

(No Model.)

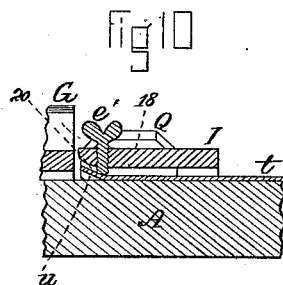
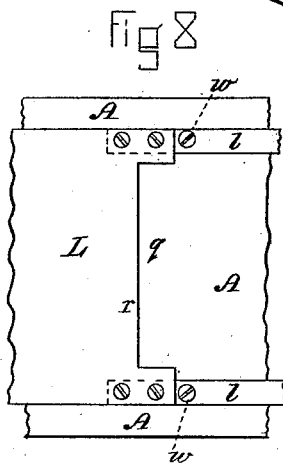
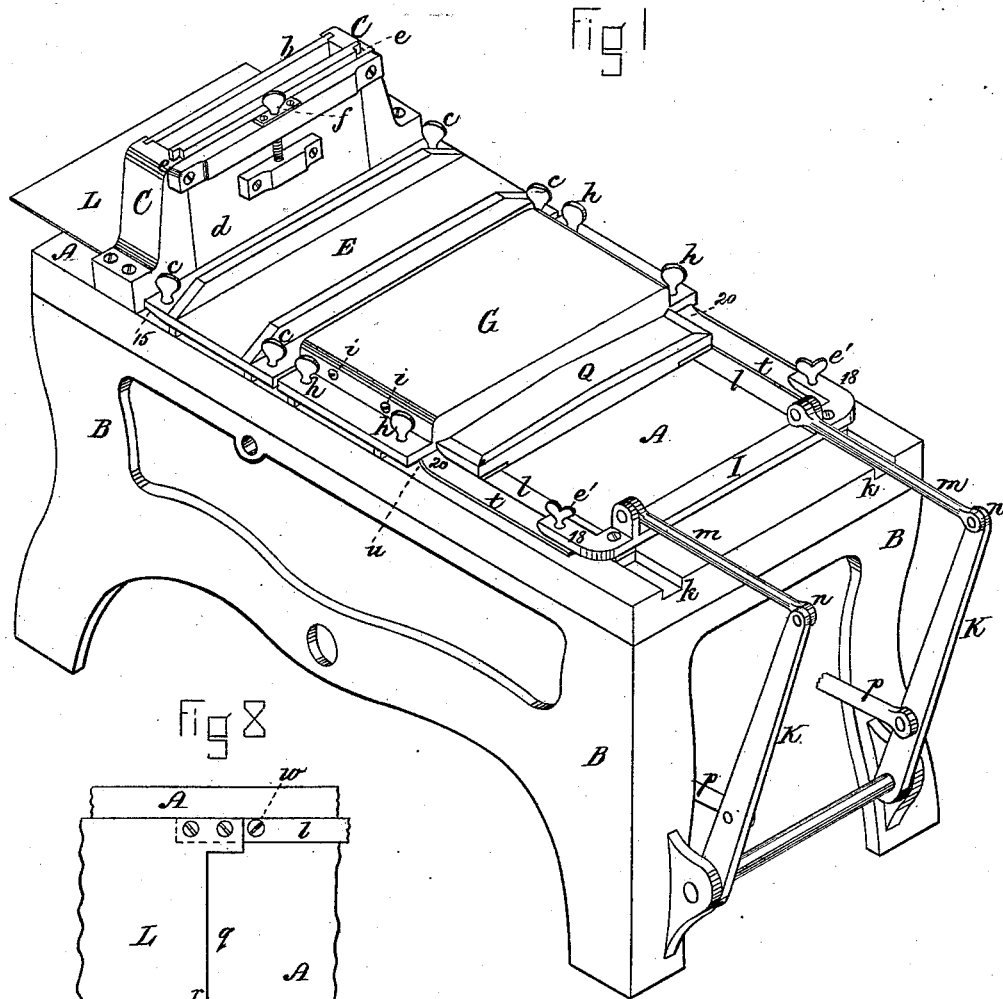
3 Sheets—Sheet 1.

W. H. WELSH & C. W. WOODWARD.

MACHINE FOR RUBBING AND DRESSING TYPE.

No. 266,932.

Patented Oct. 31, 1882.



