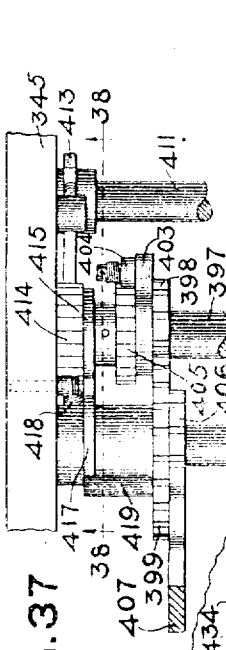


FIG. 38

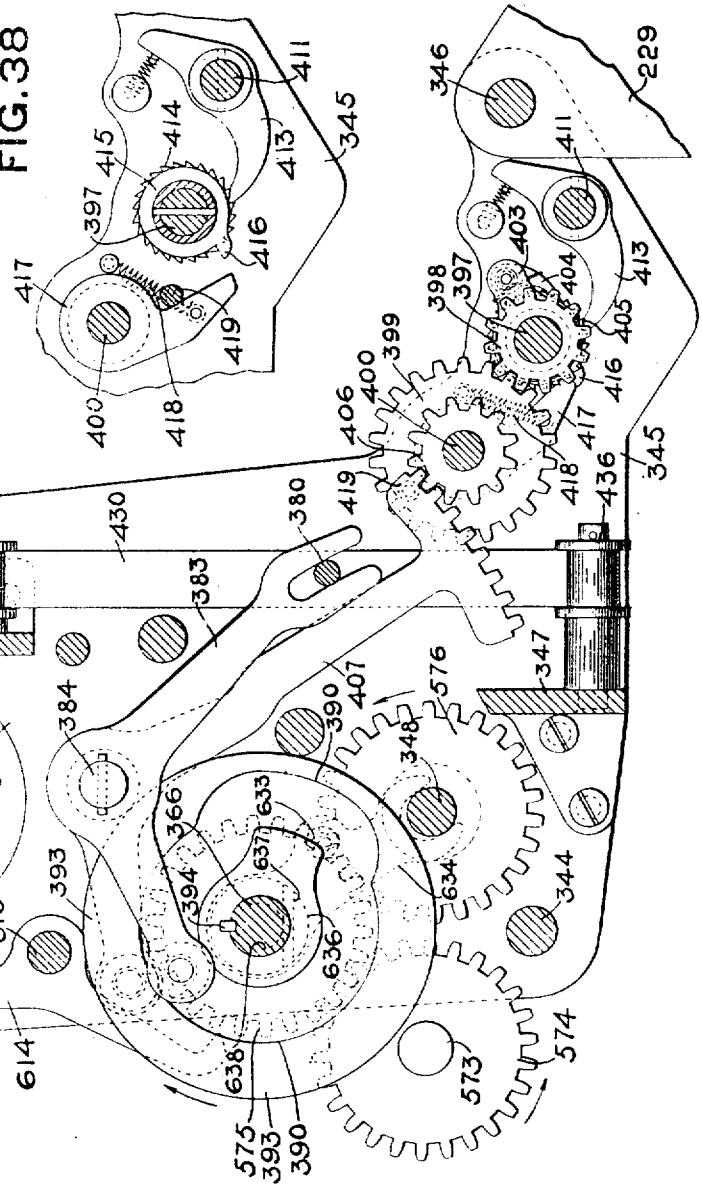


FIG. 39

Inventor

FREDERICK L. FULLER

by R. C. Lee

Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 18.

FIG. 40

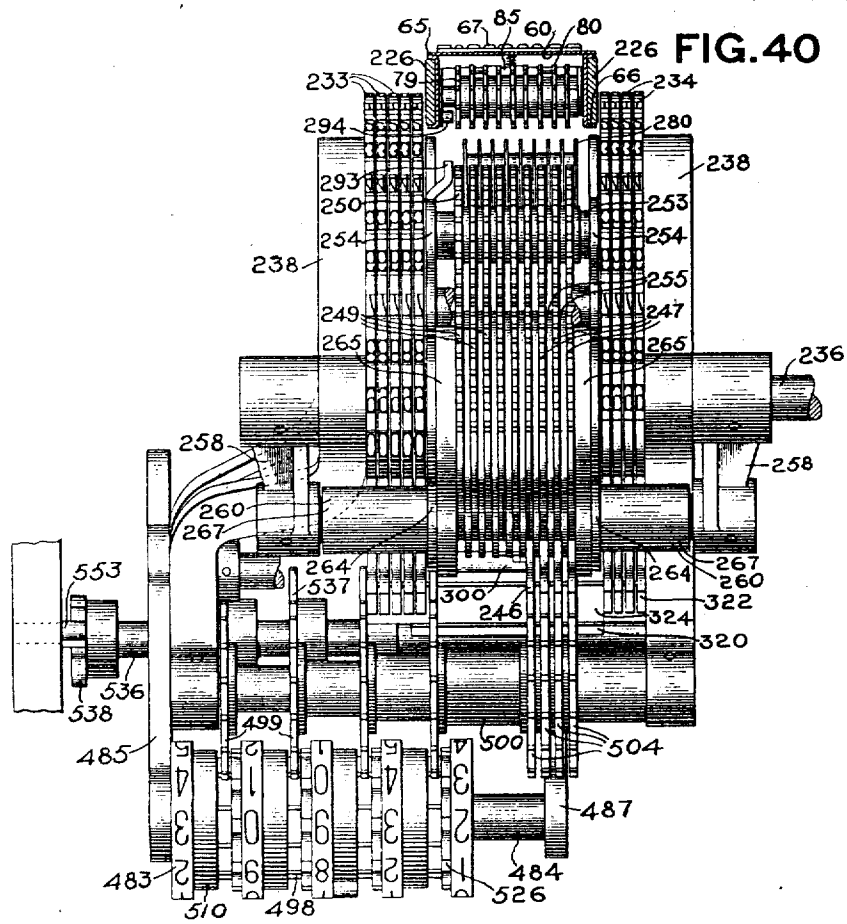
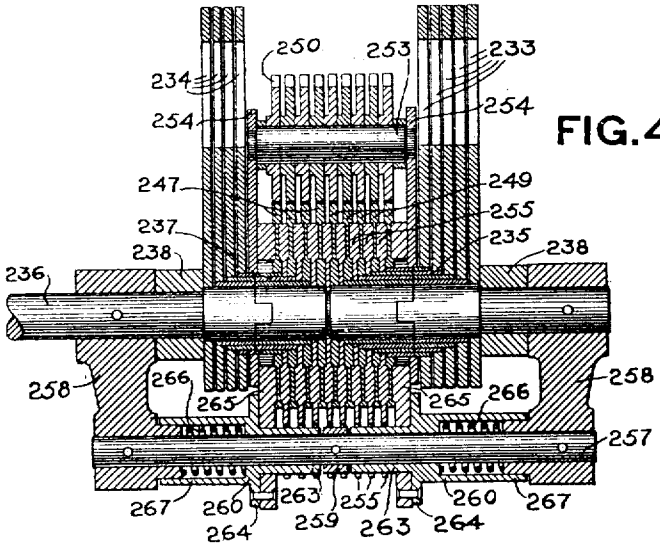


FIG. 41



Inventor
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by Rehlaen
Attorney

F. L. FULLER.

MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637.

Patented June 28, 1921.

23 SHEETS—SHEET 19.

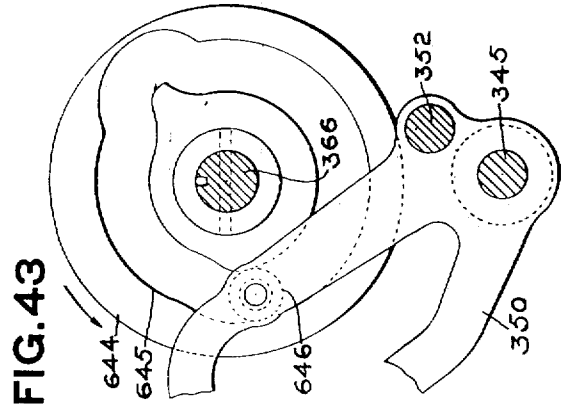


FIG. 43

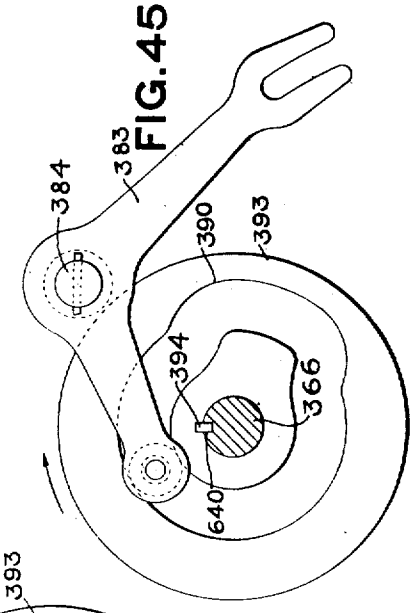


FIG. 45

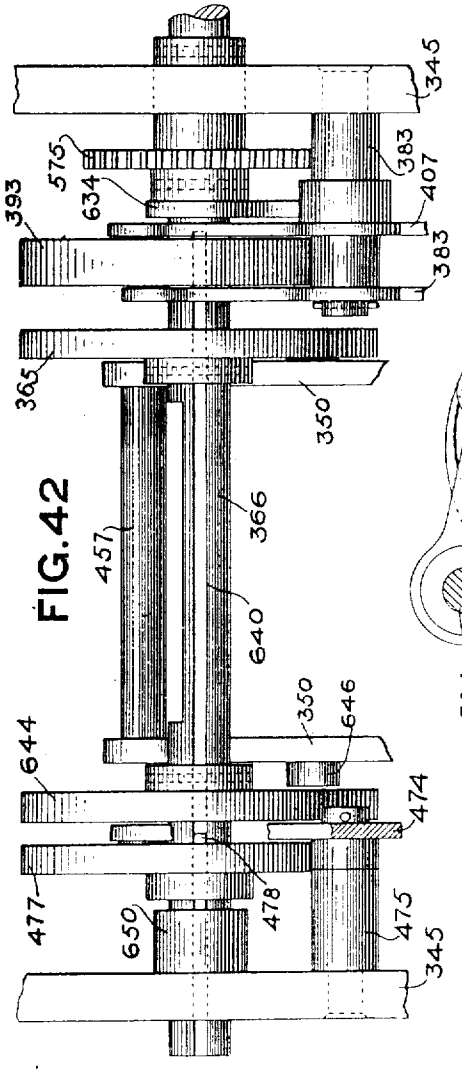


FIG. 42

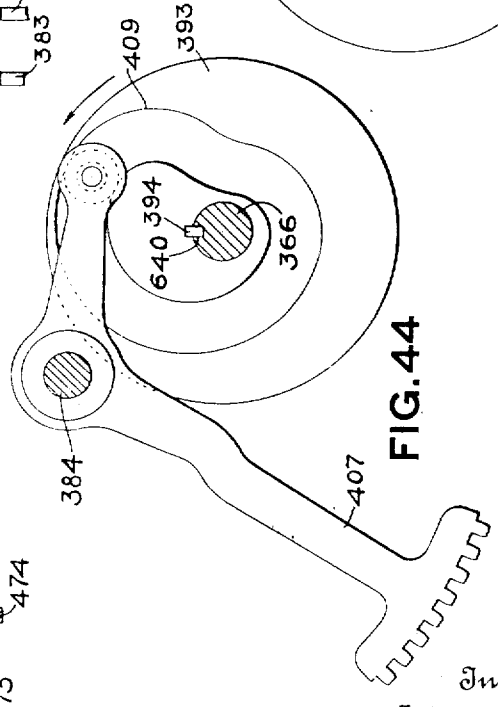


FIG. 44

Inventor

FREDERICK L. FULLER

by Rehms

Attorney

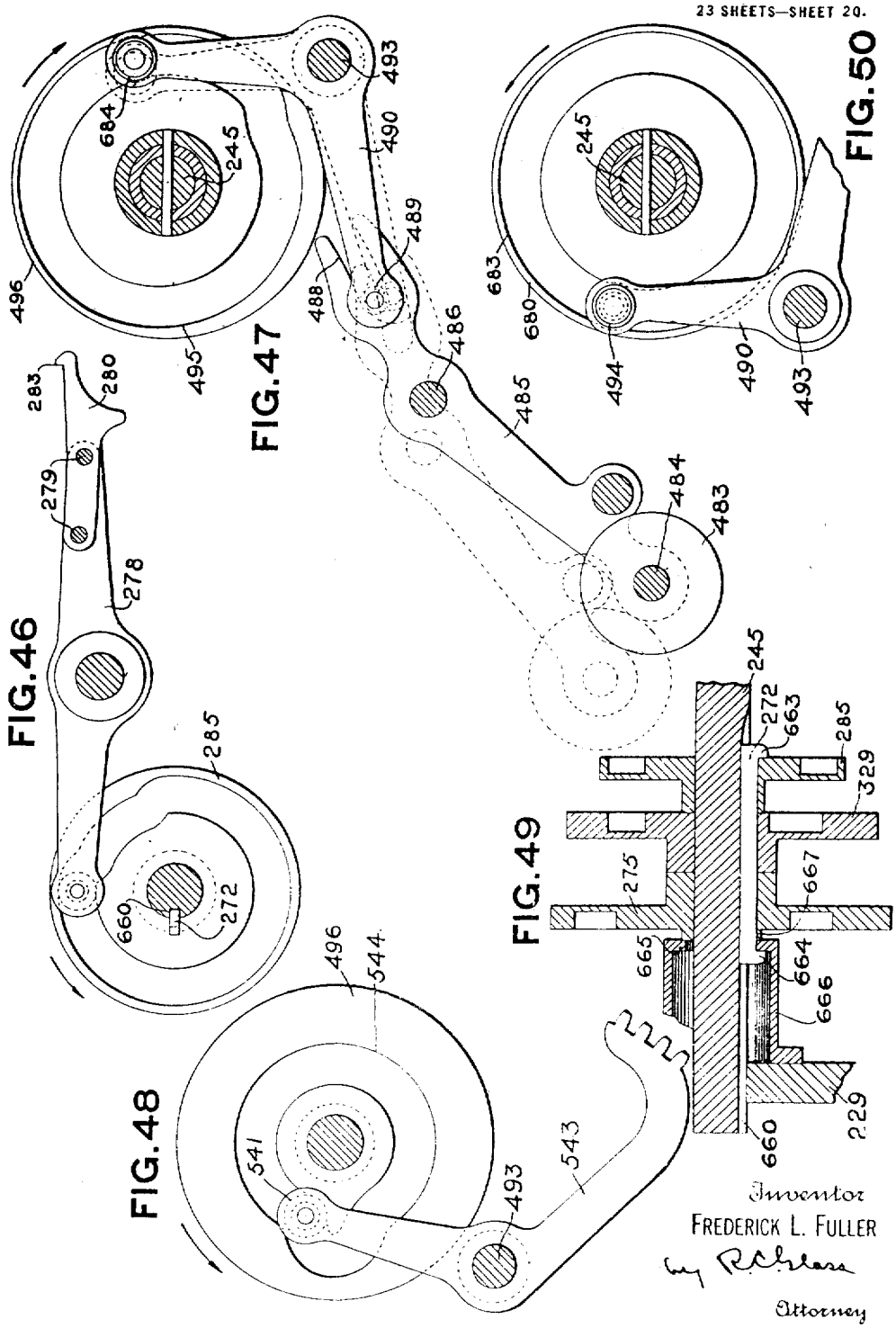
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MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. **Patented June 28, 1921.**

23 SHEETS—SHEET 20.



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MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

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23 SHEETS—SHEET 21.

