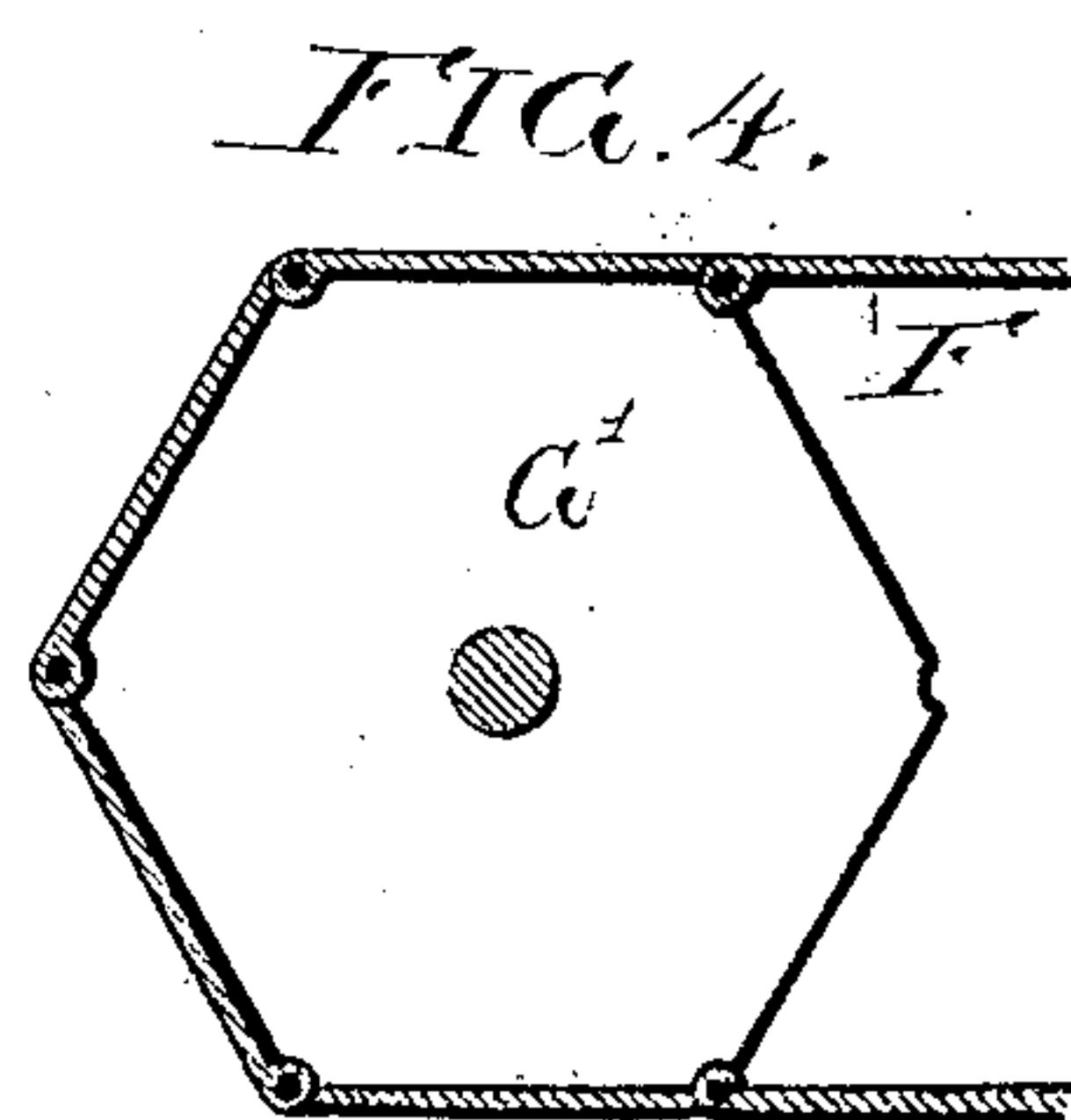
