

S. CRUMP.
BRONZING MACHINE.

No. 106,667.

Patented Aug. 23, 1870.

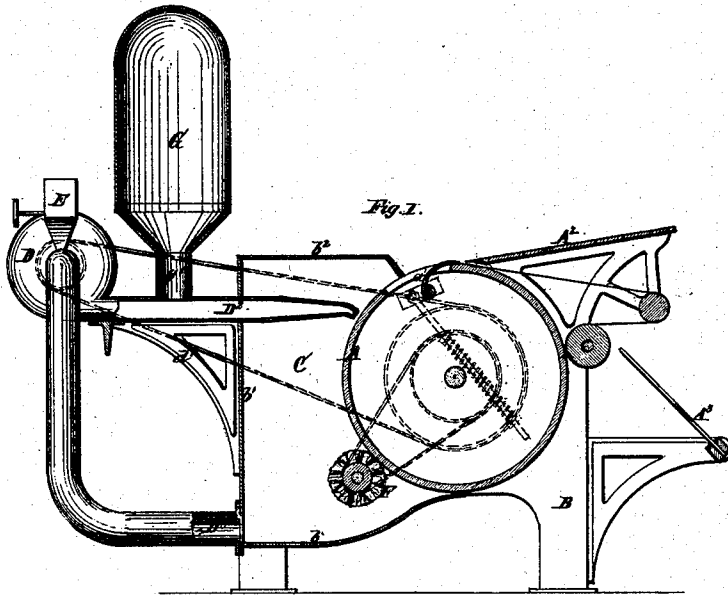
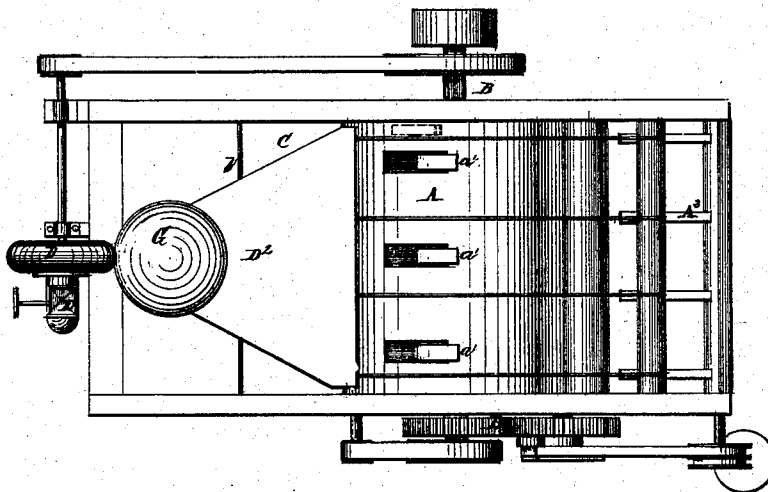


Fig. II.



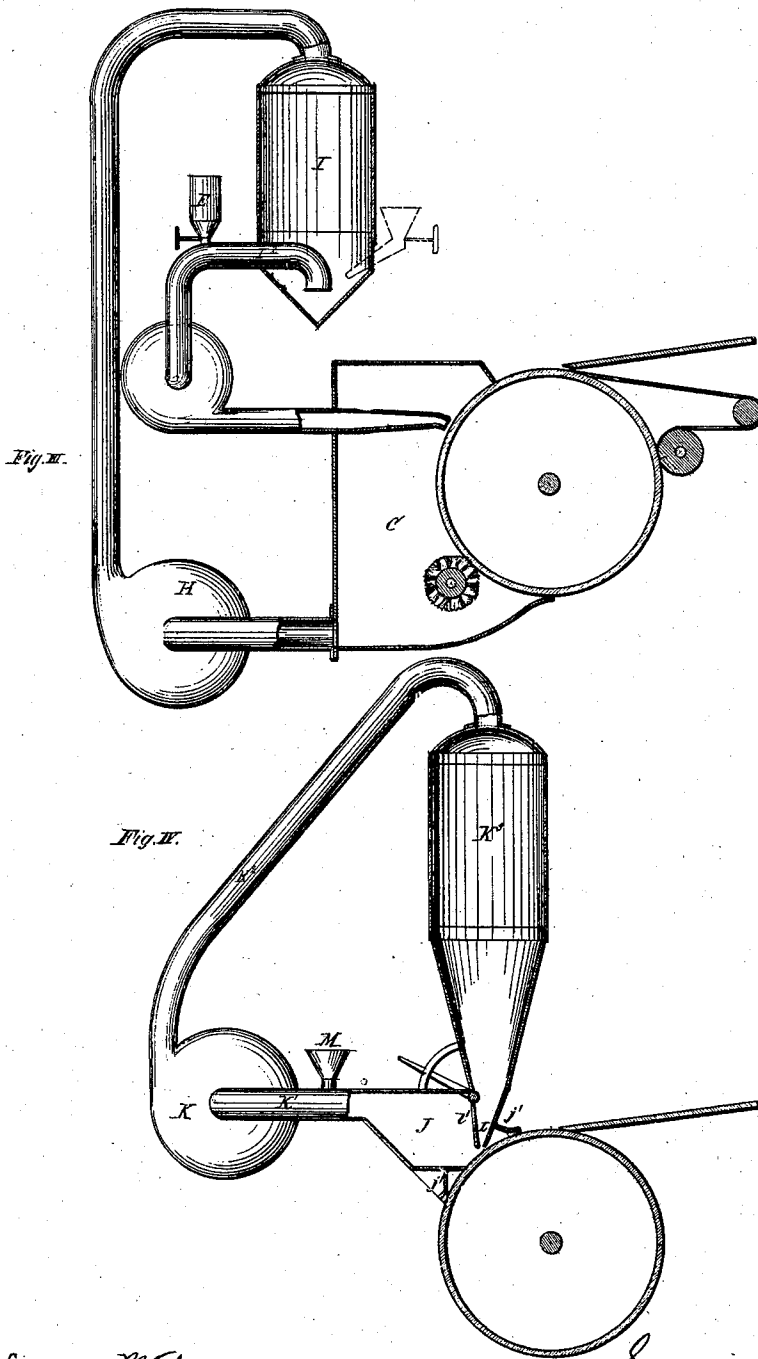
Edward Wilhelm
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Witness:

