July 21, 1931. C. F. WEBB 1,815,534

PRINTING MACHINE

Filed Aug. 24, 1928 2 Sheets-Sheet 1

Fig. 1.

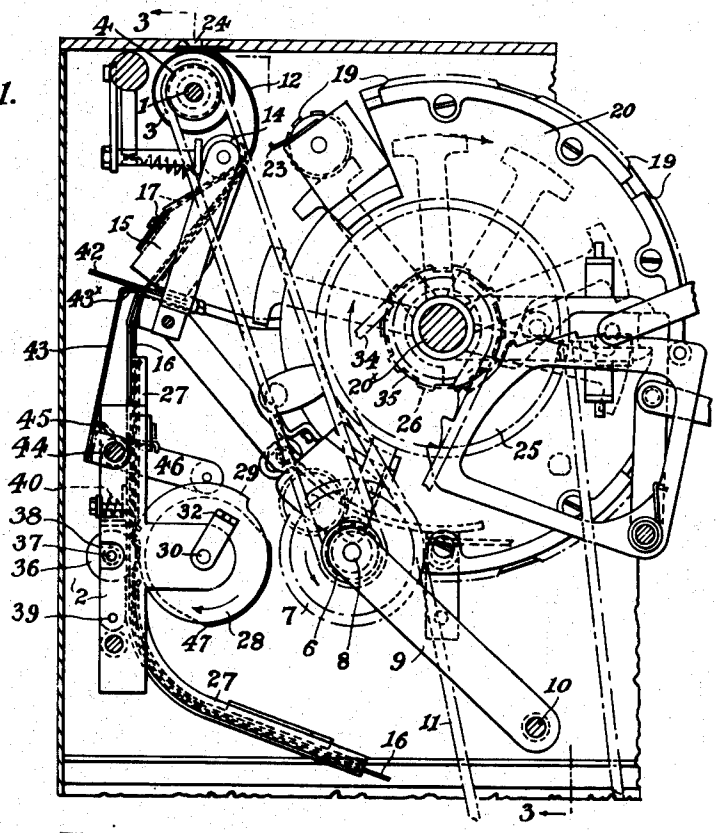
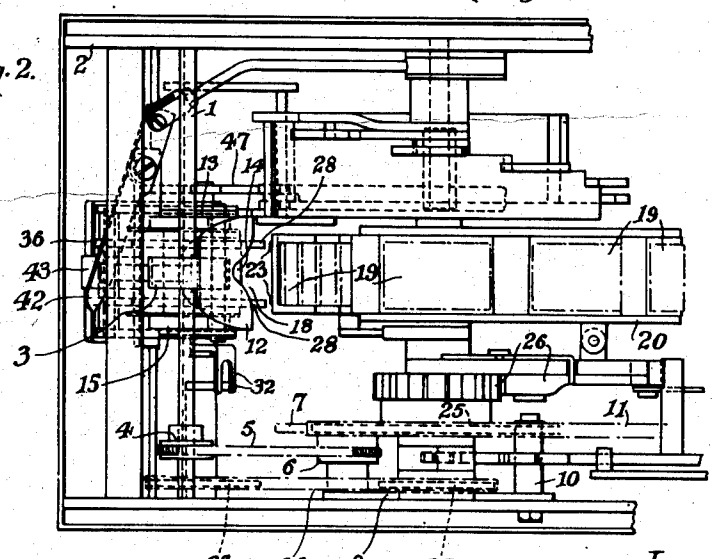


Fig. 2.



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Fig.3.

