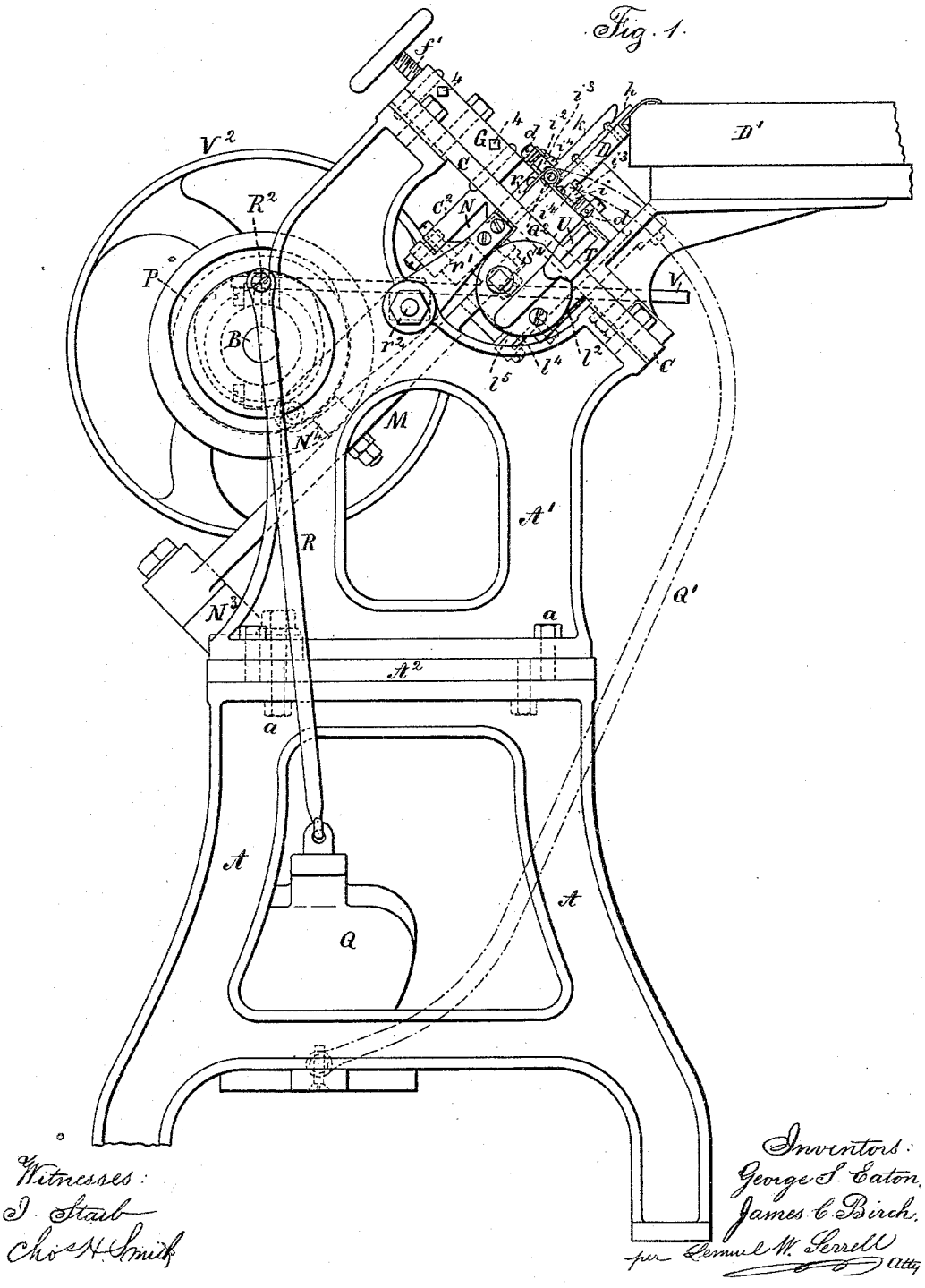
(No Model.) 3 Sheets—Sheet 1.

G. S. EATON & J. C. BIRCH.

MACHINERY FOR RUBBING TYPE.

No. 380,559. Patented Apr. 3, 1888.

Fig. 1.



Witnesses:
J. Staub
Chas. H. Smith

Inventors:
George S. Eaton,
James C. Birch,
per Samuel W. Serrell Atty

(No Model.) 3 Sheets—Sheet 2.

G. S. EATON & J. C. BIRCH.

MACHINERY FOR RUBBING TYPE.