WITNESSES  
W. J. Cambridge  
Edward E. Petter

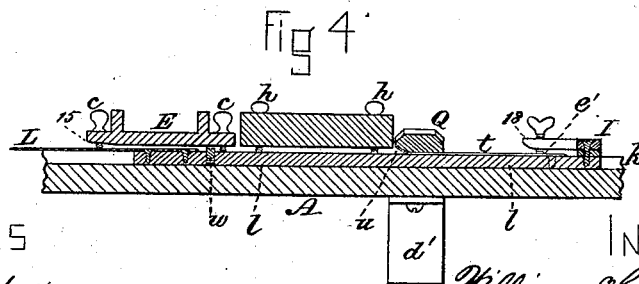
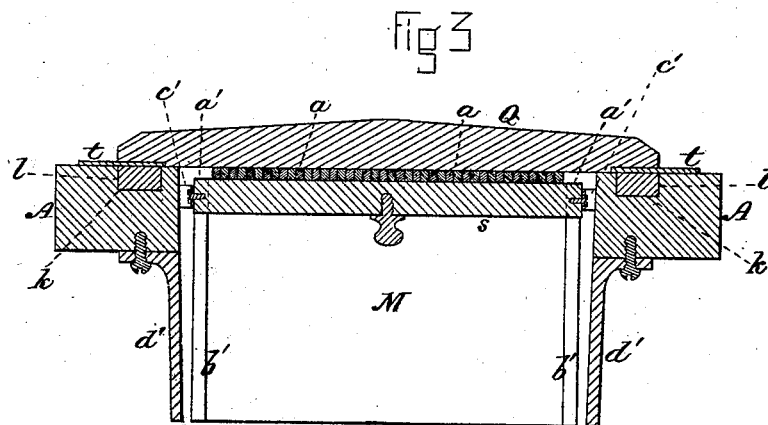
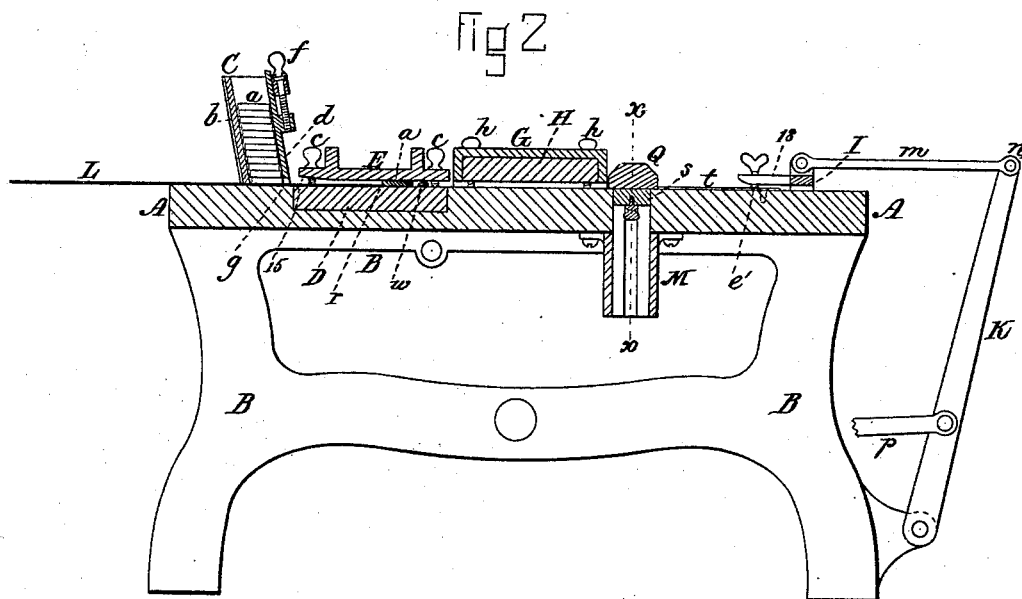
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(No Model.)

