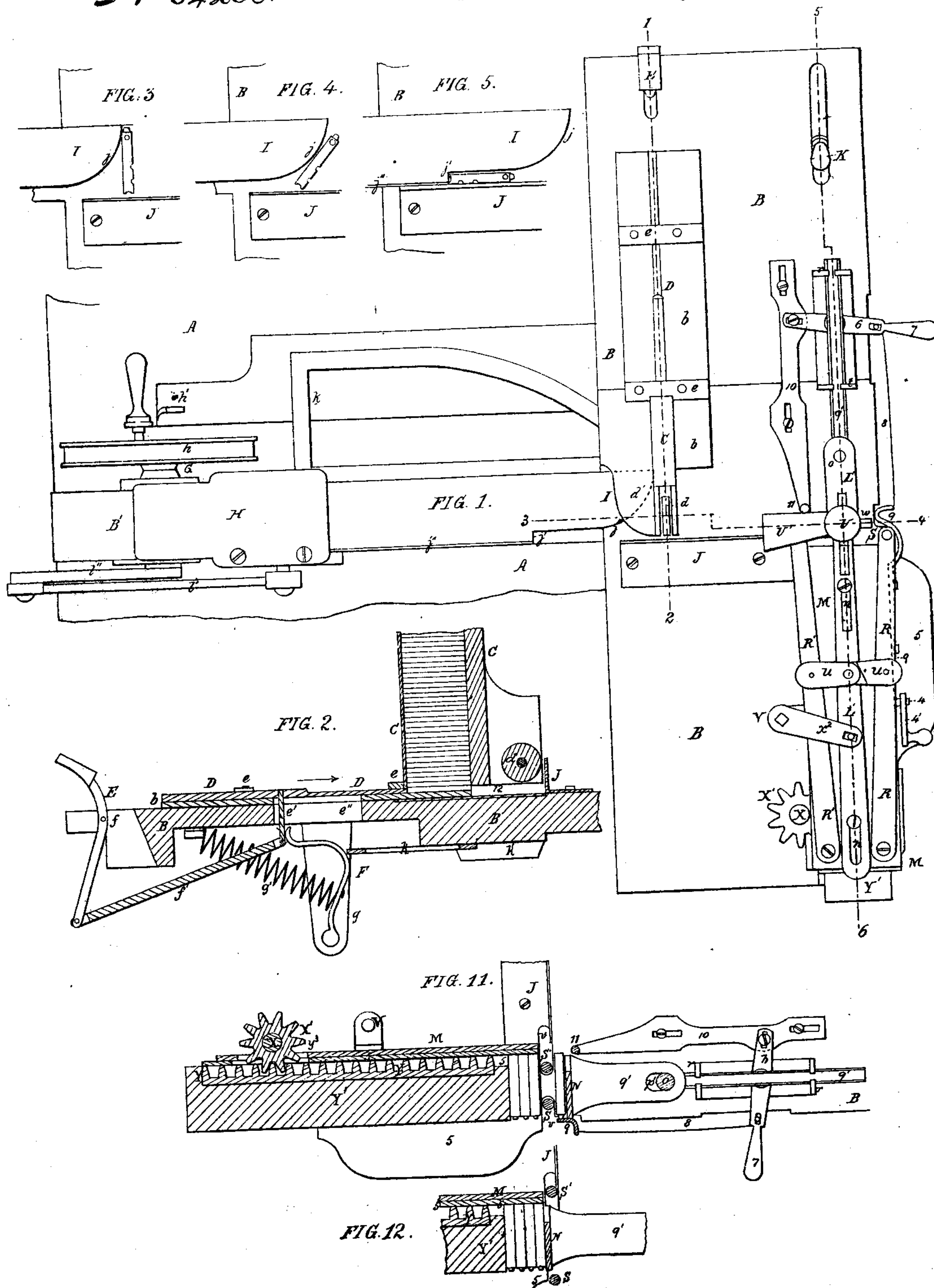


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Type Setting Mach.

N^o 64200.

