

(No Model.)

2 Sheets—Sheet 2.

J. H. BINGHAM.  
BRONZING MACHINE.

No. 248,012.

Patented Oct. 11, 1881.

Fig. 3.

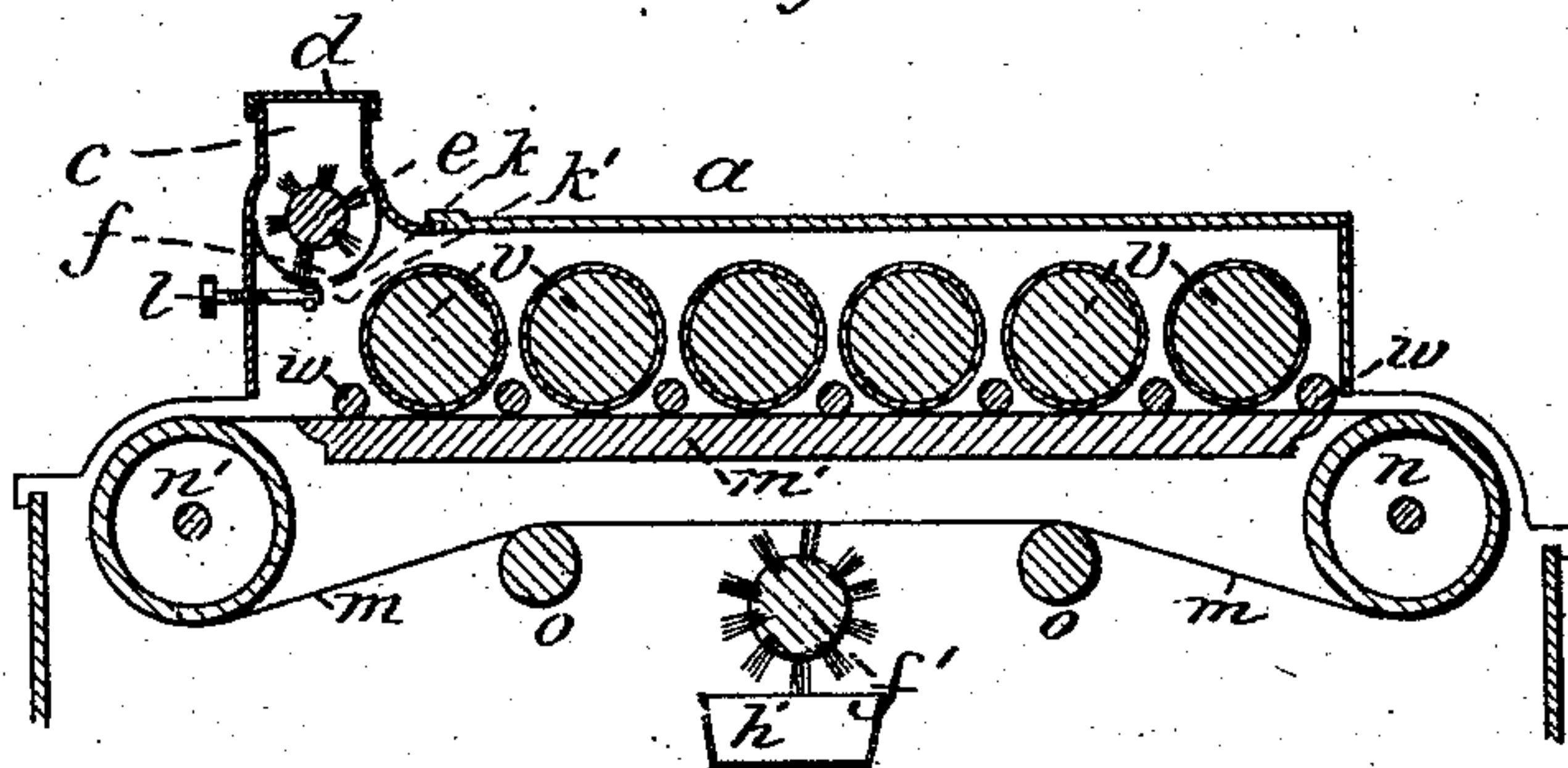


Fig. 4.