3 Sheets—Sheet 3.

W. H. WELSH & C. W. WOODWARD.

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Fig 5

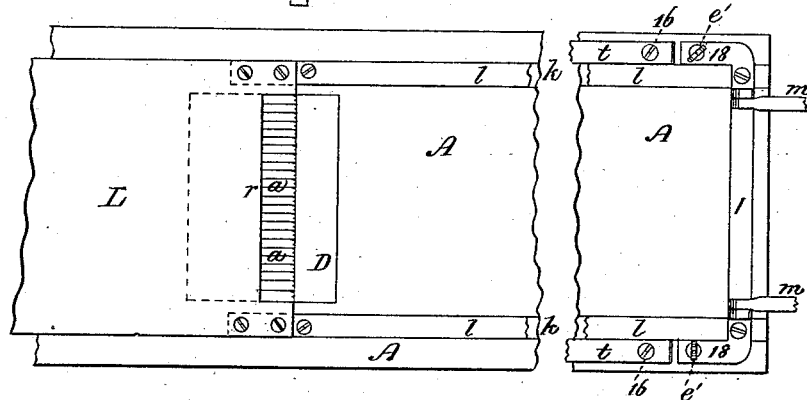


Fig 11

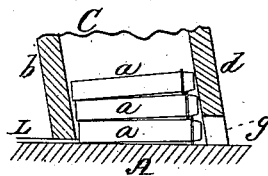


Fig 6

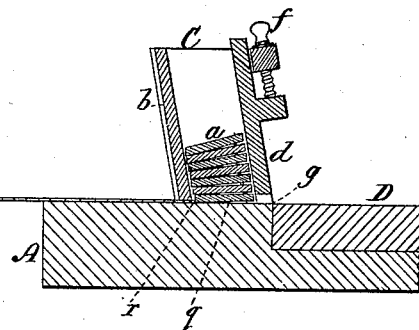


Fig 9

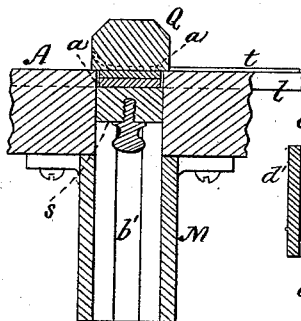
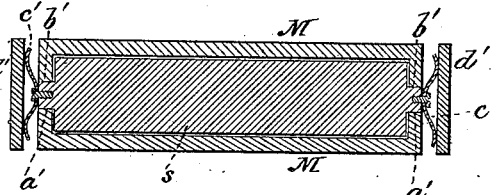


Fig 7



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# UNITED STATES PATENT OFFICE.

WILLIAM H. WELSH AND CHARLES W. WOODWARD, OF BOSTON, MASS.

## MACHINE FOR RUBBING AND DRESSING TYPE.

SPECIFICATION forming part of Letters Patent No. 266,932, dated October 31, 1882.

Application filed December 16, 1881. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM H. WELSH and CHARLES W. WOODWARD, citizens of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Machines for Rubbing and Dressing Type, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of our improved machine for rubbing and dressing type. Fig. 2 is a longitudinal vertical section through the center of the same. Fig. 3 is a transverse vertical section, enlarged, on the line *x x* of Fig. 2. Fig. 4 is a longitudinal vertical section taken through one of the slides. Fig. 5 is a plan of a portion of the machine, showing the type-carrying plate. Fig. 6 is a vertical section, enlarged, through the hopper and adjacent parts of the machine. Fig. 7 is a horizontal section through the type-receiver; Figs. 8, 9, 10, and 11, details.

Our invention relates to certain improvements in machines for rubbing and dressing type, whereby a large number arranged in a single line can be operated upon simultaneously for the purpose of removing the fins or feather-edges and smoothly finishing them, ready for removing the "jets" or "sprues" and packing, each type requiring to be separately handled but once, thereby effecting a material saving in time and labor, and also enabling the work to be performed with a rapidity and accuracy heretofore unattained, while the melting over and recasting of a considerable quantity of type, heretofore necessitated by the impossibility of properly rubbing it by hand on account of its form, is entirely avoided.

To this end our invention consists in a machine embodying a hopper or receiver, in which the type are placed in rows or lines, one over the other; a rubbing or abrading surface or surfaces, against which the type are firmly held in their passage through the machine; an automatic mechanism for drawing or carrying positively a single line or row of type at a time over or under such rubbing or abrading surface or surfaces, and a receptacle or box in which the type are deposited after being oper-

ated upon by the rubbing mechanism; and our invention also consists in certain details of construction, as hereinafter set forth and specifically claimed.