Patented Apr. 30. 1867.



Witnesses
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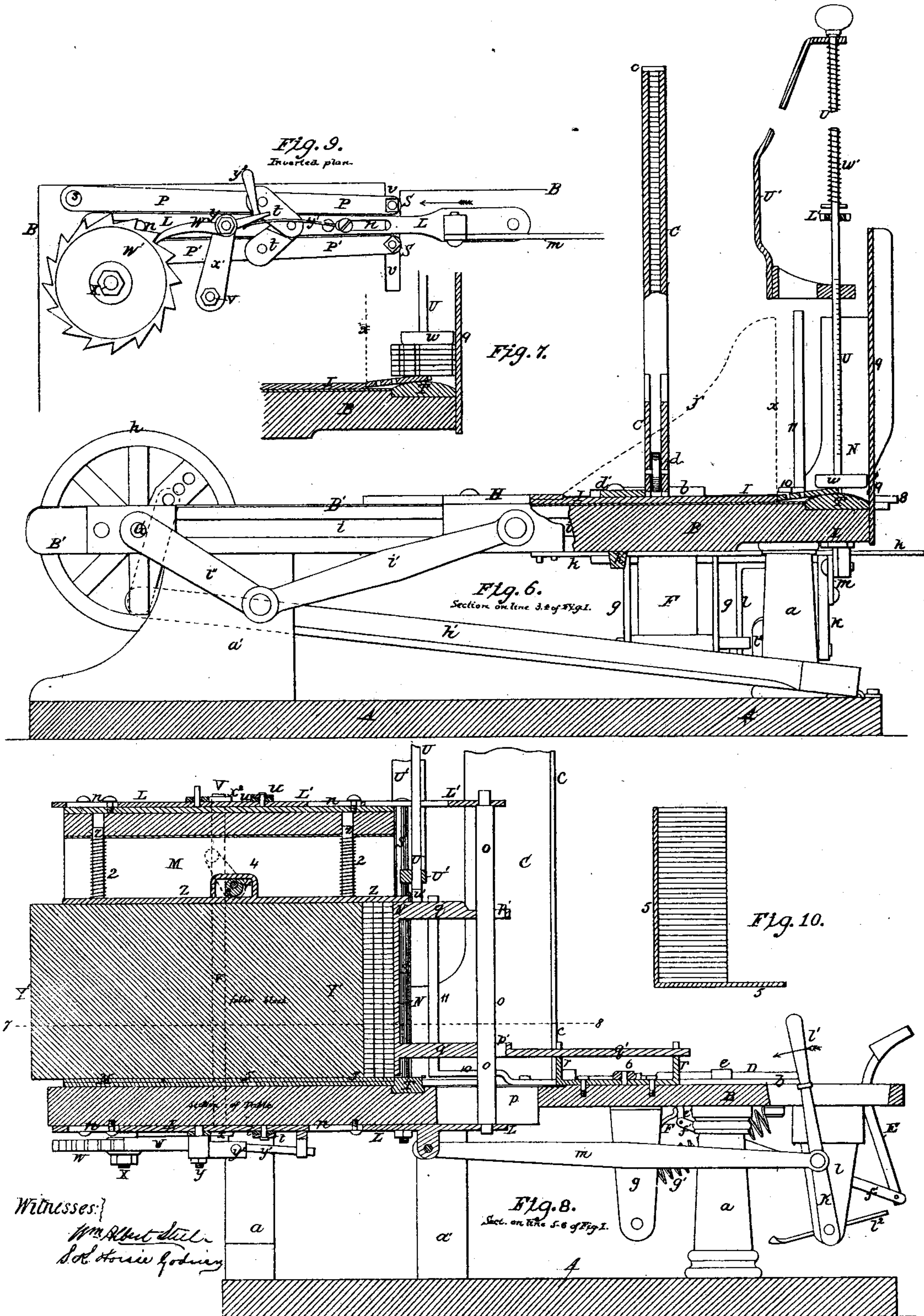
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Type Setting Machine.

