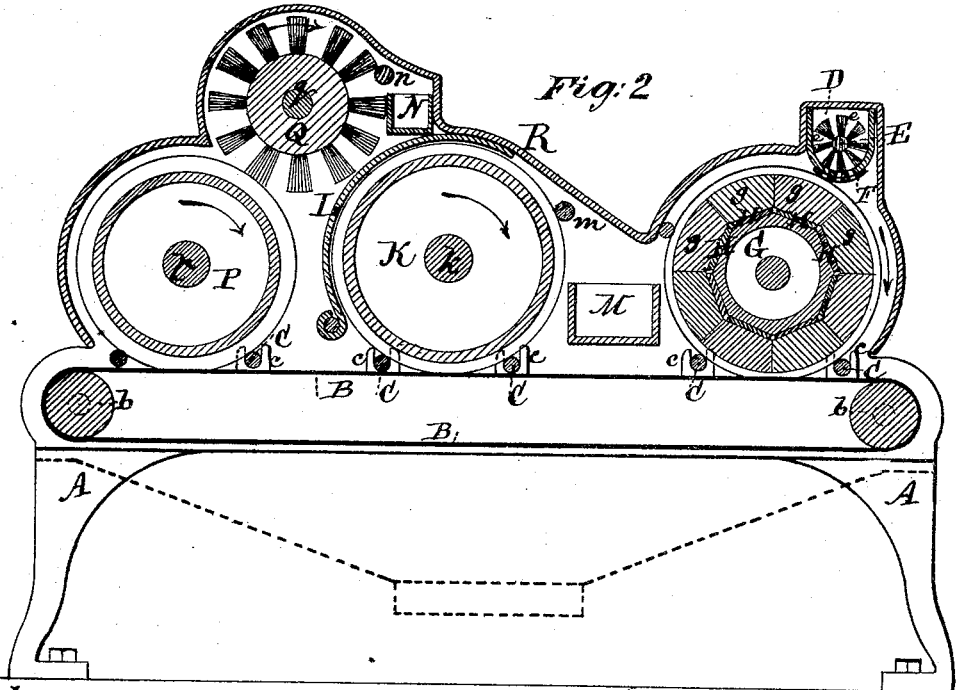
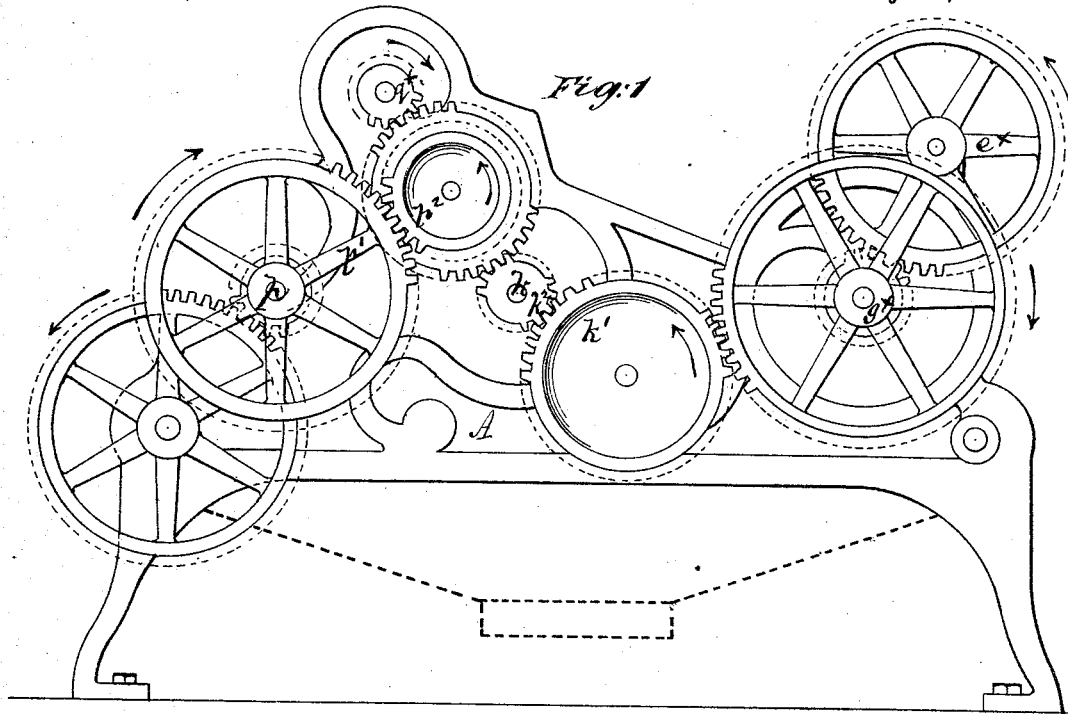


