

C. MUEHLEISEN.
 TYPOGRAPHICAL COMPOSING MACHINE.
 APPLICATION FILED MAR. 18, 1915.

1,149,672.

Patented Aug. 10, 1915.

4 SHEETS—SHEET 1.

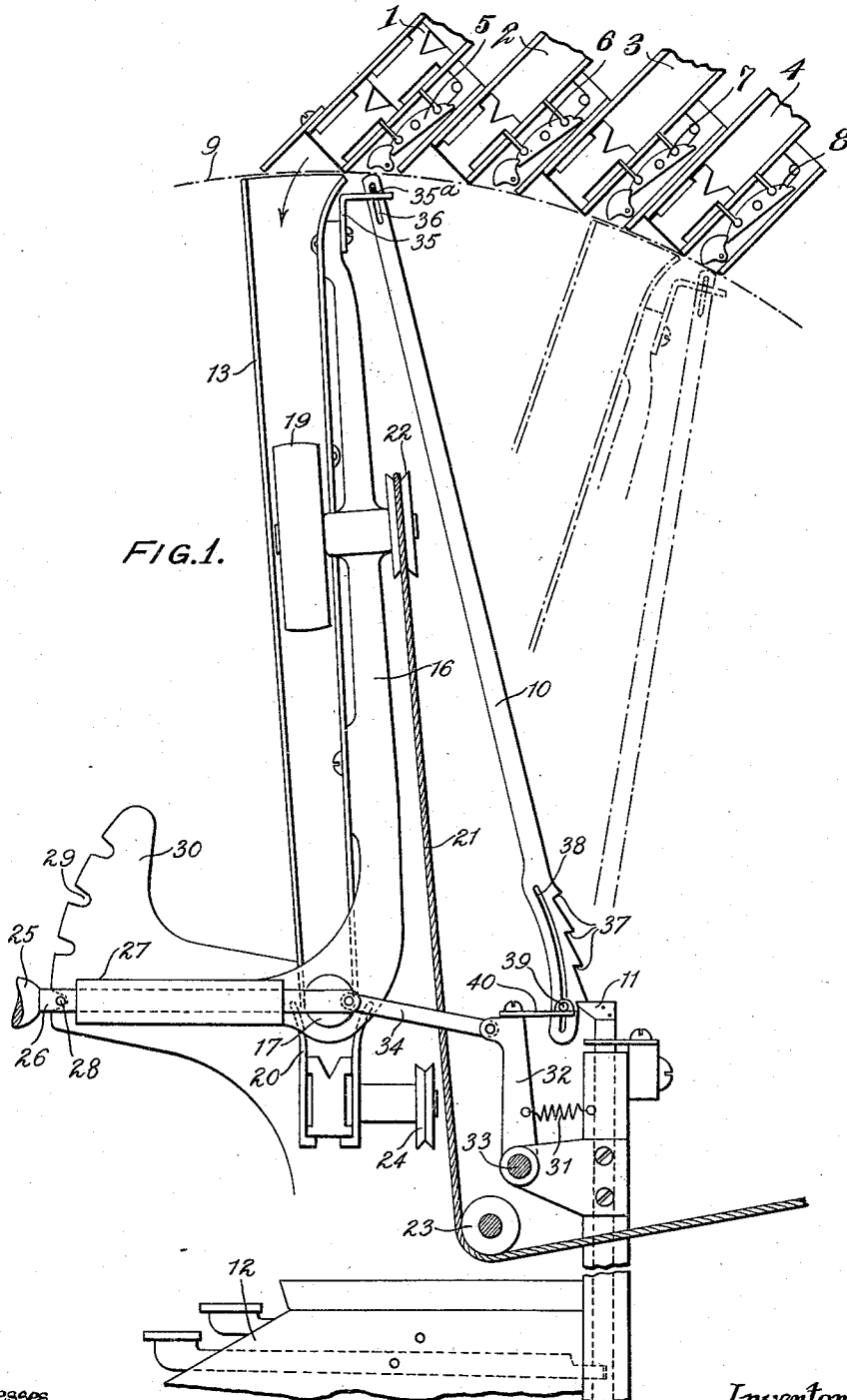


FIG. 1.