No. 380,559. Patented Apr. 3, 1888.

Fig. 3.

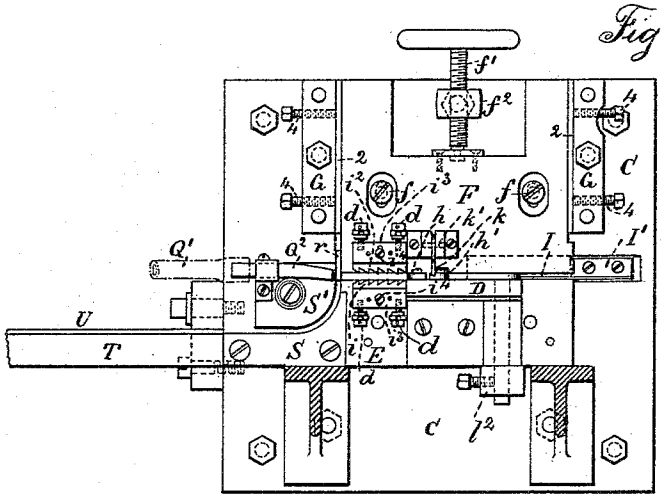


Fig. 8.

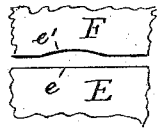
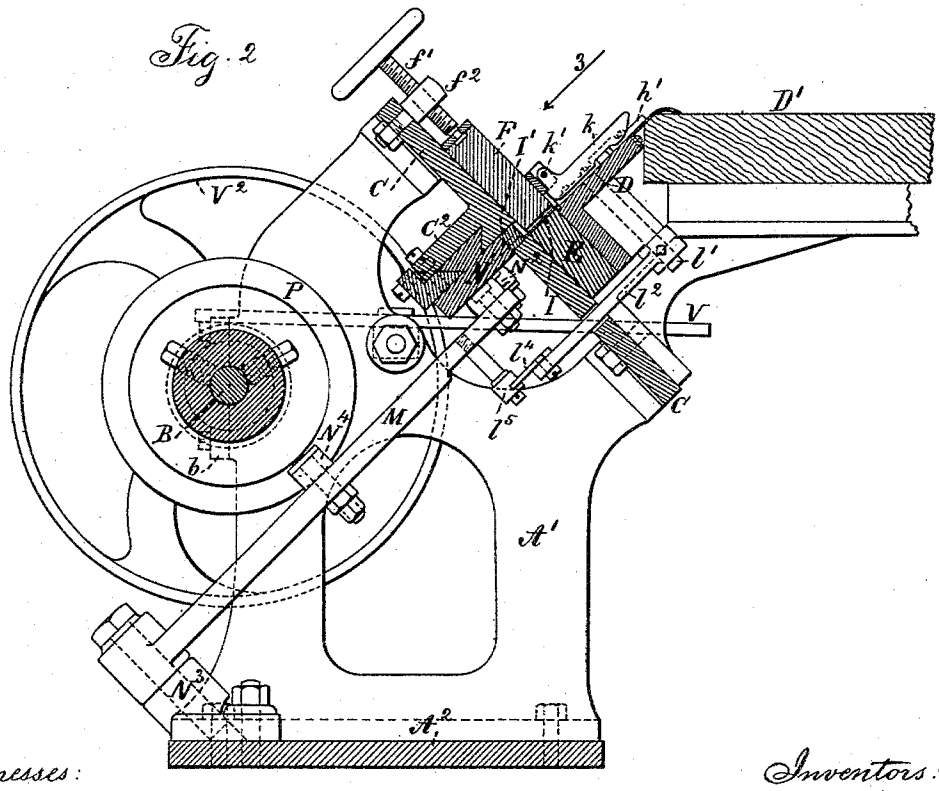


Fig. 2



Witnesses:
J. Stair
Chas. N. Smith

Inventors:
George S. Eaton
James C. Birch
per Samuel W. Sewall atty.

(No Model.) 3 Sheets—Sheet 3.

G. S. EATON & J. C. BIRCH.

MACHINERY FOR RUBBING TYPE.

No. 380,559. Patented Apr. 3, 1888.

Fig. 4.