W. J. BARBER.  
Bronzing-Machine.

No. 163,722.

Patented May 25, 1875.



Witnesses:  
Michael Ryan  
Fred Haines

W. J. Barber  
by his Attorneys  
Mount Allen

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Fig: 3

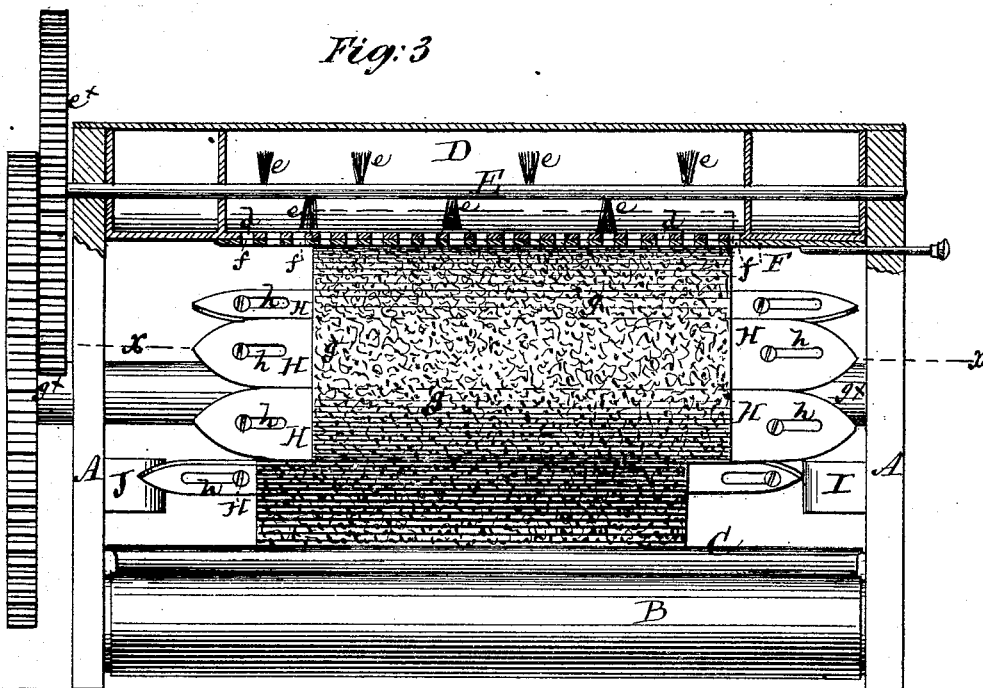
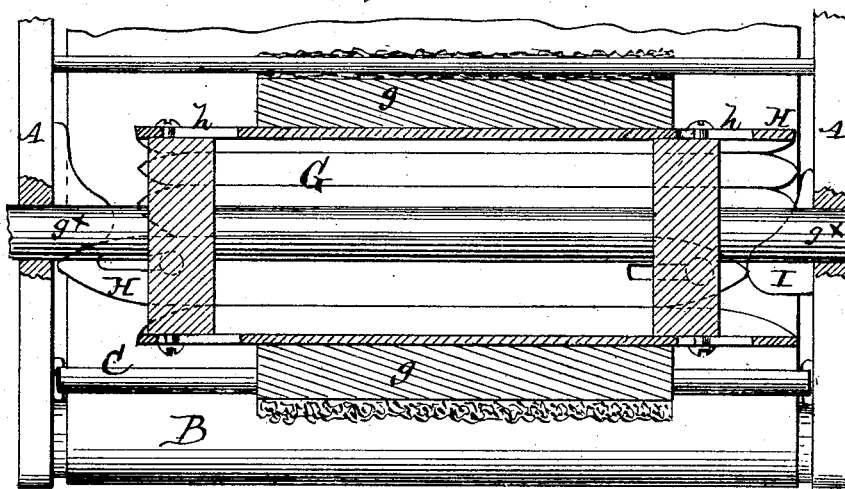


Fig: 4



Witness:  
 Michael Ryan  
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# UNITED STATES PATENT OFFICE.

