(No Model.) 3 Sheets—Sheet 1.

J. C. BIRCH & C. DANCEL.

MACHINERY FOR RUBBING TYPE.

No. 457,575. Patented Aug. 11, 1891.

Fig. 1.

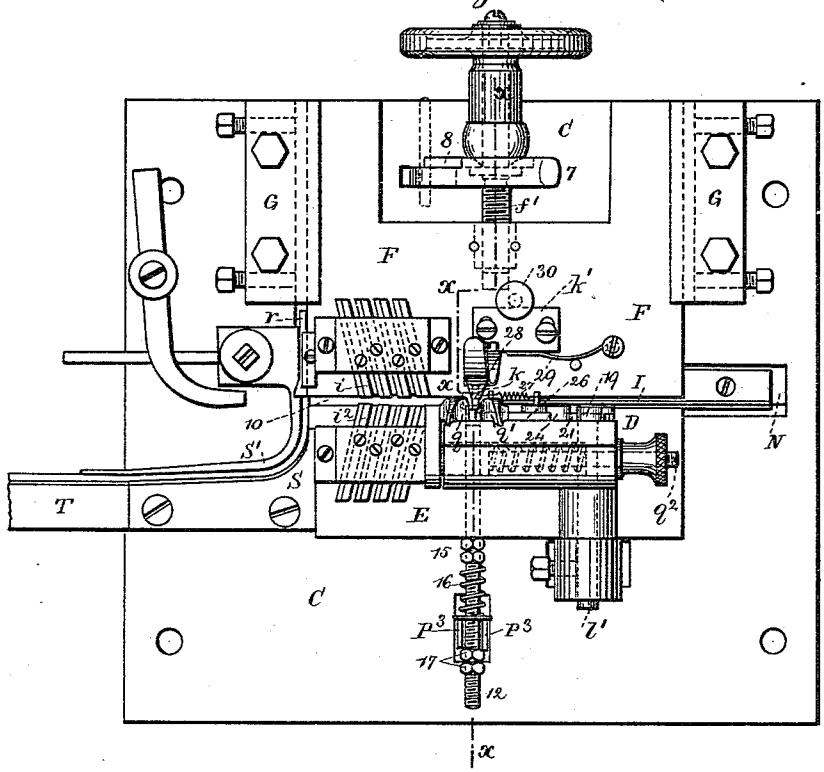
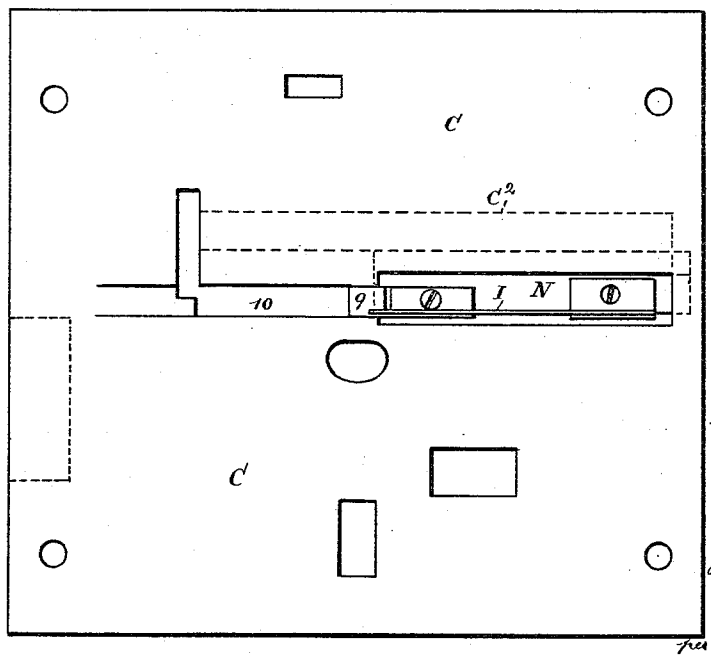


Fig. 2.



