J. F. Tapley,

Bronzing Machine.

No. 41,029. Patented Dec. 22, 1863.

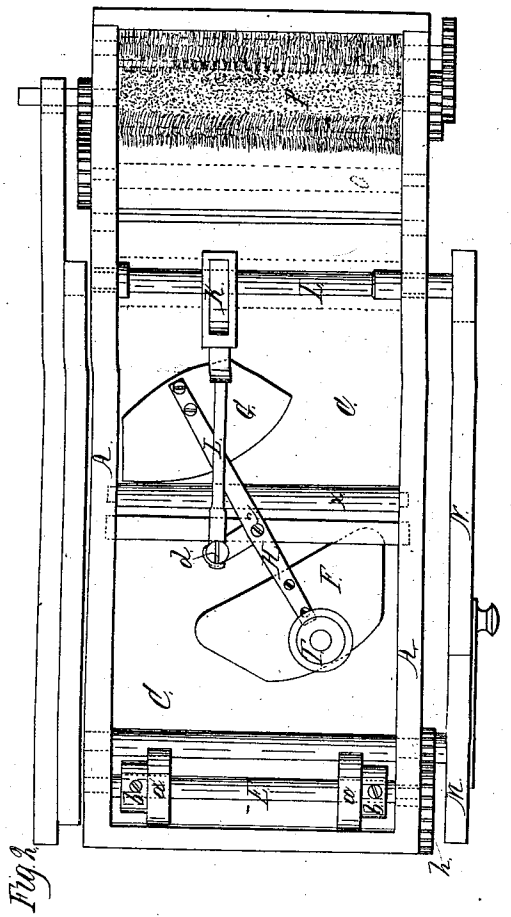


Fig. 2.

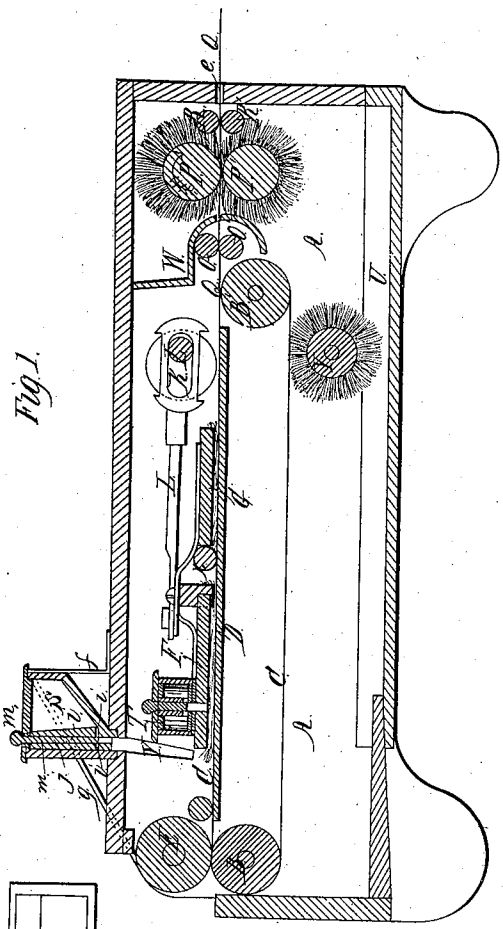


Fig. 1.

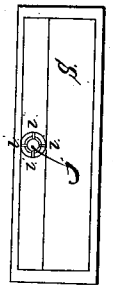


Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

J. F. TAPLEY, OF SPRINGFIELD, MASSACHUSETTS.

BRONZING-MACHINE.

Specification forming part of Letters Patent No. **41,029**, dated December 22, 1863.

To all whom it may concern:

Be it known that I, J. F. TAPLEY, of Springfield, in the county of Hampden and Commonwealth of Massachusetts, have invented a new and useful machine for applying bronze and other similar powders to sheets of paper or other similar substance on which letters or designs have previously been printed or drawn; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

It is the object of my invention to produce a machine which shall apply the bronze, as above stated, as perfectly as it is now applied by hand. Many methods have been tried by myself and others, but heretofore, as far as my knowledge has extended, they have all failed in some important feature, thereby rendering them of little or no value; but a machine embodying the principles herein described has been in successful operation for several months. The common method of applying bronze by hand is with a pad of some soft substance held in the hand and briskly passed over the sheets in a manner only acquired perfectly by long practice. These pads may be made of fur, which I have found by experience to be the best substance. After being bronzed the sheets are subjected to a brushing to remove the superfluous bronze. In my machine I have endeavored to combine the mechanism in such a manner as to imitate the operation of the human muscles as nearly as possible.

Without further preliminaries I will proceed to describe the construction and operation of my invention.

In the drawings making a part of this specification, Figure 1 is a vertical longitudinal section of the machine. Fig. 2 is a top view of the same with the cover removed and Fig. 3 is a top view of bronze-receptacle attached to the cover of machine.

