

R. NORTH.
MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.
APPLICATION FILED DEC. 17, 1904.

939,295.

Patented Nov. 9, 1909.

9 SHEETS—SHEET 1.

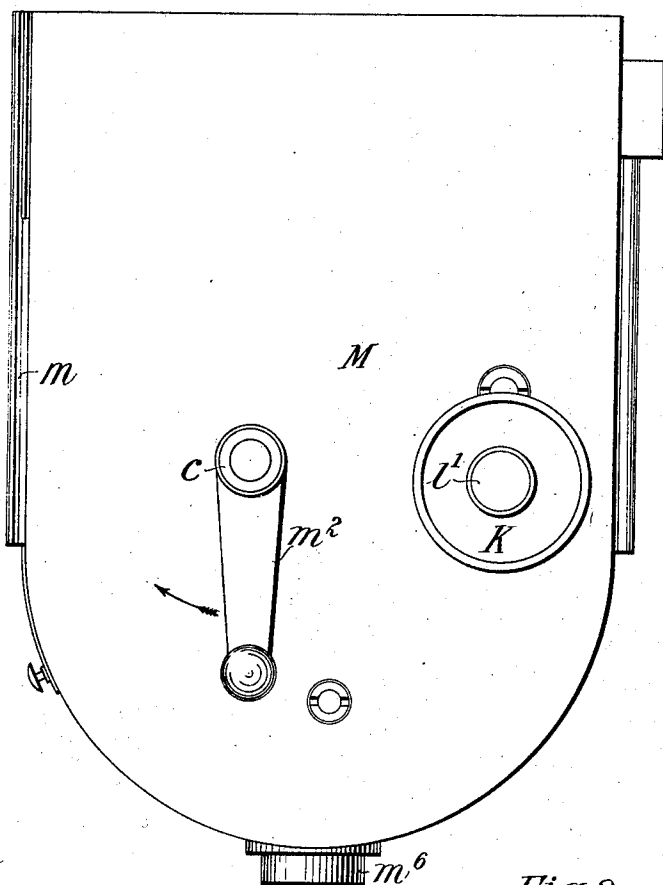


Fig. 1.

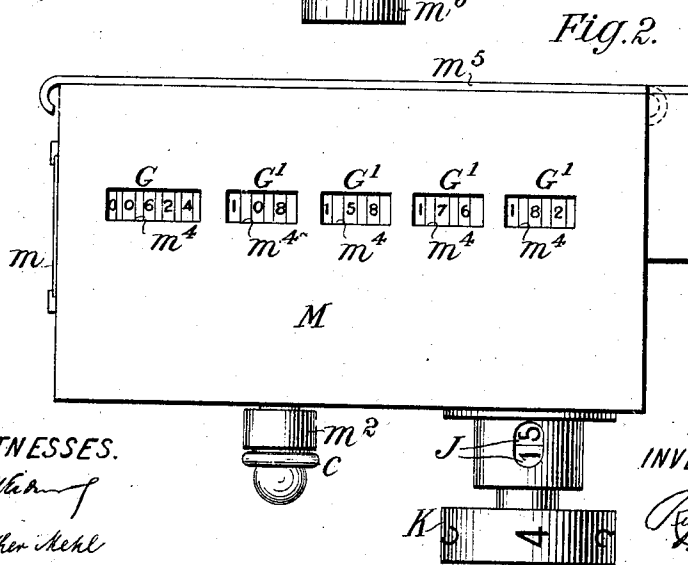


Fig. 2.

WITNESSES.
William
Walther Kehl

INVENTOR

Ruffin North

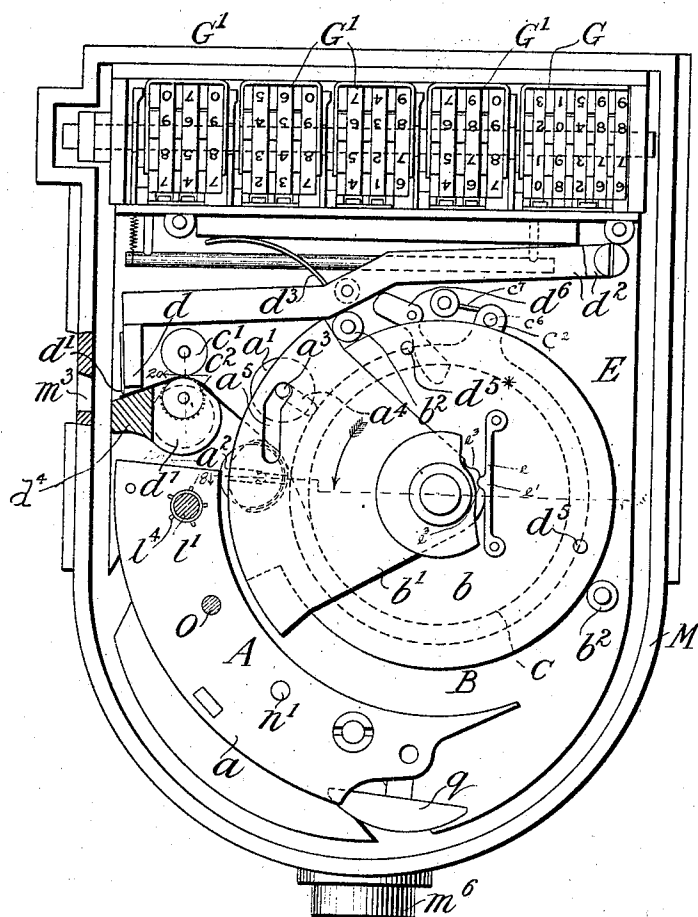
R. NORTH.
MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.
APPLICATION FILED DEC. 17, 1904.

939,295.

Patented Nov. 9, 1909.

9 SHEETS—SHEET 2.

Fig. 3.



WITNESSES

Stewart
Walther Kehl

INVENTOR

Rufus North

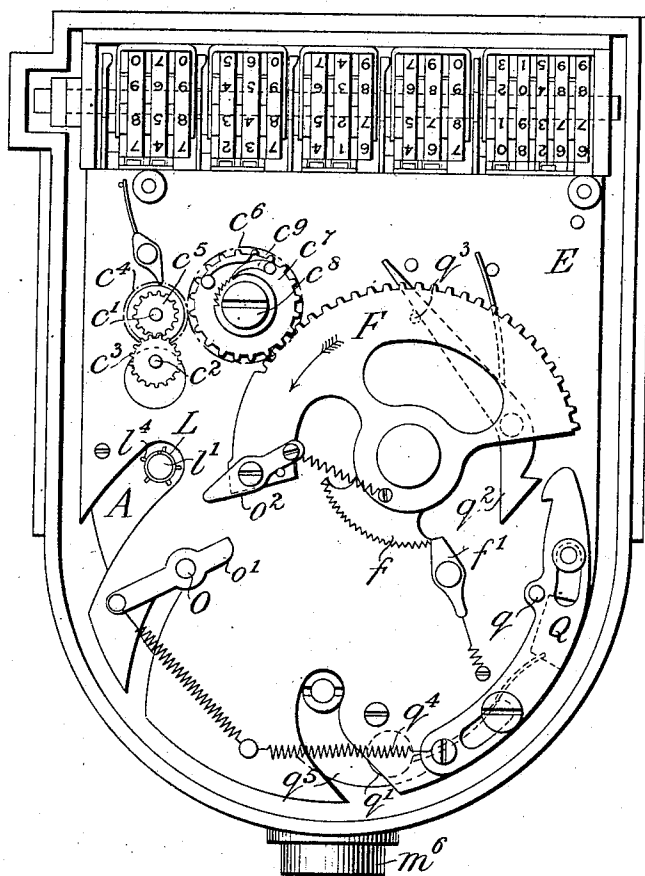
R. NORTH.
MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.
APPLICATION FILED DEC. 17, 1904.