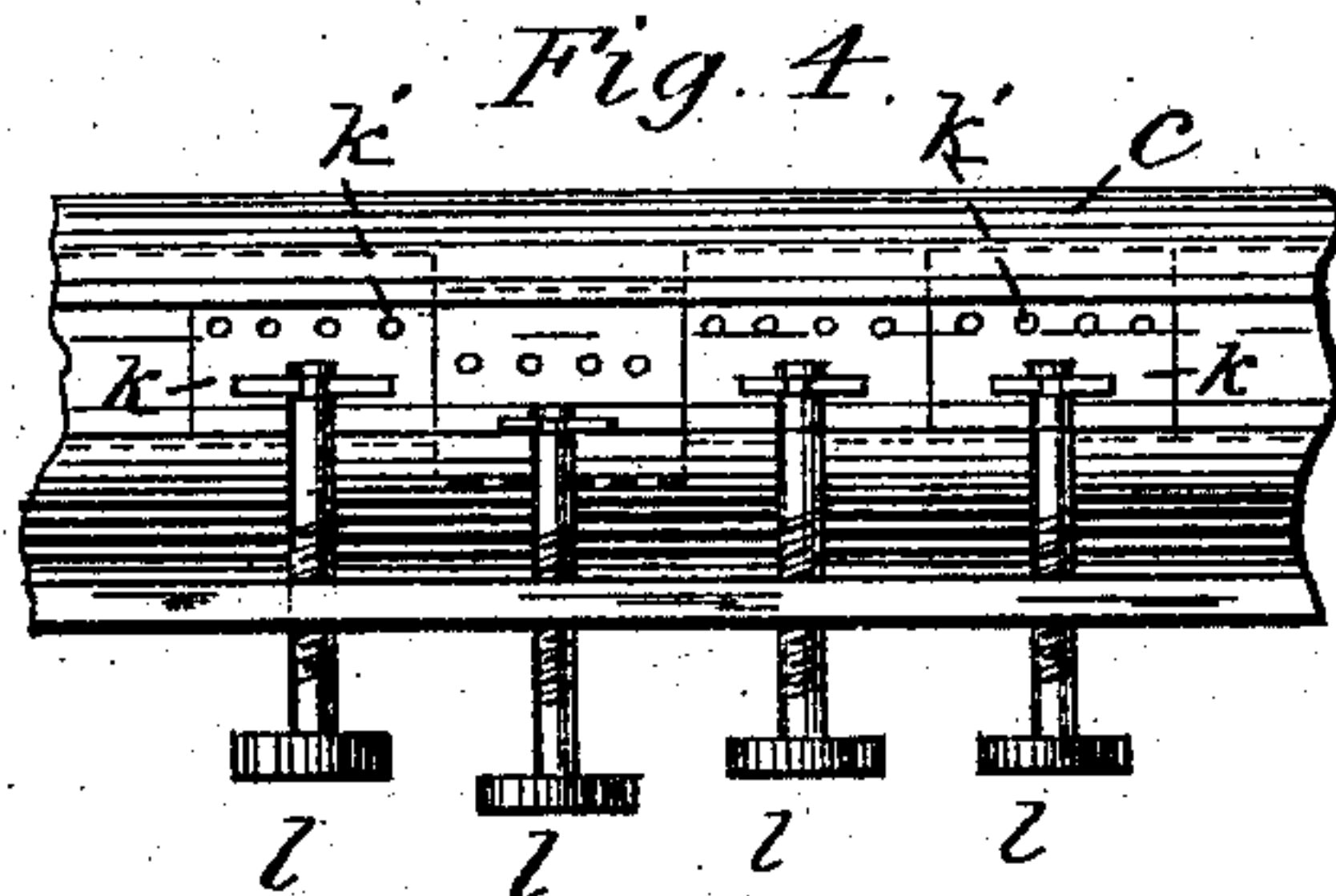


Fig. 5.