Samuel Crump, Inventor.
by Forbush & Hyatt
his attys.

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United States Patent Office.

SAMUEL CRUMP, OF BROOKLYN, NEW YORK.

Letters Patent No. 106,667, dated August 23, 1870.

BRONZING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, SAMUEL CRUMP, of Brooklyn, in the county of Kings and State of New York, have invented an improved Bronzing-Machine, of which the following is a specification.

Nature and Objects of the Invention.

My improvements relate to a machine for applying powdered bronze or other analogous material to freshly printed or otherwise properly prepared surfaces of paper, and the invention consists,

First, in the combination with a centrifugal fan, or equivalent device, for generating and directing a current of air upon the surface of the prepared sheets, and means for combining or commingling the powdered material with such air-current, of an air-chamber for the deposit of the superfluous material, and mechanism for feeding the sheets through said air-chamber, thereby greatly improving the quality and uniformity of the work done;

Second, in the combination with such mechanism for generating the current of air, commingling the powdered material therewith, and directing and depositing the same upon the prepared surface, of an air-exhausting mechanism arranged either to deposit the superfluous material either in an enlarged chamber or screening-bag, or to return it into the depositing current, thereby avoiding loss or waste of the material and preventing its escape into the surrounding atmosphere to poison the lungs of the workmen.

Third, in means for regulating the relative intensity of the depositing and exhausting air-currents, so that the latter will exceed the former, and compensate for any leakage at the apertures through which the sheets are fed to the action of the depositing current.

Description of Drawing.

In the accompanying drawing, forming a part of this specification,

Figure I is a sectional elevation of my improved bronzing-machine

Figure II is a plan of the same;

Figure III is a sectional elevation of a modified form thereof; and

Figure IV is a sectional elevation of a second modification thereof.

General Description of Figs. I and II.

A is the feeding-cylinder by which the sheets of paper are carried through the air-chamber and subjected to the action of the depositing air-current.

It has a rotary motion imparted to it by any convenient means, and is provided with a set of grippers, *a*, to grasp and carry forward the sheets as they are fed from the feed-table *A*².

A fly, *A*³, is also provided for discharging the sheets.

The mechanism for feeding and discharging the sheets, and the operation of the grippers, is the same as is common in the ordinary cylinder printing-press.

B B are the side frames of the machine, supporting the principal working-parts.

The space between the side frames in front of the cylinder is inclosed by the front, top, and bottom plates or boards *b*¹ *b*² *b*³, the top and bottom boards reaching back upon the cylinder and fitting to it as closely as possible, and yet allow the passage of the sheets of paper between their edges and the cylinder, and the ends of the cylinder are made to fit closely to the side frames.

The air-chamber C is thus formed, the cylinder constituting one of its sides, so that the sheets, as they are carried around with the cylinder, are made to pass through the air-chamber.

D is the centrifugal fan for generating the depositing air-current.

It is supported upon the bracket extensions *D*¹ of the side frames, or in any other convenient manner.

The blast-nozzle *D*² of this fan enters the chamber C, and terminates a short distance from the cylinder with a laterally expanded mouth, so as to cause the escaping current to impinge upon the surface of the cylinder throughout its whole length.