Witnesses
L. C. Morrison
A. Lawson

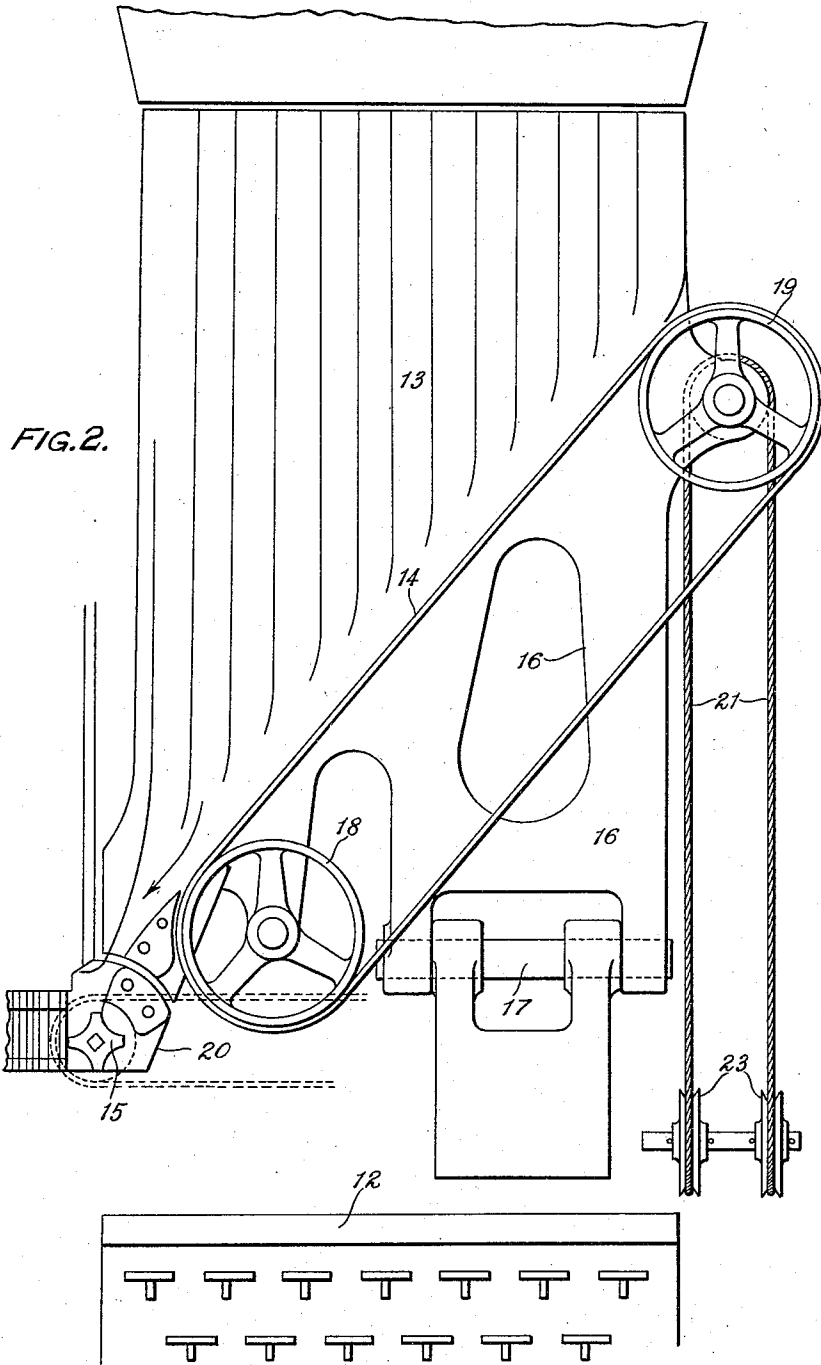
Inventor
per Carl Muehleisen
Rogers, Kennedy & Campbell, Attorneys

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4 SHEETS—SHEET 2.