No. 64,200.

Patented Apr. 30, 1867.



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United States Patent Office.

AUGUSTUS COREY AND JOHN M. HARPER, OF PHILADELPHIA,
PENNSYLVANIA.

Letters Patent No. 64,200, dated April 30, 1867.

TYPE-SETTING MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, AUGUSTUS COREY and JOHN M. HARPER, both of Philadelphia, Pennsylvania, have invented an improved Type-Setting Machine; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

Our invention consists of certain mechanism, fully described hereafter, for setting type in rows, and collecting these rows together, the mechanism being such that on depressing one of a number of keys, designating the particular character of the type to be operated on, one of these types is pushed horizontally from a reservoir containing a number of similar types on to a table or plate to which it is lightly pressed during its movement. As soon as this type is free from the reservoir it is turned against an arresting and guiding plate, along which it is pushed beneath the lowest of a vertical row of types previously operated on; thus type after type is pushed from the various reservoirs by the different keys, turned on the table or plate, and then pushed beneath the vertical row of previously set types until that row has reached a height equal to the width of a page of printed matter, when the completed row is pushed against another, previously completed. The vertical rows of type thus collected are from time to time removed for examination or such corrections or alterations as may be required, preparatory to being arranged in forms of the desired size, the width of the form being equal to the height of the vertical rows.

In order to enable others skilled in the art to make and use our invention, we will now proceed to describe its construction and operation. On reference to the accompanying drawings which forms a part of this specification—

Figure 1, drawing No. 1, is a plan view of our improved type-setting machine.

Figure 2, a transverse sectional view on the line 1-2, fig. 1, showing the mode of pushing the type from the reservoir.

Figures 3, 4, and 5, diagrams illustrating the manner in which the type are turned previous to being pushed home to their places.

Figure 6, drawing No. 2, a sectional view on the line 3-4, fig. 1, drawing No. 1.

Figure 7, a detached view of part of the same, drawn in a different position.

Figure 8, a section on the line 5-6, fig. 1.

Figure 9, an inverted plan view of part of the machine.

Figure 10, a sectional view of the type-receiver or stick.

Figure 11, drawing No. 1, a sectional plan view on the line 7-8, fig. 8, drawing No. 2.

Figure 12, a part of the same drawn in a different position.

Similar letters refer to similar parts throughout the several views.

A is the base of the machine, above which, and supported by uprights *a a*, is a table, B; and a projecting portion, B', of this table as seen in figs. 1 and 6, is supported by an upright, *a'*. Secured to the table B is a plate, *b*, above which projects to any desired height a type reservoir, C, the construction of which will be best observed on reference to figs. 2 and 6, the interior of the reservoir, as viewed from the top, being of such dimensions as to receive one type only. The reservoir C is open at the bottom, the top and front edge being covered by a detachable plate, *c*. A small wheel, *d*, is hung very loosely between two projecting sides of the reservoir, and a plate, *d'*, the object of which will be explained hereafter, is bolted to the plate *b*, close to one side of the reservoir C, fig. 6. Upon the plate *b*, and guided by projections *e e* on the same, is a sliding rod, D, a projecting pin, *e'*, on which passes through a slot, *e''*, cut in the table and plate *b*. A key-lever, E, is hung to the table at a point, *f*, and is connected to the sliding rod D by a rod, *f'*, (see fig. 2.) A plate, F, hung to brackets *g* on the table, and operated by a spiral spring, *g'*, bears against the lower end of the pin *e'*, and has a constant tendency to retain the sliding rod D in the position shown in fig. 2. Passing through the end of the portion B' of the table, and turning in suitable bearings secured to the opposite sides of the same, is a driving-shaft, G. On the table B', and guided by grooves *i* cut in each edge of the same, is a sliding block, H, which is connected by a rod, *i'*, to the pin of the crank *i''* upon the driving-shaft G. Secured to or forming part of this block H is a pusher-bar, I, the end *j* of which is rounded as shown in the diagrams figs. 3, 4, and 5, and a portion of the bar