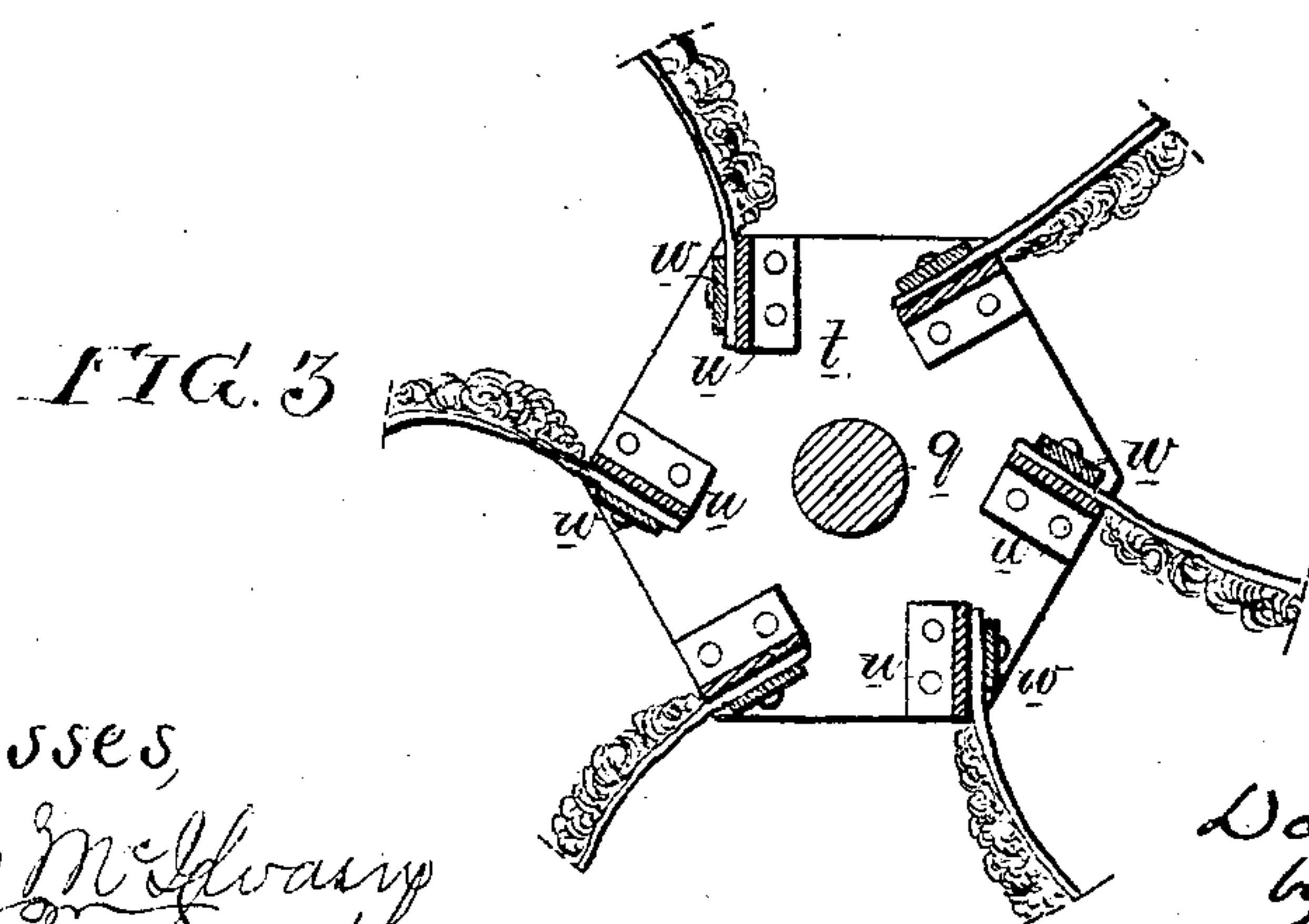