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A. Lawson

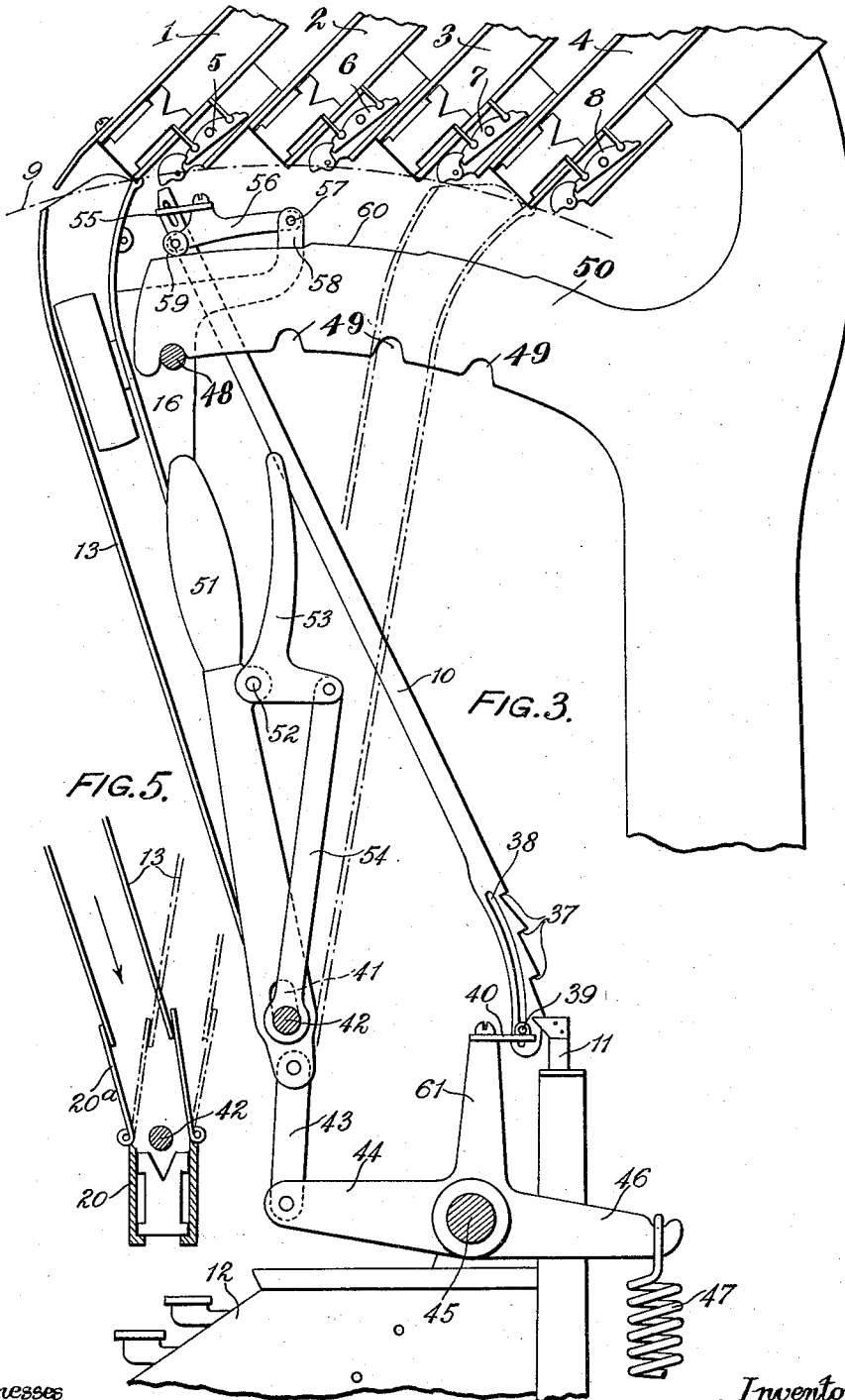
Inventor
per Carl Muehleisen
Rogers, Kimbrey & Campbell Attorneys

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4 SHEETS—SHEET 3.