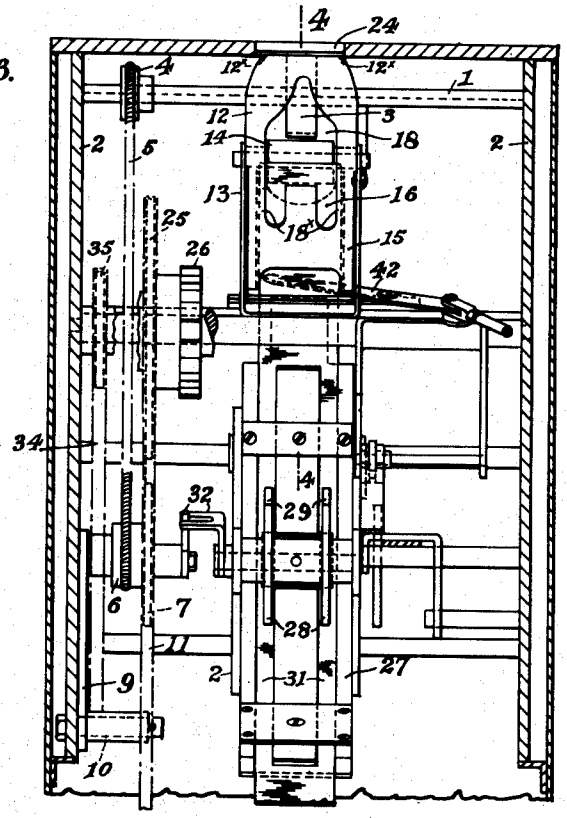


Fig.4.

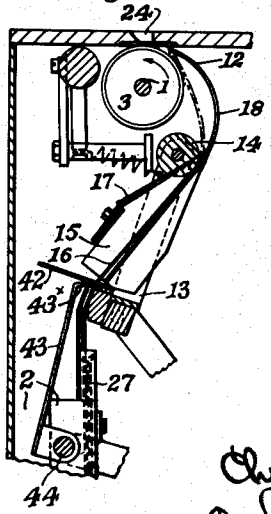
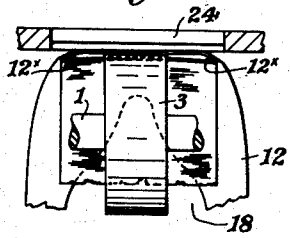


Fig.5.



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UNITED STATES PATENT OFFICE

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PRINTING MACHINE

Application filed August 24, 1928, Serial No. 301,843, and in Great Britain July 24, 1928.

This invention is for improvements in or relating to printing machines and more particularly to the type of printing machine wherein portions of a strip or web are printed in the form of railway or like tickets and delivered. A machine of the above character is described in specification Serial No. 260268, wherein the printing is effected by means of a single rotary type-cylinder co-operating revolubly with an impression roller.

The present invention has for its object the provision in a machine of the above type of an improved delivery mechanism for the printed tickets.

The present invention consists of a printing machine of the type referred to, wherein the overrun of the driving motor is employed to actuate the means for delivering a printed ticket or tickets.

Further, according to the present invention, there is provided a machine of the type referred to, wherein each ticket is fed into engagement with a guide arranged to press the ticket into contact with a friction wheel operable to feed the ticket through the delivery slot of the machine.

In a suitable arrangement according to the present invention a friction wheel, rotated by means of the driving motor for the machine, is arranged to co-operate with a curved guide-plate in such a manner as to ensure that each ticket after being printed is frictionally engaged by the wheel and delivered through a delivery slot in the cover plate of the machine.

The invention will be particularly described with reference to the accompanying drawings, in which:—

Figure 1 is a vertical longitudinal section of the rear portion of a machine embodying the subject matter of the present invention.

Figure 2 is a plan view of Figure 1 with the cover plate removed.

Figure 3 is a sectional view of Figure 1 on the line 3—3.

Figure 4 is a sectional view of a detail of Figure 3 on the line 4—4, but with the parts illustrated in a different position, and,

Figure 5 is a detail view of an element drawn to a larger scale than Figures 1–4.

Referring to the drawings, 1 is a spindle mounted transversely in bearings formed in the frame 2 of the machine and arranged to carry rotatably a friction wheel 3, the periphery of which is preferably covered with rubber.

The spindle 1 is arranged to carry in addition a driving pulley 4 which is driven from a second pulley 6 through the medium of a spring driving band 5. The pulley 6 is fixed to and arranged to rotate with a sprocket wheel 7 carried rotatably on a spindle 8 fixed to one end of an arm 9, the other end of which is pivoted at 10 to the frame 2. The sprocket wheel 7 is arranged to mesh with a driving chain 11 which is connected direct to the motor which drives the machine and the band 5 tends to keep the sprocket wheel 7 in mesh with the chain 11. It will thus be observed that the friction wheel 3 will continue to rotate as long as the spindle of the driving motor rotates.

A curved guide-plate 12 mounted upon a rocking arm 13 is so disposed relatively to the friction wheel 3 as to embrace partly the surface of the friction wheel 3, whilst the free end of the plate is disposed in close proximity to the surface of the friction wheel 3 and to the delivery slot 24 of the machine.