FIG. 52

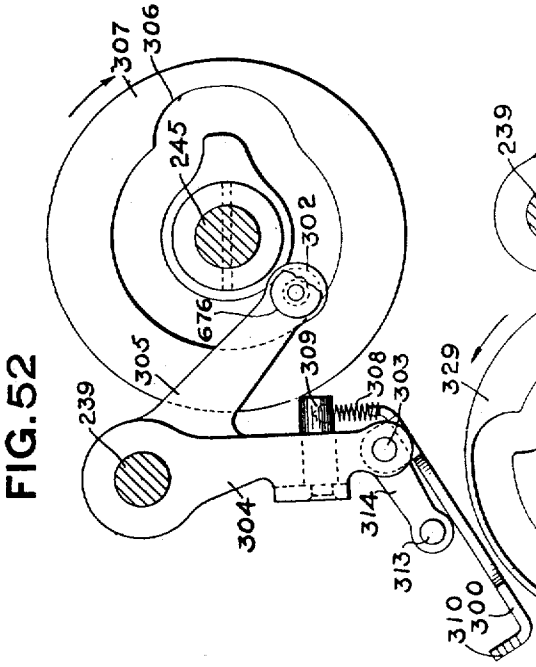


FIG. 54

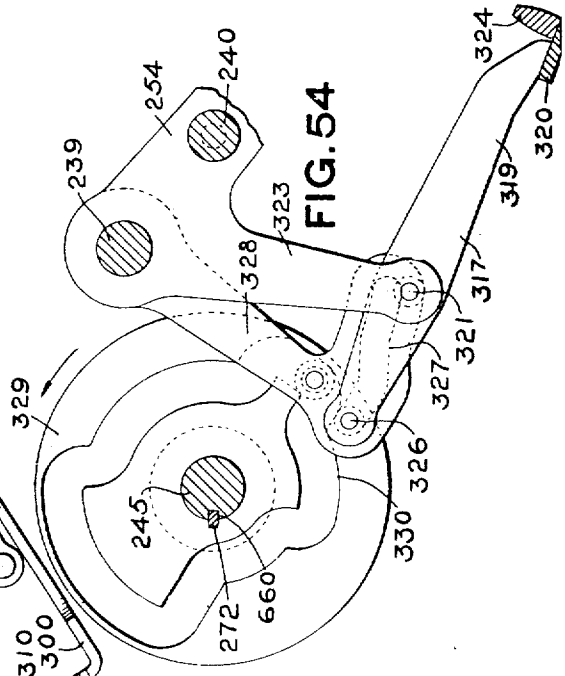


FIG 51

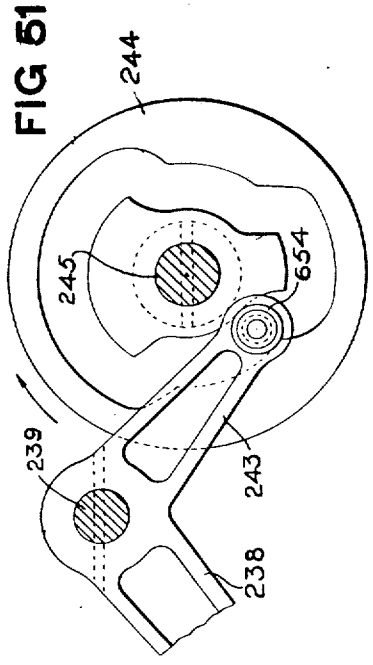
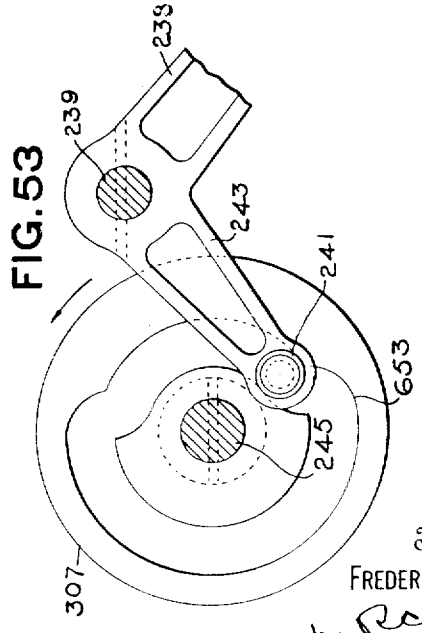


FIG. 53



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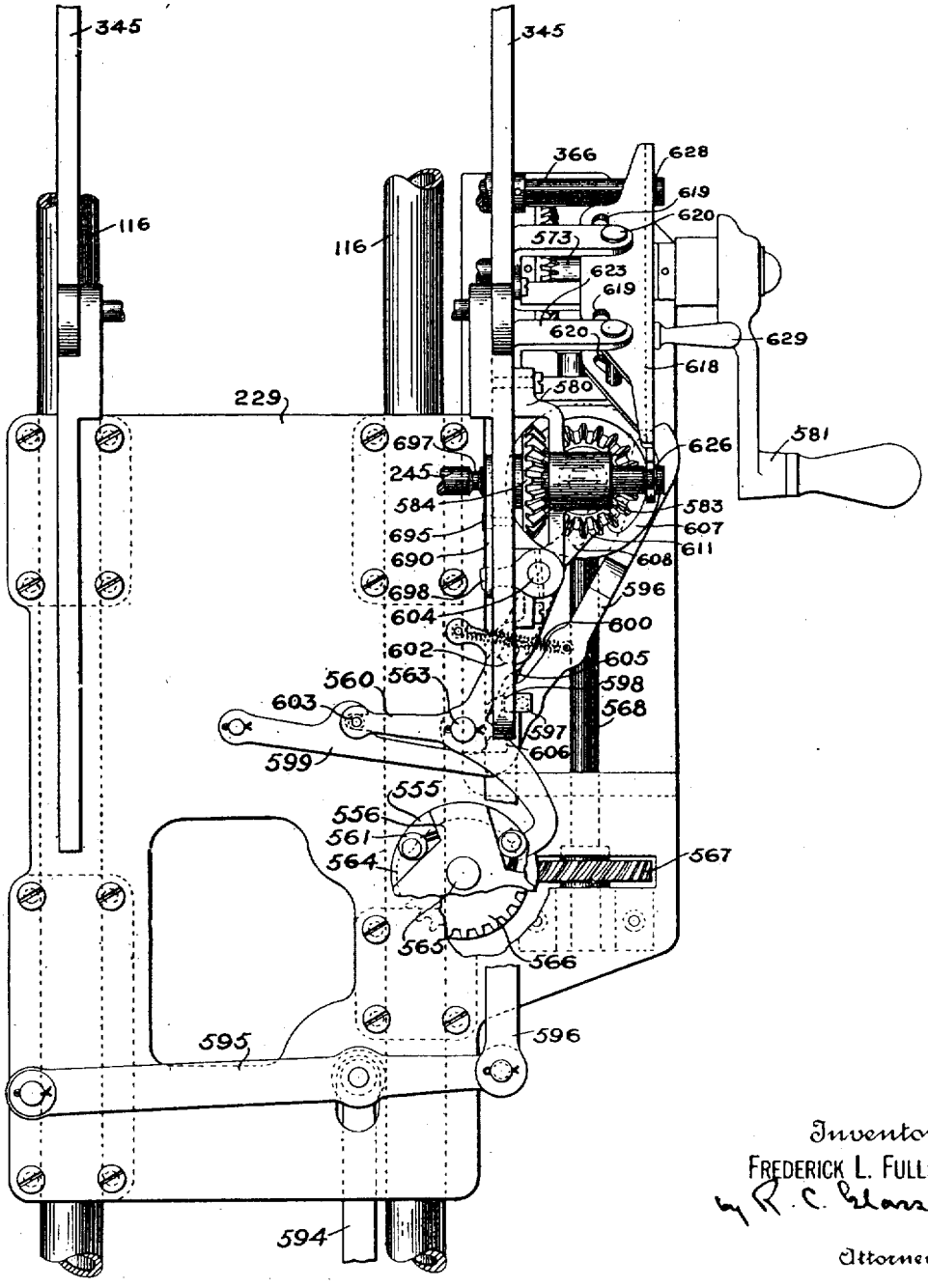
MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 22.

FIG. 55



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MACHINE FOR PRINTING AND ISSUING RAILWAY TICKETS.

APPLICATION FILED OCT. 27, 1916.

1,382,637. Patented June 28, 1921.

23 SHEETS—SHEET 23.

FIG. 56

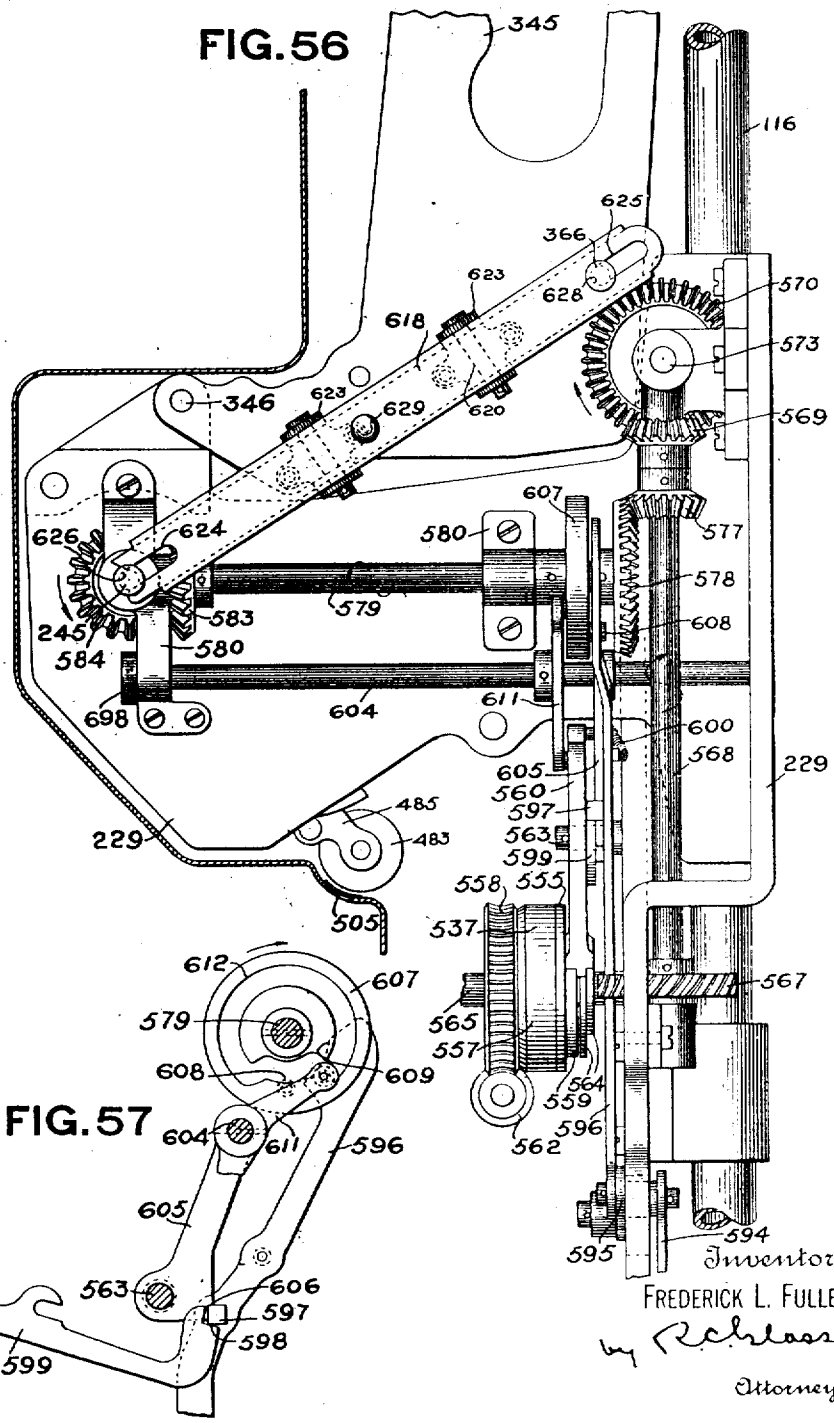


FIG. 57

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UNITED STATES PATENT OFFICE.

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MACHINE FOR PRINTING AND ISSUING RAILWAY-TICKETS.

1,382,637. Specification of Letters Patent. Patented June 28, 1921.

Application filed October 27, 1916. Serial No. 128,093.

To all whom it may concern:

Be it known that I, FREDERICK L. FULLER, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Machines for Printing and Issuing Railway-Tickets, of which I declare the following to be a full, clear, and exact description.

This invention relates to ticket issuing machines and has more particular relation to that class of ticket issuing machines adapted for use in issuing tickets for railroad and steamship lines or other analogous uses.

The general object of this invention is to provide an improved compact and efficient machine for use in ticket offices of railroads, steamship lines and other lines of travel to issue tickets of different classes and accurately account for the money received for the tickets of each class, (such as "Full fare round trip", "Full fare one way", "Half fare round trip", "Half fare one way", "Excursion" and "Clergyman") to each station as well as for the total amount received for all of the tickets issued by the machine. It will be apparent that the invention is capable of use in other embodiments without constituting departure from the scope of the present invention.

One of the principal objects of this invention is to provide improved destination devices constructed to print the names of the destination stations and the classes on the tickets, retain records of the number of tickets of each class issued to each station and control the numbering of and the printing of the values on the tickets. In the present embodiment but one distination device is provided for each station taken care of by the machine. Each destination device is adapted to print the name of the destination station, the classes of the tickets and any other desired information as well as control the printing of the number and value of the ticket of each particular class. In some inventions relating to railroad ticket machines one destination device is provided for each class of tickets to each station instead of for all classes of tickets to each station and therefore the number of destination devices is greatly increased. It is evident that in such inventions the destination devices require more space and their selection is more tedious and requires more time.

A further object of the invention is to provide improved means for selecting the desired destination device for use and moving it into position to print a ticket of the desired class. In the illustrative form of embodiment the destination devices are carried on an endless chain, which is adjusted to move the desired destination device into position to be inserted into the printing mechanism. Then a foot pedal, appropriate to the desired class of ticket, is operated to move the selected device into the printing mechanism so that the ticket of the desired class is printed and issued.

Another object of the invention is to construct the amount determining means carried by the destination devices so that they may be adjusted manually to represent the fare value of the tickets. The amount determining means comprise a plurality of pinions which are normally in positions representing the value and are turned to zero to control type carriers for printing the value on the tickets. The amount determining means of the destination devices in machines heretofore invented are not manually adjustable and therefore new means must be substituted in case there is a change in the value of tickets. In the present invention it is only necessary to adjust the pinions to represent the new value.

A further object of the invention is to provide novel mechanism for actuating an accounting device adapted to add. In the present form of embodiment the accounting device is a consecutive number device carried by a destination device and adapted to control type carriers for printing the consecutive numbers on the tickets. The differential mechanism is constructed to turn the consecutive number device to zero and then actuate the number device to set up the next consecutive number on the device. While the consecutive number device is in zero position one is added on the differential mechanism and the type carriers.

Still another object of the invention is to provide novel transfer mechanism for the totalizing mechanism employed to accumulate the total value of the tickets issued by the machine.

With these and incidental objects in view, the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims, and a preferred form of embodiment of which is hereinafter described with reference to the drawings which accompany and form part of the specification.

Of said drawings:

Figure 1 is a perspective view of the machine embodying the present invention.

Fig. 2 is a detail sectional view taken on the line 2—2 of Fig. 6^B and shows the lower pair of sprocket wheels in full.

Fig. 3 is a detail sectional view taken on the line 3—3 of Fig. 2 and shows the devices for preventing operation of more than one foot pedal at a time.

Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 6^A.

Fig. 5 is a detail vertical section taken on the line 5—5 of Fig. 4.

Figs. 6^A and 6^B combined constitute a detail left hand side view of the machine with part of the cabinet shown in cross section.

Figs. 7^A and 7^B combined constitute a transverse vertical section taken through the center of the machine. The portion of the cabinet covering the printing and totalizing mechanisms is shown in full and the chain carrying the destination devices is shown in side elevation instead of in section.

Fig. 8 is a horizontal sectional view taken on the line 8—8 of Fig. 6^A.

Fig. 9 is a detail horizontal sectional view taken on the line 9—9 of Fig. 6^B.

Fig. 10 is a detail horizontal sectional view taken on the line 10—10 of Fig. 6^B, but shows the upwardly extending arms of the levers carrying the foot pedals in full.

Fig. 11 is a full sized detail side view of a portion of the chain carrying the destination devices and shows one of the destination devices in position in one of the links of the chain.

Fig. 12 is a full sized detail sectional view taken on the line 12—12 of Fig. 11.

Fig. 13 is a full sized detail top plan view of one of the destination devices, with one of the printing plates removed.

Fig. 14 is a full sized detail front view of one of the destination devices.

Fig. 15 is a full sized detail sectional view taken on the line 15—15 of Fig. 13.

Fig. 16 is a full sized detail side view of two parts of one of the transfer units for the totalizer.

Fig. 17 is a full sized detail side view of one of the disks rigidly connected to the pinions carried by the destination devices.

Fig. 18 is a full sized detail sectional view taken on the line 18—18 of Fig. 15.

Fig. 19 is a full sized detail top plan view of the totalizer.

Fig. 20 is a full sized detail side view of two parts of one of the transfer units for the totalizer.

Fig. 21 is a full sized detail side view of part of the means for moving the selected destination device into printing position.

Figs. 22 and 23 respectively are full sized rear and top plan views of the means shown in Fig. 21.

Fig. 24 is a full sized section taken through the slides shown in Figs. 21, 22 and 23. The section is taken on the line 24—24 of Fig. 21 and shows the slides extended.

Fig. 25 is a full sized top plan view of the means for locking the slides shown in Fig. 24 in adjusted positions.

Fig. 26 is a full sized view of a portion of the detail strip used in the machine and shows a detail record of the tickets as issued.

Fig. 27 is a full sized view of a portion of the detail strip showing an audit of one of the destination devices.

Figs. 28 and 29 are full sized views of tickets issued by the machine. Fig. 28 is a front view and Fig. 29 a rear view.

Figs. 30^A and 30^B combined constitute a full sized front view of the printing and totalizing mechanisms.

Fig. 31 is a detail vertical sectional view taken through a portion of the chute through which the ticket strip is fed.

Figs. 32^A and 32^B combined constitute a detail sectional view through the printing and totalizing mechanisms, the section being taken on the line 32—32 of Figs. 30^A and 30^B.

Fig. 33 is a full sized side view showing two gears through which part of the ticket feeding mechanism is operated.

Fig. 34 is a full sized top plan view of the gears shown in Fig. 33 and shows the gears out of engagement.

Fig. 35 is a full sized detail side view of the means for adjusting the printing platen.

Figs. 36^A and 36^B combined constitute a full sized detail sectional view through the printing and totalizing mechanisms, the section being taken on the line 36—36 of Figs. 30^A and 30^B.

Fig. 37 is a full sized detail top plan view of part of the mechanism for operating the means which feeds the tickets out of the machine.

Fig. 38 is a full sized detail sectional view taken on the line 38—38 of Fig. 37.

Fig. 39 is a full sized detail side view of the mechanism for operating the means for feeding the tickets out of the machine and also of the mechanism for operating the de-

vice for moving the ticket after it is severed to said feeding means.