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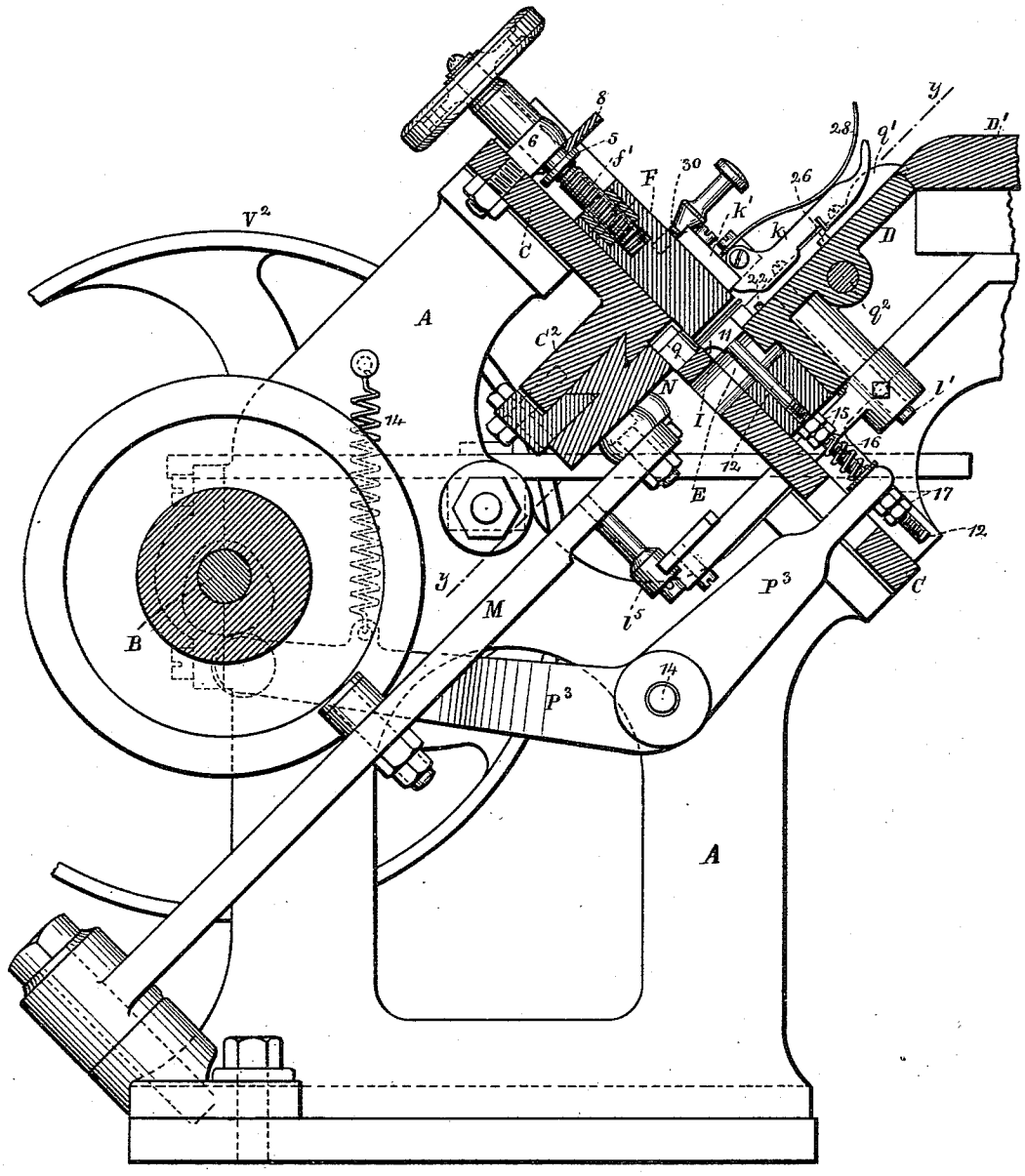
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Fig. 3.



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J. C. BIRCH & C. DANCEL.

MACHINERY FOR RUBBING TYPE.

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Fig. 5.

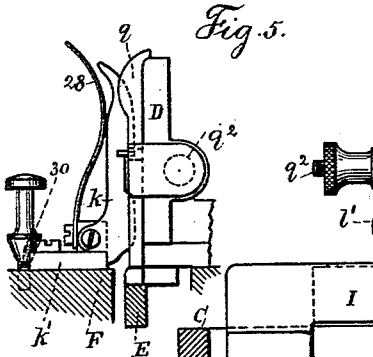


Fig. 4.

Fig. 6.

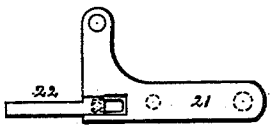


Fig. 7.