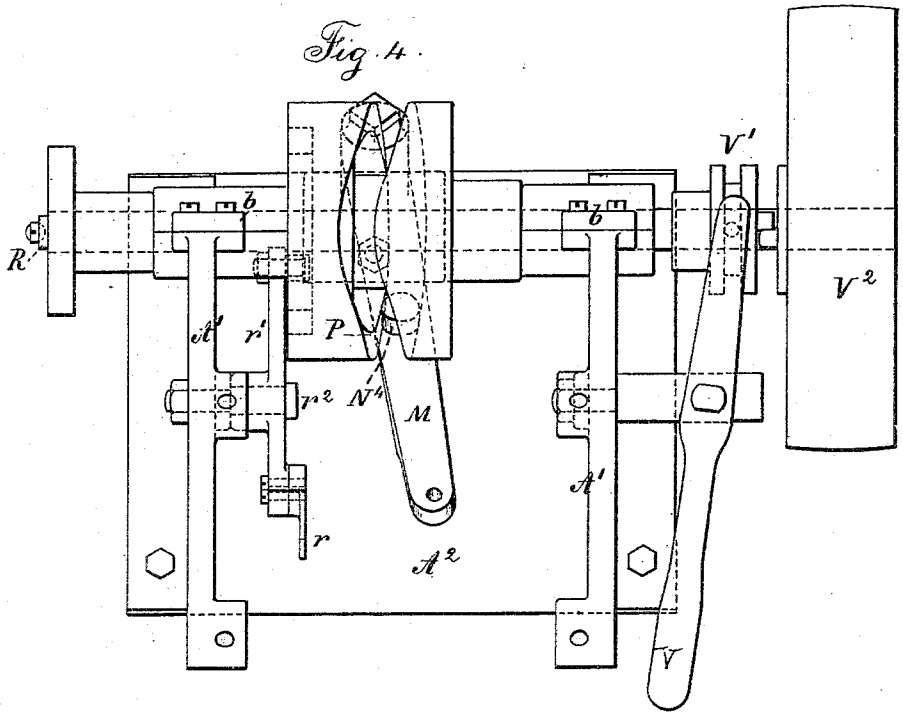


Fig. 6.

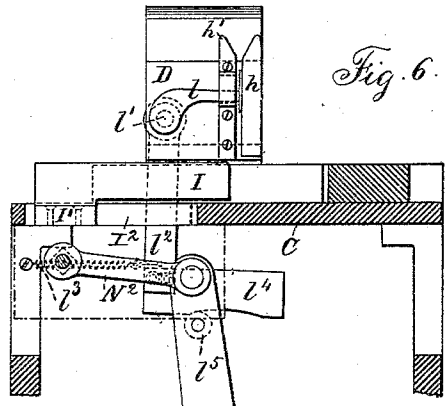


Fig. 5.

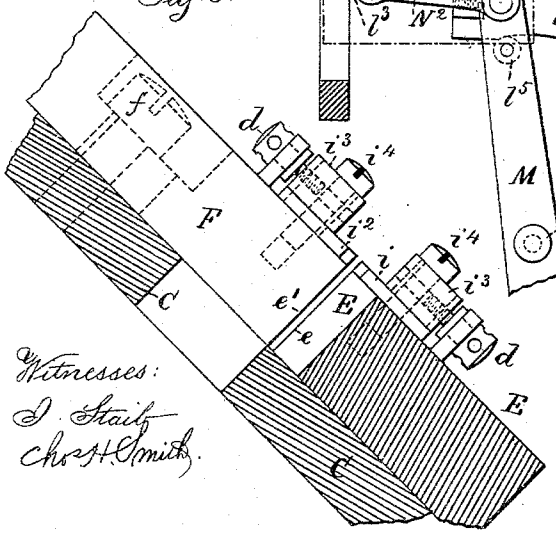
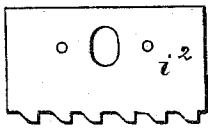


Fig. 7.



Witnesses:
J. Stait
Chas. H. Smith.

Inventors:
George S. Eaton.
James C. Birch.
per Lemuel W. Serrell Atty

UNITED STATES PATENT OFFICE.

GEORGE S. EATON AND JAMES C. BIRCH, OF BROOKLYN, NEW YORK, ASSIGNORS TO SAID GEORGE S. EATON.

MACHINERY FOR RUBBING TYPE.

SPECIFICATION forming part of Letters Patent No. 380,559, dated April 3, 1888.

Application filed May 11, 1886. Serial No. 201,798. (No model.)

To all whom it may concern:

Be it known that we, GEORGE S. EATON and JAMES C. BIRCH, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Machinery for Rubbing Types, of which the following is a specification.

This invention is for dressing or rubbing types, and relates to a mechanism for passing the types through between stationary cutters.