Fig. 40 is a full sized detail rear view of the adjustable printing means and the totalizer and shows a destination device in cross section.

Fig. 41 is a detail sectional view taken through the adjustable type carriers and frictional driving means for the type carriers and totalizer actuating means, the section being taken on the line 41—41 of Fig. 36[B].

Fig. 42 is a full sized detail top plan view of the shaft and the cams thereon for operating the ticket strip and detail strip feeding devices and for rocking the platen frame.

Fig. 43 is a full sized detail side view of part of the platen frame and the cam for operating the frame when the machine is used to make an audit on the detail strip.

Fig. 44 is a full sized side view of the cam and lever for operating the mechanism shown in Figs. 37 and 39.

Fig. 45 is a full sized side view of the cam and lever for operating the means for moving the tickets to the feeding means which feeds the tickets out of the machine.

Fig. 46 is a full sized detail side view of one of the stop arms and the cam for operating the latter which are adapted to arrest the pinions carried in the destination devices in zero position to control the extents of movement of the consecutive number and amount type carriers.

Fig. 47 is a full sized sectional view taken through the totalizing mechanism and showing the means for rocking the totalizer during ticket issuing operations of the machine.

Fig. 48 is a detail side view of the cam and lever for operating the transfer arms of the transfer mechanism for the totalizer.

Fig. 49 is a full sized detail sectional view taken through the cams shown in Figs. 36[B], 46 and 54.

Fig. 50 is a detail side view of the disk employed to prevent engagement of the totalizer with the actuating mechanism during operations in which an audit is taken on the detail strip.

Fig. 51 is a full sized detail view showing part of the frame carrying the adjustable type carriers and differential mechanism and the cam for operating the frame during ticket printing operations.

Fig. 52 is a detail side view of the means for adding one on the consecutive number type carriers during each ticket printing operation.

Fig. 53 is a detail side view showing part of the frame carrying the adjustable type carriers and differential mechanism and the cam for operating the frame when an audit is taken on the detail strip.

Fig. 54 is a full sized detail sectional view through the means for alining the adjustable type carriers.

Fig. 55 is a detail front view of the operating mechanism of the machine.

Fig. 56 is a detail right hand side view of the operating mechanism of the machine.

Fig. 57 is a detail front view of the means for retaining the operated foot pedal in operated position and preventing a second intermediate operation of the machine by retaining a foot pedal in depressed position at the end of an operation.

As above stated, but one destination device for each station is provided in the present invention. Each destination device is adapted to control the issuing of a ticket of any desired class to its appropriate destination station. In the illustrative form of embodiment each destination device is provided with six printing plates or electros, one for each class of tickets, and each plate is adapted to print the name of the destination station and the class of the ticket on a ticket severed from a ticket strip. The six classes represented by the plates of each destination device are "Full fare round trip," "Full fare one way", "Half fare round trip", "Half fare one way", "Excursion" and "Clergyman". While the machine is shown as providing for these six classes of tickets it will be obvious that the construction is capable of development to provide a still wider scope without departing from the scope of the invention. Each destination device is also provided with six rows of pinions, one row for each class of tickets. Several of these pinions of each row constitute a consecutive counter which controls type carriers to print on the tickets the number of the tickets of the appropriate class issued to the destination station. One is added on a consecutive counter of the selected destination device during an operation in which a ticket of that particular class is issued. The remaining pinions of a row normally have positions representing the value of the ticket of the particular class and control type carriers for printing the value on the ticket.

The destination devices are carried in an endless chain which is operated by hand wheels, preliminarily to the operation of the machine, to adjust the desired destination device into position to be moved into the printing mechanism. Six foot levers or pedals, one for each class of tickets, are provided with connections to slides which are adapted to move the selected destination device into the printing mechanism. The foot levers are constructed to operate the slides to different extents so that when a lever is operated the desired printing plate for printing on the ticket is moved into printing position, the corresponding row of pin-

ions at the same time being moved into position to control the consecutive number and amount type carriers. Operation of a foot lever also releases the operating mechanism of the machine.

During operation of the machine the selected printing plate and the amount and consecutive number type carriers print on a detail strip retained in the machine and also on a ticket severed from a ticket strip. The ticket is then fed out of the machine. An electro prints the name of the issuing railroad as well as the name of the issuing station upon every ticket and a consecutive numbering device prints the number of tickets issued by the machine upon the back of each ticket during the operation in which it is issued. The pinions constituting the consecutive counter first control movement of the consecutive number type carriers, then one is added on the type carriers by suitable mechanism before the consecutive number and the amount are printed on the detail strip and ticket. The amount type carriers are controlled by the pinions representing the amount. After the amount and the consecutive number of the tickets of the particular class are printed the consecutive number and amount type carriers are restored to zero position whereupon the amount pinions are set to their original positions and the consecutive numbering pinions are set to represent the consecutive number printed on the ticket and detail strip.

The amount type carriers are provided with actuating segments which through suitable gears actuate a totalizer employed to accumulate the total value of all the tickets issued by the machine.

During the operation of the machine the selected destination device is locked in its adjusted position and near the end of the operation it is released whereupon it is withdrawn from the printing mechanism into normal position in the chain carrying the destination devices.

The printing mechanism is constructed to make a statement or audit upon the detail strip, as for example, when the ticket office at which the machine is located is being checked up by the auditor. In taking an audit the machine is operated a sufficient number of times to print on the detail strip from each printing plate of each destination device, the destination devices being selected and moved into printing position in the same manner as when tickets are to be issued. During such operations the consecutive number type carriers and amount type carriers are controlled by the appropriate pinions in the destination devices and these type carriers and the printing plates print upon the detail strip. The means for adding one on the consecutive number type carriers and pinions is disabled as an incident to preparing the machine for auditing. The ticket strip feeding mechanism is also disabled during such operations so that a printing impression is taken only upon the detail strip during each operation.

Destination devices.

A destination device is shown in detail in Figs. 11, 12, 13, 14, 15 and 18. The casing or frame of each destination device comprises a plate 60, which is bent so as to form a top 63 and sides 64. The top is bent back upon itself along the edges of the top to form flanges or ribs 65 and the lower edges of the sides 64 are bent to form flanges 66 which are parallel to the flanges 65. Six printing plates or electros 67 are mounted on the top 63. The plates 67 are slid in place on the top 63, the latter being provided with projections 68 (Figs. 13 and 15) which are cut out of the top and engage over the beveled edges of the plates. Each plate is provided with a notch 69 (Fig. 13) in which engages a vertical projection 70 of a cut-out portion 73 of the top of the destination device to prevent movement of the plate on the device. When a plate 67 is placed on the destination device the cut out portion 73, which acts like a leaf spring, is depressed and then when the notch 69 is in alinement with the projection 70 the portion springs to normal position, moving the projection 70 into the notch 69. Each of these plates is adapted to print the name of the destination station to which the device is appropriate as well as the class of ticket.

A plate 74 (Figs. 13, 14 and 15) carrying a card 75, bearing the name of a destination station, is mounted on the forward end of the destination device. The plate 74 has bent projections 76 (Figs. 13 and 15) engaging over projection 77 formed on the sides 64 of the destination device, the plate 74 in this manner being mounted on the device.

Under each printing plate 67 is a cross rod 78 (Figs. 12, 15 and 18) carrying pinions. The five right hand pinions 79 (Fig. 12) on a rod 78 constitute a consecutive number counter. The four left hand pinions 80 normally have positions representing the value of the ticket printed upon by the corresponding printing plate 67 which is directly above the pinions when the destination device is in printing position. Fast to each pinion 79 and 80 is a disk 83 having a finger 84 (Fig. 17). The operation and functions of these pinions and disks will be described more particularly later. The pinions 79 and 80 of each row are alined in their adjusted positions by a corresponding alining frame 85 (Figs. 13 and 18). There is one of these alining frames for each row of pinions and the frames are pivoted on the four foremost

cross rods 78 and a cross rod 86. Each frame has a cross bar 87 engaging between teeth of the pinions of a row to retain the pinions in adjusted positions. The cross rod 87 is retained in engagement with its row of pinions by means of a spring 88 compressed between the bar and a projection 89 bent from the top 63 of the destination device.

Means carrying destination devices.

As shown in Figs. 6A, 7A, 11 and 12 the destination devices are carried in an endless chain. The chain comprises a plurality of links 94, there being one link for each destination device. Each link comprises a base 95 having bent sides or projections 96 by which the links are connected together. Only a few of the destination devices are shown in Figs. 6A and 7A and the bases 95 of most of the links are broken away in these figures as well as in Figs. 6B and 7B. The projections 96 of the links overlap as best shown in Figs. 11 and 12. Mounted in each projection 96 is a collar or hub 97 (Fig. 12) fastened to the projection by pins 92. Loose in each collar 97 is a pin or rod 98 upon which is fast a collar 99 which projects through and is rigidly connected by pins 100 to the projection 96 of the next link. Mounted on the collar 99 and vertical projections 103 integral with the base 95 of each link is a track 104 having flanges 106. When a destination device is in a link its upper flanges 65 engage over the upper flanges 106 of the tracks 104 and the lower flanges 66 of the destination device engage under the lower flanges 106 of the tracks 104, the destination device in this manner being slidably mounted within the link.

Loose on each collar 97 is a roller 108 (Figs. 11 and 12). These rollers 108 are adapted to engage between the teeth of sprocket wheels 109, 110 and 111 (Figs. 2, 6A–6B, 7A–7B and 8). The chain passes over the pair of sprocket wheels 109 at the top of the machine and under the pair of sprocket wheels 111 near the bottom of the machine. The pair of sprocket whels 110 intermediate the sprocket wheels 109 and 111 do not support the chain, the function of these sprocket wheels being to move the chain as will be described later. The pair of sprocket wheels 111 are fast on a shaft 113 mounted in brackets 114 (Figs. 2 and 6B) fast on the base 115 of the machine. Mounted in the base 115 are four vertical rods 116. Two vertical frames 117 (Figs. 6A–6B and 8) mounted on the rods 116 support a shaft 118 upon which is fast the pair of sprocket wheels 110. Cross bars 119 (Figs. 6A and 7A) mounted upon the upper ends of the rods 116 support a shaft 120 upon which is fast the pair of sprocket wheels 109.

The vertical portions of a guide track 123 (Figs. 2, 6A–6B, 7A–7B, 8, 9, 10, 21 and 23) are fast to horizontal frames 124, 125, 126 and 127 mounted on the rods 116. The upper semi-circular portion of the track 123 is supported by a frame 128 (Fig. 7A) loose on the shaft 120 and the lower semi-circular portion of the track 123 is fast on a frame 130 (Figs. 2 and 7B) loose on the shaft 113. The track 123 is also fast on a frame 131 (Figs. 7A, 8, 21 and 23) supported on the shaft 118 and a shaft 132 journaled in the frames 117. This guide track comprises a strip or band 134 upon which is fast an angular strip or band 135 which is bent to form two guide-ways 136 between the bands 134 and 135. The sides 64 (Figs. 11, 13 and 15) of the destination devices carry rollers 137 near their rear ends and these rollers, as best shown in Figs 7A and 8, are adapted to move in the guide-ways 136. From this construction so far described, it can be seen that when the chain carrying the destination device is moved the engagement of the rollers 137 in the guide-ways 136 prevents the destination devices from sliding out of the links of the chain.

Means are provided to permit a destination device to be readily inserted or removed from the chain, as for example, when a destination device needs repair or is to be changed in some manner. To this end a small block 143 (Figs. 4, 5, 6A and 7A) is provided with grooves 144 in its sides, the grooves being in alinement with the guide-ways 136 of the track 123 when the block is in position, as shown in the drawings. The block 143 is mounted on a vertical projection 145 of the frame 126 by means of a thumb screw 146. When a destination device is to be removed the screw 146 is turned to permit removal of the block 143 and then the chain is adjusted to bring the rollers 137 of the destination device in the open space in the track caused by the removal of the block so that the destination device may be slid out of the link 94 in which it is mounted. The operator may have access to the screw 146 to remove or insert a destination device, through a door 149 in the back of the cabinet of the machine.

Fast on the shaft 118 (Figs. 6A and 8) is a gear 150 meshing with a gear 153 fast on the shaft 132. Hand wheels 155 fast on ends of the shaft 132 are adjusted by the operator to rotate the pair of sprockets 110 through the gears 150 and 153 and thereby adjust the chain to move the desired destination device into position to be moved into printing position. When a destination device is in position to be moved into the printing mechanism its rollers 137 are in small movable tracks 156 (Figs. 7A, 21 and 24) normally positioned in an open space in the track 123. These movable tracks 156

will be described more specifically later. The front of the machine is provided with a window 158 (Figs. 1 and 7A) through which the names of the destination stations on the front ends of the destination devices may be viewed by the operator. It is obvious that the names of the destination stations on the destination devices are not appropriate to the stations represented by the devices carrying them but that the name on each destination device, when the device is moved opposite an arrow 159 adjacent the window 158 is appropriate to the destination device in position to be moved into the printing mechanism, this arrangement of the names on the destination devices being employed so as to enable the operator to move the desired destination device into position to be moved into the printing mechanism. The names on a number of destination devices are displayed at the same time through the window 158 so that the operator, who, of course, is familiar with the routes, can readily determine which way to adjust the hand wheels 155 to move the desired destination device the shortest distance into position to be moved into the printing mechanism.

In order to guide the chain carrying the destination devices and retain the rollers 108 on the chain in engagement with the sprocket wheels 110 four vertical tracks 160 (Figs. 2, 6A–6B, 8, 9 and 10) are mounted on the frames 117, 119, 124, 125, 126, 127 and frames 161 (Figs. 2 and 6B) loose on the shaft 113. Each track comprises a strip 163, and an angular bar or strip 164 which form guide-ways in which the rollers 108 move so as to guide the chain and prevent disengagement of the rollers 108 from the sprocket wheels 110.

Means for moving selected destination device into printing position.

After the selected destination device has been adjusted into position to be moved into the printing mechanism, as above described, the destination device is moved by the following described means into the printing mechanism so that the desired printing plate 67 is in position to print on the ticket to be issued.

The small tracks 156 (Figs. 21, 23 and 24), in which the rollers 137 of the selected destination device engage, are fast on the forward end of a slide 167 provided with a slot 168 through which pins 169 on a slide 170 project. The slide 170 carries pins 173 which project through a slot formed in a bar 174 fast on the frame 131. The slot in the bar 174 coincides with the slot 168 in Fig. 21. The slide 167 near its rear end carries pin 176 (Fig. 21) projecting through a slot 181 formed in the upper end of an arm 177 pivoted on a cross rod 178 (Figs. 6B and 7B) mounted in brackets on the frame 125. Pivoted on the cross rod 178 and fast to the arm 177 is an arm 179 (Figs. 6B, 7B, and 9) carrying a rod 180. The rod 180 carries rollers which project through V-shaped slots 183 formed in the upper ends of six levers 184 pivoted on the shaft 113 (Figs. 2, 6B and 7B). Rigidly mounted on the lower end of each lever 184 is a foot pedal 185 projecting through slots 186 (Figs. 1 and 3) in the base 115 of the machine. Springs 182 interposed between rearwardly extending arms 187 of the levers 184 and a cross rod 188 serve to retain the levers 184 in the normal position shown in Figs. 6B and 7B. The rearwardly extending portions 189 of the slots 183 are differentially inclined. From the above description it can be seen that when the foot pedal 185 is depressed the corresponding lever 184 is rocked clockwise whereupon the portion 189 of the slot 183 in the lever raises the rod 180 thereby rocking the arms 177 and 179 clockwise. As the portions 189 of the slots are differentially inclined it is obvious that the lever 177 is rocked clockwise to an extent dependent upon the foot pedal depressed. For example if the "Full fare one way" foot pedal is depressed the lever 177 is rocked one step; if the "Full fare round trip" foot pedal is operated the lever 177 is rocked two steps and so on, the lever 177 being rocked six steps when the "Clergyman" foot pedal is operated. When the lever 177 is rocked in this manner it can be seen that the slides 167 and 170 (Figs. 21, 23 and 24) are moved forwardly, the extent of movement of the slides being dependent upon the movement of the lever. As the rollers 137 on the selected destination device engage in the track 156 movement of the slide 167 moves the selected destination device forwardly out of the corresponding link 94 of the chain and into the printing mechanism to an extent dependent upon the foot pedal operated.

The portions 193 (Figs. 6B and 7B) of the slots 183 are concentric with the cross rod 178 and coincide when the levers 184 are in normal position. Therefore when one of the levers 184 is operated the rod 180 is moved into the portions 193 of the slots of the levers which are not operated thereby preventing operation of one of the latter after operation of the desired lever is begun.

It is desirable to lock the chain carrying the destination devices against adjustment during operation of a foot pedal 185 and operation of the machine to insure movement of the selected destination device to its normal position in the chain when the foot pedal is restored to normal position near the end of the operation of the machine. It might be well to state here that the operated foot pedal 185 is held in operated position during operation of the op-

erating mechanism which will be described later. The operated foot pedal 185 at such time is moved to normal position by the corresponding spring 182 and, of course, upon such movement of the foot pedal the selected destination device is moved back into its link 94 in the chain. The means for locking the chain against movement will now be described. Loose on the cross rod 178 (Figs. 6B, 7B and 9) is a frame comprising two arms 195 and two cross bars 192 and 196. A rod 197 is mounted in the cross bar 196. Rollers 191 on the rod 197 engage inclined edges 198 on the levers 184. Two links 199 are pivoted at their lower ends on the rod 197 and near their upper ends are provided with slots 200 through which projects a cross rod 203 mounted in the frames 117. The inclined edges 198 of the levers 184 are so constructed that when a lever is rocked clockwise, as above described, the links 199 are raised to move projections 204 on the upper ends of the links between teeth on the corresponding sprocket wheels 110 thereby locking the sprocket wheels and chain against adjustment. The links 199 are elevated during the initial movement of the operated lever 184 and are retained in elevated position by engagement of one of the rollers 191 on the upper curved edge 205 of the lever 184 during operation of the machine. When the operated lever 184 is rocked back to normal position near the end of the operation of the machine a spring 206 (Fig. 6B) lowers the links 199 to move their projections 204 out of engagement with the sprocket wheels 110 to permit adjustment of the chain preliminarily to the next operation of the machine. It is obvious that engagement of the projections 204 on the links 199 with the sprocket wheels 110 also alines the chain in its adjusted position.