939,295.

Patented Nov. 9, 1909.

9 SHEETS—SHEET 3.

Fig. 4.



WITNESSES.

D. Weiberg
Walther Kehl

INVENTOR.

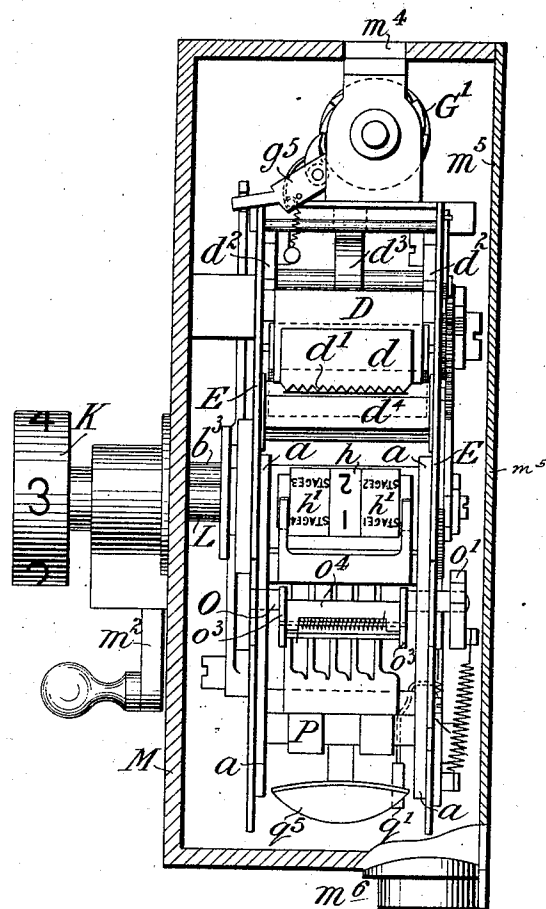
R. North

R. NORTH.
MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.
APPLICATION FILED DEC. 17, 1904.

939,295.

Patented Nov. 9, 1909.
9 SHEETS—SHEET 4.

Fig. 5.



WITNESSES.

S. Weidman
Walter Hehl

INVENTOR.

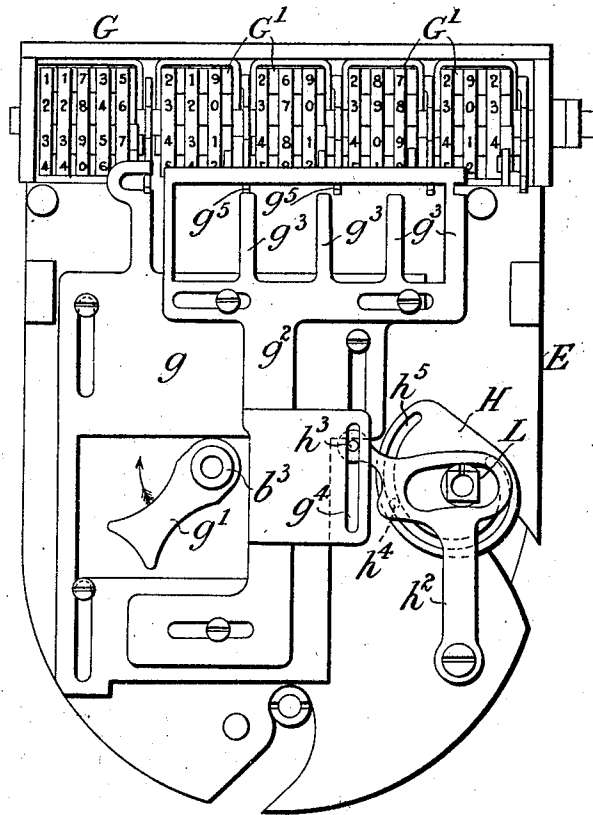
Ralph North

R. NORTH.
MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.
APPLICATION FILED DEC. 17, 1904.

939,295.

Patented Nov. 9, 1909.
9 SHEETS—SHEET 5.

Fig. 6.



WITNESSES.

W. E. Smith
Walker & Smith

INVENTOR.

R. North

R. NORTH.
MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.
APPLICATION FILED DEC. 17, 1904.

939,295.

Patented Nov. 9, 1909.
9 SHEETS—SHEET 7.

Fig. 10.

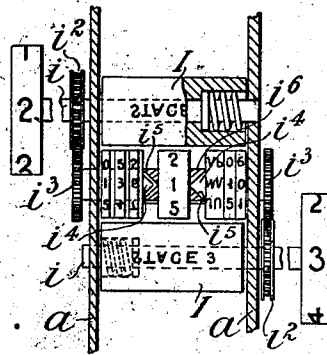
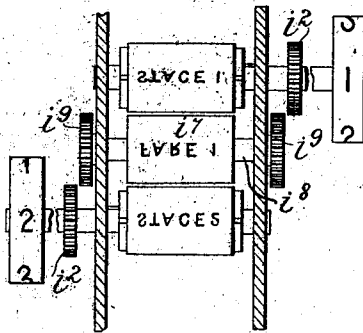


Fig. 11.



WITNESSES:

