

D. HESTON.
BRONZING MACHINE.

Patented March 7, 1876.

No. 174,526.

Fig. 1

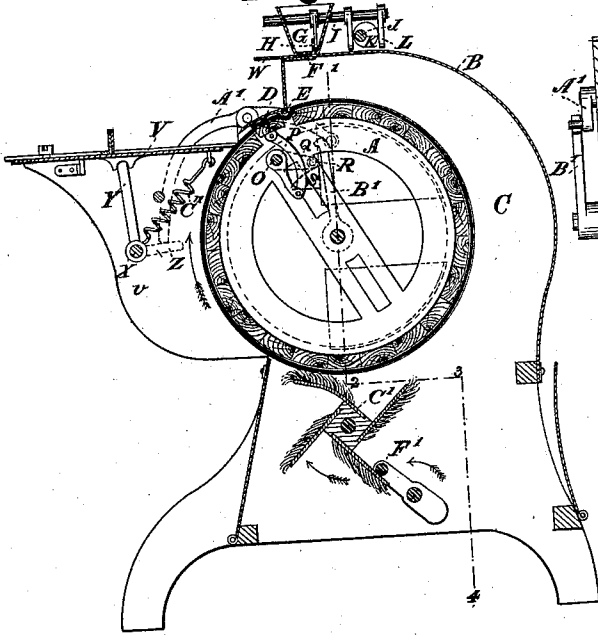


Fig. 2

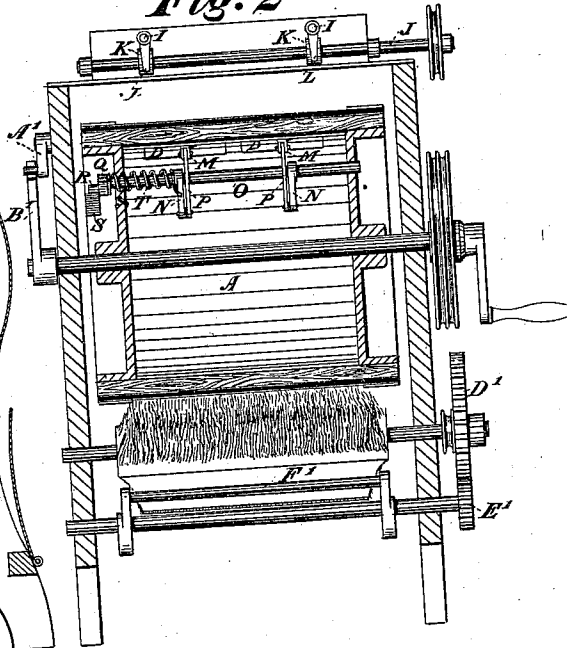


Fig. 3

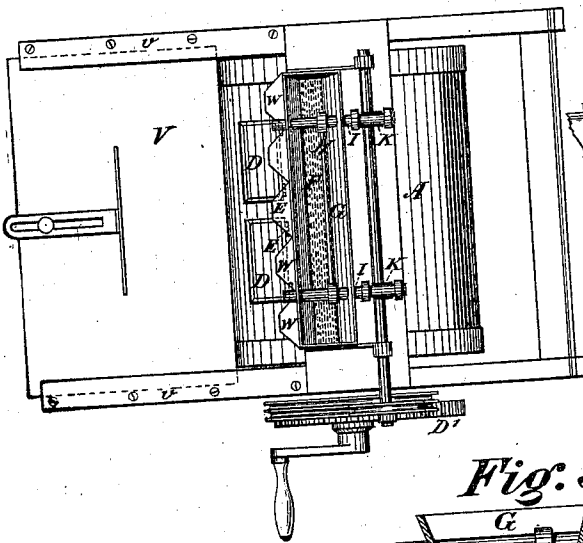


Fig. 4

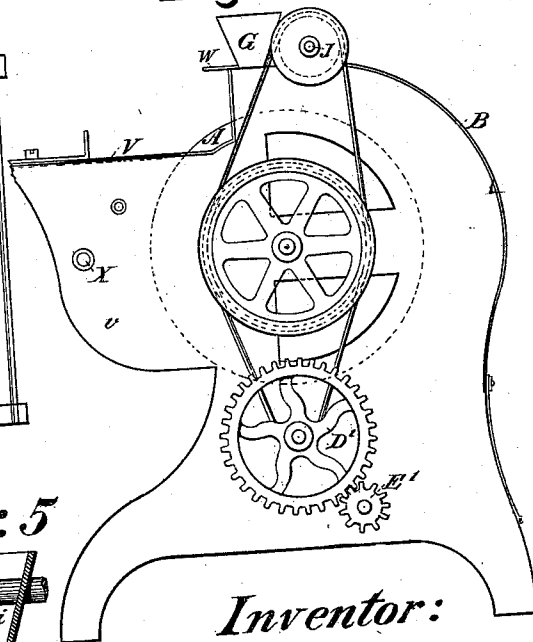
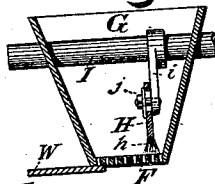


Fig. 5



Witnesses:

Geo. Evenden
William Parent

Inventor:

David Heston,
by his Atty,
Horace Binney, Jr.

UNITED STATES PATENT OFFICE.

DAVID HESTON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO ROBERT S. MENAMIN, OF SAME PLACE.

IMPROVEMENT IN BRONZING-MACHINES.

Specification forming part of Letters Patent No. **174,526**, dated March 7, 1876; application filed June 23, 1875.

To all whom it may concern:

Be it known that I, DAVID HESTON, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Bronzing-Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a vertical longitudinal section of my improvement, taken through the middle of the machine. Fig. 2 is a transverse section thereof, taken on the line 1 2, Fig. 1, and the lower part taken on the line 3 4, Fig. 1. Fig. 3 is a plan or top view thereof, the casing being removed. Fig. 4 is a side view of the said improvement, and Fig. 5 is a transverse section, on an enlarged scale, of the feeding-trough and scraper.

The same parts are denoted by the same letters in all the figures.

This invention consists, first, in the combination of a fountain or receptacle for bronze-powder and a scraper, which, by moving transversely to and fro over the perforated bottom of said fountain, causes the powder to fall through it onto the sheet to be bronzed; secondly, in the combination of a cylinder, covered with elastic material, and a griper hinged to said cylinder by a joint which is protected by said elastic covering, preventing the bronze from being brushed into the interior of the cylinder; thirdly, in the combination, with the griper, of a spring which closes it, and an arm pivoted to said griper, and