After a destination device has been moved differentially into printing position it is alined in its adjusted position during operation of the machine by the following described means. An arm 207 (Figs. 7A, 21 and 25) is pivoted on the frame 131 and projects through an opening in the track 123, as shown in Fig. 25. A link 208 is connected to the arm 207 and to an arm 209 (Figs. 6B, 7B and 9) loose on the cross rod 178. Rollers 210 mounted on a rod 213 connecting the link 208 to the arm 209 rest upon the curved edges 205 of the levers 184. Near the end of a clockwise movement of the operated lever 184 a cam projection 214 on its upper edge engages one of the rollers on the rod 213, thereby rocking the arm 209 and raising the link 208 against the action of a spring 215 interposed between the arm 209 of the frame 124. When the link 208 is raised in this manner the arm 207 is rocked counter clockwise (Fig. 21) whereupon its nose 216 engages in one of the V-shaped notches 217 cut in the lower edge of the slide 167 to lock and aline the slide and the selected destination device in adjusted position. When the link 208 is raised the destination device is already in adjusted position, the rear ends of the portions 189 of the slots 183 in the levers 184 being concentric with the shaft 113 so that while the link 208 is being raised the destination device is not being moved. As the operated foot pedal is not restored to normal position until near the very end of the operation of the machine it can be seen that the selected destination device is locked in adjusted position during operation of the printing mechanism and is released during the initial return movement of the operated foot pedal to normal position, the spring 215 serving to move the locking arm out of locking position when the cam projection 214 on the lever 184 is moved out of engagement with one of the rollers on the rod 213.

In order to prevent simultaneous depression of two or more foot pedals a well known form of locking devices 220 (Fig. 3) is provided. These devices are in the form of arms pivoted at 223 on the base 115 of the machine. When a foot pedal is depressed it separates and moves between two of the arms, movement of which is limited by projections 224 projecting into recesses 225 in the upper ends of the arms so that but one foot lever can move between two arms at a time, as is well known in the art whereby two foot pedals can not be operated at the same time.

Amount and consecutive number type carriers.

When a destination device is moved out of a link in the chain into the printing mechanism it slides off of the tracks 104 in the link onto tracks 226 (Figs. 32B, 36B and 40), which at such time are in alinement with the tracks 104. The tracks 226 are formed on bars or frames 227 mounted on three cross rods 228. The cross rods 228 are mounted in the sides of a frame 229 fast on the two front rods 116. The upper flanges 65 of the destination device slide on the top edges of the tracks 226 and the lower flanges 66 of the destination device engage under the lower edges of the tracks 226.

When a destination device has been moved into the printing mechanism its selected printing plate 67 is under a printing platen 230 (Figs. 32B and 36B) adapted to carry the ticket against the plate. The pinions 79 and 80 of the row under the selected printing plate are also in position to control actuation of consecutive number type carriers 233, and amount type carriers 234 respectively (Figs. 32B, 36B, 40 and 41). There is one consecutive number type carrier 233 for

each of the pinions 79 and one amount type carrier 234 for each of the amount pinions 80. The consecutive number type carriers 233 are fast on the right hand ends of nested sleeves 235 (Fig. 41) loose on a shaft 236 and the amount type carriers 234 are fast on the left hand ends of nested sleeves 237 also loose on the shaft 236. The shaft 236 is journaled in rock frames 238 (Figs. 30B, 32B, 36B and 40), fast on a rock shaft 239 mounted in the frame 229. The rock frames 238 are rigidly connected by a cross rod 240 (Figs. 32B and 36B). The right hand frame 238 has an arm 243 (Figs. 51 and 53) carrying a roller 241 (Fig. 53) which projects into a cam groove formed in the face of a disk 244 (Fig. 51) fast on a shaft 245 journaled in the frame 229. The shaft 245 is given one complete rotation in the direction of the arrows by the operating mechanism which will be described later.

Fast on the right hand end of each of the sleeves 237 is a segment gear 247 (Figs. 32B, 40 and 41) having a segmental rack portion 246 and a series of teeth 248. Rigidly mounted on the left hand end of each of the sleeves 235 is a segment gear 249 having a segmental ratchet 252 and also a series of teeth 248. The teeth 248 of each segment gear 247 and 249 mesh with a corresponding gear 250 loose on a cross rod 253 supported in levers 254. The levers 254 (Figs. 32B and 36B) are mounted on the shaft 239 and loose on the outermost sleeves 235 and 237. The cross rod 240 projects through these levers 254 so that the frames 238 and the levers 254 are moved as a unit.

Mounted between the segment gears 247 and 249 and loose upon the sleeve 235 and 237 are levers 255 (Figs. 32B, 40 and 41). The levers 255 at their lower ends have recesses 256 (Fig. 32) through which a cross rod 257 projects. The cross rod 257 is fast in arms 258 (Figs. 36B, 40 and 41) fast on the shaft 236. Mounted within the recesses 256 of two of the levers 255 and fast upon the rod 257 is a collar 259 (Fig. 41.) Loosely mounted on the rod 257 are two sleeves 260 and the portion 263 of each sleeve projects through the recesses 256 in three of the levers 255. The sleeves 260 have circular flanges 264 (Figs. 40 and 41) fastened to levers 265 by pins. The outermost sleeve 235 projects through an opening in the right hand lever 265 and this lever is in engagement with the side of the right hand segment gear 249. The outermost sleeve 237 projects through an opening in the left hand lever 265 which is in engagement with the side of the left hand segment gear 247. A spring 266 is mounted within the hollow enlarged portion 267 of each of the sleeves 260 and is compressed between the arm 258 and the end of the hollow portion of the sleeve. From this construction it can be seen that the springs 266 tend to move the sleeves 260 and the levers 265 toward each other and thereby firmly retain the levers 255 and 265 in frictional engagement with the segment gears 247 and 249. Fast on the shaft 236 is a segment gear 269 (Fig. 36B) meshing with a segment gear 270 pivoted on the shaft 239. A pitman 273 is pivoted to the segment gear 270 and carries a roller projecting into a cam groove 274 formed in a disk 275, splined on the shaft 245 by a spline 272 (Figs. 30B, 36B and 49).

Pivoted on the shaft 239 is an arm 277 (Fig. 32B) and a lever 278 (Figs. 36B and 46) connected by cross rods 279. Mounted on the cross rods 279 is a series of arms 280 one for each of the pinions 79 and 80 of a row. The rear ends of the arms 280 have noses 283. Spacing collars 284 (Fig. 32B) are mounted on the rods 279 between the arms 280. The forward end of the lever 278 carries a roller projecting into a cam groove formed in the face of a disk 285 (Figs. 30B and 46) also splined upon the shaft 245 by the spline 272.

Operation of the type carriers 233 and 234 by the mechanism so far described will now be given in detail. The cam groove in the disk 244 (Fig. 51) is so constructed that the frames 238 and levers 254 are first rocked clockwise (Figs. 32B and 36B) to move the gears 250 into mesh with the pinions 79 and 80 under the printing plate 67 which is in printing position. At the same time the cam groove in the disk 285 (Fig. 46) rocks the lever 278 and arm 277 clockwise (Figs. 32B and 36B) to move the noses 283 on the arms into the path of movement of the fingers 84 (Fig. 17) on the disks 83 fast to the pinions 79 and 80. During movement of the gears 250 into engagement with the pinions 79 and 80 the segment gear 270 (Fig. 36B) is operated by the cam groove 274 in the disk 275 so that the segment gear 269 and shaft 236 are not rocked relative to the frames 238. While the gears 250 are in mesh with the pinions 79 and 80 the segment gear 270 is rocked by the cam groove 274 to rock the segment gear 269 and shaft 236 clockwise an invariable extent. As the arms 258 are fast on the shaft 236 and the sleeves 260 and collar 259 (Fig. 41) on the rod 257 carried by the arms 258 project through the recesses 256 (Fig. 32B) in the levers 255 it is obvious that the levers 255 as well as the levers 265 are rocked with the shaft 236. As the levers 255 and 265 are firmly retained by the springs 266 in frictional engagement with the segment gears 247 and 249 the segment gears are rotated frictionally by the levers 255 and 256 thereby rotating the gears 250 and the pinions 79 and 80. When a pinion 79 or 80 arrives at zero position the finger 84 on its disk 83 engages the vertical face of the nose 283 on

the corresponding arm 280 thereby arresting movement of the pinion and the corresponding gear 250 and segment gear 247 or 249, such arrestment being permitted as these parts are only driven frictionally by the levers 255 and 265. As the amount type carriers 234 and consecutive number type carriers 233 are fast on the sleeves 237 and 235 respectively carrying the segment gears 247 and 249 respectively it can be seen that the type carriers are differentially positioned under the control of pinions 79 and 80. When the amount type carriers and consecutive number type carriers are positioned in this manner the type representing the amount and the type representing the consecutive number are on the printing line, in alinement with the selected printing plate 67. After the consecutive number and amount type carriers have been positioned under the control of the pinions 79 and 80 the frames 238 are rocked counter clockwise to normal position by the cam shown in Fig. 51 and then one is added to the consecutive number type carriers by means to be described later. The frames 238 are then rocked clockwise again to move the type carriers to the printing line and while in this position impressions are taken from the type carriers and the printing plate 67 onto the ticket and a detail strip, which will be described later. During these movements of the frames 238 the shaft 236 is not rocked, the cam groove 274 being constructed to provide for such movement of the frames without effecting movement of the shaft 236. After printing impressions have been taken on the ticket and the detail strip and while the type carriers remain in printing position the segment gear 270 is rocked clockwise (Fig. 36B) to rock the shaft 236 and therefore the levers 255 and 265 back to normal position relative to the frames 238. During this return movement of the levers 255 and 265 to normal position they rotate the segment gears 247 and 249 to normal position, movement of the latter being arrested at zero by their engagement with a cross rod 290 supported in the levers 254. To insure return movement of the segment gears 247 and 249 and therefore of the type carriers to normal position the enlarged portions 267 of the sleeves 260 engage the type carriers thereby positively moving them to normal position if they are not returned to such position by the levers 255 and 265. It is obvious that during this return movement of the type carriers to normal position the gears 250 are rotated to corresponding extents and being in mesh with the pinions 79 and 80 rotate the pinions 80 to their original position and the pinions 79 to positions representing the consecutive number printed on the ticket and detail strip. After the type carriers have been restored to zero positions the frames 238 are again rocked counter clockwise (Figs. 32B and 36B) to normal position and the lever 278 and arm 277 are restored to normal position to lower the noses 283.

When the frames 238 are rocked clockwise to move the gears 250 into mesh with the pinions 79 and 80 a projection 293 (Figs. 32B and 40) on the left hand lever 254 engages a pin 294 on the alining frame 85 to move the frame out of engagement with the pinions 79 and 80 which are to be operated.

It is obvious that in case there is any change in the fare value of tickets of one class the corresponding destination device may be removed from the machine and the pinions 80 adjusted manually to represent the new fare value.

Means for adding on consecutive number type carriers.

An operating pawl 300 (Figs. 30B, 32B and 52) is pivoted on a cross rod 303 mounted in a yoked frame 304 loose on the shaft 239. The frame 304 has an arm 305 (Fig. 52) carrying a roller 302 which projects into a cam groove 306 formed in the left hand face of a disk 307 fast on the shaft 245. A spring 308 is compressed between a stud 309 on the frame 304 and the forward end of the operating pawl 300 and serves normally to retain the longer step or tooth 310 on the rear end of the pawl in engagement with the teeth of the segmental ratchet portion 252 on the units segment gears 249. When the frames 238 are rocked clockwise (Fig. 32B) the first time to move the gears 250 into mesh with the pinions 79 and 80, as above described, the spring 308 rocks the pawl 300 clockwise until it is arrested by a pin 313 which projects from a projection 314 on the frame 304. When the gears 250 are in mesh with the pinions 79 and 80 the graduated steps 310 on the pawl 300 are out of engagement with the teeth on the segmental ratchet portions 252 of the segment gears 249. When the frames 238 are rocked counter clockwise to normal position the segmental ratchet portions engage the steps 310 and rock the pawl 300 to normal position. The cam groove 306 (Fig. 52) then rocks the frame 304 clockwise whereupon the pawl 300 operates the segment gears 249 and therefore the consecutive number type carriers 233 to add one on the latter. As is well understood in the art, the steps 310 on the pawl 300 are so constructed that upon each operation of the pawl the highest step 310 engages a ratchet tooth of the units segment gear 249, thereby moving the units type carrier to add one. When the units type carrier is adjusted to its nine position under the control of the units pinion 79 the corresponding step 310 engages behind the face 315 (Fig. 32B) of the last ratchet tooth on the units segment gear

249 and the tens step 310 engages the face of one of the ratchet teeth on the tens segment gear 249 so that the units type carrier is moved to its "ten" position and the tens type carrier is moved one step to add one. When a type carrier 233 is in its "ten" position it prints "0" the carrier being provided with two "0" types, one for printing when the carrier is in "zero" position and the other when the carrier is in its "ten" position. The operation of this mechanism is well understood in the art and needs no further explanation. It will be recalled that when the type carriers 233 are restored to zero position they are in elevated position and therefore the pawl 300 is in engagement with the pin 313 and its steps 310 are out of engagement with the ratchet teeth on the segment gears 249 so that movement of the type carriers to zero position is permitted.

Alining mechanism for type carriers.

An alining frame 317 (Figs. 32B, 36B and 54) comprising an arm 318 and a lever 319 integral with a cross bar 320 is pivoted by pins 321 on arms 323 of the levers 254. Fast on the cross bar 320 is an alining bar 324 normally engaging between the teeth of gear segments 322 (Figs. 36 and 40) integral with the consecutive number and amount type carriers and also between the teeth of the segmental gear portions 246 of the segment gears 247 to aline and lock the type carriers in zero position. The lever 319 (Fig. 54) carries a roller 326 projecting through a cam slot 327 formed in an arm 328 pivoted on the shaft 239. The arm 328 carries a roller projecting into a cam groove 330 formed in the face of a disk 329 splined on the shaft 245 by the spline 272. The cam slot 327 and cam groove 330 are so constructed that while the type carriers are being raised the first time the alining bar 324 is lowered and is retained in lowered position until the type carriers are raised the second time into printing position. The bar 324 is then raised when the type carriers are elevated so that the latter are alined in adjusted positions while the printing impressions are being taken on the detail strip and ticket. Then before the type carriers are turned to zero positions the bar 324 is lowered to normal position and is retained in such position during the remainder of the operation of the machine. When the type carriers are finally lowered to normal position their segmental gears 322 again engage the alining bar.

Ticket printing and feeding means.

The ticket strip 332 is fed from a supply roll 335 (Fig. 6A) through a chute 336 and a chute 337 in alinement with the chute 336 (Figs 32A–32B). The end of the ticket strip is normally in engagement with a movable knife 338. Near the beginning of the operation of the machine the ticket strip is fed the length of one ticket by a printing and feeding cylinder 339 and an impression roll 340 to move the end portion of the strip, which is to constitute the ticket, under the printing platen 230. While the end portion of the ticket strip is under the platen 230 it rests on a table 343 which is pivoted on a cross rod 344 supported in frames 345 (Figs 30A–30B, 32A–32B and 39). The frames 345 are pivoted on a cross rod 346 mounted in the sides of the frame 229. The chute 337 is fast on a frame 347 (Figs. 32B and 36B) mounted on the frames 345. The frame 347 has a slot 341 (Fig. 32B) through which the ticket strip is fed. The ends of the cylinder 339 are fast on the ends of shafts 348 (Figs. 32A and 36A) which are in alinement and journaled in the frames 345. The shafts 348 and cylinder 339 are rotated in the direction of the arrow (Fig. 32A) in a manner to be described later and during such rotation feeding flanges on the cylinder coöperate with an impression roll 340 to feed the ticket strip the length of the ticket near the beginning of the operation of the machine.

The platen 230 (Fig. 32B) is loose on a cross rod 349 mounted in frames 350 (Figs. 32A–32B and 36A–36B) pivoted on the cross rod 344. The frames 350 are connected by cross rods 353. The ends of the cross rod 349 (Fig. 35) project through slots in the frames 350 and are mounted in plates 355 which together with the cross rod and platen are adjustable relative to the frames 350 by means of slot and screw connections 356 in a manner well known in the art so that impressions of the desired distinctness may be made on the ticket and detail strip. Projections 357 on the frames 350 (Figs. 32B and 36B) project into recesses (not shown) formed in the movable knife 338. Pins 358 (Fig. 32B) mounted in the frame 347 project through vertical slots (not shown) in the knife 338 to permit the knife to be raised and lowered. A block 359 is fast on the forward ends of the pins 358. Compressed springs 360 coiled about the pins 358 serve yieldingly to retain the block against the movable knife and the knife against the frame 347.