Witnesses
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 A. Lawson

Inventor
 per Carl Muehleisen
 Rogers, Kennedy & Campbell Attorneys

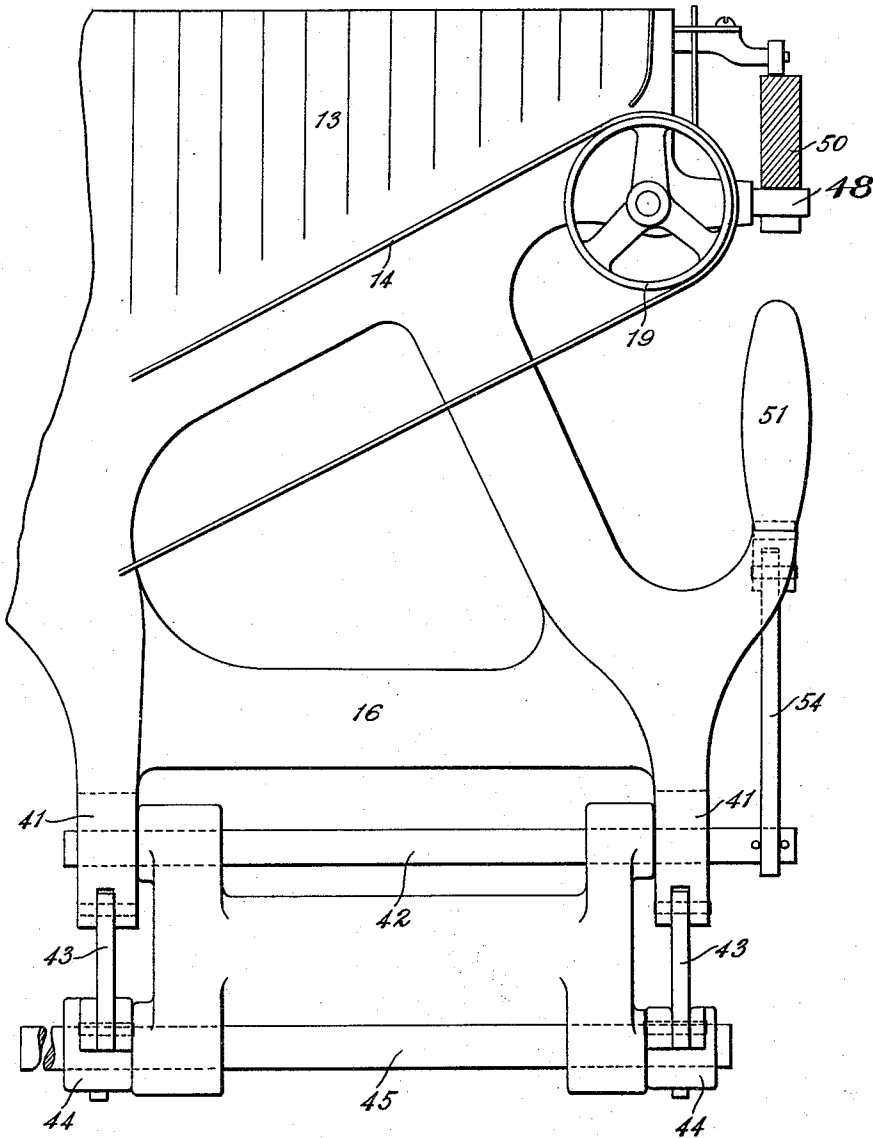
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4 SHEETS—SHEET 4.

FIG. 4.



Witnesses
L. I. Thomson
G. Lawton

Carl Muehleisen
Inventor
Rogers, Kennedy & Campbell
per Attorneys

UNITED STATES PATENT OFFICE.

CARL MUEHLEISEN, OF BERLIN, GERMANY, ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

TYPOGRAPHICAL COMPOSING-MACHINE.

1,149,672.

Specification of Letters Patent.

Patented Aug. 10, 1915.

Application filed March 18, 1915. Serial No. 15,317.

To all whom it may concern:

Be it known that I, CARL MUEHLEISEN, a citizen of the United States of America, residing at Chausseestrasse 23, Berlin, N. 4, in the Empire of Germany, have invented new and useful Improvements in Typographical Composing-Machines, of which the following is a specification.

This invention relates to typographical composing machines such as those known commercially under the trade mark "Linotype," and particularly to those which are provided with a plurality of superposed inclined magazines from which matrices are discharged into a single assembler entrance. Hitherto it has been customary to construct such magazines with their delivery ends in substantially the same inclined plane, and either to mount them on the machine so that any desired one of the plurality can be moved into operative relationship with a fixed assembler entrance or to have the magazines fixed and the assembler entrance adjustable at will to cooperate with one or other of them. The last-mentioned arrangement, while possessing certain advantages as compared with that in which the magazines are movable, has not proved entirely satisfactory for the reason that the adjustment of the assembler entrance has involved an undesirable lack of uniformity in respect of the length of the path of the matrices between the delivery ends of the magazines and the assembler belt, in the several operative positions of the said entrance.

According to the present invention the just-named disadvantage is eliminated by so arranging the magazines in the machine that their delivery ends, instead of, as heretofore, lying in an inclined plane, lie in an imaginary surface forming, or approximately forming, part of a cylinder, hereinafter for convenience referred to as a cylindrical surface, and the assembler plate is pivoted to swing thereunder, so that the distance to be traveled by the matrices is substantially the same for every operative position of the said plate.

