

(No Model.)

2 Sheets—Sheet 1.

W. P. H. GLIDDEN.
BRONZING MACHINE.

No. 413,602.

Patented Oct. 22, 1889.

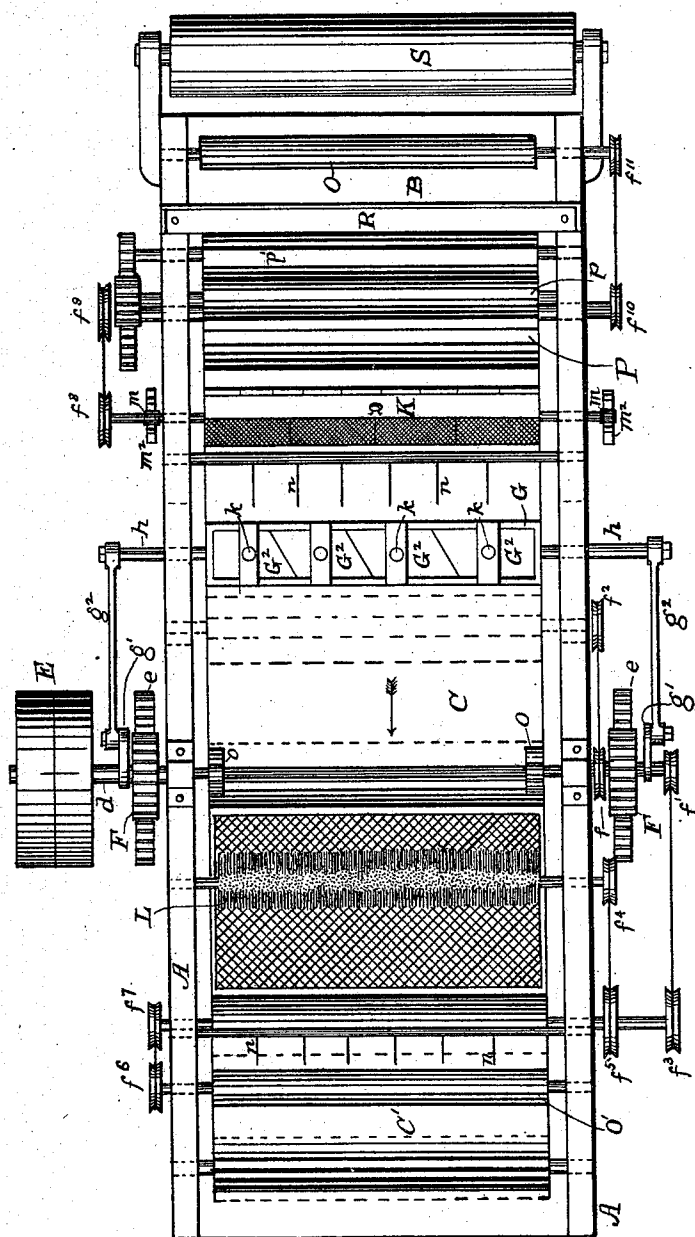


Fig. 1

WITNESSES:

L. D. Vore
L. R. Vore

INVENTOR

W. P. H. Glidden
by *W. W. Wadsworth*
Atty

(No Model.)

2 Sheets—Sheet 2.

W. P. H. GLIDDEN.

BRONZING MACHINE.

No. 413,602.

Patented Oct. 22, 1889.