The right hand frame 350 (Fig. 32A) carries a roller 363 projecting into cam groove 364 formed in the face of a disk 365 fast on a shaft 366 which is mounted in the frames 345 and given one complete rotation in the direction of the arrow upon each operation of the machine by the operating mechanism to be described later. The cam groove 364 is so constructed that the frames 350 are first rocked counter clockwise (Figs. 32A–32B) to raise the platen 230 and the movable knife 338 for the purpose of permitting the end of the ticket strip to be fed

onto the table 343 and under the platen. Then after the type carriers 233 and 234 have been adjusted to represent the amount and the consecutive number of the ticket the frames 350 are rocked clockwise past normal position by the cam groove 361. During this movement of the frames the knife 338 first severs the ticket and then the platen 230 moves the ticket against the selected printing plate 67 and the amount and the consecutive number type carriers to take printing impressions therefrom (Fig. 28). It is obvious that when the platen 230 is lowered to carry the ticket against the type carriers and the printing plate 67 the table 343 (Figs. 32^B and 36^B) is rocked by the platen against the action of springs 361 which serve to hold this table in normal position. The cam groove 364 then rocks the frames 350 counter clockwise to normal position and while in this position the ticket is fed by the following described means to a feeding and printing cylinder 373 and an impression roll 370 which feed the ticket out of the machine.

Fast on a shaft 375 supported in the frames 350 is a frame 376 comprising two side arms 377 (Figs. 32^A–32^B and 36^A–36^B) and a cross bar 378. The cross bar 378 is provided with ridges 379 the sharp edges of which are adapted to bite into the ticket. The frame 376 carries a roller 380 (Figs. 32^A and 39) projecting into a slot formed in a lever 383 pivoted on a stud 384 projecting from the right hand frame 345. The lever 383 carries a roller projecting into a cam groove 390 formed in the left hand face of a disk 393 splined on the shaft 366 by a spline 394. The cam groove 390 is so constructed that after a ticket has been severed from the ticket strip and printed upon by the printing plate 67 and type carriers the frame 376 (Figs. 32^A–32^B) is rocked counter clockwise whereupon its ridges 379 engage the ticket and move it on the table 343 to the feeding cylinder 373 and impression roll 370. The frame 376 is then rocked to normal position, the ticket at such time being held by the impression roll 370 and cylinder 373 against return movement with the frame 376.

The right hand end of the cylinder 373 is fast on a shaft 397 (Figs. 30^B, 32^B, 37 and 39) journaled in the right hand frame 345. A tube 401 (Figs. 30^B and 36^B) fast to the left hand end of the cylinder is journaled in the left hand frame 345. Loose on the shaft 397 is a gear 398 (Figs. 37 and 39) meshing with a gear 399 fast on a shaft 400 upon which is fast the impression roll 370. Fast to the gear 398, but loose on the shaft 397, is an arm 403 carrying a pawl 404 which is retained by a spring in engagement with a ratchet wheel 405 fast on the shaft 397. Fast on the shaft 400 is a gear 406 meshing with a segmental rack portion on a lever 407 pivoted on the stud 384. The lever 407 carries a roller projecting into a cam groove 409 (Fig. 44) formed in the right hand face of the disk 393. This cam groove 409 is so constructed that the lever 407 is rocked counter clockwise (Fig. 39) and then rocked clockwise to normal position. The clockwise movement begins at the time that the ticket is fed to the roll 370 and cylinder 373 by the frame 376, as above described. Movement of the lever 407 rotates the roll 370 one complete rotation, first in a clockwise direction (Fig. 32^B) and then in a counter clockwise direction to normal position. It is obvious that through the gears 398 and 399, the arm 403 is rotated one complete rotation, first counter clockwise (Fig. 39) and then clockwise to normal position. During the counter clockwise movement of the arm 403 the pawl 404 rides idly on the ratchet wheel 405 and upon clockwise movement the pawl 404 rotates the ratchet wheel and therefore the cylinder 373. During counter clockwise rotation of the roll 370 and clockwise rotation of the cylinder 373 the roll and cylinder coöperate to feed the ticket through a chute 410 and out of the machine. A spring operated retaining lever 413 (Figs. 37 and 38) pivoted on a cross rod 411 mounted in the frames 345 coöperates with a ratchet 414 fast on the shaft 397 to prevent counter clockwise rotation of the cylinder 373 during counter clockwise rotation of the arm 403.

In order to prevent the roll 370 and cylinder 373 from being rotated past normal position when they eject the ticket the following device is employed. Fast on the shaft 397 is a disk 415 (Figs. 37 and 38) provided with stop projection 416 which normally engages the end of an arm 417 (Fig. 39) pivoted on the shaft 400. A spring 418 serves to retain the arm 417 in normal position. Near the end of the clockwise rotation of the gear 399 a pin 419 on the gear engages the arm 417 to rock it to the position shown in Fig. 38 in which position it is out of engagement with the stop projection 416. During the initial counter clockwise movement of the gear 399 the stop projection 416 is moved over the arm 417 so that when the pin 419 moves out of engagement with the arm 417 the latter engages the end of the stop projection 416 thereby permitting rotation of the cylinder 373. During rotation of the cylinder 373 the end of the arm 417 rides on the periphery of the disk 415 and is engaged by the stop projection 416 at the end of the rotation of the cylinder to prevent overthrow of the latter.

A consecutive counter 420 (Fig. 32^A) mounted within the cylinder 339 and operated by a pawl 423 in a manner well known in the art is employed to print the consecutive

number of the tickets issued by the machine on the backs of the tickets as shown in Fig. 29. An electro plate mounted on the cylinder 339 may be employed to print any desired directions or information on the backs of the tickets. An inking roll 421 mounted on a cross rod 422 supported in the frames 345 inks the electro plate and the type wheels of the consecutive numbering device 420 during rotation of the cylinder.

The printing and feeding cylinder 373 (Fig. 32B) is provided with an electro plate adapted to print the name of the railroad and the name of the issuing station on the face of the ticket as shown in Fig. 28. Date wheels 425 (Fig. 36B) in the cylinder 373 are fast on sleeves 426 and a shaft 432 adjusted in the usual manner by turn knobs 427 (Figs. 1 and 30B). These date wheels also print the date upon the face of the ticket (Fig. 28) as the roll 370 and cylinder 373 feed the ticket out of the machine. An ink roll 431 (Figs. 32B and 36B) on the cross rod 411 inks the date wheels and electro plate during rotation of the cylinder 373.

An endless inking ribbon 430 (Figs. 30A, 32A–32B, 36A–36B and 39) through which the printing impressions are made from the selected plate 67 and type carriers 233 and 234 on the detail strip and ticket, passes over two rollers 433 mounted on a cross bar 434 fast on the frames 345 and passes under two rollers 436 mounted on the frame 347. This inking ribbon, which may be fed by any desired means, passes under the platen 230 and through slots formed in the sides of the table 343, as shown in Fig. 32B.

As before stated, the frames 345 (Figs. 32A and 32B) are pivoted on the cross rod 346. A shaft 438 (Figs. 30B, 31 and 32A) is mounted in frames 439 fast on the front rods 116. The shaft 438 passes through circular recesses in the frames 345. This shaft is cut away at 441 and these cut-away portions are in the same planes as the frames 345. The shaft 438 may be turned by a knob 442 (Fig. 30B) to move its cut-away portions into such position that the frames 345 may be rocked forwardly about the cross rod 346. The shaft 348 is constructed to permit rocking of the frames 345 so that in case the ticket strip should buckle up between the cylinder 339 and the impression roll 340 the buckled portion may be torn off to permit proper feeding of the strip. Access may also be had more readily to the various parts carried by the frames 345. The chute 336 is slidably mounted on a vertical portion 440 (Figs. 31 and 32A) of the cabinet, the chute being provided with pins 443 which project through slots 444 (Fig. 30A) formed in the portion 440 of the cabinet. The lower end of the chute projects into a member 445 (Fig. 32A) which is fast on the end of the chute 337 and serves to retain the chutes 336 and 337 in alinement. Before the frames 345 are rocked, as above described, the chute 336 is manually raised to move it out of the member 445 and thereby permit movement of the frames 345. The shaft 366 is cut away at 451 to permit the end of the chute 336 to be raised above the shaft.

Detail strip.

The detail strip 450 (Figs. 30A, 32A–32B and 36A–36B is fed from a supply roll 453 thence under a roller 454, over a roller 455, under the platen 230, past a guide roller 456, over a roller 457, under a roller 458, over a roller 459 onto a storage roll 460. The rollers 455 and 456 are mounted on the cross rods 353. The rollers 458 and 459 are loose on cross rods mounted in the frame 345. The rollers 454 and 457 are mounted on cross rods carried by levers 463 fast on a shaft 464 journaled in the frames 345. Fast on the shaft 464 is an arm 465 (Fig. 36A) carrying a roller projecting into a slot 466 formed in the left hand frame 350. The cam groove 364 (Fig. 32A) in the disk 365 is so constructed that after the frames 350 have been rocked to carry the ticket against the printing plate 67 and the type carriers as above described, these frames are rocked counter clockwise and then rocked clockwise so that the platen 230 carries the detail strip against the printing plate and type carriers to make an impression thereon. The detail strip is carried against the print plate 67 and type carriers after the ticket has been moved from under the platen by the feeding frame 376. The levers 463 are normally in the positions shown in Figs. 32A and 36A to hold the detail strip firmly against the platen. When the frames 350 are rocked clockwise to take impressions on the ticket and the detail strip the slot 466 (Fig. 36A) rocks the arm 465, shaft 464 and arms 463 clockwise to permit lowering of the platen without feeding the detail strip from the supply roll, the levers being moved back to normal position when the frames 350 are rocked counter clockwise.

After the detail strip has been printed upon it is fed one step on the storage roll 460 by the following described mechanism. The storage roll 460 and supply roll 453 (Fig. 36A) respectively are loose on rods 461 and 462 projecting from the left hand frame 345. Pivoted on the rod 461 is a lever 468 carrying a pawl 469 which is retained by a spring in engagement with a ratchet wheel 470 fast on the storage roll 460. A pin 473 on the lever 468 projects through a recess in a lever 474 pivoted on a stud 475 projecting from the left hand frame 345. The lever 474 carries a roller projecting into a cam groove 476 formed in the face of a disk 477 splined on the shaft 366 by a spline 478. The cam groove 476 is

so constructed that after a printing impression has been taken on the detail strip the lever 468 is rocked counter clockwise through the lever 476 whereupon the pawl 469 rotates the ratchet wheel 470 and the storage roll 460 one step to feed the detail strip on the latter. A spring operated pawl 479 engages the ratchet wheel 470 to prevent retrograde movement of the storage roll.

Totalizing mechanism.

In order to provide a suitable mechanism for at all times showing the total amount of money which has been taken in for tickets issued and sold there is provided a totalizer which is operated upon each operation of the machine during which a ticket is issued.

The totalizer comprises a plurality of totalizer wheels 483 (Figs. 19, 30B, 32B and 36B) loose on a shaft 484. The shaft 484 is journaled at its right hand end in a lever 485 fast on a shaft 486 journaled in the frames 238 and at its left hand end the shaft 484 is journaled in an arm 487 also fast on the shaft 486. The lever 485 is provided with a slot 488 (Figs. 32B and 47) through which projects a roller 489 mounted on one arm of a bell crank lever 490 pivoted on a cross rod 493 mounted in the frame 229. The other arm of the bell crank lever 490 carries a roller 494 (Fig. 50) projecting into a cam groove 495 (Fig. 47) formed in the left hand face of the disk 496 fast on the shaft 245. The cam groove 495 is constructed to move the totalizer to the position shown in dotted lines in Fig. 47, when the frames 238 are rocked clockwise the second time to raise the type carriers 233 and 234 to printing position. Then when the type carriers are lowered to normal position the totalizer is moved to normal position at the same time. While the totalizer is in the moved position indicated by the dotted lines pinions 498 (Figs. 30B, 32B and 40) rigid with the totalizer wheels mesh with gears 499 (Figs. 30B and 40) fast on the right hand ends of nested sleeves 500 loose on a cross rod 503 (Fig. 32B) carried by the frames 238. Fast on the left hand ends of the sleeves 500 are gears 504 (Figs. 32B, and 40) meshing with the segmental gear portion 246 of the segment gears 247. As the pinions 498 are in mesh with the gears 499 while the type carriers 233 are in their differentially adjusted positions and at the printing line and are retained in engagement until after the type carriers and segment gears 247 are restored to zero position it can be seen that when the segment gears 247 are restored to zero position the amount represented by the pinions 80 controlling movement of the segment gears is added on the totalizer which therefore accumulates the total value of all the tickets issued by the machine.

The total accumulated on the totalizer may be viewed through a window 505 (Fig. 56) in the cabinet of the machine.

Transfer mechanism.

In order to provide for the transfer of a unit from a totalizer wheel of lower order to a transfer wheel of higher order a novel form of transfer mechanism has been provided (Figs. 16, 19, 20, 30B and 32B).

Fast to each totalizer wheel, except that of highest order is a disk 510 (Figs. 16 and 19) having a single tooth 513 adapted to cooperate with recesses 514 formed in a wheel 515 loose on a rod 516 (Figs. 19 and 32B) slidably mounted in the lever 485 and arm 487 carrying the totalizer. A spring 517 (Fig. 19) which is coiled about the rod 516 and compressed between the wheel 515 and a collar 518 fast on the rod serves to retain a clutch hub 519 on the wheel 515 in clutching engagement with a clutch hub 520 on another disk 523 loose on the rod 516. Each disk 523 is provided with three teeth 524 (Fig. 20) adapted to engage in recesses 525 formed in a wheel 526 fast to the corresponding totalizer wheel 483. One of the concave locking edges 527 between the recesses 525 engages the periphery of the corresponding disk 523 normally to lock the totalizer wheel against rotation. Each of the disks 523 carries three rollers 528. The rod 516 is provided with a groove 529 (Figs. 19 and 30B) in which engages the lower edge of a cam arm 530 fast on the frame 229. The cam arm 530 is so constructed that when the totalizer is moved to engage the pinions 498 with the gears 499 the rod 516 is shifted toward the right whereupon the collars 518 on the rod shift the disks 523 and wheels 515 with the rod. In such position the disks 523 are out of engagement with the wheels 526 and in the same planes as, but out of engagement with the pinions 498. The wheels 515, however, remain in engagement with the disks 510.

It can be seen from this construction, so far described, that when a totalizer wheel moves from its "nine" to its "zero" position or beyond the tooth 513 (Fig. 16) on the disk 510 rigid with the totalizer wheel engages in one of the recesses 514 in the wheel 515 to rotate the latter clockwise one sixth of a rotation. The edges 534 between the recesses 514 engage the periphery of the disk 510 to lock the wheel 515 against rotation except when the corresponding totalizer wheel passes from its "nine' to its "zero" position. The clutch hubs 519 and 520 of the wheel 515 and disk 523 are so constructed that when the wheel 515 is rotated one sixth of a rotation the corresponding disk 523 is rotated with it. It is understood, of course, that one wheel 515 coöperates with the disk 510 fast to one totalizer wheel and that the disk 523 rotated by the wheel 515 coöperates

with the wheel 526 fast to the totalizer wheel of next higher order. When the totalizer is lowered to normal position after being actuated differentially the arm 530 shifts the rod 516 and therefore the disks 523 and wheels 515 to normal position, the disks 523 then being in engagement with the wheels 526.

Fast on a shaft 536 (Figs. 30B and 32B), mounted in the frames 238, are a series of arms 537. There is one of these arms 537 for each disk 523 and the downwardly curved portions of the arms 537 are of different lengths for the purpose of effecting successive transfers as is readily understood in the art. Fast on the shaft 536 is a lever 538 (Fig. 32B) provided with three teeth 539 meshing with teeth 540 on a lever 543 pivoted on the cross rod 493. The upper end of the lever 543 carries a roller 541 projecting into a cam groove 544 (Fig. 48) formed in the right hand face of the disk 496. It can be seen that each time the type carriers are raised to printing position the teeth 539 are moved out of mesh with the teeth 540 and that when the type carriers are lowered the teeth 539 again mesh with the teeth 540. The cam groove 544 is so constructed that after the teeth 539 have been restored into mesh with the teeth 540 the second time the shaft 536 and therefore the arms 537 are rocked counter clockwise (Fig. 32B) and then clockwise to normal position. During counter clockwise movement the end of the downwardly curved portion of an arm 537 engages a roller 528 (Figs. 19, 20 and 32B) on the corresponding disk 523 if the disk has been rotated one sixth of a rotation by the totalizer wheel of next lower order, as above described. If the disk 523 is not rotated during operation of the totalizer the corresponding lever 537 does not engage one of the rollers 528 on the disk. It is obvious that when one of the arms 537 engages a roller 528 on the corresponding disk the latter is rotated one sixth of a rotation farther whereupon one of its teeth 524 coöperates with one of the recesses 525 in the wheel 526 to rotate the latter and its totalizer wheel one step to add "1" on the latter. When a disk 523 is rotated by its arm 537 the corresponding wheel 515 is locked against rotation by the disk 510 and therefore the wheel 515 is shifted toward the right against the action of its spring 517 by the inclined faces of the teeth on the clutch hubs 519 and 520 of the wheel 515 and disk 523 thereby permitting rotation of the disk 523 independently of the wheel 515. After the disk 523 has been rotated by its arm 537 the spring 517 shifts the corresponding wheel 515 to normal position on the rod 516.

