(No Model.) 2 Sheets—Sheet 1.

L. DOW & D. POWERS.

TYPE DISTRIBUTING MACHINE.

No. 467,087. Patented Jan. 12, 1892.

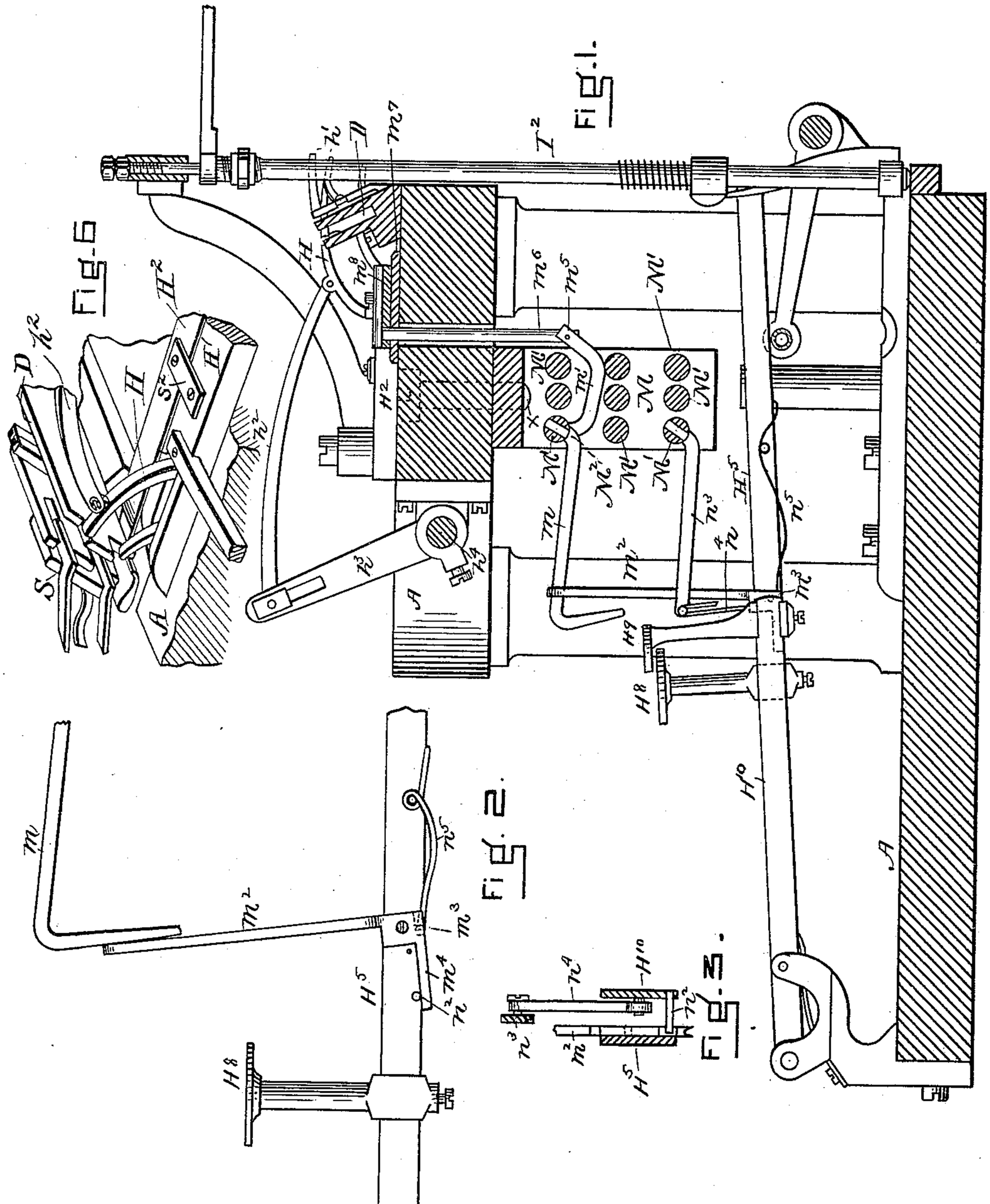

Fig. 1.

Fig. 6.

Fig. 2.

Fig. 3.