is cut away so as to present an abrupt shoulder, j^1 . At right angles to the bar, a thin plate, j^2 , projects vertically, this plate having a straight edge, x , shown in dotted lines fig. 6, for an object explained hereafter. A plate, k , is secured to the under side of the block H, and is supported by a guide, k' , one edge of this plate, when the parts are in the positions shown in fig. 6, bearing against the spring-plate F. A plate, J, is bent on one edge at right angles, and secured to the table B, parallel and adjacent to the course of the pusher-bar I, (see fig. 1.) On the under side of the table B is a hanger, l , to which is hung a lever, K, the latter being operated either by its handle l' , projecting through a slot in the table, or by a suitable treadle, l^2 , (see fig. 8.) A rod, m , connects the lever K with a horizontal sliding bar, L, guided on the under side of the table by screws, which pass through slots n in the said sliding bar. A box, M, is secured to the table immediately over the bar L, and above this box is a similar sliding bar, L' , which is connected to the bar L by a rod, o , fig. 10, which rod passes through a slot, p , in the table. The rod o also passes through slots p' formed in projections q and q' of a vertical plate, N, which is maintained in its position by its projection q' , the latter being maintained in its proper lateral and vertical position by guides r secured to the table B. Two long arms P and P', fig. 9, one on each side of the bar L, are pivoted to the table at points s , and are connected to the bar L by links t . Two similar arms R and R' are pivoted to the top of the box M, and are connected to the bar L' by links u , similar to the links t of the arms P and P'. The arms P and R are connected together by a vertical rod, S, and the arms P' and R' by a like rod, S'. These rods when the parts are in the positions shown in figs. 6 and 11, are directly opposite the front edge of the box M, and pass through slots v in the table. Embedded in the table, and in the space between the rods S and the face of the plate N, is a metal block, T, the surface of which is rounded, as shown in fig. 6, for a purpose described. A vertical rod, U, fig. 6, having a foot, w , is situated immediately over the block T, and is arranged to slide in a bracket, U' , secured to the box M. A spiral spring, w' , encircling the rod U, tends to depress the latter. A vertical spindle, V, shown in dotted lines fig. 8, passes through the table B, at one side of but close to the box M, and is provided with a lower arm, x^1 , and an upper arm, x^2 , figs. 1 and 9, the latter being connected to the sliding rod L, and the former to the sliding rod L' , so that the movements of the two rods must be simultaneous. On the pin y , which connects the arm x^1 to the bar L, is hung a pawl, W, fig. 9, acted on by a spring, y^1 , and provided with a handle, y^2 , the end of this pawl being adapted to the teeth of a ratchet-wheel, W' , on a spindle, X, which passes through the table B, and which has a pinion, X' , fig. 11, the teeth of which gear into those of a rack, Y, on the side of a block, Y'. A horizontal plate, Z, fig. 8, having two vertical rods z , which fit into holes cut in the top of the box M, rests upon the block Y', and is caused to bear upon the same by spiral springs 2 2, which surround the rods z . The pressure upon the block Y' may be relieved when necessary, and the plate Z raised by means of an eccentric, 3, upon a spindle, 4, the handle 4' of which is shown in dotted lines. A portion of the bottom and side of the box M is cut away for the reception of a type-receiver, 5, against the vertical portion of which the block Y' is arranged to slide. The form of this type receiver will be best observed on reference to fig. 10. To the guiding plates r on the table, is hung a horizontal lever, 6, having a handle, 7, and to one arm of this lever is connected a sliding rod, 8, to the end of which is secured a vertical bar, 9, having a flat surface opposite the edge of the plate N. To the other arm of the lever 6 is connected a slide, 10, which terminates in a vertical rod, 11, and the object of which will be rendered apparent hereafter.

Operation.