In order positively to prevent movement of the shaft 536 and arms 537 relative to the frames 238 during rocking movement of the frames 238 the lever 538 (Fig. 32B) is provided with a slot 550 adapted to pass over a stationary pin 553 when the frames 238 are moved out of normal position. When the frames 238 are in normal position, as shown in Fig. 32B, it can be seen that the pin 553 does not project through the slot 550 and therefore the arms 537 may be rocked to effect the required transfers.

Operating mechanism.

The form of clutch and motor connections shown in Figs. 55 and 56 has become well known in the art and is fully shown and described in Letters Patent of United States No. 1,144,418 granted to Chas. F. Kettering and Wm. A. Chryst, June 29, 1915 and therefore will not be described in detail here.

In general the clutch comprises a disk 555 (Figs. 55 and 56) which is adapted to be given a slight preliminary movement under the action of a spring (not shown) to couple two clutch members 556 and 557 together by means of rollers 561. The clutch member 557 is fast to a gear 558 meshing with a worm gear 562 driven positively by the motor (not shown). The disk 555 is normally restrained from such preliminary movement by engagement of a block 559 (Fig. 56) on the disk with the nose of a locking lever 560 which is pivoted on a stud 563 projecting from the frame 229. When the lever 560 is rocked counter clockwise (Fig. 55) to move the nose of the lever out of engagement with the block 559, as will be presently described, the disk 555 is moved to couple the two clutch members together by the rollers 561. At the same time the nose of the lever 560 is moved out of engagement with the shoulders on two disks 564 which close the motor circuit as described in the aforesaid patent. The clutch member 556 is fast on a shaft 565 carrying a gear 566 (Fig. 55) meshing with a gear 567 fast on a vertical shaft 568 which is journaled in brackets on the frame 229. Fast on the shaft 568 is a bevel gear 569 (Fig. 56) meshing with a bevel gear 570 fast on a stub shaft 573 journaled in the frame 229. Also fast on the shaft 573 is a gear 574 (Fig. 39) meshing with a gear 575, fast on the shaft 366. The gear 575 in turn meshes with a gear 576 fast on the right hand shaft 348 carrying the printing and feeding cylinder 339. Through these connections it can be seen that the motor is adapted to give the shafts 366 and 348 one complete rotation in the direction of the arrows during each operation of the machine. Also fast on the shaft 568 (Fig. 56) is a bevel gear 577 meshing with a bevel gear 578 fast on a shaft 579 journaled in brackets 580 fast on the frame 229. Also fast on the shaft 579 is a bevel gear 583 meshing with a bevel gear 584 splined on the cam shaft 245.

Through these connections the cam shaft 245 is given one complete rotation in the direction of the arrows (Figs. 32B, 36B and 56) upon each operation of the machine.

If desired a crank handle 581 (Fig. 55) may be employed to operate the machine. The crank handle 581 is fast upon the shaft 573 so that upon each complete rotation of the crank handle the shafts 245 and 366 are given one complete rotation through the above described gear connections between the shaft 573 and the shafts 245 and 366.

The means for operating the locking lever 560 to release the machine will now be described. Loose on a cross rod 586 (Figs. 6B, 7B and 10) mounted in the frame 124 is a lever 587, the rear end of which carries a rod 588 upon which is mounted rollers 589 projecting through slots 590, which are formed in the levers 184. The forward end of the lever 587 is pivoted to the lower end of a link 594, which at its upper end is pivoted to an arm 595 (Fig. 55) pivoted at its left hand end on the frame 229. Pivoted to the right hand end of the arm 595 is a link 596 which carries a stud 597 normally engaging a notch 598 formed in an arm 599 which is pivoted on the frame 229. A spring 600 (Fig. 55) interposed between the link 596 and an arm of the locking lever 560 normally retains the stud 597 in the notch 598 and the lever 560 in locking position. One arm of the lever 560 carries a roller 603 projecting into a notch formed in the arm 599. Mounted on the stud 563 and a shaft 604 is a plate 605 having a notch 606. The shaft 604 is mounted in the frame 229 and the front bracket 580. Projecting from a disk 607, fast on the shaft 579, is a pin 608 (Fig. 57) adapted to engage an edge 609 on the upper end of the link 596. The slots 590 (Figs. 6B and 7B) in the levers 184 are all the same and are so constructed that when one of the levers is operated the corresponding slot rocks the lever 587 clockwise near the very end of the clockwise movement of the lever, the rod 588 at such time being raised by the rear cam portion 610 of the slot. When the rod 588 is raised by one of the levers 184 it moves into the forward portions 613 of the slots in the other levers, these portions being concentric with the cross rod 586. Clockwise movement of the lever 587 lowers the link 596 to the position shown in Fig. 57. As the stud 597 on the link 596 engages in the notch 598 in the arm 599 the locking lever 560 is rocked counter clockwise to effect release of the motor as above described.

When the link 596 is lowered to the position shown in Fig. 57 its stud 597 engages in the notch 606 of the arm 605, the arm thereby serving to retain positively the link in moved position. The rod 588 (Fig. 7B) is therefore retained in the portion 610 of the slot 590 in the operated lever 184 to hold the latter in operated position during operation of the machine.

Near the end of the operation of the machine the pin 608 engages the edge 609 (Fig. 57) of the link 596, thereby rocking the link clockwise about its pivot and against the action of the spring 600 to move its stud 597 out of engagement with the notches 598 and 606. At such time the spring 600 rocks the locking lever 560 and the arm 599 to normal position to disconnect the motor clutch and break the motor circuit. When the arm 599 is moved to normal position and the pin 608 moves out of engagement with the edge 609 of the link 596 the spring 600 rocks the link 596 counter clockwise until arrested by engagement of the stud 597 with the arm 599 below the notch 598. From this construction it can be seen that if the operated foot pedal 185 is held in operated position at the end of an operation of the machine a second immediate operation of the machine will not be effected, as the pin 597 does not retain the locking lever in operated position. When the operated foot pedal 185 is finally released its spring 182 restores it to normal position and the link 596 is raised to normal position whereupon the spring 600 rocks the link to move its stud 597 into normal engagement with the notch 598 in the arm 599. When the operated foot pedal 185 is rocked to normal position by its spring 182 it is obvious that the links 199 (Figs. 6B and 7B) are lowered by the spring 215, that the arm 195, link 208 and locking arm 207 (Fig. 21) are moved to normal position by the spring 206 (Fig. 6B) and that the arms 177 and 179, slides 167 and 170 (Figs. 21, 23 and 24) and the selected destination device are moved to normal position by the action of the cam slot 183 (Fig. 7B) in the operated lever 184.

For the purpose of positively restoring the locking lever 560 to normal position near the end of the operation of the machine one arm of a lever 611 (Figs. 55, 56 and 57) fast on the shaft 604 carries a roller projecting into a cam groove 612 (Fig. 57) formed in a face in the disk 607 and the other arm of the lever 560 is provided with a recess (Fig. 55) through which a pin 602 on an arm of the locking lever 560 projects. The cam groove 612 is constructed so that when the locking lever 560 is rocked to release the machine the lever 611 is permitted to rock to the position shown in Fig. 57. Near the end of the operation of the machine the lever 611 and locking lever 560 are positively restored to normal positions by the cam groove 612.

When the shaft 438 (Figs. 30A and 32A) is turned and the frames 345 are rocked about the cross rod 346 (Fig. 39) it can be seen that the gear 575 is moved out of mesh

with the gear 574. In order to prevent any rotation of the gear 575 and shaft 366 while the gears 574 and 576 are out of mesh a pawl 614 is provided. The pawl is pivoted on a cross rod 615 mounted in the frames 345. A vertical arm 616 of the pawl normally engages a projection 617 on one of the frames 439 to retain the nose of the pawl out of engagement with the gear 575 while the gears 574 and 575 are in mesh. A spring 621 is compressed between the arms 616 and a stud 622 on the right hand frame 345. It can be seen from this construction that when the frames 345 are rocked clockwise about the cross rod 346 the spring 621 rocks the pawl 614 counter clockwise to move its nose into engagement with the gear 575 and therefore retain the gear in normal position When the frames 345 are rocked back to normal position the arm 616 of the pawl engages the projection 617 thereby moving the nose of the pawl out of engagement with the gear 575.

Audit.

As heretofore stated in the early part of the specification, the machine embodying the present invention is constructed so that an audit of the business may be had at any desired time.

When an audit of the business is to be made the machine is given a sufficient number of operations to print on the detail strip 450, the name of the destination station and the class of ticket from each printing plate 67 of each destination device and to print the consecutive number of the tickets of each class issued to each station and the fare, from the type carriers 233 and 234 as controlled of the pinions 79 and 80. After the machine is prepared for auditing as will be described presently, the destination devices are preferably moved successively by adjustment of the hand wheels 155 into position to be moved into the printing mechanism as in the ticket printing operations. After a destination device has been moved into such position the six foot pedals 185 (Fig. 1) are depressed preferably in succession from left to right before the next destination device is adjusted into position to be moved into the printing mechanism. Therefore, the machine is given six operations to make a complete audit of each destination device and the audits of the various devices are printed in succession on the detail strip. When an audit is made by the machine from all of the destination devices the auditor can ascertain the cash value of the tickets of each class sold to each station by multiplying the consecutive number in question by the fare rate. The various products can then be added together and the result compared with the cash on hand and the total accumulated on the totalizer.

It is, of course, unnecessary to issue tickets when the machine is operated to make an audit. It is also not desired to operate the consecutive numbering device 420 (Fig. 32A) for printing on the tickets or to actuate the consecutive number pinions 79 and the consecutive number type carriers 233 to add one during such operations. Furthermore, when an audit is to be effected no actuation of the totalizer is to take place as the true total of the business handled by the machine would then be destroyed. Means are therefore provided so that when it is desired to employ the machine for auditing the business handled during any desired length of time all of the mechanisms which are employed for performing the functions above stated as undesirable during auditing operations are rendered inefective. This means will now be described.

A frame 618 (Figs. 30A–30B and 55) is provided with cam slots 619 through which cross rods 620 project. The cross rods 620 are mounted in U-shaped brackets or frames 623 fast on the right hand frame 345. The frame 618 is provided with slots 624 and 625 (Fig. 56) which engage grooves 626 and 628 formed in the shafts 245 and 366 respectively. When the machine is to be prepared for auditing the frame 618 is slid forwardly by a knob 629 on the frame. The slots 619 in the frame 618 are constructed so that when the frame is moved forwardly it is cammed toward the right by the slots 619, thereby shifting the shafts 245 and 366 toward the right.

The gear 574 (Figs. 30A and 39) is a wide one so that when the shaft 366 is shifted as above described the gear 575, fast on the shaft 366, remains in mesh with the gear 574 but is moved out of mesh with the gear 576 fast on one of the shafts 348 carrying the printing and feeding cylinder 339 (Figs. 32A and 36A). Therefore, during auditing operations the shaft 366 is rotated as in ticket printing operations but the electro cylinder 339 is not rotated. From this description it can be seen that during auditing operations the ticket strip is not fed and therefore a ticket is not printed and issued. It is also clear that as the cylinder 339 is not rotated during such operations the consecutive numbering device 420 is not operated.

When the shaft 366 (Figs. 33, 34 and 39) is shifted toward the right a pin 633 on an arm 634 shifted with the shaft 366 engages between teeth on the gear 576 positively to prevent any rotation of the printing and feeding cylinder 339. The pin 633 is normally out of engagement with the gear 576 to permit rotation of the cylinder 339 during ticket printing operations. The arm

634 is loose on the shaft 366 and its hub 636 carries a pin 637 engaging in a groove 638 in the shaft 366 so that the arm 634 is shifted with the shaft 366 and the shaft is rotated independently of the arm. The lower end of the arm 636 is provided with a recess through which the shaft 348 projects to prevent rotation of the arm 634.

The cam disk 393 (Figs. 42, 44 and 45) for operating the ticket feeding frame 376 and ticket feeding roller 370 and cylinder 373 (Figs. 32A–32B) as above described, is splined on the shaft 366 by the spline 394. This spline 394 is fastened in a groove 640 in the shaft and is long enough to cause the disk to be rotated with the shaft during both ticket printing and auditing operations. The disk 393 is prevented from moving laterally with the shaft by the rollers on the levers 383 and 407. It is, therefore, obvious that during auditing operations the ticket feeding frame 376 and the roller 370 and cylinder 373 are operated as in ticket printing operations, but as no ticket has been printed and severed from the ticket strip, movements of these parts are idle.

Fast on the shaft 366 is a disk 644 (Figs. 42 and 43) provided with a cam groove 645. When the shaft 366 is shifted toward the right to prepare the machine for auditing, the disk 365 (Figs. 32A and 42) is shifted with the shaft to disengage its cam groove 364 from the roller 363 on the right hand one of the frames 350 which carry the platen 230. At the same time the cam disk 644 is shifted so that a roller 646 (Figs. 42 and 43) on the left hand frame 350 projects into the cam groove 645. This cam groove 645 is so constructed that during an operation in which the machine is used to audit the frames 350 are rocked clockwise (Figs. 32A and 32B) but once so that the printing platen 230 carries the detail strip against the selected plate 67 on the selected destination device and against the adjusted amount and consecutive number type carries 234 and 233.

The disk 477 for operating the detail strip feeding mechanism shown in Fig. 36A is splined on the shaft 366 by the spline 478 (Figs. 30A, 36A and 42). The spline is fastened to the disk 477 and loose in the groove 640 in the shaft 366 so that the shaft may be shifted independently of the disk 477 and so that the disk is rotated with the shaft. The disk 477 is prevented from being shifted toward the right with the shaft 366 by the roller 472 on the lever 474 and is prevented from shifting toward the left with the shaft by engagement of the left hand end of the spline 478 with a bearing 650 fast on the left hand frame 345. Therefore, the detail strip feeding mechanism is operated during each auditing operation in the same manner as during ticket printing operations.

The bevel gear 584 (Figs. 55 and 56) is splined on the shaft 245 and is held against lateral movement by the frame 229 and bracket 580. Therefore, the shaft 245 is shifted independently of the gear 584 and is given one complete rotation by the operating mechanism upon each operation when the machine is used for auditing or issuing tickets.

The left hand face of the cam disk 307 (Figs. 30B and 53) which is fast on the shaft 245 is provided with a cam groove 653. When the shaft 245 is shifted toward the right to prepare the machine for auditing the disk 307 is shifted with the shaft so that a roller 654 (Figs. 30B and 51) on the arm 243 of the right hand frame 238 projects into the cam groove 653 (Fig. 53) in the disk 307. At the same time the cam disk 244 (Figs. 30B and 51) is shifted to move its cam groove out of engagement with the roller 244 (Fig. 53) on the arm 243. The cam groove 653 is so constructed that during an auditing operation the frames 238 are rocked clockwise (Figs. 32B and 36B) but once to move the gears 250 into mesh with the pinions 79 and 80 under the selected printing plate 67. After the type carriers 233 and 234 have been positioned under the control of the pinions 79 and 80 and then turned to zero position as in ticket printing operations the cam groove 653 rocks the frames 238 counter clockwise to normal position. While the type carriers 233 and 234 are in their adjusted positions the frames 350 (Figs. 32A–32B) are rocked by the cam groove 645 (Fig. 43) to print from the selected plate 67 and the type carriers onto the detail strip.

The cam disk 275 (Fig. 36B) for driving the differential mechanism for the type carriers 233 and 234, the cam disk 329 (Fig. 54) for operating the alining frame 317, and the cam disk 285 (Fig. 46) for moving the stop arms 280 are splined on the shaft 245 by the spline 272 (Figs. 30B, 36B and 49). The spline 272 is loosely mounted in a groove 660 in the shaft 245 so that the shaft may be shifted independently of the spline. The right hand end of the spline has a projection 663 (Fig. 49) engaging the right hand face of the disk 285. The left hand end of the spline is provided with a projection 664 which engages the inside of a circular flange 665 of a hollow cylindrical member 666 fast on the frame 229. A hub 667 on the disk 275 engages the circular flange 665 of the member 666. Hubs of the disks 275 and 329 are in engagement and the hub of the disk 285 is in engagement with the disk 329 to hold the disks in place on the spline. From this construction it can be seen that when the shaft 245 is shifted toward the right the spline 272 and therefore the disks 275, 278 and 329 are not shifted with the

shaft because of engagement of the projection 664 on the spline 272 with the flange 665. On the other hand when the shaft 245 is shifted toward the left the spline and disks are not shifted with the shaft because of the engagement of the hub 667 of the disk 275 with the flange 665. It is therefore obvious that during an auditing operation the noses 283 (Fig. 32B) on the arms 280 are moved into position to arrest the pinions 79 and 80 in zero position in the same manner as in ticket printing operations. The segment gear 270 (Fig. 36B) is also operated by the cam disk 275 to actuate the differential mechanism for the type carriers 233 and 234. The aliner frame 317 is operated by the cam disk 329 to aline the type carriers at the same time as in ticket printing operations.