J. W. Dwyer
Walter A. Hill

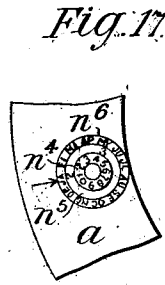
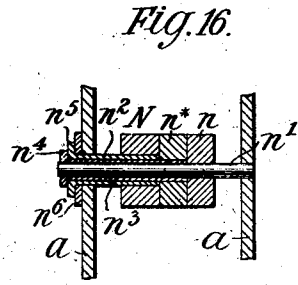
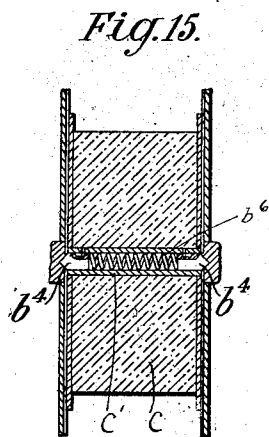
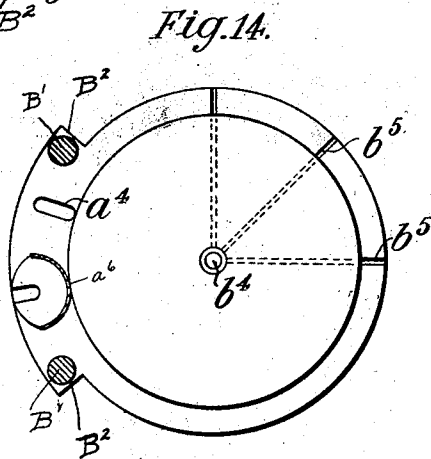
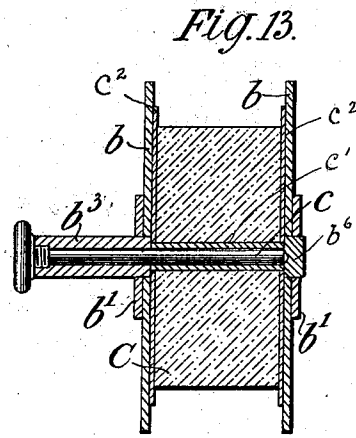
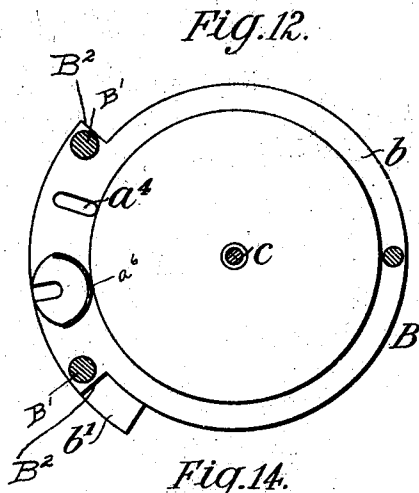
INVENTOR.

R. North

R. NORTH.
MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.
APPLICATION FILED DEC. 17, 1904.

939,295.

Patented Nov. 9, 1909.
9 SHEETS—SHEET 8.



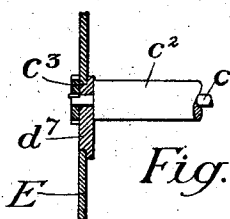
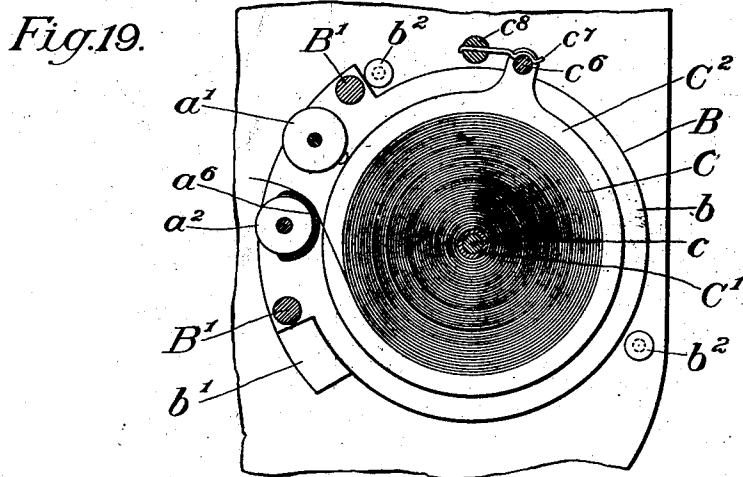
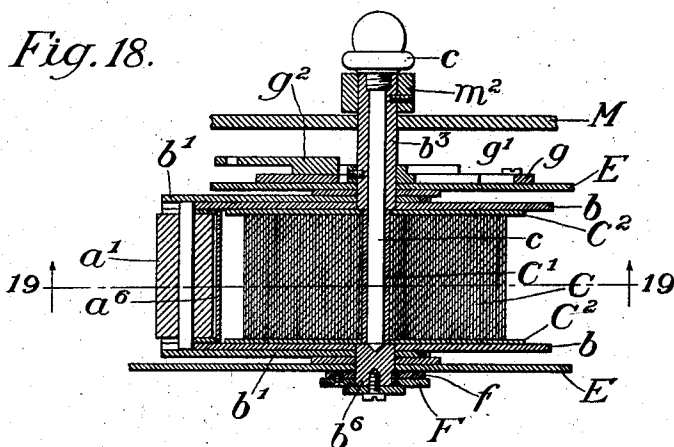
WITNESSES
W. H. Kuhl

INVENTOR.
R. North

R. NORTH.
MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.
APPLICATION FILED DEC. 17, 1904.

939,295.

Patented Nov. 9, 1909.
9 SHEETS—SHEET 9.



WITNESSES.
L. P. Brock

Fig. 20.

INVENTOR.
Ruffin North

BY *A. M. Brown*
ATTY.

UNITED STATES PATENT OFFICE.

RUFFIN NORTH, OF OXFORD STREET, LONDON, ENGLAND, ASSIGNOR TO ROBERT CASNER CAMPBELL, OF CHICAGO, ILLINOIS, AND LONDON, ENGLAND.

MACHINE FOR PRINTING AND ISSUING TICKETS AND REGISTERING FARES.

939,295.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed December 17, 1904. Serial No. 237,350.

To all whom it may concern:

Be it known that I, RUFFIN NORTH, a citizen of the United States of America, residing at 5 Wells street, Oxford Street, in the county of London, England, have invented certain new and useful Improvements in Machines for Printing and Issuing Tickets and Registering Fares, of which the following is a specification.

This invention relates to machines for use in issuing tickets wherein the date, the consecutive numbers, the name of the station, and other matter are printed upon the tickets.

The object of the invention is to furnish a machine of a type which shall be compact, and capable of being easily carried; means being, at the same time, provided for cutting off or perforating each ticket, for guarding the printing from becoming smeared, and for preventing the attendant tampering with the type.

In the accompanying drawings, which illustrate a machine for printing and issuing tickets constructed according to my invention: Figure 1 is a face view of the machine. Fig. 2 is a plan of the machine. Fig. 3 is a view in elevation showing the internal mechanism. Fig. 4 is a similar view showing the means for operating the internal mechanism. Fig. 5 is an end elevation of the interior of the machine. Fig. 6 illustrates the means for operating the counters which record the number of tickets sold.

Figs. 7 and 8 illustrate the type-carrier and type for printing the tickets, the views being, respectively, a longitudinal section and plan. Fig. 9 illustrates the means for adjusting the type for printing the stages and the fare. Figs. 10 and 11 illustrate modified forms of mounting the type. Figs. 12 and 13 illustrate one form of paper-carrier, the views being, respectively, a side elevation and vertical section. Figs. 14 and 15 illustrate a modified form of paper-carrier, the views being, respectively, similar to Figs. 12 and 13. Figs. 16 and 17 illustrate means for indicating the position of the type for printing the dates, the views being a vertical section and an end elevation. Fig. 18 is a detail sectional view of the paper-carrier and the pivotal supports for the same, taken on line 18—18 of Fig. 3. Fig. 19 is a detail sectional view of the paper-carrier, taken on

line 19—19 of Fig. 18. Fig. 20 is a detail section, taken on line 20—20 of Fig. 3.