The accompanying drawings show two constructional forms of the invention each applied, as a convenient example, to a machine having four magazines.

In these drawings, throughout the several figures of which like reference numerals are used to indicate like or corresponding parts,

Figure 1 is a right-hand side elevation of one of the said constructional forms, only the pertinent parts of the machine being represented; Fig. 2 is a front elevation of the same, some of the parts shown in Fig. 1 being omitted; Fig. 3 is a view similar to Fig. 1 of another constructional form of the invention; Fig. 4, a front elevation thereof, and Fig. 5 a sectional view of the connection between the stationary and movable parts of the assembler plate.

Referring to Figs. 1 and 2, the four superposed magazines 1, 2, 3, 4 are, as is usual, provided with respective escapements 5, 6, 7 and 8, but, as distinguished from the arrangements hitherto generally employed, the said magazines have their delivery ends lying in a cylindrical surface, as indicated by the dotted line 9. The escapements 5, 6, 7 and 8 are operated to release matrices from the respective magazine by one and the same set of escapement rods 10, cooperating, in the manner hereinafter described, with rods 11, which latter are in turn actuated by the ordinary cam-carriage mechanism (not shown in the drawings), controlled from the keyboard 12. The released matrices fall from the respective magazine directly into the assembler plate 13 on to the assembler belt 14, and are conveyed by the latter to the star wheel 15 (Fig. 2) by which they are successively added to the assembling line.

According to the present invention, the assembler plate 13 is rigidly secured to a frame 16 pivotally mounted on a rod 17 which, as shown in Fig. 2, is supported in suitable bearings in the machine frame, and which is concentric with the curve of the cylindrical surface 9. The pulleys 18, 19, for the assembler belt 14 are mounted in bearings in the frame 16 so that the said assembler plate 13, belt 14 and pulleys 18, 19, move together with the frame 16 when the latter is swung on the rod 17, while the housing 20, in which the star wheel 15 rotates, remains stationary, the entrance to the said housing 20 being funnel-shaped, as shown in Fig. 1, to insure the proper passage thereinto of the matrices delivered from the assembler belt. The assembler belt 14 may be driven by a belt 21, passing over a pulley 22 fast to the spindle of the pulley 19, and suitably guided over intervening jockey pulleys 23 which, although not so

shown in the drawings, may be co-axial with the rod 17, so that the tension of the belt 21 may be maintained throughout the pivotal movement of the frame 16; the belt 21 passes
 5 from the guide pulleys 23 to a pulley on the driving shaft. As an alternative to the just described arrangement, the assembler belt 14 can be driven directly from the pulley 18, instead of from the pulley 19. The star
 10 wheel 15 is independently driven by means of the pulley 24, or in any other convenient manner.

The adjustment of the assembler plate 13 into operative relationship with one or other
 15 of the magazines, is effected by a handle 25 on a rod 26, which extends through, and is longitudinally movable in, a guide 27 fast to or integral with the frame 16. The rod 26 is provided with a projecting pin 28,
 20 which is adapted to engage notches 29 in a plate or sector 30 fast to the machine frame, for the purpose of holding the assembler plate 13 in any of the operative positions to which it may be adjusted, the pin 28
 25 being retained in any of the notches 29 by a tension spring 31, which acts on a lever arm 32 fast at one end to a rocking shaft 33 and connected at its opposite end, by a
 30 link 34, to the rear end of the rod 26.

As stated above, there is only one set of escapement rods 10 for operating the escapements of all the magazines. These escapement rods 10 are brought into operative relationship with the escapements of any
 35 one of the magazines simultaneously with the adjustment of the assembler plate 13 to coöperate with that magazine, and the means by which this is effected will now be described.

Fast to the upper end of the frame 16, there is a bracket 35, the horizontal part of which constitutes a comb which serves to guide the upper ends of the escapement rods 10, each of which rods has a slot 36, traversed by a wire or rod 35^a extending preferably throughout the whole bank of such
 45 rods and fast to the bracket 35, to permit a limited longitudinal movement of the said escapement rods. The lower end of each escapement rod 10 is provided with a number of notches 37, corresponding to the number of magazines, and adapted to engage with the head of the appropriate key-controlled rod 11, and is also provided with an
 50 arcual slot 38 which is penetrated by a wire or rod 39, preferably common to the whole bank of escapement rods 10, and fast to a comb plate 40 serving to guide the said lower ends. The plate 40 extends in front
 55 of the whole bank of escapement rods, and is fast at one end to the lever arm 32 and at the opposite end to a similar arm fast to the respectively opposite end of the rocking shaft 33. When, therefore, the handle 25
 60 is pulled forward preparatory to effecting