In the said drawings, A represents a flat bed or table, supported upon suitable framework, B. To the top of this table A, near one end, is secured a case or hopper, C, in which are placed the type *a* to be rubbed for the purpose of removing the fins or feather-edges which in casting are left on three sides of the type at the "letter end," one side, *b*, of the hopper being made to slide in grooves in order that it may be readily removed to facilitate the operation of filling it with type, which are placed in rows or lines one above the other, all bearing the same letter. This is accomplished by setting them up in a compositor's "stick" in lines or rows of a length corresponding to that of the hopper, which is preferably six inches, as this is the width of the boxes in which the finished type are usually packed, the type being transferred to the hopper, after which the side *b* is replaced.

Immediately in front of the hopper C is placed a flat piece of grindstone, D, or other equivalent gritty or abrading substance, or a flat piece of steel having a surface formed like a file, which is let into the table A so as to lie perfectly flush therewith, and directly over this stone D is secured, by means of adjusting-screws *c*, a stiff iron presser-plate, E, the distance of the under surface of which from the stone can be nicely regulated by means of the screws *c* to correspond to the thickness of the type, which are drawn between these two surfaces, in a manner to be presently explained, for the purpose of causing the fins on their under sides to be removed by the action thereon of the stone, upon which they are firmly held during their passage thereover by the presser-plate E.

A certain and reliable method of adjusting the plate E which we prefer to adopt is by inserting four type of the same size as those in the hopper, and placed in the same relative position, between the table A and plate E, at or near the corners of the plate, and then turning the screws *c* to hold the plate down thereon. The front side, *d*, of the hopper C is made to slide in grooves *e* in the same manner as the side *b*, and forms an adjustable gate, which can

be raised and lowered by means of a thumb-screw, *f*, in order to leave a throat or narrow aperture, *g*, at the bottom of the hopper, of a sufficient width or height to allow of the passage of a single line of type of any thickness or size to the stone D.

Over the table A, in front of the stone D and plate E, is secured by adjusting-screws *h* a metallic box or holder, G, within which is held, by screws *i* or otherwise, another flat piece of grindstone, H, or other equivalent abrading substance, which is adjusted and held at the required distance from the surface of the table A to allow of the passage of the type by means of the screws *h*, and type placed under its corners, as described for the plate E, this second stone, H, serving to remove the fins from the upper surfaces of the type after those on the under sides have been removed by the first stone, D, the surface of the table A acting as a guide and serving to keep the upper surfaces of the type firmly against the abrading-surface H thereover.

We will now describe the mechanism by means of which an entire line of type arranged side by side, and of a length corresponding to that of the interior of the hopper, is positively forced or carried simultaneously over the stone D and under the stone H, for the purpose of removing the fins and smoothly finishing them, as previously described.

Along the sides of the table A, near the edges, are formed grooves *k k*, in which are fitted slides *l l*, the upper surfaces of which are flush with the top of the table. At one end these slides *l* are connected together by a cross-bar, I, to the opposite ends of which are pivoted two pitmen or connecting-rods, *m m*, which are also pivoted at *n n* to the upper ends of two levers, K K, to which are pivoted connecting-rods *p p*, to be actuated by cams or other suitable driving mechanism adapted to impart the required reciprocating movement to the slides *l l*. This actuating mechanism is intended to be supported by the frame-work beneath the table A, but is not shown, as it forms no part of our present invention. The ends of the slides *l* opposite to those united by the cross-bar I are connected together by a thin steel carrier-plate, L, the length of which should exceed by at least one or two inches that of the stroke or traverse of the slides *l*. This carrier-plate L, which rests upon the table A, extends under the open bottom of the hopper and forms a surface for the lower line or row of type therein to rest upon, as seen in Fig. 2. A portion of the plate L is cut away in front, leaving a space, *q*, Fig. 8, of the same dimensions as those of the interior of the hopper, by which construction, when the plate L is forced to the end of its rearward traverse by the movement of the slides *l* the lower line of type in the hopper drops through the space *q*, which is brought directly thereunder onto the table A, the remaining rows of type settling down a distance equal to the thickness of the plate L. On the return-stroke of this plate L its front edge, *r*,

strikes against the "jet" ends of the lower row of type and carries positively the entire line simultaneously forward through the throat *g*, adjusted to allow of their passage, and thence over the stone D and under the stone H, as previously described, whereby the operation of "rubbing" is performed with great rapidity and accuracy. As soon as the lower line of type has passed through the gate the next line above settles onto the plate L, and on the return movement of the latter drops into the space *q*, ready to be carried forward in the same manner as the previous line.