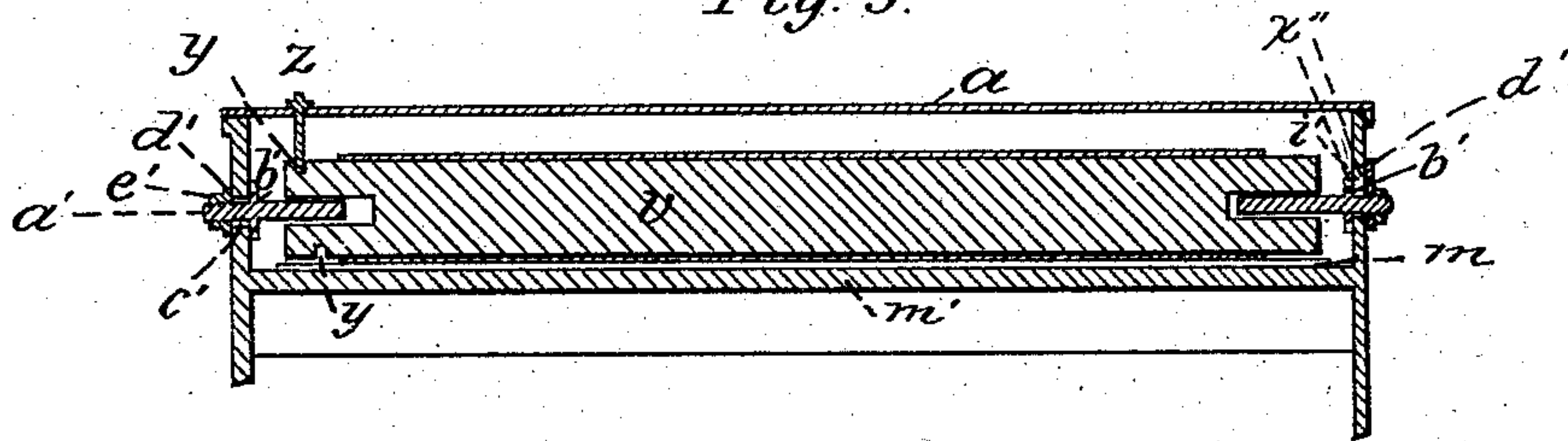
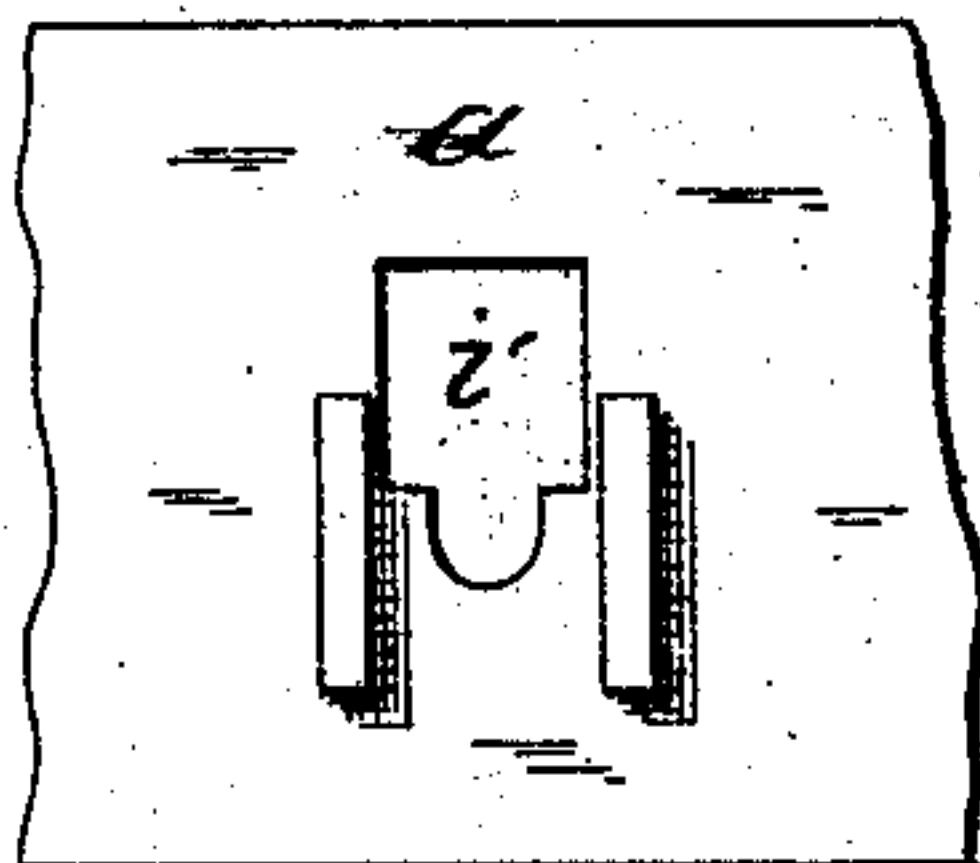