In a machine constructed according to my invention, the devices for printing the ticket include a type-carrier A of curved or segmental form and on the inner curved face of which the printing types are located, an impression roller a^1 , an inking roller a^2 , said impression and inking rollers having oscillatory motion about an axis concentric with the segmental type-carrier, and an oscillatory paper-carrier, indicated as a whole by B, also mounted to turn on an axis concentric with the segmental type-carrier. The said type-carrier A is secured between the two parallel side plates E, E of the device and the paper-carrier consists of two disks b , b which are rigidly connected with each other by means of transverse rods B^1 , B^1 , located near the margins of the disks. Said disks b , b are provided with rigidly attached, outwardly extending pivot studs b^3 , b^3 which extend through and have bearing in the said side plates E, E. The said paper-carrier is given oscillatory movement through the medium of a crank-handle m^2 secured to the pivot stud b^3 outside of the casing M of the device. The roll of paper, indicated by C, is applied to a spool or paper-holder which is rotatively held between the disks b , b of the paper-carrier and consists of a central tube C^1 and two disks C^2 , C^2 . Said spool is supported in the paper-carrier by means of a removable spindle c which passes through the said disks and the central tube C^1 of said spool.

The types for printing the tickets are supported in the carrier A between the two side plates a , a of said carrier in such manner that the printing surfaces of the types, when in operative position, are at equal distances from the pivotal axis of the paper-carrier B. On said paper-carrier, between the marginal parts of the disks b , b , are mounted the impression roller a^1 and the inking roller a^2 . In the oscillatory movement of said paper-carrier said inking roller is carried over the type, for supplying ink thereto, and the impression roller is carried over the type to press the strip of paper against the said type. A shield a^3 of curved or cylindric form, is attached at its ends to the disks b , b and covers the inner part of the inking roller. The spindle a^3 of said

impression roller extends through radial slots a^4 , a^4 , formed in the marginal parts of the disks b , b , and the outer ends thereof are engaged by cam grooves a^5 , a^5 formed in the swinging ends of the arms b^1 , b^1 which are located at the outer faces of said disks and are engaged with the pivot studs b^3 , b^3 so that said arms are adapted to swing or oscillate on the paper-carrier about an axis concentric with the disks b , b . As shown, said arms have the form of flat, sector-shaped plates. Two fixed stops b^2 , b^2 are secured to the frame plates E, E in position for contact therewith of the opposite edges of the arms b^1 , b^1 , when the paper-carrier approaches the end of its swing in each direction when it is turned or oscillated, so that said arms b^1 , b^1 will be swung or moved relatively to the paper-carrier at each turning movement of the latter; the cam grooves a^5 , a^5 of said arm serving to move or shift the impression roller either toward or away from the type in the manner hereinafter described. The disks b , b are provided with radial stop-shoulders B^2 , B^2 , arranged at a distance apart, circumferentially of the disks, less than the distance between the opposite edges of the arms b^1 , b^1 , said shoulders being adapted for contact with the stops b^2 , b^2 , so as to limit the swinging movements or oscillations of the paper-carrier in both directions.

Each of the disks b , b has attached to its outer face a flat spring e provided with a lug or projection e^1 adapted for engagement with either one or two notches e^2 , e^3 formed in the pivoted ends of the arms b^1 , b^1 which are concentric with the pivotal axis of the disks b , b . Engagement of the lug e^1 with one or the other of the said notches e^2 , e^3 serves to hold the arms b^1 , b^1 yieldingly from swinging movement relatively to the disks b , b , so that said arms move with said disks in the swinging or oscillatory movement of the latter until the movement of the arms is arrested by contact of the same with one pair of the stops b^2 , b^2 .

Two feed rollers c^1 , c^2 are mounted between the side plates E, E, above the upper end of the segmental type-carrier A and adjacent to a slot or opening m^3 which is formed in the side wall of the casing M, for the passage of the printed strip of paper from the casing. The strip of paper passes from the roll of paper C between the impression and inking rollers to the feed rollers, and the impression roller acts on the part of the strip, between the feed rollers and the roll of paper, to carry and press the same against the types, in the advance or printing movement of the paper-carrier. Said feed rollers are intermittently actuated, through the turning movement of the paper-carrier, so as to deliver from the machine the printed part of the strip or ticket. After

passing from said feed rollers c^1 , c^2 the strip passes through a cutting or perforating device D (Fig. 5). Said cutting device embraces a cross-bar d , attached to the extremities of two arms d^2 , d^2 which are pivotally mounted at the opposite side of the machine frame. Said cross-bar carries a cutter d^1 adapted to act downwardly against a block d^4 which is supported between the side plates E, E, as shown in Fig. 3. Said cutter d^1 is pressed by a spring d^3 , which acts on the arms d^2 , d^2 , toward the said block d^4 . Said arms d^2 , d^2 are swung upwardly against the action of the spring d^3 by means of two operating levers d^6 , d^6 mounted one on each of the side plates E, E. The upper ends of said levers d^6 , d^6 bear against the said arms d^2 , d^2 , and their lower ends are located in position to be acted upon by stop pins d^{5*} , d^{5*} , d^5 , d^5 secured on the outer faces of the disks b , b , in the swinging or oscillatory movements of the paper-carrier. The stop pins d^5 , d^5 are arranged in position to strike the lower ends of the levers d^6 , d^6 at the end of the advance or printing stroke of the carrier, when the same is turned in the direction indicated by the arrow in Fig. 3, and to thereby swing said levers in a direction to lift the said arms, which are held elevated by the upper ends of said levers. The stop pins d^{5*} , d^{5*} are arranged to act in a reverse direction on the lower or return stroke of the paper-carrier, with the effect of swinging the upper ends of said levers in a direction to release the said arms d^2 , d^2 and permit the cutter d^1 to act upon the paper.

The lowermost feed roller c^2 is mounted at its ends in plates d^7 , d^7 (Figs. 3 and 20) which are pivotally supported in the side plates E, E and upon which the block d^4 is eccentrically mounted, said block d^4 being attached at its ends to the inner faces of the said plates d^7 , d^7 outside of the central axis thereof. The lower feed roller c^2 is eccentrically mounted in the plates d^7 , d^7 so that with the turning of said plates said feed roller c^2 may be shifted away from the upper feed roller to permit the free withdrawal of the paper. Said plates d^7 , d^7 are shown as being provided with annular external bearing shoulders which engage circular apertures in the plates E, E; the bearing spindle of said roller c^2 being engaged with bearing apertures formed in said plates d^7 , d^7 inside of said annular bearing shoulders, as clearly seen in Figs. 3 and 20. For actuating the said feed rollers c^1 and c^2 , the lower feed roller c^2 is provided at one end outside of the frame plate E (Fig. 4) with a toothed wheel c^3 adapted to mesh with a toothed wheel c^5 attached to the adjacent end of the upper feed roller c^1 . Said feed roller c^1 is driven or rotated through the medium of toothed

wheels c^4 , c^5 and c^7 , mounted on the side plate E. The toothed wheel c^7 is in mesh with a toothed quadrant F secured to the pivot stud b^6 of the paper-carrier. The wheels c^5 and c^7 are loosely mounted upon a fixed spindle c^6 and the wheel c^7 is provided with a spring pressed pawl c^9 which engages ratchet teeth formed on the hub of the wheel c^6 . By the action of said pawl and ratchet teeth, said feed rollers are permitted to remain stationary during the printing operation, when the paper-carrier and quadrant F are moving in the direction indicated by the arrow in Fig. 4; the wheel c^7 at this time rotating freely to render the gearing inoperative. During the reverse rotation of the paper-carrier and said quadrant F, the pawl c^9 engages said ratchet teeth and rotates the feed rollers through the action of the gear wheels c^5 and c^4 . The quadrant F has attached to it a sector f having marginal teeth or notches which are engaged by a spring controlled detent f^1 which is pivoted on the frame plate E and is arranged to permit the said sector f to swing or move past the same in both directions, but is adapted to restrain said sector from backward movement if any attempt be made to swing the paper-carrier backwardly at any point intermediate between the extremities of its normal range of movement, required for effecting the operation of the printing device.