WITNESSES

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W. W. Deane.

INVENTORS.

Lorenzo Dow
Daniel Powers

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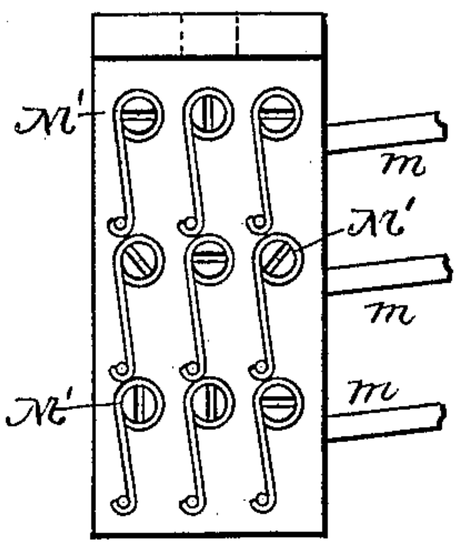

Fig. 5

Fig. 4.

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UNITED STATES PATENT OFFICE.

LORENZO DOW AND DANIEL POWERS, OF BOSTON, MASSACHUSETTS.

TYPE-DISTRIBUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 467,087, dated January 12, 1892.

Application filed March 27, 1889. Renewed December 5, 1891. Serial No. 414,192. (No model.)

To all whom it may concern:

Be it known that we, LORENZO DOW and DANIEL POWERS, citizens of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Type-Distributing Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our present invention relates particularly to improvement upon the type-distributing machine invented by Lorenzo Dow, one of the present inventors, and embodied in his patent, No. 394,255, of December 11, 1888, and embraces modifications of the method of operating the gate shown in our application for patent, Serial No. 304,943, filed the same day with this application, on which Letters Patent No. 430,007 were issued June 10, 1890.

Figure 1 is a vertical cross-section showing mechanism for operating the gate. Figs. 2 and 3 are details illustrating the same. Fig. 4 is a perspective view illustrating the means for operating the gate. Fig. 5 is a detail of the same. Fig. 6 is a detail of the hammer and gate.

In the method shown in our application, Serial No. 304,943, and the aforesaid patent issued thereon, the movements of the hammer and gate were made to nearly conform to sixty sizes of type-bodies. In the one we now show the thickness of the bodies has been arranged in nine classes, so that nine different-sized openings and nine different adjustments of the hammer suffice for ejecting the entire number of type to be distributed. To illustrate, the lower-case letters f i j are in thickness in minion type between .032 and .038 and t s v between .041 and .047. If we call the first-named class No. 1 and the second class No. 2, it will be seen that if one adjustment of the hammer and gate would suffice to expel all the letters of its class—No. 1, for instance—it would simplify the mechanism necessary to effect this. All the other letters, figures, and marks can be made to fall within one or another of these nine classes. The lettering of the drawings in this case corresponds with that of the drawings in my other case above referred to. The frame is designated by letter A, the type-channel by letter D.

In Fig. 1 is shown a piece M, attached to the frame A by the screw *x* above the levers of the key-board and between the keys H^8 and the upright shaft I^2. This supports one end of nine small shafts, and the other ends of these shafts are supported by another similar piece attached in the same manner, as M, to the frame A, so that the shafts M′ extend across all the levers of the key-board and at right angles to them. At M^2 is seen the arm *m*, attached to to the shaft M′. Suppose this shaft is designed to move the gate and hammer for the letters we have called "Class 1," whose thickness is between .032 and .038 of an inch. For each lever of the keyboard operating to expel a letter of this class, as t, is an arm *m*, as seen in Figs. 1 and 2. The piece m^2 is pivoted to the key-lever H^5 at m^3. It has an arm projection m^4, Fig. 2. The upper end of m^2 is bent like a hook to pass over the arm *m* near its free extremity. The depression of the key-lever H^5 would of course carry down the piece m^2 and the free end of the arm *m*, partially rotating shaft M′. A coiled spring on shaft M′ (shown at Fig. 5) returns the shaft M′ to the position shown in Fig. 1, when the key is released by the finger. From other side of shaft M′ projects the arm *m*′, which at its outer end m^5 is pivoted to the upright pin m^6. It is obvious that on the depression of the key-lever effecting the partial rotation of shaft M′, as explained, the arm *m*′ moves up and carries up the pin m^6, wedge-shaped at its upper end and as seen in Fig. 1. This pin passes through an opening in the frame A to the upper surface of an opening in a small plate m^7, attached to the frame A, which serves as a guide to said pin. The upper extremity of this pin m^6 stands just below the surface of the plate m^7. Upon plate m^7 lies another m^8, held at one end in position by the pin *v* working in a slot and the other pivoted to lever-piece H^2, which carries the gate. This plate has openings or holes to correspond with those in plate m^7, into which the pin m^6 enters, when the depression of the key-lever H^5 causes it to rise. The holes in the upper plate m^8 are so adjusted with reference to the wedge-shaped end of the pin m^6 that, enter-

