

No. 883,180.

P. T. DODGE.

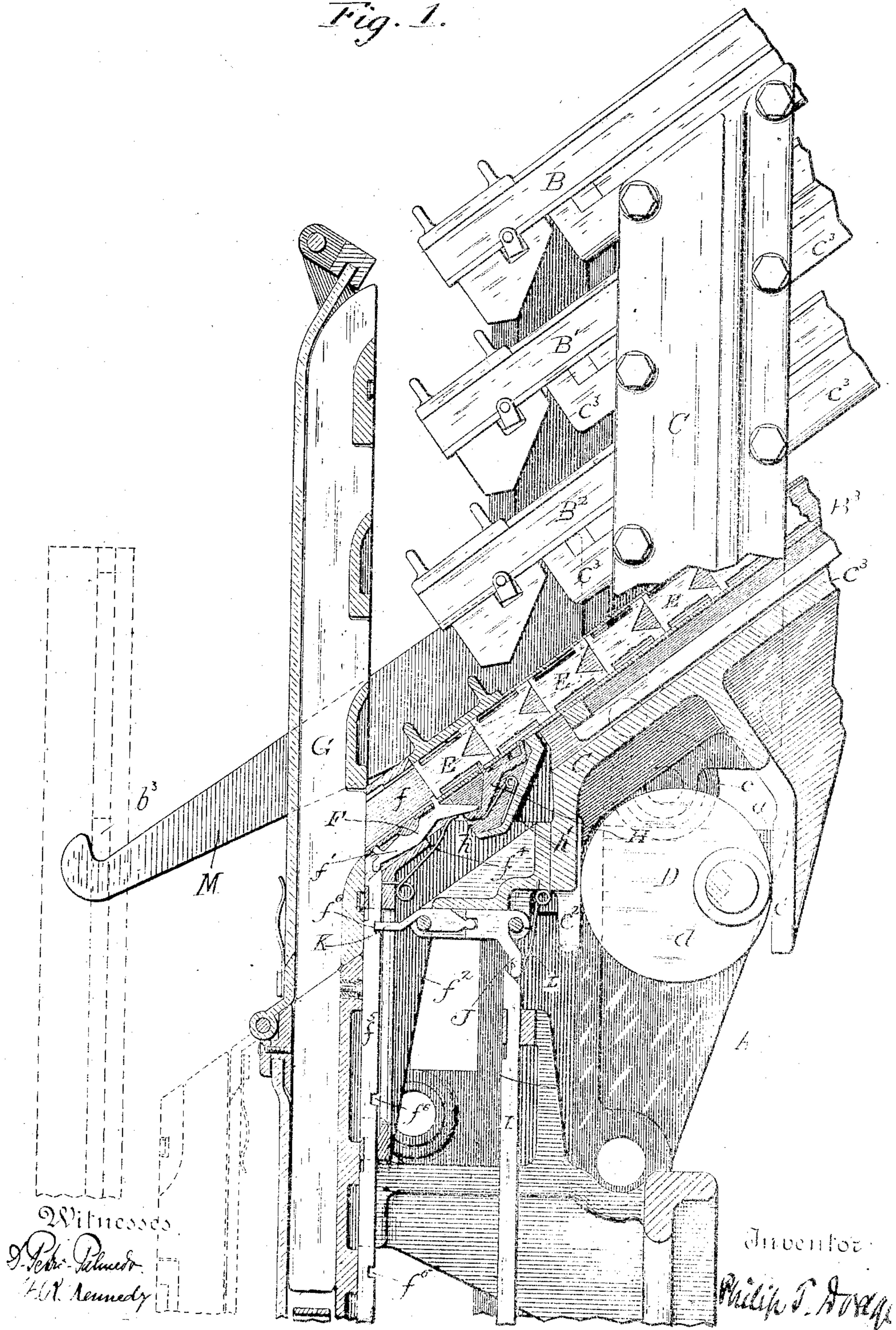
PATENTED MAR. 31, 1908.

LINOTYPE MACHINE.

APPLICATION FILED APR. 13, 1907. RENEWED NOV. 21, 1907.

2 SHEETS—SHEET 1.

Fig. 1.



No. 883,180.