to another arm rigidly secured to a rock-shaft, which is in line, or nearly so, with both of said pivots; fourthly, in the combination, with the cylinder, of a table for feeding the sheet to the griper automatically; fifthly, in the combination of a revolving wiper, consisting of pads faced with fur for wiping the sheet clean, and of a knocker which cleans the fur by striking the back of the pads.

A, in the drawing, represents the revolving cylinder, which carries the paper to be bronzed, and of which somewhat more than one-half

is inclosed in a casing, B, within which is the bronzing-chamber C. One or more portions, D, of this cylinder are hinged, as shown at E, in order to act as gripers, and the entire convex surface of the cylinder, including the parts D D, is covered with rubber or similar elastic material. To each hinged portion D is fastened, outside of this air-tight covering, a plate, which projects over the adjacent part of the cylinder, as shown in Fig. 1. At the top and near the front of the casing B is a long and narrow transverse opening, over which is placed the perforated bottom F of the feeding-trough G, the receptacle for the bronze-powder. H is the reciprocating scraper, consisting of a horizontal blade adjustably bolted to arms *i i* on the sliding rods I I. I prefer to insert bristles or brushes in the lower edge of H, as shown at *h*, Fig. 5. The height of the scraper above the bottom of the feeding-trough may be adjusted by the bolt *j*. J is a shaft mounted on the top of the machine, and revolved by a band and pulley, as shown in Fig. 4. To this shaft are keyed eccentrics K K, which work within the jaws L L, projecting from rods I I, which rods pass through holes in the sides of the feeding-trough, so that the revolution of the shaft J imparts to these rods and scraper H a reciprocating movement between the front and rear of the trough. The bottom of the trough may be closed, either wholly or partly, by means of the slides W W.