The number of tickets sold is recorded by means of counters G, G^1 (Fig. 6) operated by a slide g which is reciprocated by an arm g^1 mounted upon the spindle b^3 of the paper-carrier. On the slide g is mounted a second slide g^2 which is capable of adjustment in relation to the counters G^1 in such manner that either one of several projections g^3 on the slide g^2 will be brought into position to operate upon one of the counters G^1 which record independently the number of different priced tickets sold; the counter G for recording the total number of tickets being in permanent connection with the slide g . The adjustment of the slide g^2 is effected by a cam H secured to a shaft L which rotates with the roller h , (Fig. 9) whereon the type for printing the price of the fare is carried. Connection between the slide g^2 and the cam H is effected by a pivotally mounted arm h^2 furnished with pins h^3 , h^4 ; the pin h^3 engaging with a slot g^4 in the slide g^2 , while the pin h^4 engages a groove h^5 in the cam H. Each of the counters G^1 , which I prefer to employ, comprises three disks, one for units, one for tens and one for hundreds. These disks are operated by levers g^5 , severally acted upon by one of the projections g^3 , g^2 on the slide g^2 .

The types for printing the names of the stations and the fares according to the preferred construction illustrated in the princi-

pal figures of the drawings, and more in detail in Figs. 7, 8 and 9, are supported and operated as follows: The rollers h^1 , h^1 having the station-printing type, and the rollers h having the fare-printing type are loosely mounted on the hollow shaft L, which is adapted to be rotated in the side plates a , a of the type-carrier A and which extends at one end through the casing M of the machine. Means are provided for severally holding the said type-wheels h , h^1 , h^1 yielding from rotation, consisting, as shown, of spring arms h^7 one for each of the said type wheels, the ends of which engage the said type wheels in a familiar manner. The station and the fare-printing wheels are each formed with interior, longitudinal grooves h^6 with which a feather l , formed on a spindle l^1 , which slides in the hollow shaft L, is adapted to be engaged to effect the adjustment of the wheels. At the end of the shaft L, outside of the casing M, are loosely mounted two indicator wheels J, J which are lettered or numbered to correspond with the station-printing wheels and are provided with grooves j , j corresponding with those in the wheels h , h^1 , h^1 . Said wheels J, J are adapted to be operated by a second feather l^2 on the spindle l^1 , adapted to engage said grooves j , j . On the outer extremity of the shaft L is secured a wheel K which serves as a handle for turning the shaft, and also as a fare-indicator, for which purpose its periphery is marked to correspond with the fare-printing wheel. Spring actuated detents j^1 , j^1 are provided for severally holding the said indicator wheels from rotation except when locked to and turned by said shaft. The spindle l^1 is furnished with a third feather l^3 which, by engaging notches l^4 formed in one of the side plates a of the carrier A, (Fig. 9) serves to prevent the shaft L being turned until one of the type wheels h^1 , h^1 has been properly engaged by the feather l entering one of the grooves h^6 . The spindle l^1 passes through the hub of the wheel K and is provided at its end, outside of said wheel, with a head or knob by which it may be shifted endwise in the hollow shaft L for the purpose of turning either of the type wheels as desired.

Other forms of devices for supporting the type wheels used for printing the names of the stations and the fares are shown in Figs. 10 and 11. In the construction shown in Fig. 10, two parallel rollers I, I are mounted on spindles i , i adapted to slide endwise in the said rollers and provided with gear wheels i^2 , i^2 which mesh with the toothed wheels i^3 , i^3 on two aligned spindles i^4 , i^4 . By means of the sliding spindle i the two aligned spindles i^4 may be brought into engagement with, or removed from, recesses i^5 , i^5 on the ends of an intermediate spindle i^6 upon which the type for printing the price

of the fare is mounted. The two alined spindles may also serve as pivotal supports for the "date" and consecutive number type wheels, as shown in said Fig. 10; or the type wheels for printing the names of the stations and the fares may be arranged as shown in Fig. 11; the fare-printing type in this instance being carried on a roller i' mounted on a spindle i^8 furnished at its opposite ends with gear wheels i^9 , i^{10} with which the toothed wheels i^2 , i^3 , on endwise sliding spindles, corresponding with the spindles i , i of Fig. 10, are brought into mesh for operating the fare-printing roller i' by endwise shifting movement of the said spindles carrying the gear wheels i^2 , i^3 .

The devices for printing the date and the consecutive numbers are also mounted in the carrier A. The date-printing device, as shown in Figs. 3, 7 and 8, comprises a printing roller N for the months, and printing rollers n , n^* for the days of the month, all mounted on a spindle n^1 supported in the side plates a , a of the carrier A. For the more convenient adjustment of the date-printing rollers, the same may be arranged as shown in Figs. 16 and 17. In this instance, the rollers N, n^* are secured to sleeves n^2 , n^3 , while the roller n is secured to the spindle n^1 . The sleeve n^3 turns on the spindle n^1 and the sleeve n^2 surrounds the sleeve n^3 , while the ends of both of said sleeves extend through the plate a at one side of the type carrier. On the outer extremities of the sleeves and of the spindle are mounted disks n^4 , n^5 , n^6 , marked to indicate the months and days of the month; an arrow or other mark being made on the side of the type-carrier to operate in connection with the marks on said disks for indicating the printing position of the rollers.

The device for printing the consecutive numbers on the tickets comprises a spindle O, Figs. 7 and 8, on which are loosely mounted a plurality of type disks o . The spindle O extends through the side plates a , a of the type-carrier and one end of said spindle projects at one side of the type-carrier and has secured to its extremity a spring actuated arm o^1 , Fig. 4, which is operated by an arm o^2 mounted on the segment F. Said arm o^2 is pivotally connected with the segment F and is held by a spring against a stop on said segment, so that the said arm will yield backwardly and pass over the arm o^1 in the movement of the segment F in the direction of the arrow in Fig. 4, but will actuate said arm o^1 to turn the spindle O in the movement of said segment in the opposite direction. Secured to the spindle O are two levers o^3 , o^4 , Fig. 7, one on either side of the type disks, and between these levers is mounted a swinging plate o^5 provided with pawls o^6 adapted to engage notches provided in the type disks o . Each

type disk is provided with ten notches, and the tenth notch in the units and tens disks, respectively, is made deeper than the other, so that when ten units have been registered the pawl operating the tens disk is rendered effective, and the latter disk is moved forward one space. In a similar manner, upon the tens disk making its tenth movement the hundreds disk is moved one space. The type-carrier A is further provided with type P for indicating on the ticket the station to which the passenger is entitled to travel. The carrier may also be provided with type at p for printing the word "Workman's" when such tickets are issued. The face of the carrier may be furnished with type of a permanent character for printing the number of the machine, the name of the company and any other particulars that may be desired. In the case of transfer tickets being issued, the fare-printing wheel h is furnished with a letter, such as "c", which is brought into the printing position when each of the station-printing wheels indicates the same station.