In Letters Patent No. 278,785, granted June 5, 1883, to George S. Eaton, the type is moved by a rotary conveyer between two stationary heads or face-plates, upon which cutters are supported; but these heads are closest together immediately behind the cutters, so as to act upon the sides of the types throughout their entire length and smooth the said sides of the type, including the portion from which the burrs or projections at the bases of the letters have been removed.

The object of the present invention is to equalize the bodies of the types and render the surfaces smooth and uniform, and to hold the types firmly while being moved between stationary cutters. To effect these objects we make use of two metallic equalizers formed with flat smooth surfaces, one of which is adjustable for the different thicknesses or widths of type-bodies, said metallic surfaces performing the twofold duties of equalizing, straightening, and rendering true the type-bodies and of firmly supporting the types while the burrs at the base of the letters are being removed by two or more cutters that extend above the equalizers, there being a pusher that moves the types along between the metallic equalizers.

In an application (Serial No. 201,797) of like date herewith we have shown a machine that is adapted to receiving types and rubbing the type-bodies for the removal of the burrs at the sides of the letter-bases, and also for dressing the type by the removal of the burrs at the top and bottom of the letter.

Our present invention relates to the simpler form of machine for dressing type, and our claims relate to the combinations of devices hereinafter set forth.

In the drawings, Figure 1 is an elevation at the delivery end of the machine. Fig. 2 is a section of the upper part of the machine through the inclined feeding-slide and transversely of the equalizing-plate. Fig. 3 is a view perpendicular to the bed, showing the rubbing mechanism and the bed supporting the same perpendicularly to the surface of such bed and in the direction of the arrow 3, Fig. 2, the feeding-table being removed. Fig. 4 is a plan view of the actuating mechanism beneath the table. Fig. 5 is a section of the table and end elevation, in larger size, of the equalizing plates and cutters. Fig. 6 is a diagrammatic view showing the feeding-slide, the pusher, and a part of the lever that gives motion to the pusher. Fig. 7 shows one of the cutters detached, and Fig. 8 shows part of the equalizers where the types are supplied.

The machine is supported upon the leg-frames A of suitable character.

A′ are the frames of the machine, bolted at *a* to the leg-frames A and to an intermediate plate, A^2, and B is the driving-shaft in bearings *b* upon the frames A′. The frames A′ are extended upwardly above the shaft B and terminate in supports for the bed C. The bed C is at an inclination of about forty-five degrees to the horizon, and perpendicular to such bed C is an inclined plate, D, upon which is the chute or slide through which the types are fed. The plate D extends up and is connected with the table D′, upon which the types to be rubbed are laid. The types are fed down upon the plate D by hand and rubbed, and they occupy an inclined position in consequence of being perpendicular to the inclined bed C.

Upon the bed C is a stationary equalizer, E, in the form of a metallic bar or block, the face *e* of which is perpendicular to the bed C. This face *e* requires to be very smooth and flat, and the equalizer is preferably of hardened steel and is attached to the bed C by screws in any convenient manner.

F is the adjustable equalizer, the face *e′* of which is similar to the face *e*, except that at the place where the types are fed down in between the equalizer the face *e′* is slightly recessed, so as to allow the types to slide down freely by gravity between the equalizers and in front of the end of the pusher I, hereinafter described. This adjustable equalizer F is made of a block of steel with slotted holes for the pas-

sage of the clamping-screws *f*, by which the adjustable equalizer is firmly held to the bed C, and there is an adjusting-screw, *f'*, passing through a stud, f^2, that forms a nut for the same, and by which screw *f'* the equalizer F can be adjusted nearer to or farther from the stationary equalizer E, and thereby adapt the machine to type-bodies of different thicknesses or widths. In order to render the movement of the adjustable equalizer F accurate, so that the face *e'* may always remain parallel to the face *e*, we make use of the stationary blocks G, that are bolted firmly to the bed C and provided with adjusting-bolts 4 and gibs 2, which, being held in position at the opposite parallel edges of the adjustable equalizer F, allow of the adjustment by the screw *f'*, but insure parallelism of movement.