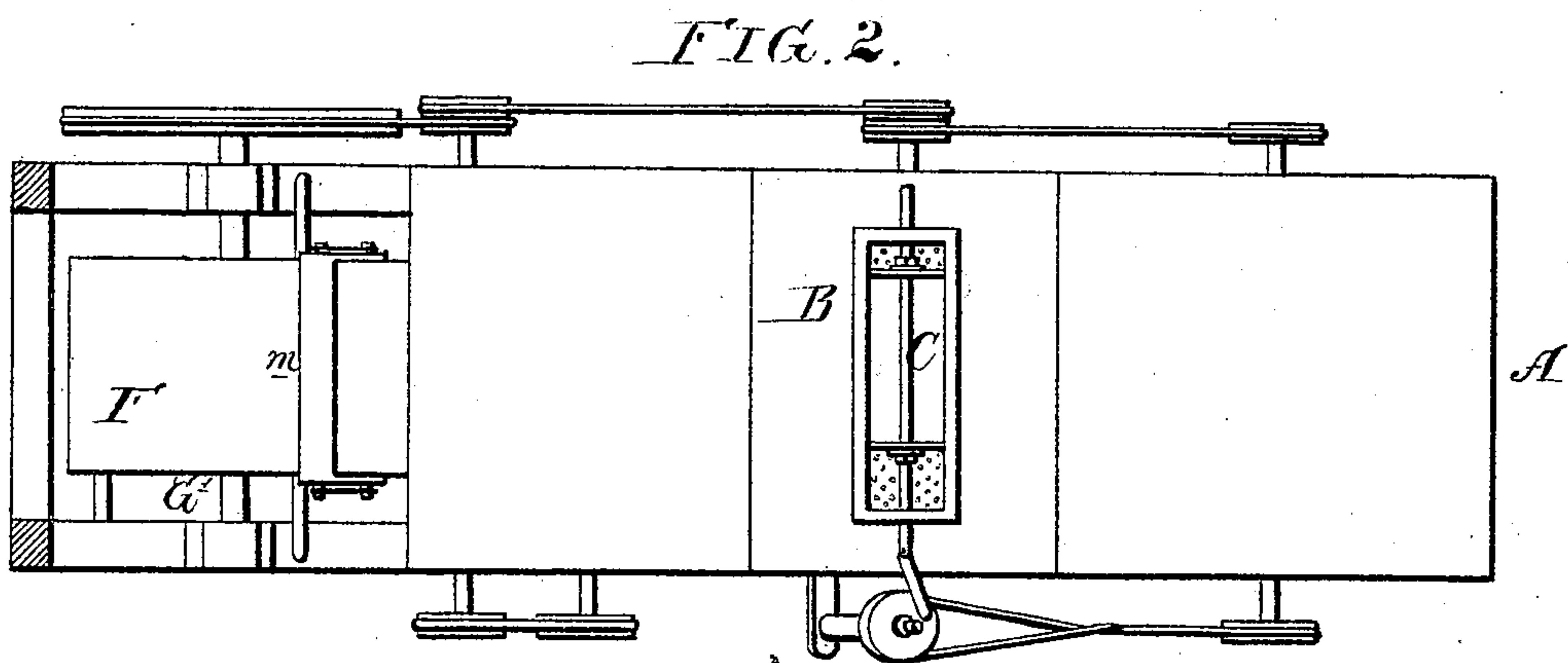