The casing M is formed with apertures m^4 through which the counters G, G^1 may be read, and a door m^5 closes the back of the casing; a suitable lock m^6 being provided for locking the door to the casing. Said door prevents access to the disks n^4 , n^5 , n^6 by which the date-printing wheels N, n^* , n are operated, so that the types for printing the dates cannot be changed except by a person having a key to the said lock.

To enable the roll of paper C to be placed upon the spool formed by the circular disks C^2 , C^2 and the tube C^1 , one of said disks C^2 is removable from the said tube. As shown in Figs. 12, 13 and 19, the spindle c , on which said spool is mounted, extends at one end outwardly through the pivot stud b^3 of the paper-carrier, and has at its outer end a knob by which said spindle may be withdrawn to permit the introduction and removal of the said spool. The said spool is held from rotating with the paper-carrier by means of a rod c^6 which is attached to and extends between two radial arms that extend outward from the disks C^2 , C^2 (Fig. 19). Said bar c^6 is, when the spool is inserted between the disks b , b of the paper-carrier, engaged by a spring detent arm c^7 attached to a cross-rod c^8 extending between the side plates E, E. The purpose of so holding the spool from rotation is to maintain a constant tension on the strip of paper as it is drawn from the spool, the contact of the roll of paper with the tube C^1 and disks C^2 , C^2 producing a sufficient degree of frictional resistance to the turning of the roll on the spool as to give the desired tension in the strip. The spool with the roll of paper thereon is inserted laterally between the disks b , b of the paper-carrier through an

opening in the casing M of the machine, the spindle c being withdrawn during the insertion of the spool and thrust inwardly through the central tube C of the spool, so as to support the spool centrally in the paper carrier. When the spool is so inserted, the cross-bar c' thereof is engaged with the detent c'' by which the spool is held from turning.

In Figs. 14 and 15 is shown another form of device for removably supporting the paper spool in place between the disks b, b of the paper-carrier. In this instance, the central tube C of the spool is provided with two endwise sliding pivot pins b^4, b^4 provided with conical bearing ends. Said pivot pins b^4, b^4 are thrown outwardly into position for engagement with bearing recesses at the centers of the disks b, b by means of a coiled spring b^5 , as shown in Fig. 15. Said pivot pins are guided to the center of the disks b, b by radial grooves b^5 formed in the inner faces of the disks b, b , as seen in Fig. 14.

An alarm device is provided for giving audible indication of each operation of the machine as follows: On the side plate E (Fig. 4) is mounted a curved, endwise sliding bar Q arranged to operate a bell-hammer q^1 which is adapted to act on a bell q^3 (Fig. 7). Said bell is located at the bottom of the machine frame and the bar Q is of curved form and extends along the outer face of the plate E adjacent to its curved margin. Said bar has endwise sliding connection with said plate E by means of headed studs on the plate engaging longitudinally extending slots in the bar. A spring q^4 acts on the said bar Q to hold the same normally in its lowermost position, as shown in Fig. 4. Said bar Q is provided near its upper end with a stud q , located in position to be engaged by the arm o^2 on the segment F when said segment is about to reach the limit of its swinging movement when turning in the direction of the arrow in Fig. 4. The upper end of said bar Q is provided with a holding tooth adapted to engage a spring actuated hooked detent or catch q^2 on the side plate E of the machine, when the said bar has been moved upwardly by the action of the lever o^2 . The said segment F is provided with a pin q^3 adapted to strike the detent q^2 and disengage the said detent from the bar Q, when the segment F reaches the end of its return or backward stroke and reaches the position shown in Fig. 4.

The operation of printing and issuing a ticket is as follows: The wheel K having been turned to the position indicating, by means of the indicator wheels J, J, the required destination, say station "1" to "5", the amount of the fare will be indicated at the periphery of the type wheel h , in this case "4", and the shaft L will have brought

the slide g , by means of the cam H, into position with one of the projections g in engagement with the counter for recording the number of the ticket issued for that station of the trip. The handle m^2 , secured to the spindle b^3 of the paper-carrier, is not turned in the direction of the arrow in Fig. 1, whereupon the paper-carrier B will be turned in the direction indicated by the arrow in Fig. 3 and the strip of paper, the end of which is held between the feed rollers a^1, a^2 , will be drawn or unwound from the roll and pressed into contact with the type on the carrier A by the impression roller a^1 ; the inking roller a^2 having meanwhile passed over and inked the type.

During the operation of printing the ticket, the segment F will move in the direction of the arrow in Fig. 4, and operate the lever o^1 , by means of the lever o^2 , to move the consecutive number type wheels. The continued movement of the segment will bring the lever o^2 into engagement with the pin q on the bar Q, which latter will be carried upwardly into position to engage the catch q^2 . The slide g , together with the slide g^2 , will be moved by the arm g^1 , on the spindle b^3 , and will operate the counter G, indicating the total number of tickets, and one of the stage-indicating counters G^1 . When the carrier B is near the end of its travel in its advance or printing stroke the arm b^1 will engage the lowermost stop b^2 , and during the continued movement of the carrier, until the stop shoulders on the disks b, b engage or strike the said stop b^2 , the spindle of the impression roller will travel along the grooves a^5, a^5 in said arms b^1, b^1 and the impression roller will be retracted into position to be out of contact with the type in the subsequent return movement of the carrier. At the same time the pins d^3, d^3 will be brought into engagement with the arms d^6 , which latter will thereupon be swung on their pivots and raise the arms d^2, d^2 carrying the paper cutter d^1 .

The end portion of the strip of paper having been printed, it is issued through the opening m^3 in the casing, in the backward stroke or return movement of the paper-carrier, effected by moving the handle m^2 in the opposite direction. As the paper-carrier approaches the end of its movement in its return or backward stroke, the arms b^1, b^1 will strike the upper stops b^2, b^2 and will be moved or shifted backwardly until the stop shoulders on the disks come into contact with the said upper stop. As the said arms b^1, b^1 are so shifted or turned relatively to the disks b, b , the impression roller will be shifted outwardly by the action of the cam grooves a^5, a^5 and thereby brought into position to press the paper against the types in the succeeding forward or printing stroke of the carrier, this being the position of the

said impression roller shown in Fig. 3. The segment F, in its return movement, effects the rotation of the feed rollers c^1 , c^2 , by means of the gearing described and the pawl c^3 . The printed end of the paper having been ejected by the action of the feed rollers, the pins d^{5*} , d^{5*} will act on the levers d^5 , d^6 to release the arms d^2 , d^2 , whereupon the cutter d^1 will be brought down upon the paper supported by the block d . At the end of the travel of the segment F, the pin q^3 thereon will engage with the catch q^2 and release the slide Q, which will be pulled by the spring q^4 and the bell q^5 will be struck by the hammer q^1 .