The curved guide-plate 12 carried on the rocking frame 13 is arranged to support an impression roller 14, the operation of which is described in the aforesaid specification No. 260268. The plate 12 is arranged between the impression roller and the type cylinder and is provided with an extension 15 which forms a guide for the strip or web 16 during the movement of the same towards the impression roller 14. The guide 12 is provided with a spring 17 arranged to bear upon the ticket as the same is fed forwardly. The plate 12 is provided with an aperture 18 through which the impression roller 14 co-operates with the printing surfaces 19 on the type cylinder 20 to print the ticket in the manner described in the aforesaid specification. The aperture is constructed of a width which leaves ledges 18×, 18× on either side of the said aperture adapted to support the side edges of the tick-

et as the same is fed forward. A pair of hooks 23, 23 fixed to the type cylinder 20 are arranged to engage with the rear end of each printed ticket, and move the same past the impression roller 14, so that the free end of the ticket engages substantially with the free end of the guide-plate 12 so as to lie in the direction of a chord of the curve of the plate and tangential to the curvature of the surface of the friction wheel 3.

The printed ticket, now being free of the impression roller 14 and guide 15, is, due to the rotation of the friction wheel 3, carried through the delivery slot 24 in the cover plate of the machine.

In order to prevent any set off by the ticket, the two corners or edges 12^x, 12^x of the plate 12 situated adjacent to the friction wheel 3 and the delivery slot 24 are bent slightly downwardly as shown in Figure 5, the said corners thus maintaining the printed portion of the ticket out of contact with the surface of the guide-plate 12.

In the type of machine described, the rotary type cylinder 20 is designed at predetermined periods to be engaged with and disengaged from a sprocket wheel 25 by means of a clutch mechanism 26, the sprocket wheel 25 being driven by the electric motor, hereinbefore referred to. This arrangement results in the sprocket wheel 25 and the driving chain 11 therefor continuing in motion, by reason of the overrun of the aforesaid motor, after the type cylinder 20 has been brought to rest. The motor is started and stopped for each impression made upon the ticket strip by means of a suitable switch mechanism such as disclosed in my co-pending application Serial No. 260,268, in order to provide for the over-run of the motor.

The fact that the friction wheel 3 is driven direct from the motor and not through a clutch mechanism enables the overrun of the motor to be employed to eject each printed ticket through the delivery slot of the machine after the remaining mechanism of the machine has come to rest.

The feed device for the strip or web for use in conjunction with the above described delivery mechanism may correspond to that described in specification No. 260268, or may, as shown in the accompanying drawings, comprise a feed race 27 carried on the frame 2 of the machine so as to receive the strip or web 16 and enable the same to be fed between sets of discs 28, 28 and 36, 36 mounted adjacent to the race. Each of the discs 28 is provided with a segmental edge 29 of a length corresponding to the length of a ticket. The discs 28 are mounted on and fixed to a spindle 30 carried in bearings in the frame 2 of the machine and are arranged to extend partly through apertures 31, 31 in the race 27 to engage with the discs 36, 36 mounted on a spindle 37 carried in a frame 38, pivoted at 39 to the frame 2. The said frame 38 and discs 36 are pressed towards the discs 28 by a spring 40. The spindle 30 is driven from the shaft 20^x carrying the type cylinder 20 through the medium of crank mechanism 32, (Figs. 2 and 3) sprocket wheel 33, chain 34 and sprocket wheel 35 on the shaft 20^x on which latter is fixed the type cylinder 20.

Thus it will be seen that as the discs 28, 28 are rotated the segmental portion 29, 29 thereof will come into engagement with the discs 36, 36 and thus grip the strip or web 16 in the race 27 and feed a length of strip corresponding to the length of the ticket.

In order to position the strip or web 16 when the same is of the type provided with registering holes a stop or retaining blade 43, pivoted at 44 to the frame 2, is provided, the end 43^x of which blade being designed to be positioned by means of the spring 45 in the holes in the said strip 16, the pressure of the blade 43 being relieved at the appropriate moment by means of an arm 46 on the blade 43 co-acting with a cam 47 on the spindle 30.

In operation of the machine a length of web corresponding to the length of a ticket is first severed from the strip or web 16 by the knife 42 whereupon the same is printed upon and fed to the delivery mechanism described and thence ejected from the machine. During the latter part of the rotation of type cylinder 20 a further ticket length is fed and located in position ready for use. It will be appreciated that although the arrangement has been described in conjunction with single tickets nevertheless the same may be employed when one or more tickets are issued simultaneously.