The mechanism for operating the gripers is as follows: A rock-shaft, O, is mounted in the cylinder, and on the arm Q, projecting from said shaft, is a pin or friction-roller, R, which, as the cylinder revolves, comes into contact with a cam, S, on the inside of the casing, whereby the arm Q is lifted and shaft O rocked. To this rock-shaft are rigidly secured the arms N N, and to each arm N is pivoted one end of an arm, P, whose other end is pivoted to a lug, M, projecting from the inner surface of the griper. When the roller R comes into contact with the cam, as above described, the lower end of the arms N N is raised by the turning of shaft O, thereby raising the arms P P and opening the griper, as shown in Fig. 1. As soon as the roller R

has passed the cam the griper is closed by a spring, T, attached to an arm, N, and to the cylinder. The rock-shaft is nearly in line with both pivots of arm P, as shown in Fig. 1, making a toggle-joint to enable the spring T to act to the greatest advantage in closing the griper and holding the sheet tightly. The sides of the casing B are prolonged to form brackets *vv*, which support the sliding table V whereon the paper to be bronzed is laid. This table is moved forward to deliver the paper to the griper at the proper time, by means of a rock-shaft, X, and arms, Y Y, rigidly keyed at one end to said shaft, and hinged or jointed at the other end to the table. The bearings of the shaft X are in the brackets *vv*, and from one of its ends, outside of the bracket, projects a toe, Z, actuated by a rocker, A', which is supported by the frame or casing of the machine, and whose lower end depresses the toe Z, when its upper end, or a pin thereon, is elevated by an arm, B', keyed to the shaft of the cylinder A, and having a cam-surface at its outer end. When the arm B' has passed the rocker the table is retracted by a spring, C'.

Within the casing is arranged a series of brushes by which the bronze-powder is spread upon the sheet and the superfluous portion cleaned off; but, as these brushes and their arrangement within the case and mode of operation are old and well known, I do not describe them further or represent them in the drawing. To wipe the sheet thoroughly after it has been subjected to the action of the afore-mentioned brushes, I employ a revolving wiper, C', consisting of pads of rubber or other elastic material faced with fur, which, as they come into contact with the sheet moving in the opposite direction, bear lightly on its surface. D' is a gear on the shaft of the revolving wiper, meshing into a pinion, E', on whose shaft is a knocker, F'. The function of this knocker is to strike on the back of each of the pads of the wiper, and by the jar of the blow to remove the bronze-powder from the fur. Any convenient number of revolving wipers and knockers may be employed.

The operation of this improvement is as follows: The table V being in the position shown in Fig. 1, and the sheet to be bronzed having been laid thereon, the revolution of the cylinder and arm B' advances the table by the action of the cam at the end of B' against

the upper end of rocker A', and the edge of the sheet is thereby inserted between the projecting lips of the griper and the surface of the cylinder under it. As the cylinder continues to revolve the roller R passes from the cam S, and the griper is instantly closed by spring T, and holds the sheet fast. As the sheet passes under the feeding-trough the scraper H, moving to and fro over the perforated bottom, agitates the bronze and scrapes or brushes it through the perforations upon the sheet, and as the cylinder continues to revolve the sheet comes into contact with the brushes, by which the bronze is spread over it, and the superfluous portion dusted off, and it is finally wiped clean by the wiper C', and released when the griper is again opened by the operation of cam S and roller R. The hinge-joint of the griper being covered with rubber or similar elastic material, so as to be air-tight, no powder can fall into the interior of the cylinder.

I do not claim in this specification a brush for feeding the powder through the perforated bottom of the fountain by a longitudinally-reciprocating movement, as shown in the drawing attached to my patent No. 150,037, of April 21, 1874.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination of the feeding-trough G and transversely-reciprocating scraper H, arranged to operate substantially as described.
2. The combination, with the cylinder A, covered with elastic material, of the griper D, hinged to said cylinder by a joint which is protected by the said elastic covering, substantially as described.
3. The combination, with the griper and spring T, of the rock-shaft O and arms P and N, constructed and arranged to operate substantially as shown and described.
4. The combination of the cylinder with the table V, arranged to operate substantially as and by the means described for feeding the sheet to the griper.
5. The combination of the wiper C' and knocker F', constructed and arranged to operate substantially as described.

DAVID HESTON.

Witnesses:

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W. P. FENTON.