A A is the frame or box supporting and inclosing the machine.

B B′ are two rolls carrying an endless apron, C, for feeding the sheets to the machine.

D is a bed-piece to support a portion of the apron.

E is an adjustable feed-roll operating in connection with the roll B. The roll E is composed of a central shaft and two short rolls, *a a′*, movable longitudinally on the shaft and held in place by the set-screws *b b′*.

F G are two pads or brushes attached to the three-armed lever H, which is pivoted at *c*.

I is a connecting-rod attached to the short arm of lever H at *d*, and formed at its other end to receive the eccentric K, from which it receives a reciprocating motion, which it communicates to the lever H, and thence to pads F G. The eccentric K is attached to and receives motion from the shaft L, which is connected to the driving pulley M by the belt N.

x is a small roll between the pads to aid in holding the paper in place while passing under the pads.

O O′ are two small feed-rolls, which receive the sheet from the apron and force it between the two rotary brushes or dusters P P′, from which it is received by the rolls R R′ and delivered through the opening *e* in the box A to any suitable receiver.

S is a receptacle for bronze, attached to the top of the box A by the spring-stand *f*.

g is an arm extending from one end of S and resting on the teeth of the gear *h*, which operates as a ratchet-wheel to give the box S a slight shaking to facilitate the delivery of the bronze.

i is a tube in the box S having a central hole, *j*, through its axis, and intersected near the bottom of the box by the holes *l l*.

m is a plug or pin sliding in the hole *j*, and serving as a gate to regulate the flow of the bronze, as when forced entirely down it closes the holes *l l*. This gate may be held in place by friction, as here shown, or by a screw or other convenient device.

T is another receptacle for bronze attached to the top of pad F, and is provided with a gate similar to *i l m* in S. Probably both of these receptacles would not be necessary at the same time, but either the one or the other can be used at pleasure.

U is a drawer for receiving the bronze that is removed from the sheets and apron.

V is a rotary brush for cleaning the apron.

W is a partition to prevent the bronze from being thrown onto the sheets from the cleaning-brushes P P′.

Q represents the sheet of paper passing between the dusting-brushes P P′. The feed-

roller E is made with the two adjustable rolls *a a*, so that they may be set to run on the margin of the printed sheet, as, if they run over and onto the printed lines, they would become covered with ink and soil the sheets.

Y is a flat tube for conducting the bronze to the sheet.

Now, the operation is as follows: The sheet of paper, having been printed with a suitable size or ink, is taken before the ink dries and fed to this machine by introducing one edge between roll E and apron C. By these it is carried under the reciprocating pads E G. The bronze, being placed in one of the holders above described, is delivered to the paper either just in front of the pad E or through said pad. Now, as the pads have a reciprocating motion in lines running in one direction, and the paper has a continuous motion in a direction at right angles to these lines, the bronze is very evenly distributed over the sheet, and without these motions in two different directions, or something producing the same results, the effect can never be produced. The motion of the pads should be very much faster than the motion of the apron. Now, as the sheet passes out from under the pads and is leaving the apron, it is received by the rolls O O′ and forced between the rotary brushes or dusters P P′, running in the direction indicated by the arrows. It will be seen that I depend on the strength of the paper to support it in passing from the feed-rolls O O′ to and through between the brushes P P′, thereby enabling me to dust both sides of the sheet, which is very necessary, as more or less bronze will get onto the apron, and, consequently, onto the under side of the sheet. After passing from the dusters the sheet is received by the rolls R R′, as before stated. As the apron C returns under the rolls B B′ it is brushed by the rotary duster V, so that it is clean to receive a new sheet. The bed-plate D under the apron is necessary to form a support to the sheet while being acted upon by the pads. The bronzing-pads may have a direct reciprocating motion instead of being attached to ends of a lever, and be moved by any other mechanism than that here described, and there may be one, two, or more pads; therefore, I do not confine myself to the precise mechanism here employed. Furthermore, I disclaim the use of any kind of rotary brushes or rubbing-cylinders (either independently or in combination with other mechanism) for applying the bronze to the sheet; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. In combination with suitable feeding mechanism, the use of one or more reciprocating or vibrating pads or brushes F G, for the purposes and in the manner substantially as herein set forth.

2. The bronze-receptacle S, provided with the gate *i j*, or its mechanical equivalent, when used in combination with the box A and feeding mechanism of a machine for bronzing printed sheets of paper or other similar substances.

3. The bed-piece D, in combination with the endless apron C and one or more vibrating pads F G.

4. The cleaning-brushes P P′, arranged as herein described, whereby both sides of the sheet are cleaned at the same time, in combination with the rolls O O′ and R R′, or their equivalents, when used for the purpose substantially as described.

5. The adjustable feed roll E, in combination with the roll B and endless apron C, or its equivalent, whereby the rolls *a b c* may be so adjusted as to run on the margin of a printed sheet, for the purpose herein described.

J. F. TAPLEY.

Witnesses:
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