The plate c is first detached from the reservoir C, which is then filled with type, the latter being laid upon their flat sides one above another, as shown in fig. 10 of the drawing, the lowest one resting upon the plate b , fig. 2. The driving-shaft G is now caused to revolve, and the pusher-bar I traverses the table back and forth through an open space, 12, fig. 2, beneath the type reservoir C. By pressing upon the key-lever E, the sliding rod D is pushed in the direction of the arrow, fig. 2, and forces the lowest type from the reservoir into the space 12, the small loose wheel d bearing by its own weight only on the type, and keeping the latter down on the table, or on the plate secured to the table. The type having been pushed out to the extent determined by the plate J, fig. 2, the pressure upon the key-lever is removed, when, by the action of the spring-plate F, the sliding rod D will return to its original position, and the row of type in the reservoir will fall, another type being consequently in a proper position to be pushed out. The type forced into the space 12 is now in the position shown in the diagram, fig. 3. The rounded end of the reciprocating pusher-bar strikes the type near one end, and, as the bar advances, necessarily turns the type, first to the position shown in fig. 4, and finally to that shown in fig. 5. The shoulder j of the pusher-bar now bears against the end of the type, which is prevented from turning by the aforesaid plate J. The pusher-bar still continues to advance until the type reaches the edge of the rounded block T, over which it mounts, passing under the presser-foot w of the rod U, as shown in fig. 6, until it is in contact or nearly so with the vertical plate 9. The pusher-bar has now reached the limit of its outward movement, and at once commences to return. In this position the type is held firmly by the action of the spring w' , and is confined by the rods S and S', the plate 9 and the plate N, (see fig. 11.) The pusher-bar again advances, and another type is pushed into the space 12, and is carried on as before to the rounded block T, and passes under the first type, as shown in fig. 7. This operation is again repeated, the spring pressure-rod U rising until as many type are contained between the block T and foot w as are required to complete one line for a page of the required width, the filling of the line being indicated by graduated marks upon the rod U, shown in fig. 6. The line as it is being formed is maintained even by the edge x of the plate j^2 , which touches the ends of the type whenever the pusher-bar is moved forward, thus keeping them in contact, or very nearly in contact, with the plate 9. When it is desirable to examine the faces of the type contained in the line it is necessary to operate the lever 6, fig. 11, so as to draw back the plate 9 and move the rod 11 of the slide, which thus prevents the line of type from being disturbed. If a type should be accidentally pushed out of the reservoir on to the top of the pusher-bar I, when the parts are in the position shown in fig. 6, no accident can occur therefrom, for