It is understood that the machine illustrated may be variously modified in practice, and that I do not desire that my invention should be limited to the details of construction and arrangement shown in the drawings, except so far as the same are pointed out in the appended claims as constituting parts of my invention.

I claim as my invention:—

1. A ticket printing and issuing device embracing a segmental type-carrier, an impression roller having oscillatory movement about an axis concentric with the type-carrier, means for supporting a roll of paper concentrically with the type-carrier, and intermittently rotating feed rollers engaging the end of the strip of paper.

2. A ticket printing and issuing device comprising a segmental type-carrier, an impression roller having oscillatory movement on an axis concentric with the type-carrier, means for supporting a roll of paper concentrically with the segmental type-carrier, and intermittently rotating feed rollers acting to hold the end portion of the strip of paper in the printing stroke of the impression roller and to deliver the printed part of the strip from the machine in the return stroke of said impression roller.

3. A ticket printing and issuing device comprising a segmental type carrier, an impression roller having oscillatory movement about an axis concentric with the type carrier, means for advancing the impression roller into position to act upon the types of the type-carrier and holding it in its advanced position during its movement over the type-carrier in one direction and for retracting said impression roller and holding it in its retracted position during its return movement, means for supporting a roll of paper concentrically with the type-carrier, and intermittently rotating feed rollers adapted to engage the end portion of the strip of paper.

4. A ticket printing and issuing device comprising a segmental type-carrier, provided with printing types, an oscillating impression roller, an oscillating inking roller, said impression and inking rollers having

movement about an axis concentric with the type-carrier, a support for sustaining a roll of paper concentrically with the type-carrier, feed rollers engaging the end portion of the strip of paper, and a shield for the inking roller adapted to prevent contact of the strip of paper with said inking roller.

5. A ticket printing and issuing device comprising a segmental type-carrier, an oscillating impression roller adapted to swing about an axis concentric with the type-carrier, means for supporting a roll of paper concentrically with the type-carrier, adapted to frictionally retard the rotation of the roll in the withdrawal of the strip from the same, feed rollers located at one end of the segmental type-carrier, adapted to engage the end of the strip of paper, said impression roller being adapted to press the portion of the strip of paper extending between said feed rollers and the roll of paper against the types on the type-carrier during the swinging movement of said impression roller in one direction, and means actuating the said feed rollers during the swing of the impression roller in the opposite direction, for delivering the printed portion of the strip from the machine.

6. A ticket printing and issuing device embracing a segmental type-carrier, an impression roller having oscillatory movement on an axis concentric with the type-carrier, and a non-rotative spool for a roll of paper mounted concentrically with the type-carrier.

7. A ticket printing and issuing device embracing a segmental type-carrier, an impression roller having oscillatory movement on an axis concentric with the type-carrier, a spool for holding a roll of paper, means pivotally supporting said spool concentrically with the type-carrier, means for holding said spool from rotation, and intermittently rotating feed rollers engaging the end portion of the strip of paper.

8. A ticket printing and issuing device embracing a segmental type-carrier, a paper-carrier having oscillatory movement on an axis concentric with the segmental type-carrier, comprising two connected side members between which the roll of paper is carried, and an impression roller mounted on the said paper-carrier and having movement thereon toward and from the type-carrier.

9. A ticket printing and issuing device embracing a segmental type-carrier, a paper-carrier having oscillatory movement on an axis concentric with the segmental type-carrier, comprising two connected side members between which the roll of paper is carried, an impression roller mounted on said paper-carrier and having movement thereon toward and from the type-carrier, and means acting to advance said impression roller and hold it in position to press the

paper against the type in the forward turning movement of said paper-carrier and to retract said roller and hold it in its retracted position during the backward movement of said paper-carrier.

10. A ticket printing and issuing device embracing a segmental type-carrier, a paper-carrier having oscillatory movement on an axis concentric with the type-carrier and provided with two side members between which the roll of paper is carried, an impression roller mounted on said paper-carrier and having movement thereon toward and from the type-carrier, two oscillating arms mounted concentrically with the type-carrier, said arms having limited swinging movement relatively to the paper-carrier, and means operated by the movement of said arms relatively to said type-carrier for giving movement to the impression roller toward and from the type-carrier.

11. A ticket printing and issuing device embracing a segmental type-carrier, a paper-carrier having oscillatory movement on an axis concentric with the type-carrier, and comprising two side members between which the roll of paper is carried, said side members being provided with radial slots, an impression roller provided with a spindle, the ends of which extend through and have bearing in said slots, swinging arms mounted concentrically with the paper-carrier and having swinging movement relatively to the said paper-carrier, said arms being provided with cam grooves engaging the ends of the impression roller spindle and acting to shift said roller inwardly and outwardly on the paper-carrier in the movement of said arms relatively to said paper-carrier.

12. A ticket printing and issuing device embracing a segmental type-carrier, a paper-carrier having oscillatory movement on an axis concentric with the type-carrier and having two side members between which the roll of paper is carried, an impression roller mounted on said paper-carrier and having movement thereon toward and from the type-carrier, two swinging arms mounted concentrically with the paper-carrier and having limited oscillatory movement with respect thereto, stops for limiting the swinging movement of the said arms in both directions, and means actuated by the movement of said arms relatively to the paper-carrier for advancing and retracting the said impression roller.

13. A ticket printing and issuing device embracing a segmental type-carrier, a paper-carrier having oscillatory movement on an axis concentric with the type-carrier and embracing two side members between which the roll of paper is carried, an impression roller mounted on said paper-carrier and movable thereon toward and from the type-carrier, means acting to maintain said im-

pression roller in operative position in the advance movement of said paper-carrier, and means operated by said paper-carrier in its backward movement for advancing the printed portion of the paper.

14. A ticket printing and issuing device embracing a segmental type-carrier, a paper-carrier having oscillatory movement on an axis concentric with the type-carrier and embracing two side members between which the roll of paper is carried, an impression roller mounted on said paper-carrier and movable thereon toward and from the type-carrier, means acting to maintain said impression roller in operative position in the advance movement of said paper-carrier, and means operated by said paper-carrier in its backward movement for advancing the printed portion of the paper, and for cutting the paper to form the tickets.

15. A ticket printing and issuing device embracing a segmental type-carrier, a paper-carrier having oscillatory movement on an axis concentric with the type-carrier and comprising two side members between which the roll of paper is carried, impression means mounted on said paper-carrier and acting to effect the printing of the ticket in the forward swinging movement thereof, feed rollers for advancing the printed end of the paper strip, intermeshing gears on said feed rollers, a toothed segment partaking of the swinging movement of the paper-carrier, and a driving connection between the said toothed segment and the feed rollers embracing means by which the said feed rollers are driven only during the backward movement of said paper-carrier.