an adjustment of the assembler plate 13, the plate 40 is also pulled forward, by the consequent movement of the rod 26, link 34, lever arm 32 and rocking shaft 33, and the
 70 respective notches 37 then in engagement with the rods 11 are pulled out of such engagement. The movement of the handle 25 up or down swings the frame 16 on the rod 17, and with it the bracket 35, the shortening or lengthening of that part of the escapement rods 10 between the bracket 35
 75 and plate 40 being permitted by the arcual slots 38 sliding over the rod 39. After the assembler plate 13 has been moved into register with the desired magazine, the notches 37 appropriate to that magazine will be in position to engage the rods 11, and the release of the handle 25 will permit the spring or springs 31 to effect such engagement, as
 80 well as to pull the pin 28 into the appropriate notch 29 so as to lock all the parts in the adjusted position. Thus, when the assembler plate 13 is adjusted to coöperate with the magazine 4, as indicated in dot-and-dash lines in Fig. 1, the pin 28 will be
 85 engaging the highest notch 29, and the highest rank of notches 37 will be in engagement with the heads of the rods 11.

The constructional form of the invention illustrated in Figs. 3, 4 and 5 differs from
 90 that just described mainly in respect of the fact that the assembler plate 13 is pivoted eccentrically to the cylindrical surface 9 and is movable vertically, or upwardly and downwardly, as well as pivotally, which additional movement enables the radius of the
 95 aforesaid cylindrical surface 9 to be less than the distance between the pivotal axis of the assembler plate and the discharging ends of the magazines. This form of construction has the advantage that at the central
 100 magazines the distance to be traveled by the matrices is made somewhat longer than at the outer magazines. When co-operating with the magazines 1 and 4, the assembler plate 13 is in a more oblique position than when coöperating with the magazines 2 and 3, and consequently the matrices falling from the magazines 1 and 4 are subjected, when passing through the assembler
 105 plate 13, to a greater amount of friction than are those falling from the magazines 2, 3, the result being that the period occupied by such passage would differ in respect of the several magazines, but uniformity in this respect is secured by the longer distance which, as aforesaid, the matrices have to travel when falling from the
 110 magazines 2, 3.

For the purpose of permitting the above-mentioned vertical movement of the assembler plate 13 the frame 16 is provided at its lower end with two slotted bearings 41 engaging with a stationary rod 42 on which it pivots, and is connected, by means of a
 115 120 125 130

link 43 beneath each of these bearings, to one arm 44 of a three-armed lever (hereinafter, when referred to as a whole, identified by the reference 44), fast to a rock shaft 45, the opposite arm 46 of which lever is connected with a spring 47 constantly tending to keep the bottom of the slotted bearings 41 in engagement with the rod 42. The upper end of the assembler plate 13 is retained in operative position, against forward-and-aft movement, by the engagement of a pin 48, fast to the frame 16, with one of a number of notches 49 provided in the lower edge of a forwardly extending arm 50 fast to the machine frame.

A handle 51 is fast to the frame 16, and pivoted to this handle at 52 there is a bell-crank lever 53, one arm of which is arranged conveniently for gripping with the handle 51, the other arm being pivotally connected by a link 54 to the rod 42, so that when the handle 51 and bell-crank lever 53 are gripped together, the assembler plate 13 is pressed downward, against the above-described action of the spring 47, until the tops of the slotted bearings 41 are in engagement with the rod 42. This movement also serves to disengage the pin 48 from the notch 49 appropriate to the magazine with which the assembler plate 13 is then coöperating, and the latter is then free to be swung, by the handle 51, into position to coöperate with another magazine, after which swinging the release of the grip between the handle 51 and lever 53 will enable the spring 47 to raise the assembler plate 13 into its new operative position, wherein it will be locked by the engagement of the pin 48 with the respective notch 49.