*D*³ is an exhaust-pipe leading from the bottom of the chamber C to the eye of the fan D, so that the fan exhausts from the chamber at the same time that it discharges into it, thus establishing a circulating current impinging upon the cylinder.

E is a hopper or funnel attached to the suction-pipe, and through which the bronze powder, or other material, is introduced into the air-current and made to circulate with it.

The action of the air-current will continually throw the powdered bronze against the surface of the cylinder within the air-chamber, so that, as the cylinder revolves and carries the printed sheets through the chamber, the bronze will be directed against the surface thereof, and will be made to adhere to the freshly printed portions thereof, while the superfluous powder will be deflected back into the chamber and carried back by the exhaust-current through the fan, to be again thrown upon the paper.

It is evident that the introduction of the powder at the hopper E may be continuous, or that it may be introduced in quantities at proper intervals.

F is a rotating brush or polishing-wheel, located within the chamber C, and applying a gentle friction to the sheets after they pass the depositing-nozzle, so as to remove the superfluous powder and burnish or polish that which has adhered to the printed surfaces.

G is a cloth bag-screen attached to a branch pipe,

g', of the blast-nozzle D², its purpose being to lessen the intensity of the blast as compared with the suction, so that the latter will be more than sufficient to carry off the air introduced into the air-chamber by the former, and thus prevent any outward leaking of the air through the joints of the top and bottom plates b² b³ with the cylinder, or between the ends of the cylinder and side frames; but, on the other hand, to cause a slight inward leak sufficient to prevent any escape of the bronzing material from the machine.

Such of the material as is blown into the bag will accumulate until its gravity causes it to drop back into the main air-current.

The size of the bag will obviously have to be regulated according to the strength of the blast and the amount of leakage.

The exhaust connection D³ may be dispensed with by connecting a cloth bag-screen similar to G directly with the chamber C, so that all the air introduced therein may escape through the meshes of such screen, while the superfluous powder will be deposited therein, and may be taken therefrom for further use. With this arrangement a continuous and regular feeding in of the material at the eye of the fan will be required.

The modified form of my invention shown in Fig. III differs from that shown in Figs. I and II, mainly in the use of separate suction and blast-fans.

The suction-fan H removes the air and superfluous powder from the chamber C, and deposits the latter in the screen-bag I, the excess of air finding easy escape through the meshes thereof.

The blast-fan throws the material upon the cylinder and paper, as before described, but takes up in addition to its regular supply by hopper E, the deposit in the bag I, by the extension of its suction-pipe I² therein, as represented.

The capacity of the suction-fan being made by construction the greatest, the same result that is obtained by the application of the screen-bag, as shown in Fig. I, will evidently be obtained in this instance.

The modified form of my invention, shown in Fig. IV, differs, mainly, from those above described in the use of an induced current to effect the depositing of the powdered material upon the paper. In this figure,

J is the air-chamber, made to cover a segment of the cylinder and fit closely thereto by hinged flaps, j, faced with wool or like material.

K is the fan, connecting with this chamber by a pipe, K¹, opening into the eye of the fan, the discharge-

nozzle of the fan communicating by a pipe, K², with a large screen-bag, K³.

L is an induction aperture, controlled by a flap-valve or deflecting board, l, and connecting with the screen-bag K³.

The material being fed in at the hopper M, and the fan being set in motion, a current of air will enter the induction-aperture along with the bronze powder, and, this air-current being made to impinge sharply by the action of the deflecting board upon the surface of the sheet as it is carried along by the movement of the cylinder, will cause the powder to deposit upon the printed surfaces, while the superfluous powder will be carried along by the air-current through the fan and deposited in the screen-bag, to again enter the induction-aperture as required.

My invention possesses great advantages over other means for like purposes, in that it prevents the escape of the material from the machine into the surrounding atmosphere to poison the lungs and destroy the health of the attendant workman, and, also, in that it improves the quality and uniformity of the work done.

It is, also, evidently applicable to various analogous uses, such as applying flock, glass, and Paris green, and making sand-paper, paper hangings, &c.

Having thus described my invention,

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

1. The combination of the fan D, and nozzle D², for producing an impinging current of commingled air and powdered material, with the air-chamber C, and sheet-feeding mechanism, or their equivalents, arranged and operating substantially as hereinbefore set forth.

2. The combination of mechanism for producing an impinging current of commingled air and powdered material, with an exhausting mechanism for carrying off the air and superfluous material, substantially as and for the purpose hereinbefore set forth.

3. The screen-bag G, in combination with a fan or fans arranged and operating to produce impinging and exhausting currents, substantially as and for the purpose hereinbefore set forth.

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Witnesses:

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