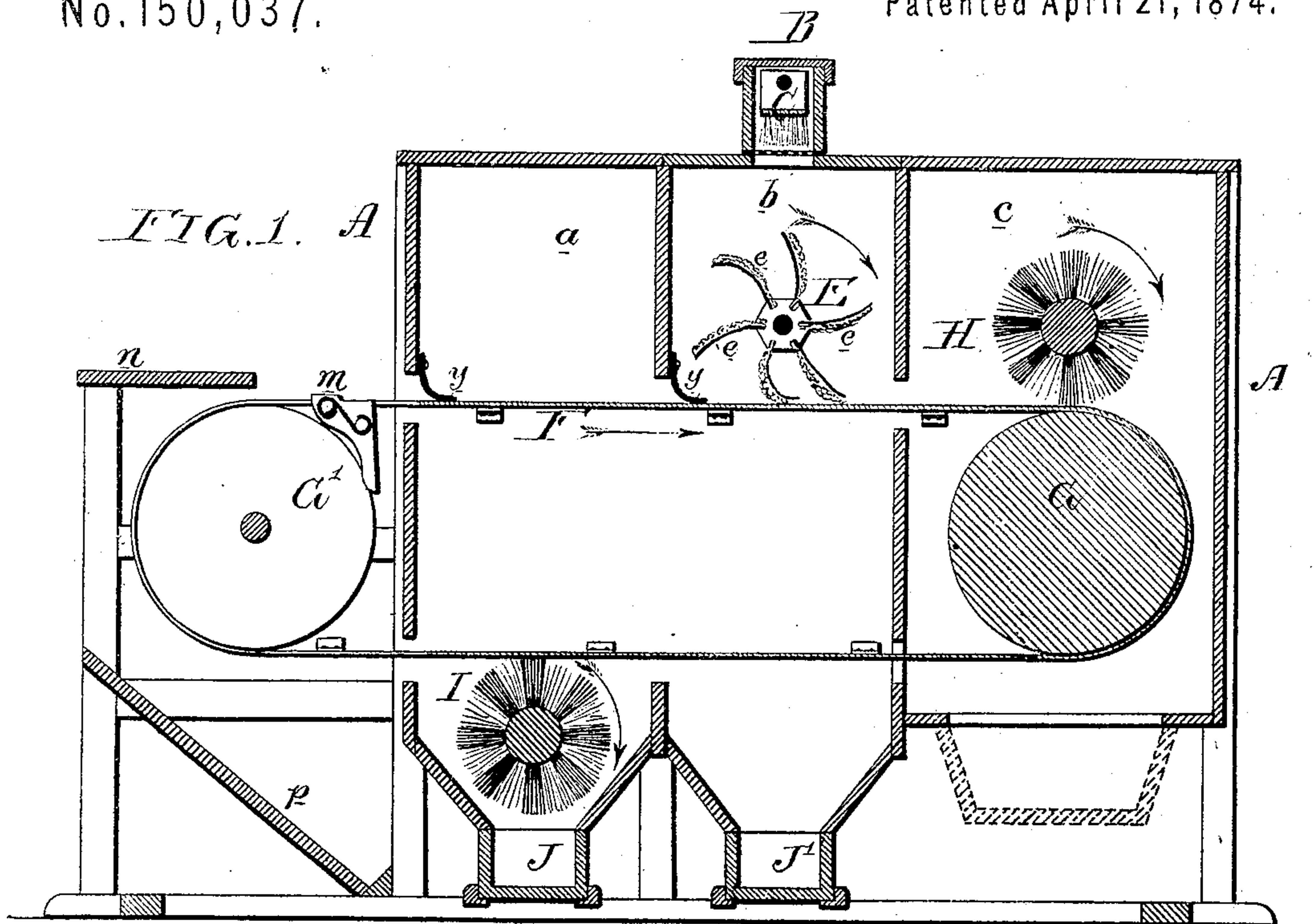