WILLARD J. BARBER, OF WILLIMANTIC, CONNECTICUT.

## IMPROVEMENT IN BRONZING-MACHINES.

Specification forming part of Letters Patent No. **163,722**, dated May 25, 1875; application filed March 27, 1875.

*To all whom it may concern:*

Be it known that I, WILLARD J. BARBER, of Willimantic, in the county of Windham and State of Connecticut, have invented certain Improvements in Bronzing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification.

My invention relates to certain improvements in machines for applying bronze and other powders to the printed or sized surfaces of sheets of paper and other material; and my invention consists of a novel construction and combination of parts, which will be fully hereinafter described, and specifically pointed out in the claims.

In the accompanying drawing, Figure 1 is a side elevation of a machine constructed according to my invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is an end view of the same. Fig. 4 is a horizontal section taken in the line *x x* of Fig. 3.

A represents the frame of the machine, which may be of suitable height from the floor to allow one end of the machine to be placed near the fly of a printing-press, so as to receive the printed or sized sheets directly from the press, and thereby dispense with the necessity of flying the sheets from the press and feeding them to the bronzing-machine by separate operations. At the ends of the frame are two rollers, *b b*, around which passes an endless apron, B, upon which the sheets are carried through the machine. The apron is preferably made of the fabric commonly known as enameled cloth, because of the advantages it possesses over other fabrics which are sometimes used for endless aprons. If plain woven fabric is used, it is too elastic, it is liable to become loose, and it allows the bronze powder to pass through it. If leather is used, although it is impervious to the passage of the powder, and is not so liable to stretch and become loose as a plain woven fabric, yet it is too expensive to allow of its being used for the purpose. The enameled cloth is inelastic, is impervious to the passage of the powder, and is cheap, and for these reasons its use for the endless apron is preferable over other fabrics. For holding the sheets in place upon the apron as they are

carried through the machine, I employ a series of heavy or weighted rolls, C, arranged at suitable distances apart throughout the length of the machine, and having their journals working in slotted bearings *c*, attached to the side pieces of the frame, by which means they are allowed to rest with their full weight upon the sheets on the apron, and thus hold them in place as they pass through the machine.

The sheets to be bronzed are fed in at one end of the machine, and near this end is arranged the bronzing-roller, over which is placed the bronze receptacle or hopper D. This hopper is provided with a stirring apparatus, consisting of a shaft, E, furnished with radial brushes *e*, and caused to revolve by means of a gear-wheel, *e*<sup>x</sup>, on its end, driven from the shaft *g*<sup>x</sup> of the bronzing-roller, by which means the powder is prevented from clogging and packing in the hopper. The bottom of the hopper D is provided with perforations *d* for the passage of the powder. Under this perforated bottom is a slide, consisting of a plate, F, having perforations *f* therein, corresponding with those in the bottom, and provided with a handle for operating it. This slide *f* may be so adjusted as to regulate the quantity of powder passing through the perforations *d*, by moving it so as to lessen the dimensions thereof; or it may be so adjusted as to entirely prevent the passage of the powder by moving it above, so as to close said perforations. The bronzing-roller G is attached to the shaft *g*<sup>x</sup>, and is arranged immediately over the end of the apron B, at which the sheets are fed into the machine. The roller G is provided with bronzing-pads *g*, each of which is composed of fur or other suitable material, and is attached to a plate, H. The plates H are attached to the roller by means of screws passing through slots *h* in the plates, and into the roller, so as to allow of a reciprocating motion being imparted to each plate in a direction parallel with the axis of the roller. The ends of the plates H are pointed or rounded for engagement with stationary cams I J, attached to the side pieces of the frame A on opposite sides thereof.