The escapement rods 10 are, in this constructional form of the invention, moved with the assembler plate 13 in a manner somewhat similar to that described in connection with Figs. 1 and 2, excepting that in the present case a longitudinal adjustment of the said rods is necessitated by the shorter radius of the surface 9. In order to provide for this longitudinal adjustment, the bracket of the first described arrangement, in the present arrangement takes the form of a practically flat comb plate 55, and instead of being in rigid connection with the assembler plate 13, it is secured to a lever arm 56, one end of which is pivoted at 57 to a bracket 58 fast to or integral with the frame 16, and the other end of which, by an antifriction roller 59, bears upon the upper edge 60 of the before-mentioned arm 50. This upper edge 60, being stepped, forms virtually a cam track for the roller 59 which is kept in contact therewith by gravity during the pivotal movement of the assembler plate 13. As a result of this construction, when the assembler plate is moved, the escapement rods 10 will, due to engagement

of the roller 59 with the stepped or cam surface 60 of the arm 50, be shifted longitudinally with reference to the assembler plate so as to locate them in proper operative relation to the escapements of the magazine beneath which the assembler plate is brought. The lower ends of the escapement rods 10 coöperate with the rods 11 in same manner as in the previously described constructional form, the comb plate 40 being secured to the upstanding arms 61 of the levers 44, the disengagement of the notches 37 from the rods 11 being effected by the movement of those arms 61 when the levers 44 are rocked by the gripping together, as before described, of the handle 51 and lever 53. Simultaneously with this disengagement the assembler plate 13 is lowered, and with it the bracket 58, leaving the escapement rods and connected parts for the time being supported on the roller 59. The arrangement of the cam track 60 is such that at the commencement of the pivotal movement of the assembler plate 13, the escapement rods 10 are lowered away from the escapements with which they had been coöperating, and when the assembler plate has reached a position to receive matrices from another magazine, the said rods 10 are raised into operative relationship with the escapements of that magazine. As previously stated, the release of the grip between the handle 51 and lever 53 will effect the locking of the assembler plate 13, and, as will now be understood, the engagement of the appropriate notches 37 with the rods 11 will be simultaneously effected by the rocking of the levers 44 under the influence of the springs 47.

To insure the proper delivery of matrices from the assembler belt to the star wheel 15, the before-described housing 20, instead of being funnel-shaped as in the previously described constructional form, has hinged to its upper end a mouth 20^a—see Fig. 5—into the upper end of which is telescopically fitted the lower end of the assembler plate 13, so that effective connection between the said assembler plate and the housing 20 is maintained throughout the different movements of the assembler plate relatively to that housing.

It is to be understood that, although the drawings illustrate only one frame 50, one lever arm 56 and one bracket 58, these devices may be in duplicate, the two sets being at respectively opposite sides of the machine.

The foregoing embodiments of my invention have been selected merely by way of example and as preferred forms, but it will be readily understood that there may be other embodiments or adaptations of my invention without departure from its spirit.

Generally speaking, I desire it to be understood that I do not limit myself to any

specific form or embodiment except in so far as such limitations are specified in the claims.

Having described my invention, I declare that what I claim and desire to secure by Letters Patent is:—

1. In a typographical composing machine, the combination with a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface, of a set of escapements for each magazine located at its lower end, and a set of actuating rods pivotally supported below the magazines so as to be swung into operative relation to the escapements of any selected one thereof.

2. In a typographical composing machine, the combination with a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface, of a set of escapements for each magazine, a single assembler plate, a pivot about which the said plate is adapted to swing, a single set of escapement rods, and means adapted to simultaneously bring the said plate and escapement rods into operative relationship with any one of the magazines.

3. In a typographical composing machine, the combination with a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface, of a set of escapements for each magazine, a single assembler plate, a pivot about which the said plate is adapted to swing, a single set of escapement rods, a guide movable with the said plate in which the rods are adapted to operate, and means adapted to simultaneously bring the said plate and escapement rods into operative relationship with any one of the magazines.

4. In a typographical composing machine, the combination of a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface, a set of escapements for each magazine, a single assembler plate and a single set of escapement rods adapted to cooperate with any one of the magazines, key-controlled rods adapted to actuate the escapement rods, notches in the escapement rods respectively adapted to be engaged by the key-controlled rods to actuate the respective escapements, and means adapted to simultaneously adjust the assembler plate and escapement rods to their respective operative positions.

5. In a typographical composing machine, the combination of a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface, a set of escapements for each magazine, a single assembler plate and a single set of escapement rods adapted to cooperate with any one of the magazines, key-controlled rods adapted to actuate the escape-

ment rods, notches in the escapement rods respectively adapted to be engaged by the key-controlled rods to actuate the respective escapements, and means adapted to simultaneously lock the assembler plate and escapement rods to their respective operative positions.