D. HESTON.  
Bronzing-Machines.

No. 150,037.

Patented April 21, 1874.



Witnesses,  
Thomas McGowan  
Harry Smith

David Heston  
by his Attor:  
Hewson and Son



# 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. **150,037**, dated April 21, 1874; application filed November 28, 1873.

*To all whom it may concern:*

Be it known that I, DAVID HESTON, of Philadelphia, Pennsylvania, have invented a Bronzing-Machine, of which the following is a specification:

The object of my invention is to apply bronze powder to printed sheets of paper with rapidity, and without exposing the attendants to the deteriorating effects of the powder; and this object I attain by the machine which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a vertical section of the bronzing machinery; Fig. 2, a plan view; and Fig. 3, an enlarged sectional view of the rotating pad.

The box A contains three compartments, *a*, *b*, and *c*, and on the top of the box, above the central compartment *b*, is a receptacle, B, for containing the bronze powder, this receptacle having a perforated bottom, over which a brush, *c'*, is caused to reciprocate, and to force through the perforations the powder, which is distributed onto the flexible vanes or flaps *e* of the rotating pad E, which is caused to revolve in the direction of the arrow, so that the flaps will strike the paper on the endless apron F as the latter traverses in the course indicated by its arrows, the paper having been printed with the usual sizing in those parts which have to receive and retain the bronze. I make the flaps or vanes of lamb-skin with the wool on the woolly surface, and, owing to the yielding character of the skin striking the bronze against the paper, it is deposited in the light and delicate manner nearly analogous to that adopted with light pads of cotton-wool in the hands of those who apply bronze to printed surfaces in the usual manner. The apron passes round the front roller G', and round the rear roller G, above which a revolving brush, H, with fine bristles, removes the greater portion of superfluous powder from the printed sheet, and causes the bronze to fall to the bottom of the compartment *c*, where there is a suitable detachable receptacle (shown by dotted lines) to receive it. There is another revolving brush, I, which removes from the sheet the remnants of the superfluous powder, which falls into the removable drawer J imme-

diately below the brush. There may be additional revolving brushes; one, for instance, may be situated directly above the receptacle J'. The endless apron is provided with a series of spring-clips, *m*, situated at such intervals as the size of the printed sheets may suggest, one only of these clips being shown in the drawing. When one of these clips arrives at the position shown in Fig. 1 it is opened by contact with a stationary object, and the end of a printed sheet taken from the platform *n* is introduced between the clip and the apron, the former closing on the paper, which is carried by the said apron in the direction pointed out by the arrows, and is subjected to the bronzing process described above, the paper being released when it arrives at the front roller G', and above the inclined platform *p*, into which it falls. Thus sheet after sheet is seized by successive clips on the apron, bronzed, and delivered and released above the said platform *p*.

It has not been deemed necessary to describe minutely the detailed construction of the clips, as they may be similar to those used in connection with cylinder printing-presses.

The general frame-work of the machine, and method of driving the apron F, rotary pad E, and rotary brushes by means of belts and pulleys, will be readily understood without further explanation than that afforded by the drawing, in which the means of imparting a reciprocating motion to the brush C is also clearly shown. I prefer to construct the rotating pad in the manner illustrated in the enlarged view, Fig. 3. Two plates, *t*, are secured to the shaft *q* of the pad, and from plate to plate extend a series of bars, *u*, to which the strips of lamb-skin are secured by plates *u* and rivets.

Independently of the rapidity with which printed sheets can be bronzed by the machine, it possesses the advantage of preventing the dissemination of the impalpable powder, which is of so deleterious a character as to impair the health of those who are engaged in applying bronze by hand.

In order to effectually confine the powder to the interior of the compartments, I arrange flexible strips, *y*, of suitable fabric at points

where the endless apron passes through the front end of the box and through the partitions. These partitions are not absolutely essential; but I prefer to place the rotating pad in compartments separate from those which contain the brushes, as shown, so as to restrict the dissemination of the powder as much as possible.

The endless apron F may be made of leather or other flexible material, as shown in Fig. 1, or of a series of links adapted to polygonal rollers, as shown in the modification, Fig. 4.

I claim as my invention—

1. A bronzing-machine having an endless apron, F, provided with clips *m*, for seizing and conveying successive sheets of paper, a rotating pad, E, with flexible flaps *e* of sheep-

skin or analogous material, for applying the bronze, and a rotating brush or brushes for removing the superfluous bronze, all constructed and arranged for operation substantially as set forth.

2. The combination, in a bronzing-machine, of the rotating pad E and the box B with its perforated bottom and reciprocating brush, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID HESTON.

Witnesses:

WM. A. STEEL,  
HARRY SMITH.