16. A ticket printing and issuing device comprising a segmental type-carrier, an oscillating paper-carrier swinging on an axis concentric with the type-carrier, an impression roller mounted on the paper-carrier and movable thereon toward and from the type-carrier, means for giving movement to said impression roller adapted to maintain the same in operative position during the forward swinging movement of the paper-carrier, feed rollers for advancing the strip of paper after it is printed, and means for actuating said feed rollers from the paper-carrier, acting to turn the same during the backward swinging movement of said paper-carrier.

17. A ticket printing and issuing device comprising a segmental type-carrier, an oscillating paper-carrier swinging on an axis concentric with the type-carrier, an impression roller mounted on the paper-carrier, means for giving movement to the impression roller acting to maintain the same in operative position during the forward swinging movement of the paper-carrier, feed rollers for advancing the strip of paper after it is printed, and means actuating said feed

rollers from the paper-carrier, acting to turn the same during the backward movement of said paper-carrier, and a cutting device actuated by the oscillatory movements of the paper carrier.

18. A ticket printing and issuing device embracing an oscillatory paper-carrier comprising two side members between which the roll of paper is carried, a cutting knife, pivotally mounted arms on the swinging ends of which said knife is carried, and means carried by the said oscillating paper-carrier and acting on said arm in the oscillatory movements of said paper-carrier.

19. A ticket printing and issuing device embracing an oscillating paper-carrier comprising two side members between which the roll of paper is carried, a cutting knife, pivotally mounted arms upon the swinging ends of which said knife is carried, a block against which said knife acts in cutting, a spring acting on said pivoted arms to press the said knife toward said block, pivoted levers bearing against said arms, and stops on the paper carrier acting on said levers, in the forward swinging movement of the carrier, for swinging the knife away from the said block, and other stops upon said paper-carrier acting in the backward swinging movement thereof on said levers to release said arms and permit the knife to act against said block.

20. A ticket printing and issuing device embracing a segmental type-carrier, an oscillating paper-carrier comprising two rigidly connected side members, and a removable spindle for supporting a roll of paper, mounted between said side members concentrically with the pivotal axis of the said side members.

21. A ticket printing and issuing device embracing a segmental type-carrier, an oscillating paper-carrier mounted concentrically with the type-carrier, an impression roller mounted on said paper-carrier, a notched sector attached to and turning with the paper-carrier, and a detent engaging said sector adapted to prevent reverse rotation of the same until the completion of its swinging movement in both directions.

22. A ticket printing and issuing device embracing a segmental type-carrier, an oscillating paper-carrier mounted concentrically with the type-carrier and comprising two rigidly connected side members, an impression roller mounted on the paper-carrier, a spool for holding a roll of paper adapted for insertion laterally between said side members, and means affording detachable and rotative connection of said spool with the paper carrier.

23. A ticket printing and issuing device embracing a segmental type-carrier, an oscillating paper-carrier mounted concentrically with the type-carrier and comprising two

rigidly connected side members, an impression roller mounted on said paper-carrier, a spool for a roll of paper adapted for insertion between said side members of the paper-carrier and having rotative connection with the same, and means holding said spool from turning during the oscillating movements of the paper-carrier.

24. A ticket printing and issuing device embracing a machine frame, a segmental type-carrier, an oscillating paper-carrier comprising two rigidly connected side members, a spool for supporting a roll of paper adapted for insertion laterally between said side members of the paper-carrier, means rotatively supporting said spool in the paper-carrier, said spool comprising a central tube, two side plates and a transverse rod extending between said side plates outside of the roll of paper, and a detent on the machine frame adapted to engage said rod to hold the spool from turning.

25. A ticket printing and issuing device embracing a machine frame having two side plates, a segmental type-carrier, an oscillating paper-carrier comprising two rigidly connected side members, each provided with a central outwardly extending pivot stud by which the paper-carrier is supported in the side plates of the machine, one of said pivot studs being tubular, and a spindle for supporting a roll of paper adapted to slide endwise in said tubular pivot stud.

26. A ticket printing and issuing device embracing a segmental type-carrier, an oscillating paper-carrier comprising two rigidly connected side members, between which the roll of paper is carried, an impression roller and an inking roller mounted between said side members, and a shield for the inking roller supported at its ends on said side members.

27. A ticket printing and issuing device comprising a segmental type-carrier, an oscillating paper-carrier mounted concentrically with the type-carrier, an impression roller mounted on the paper-carrier, type wheels for printing consecutive numbers on succeeding tickets, a spindle mounted in the type-carrier, on which said type wheels are supported, a spring actuated arm carried by said spindle at one side of the type-carrier, an oscillating member attached to and moving with the paper-carrier, and a yielding arm mounted on said oscillating member and adapted to act on said spring controlled arm to move the type wheels one unit forward in the swinging movement of the paper-carrier in one direction.

28. In a ticket printing and issuing device, a frame having two side plates, a segmental type-carrier mounted between said side plates, an oscillating paper-carrier mounted concentrically with said type-carrier, said paper-carrier having laterally ex-

tening pivot studs, an impression roller mounted on the paper-carrier, type wheels for printing consecutive numbers, a spindle mounted in the type-carrier and supporting said type wheels, a spring actuated arm carried by said spindle, located outside of the frame plates, an oscillating member mounted on one of the pivot studs of the paper-carrier outside of the said side plate, and an operating arm yieldingly mounted on said oscillating-member and adapted to engage the spring controlled arm to move the type wheels one unit forward in the swinging movement of the paper-carrier in one direction.

29. In a ticket printing and issuing device, a plurality of type wheels, a hollow shaft on which said type wheels are mounted, the shaft being rotatively mounted and provided with a longitudinal slot, means for yieldingly holding said type wheels severally from rotating, a spindle having endwise movement in said hollow shaft, two indicator wheels mounted to turn freely on said shaft, and means for holding said indicator wheels yieldingly from rotation, said type wheels and indicator wheels being provided with feather receiving slots and said spindle being provided with two feathers one of which is adapted to engage the slots in the type wheels and the other the slots in the indicator wheels.

30. In a ticket printing and issuing device, a plurality of type wheels, a hollow shaft on which said type wheels are mounted, bearings for said shaft, one of which is provided with a plurality of notches, said shaft being provided with a longitudinal

slot, means for yieldingly holding said type wheels severally from rotation, a spindle having endwise movement in said hollow shaft, two indicator wheels mounted to turn freely on said shaft, said type wheels and indicator wheels being provided with feather receiving grooves, and said spindle being provided with three feathers, one of which is adapted to engage the grooves in the type wheels, another the grooves in the indicator wheels, and the third the notches in the said bearing for the shaft.

31. In a ticket printing and issuing device, the combination of a segmental type-carrier, an oscillating paper-carrier mounted concentrically with the type-carrier, an impression roller carried by the paper-carrier, and an audible alarm device comprising a bell, a bell hammer, a spring pressed sliding bar adapted to actuate the bell hammer, a spring yieldingly holding said bar in one position, a spring pressed detent on the machine frame, an oscillating member attached to and moving with the paper-carrier, and an arm yieldingly mounted on said oscillating member and adapted to engage said bar and shift the same into position for engagement with the said detent, said oscillating member being provided with a stop pin adapted to actuate said detent to release the same from said bar.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RUFFIN NORTH.

Witnesses:

JOHN BAKER,

ARCHIBALD R. BAKER.