6. In a typographical composing machine, the combination of a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface, a set of escapements for each magazine, a single assembler plate and a single set of escapement rods adapted to cooperate with any one of the magazines, key-controlled rods adapted to actuate the escapement rods, notches in the escapement rods respectively adapted to be engaged by the key-controlled rods to actuate the respective escapements, and means adapted to simultaneously lock and simultaneously unlock the assembler plate and escapement rods in their respective operative position.

7. In a typographical composing machine, the combination of a plurality of magazines each provided with a set of escapements at its lower end, an assembler plate pivotally supported below the magazines so as to be swung into operative relation to any selected one thereof, an assembler belt carried by the plate and adapted to convey the matrices therethrough, and a set of actuating rods also carried by a plate and adapted thereby to be brought into operative relation to the escapements of the selected magazine.

8. In a typographical composing machine, the combination with a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface and a single assembler plate, of a pivot eccentric to the said surface, means adapted to swing the assembler plate about the pivot, and means adapted to move the plate radially relatively to the pivot.

9. In a typographical composing machine, the combination with a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface, a set of escapements for each magazine, a single assembler plate, a pivot eccentric to the said surface about which the assembler plate is adapted to swing, means adapted to move the assembler plate radially relatively to the pivot, a single set of escapement rods, and means adapted to move the said rods longitudinally during the pivotal movement of the assembler plate.

10. In a typographical composing machine, the combination with a plurality of superposed inclined magazines terminating at their lower ends all in the same cylindrical surface, a set of escapements for each magazine, a single assembler plate, a pivot eccentric to the said surface about which the assembler plate is adapted to swing, means

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adapted to move the assembler plate radially relatively to the pivot, a single set of escapement rods, means adapted to bring the said assembler plate and escapement rods into operative relationship with any one of the magazines, and means adapted to simultaneously swing the assembler plate about the pivot and move the escapement rods in a fore-and-aft direction.

11. In a typographical composing machine, the combination of an assembler plate, an assembler belt adapted to convey matrices through the assembler plate, a star wheel to which the assembler belt delivers matrices to be assembled in line, a housing for the star wheel, a horizontal pivot about which the assembler plate and assembler belt are movable pivotally and radially as a complete entity independently of the housing, and a telescopic connection between the assembler plate and the housing.

12. In a typographical composing machine, the combination of an assembler plate, an assembler belt adapted to convey matrices through the assembler plate, a star wheel to which the assembler belt delivers matrices to be assembled in line, a housing for the star wheel, a hinged mouth on the housing, a horizontal pivot about which the assembler plate and assembler belt are movable pivotally and radially as a complete entity independently of the housing, and a telescopic connection between the assembler plate and the hinged mouth.

13. In a typographical machine, the combination of a plurality of magazines each provided with a set of escapements at its lower end, an assembler plate pivotally supported below the magazines so as to be swung into operative relation to any selected one thereof, and a single series of actuating devices movable with the plate so as to be brought into operative relation to the escapements of the selected magazine.

14. In a typographical machine, the combination of a plurality of magazines each provided with escapements, an assembler

plate pivotally mounted so as to be swung into operative relation to one or another of the magazines, and a series of actuating devices movable with the assembler plate so as to be brought into engaging relation with the escapements of the selected magazine, the said actuating devices being formed in sections which are relatively adjustable to correspond to the different positions of the assembler plate.

15. In a typographical machine, the combination of a plurality of magazines each provided with escapements, an assembler plate pivotally mounted so as to be swung into operative relation to one or another of the magazines, a set of escapement rods movable with the assembler plate so as to be brought into engaging relation to the escapements of the selected magazine, a set of actuating rods connected to the escapement rods, and means for disconnecting and reconnecting the two sets of rods before and after each movement of the assembler plate, respectively.

16. In a typographical machine, the combination of a plurality of magazines each provided with escapements, an assembler plate pivotally mounted so as to be swung into operative relation to one or another of the magazines, a set of escapement rods movable with the assembler plate so as to be brought into engaging relation to the escapements of the selected magazine, a set of actuating rods connected to the escapement rods, devices for locking the assembler plate in its different positions, and means controlled by the said locking devices for effecting the connection and disconnection of the two sets of rods, for the purpose described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

CARL MUEHLEISEN.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.