Fig. 6.



Witnesses.

Chas. L. Rundlett.  
James J. Greene,

Inventor.

John H. Bingham  
By W. E. Simons  
Atty

(No Model.)

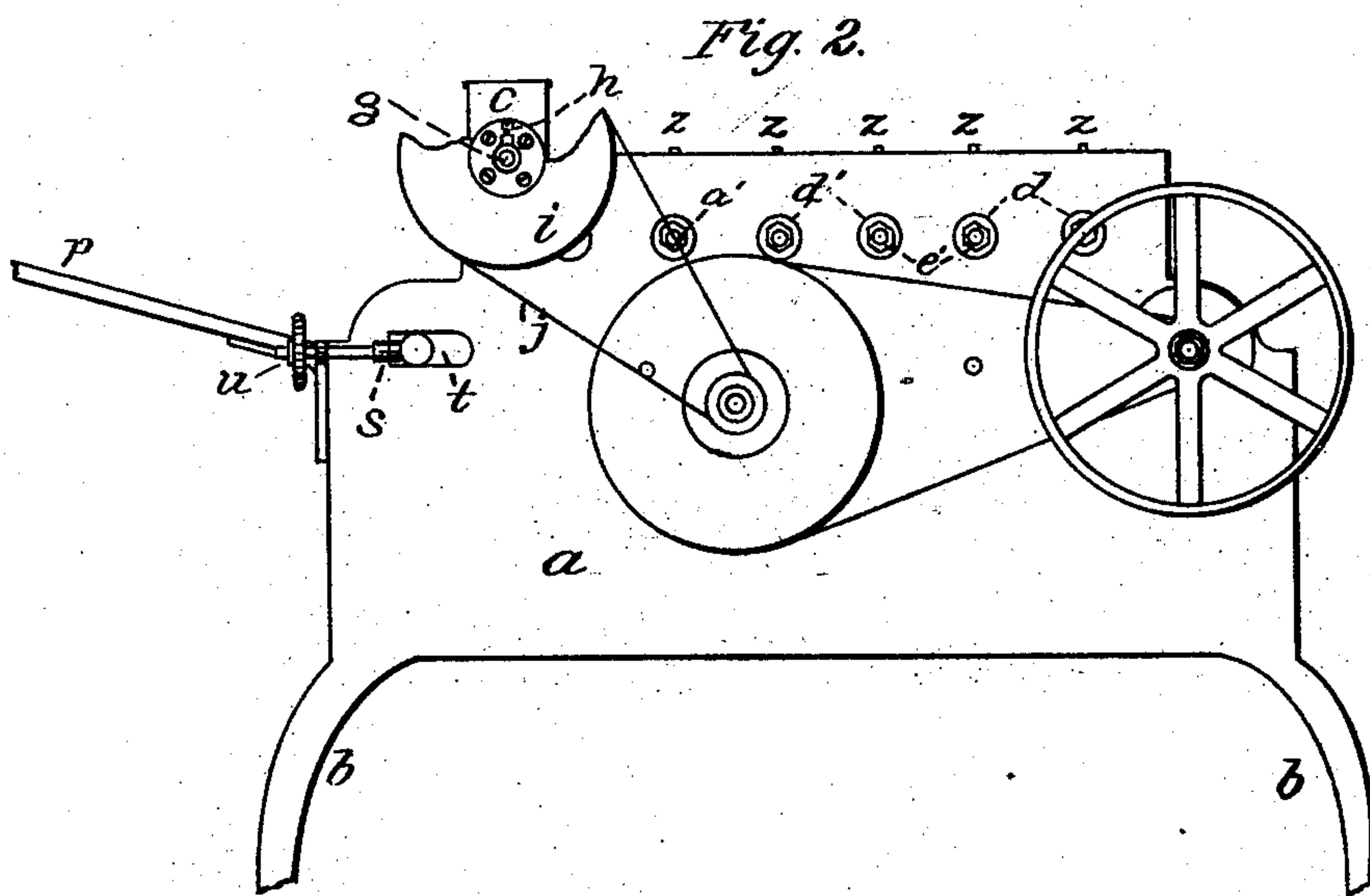
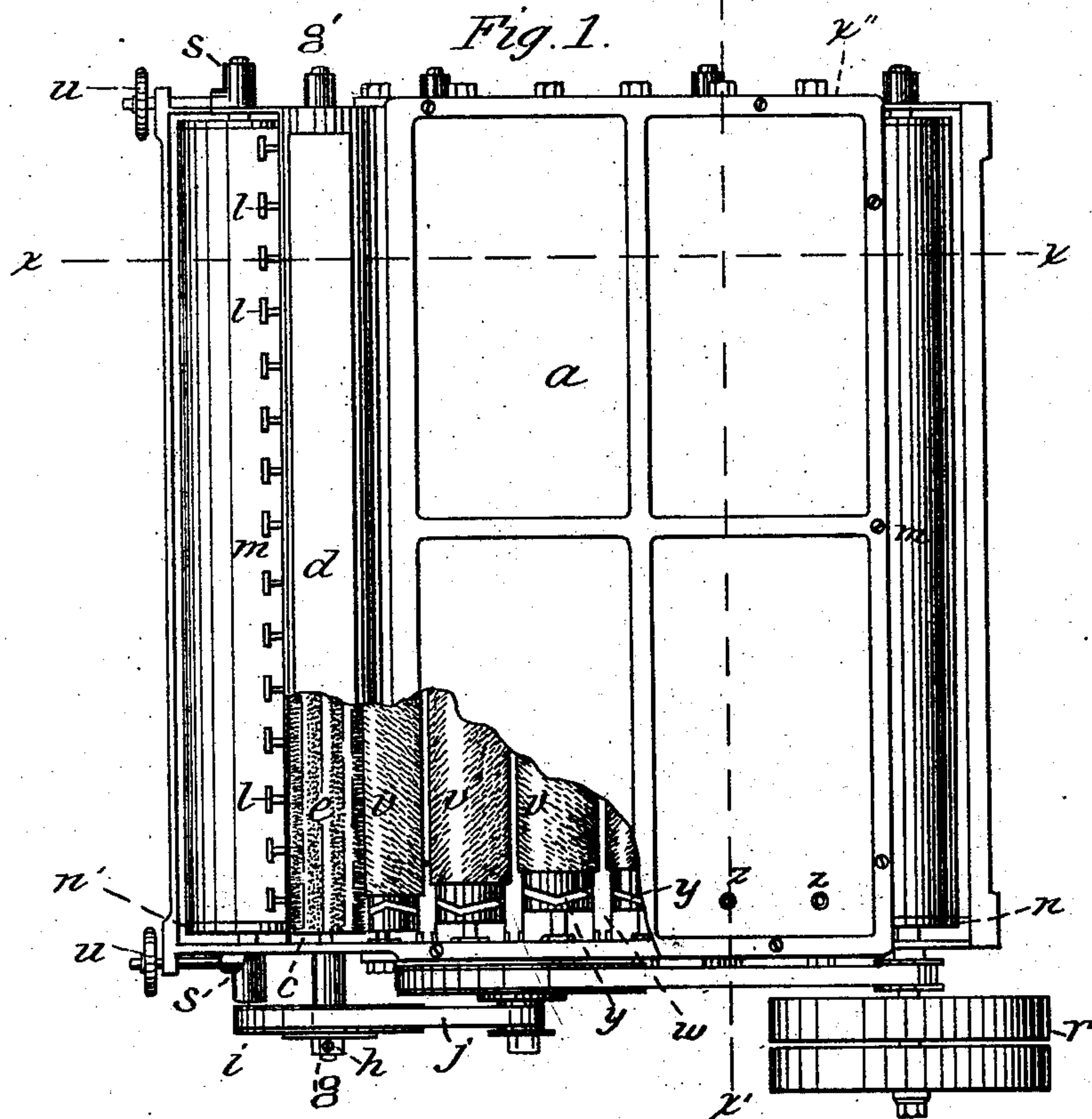
2 Sheets—Sheet 1.