P. T. DODGE.

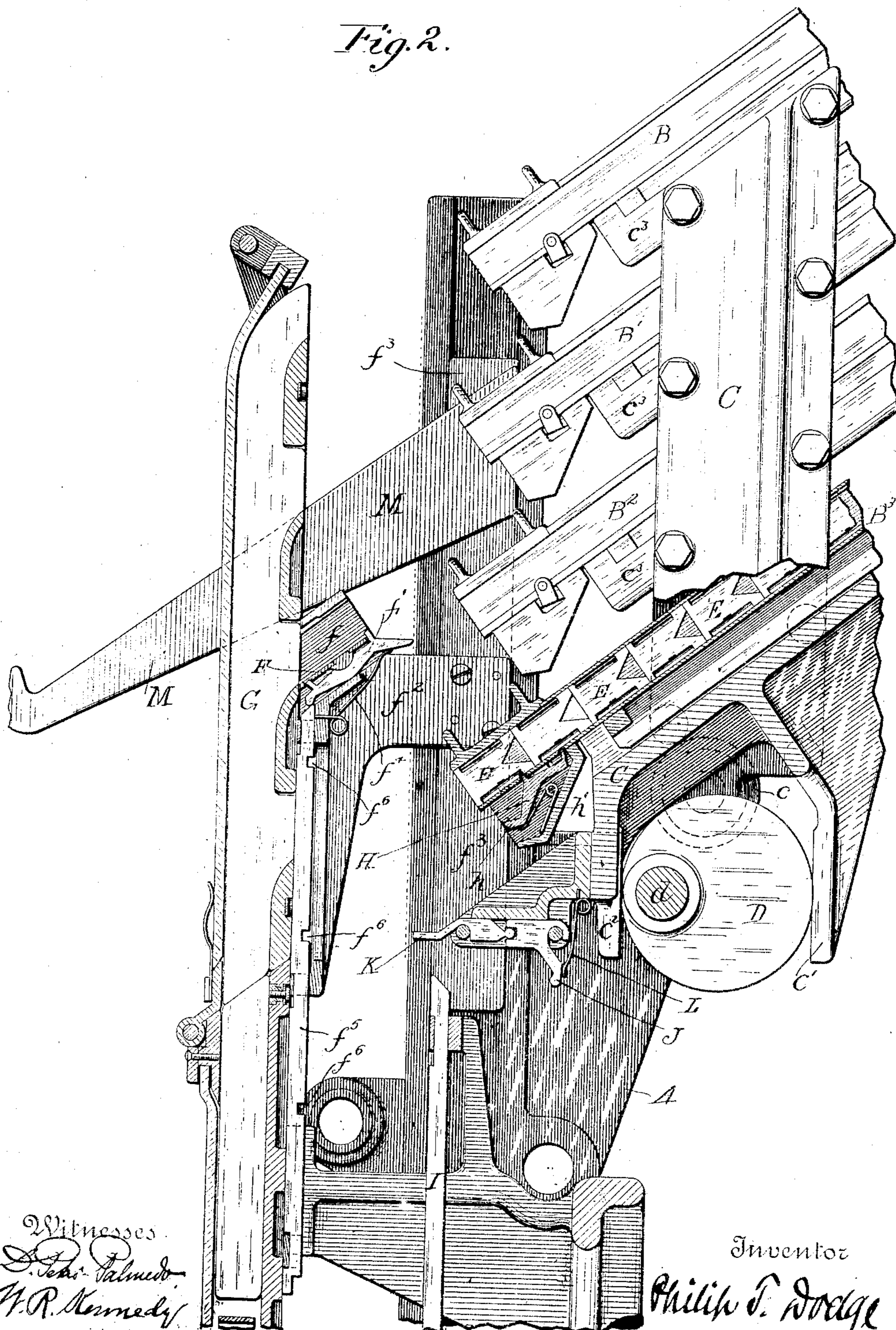
PATENTED MAR. 31, 1908.

LINOTYPE MACHINE.

APPLICATION FILED APR. 13, 1907. RENEWED NOV. 21, 1907.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses.
J. L. Talmed.
W. R. Kennedy

Inventor
Philip T. Dodge

UNITED STATES PATENT OFFICE.

PHILIP T. DODGE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO MERGENTHALER
LINO TYPE COMPANY, A CORPORATION OF NEW YORK.

LINO TYPE-MACHINE.

No. 883,180.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed April 13, 1907, Serial No. 368,056. Renewed November 21, 1907. Serial No. 403,192.

To all whom it may concern:

Be it known that I, PHILIP T. DODGE, a citizen of the United States, and a resident of Washington, in the District of Columbia, have invented a new and useful Improvement in Linotype - Machines, of which the following is a specification.