ing the hole in the upper plate, it draws it back the distance required to open the gate. Each of the nine shafts M′ actuates a pin, and the wedge end *f* of each pin actuates the plate m^8 to open the gate sufficiently to allow the letters of the class to which it is adjusted to pass out. Each shaft M′ is connected by the arm *m* and the piece m^2 to all key-levers H^5, that operate the letters of its class. It will be observed that lever-piece H′ carries the automatically-adjustable hammer H and the lever-piece H^2 the gate S, and that the movement of these two pieces is over the same distance. If, then, these two pieces are connected together, so that the movement of one would cause a corresponding movement of the other, the gate and hammer would automatically assume the nine positions required to eject the nine classes of type. Since the supplemental key H^9, Fig. 1, operates to open the gate for capital letters whose bodies are thicker than the corresponding lower-case letter which key H^8 operates to eject, these two keys must operate in nearly all cases shafts M belonging to different classes. The depression of supplemental key H^9 carries down with it in all cases the key H^8, operating the lever H^5, and, unless the piece m^2 were disengaged from the arm *m* when the supplemental keys were depressed, two levers would be actuated and two pins attempt to operate upon plate m^8 at the same time. This would defeat the attempt of the operator to eject the end type. It will be seen in Fig. 1 that the short lever H^{10} is not connected to the same shaft M′ as is lever H^5 and therefore actuates a different pin m^6. In Fig. 2 it will be seen that the piece m^2 is an arm of a bell-crank lever, pivoted at m^3, the other arm of which m^4 is actuated by a pin n^2 in the short lever H^{10}, Figs. 1 and 4. In Fig. 1 it appears that the supplemental key H^9 stands just above H^8, while key H^9 is moving down this short distance, carrying lever H^{10}. The pin n^2 operates upon the short arm m^4, Fig. 2, of the bell-crank lever m^2 to depress it and throw the long arm m^2 forward and off from the end of *m*, as seen in Fig. 2. This release of arm *m* allows the supplemental key H^9 to actuate its own arm n^3 through the link n^4, pivoted to the short lever H^{10}, as described.

n^5 is a small spring which returns the arm m^2 to the position seen in Fig. 4 when the keys H^8 and H^9 have returned to the position shown.

Having now described our invention, what we claim is—

1. The combination of the automatically-adjustable hammer H and pivoted pieces H′ and H^2, gate S, the sliding plate m^8, plate m^7, with the pin m^6, all operating together substantially as described, and for the purposes set forth.

2. The combination of the automatically-adjustable hammer H, pivoted pieces H′ H^2, the sliding plate m^8, plate m^7, with the pin m^6, the arm m', mounted on shaft M′, arm *m*, piece m^2, and key-lever H^5, substantially as described, and for the purposes set forth.

3. The combination of key-lever H^{10}, pin n^2, with the bell-crank lever m^4 and m^2, the arms *m* and m', mounted on shaft M′, and pin m^6, substantially as described, and for the purposes set forth.

4. The combination of the automatically-adjustable hammer H, pieces H′ H^2, and gate S, the sliding plate m^8 and plate m^7, with the pin m^6, the arm *m*, mounted on shaft M′, arm n^3, the link n^4, and key-lever H^{10}, substantially as described, and for the purposes set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

LORENZO DOW.
DANIEL POWERS.

Witnesses:
HENRY BAYLESS,
STEPHEN CUSHING.