The cam groove 274 (Fig. 36B) in the disk 275 has been described as being constructed to operate the segment gear 270, when the type carriers 273 and 274 are lowered and then raised while in their differentially moved positions in such a manner that the positions of the type carriers are not changed. In auditing operations the type carriers are not lowered and then raised while in their differentially moved positions but are retained in elevated positions until after they have been restored to zero position as above described. As the cam groove 274 operates the segment gear 270 during both ticket printing and auditing operations it can be seen that during auditing operations the movement of the segment gear changes the positions of the type carriers after they have been differentially positioned and at the same time that the type carriers are lowered and raised in ticket printing operations. When the type carriers are lowered after adjustment in ticket printing operations the segment gear 270 is rocked counter clockwise and when the type carriers are raised it is rocked clockwise to the same extent so as not to effect the adjustment of the type carriers. When the segment gear 270 is given this counter clockwise movement during auditing operations it can be seen that the type carriers are rotated slightly clockwise and that at the same time the pinions 79 and 80 are rotated slightly clockwise past zero position. Before the pinions 79 and 80 are given this movement the arms 280 are lowered so that their noses 283 are out of the path of movement of the fingers 84 on the disks 83 fast to the pinions to permit such movement of the pinions. Then when the segment gear 270 is rotated clockwise to the same extent the pinions 79 and 80 are rotated slightly counter clockwise to zero position and the type carriers are moved to the positions to which they were first adjusted under the control of the pinions. From this construction it can be seen that the operation of the segment gear 270 after the type carriers have been adjusted and before they print in auditing operations does not effect the correct positions of the type carriers at the time an impression is taken. It is understood, of course, that the type carriers print upon the detail strip after they have been moved back to their correct positions.

When the cam disk 307 is shifted with the shaft 245 toward the right its cam groove 306 (Fig. 52) is moved out of engagement with the roller 302 on the arm 305 of the frame 304 carrying the operating pawl 300 for adding one on the consecutive number type carriers 234 during each ticket printing operation. At the same time a concentric groove (not shown) in a disk 675 (Fig. 30B) fast on the shaft 245 is moved into engagement with a roller 676 (Figs. 30B and 52) to prevent operation of the pawl 300 during auditing operations. It can be seen that if the cam groove 306 were employed to operate the pawl 300 during auditing operations the pawl would not operate to the consecutive number type carriers as the type carriers at such times are in elevated position and the pawl is in engagement with the stud 313 on the frame 304. However, as the cam disk 307 is fast on the shaft 245 and is shifted out of operative relation with the roller 302 on the frame 304 the disk 675 is provided to prevent displacement of the frame 304 during auditing operations.

As above stated, the totalizer is not to be operated during auditing operations as operation of the totalizer would destroy the true total of the amount of business handled by the machine. To this end the cam disk 496 (Figs. 30B and 47) is fast on the shaft 245 so that when the shaft is shifted the groove 495 in the disk is shifted out of operative relation with the roller 494 (Fig. 50) and therefore this cam groove does not move the pinions 498 of the totalizer into engagement with the gears 504 during auditing operations. In order to hold the totalizer against displacement during auditing operations a cam disk 680 (Figs. 30B and 50) is fast on the shaft 245 so that when it is shifted a roller 684 (Fig. 47) on the lever 490 engages in a concentric groove 683 in the disk 680.

The transfer arms 537 (Fig. 32B) are operated during auditing operations but as the totalizer is not actuated during such operations it can be seen that no transfers are to be effected and that therefore movement of the arms is idle. The roller 541 (Figs. 48 and 30B) on the lever 543, which is operated by the cam groove 544 in the disk 496, and which is employed to operate the transfer arms 537, is long enough and the cam groove

544 is deep enough to permit shifting of the disk 496 toward the lever 543 when the machine is prepared for auditing.

For the purpose of preventing operation of the frame 618 (Figs. 30A–30B, 55 and 56) and therefore shifting the shafts 245 and 366 during operation of the machine, the following described device is employed. A slide 690 (Fig. 32B) is provided with a slot 693 through which the shaft 245 projects. The slide is also provided with a slot 694 through which a guide pin 695 on the frame 229 projects. The slot 693 has a setoff 696 adapted to engage in one of two grooves 697 (Figs. 30B and 55) on the shaft 245, the groove engaged by the setoff being dependent upon the position of the shaft 245. An arm 698 fast on the shaft 604 projects through a slot 699 (Fig. 32B) in the slide 690. From this construction it can be seen that when the shaft 604 is rocked upon release of the machine, as above described, the slide 690 is raised to move the setoff 696 of the slot 693 into one of the grooves 697, thereby locking the shaft 245, the frame 618 and the shaft 366 against shifting movement during operation of the machine. When the shaft 604 is rocked back to normal position the slide 690 is lowered so that the shaft 245 may be shifted, the enlarged portion of the slot 693 then being in position to permit the shaft to be shifted.

Operation.

It is thought that the above description is sufficient for a complete understanding of the invention, but a resume of its operation will be given here.

When a ticket is to be issued the chain (Figs. 7A–7B) is adjusted to move the destination device, appropriate to the station to which the ticket is to be issued in such position that its rollers 137 (Figs. 13 and 15) are in the small tracks 156 (Figs. 7A and 21). Then the foot pedal 185 (Figs. 1, 6B and 7) appropriate to the class of ticket to be issued is depressed by the foot of the operator. During the initial movement of the foot pedal the links 199 are elevated by the cam edge 198 on the lever 184 to move their projections 204 into engagement with the ratchet wheels 110 (Figs. 6A and 7A and thereby lock the chain in adjusted position. Then the cam slot 189 (Figs. 6B and 7B) rocks the lever 177 clockwise to move the slides 167 and 170 (Figs. 21 and 24) and therefore the selected destination device forwardly to an extent dependent upon the foot pedal depressed thereby moving the selected destination device on the tracks 104 (Figs. 11 and 12) and 226 (Fig. 32B) into the printing mechanism. Near the end of the depression of the foot pedal and after the selected destination device has been moved differentially into the printing mechanism the alining arm 207 (Figs. 7A and 21) is operated by the cam projection 214 (Fig. 6B) to aline and lock the selected destination device in its moved position. Also near the very end of the depression of the foot pedal the cam slot 590 in the lever 184 operates the lever 587 and through the above described connections releases the operating mechanism.

Near the beginning of the operation of the machine the feeding flanges on the printing and feeding cylinder 339 (Figs. 32A–32B and 36A–36B) coöperate with the impression roller 340 to feed the ticket strip the length of one ticket. During such movement of the ticket strip the consecutive numbering device 420 prints the total consecutive number of the tickets issued by the machine on the back of the ticket. After the end portion of the ticket strip which is to be the ticket has been fed on the table 343 the frames 350 carrying the platen 230 are rocked clockwise whereupon the knife 338 severs the ticket from the ticket strip and the platen 230 carries the ticket against the selected printing plate 67 on the destination device and against the type carriers 233 and 234 to print the destination station, the class of ticket, the fare value and the consecutive number of the tickets of that particular class, on the face of the ticket. Then after the platen has been raised the feeding frame 376 is operated to feed the ticket to the impression roll 370 and the cylinder 373 which feed the ticket out of the machine. While the ticket is being fed out of the machine the date wheels 425 (Fig. 36B) print the date and the electro plate on the cylinder 373 prints the names of the railroad and issuing station on the face of the ticket. After the ticket has been moved from under the printing platen 230 the platen is again lowered to carry the detail strip 450 against the selected plate 67 and the type carriers 233 and 234 to print therefrom and then the detail strip is fed one step on the storage roll by the feeding mechanism.

Immediately after the selected destination device has been moved into printing position the frames 238 (Figs. 32B and 36B) are rocked clockwise by the cam groove in the disk 244 (Fig. 51) to move the gears 250 into mesh with the pinions 79 and 80 under the selected plate 67 and the lever 278 and arm 277 are rocked clockwise by the cam groove in the disk 285 (Fig. 46) to move the noses 283 on the arms 280 into the path of movement of the fingers 84 on the disks 83 fast on the pinions 79 and 80. While the gears 250 are in mesh with the pinions 79 and 80 the segment gear 270 (Fig. 36B) is rocked counter clockwise whereupon the segment gears 247 and 249 and therefore the type carriers 233 and 234 are moved frictionally by the levers 255 and 265 (Figs.

32B, 40 and 41). When the pinions 79 and 80 reach zero positions the projections 84 on their disks 83 engage the noses 283 thereby arresting movement of the pinions and type carriers 233 and 234, the latter at such time being in positions representing the amount and consecutive number. Then the frames 238 are rocked counter clockwise to normal position and the operating pawl 300 (Figs. 32B) is operated to add one on the consecutive number type carriers. Then the frames 238 are again rocked clockwise to move the type carriers to the printing line so that impressions may be taken therefrom upon the ticket and the detail strip. After the detail strip has been printed upon the segment gear 270 is rocked clockwise to move the type carriers 233 and 234 to zero positions, the amount pinions 80 to their original positions and the consecutive number pinions 79 to positions representing the consecutive number printed upon the ticket. Finally the frames 238 are rocked counter clockwise to normal position.

Before the type carriers are restored to zero position the totalizer frame is rocked to move the pinions 498 (Figs. 30B and 32B), fast to the totalizer wheels 483, into mesh with the gears 499 so that upon return movement of the type carriers to zero position the value of the ticket is added on the totalizer. After the totalizer is lowered the transfer arms 537 are operated to effect the required transfers.

When a foot pedal 185 is depressed the stud 597 (Fig. 57) on the link 596 engages in the notch 606 in the arm 605 thereby holding the foot pedal in moved position. Near the end of the operation of the machine the pin 608 on the disk 607 engages the link 596 thereby rocking the latter to move the pin 597 out of the notch 606 whereupon the spring 182 (Fig. 7B) for the operated foot pedal restores the latter to normal position. During return movement of the foot lever 185 to normal position the links 199 are lowered to release the chain, the alining pawl 207 (Figs 7A and 21) is moved out of alining position, and the lever 177 is restored to normal position by the action of the cam slot 183 in the lever 184 carrying the foot pedal to draw the selected destination device back into the chain.

When it is desired to use the machine to make an audit the frame 618 (Figs. 30A–30B, 55 and 56) is slid forwardly to shift the cam shafts 245 and 366 toward the right. During an audit operation the ticket strip is not fed and therefore a ticket is not issued. The frames 350 are operated but once by the cam groove 645 (Fig. 43) to carry the detail strip against the selected plate 67 and the positioned type carriers 233 and 234.

The type carriers 233 and 234 are first raised and then the differential mechanism is operated to turn the pinions 79 and 80 to zero position and set the type carriers accordingly. After a printing impression has been taken on the detail strip the type carriers are restored to zero position and lowered.

During an auditing operation one is not added on the consecutive number type carriers 233 by the pawl 300 as no ticket is issued. During such operation the cam disk 496 (Fig. 47) for rocking the totalizer into engagement with the gears 499 is out of operative position and therefore the totalizer is not actuated.

While the form of mechanism herein shown and described, is admirably adapted to fulfil the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:

1. In a machine of the class described, the combination of type carriers for printing values on tickets, a plurality of destination devices, each provided with means for printing class designations on tickets, a plurality of means carried by the destination devices, each means representing the value of a ticket of the appropriate class and adapted to control said type carriers, and means for moving the desired destination device into position to print a designation of the desired class on a ticket, the type carriers being controlled by the corresponding controlling means on the desired device to print the value on the ticket.

2. In a machine of the class described, the combination of type carriers for printing values on tickets, a plurality of destination devices, a plurality of printing means on each destination device for printing class designations on the tickets, there being one printing means for each class, a plurality of means, one for each class, for controlling the type carriers and carried by each destination device, and mechanism for moving the desired destination device into such position that the desired printing means prints a designation of the class on the ticket and the corresponding control means controls the type carriers.

3. In a machine of the class described, the combination of type carriers for printing values on tickets, a plurality of destination devices, means carrying said destination devices, mechanism for adjusting said carrying means to move the desired destination device into printing position, a plurality of printing plates, one for each class of tickets, for printing the class designations on the tickets, a plurality of means, one for each class, for

controlling the type carriers and carried by each destination device, and a plurality of devices, one for each class, for controlling movement of the selected destination device into such position that the desired printing plate prints the class on the ticket and the corresponding controlling means controls the type carriers.

4. In a machine of the class described, the combination of type carriers for printing values on tickets, a plurality of destination devices, means on each destination device for printing the class designations on tickets, a plurality of means, one for each class, carried by each destination device and adapted to control said type carriers, means for moving the desired destination device into position to be moved into printing position, and a plurality of devices, one for each class for moving the selected destination device into printing position so that the designation of the desired class is printed on the ticket and the corresponding controlling means controls the type carriers.

5. In a machine of the class described, the combination of a plurality of destination devices for printing on tickets, a plurality of elements carried by each destination device and manually adjustable normally to represent the value of a ticket, means for selecting the desired destination device, and type carriers controlled by the elements of the selected destination device to print the value on the ticket.

6. In a machine of the class described, the combination of a plurality of destination devices for printing on tickets, a plurality of value means carried by each device and manually adjustable to positions normally representing the value of a ticket, type carriers for printing the values on the tickets, means for moving the desired destination device into printing position, and differental mechanism for moving the value means of the selected destination device to zero and positioning the type carriers accordingly and then moving the type carriers to zero and adjusting the value means to normal positions.

7. In a machine of the class described, the combination of a plurality of destination devices for printing on tickets, a plurality of pinions carried by each device and manually adjustable normally to represent the value of a ticket, alining means on each destination device for alining the pinions, type carriers for printing the values on the tickets, means for moving the desired destination device into printing position, differential mechanism for turning the pinions of the selected destination device to zero and positioning the type carriers accordingly and then moving the type carriers to zero and adjusting the pinions to their original positions, and means for disabling the alining means for the pinions during operation of the latter by the differential mechanism.

8. In a machine of the class described, the combination of a plurality of destination devices, a plurality of printing devices on each destination device for printing the class designations on the tickets there being one printing device for each class of tickets, a plurality of rows of elements on each destination device, there being one row for each class and the elements of a row being manually adjustable normally to represent the value of a ticket of that class, means for moving the desired destination device so that the printing device of the desired class is in printing position, type carriers for printing the values on the tickets, and means for operating the type carriers under the control of the row of elements of the selected class.

9. In a machine of the class described, the combination of a plurality of destination devices, a pluralitiy of printing devices on each destination device for printing the class designations on the tickets, there being one printing device for each class, a plurality of rows of pinions on each destination device, there being one row for each class and the pinions of a row being manually adjustable to represent the value of a ticket of that class, means for moving the desired destination device so that the printing device of the desired class is in printing position, type carriers for printing the values on the tickets, and means for turning the row of pinions of the selected class to zero and positioning the type carriers accordingly and then moving the type carriers to zero and adjusting the pinions to their original positions.

10. In a machine of the class described, the combination of a plurality of destination devices, a plurality of printing devices on each destination device for printing the class designations on the tickets there being one printing device for each class of tickets, a plurality of value means on each destination device, there being one means for each class and each means being manually adjustable normally to represent the value of a ticket of the particular class, means supporting the destination devices, means for adjusting the supporting means to move the desired destination device into position to be moved into printing position, means for moving the selected destination device differentially into printing position so that the printing device of the desired class is in printing position, and type carriers controlled by the value means of the desired class on the selected destination device for printing the value on the ticket.

11. In a machine of the class described, the combination of a plurality of destination devices, a plurality of printing devices on each destination device for printing the class

designation on the tickets there being one printing device for each class of tickets, a plurality of value means on each destination device, there being one means for each class and each means being manually adjustable normally to represent the value of a ticket of the particular class, means supporting the destination devices, means for adjusting the supporting means to move the desired destination device into position to be moved into printing position, means for moving the selected destination device differentially into printing position so that the printing device of the desired class is in printing position, type carriers for printing the values on the tickets, and means controlled by the value means of the selected class for turning the value means to zero and adjusting the type carriers accordingly and then moving the type carriers to zero and adjusting the value means to normal position.

12. In a machine of the class described, the combination of a consecutive counter, differential mechanism for turning the counter to zero and then actuating the counter to set up the next consecutive number, and means for actuating the differential mechanism to add one thereon after the differential mechanism is adjusted under the control of the consecutive counter.

13. In a machine of the class described, the combination of an accounting device, differential mechanism constructed to turn the accounting device to zero and to be adjusted accordingly under the control of the accounting device and then to be turned to zero and adjust the accounting device accordingly, and means for adding on the differential mechanism after it is set differentially under the control of the accounting device and before it is turned to zero.

14. In a machine of the class described, the combination of a consecutive counter, a main operating mechanism, differential mechanism for turning the counter to zero and then actuating the counter to set up the next consecutive number during each operation of the machine, and means for actuating the differential mechanism to add one thereon after the differential mechanism is adjusted under the control of the consecutive counter.

15. In a machine of the class described, the combination of an accounting device, a main operating mechanism, differential mechanism constructed to turn the accounting device to zero and to be adjusted accordingly under the control of the accounting device and adapted to be turned to zero to adjust the accounting device accordingly during the same operation of the machine in which the accounting device is turned to zero, and means for adding on the differential mechanism after it is set differentially under the control of the accounting device and before it is turned to zero.

16. In a machine of the class described, the combination of a consecutive counter, differential mechanism for turning the counter to zero and then actuating the counter to set up the next consecutive number, means for actuating the differential mechanism to add one thereon after the differential mechanism is adjusted under the control of the consecutive counter, and means for engaging and disengaging the counter and differential mechanism so that they are in engagement when the counter is actuated by the differential mechanism and out of engagement when the differential mechanism is actuated by the adding means.

17. In a machine of the class described, the combination of an accounting device, differential mechanism constructed to turn the accounting device to zero and to be adjusted accordingly under the control of the accounting device and adapted to be turned to zero to adjust the accounting device accordingly, means for adding on the differential mechanism after it is set differentially under the control of the accounting device and before it is turned to zero, and means for engaging and disengaging the accounting device and differential mechanism so that they are in engagement when the accounting device is actuated by the differential mechanism and out of engagement when the adding means operates the differential mechanism.