the loose type would be drawn back by the pusher-bar to the plate d' , and retained there until the bar was drawn back to its full extent, when the type would fall into the space 12, and be pushed forward as before. When the parts are in the positions shown in fig. 6, the plate k being attached to the block H, has moved forward with it, and one edge of the plate bears against and locks the spring-plate F, and thus prevents the depressing of the key-lever E. When, however, the parts are in the positions shown in fig. 1, the plate k is drawn back, and nothing retards the motion of the sliding rod D, hence it will be impossible to push a type from beneath the reservoir before the proper time. Only one reservoir has been described in connection with this machine, but it should be understood that it is necessary to have as many reservoirs, with their appliances, as there are letters, figures, &c. The reservoirs are placed adjacent to each other, and their key-levers, each with its proper letter or figure marked upon it, are ranged in a manner somewhat similar to those of a piano. One spring-plate F only is required for the whole number of keys, and this long plate may be operated either by a single spring in the centre, or by two springs, one at each end. The line of type having been formed, as described, it may be moved into the type reservoir 5 in the box M. The parts being now in the positions shown in figs. 9 and 11, the lever K, fig. 8, is first moved in the direction of its arrow. Through the medium of the connecting-rod m , the sliding bar L is pushed in the direction of its arrow, fig. 9. By this movement of the bar L the arms P and P', connected to the said bar by the links t t , are turned upon their pivots s s , and as the bar L, upon the top of the box M, is connected to the bar L' by the rod o and spindle V, the arms P and P' and the arms R and R' will be moved simultaneously, and the distance between the rods S and S' will be increased until they assume the position shown in fig. 12. The rod o , fig. 11, will now have traversed the length of the slots p' of the projections q and q' of the plate N, and the forward motion of the rod being continued, the line of type will be pushed by the plate N from beneath the foot of the pressure-rod U, and between the rods S and S', into the type receiver 5 in the box M. At the same time the pawl W, pivoted to the bar L at y , will turn the ratchet-wheel W' to a limited extent, and the pinion X' upon the same spindle, thus drawing back the block Y' a distance equivalent to the width of the type. The working parts being now in the position shown in fig. 8, the movement of the lever K is reversed, and the arms L and L' are drawn back, the former carrying with it the spring-pawl W, the end of which takes its place between two other teeth of the ratchet-wheel W'. The rod o first moves along the slots p' , and then the plate N is drawn back from the line of type, and from between the rods S and S'. The returning motion of the bars L and L' is still continued, and the arms P and P', R and R', are drawn together, and the rods S and S' approach each other until they have reached their old position, while the rod U, which has rested upon the top of the plate N, falls by the action of the spring w' . The above operations are repeated, the block Y' receding as each line of type advances, until the desired number of lines of type are contained in the receiver 5, after which the plate Z is raised by means of the eccentric upon the spindle 4, thereby relieving the pressure upon the top of the lines of type and on the block Y'. Then the type receiver may be drawn out from the box M, its mass of type removed, and the receiver returned to its place. By means of its handle y^2 the pawl W is now disengaged from the teeth of the ratchet-wheel W', and the block Y' is then moved close to the rod S, after which the plate Z is lowered to the block Y', and the several parts of the machine are now in a proper position for commencing a repetition of the above-required movements by which line after line of type is deposited in the receiver. It will be seen, without further description, that a boy or girl of ordinary capacity, and capable of reading, can not only set type by the aid of the above-described machine, but can arrange the types in lines side by side, thereby forming masses of set type ready to be prepared for the printing form. It will be apparent to those familiar with the construction of machinery that many of the above-described parts may be altered or modified, and other parts substituted for those illustrated without departing from the main features of our invention.

We therefore claim as our invention, and desire to secure by Letters Patent—

1. The loose wheel d , or its equivalent, so arranged as to bear on the type as it is being pushed from beneath the reservoir.
2. The reciprocating bar I, so constructed at the end, and so combined with the arresting and guiding-plate J, as to turn the type in the manner described.
3. The combination of the said guiding-plate J, the pushing-bar and the shoulder j on the latter.
4. The combination, with the pushing-bar, of a plate, j^2 , with a straight-edge, x , so arranged and operating as to adjust the row of types in line.
5. The setting of a vertical row of type by introducing type after type to the said row, substantially in the manner described.
6. Beneath the vertical row of type, a block or plate, T, or its equivalent, so rounded or otherwise formed that on pushing a type to its place beneath the row, it will be the means of elevating the same, as described.
7. The plate 9, arranged as shown, so that the row of set type will not be disturbed by the introduction of a new type to the row.
8. The pressure-plate m , arranged in respect to the plate 9 for the steadying of the vertical row of type, substantially as described.
9. The combination, substantially as described, of the plates N and 9, and rods S and S', for confining and guiding the vertical row of type.
10. The bar 9, so connected to the machine, and to a suitable operating device, that it can be moved at pleasure away from the front edge of the row of type when the same has to be inspected.
11. The combination of the plate N, the rods S and S', and the mechanism herein described, or the equivalent to the same, whereby the rods are caused to recede from each other, and make way for the row of type prior to the same being pushed back by the said plate N.
12. The box or case M, in combination with the detachable type receiver 5.

13. The mechanism described, or its equivalent, for causing the block Y' to recede prior to a new row being pushed towards a previously formed one.

14. The combination of the pressure-plate Z with the type-receiving case and sliding block Y'.

15. The spring-plate F, fig. 2, arranged and operating for controlling the whole of the keys, substantially in the manner described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

AUGUSTUS COREY,
JOHN M. HARPER.

Witnesses:

H. HOWSON,
JOHN WHITE.