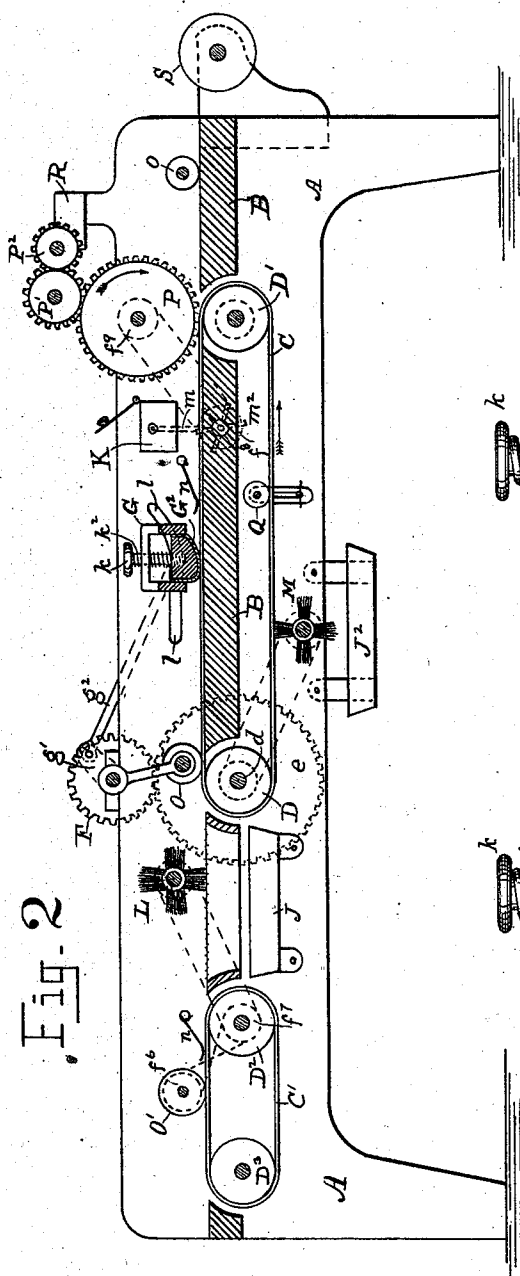


Fig. 2

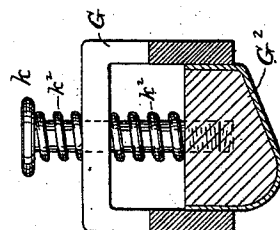


Fig. 4

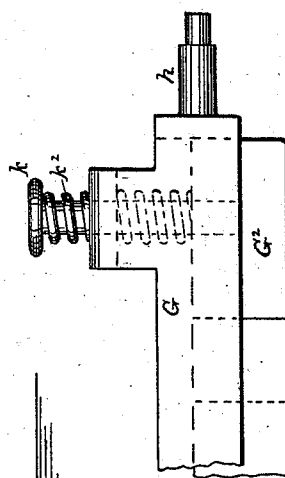


Fig. 3

WITNESSES:

L. D. Vorce
L. R. Vorce

INVENTOR:

W. P. H. Glidden
by *E. M. Vorce*
Atty

UNITED STATES PATENT OFFICE.

WILLIAM P. H. GLIDDEN, OF CLEVELAND, OHIO.

BRONZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 413,602, dated October 22, 1889.

Application filed June 8, 1889. Serial No. 313,632. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. H. GLIDDEN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Bronzing-Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it pertains to make and use the same.

Heretofore bronzing-machines have been constructed in which the bronzing-rubbers had a rotary or simply reciprocating movement; but in neither of these ways can so perfect a result be obtained as in bronzing by hand, and the work is liable to be streaked, especially when rotary rubbers are employed.

The object of my invention is to secure the perfection of surface obtained by hand-work, while operating with greater speed, and to bronze a continuous web or separate sheets, as may be required, and to combine the sizing and bronzing in a single machine.

In the drawings, Figure 1 represents a plan view of a bronzing-machine embodying my invention. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is an elevation of part of the rubber holder, and Fig. 4 a transverse section of the same.

A represents the frame of the machine.

B is the bed supported by the frame.

C is an endless apron or belt driven by the roller D, whose axle *d* carries the fast and loose pulleys E and the gears *e* and belt-pulleys *f f'*.

F is a gear meshing with gear *e* and carrying a crank *g'*, or a cam, on its axle, which, by means of connecting-rods *g²*, is connected to a pin *h*, extending from the rubber carrier G. Rubbers *G²*, covered on their face with felt, fur, plush, or other similar soft material, are secured to the carrier G by screws *k*, and have springs *k²* to regulate their bearing on the work. The rubbers are made with diagonal ends and lap past each other, as shown in Fig. 1, to prevent streaks in the work. One or more of the rubbers, to suit the size of the work to be done, may be used, or for large work a single rubber extending entirely across the bed may be used with advantage. The arm or pin *h* travels in a slot *l*, which is curved or inclined upward at one end, and thus causes the rubber to lift above the paper or

work to be bronzed at each stroke, and permits a fresh quantity of the bronze-powder to be carried under the rubber before it again descends upon the paper.

The bronze-powder is placed in a box K, extending across the machine and having its bottom formed of fine wire-gauze or bolting-cloth. The box K is preferably made in compartments, so that one or more may be used, or different colors placed in the various compartments, and is pivoted or suspended so as to oscillate, and is provided with an arm *m*, adapted to be struck by the teeth of a rag-wheel *m²*, thus jarring the box and sifting out the powder. An opening in the bed immediately beyond the roller D is covered with wire-gauze, and a brush L is arranged over this gauze-covered opening in contact with the gauze. When separate sheets are fed into the machine, there is necessarily a space between the successive sheets, and the loose bronze-powder swept from the sheets by the revolution of the brush L falls through the gauze in the space between the sheets and is received in a pan J, placed beneath the gauze, from which it may be collected and used again. In bronzing a continuous web the brush L is placed diagonally across this bed of the machine and sweeps the loose bronze powder off the side of the web, when it falls through the gauze, as before. If preferred, the brush L may be placed diagonally when bronzing separate sheets, but for such use I prefer to arrange it transversely, as shown.