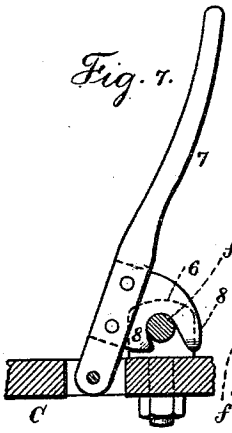
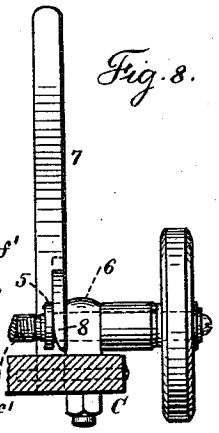


Fig. 8.



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UNITED STATES PATENT OFFICE.

JAMES C. BIRCH AND CHRISTIAN DANCEL, OF BROOKLYN, NEW YORK.

MACHINERY FOR RUBBING TYPE.

SPECIFICATION forming part of Letters Patent No. 457,575, dated August 11, 1891.

Application filed October 11, 1890. Serial No. 367,825. (No model.)

To all whom it may concern:

Be it known that we, JAMES C. BIRCH and CHRISTIAN DANCEL, both citizens of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Machinery for Rubbing Type, of which the following is a specification.

In Letters Patent No. 380,599, granted April 3, 1888, to George S. Eaton, assignee of George S. Eaton and James C. Birch, a mechanism is represented for receiving type and passing the same along between two polished surfaces to equalize the type at the same time that the cutters remove from the base of the letter the projecting burrs.

The present invention is an improvement upon the devices set forth in the said patent; and the same consists in the peculiarities of construction and combination hereinafter set forth and claimed.

In the drawings, Figure 1 is a plan view perpendicular to the inclined bed. Fig. 2 represents the bed-plate with the parts above the same removed. Fig. 3 is a section of the equalizers and bed near the line $x\,x$; and Fig. 4 is a plan of the feeding mechanism with the bed in section near the line $y\,y$, Fig. 3. Fig. 5 shows the feed-plate and steadying-finger. Fig. 6 is a detached view of the slide and bolt from the under side and in larger size, and Figs. 7 and 8 show the lever and plate for the adjusting-screw of the equalizer.

The frame A, driving-shaft B, and bed C are similar to those in the aforesaid patent, and upon the bed C is a plate D extending up to the table D′, upon which the types to be rubbed are placed, and this plate D is perpendicular to the bed C; but the bed and the plate are inclined to the horizontal line at about forty-five degrees, and the stationary equalizer E is bolted permanently to the bed C, and the movable equalizer F is adjustable toward or from the stationary equalizer E and between the guides G, that are permanently fastened upon the bed C, and there is a screw f' for adjusting the equalizer F toward and from the equalizer E. These parts, except as hereinafter named, are also similar to those in the aforesaid patent.

In practice we have found that in cases where an imperfectly-cast type was forced in between the equalizers and the machine was stopped thereby, the belt slipping upon the pulley V^2, it was difficult to remove such obstruction without altering the adjustment of the movable equalizer in its relation to the stationary equalizer. To provide for this contingency we make upon the screw f' a rigid collar 5, which is adjacent to the bearing 6, through which such screw f' passes. This bearing 6 is permanently fastened to the plate C, and the distance between the rigid collar 5 and the side of the bearing 6 is such that the movable equalizer F can be slipped away from the stationary equalizer E until the collar 5 strikes against the side of the bearing 6, and this movement can be given to the parts after the lever 7 has been drawn back, there being upon this lever 7 a plate 8, the end of which is slightly beveled and notched, so as to pass over the screw f' and between the rigid collar 5 and the bearing 6. Hence when the machine is in operation the pressure in equalizing the types is taken by the collar 5 upon the plate 8 and bearing 6, and when this plate 8 is raised by the lever 7 the equalizer F can be moved back and any obstruction taken out from between the equalizers, and in doing this the screw f is not rotated, nor the adjustment varied in the least, and the parts are returned to their normal position by pressing the plate 8 in between the collar 5 and the bearing 6.