The type must all be placed in the hopper with the letter end toward the front, ready to go forward in that position, in order that the edge *r* of the plate L may take a firm bearing on the jet ends, as required, and all danger of injuring the letter ends thus avoided, and by thus causing the type to be carried forward by a positive pressure applied to their ends their regular passage through the machine is insured, which cannot be effected by the employment of an endless belt, as in machines heretofore constructed for this purpose, where the friction of the belt upon the type is relied upon to carry them through the machine. The hopper is inclined at an angle of about ten degrees to the vertical, which causes each row of type to project slightly beyond the row immediately above, as seen in Figs. 6 and 11, thus preventing the fins of one row from resting on those of the next row, and consequently enabling the type to lie more compactly and squarely in the hopper than if the fin of one type rested on that of the type next below, while the liability of the fins of the lower row getting behind and catching against those of the row above, which might obstruct their forward movement, is entirely avoided. The edge 15 of the presser-plate E is slightly beveled to facilitate the entrance of the type beneath it, as is necessary on account of the fins, which render them thicker at their front ends when they first enter beneath the plate E. The first line of type, after being rubbed, is drawn out from under the stone H by the continued forward movement of the plate L, and deposited thereby upon the movable bottom *s* of a box or receptacle, M, which is of the same size as the hopper C and adapted to contain its entire contents, the upper portion of the receptacle M being formed by cutting a slot through the table A, and the lower portion consisting of a casting made in two halves secured to the under side of the table.

Over the bottom *s* is placed a transverse presser-bar, Q, secured at its opposite ends to a pair of narrow plates or springs, *t*, secured to the table A at 16 16, and lying parallel with the slides *l* and just outside thereof. The ends of each of the springs *t*, where they are attached to the bar Q, are curved or turned up, forming an incline, *u*, against which strikes an adjustable pin or projection, *w*, on the adjacent slide *l*, for the purpose of raising the bar Q sufficiently to allow the line of type to pass thereunder into

the receptacle M, the position of the pins *w* on the slides being such that the bar Q will be lifted as soon as the line of type begins to emerge from under the stone H.

5 The bottom *s* of the type-receiver M is provided at each end with a tongue, *a'*, Fig. 7, which slides in an open vertical space or slot, *b'*, formed in the end of the receiver, and to each of the tongues *a'* is secured a curved spring, *c'*, which  
10 bears against a vertical friction-plate, *d'*, secured to the under side of the table A. In this manner sufficient friction is created to enable the bottom *s* to support a weight considerably exceeding that of the entire quantity of type  
15 contained in the hopper C, which is eventually transferred to the receiver M. On the return-stroke of the carrier-plate L, after having deposited a line of type upon the bottom *s* of the box M, two adjustable screws or projections, *e'*,  
20 *e'* Figs. 2, 4, and 10, on the under side of the ends 18 of the cross-bar I, strike inclines 20 at the ends of the plates *t* and depress the bar Q, causing it to press down the line of type, and with them  
25 the bottom *s*, against the friction of the springs *c'* until the upper surfaces of the type are flush with the upper surface of the table A, or a little below it, which allows the next line of type brought forward by the carrier-plate to pass  
30 over and rest upon the first line. The presser-bar Q now descends, as before, and presses down the second line of type flush with or a little below the upper surface of the table, ready for the next line, the type being in this manner  
35 transferred one line at a time from the hopper C to the receiver M until the entire contents of the former rest upon the bottom *s*. The friction-plates *d'* converge slightly toward the bottom, by which means an additional compression of the springs *c'* is effected, as the  
40 weight of the type on the bottom *s* increases with its descent, and thus all possibility of the bottom falling out of the box M is avoided.

We prefer to first place a narrow strip of metal upon the movable bottom *s*, and after  
45 all the type have passed into the receiver M we place another similar strip on top of them, by which means the operation of handling the type after the bottom *s* has been removed is greatly facilitated.