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Chas L. Rusdell.  
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# UNITED STATES PATENT OFFICE.

JOHN H. BINGHAM, OF HARTFORD, CONNECTICUT.

## BRONZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 248,012, dated October 11, 1881.

Application filed May 3, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. BINGHAM, of Hartford, in the county of Hartford and State of Connecticut, have invented a certain new and useful Improvement in Bronzing-Machines, of which the following is a description, reference being had to the accompanying drawings, where—

Figure 1 is a top view of a machine embodying my improvement, with a portion of the top plate represented as broken away—this for the purpose of exposing the mechanism beneath; also with a portion of the “fountain” or “stock-box” represented as broken away—this for the purpose of showing the interior of the same. The feed-board is also omitted in this view. Fig. 2 is a side view of the machine, a portion of the pulley appurtenant to the fountain-brush broken away. Fig. 3 is a view of the machine in vertical section on plane denoted by line  $x x$ . Fig. 4 is a detail view of part of the bottom or under side of the fountain or stock-box. Fig. 5 is a detail sectional view of a portion of the machine on line  $x' x'$ , the section being transverse as to the whole machine, but extending down but a part of the depth of the machine. Fig. 6 is a detail side view of a very small part of the machine—that denoted by the dotted line  $x''$ —the object of which is to show the mortises or shaft-openings in the side of the table-box for the short shaft-pin which each of the bronzing-rollers has at one or (in the case of the first of these rolls) at both ends.

The mechanism is contained mainly in the table-box, which, as a whole, I will designate by the letter  $a$ , which is supported on suitable legs,  $b$ .

The letter  $c$  denotes the receptacle for containing the bronze-powder before it is applied, which I will call the “fountain” or “stock-box.” It is detachable from the box  $a$ .  $d$  denotes the cover of this fountain. Within it is a rotating brush-wheel,  $e$ , for constantly agitating the bronze-powder and carrying it over and across the small exit-orifices  $f$  in the bottom thereof. This brush-wheel is hung at one end loosely on the shaft-pin  $g'$ , and at the other end (fast by means of set-screw  $h$ ) on the shaft-pin  $g$ , which are supported in proper bearings appurtenant to the table-box. The shaft-pin  $g$  has a pulley,  $i$ , thereon, and motion is communi-

cated to the brush-wheel by belt  $j$ , running on this pulley.

Underneath the fountain and underneath the exit-orifices is a series of sliding valves,  $k$ , provided with holes  $k'$ , corresponding to the exit-orifices, which are moved to close and uncover the exit-orifices by means of the screws  $l$ , hung in a portion of the fountain or stock-box. The opening and closing motions of these valves is transversely of the length of the brush-wheel, enabling me to make and use these valves in sections, so that one part of the fountain can be adjusted in this respect independent of the other parts.