My invention relates to linotype machines wherein a series of magazines, each containing a font or set of matrices, is combined with means for selecting matrices, assembling them in line, transferring the composed lines to the casting mechanism, and thereafter returning the matrices, through a distributing mechanism, to the magazines. Such a machine, containing a single magazine, is represented for example in U. S. Letters Patent No. 436,532.

The aim of my invention is to provide improved means whereby the matrices may be delivered at will from one magazine or another, and this by the employment of a single series of escapements to control their release.

In carrying my invention into effect, I combine with a series of superposed magazines, standing normally at rest, an escapement mechanism including a single series of escapements and movable vertically so that it may be brought into operative relation to any one of the magazines in order to deliver the matrices therefrom into a channel-plate through which they are directed to the assembling mechanism.

The magazines are mounted in such manner that they may be moved endwise into and out of their operative relation to the escapements to permit the vertical adjustment of the latter.

The details may be widely varied without passing beyond the limits of my invention.

The magazines are arranged to be slid out of the machine separately at the front, in order that they may be replaced by others carrying matrices of different fonts. To facilitate this removal of the magazines, I provide a pair of arms whereby they may be supported and suspended during their introduction and removal, and in order that these arms may be brought into operative relation to the respective magazines, I arrange them to be adjusted vertically. To this end they may be attached to vertical slides mounted in the main-frame, or supported in any other manner which will admit of their being raised and lowered at will.

In the drawings,—Figure 1 is a vertical section of a machine having my invention incorporated therein, the lowermost of the four magazines being in operative position. Fig. 2 is a similar view showing the magazines retracted in order to permit the vertical adjustment of the escapement devices.

Referring to the drawings, A represents a rigid main-frame which may be of any form or construction adapted to sustain the other parts of the machine.

B, B', &c., represent a series of superposed inclined magazines removably seated and firmly supported in a secondary frame C, mounted to slide horizontally forward and backward in the main-frame A, in order to carry the series of magazines to and from their operative positions. This secondary frame may be of any suitable construction and may be supported in the main-frame by horizontal guides or supports of any suitable character. In the drawing, I have shown it provided with supporting rollers *c*, arranged to travel on horizontal tracks *a*.

While I prefer to arrange the magazine supporting frame to move in a horizontal direction because of the ease of movement, it will be understood that the only essential requirement is that the frame shall move in such direction as to withdraw the magazines endwise from the escapement, and therefore the expression "horizontal movement" as used in this specification, should be understood as including any kindred movement, which effects the proper retraction of the magazines.

The forward and backward movement of the frame C may be effected by hand or by any suitable mechanism. In the drawings I have shown for the purpose eccentrics D secured on a horizontal shaft *d* seated in the main-frame. The eccentrics are arranged to bear between vertical arms *c'* and *c''*, formed on or attached to the frame C. When the eccentrics are turned forward, the magazines will stand in the operative position shown in Fig. 1. When the position is reversed, they will carry the frame and magazines rearward to the position shown in Fig. 2.

The magazines may be of any suitable construction, but I prefer to construct them as in commercial linotype machines of the present day, and as shown in the drawing, each of two parallel plates having their inner opposing faces provided with longitudinal grooves

to receive and guide the edges of the matrices E. Each of the magazines rests upon and is sustained by an underlying support c^3 secured to or forming a part of the frame C. 5 The lower or forward ends of these supports c^3 extend upward and engage the front of a shoulder on the magazine to prevent the latter from sliding forward. By lifting the forward end of the magazine, it may be disengaged from the retaining shoulder, after 10 which it is free to slide forward and downward out of the machine to be replaced by another.

In order to sustain the outgoing magazine, 15 I provide on each side of the machine the forwardly and downwardly extending arm M having an upturned forward end adapted to engage projections b^3 formed on the edges of the magazine in a manner well known in the 20 art.

The arms M are secured to the slide f^3 which carries the escapement bar, so that by moving the slides upward and downward, the arms may be placed in position to receive and support any one of the outgoing 25 magazines. The action of these arms in sustaining the magazines is essentially the same as that of the arms b^4 shown in the U. S. Patent to Homans, No. 830,436. They differ, 30 however, from the arms of Homans in that they are adjusted vertically so as to cooperate with different magazines at different levels, whereas the Homans arms may be operated at one level only.