50 In practice the hopper should be about six inches in length and the same in height, and about one inch, or a little more than the length of a type, in width from front to rear, which enables the type, after having been rubbed "set-  
55 ways," to be taken out of the receiver M in a single bunch, turned a quarter-way round, and again placed within the hopper C, after which the gate *d*, plate E, and holder G are adjusted and the type rubbed or dressed "bodyways." As  
60 soon as this latter operation is completed the type are again removed from the receiver M, when the sprues or jets are planed off and the type examined for imperfectly-cast letters, and then packed in the ordinary shipping-boxes  
65 without breaking the bunch as it comes from the receiver M, the individual types having been subjected in the entire operation to a sin-

gle handling only, which occurs when they are first set up in the "stick" or "galley," preparatory to being transferred to the hopper C for  
70 the first rubbing, and consequently by the employment of our improved machine an immense amount of extra labor is avoided and a material saving in the cost of the type thus effected, while at the same time the operation of rubbing  
75 and dressing is performed in such a perfect and reliable manner that a large number of type can be saved, which it has hitherto been necessary to discard and recast on account of the impossibility of properly rubbing and finishing them by hand. Furthermore, the great  
80 rapidity with which the work is performed by our improved machine, in consequence of an entire row or line of type being simultaneously carried forward and rubbed, renders it superior  
85 to all other machines hitherto used for this purpose, while it also possesses the additional advantages of simplicity, durability, and freedom from liability to get out of order.

It is evident that the machine can be constructed, if desired, with a single stone or abrading-surface, instead of two, as shown; but in such case much time would be lost, as the type would be required to be passed through the machine three times instead of twice.

90 In rubbing "kerned" and italic type a thin steel plate of a width less than the length of the type is introduced within the hopper between each row of type, placed with the "kern" or projection uppermost, one of these covering-plates being carried forward with each row immediately above the same, which is effected by increasing the thickness of the carrier-plate L so that it will bear both upon the jet ends of the type and the edge of the narrow covering-plate resting thereon; and by this means the  
105 kerns or projections which extend over the bodies of the type are prevented from coming into contact with the under surface of the plate E and that of the stone H, which latter is raised sufficiently, by means of its screws *h*, to prevent it from pressing upon and wearing away the steel covering-plates resting on the rows of type.

What we claim as our invention, and desire to secure by Letters Patent, is—

115 1. In a machine for rubbing and dressing type, the combination of a bed or table, one or more adjustable rubbing or abrading surfaces applied thereto, and means, substantially as described, for positively carrying or forcing simultaneously an entire line or row of type over or under the rubbing surface or surfaces, as and for the purpose set forth.

125 2. In a machine for rubbing and dressing type, the combination of a bed or table provided with one or more adjustable rubbing or abrading surfaces, a hopper for containing the type to be rubbed, means for positively carrying or forcing simultaneously an entire line or row of type over or under the rubbing surface or surfaces, a box or receiver having a movable bottom for containing the type after being rubbed, and a presser device for forcing each line of type deposited in the receiver down flush with the

upper surface of the table to allow the next line of type to pass thereover, substantially as described.

3. In a machine for rubbing and dressing  
5 type, the combination, with the table, hopper, and adjustable rubbing mechanism, of the carrier-plate L, adapted to bear upon the jet ends of the type and simultaneously force or carry through the machine positively an entire line  
10 or row of type, substantially as described.

4. In a machine for rubbing and dressing type, the combination, with the type-receiver M, with its sliding bottom s, and the type-carrying and rubbing mechanism, of the presser-  
15 bar Q, the slides l, with their projections w, the cross-bar I, with its projections e', and the plates or springs t, with their inclines 20, all constructed to operate substantially in the manner and for the purpose set forth.

20 5. In a machine for rubbing and dressing type, the combination, with the receiver M, of

the sliding bottom s, provided with tongues a', adapted to slide in the vertical slots b', and springs c', adapted to bear against the friction-plates d', substantially as and for the purpose 25 set forth.

6. In a machine for rubbing and dressing type, the combination of the receiver M, the sliding bottom s, with its tongues a' and sustaining-springs c', and the friction-plates d' converging toward their lower ends for the purpose 30 of increasing the pressure of the springs c' as the bottom descends and the weight of the type thereon increases, substantially as described.

Witness our hands this 14th day of Decem- 35  
ber, A. D. 1881.

WILLIAM H. WELSH.  
CHARLES W. WOODWARD.

In presence of—

P. E. TESCHEMACHER,  
W. J. CAMBRIDGE.