The letter  $m$  denotes an endless apron passing around rollers  $n n'$  and over (on the top of) rollers  $o o$ . The sheets to be bronzed are fed from the feed-board  $p$  upon this endless apron, and are delivered at the opposite end of the machine bronzed, the motion being imparted to roll  $n'$  by belt running on pulley  $r$ . Roller  $n'$  is hung in bearing-blocks  $s$ , which are adjustably held in mortises  $t$ , (made in the sides of the table-box,) the position of which can be regulated to give the endless belt greater or less tension by the screws  $u$ .

The letter  $v$  denotes a series (two or more) of bronzing-rolls, made of any suitable material. I have found it well to make the body of wood, with metallic ends, and covered, the first and last rolls with plush, and the intermediate with the fur of beaver or skunk. These rolls have shaft-holes in the ends of somewhat larger diameter than the shaft-pins which enter them, so as to allow the rolls some freedom of up-and-down movement, so that they can accommodate themselves to paper of different thicknesses. These rolls rest on the endless apron and have their rotation given thereby. Intermediate between these bronzing-rolls are smaller rolls  $w$ , for insuring that the paper passing through the machine keeps flat down on the endless apron. Each of these bronzing-rolls has a longitudinal reciprocation or vibration while it rotates, and this is (or may be, for I have different ways of effecting it) given by cam-grooves  $y$  in the ends of the rolls, into which project pins  $z$ , stationarily fixed in the top plate of the table-box. This longitudinal movement of the bronzing-rolls, in combination with the rotary motion, is very effective in spreading the pow-



der upon each and every part of the passing sheet of paper.

The letter *a'* denotes a kind of shaft-pin, with which one end of each of the bronzing-rolls (except the first) is equipped. The pin has a collar, *b'*, for bearing against the inner surface of one side of the table-box; thence it passes a mortise, *c'*, in the side of the table-box, of a shape that allows vertical adjustment of the shaft-pin, where it bears outside the table-box a washer and mortise-closer, *d'*, and outside that it bears a nut, *e'*, which serves to fasten the pin in its place. The mortise *i'* at the other end of each of the bronzing-rolls except the first, and at both ends of that, is so modified in shape as to permit the collar *b'* to pass through it, (see Fig. 6,) and the washer and mortise-closer *d'* is modified in shape accordingly.

Underneath the endless belt is a rotating brush-wheel, *f'*, which brushes the superfluous bronzing-powder off into the box *h'*, and thereby saves it.

In order to prevent sagging of the endless apron *m*, which would cause a sheet passing through for bronzing to curl up at its front edge and pass over instead of under the bronzing-rolls *v*, and to render unnecessary a frequent adjustment of the tension of the endless apron *m*, and also to furnish a firm bed for the action of the bronzing-rolls *v*, and so insure an even deposit of the bronze-powder, I use a dia-

phragm, *m'*, placed in the table-box just below the bronzing-rolls, and under and in contact with the endless apron *m* as it passes between the upper surfaces of rollers *n n'*.

I claim as my invention—

1. In combination, the fountain or stock-box, (the brush-wheel rotary therein,) the exit-orifices therein, and the sectional sliding valves for the same, moving transversely of the length of the brush-wheel, all substantially as described, and for the purpose set forth.

2. The combination of the endless apron with the bronzing-rolls rotating thereon and impelled thereby, all substantially as set forth, and for the purpose described.

3. The shaft-pin for the end of the bronzing-roll provided with collar, nut, and washer, in combination with the mortise which permits the passage of the collar through the same, all substantially as set forth, and for the purpose described.

4. In combination, the fountain with its brush-wheel, the endless apron with the diaphragm on which it rests, and the bronzing-rolls having longitudinal play and impelled by the endless apron, all substantially as described.

JOHN H. BINGHAM.

Witnesses:

CHAS. L. BURDETT,  
JAMES J. GREENE.