35 F represents the escapement mechanism for controlling the delivery of the matrices from the magazines into the vertically channeled plate or raceway G, through which they descend to the ordinary composing or 40 assembling mechanism. The escapement mechanism consists of an inclined channeled throat or guide f adapted to be joined to and to form a continuation of either one of the magazines and of a series of escapement le- 45 vers f' , one for each channel of the magazines, seated in the under side of the throat. The escapement mechanism as a whole is firmly connected by arms f^2 to vertical slides f^3 seated in grooves or guides in the main- 50 frame. This arrangement permits the escapement mechanism, after the magazines are retracted as in Fig. 2, to be raised or lowered by hand, or by suitable mechanism, to any required level, so that when the maga- 55 zines are again advanced to the forward position shown in Fig. 1, the escapement devices will stand in operative relation to the particular magazine from which matrices are, for the time being, required.

60 Locking pins, latches, or any other suitable devices may be used to hold the slides in their different positions, many such devices being familiar to the skilled mechanic.

In Fig. 1 the escapements are shown in 65 operative relation to the lowermost maga-

zine. Each escapement lever rocks about a central bearing and is provided at opposite ends with upwardly projecting lips which act alternately to engage the matrices passing 70 thereover. A spring f^1 , secured to the escapement frame and acting on the upper end of the lever, holds the same normally in the position shown in Figs. 1 and 2, so that the upper lip stands in front of and holds back 75 the lowermost matrix in the magazine.

Below each escapement is mounted, in the escapement frame, a vertical reed or slide f^5 , actuated by the keyboard mechanism, as hereinafter described, and acting at its upper 80 end against the escapement lever for the purpose of reversing its position. When thus reversed, the upper lip of the escapement is withdrawn and the matrix permitted to pass into the throat f , where it is momentarily arrested by the lower lip. When the 85 escapement is released, it resumes its original position, permitting the first matrix to pass out of the throat f and into the raceway G, while at the same time the second matrix, advancing to the position vacated by the 90 first, is in its turn arrested by the upper end of the escapement.

When matrices are to be delivered from a particular magazine, it is only necessary to move the frame C and the contained maga- 95 zines rearward, after which the escapement mechanism is moved directly upward or downward to a point opposite a selected magazine and the magazines moved forward until the one selected joins the escapement 100 mechanism, in the manner shown in Fig. 1.

It will be observed that the matrices delivered from the magazine into the throat f , are immediately released from the latter, so that under normal conditions, the throat f is 105 empty and the matrices are confined wholly within the magazines proper. In consequence of this arrangement, the magazines may be shifted and the escapement raised or lowered at any instant, and without first re- 110 leasing or moving any of the matrices for the purpose.

Preparatory to the movement of the magazines, it is necessary to lock the contained matrices therein, and it is also necessary to 115 lock them fast in those magazines which are not connected to the escapement devices. I propose to use for this purpose, in connection with each magazine, a locking device of any suitable character to engage the matrices. 120 In the form shown, this locking mechanism consists of a rocking bar H extended across the under side of each magazine near its delivery end, the bar being provided at the upper and lower edges with the lips passing 125 through slots in the magazine to engage the ears of the contained matrices. The bar, which rocks about a horizontal axis, is provided with a forwardly extending arm h , and is acted upon by a spring h' which tends to 130

hold it normally in the position shown in Figs. 1 and 2, with its forward lip in engagement with the foremost matrix. The arm *h* extends beneath the rear ends of the escapement levers so that when the parts are in operative position, the action of an escapement lever will also rock the bar *H* and permit the matrices to pass forward to the escapements. When the magazines are moved rearward, the bars *H*, carried therewith, prevent the matrices from escaping.

In place of the rocking bars *H*, I may employ rock-shafts flattened on one side, as shown in Patent No. 776,779, or transverse locking bars to be inserted and removed by hand, as shown in Patent No. 792,521.

For the purpose of imparting motion to the escapement-actuating slides or reeds *f*⁵ when the escapements are at the various levels required, I propose to provide an adjustable connection of any sort between them and the keyboard mechanism. The arrangement shown in the drawing is as follows:—
I, I, represent a series of reeds or slides vertically guided in the main-frame and connected with a keyboard mechanism of any ordinary character, by which they will be raised individually as the finger-keys are manipulated. On the under side of the movable frame *C* I pivot, in line with the reeds *f*⁵ and I, angular levers *J* and also levers *K* jointed thereto. Springs *L* hold these levers normally in the position shown. Each of the reeds *f*⁵ is provided with four notches *f*⁶ at distances apart equal to that between the magazines, and so located that when the escapement mechanism is set in operative position at either level and the magazine frame then moved forward, the levers *K* will enter the notches in the reeds *f*⁵, and the levers *J* at the same time assume an operative relation to the reeds *I*, as shown in Fig. 1, so that whenever the reed *I* is lifted through the instrumentality of the finger-key, it will communicate motion through the intermediate levers *J* and *K* to the reeds *f*⁵, raising the latter and reversing the position of the escapements so that the foremost matrix will pass into the throat *f*. When the reeds *I* are released, the position of the escapement will be reversed and the matrix will be discharged.