Upon the equalizers E and F are the cutters *i* i^2. The cutters are made upon the edge of steel plates, the plates being of greater thickness than the height of the bases of the letters upon the type-bodies. These cutters *i* i^2 are attached to the equalizers E and F, respectively, and, by preference, clamping-blocks i^3 are used, to which the cutters are connected and through which the screws i^4 pass to hold the cutters firmly upon the respective equalizers. There are adjusting-screws *d* passing through forks upon the equalizers and into the clamping-blocks, so as to adjust the cutters from time to time, especially after the cutters have been sharpened. It is now to be understood that the machine is adjusted in such a manner that the distance between the faces *e e'* is slightly less than the width or thickness of the types that are to be rubbed, so that such types as they are pushed along between the faces of the equalizers are slightly compressed and the surface rendered smooth, and should there be any bend or irregularity in the body of the type, due to inequalities produced by the casting operation, the equalizers rectify the same. It is not the intention to remove from the body of the type any of the metal in this equalizing operation, because that is not necessary. Hence the equalizers must not be too close to each other, as the smooth surfaces of such equalizers are only intended to slightly consolidate and smooth the sides of the type-body. While this is being done and the type moved along by the pushers, the burrs or projections at the base of the letter are removed by the cutters *i* i^2; and with this object in view the said cutters *i* i^2 are made with several chisel-shaped cutting-edges, and they are to be adjusted so that each one will remove a shaving of about the same thickness. It is therefore necessary to adjust the cutters, so that they are farther apart where the rubbing operation commences than they are where the rubbing operation is completed, and this adjustment must be such that the last cutting-edges are in line with the respective faces *e e'*, or slightly closer than the same, so that the bases of the letters will not project beyond the bodies of the types.

Upon the plate D there is a stationary guide, *h*, and guide *h'*, forming a channel or slide between which the types pass down upon the plate D as they are fed in by hand from the table D'. The upper ends of these guides *h h'* are beveled to give space for the free insertion of the types.

There is a steadying-finger, *k*, hinged at *k'* to a stock fastened upon the equalizer F, and this steadying-finger lies between the guides *h h'*, and its under surface is at a sufficient distance from the surface of the plate D to allow the type to slide down freely beneath it; but this finger prevents the type becoming misplaced, and this steadying-finger can be lifted in case of obstruction in the feeding slide or chute. The holes in the guide *h'* for the attaching-screws should be elongated crosswise of the guide, so as to allow for varying the width of the channel down which the types pass, and the hinge *k'* of the finger *k* being attached to the equalizer F is adjusted with it in adapting the parts to different widths or thicknesses of types.

We provide a detainer for the types in the form of a spring-actuated lever, *l*, pivoted at *l'* upon the plate D, and the end of which passes through a slot in the guide *h'*. The pivot shaft of the lever *l* passes through the plate D and is provided with an arm, l^2, below the plate. A spring, l^3, acts to press the end of the detainer *l* against the side of one of the types in the feeding-chute, and there is a cam-shaped end, l^4, against which the pin l^5 upon the swinging-lever M acts to relieve the pressure of the detainer upon the side of the type and allow it to slide down the chute and feed into the machine. The parts are constructed and timed in such a manner that the pin l^5 moves the detainer *l* and allows one of the types between the guides *h* and *h'* to slide down and rest upon the top of the pusher I. The attendant feeds in a second type at this time, and upon the return movements of the pusher I the detainer *l* holds this upper one of the types, and the lowest one slides in between the equalizers E F and in front of the pusher I, and after this pusher I has been moved along, carrying with it the type between the equalizers, the detainer *l* is again released and another type feeds down into position.

At the back of the bed C is a projecting guide, C^2, for the carriage N, the base of which carriage is V-shaped to pass into and slide freely lengthwise of the guide C^2. To one edge of this carriage N the base-block I' of the pusher I is secured, there being a slot, I^2, through the bed C, in which the base-block of the pusher slides, and this slot does not extend as far as the place where the types are fed in; hence the types slide down the plate D and rest upon the bed C between the faces of the equalizers. The pusher I and its base I' can be unscrewed and removed from the carriage N, so as to introduce a pusher adapted to the thickness of type that is to be operated upon.

The lever M is connected by the link N^2 to

the carriage N, and the pivot N^3 of the lever M is upon the plate A^2, and there is a roller, N^4, upon the lever M, acted upon by a cam, P, upon the main shaft B, the shape of which cam is such that the proper motions are given to the pusher for carrying the type along between the equalizer-faces.

In type-rubbing machines the particles of type-metal and the chips are likely to obstruct the movements of the parts and to cause the pusher to injure or break the types. We provide for blowing the chips and shavings of type-metal away at a time when the chips cannot obstruct or injure the movements of the parts. With this object in view we make use of a bellows at Q, from the nozzle of which leads a flexible pipe, as shown at Q′, and the same connects with a stationary nozzle, Q^2, at the end of the space between the equalizers and in line with the cutters i i^2, and there is a link, R, to a crank-pin, R′, at the end of the shaft B, and this crank-pin is so placed in relation to the other parts that the air-blast will pass out from the end of the nozzle Q^2 at about the time a pusher, I, has carried the type to the end of the raceway between such equalizers, so that any particles of metal removed by the cutters i i^2 are blown away from such cutters and over the top of the pusher I, entirely out of the machine, and should there be any particles of metal upon the pusher itself they are blown down and fall out through the slot I^2 in the bed C, in which the base I′ of the pusher I is reciprocated.