A brush rotating in a horizontal plane may be used without departing from my invention, but I prefer a vertically-rotating brush.

A brush M below the bed cleans off all powder adhering to the apron C, which is received in a pan J².

Guide-fingers *n* are arranged at suitable intervals to keep the sheets in position, and rolls *o o* are located where needed to cause the sheets to travel with the apron C. As the brush L to be most efficient must rotate in a direction the reverse of apron C, the paper after passing under the brush would, as soon as its rear end had passed from under the feed-roll, be stopped and held by the brush L, and would not only not feed out, but there would be a great liability to streak and spoil the work. To obviate this, I arrange a sec-

ondary apron C', running on rollers D² D³, with a feed-roller O' placed above the apron to cause the work to move with it, and this secondary apron and feed-roller engage the work as it issues from under the brush L and before it has entirely passed from the apron C and pull it along against the resistance of the brush after it has passed from apron C, and thus insure the continuous motion and discharge of the sheet, and may be arranged to pass the work to any convenient discharge.

If a continuous web, like wall-paper, is to be bronzed, it is passed to any suitable reel in the usual way.

¹⁵ $f^2 f^3 f^4 f^5 f^6 f^7 f^8 f^9 f^{10} f^{11}$ are belt-pulleys for driving the various rollers, brushes, &c. Their operation is obvious, suitable belts being used to connect them, as shown in the drawings.

²⁰ I have found it expedient to so proportion the gears e and F that the bronzing pad or rubber G² is caused to make about five or six passes over the paper, and in such case the throw of the crank g may be short, as the repeated rubbing of the surface will be equally efficient and the speed of apron C may be greater. To keep the apron C tightly stretched, a loose roller Q in slotted bearings is placed above the under side of the apron. If preferred, however, the bearing of the roller D' may be made laterally adjustable.

³⁰ In the operation of the machine for bronzing paper the sheets, printed in size, as usual, may be taken from the printing-press and fed into the bronzing-machine; or the sheets may be delivered from the press by a fly directly upon the apron of the bronzing-machine, in which case this machine would form an auxiliary attachment to a printing-press.

P represents a printing-cylinder with the usual inking-rolls $p p'$ and an ink-fountain R, for supplying size.

S is a reel for holding a web of paper.

⁴⁵ By the rapid motion to and fro of the bronzing-rubber, lifting at each stroke, a close imitation is obtained of the movements of the hand in the operation of bronzing, by which alone the work has been perfectly accomplished heretofore, and this is one of the most essential parts of my invention.

⁵⁰ It is obvious that the arrangement and construction of the various parts may be varied to a considerable extent without departing from the spirit of my invention, which is, broadly stated, the conveying of the sized sheets or web under an automatic bronze-powder sifter, and thence under a rapidly-moving rubber lifting at each stroke to receive fresh powder, in imitation of the movement of the hand in hand-bronzing, and in providing means for sizing, bronzing, and

cleaning the sheets or web in a continuous operation in a single machine.

Although the machine is designed to be run by power, it is obvious that it can be operated by hand by substituting a crank for the pulleys E. I prefer, also, in using the machine, to provide a removable cover of sheet metal or other light material, which may be placed on the machine to prevent the blowing about of the bronze-powder.

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

1. In a bronzing-machine, a bronzing-rubber having a combined reciprocating and oscillating motion, substantially as and for the purposes set forth.

2. In a bronzing-machine, the rubber having a reciprocating movement and lifting at each stroke, substantially as described.

3. In a bronzing-machine, the combination of a rubber having a combined reciprocating and oscillating movement, an endless apron for feeding the work, and a sifting-box for applying the bronze-powder, substantially as described.

4. The combination, in a bronzing-machine, of a traveling apron for carrying the work, a sifting-box for applying the bronze-powder, a bronzing-rubber having a combined reciprocating and oscillating movement, whereby it is caused to lift from the work at each stroke, and a brush for cleaning off the loose powder from the work, substantially as described.

5. In a bronzing-machine, the combination of an endless apron for feeding the work, a sifting-box for applying the bronze-powder, a bronzing-rubber having a reciprocating movement and lifting from the work at each stroke, a brush for cleaning the work, and a brush for cleaning said apron, substantially as described.

6. In a bronzing-machine, the combination of an endless apron, feed-rollers, and guide-fingers for feeding the work and retaining it in position, a sifting-box for applying bronze-powder, a reciprocating rubber for bronzing the work, a brush for cleaning the work, and a secondary apron and feed-rollers for forcing the work to feed past the cleaning-brush and discharging the finished work, substantially as described.

7. The bronzing-rubber made in sections with diagonal overlapping ends, each section removably secured in the carrier to permit the removal of one or more sections, substantially as described.

WILLIAM P. H. GLIDDEN.

Witnesses:

WM. G. TAYLOR,
LOUIS PRENTISS.