In the aforesaid patented machine the base of the type rested upon the surface of the bed C, and the pusher I moves such type along with the base thereof in contact with the surface of said bed. It has been found that the delicate edges of the base of the type are sometimes injured by the friction of the base of the type against the surface of the bed C. To avoid this difficulty, we make use of a traveling table 9 within a slot 10, that extends from the place of reception to the place of delivery of the types, and this traveling table 9 is connected with and moved by the carriage N, that is supported by the portion C^2 of the bed C. This carriage receives its motion in substantially the manner described in the aforesaid patent, and it also carries the pusher I, which is connected to it, as before described, and the operative end of this pusher is immediately over the traveling table 9. Hence each type, as it is fed into

the machine, passes down and its base rests upon this table 9, and the pusher I carries the type along between the equalizers E and F, by which the surfaces of the type are smoothed and such type equalized, and during this operation the cutters $i\,i^2$ remove the burrs from the base of the letter, and during this time the base or lower end of the type rests upon the table 9, and this table 9 sets up closely against the lower edge of the movable equalizer F. Hence such equalizers act efficiently upon the whole of the surface of the sides of the type during the operation of equalizing and rubbing.

In the aforesaid machine the surface of the equalizer F in line with the feed was notched to allow for the type feeding down between the two equalizers with freedom. We find it advantageous to make the equalizing-surfaces upon the equalizers E and F smooth and flat, and in the block portion of the stationary equalizer E in line with the feed a recess is provided for the feeder 11, which is in the form of a block sufficiently wide to correspond with the widest type, and it receives a motion from the line of the face of the plate D up to the face of the equalizer E, and this motion is given to the feeder by a rod 12 and lever P^3 upon a fulcrum 14, and this lever is acted upon by a cam (shown by dotted lines in Fig. 3) and a spring 14, and this rod 12 is screw-threaded and provided with lock-nuts 15, which come up against the back surface of the stationary equalizer E, and they are so adjusted that when in contact therewith the face of the feeder is accurately in line with the polished surface of the equalizer E. These lock-nuts allow for adjustment in case of wear, and there is a spring 16 between the jaw end of the lever P^3 and the lock-nuts 15, so that the cam upon the driving-shaft B will act to compress this spring after the lock-nuts 15 come into contact with the rear surface of the equalizer E and the nuts 17 are behind the jaw of the lever P^3 and they are adjustable, so that when the jaw of the lever P^3 comes in contact with the metal at the end of the slot in the bed C the surface of the feeder 11 will correspond accurately with the surface of the plate D. The plate D is set back from behind and below the surface of the equalizer E a distance equal to the largest type to which the machine is adapted, so that the type may be fed down this plate D and in front of and rest upon the feeder 11 during the time that the pusher I is carrying the preceding type through the machine. This allows more time for the operation of the feeding mechanism, and when the type is brought up to position it is held reliably between the surface of the feeder 11 and the polished face of the movable equalizer F, so that the pusher I acts uniformly in starting the type and carrying it through between the equalizers and during the rubbing operation.

We find it preferable to make use of automatic spring-pressure for detaining the types as they are fed down the surface of the plate D and between the guides $q\,q'$. The guide q is adjustable by the screw q^2 to adapt the slot between the guides to different thicknesses of types and the rock-shaft l' is acted upon by a roller l^5 upon the lever M, as in aforesaid patent; but the detaining mechanism that acts upon the types is varied. The rock-shaft l' has at its end and upon the face of the plate D a crank-arm 18, acting upon a swinging lever 19, pivoted at 20 and having a slide 21 connected with the moving end of said lever 19 and adjacent to the lower edge of the plate D, and in a recess at the end of this slide 21 is a bolt 22, sliding freely but kept toward the type by a weak spring 23 and there is a second-lever 24, pivoted at 25 and acting to draw back the presser 26, and there is a contractile spring 27, acting upon the presser in the opposite direction. It will now be understood that the attendant supplies the types successively between the guides $q\,q'$ and upon the table D and the presser 26 arrests their downward movement. At the proper time the presser 26 is drawn back by the lever 24, so that the type can slide down upon the plate D, and between the guides $q\,q'$, and simultaneously with this movement, which draws back the presser 26, the slide 21 is moving in the opposite direction and the bolt 22 passes across the slot between the guides $q\,q'$ and the type is arrested thereby, and this bolt 22 is drawn back at the proper moment to allow the type to slide down upon the surface of the feeder 11 before said feeder carries the type up against the surface of the equalizer F, as aforesaid, and should a type become obstructed or temporarily detained between the guides $q\,q'$, or should the attendant supply the types too fast between such guides, the type will not be injured by any positive motion given to the parts, because the presser 26 is moved toward the types by the contractile spring 27, which is too weak to injure the types, and the bolt 22 is moved toward the types by the slide 21 and the spring 23. Hence the types are not injured, even when very thin, by being caught between the end of either the bolt 22 or the presser 26 and the guide q, and the feeding operation is uniform and reliable.