18. In a machine of the class described, the combination of an accounting device, a main operating mechanism, differential mechanism constructed to turn the accounting device to zero and to be adjusted accordingly under the control of the accounting device and adapted to be turned to zero to adjust the accounting device accordingly during the same operation of the machine in which the accounting device is turned to zero, means for adding on the differential mechanism after it is set differentially under the control of the accounting device and before it is turned to zero, and means for engaging and disengaging the accounting device and differential mechanism so that they are in engagement when the accounting device is actuated and out of engagement when the adding means operates the differential mechanism.

19. In a machine of the class described, the combination of a consecutive counter, differential mechanism for turning the counter to zero and then actuating the counter to set up the next consecutive number, mechanism for driving the differential mechanism frictionally, and means for actuating the differential mechanism to add one thereon after the differential mechanism is

adjusted under the control of the consecutive counter.

20. In a machine of the class described, the combination of a consecutive counter, differential mechanism for turning the counter to zero and then actuating the counter to set up the next consecutive number, means for arresting the differential mechanism and counter when the counter reaches zero, mechanism for driving the differential mechanism frictionally, and means for actuating the differential mechanism to add one thereon after the differential mechanism is adjusted under the control of the consecutive counter.

21. In a machine of the class described, the combination of an accounting device, differential mechanism constructed to turn the accounting device to zero and to be adjusted under the control of said device and then to be turned to zero and control the accounting device accordingly, mechanism for driving the differential mechanism frictionally, and means for actuating the differential mechanism to add thereon after the latter is set differentially under the control of the accounting device and before it is turned to zero.

22. In a machine of the class described, the combination of a consecutive counter, differential mechanism for turning the counter to zero and then actuating the counter to set up the next consecutive number, mechanism for driving the differential mechanism frictionally, means for actuating the differential mechanism to add one thereon while the differential mechanism is in the position to which it is adjusted under the control of the consecutive counter, and means for engaging and disengaging the counter and differential mechanism so that they are in engagement when the accounting device is actuated and out of engagement when the adding means operates the differential mechanism.

23. In a machine of the class described, the combination of a consecutive counter, differential mechanism for turning the counter to zero and then actuating the counter to set up the next consecutive number, means for actuating the differential mechanism to add one thereon after the differential mechanism is adjusted under the control of the consecutive counter, and means for rendering said adding means ineffective.

24. In a machine of the class described, the combination of an accounting device, differential mechanism constructed to turn the accounting device to zero and to be adjusted accordingly under the control of the accounting device and adapted to be turned to zero to adjust the accounting device accordingly, means for adding on the differential mechanism after it is set differentially under the control of the accounting device and before it is turned to zero, and means for rendering said adding means ineffective.

25. In a machine of the class described, the combination of a consecutive counter, differential mechanism for turning the counter to zero and then actuating the counter to set up the next consecutive number, mechanism for driving the differential mechanism frictionally, means for actuating the differential mechanism to add one thereon after the differential mechanism is adjusted under the control of the consecutive counter, and means for rendering said adding means ineffective.

26. In a machine of the class described, the combination of an accounting device, differential mechanism constructed to turn the accounting device to zero and to be adjusted under the control of said device and then to be turned to zero and control the accounting device accordingly, mechanism for driving the differential mechanism frictionally, means for actuating the differential mechanism to add thereon after the latter is set differentially under the control of the accounting device and before it is turned to zero, and means for rendering said adding means ineffective.

27. In a machine of the class described, the combination of an accounting device, a plurality of type carriers, differential mechanism for turning the accounting device to zero and adjusting the type carriers accordingly and moving the type carriers to zero and adjusting the accounting device accordingly, and means for adding on the type carriers after they have been adjusted under the control of the accounting device and before they are moved to zero.

28. In a machine of the class described, the combination of a consecutive number device, a plurality of type carriers, differential mechanism for turning the consecutive number device to zero and adjusting the type carriers accordingly and moving the type carriers to zero and adjusting the consecutive number device accordingly, and means for adding one on the type carriers after they have been adjusted under the control of the consecutive number device and before they are moved to zero.

29. In a machine of the class described, the combination of an accounting device, a plurality of type carriers, differential mechanism normally out of operative relation with the accounting device for turning the accounting device to zero and adjusting the type carriers accordingly and moving the type carriers to zero and adjusting the accounting device accordingly, means for establishing operative relation between the accounting device and differential mechanism, and means for adding on the type carriers while the differential mechanism is out of

operative relation with the accounting device and the type carriers are in adjusted positions as controlled by the accounting device.

30. In a machine of the class described, the combination of a main operating mechanism, type carriers, an accounting device, and means for adjusting the type carriers under the control of the accounting device, adding on the type carriers, and then adjusting the accounting device in accordance to the positions of the type carriers during an operation of the machine.

31. In a machine of the class described, the combination of a main operating mechanism, type carriers, a consecutive number device, and means for adjusting the type carriers under the control of the consecutive number device, adding one on the type carriers and then adjusting the consecutive number device in accordance to the consecutive number on the type carriers during an operation of the machine.

32. In a machine of the class described, the combination of an accounting device, a plurality of type carriers, differential mechanism for turning the accounting device to zero and adjusting the type carriers accordingly and then moving the type carriers to zero and adjusting the accounting device accordingly, means moved to an invariable extent for frictionally driving the differential mechanism, and means for operating the differential mechanism to add on the type carriers after they have been adjusted under the control of the accounting device and before they are moved to zero.

33. In a machine of the class described, the combination of a consecutive number device, a plurality of type carriers, differential mechanism for turning the consecutive number device to zero and adjusting the type carriers accordingly and then moving the type carriers to zero and adjusting the consecutive number device accordingly, means moved to an invariable extent for frictionally driving the differential mechanism, and means for operating the differential mechanism to add one on the type carriers after they have been adjusted under the control of the consecutive number device and before they are moved to zero.

34. In a machine of the class described, the combination of an accounting device, a plurality of type carriers, differential mechanism for turning the accounting device to zero and adjusting the type carriers accordingly and then moving the type carriers to zero and adjusting the accounting device accordingly, means for adding on the type carriers after they have been adjusted under the control of the accounting device and before they are moved to zero, and means for rendering said adding means ineffective.

35. In a machine of the class described, the combination of a consecutive number device, a plurality of type carriers, differential mechanism for turning the consecutive number device to zero and adjusting the type carriers accordingly and then moving the type carriers to zero and adjusting the consecutive number device accordingly, means for adding one on the type carriers after they have been adjusted under the control of the consecutive number device and before they are moved to zero, and means for rendering said adding means ineffective.

36. In a machine of the class described, the combination of an accounting device, a plurality of type carriers, differential mechanism for turning the accounting device to zero and adjusting the type carriers accordingly and then moving the type carriers to zero and adjusting the accounting device accordingly, means moved to an invariable extent for frictionally driving the differential mechanism, means for operating the differential mechanism to add on the type carriers after they have been adjusted under the control of the accounting device and before they are moved to zero, and means for rendering said adding means ineffective.

37. In a machine of the class described, the combination of type carriers, an accounting device, differential mechanism for adjusting the type carriers under the control of the accounting device and then adjusting the accounting device in accordance to the positions of the type carriers after the type carriers have been added upon, means for adding on the type carriers after they have been adjusted under the control of the accounting device, and means for rendering said adding means ineffective.

38. In a machine of the class described, the combination of a plurality of destination devices, means for moving the desired destination device into position to print on a ticket, type carriers for printing the consecutive numbers on the tickets, a consecutive number device carried by each destination device, and mechanism for actuating the type carriers under the control of the number device of the destination device in printing position then adding one on the type carriers, and finally actuating the consecutive number device so that one is added to the preceding consecutive number.

39. In a machine of the class described, the combination of a plurality of destination devices, means for moving the desired destination device into position to print on a ticket, type carriers for printing the consecutive numbers on the tickets, a consecutive number device carried by each destination device, means for turning the number device of the selected destination device to zero and actuating the type carriers accordingly and for turning the type carriers to zero and

actuating the consecutive number device accordingly, and means for adding one on the type carriers after they have been adjusted under the control of the consecutive number device and before they are turned to zero.

40. In a machine of the class described, the combination of a plurality of destination devices, a plurality of printing plates on each destination device for printing the class designations on the tickets there being one plate for each class, a plurality of consecutive number devices on each destination device, there being one number device for each class, means for moving the selected destination device so that the desired plate is in printing position, type carriers controlled by the consecutive number device of the selected class for printing the consecutive number on the ticket, and means for operating the selected consecutive number device.

41. In a machine of the class described, the combination of a plurality of destination devices, means on each destination device for printing any desired class designations on the tickets, a plurality of consecutive number devices on each destination device there being one consecutive number device for each class, means supporting the destination devices and adjustable to move the desired destination device into position to be moved into printing position, means for moving the selected destination device differentially into printing position so that the desired class designation is printed on the ticket, type carriers controlled by the consecutive number device of the selected class, and means for operating the selected consecutive number device.

42. In a machine of the class described, the combination of a plurality of destination devices, means on each destination device for printing any desired class designations on tickets, a plurality of consecutive number devices on each destination device, there being one consecutive number device for each class, means for moving the desired destination device so that the desired class designation is printed on the ticket, type carriers for printing the consecutive number on the tickets, and means for actuating the type carriers under the control of the consecutive number device of the selected class, then adding one on the type carriers, and finally actuating the selected consecutive number device to set up the next consecutive number.

43. In a machine of the class described, the combination of a consecutive counter, differentially movable members provided with ratchet teeth, mechanism for actuating the members to turn the counter to zero and then set up the next consecutive number on the counter, and a pawl coöperating with the ratchet teeth on the differentially movable members to add one thereon while the members are in the positions to which they are adjusted under the control of the consecutive counter.

44. In a machine of the class described, the combination of a consecutive counter, differentially movable members provided with ratchet teeth, mechanism for actuating the members frictionally to turn the counter to zero and then set up the next consecutive number on the counter, and a pawl coöperating with the ratchet teeth on the differentially movable members to add one thereon while the members are in the positions to which they are adjusted under the control of the consecutive counter.

45. In a machine of the class described, the combination of a consecutive counter, differentially movable members provided with ratchet teeth, mechanism for actuating the members to turn the counter to zero and then set up the next consecutive number on the counter, a pawl coöperating with the ratchet teeth on the differentially movable members to add one thereon while the members are in the positions to which they are adjusted under the control of the consecutive counter, and means for engaging and disengaging the counter and the members so that they are in engagement when the counter is actuated by the members and out of engagement when the members are actuated by the pawl.

46. In a machine of the class described, the combination of a consecutive counter, differentially movable members provided with ratchet teeth, mechanism for actuating the members to turn the counter to zero and then set up the next consecutive number on the counter, means for arresting the members and counter when the counter reaches zero, and a pawl coöperating with the ratchet teeth on the differentially movable members to add one thereon while the members are in the positions to which they are adjusted under the control of the consecutive counter.

47. In a machine of the class described, the combination of a consecutive counter, differentially movable members provided with ratchet teeth, mechanism for actuating the members to turn the counter to zero and then set up the next consecutive number on the counter, a pawl coöperating with the ratchet teeth on the differentially movable members to add one thereon while the members are in the positions to which they are adjusted under the control of the consecutive counter, and means for rendering said pawl ineffective.

48. In a machine of the class described, the combination of a consecutive number device, a plurality of type carriers, differentially movable members, having ratchet teeth and constructed to turn the consecutive number device to zero and adjust the

type carriers accordingly and move the type carriers to zero and adjust the consecutive number device accordingly, and a pawl cooperating with the differentially movable members to add one on the latter and the type carriers after the members and type carriers have been adjusted under the control of the consecutive number device and before the type carriers are turned to zero.

49. In a machine of the class described, the combination of a consecutive number device, a plurality of type carriers, differentially movable members, having ratchet teeth and constructed to turn the consecutive number device to zero and adjust the type carriers accordingly and move the type carriers to zero and adjust the consecutive number device accordingly, means for driving the differentially movable members frictionally, and a pawl coöperating with the differentially movable members to add one on the latter and the type carriers after the members and type carriers have been adjusted under the control of the consecutive number device and before the type carriers are turned to zero.

50. In a machine of the class described, the combination of a consecutive number device, a plurality of type carriers, differentially movable members, having ratchet teeth and constructed to turn the consecutive number device to zero and adjust the type carriers accordingly and move the type carriers to zero and adjust the type carriers accordingly, a pawl coöperating with the differentially movable members to add one on the latter and the type carriers after the members and type carriers have been adjusted under the control of the consecutive number device and before the type carriers are turned to zero, and means for rendering said pawl ineffective.

51. In a machine of the class described, the combination of a consecutive number device, a plurality of type carriers, differentially movable members, having ratchet teeth and constructed to turn the consecutive number device to zero and adjust the type carriers accordingly and move the type carriers to zero and adjust the consecutive number device accordingly, a pawl coöperating with the differentially movable members to add one on the latter and the type carriers after the members and type carriers have been adjusted under the control of the consecutive number device and before the type carriers are turned to zero, and means for engaging and disengaging the consecutive number device and the differentially movable members so that they are in engagement when the device is actuated by the members and out of engagement when the members are actuated by the pawl.

52. In a machine of the class described, the combination of a plurality of type carriers for printing the values on tickets, a plurality of type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, means carried by each destination device for printing the class designations on the tickets, a plurality of means carried by each destination device, each means representing the value of a ticket of the appropriate class and adapted to control said amount type carriers, a plurality of means carried by each destination device, each means representing the consecutive number of the tickets of the appropriate class issued and adapted to control the consecutive number type carriers, and mechanism for moving the desired destination device into position to print the desired class designation on the ticket, the amount type carriers being controlled by the corresponding value means and the consecutive number type carriers being controlled by the corresponding consecutive number means.

53. In a machine of the class described, the combination of type carriers for printing the values on tickets, type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, each carrying a printing means, a set of value pinions and a set of consecutive number pinions for each class of tickets, and means for moving the desired destination device differentially so that the desired printing means thereon prints on the ticket and the corresponding value pinions and consecutive number pinions control the value type carriers and consecutive number type carriers respectively.

54. In a machine of the class described, the combination of type carriers for printing the values on tickets, type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, each carrying a printing means, a set of value pinions and a set of consecutive number pinions for each class of tickets, means for moving the desired destination device differentially so that the desired printing means thereon prints on the ticket and the corresponding value pinions and consecutive number pinions control the value type carriers and consecutive number type carriers respectively, and means for turning the value pinions and consecutive number pinions of the selected class to zero to control the type carriers.

55. In a machine of the class described, the combination of type carriers for printing the values on tickets, type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, each carrying a printing means, a set of value pinions and a set of consecutive number pinions for each class of tickets, means for moving the desired destination device

differentially so that the desired printing means thereon prints on the ticket and the corresponding value pinions and consecutive number pinions control the value type carriers and consecutive number type carriers respectively, means for turning the value pinions and consecutive number pinions of the selected class to zero to control the type carriers, and means for adding one on the consecutive number type carriers while the latter are in the positions to which they are moved under the control of the consecutive number pinions.

56. In a machine of the class described, the combination of type carriers for printing the values on tickets, type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, each carrying a printing means, a set of value pinions and a set of consecutive number pinions for each class of tickets, means for moving the desired destination device differentially so that the desired printing means thereon prints on the ticket and the corresponding value pinions and consecutive number pinions control the value type carriers and consecutive number type carriers respectively, means for turning the value pinions and consecutive number pinions of the selected class to zero to control the type carriers, means for adding one on the consecutive number type carriers while the latter are in the positions to which they are moved under the control of the consecutive number pinions, and means for rendering said adding means ineffective.

57. In a machine of the class described, the combination of type carriers for printing the values on tickets, type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, each carrying a printing means, a set of value pinions and a set of consecutive number pinions for each class of tickets, means for moving the desired destination device differentially so that the desired printing means thereon prints on the ticket and the corresponding value pinions and consecutive number pinions control the value type carriers and consecutive number type carriers respectively, and means for adding one on the consecutive number type carriers when they are in the positions to which they are adjusted under the control of the consecutive number pinions.

58. In a machine of the class described, the combination of type carriers for printing the values on tickets, type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, each carrying a printing means, a set of value pinions and a set of consecutive number pinions for each class of tickets, means for moving the desired destination device differentially so that the desired printing means thereon prints on the ticket and the corresponding value pinions and consecutive number pinions control the value type carriers and consecutive number type carriers respectively, means for adding one on the consecutive number type carriers when they are in the positions to which they are adjusted under the control of the consecutive number pinions, and means for rendering said adding means ineffective.

59. In a machine of the class described, the combination of type carriers for printing the values on tickets, type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, each carrying a printing means, a set of value pinions and a set of consecutive number pinions for each class of tickets, means supporting the destination devices, mechanism for adjusting the supporting means to move the desired destination device into position to be moved into printing position, and means for moving the desired destination device differentially so that the desired printing means thereon prints on the ticket and the corresponding value pinions and consecutive number pinions control the value type carriers and consecutive number type carriers respectively.

60. In a machine of the class described, the combination of type carriers for printing the values on tickets, type carriers for printing the consecutive numbers on the tickets, a plurality of destination devices, each carrying a printing means, a set of value pinions and a set of consecutive number pinions for each class of tickets, and levers, one for each class of tickets for moving the desired destination device differentially so that the desired printing means thereon prints on the ticket and the corresponding value pinions and consecutive number pinions control the value type carriers and consecutive number type carriers respectively.

In testimony whereof I affix my signature.

FREDERICK L. FULLER.