As the bronzing-roller revolves it is supplied with powder from the hopper D, and as

the sheets are carried along by the apron under the roller a reciprocating motion is imparted to the plates successively by means of the cams I J. One end of each plate strikes the cam I, and is by it pushed toward the opposite side of the machine; and as soon as it has passed said cam the other end of the same plate strikes the cam J, and is by it pushed back, so as to occupy the former position. By this means the surface of the roller has a reciprocating motion imparted to it during its revolution, and the bronzing operation is more effectually performed.

If desired, the plates H may be rigidly secured to the roller, or the roller itself may be covered with a continuous bronzing-pad, and provided with projections at the ends for engagement with the cams, and the roller may be so arranged on its shaft as to admit of its being reciprocated thereon, or therewith, so that as the roller revolves the projections on its ends will strike the cams, and a reciprocating motion will thus be imparted to the entire roller.

About midway of the length of the machine is a cleaning brush or roller, K, the surface of which is provided with bristles or covered with other suitable material. This roller is attached to a shaft, *k*, driven by gearing *k*<sup>1</sup> *k*<sup>2</sup>. (Shown in Fig. 1.) The roller is partly surrounded by a jacket, L, for the purpose of preventing the loose bronze-powder from flying about. Between the roller K and the front of the machine is a clearing-bar, *m*, under which is a drawer, M. As the brush or roller K revolves, and the sheet is carried along under it, the brush cleans the greater portion of the superfluous bronze from the sheet, and carries it around until it reaches the clearing-bar *m*, which beats the bronze from the brush, and deposits it in the drawer M. Near the end of the machine at which the sheets are delivered is a cleaning-roller, P, attached to a shaft, *p*, driven by gearing *p*<sup>1</sup> *p*<sup>2</sup>. (Shown in Fig. 1.) This roller is covered with fur or other soft material, and is intended for cleaning from the sheets all superfluous bronze which may remain thereon after passing the roller K. Above the roller P is a revolving brush, Q, attached to a shaft, *q*, driven by gearing *q*<sup>x</sup> *p*<sup>2</sup>. (Shown in Fig. 1.) A clearing-bar, *n*, is arranged in the frame in a similar manner to the bar *m*, before described, and under it is a drawer, N.

As the roller P cleans the bronze from the

sheet the revolving brush Q cleans it from the roller P, and on reaching the bar *n* the bronze is beaten from the brush and deposited in the drawer N.

The bronzing and cleaning rollers and cleaning-brush are so geared with relation to each other that they all revolve in the same direction. The working parts are covered with a casing, R, a portion of which may, if desired, be hinged to the other portion, and may be provided with bearings for the revolving brush and its clearing-bar and drawer, so that on raising the casing the interior of the machine may be readily inspected.

The bottom of the machine may be provided with a hopper-like casing provided with a drawer, as indicated by dotted lines in Figs. 1 and 2, for the purpose of collecting any loose bronze which may fall from the apron B.

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

1. The combination, with the bronze-hopper D, constructed with a perforated bottom, of the perforated slide or slides F, substantially as and for the purpose described.

2. A revolving bronzing-roller having its surface composed of a series of movable bronzing-pads, to each of which a horizontal reciprocating motion is imparted during the revolution of the bronzing-roller, for the object specified.

3. The bronzing-roller having the bronzing-pads attached to horizontal sliding plates H, in combination with cams I and J, for moving said plates, substantially as described, whereby the surface of the bronzing-roller has a reciprocating motion imparted to it in a direction parallel with its axis, for the object specified.

4. The combination of the cleaning brush or roller K, the curved jacket L, partly surrounding the same, and the clearing-bar *m*, the whole being constructed and arranged substantially as and for the purpose described.

5. The combination of the cleaning-roller P, the revolving clearing-brush O, arranged above the same, the clearing-bar *n*, and the jacket R, inclosing the whole, all constructed and arranged substantially as herein shown and described.

W. J. BARBER.

Witnesses:

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