The steadying-finger k is pivoted at its lower end to a small plate connected to the surface of the equalizer F, similar to that in aforesaid patent, and this steadying-finger lies in the slot between the guides $q\,q'$ and above the types, and there is a flexible spring 28 to press such steadying-finger to its position with a slight force; but the plate k', that carries the pivot of the steadying-finger, is slotted for the screws by which it is connected to the equalizer F, and a spring 29 tends to press the block k' away from the table D, and there is a screw 30 with a conical shank adjacent to the edge of the plate k', so that by screwing this screw 30 downwardly and into the equalizer F the steadying-finger k will be moved toward the

plate D, and when the screw 30 is turned in the other direction the spring 29 moves such finger *k* away from the plate D, giving more room for the types that are fed between the guides *q* and *q'*.

The stationary block S, with a curved end to guide the type as it is delivered from the machine to a rule or holder T, is similar to that in the aforesaid patent, and the blade *r* carries the type into the groove between S and S'; but in order to allow the traveling table 9 to carry the types to the place of delivery such table 9 is preferably made as a thin plate, as shown in Fig. 4, to pass over the beveled surface of the bed C at the place of delivery of the types, and the parts are to be so timed that the table pauses at the end of its movement and the blade *r* carries the type off the table 9 and in between the blocks S and S' and holds the same in its position while the table 9 commences its return movement, thus entirely preventing the movement of the table 9 from interfering with the proper delivery of the type from the machine.

We claim as our invention—

1. The combination, with the straight rigid equalizers in the type-rubbing machine and the changeable reciprocating pusher for moving the type between and while firmly supported by the equalizers, of a separate reciprocating table, upon which the bottom of the type rests while being equalized and dressed, substantially as set forth.

2. The combination, with the straight rigid equalizers and the reciprocating pusher for conveying the type through between the equalizer, of an independently-operated feeder acting to lift the type into position between the equalizers before the pusher comes in contact with the same, substantially as set forth.

3. The combination, with the straight rigid equalizers and reciprocating pushers, of the independently-operated feeder, the screw-rod connected with the feeder, the lock-nuts for adjusting such feeder, and the spring and lever for giving motion to such feeder, substantially as set forth.

4. The combination, in a type-rubbing machine, of straight rigid equalizers between which the type to be rubbed is carried, a reciprocating pusher for moving the type, an independently-operated feeder for supplying the type at the proper time between the equalizers, and a plate down which the types pass successively to the feeder, substantially as set forth.

5. In a machine for rubbing type, a plate down which the type is fed, guides forming a channel for the type, a yielding presser drawn toward the types by a spring, a bolt drawn toward the types by a spring, and mechanism, substantially as specified, for drawing back the bolt and presser alternately, substantially as set forth.

6. The combination, with guides and plate and the presser 26 and spring 27, of the lever 24 for drawing back the same, the bolt 22 and its spring 23, the slide 21 for drawing back the same, and the rock-shaft and connection for giving motion to the slide, substantially as set forth.

7. The combination, with the stationary equalizer, a movable equalizer, and a screw for adjusting such movable equalizer, of a movable plate adapted to be inserted between a projection on the screw, and the support for such screw for holding the equalizer in position when the machine is in operation and for allowing the equalizer to be moved in case of obstruction in the machine without varying the adjustment of the screw, substantially as set forth.

8. The combination, with the stationary equalizer E and movable equalizer F, of a bearing 6 and screw *f'* for adjusting the equalizers, and a collar upon the screw, a lever and plate 8 acting between the collar and the stationary bearing 6, substantially as set forth.

9. The combination, with the steadying-finger *k* and the plate to which it is pivoted, of an adjusting-screw 30, having a conical shank, and the spring 29 for pressing the plate *k'* toward the screw, substantially as set forth.

Signed by us this 9th day of October, 1890.

JAMES C. BIRCH.
CHRISTIAN DANCEL.

Witnesses:
THEODORE FELDSTEIN,
WILLIAM G. MOTT.