While I have described above, and have illustrated in the drawings, details of construction which represent my invention in a commercial form, it is to be understood that the details may be widely modified within the limits of mechanical skill without passing beyond the scope of the invention. For example, the escapement mechanism may be modified, the supports for the magazines may be changed provided only they permit the magazines collectively or individually to be moved to and from the escapements, and the escapement mechanism may be modified in any manner which will admit of its being

moved from one operative position to another so as to cooperate with one magazine or another, as demanded.

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

1. In combination, superposed magazines, a raceway to receive the matrices from the magazines, an intermediate escapement mechanism movable vertically that it may be brought into operative relation to any magazine, and means for moving the magazines horizontally to and from their operative positions to permit the adjustment of the escapement mechanism.

2. In a linotype machine, the combination of a main-frame, an escapement mechanism movable vertically at will, an upright raceway to receive the matrices, superposed inclined magazines, and a magazine supporting frame mounted to move horizontally in the main-frame.

3. In a linotype machine, the combination of the following elements: a main-frame, a secondary frame movable horizontally therein, plural magazines sustained in the secondary frame, an escapement mechanism movable vertically at will in the main-frame to cooperate with one magazine or another as required, a stationary raceway in position to receive the matrices from the escapement mechanism, escapement actuating reeds sustained by and movable vertically with the escapement frame, actuating slides mounted in the main-frame, and intermediate devices for communicating motion from the slides to the reeds in each position of the latter.

4. In a linotype machine, and in combination with an escapement mechanism movable only in a vertical direction, plural magazines movably mounted in the machine so that any magazine may be brought into operative relation to the escapement mechanism when the latter is adjusted to the corresponding height.

5. In a linotype machine, the combination of superposed magazines, a movable support for said magazines, a vertically movable escapement mechanism adapted to cooperate with any one of the magazines, and means for moving the magazine support to carry the magazines endwise to and from the escapement mechanism.

6. In a linotype machine, the combination of a main-frame, a vertically movable frame *F* containing the throats *f*, escapements *f*⁵, and reeds *f*⁵, the series of magazines *B*, *B'*, etc., the horizontally sliding frame *C* sustaining said magazines, escapement actuating slides *I*, and means carried by the frame *C* for communicating motion from the slides *I* to the reeds *f*⁵.

7. In a linotype machine, the combination of superposed magazines, means for sustaining said magazines and moving them rearward from their operative positions, an es-

capement mechanism vertically movable that it may be brought into operative relation to any magazine, and means operable by the escapements to prevent the accidental
5 discharge of the matrices from the magazines which are not in action.

8. In a linotype machine, plural magazines movable to and from the escapement mechanism, and an escapement mechanism movable independently of the magazines.
10

9. In a linotype machine, an escapement mechanism movable bodily and independently of the magazines, in combination with plural magazines movable to and from the
5 escapement mechanism, and automatically acting means to prevent the escape of matrices from the magazines when the latter are separated from the escapement mechanism.

10. In a linotype machine having superposed magazines, supporting means for the outgoing magazines vertically adjustable so that it may be placed in operative relation to one magazine or another, as demanded.

11. In a linotype machine having removable magazines mounted one above another, 25 arms M to sustain the outgoing magazines one at a time, said arms mounted for vertical adjustment in relation to the magazines, whereby they may be placed in position to receive one magazine or another, as de- 30 manded.

12. In a linotype machine, inclined magazines seated one above another and removable independently in a forward and downward direction, in combination with sustain- 35 ing arms M and vertical slides supporting said arms, whereby vertical adjustment of the arms is permitted.

In testimony whereof I hereunto set my hand this twelfth day of April, 1907, in the 40 presence of two attesting witnesses.

PHILIP T. DODGE.

Witnesses:

F. M. EGGLESTON,
WALTER MOBLARD.