It is generally advantageous to set up the types in line after they have been rubbed. With this object in view we make use of the stationary blocks S S′, between which is a curved raceway, and this raceway commences at the end of the raceway between the equalizers E F at the place where the type is left by the pusher, and it extends down as a quarter-circle between the blocks S S′, and then continues in the form of a horizontal rule, U, into which the types are received. This type-rule is received into a metal bar, T, one end of which is formed as a bracket bolted to a projection at the back of the bed C, and in order to carry down and move along the line of types we make use of the pusher-blade r at the end of a lever, r', pivoted at r^2, and acted upon by a cam upon the shaft B. This pusher-blade r passes up through a mortise in the bed C, directly in line with the curved raceway, and the parts are constructed and timed in such a manner that as soon as the pusher has carried a type to the end of its raceway and commences to return the pusher-blade r carries the type away laterally and down into the curved raceway, and with each addition the types are moved along bodily until the accumulation becomes such as to fill or nearly so the type-rule U with a line of types, and this rule U is then lifted out of the bar T and another rule substituted.

The coupling-lever V and clutches V′ serve to connect the driving-pulley V^2 and shaft B, or to disconnect the power and stop the shaft.

We claim as our invention—

1. The combination, in a machine for rubbing type, of a table for receiving the types, an inclined feeding-slide down which the types are passed, a bed-plate at right angles to the feeding-slide, two metallic equalizers attached to the bed, and screws for adjusting one of said equalizers to vary the width of the opening between them and adapt the machine to different thicknesses of type, and cutters attached to the upper surfaces of the equalizers for removing the burrs at the bases of the letters, and a pusher for moving the types along between the equalizers, the opposite faces of the equalizers being flat, smooth, and parallel, so as to straighten and render true the bodies of the types, and firmly support such types while the burrs are being removed by the cutters, substantially as specified.

2. The combination, in a type-rubbing machine, of a bed-plate, two metallic equalizers attached to the bed-plate, and screws for adjusting and holding one of the equalizers, the faces of the equalizers being smooth and parallel, a reciprocating carriage beneath the bed-plate, a changeable pusher connected therewith and extending up through a slot in the bed-plate, cutters attached to the upper edges of the equalizers and acting to remove the burrs at the bases of the letters, a feeding-slide at right angles to the bed-plate, down which slide the types are passed in succession, and a detainer and means for moving the same, so as to allow the types to pass down in succession at the proper time in relation to the movement of the pusher, substantially as set forth.

3. The combination, in a type-rubbing machine, of a bed-plate, a feeding-slide perpendicular to the bed-plate, two metallic equalizers having straight, smooth, and parallel faces, and a depression in the face of one of the equalizers in line with the feeding-slide to give space for the types to pass in freely between the equalizers, a pusher between the equalizers, and cutters upon the edges of the equalizers for removing the burrs at the bases of the letters while the types are straightened and smoothed by being passed through between the parallel faces of the equalizers, substantially as set forth.

4. The combination, with the bed and the equalizers, between which the types are passed, the pusher and the cutters for removing the burrs, of a feeding-slide down which the types are supplied, the steadying-finger k above the feeding-slide, a hinge, k', at the lower end of the finger, by which the same is attached to the equalizer F, the detainer l, and means for moving the same to allow the type to pass down the feeding-slide, substantially as set forth.

5. The combination, in a machine for rubbing type, of two equalizers having smooth flat faces, a bed to which such equalizers are

attached, and screws for adjusting and holding one of such equalizers, a changeable pusher and mechanism for reciprocating the same longitudinally between the equalizers, adjustable cutters fastened upon the equalizers for removing the burrs at the bases of the letters, a feeding-slide perpendicular to the bed-plate, a curved raceway at the end of the channel between the equalizers, and a removable rule for receiving the line of types, substantially as set forth.

Signed by us this 23d day of November, A. D. 1885.

GEO. S. EATON.
JAS. C. BIRCH.

Witnesses:
GEO. T. PINCKNEY,
WILLIAM G. MOTT.