Claims.

1. A machine of the class described, including strip guiding means, an intermittently operated printing member, motor operated means for intermittently actuating said member, and means operatively connected with the last mentioned means for utilizing the overrun of the driving motor for delivering a printed ticket.

2. In a machine of the class described, a rotatable type cylinder, motor driven means for intermittently actuating said cylinder, ticket delivering means, and mechanism operatively connecting the last mentioned means to the motor driven means for utilizing the overrun of the motor for delivering a printed ticket.

3. A machine of the class described, including a rotatable type cylinder, motor driven means for intermittently actuating the type cylinder, ticket delivering means including a friction roller, and mechanism operatively connecting said roller to the motor driven means for utilizing the overrun of the motor after the type cylinder has come to rest, for delivering a printed ticket.

4. In a machine of the class described, a rotatable type cylinder, motor driven inter-

mittently operated means for rotating said cylinder, ticket delivering means including a movable element, and mechanism operatively connecting said element to the motor driven means for utilizing the overrun of the motor for delivering a printed ticket.

5. In a machine of the character described, a rotatable type cylinder, motor driven intermittently actuated means for rotating said cylinder, ticket delivering means including a friction roller, and power transmitting means operatively connecting said roller to the motor driven means for utilizing the overrun of the motor for delivering a printed ticket.

6. In a machine of the character described, a rotatable type cylinder, motor driven means for rotating said cylinder, a ticket guideway, means on the cylinder for advancing a ticket along said guideway, a friction roller for delivering a ticket from the guideway, and mechanism operatively connecting the roller to the motor driven means for utilizing the overrun of the motor after the cylinder has come to rest, for delivering a printed ticket.

7. In a machine of the character described, a type cylinder, motor driven means for rotating the type cylinder, a ticket guideway, means projecting from the cylinder for advancing a ticket along the guideway while the cylinder is revolving, and means for delivering a ticket from the guideway after the cylinder has come to rest.

8. In a machine of the character described, a rotatable type cylinder, an impression roller cooperating therewith, a ticket guideway having an aperture through which the impression roller may act to press a ticket in the guideway against the type cylinder, a ticket delivery port, a curved guide plate forming a part of the guideway, and a friction wheel cooperating with the curved guide plate to deliver a ticket through said port, the guide plate and wheel being so arranged that a ticket, during delivery, lies in the direction of a chord of the curve of the plate, and tangential to the periphery of the wheel.

9. In a machine of the character described, a rotatable type cylinder, means for presenting to the cylinder a strip of material to be printed, means for severing a ticket from the strip, means for effecting printing and movement of the ticket by the type cylinder, a friction roller, means for actuating said roller, and a movable guide arranged to press into contact with the friction roller, the movement of the ticket by the type cylinder serving to move the ticket along the guide.

10. In a machine of the character described, a rotatable type cylinder, means for presenting to the cylinder a strip of material to be printed, means for severing a ticket from the strip, means for effecting printing and movement of the ticket by the type cylinder, ticket feeding means, ticket delivering means receiving tickets from the feeding means, the ticket delivering means including a motor-driven friction roller and a movably mounted curved plate arranged partly to embrace the surface of said roller, and disposed eccentrically relatively to the surface of said roller, the delivery end of the curved plate bearing against the roller.

11. In a machine of the character described, a rotatable type cylinder, means for presenting to the cylinder a strip of material to be printed, means for severing a ticket from the strip, means for effecting printing and movement of the ticket by the type cylinder, ticket delivering means including a friction roller and a curved plate arranged partly to embrace the surface of said roller, and disposed eccentrically relatively to the surface of said roller, opposite edges of the plate at one end of the same, being bent toward the axis of the friction wheel.

12. In a machine of the character described, a rotatable type cylinder, means for presenting to the type cylinder a strip of material to be printed, including a guideway, a pivotally mounted support, friction discs carried by the support and extending into the guide-way, the guide-way being slotted adjacent to said discs, and other positively driven discs having projecting segments adapted to act through the slots in the guide-way in co-operation with the first mentioned discs for feeding a ticket strip along the guide-way, means for severing a ticket from the strip, and means for effecting printing and movement of the ticket by the type cylinder.

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