

(No Model.)

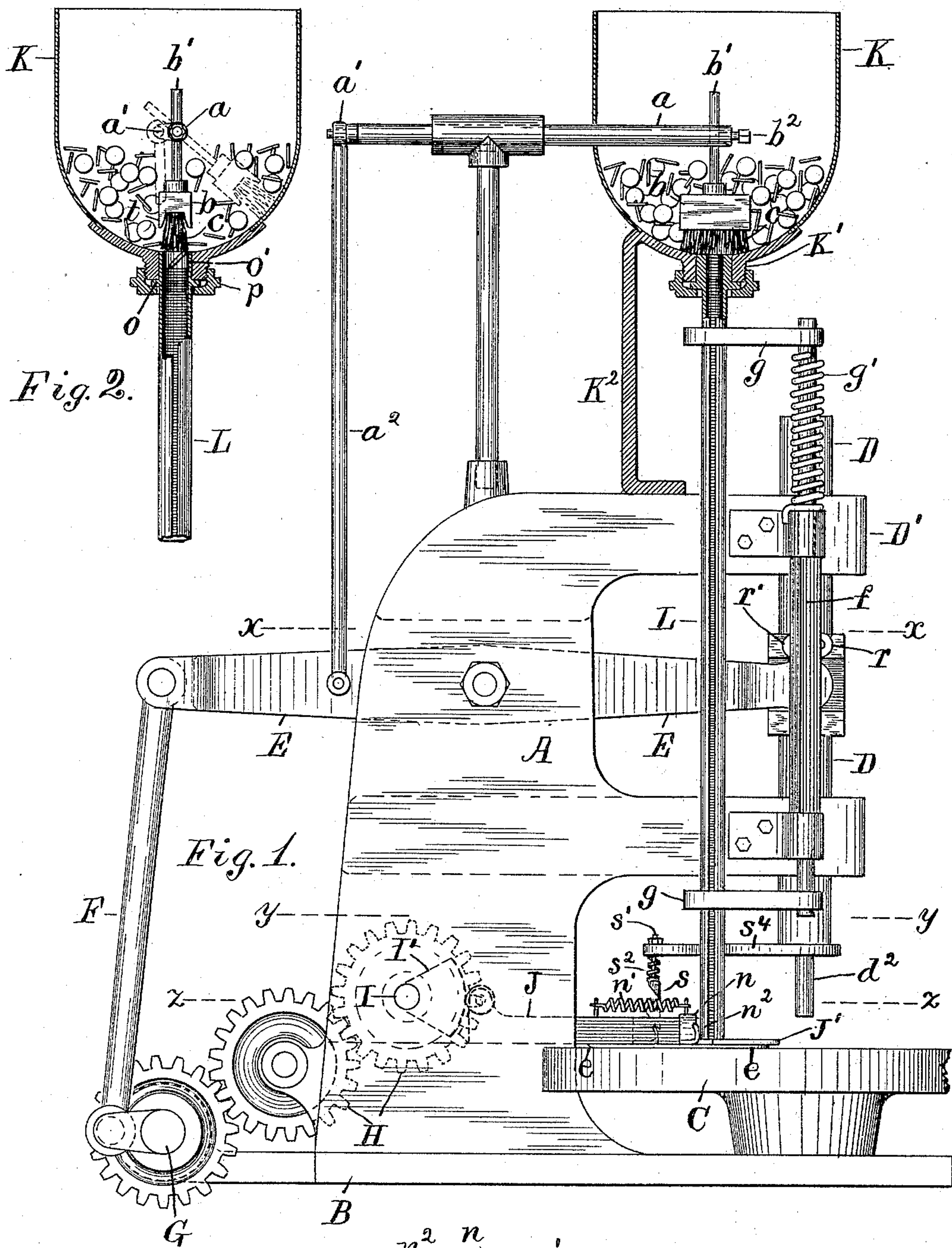
2 Sheets—Sheet 1.

W. P. DEVINE.

AUTOMATIC DEVICE FOR FEEDING BLANKS.

No. 488,389.

Patented Dec. 20, 1892.



Attest:
J. Van der Vort Jr.
L. Lee.

Fig. 3.

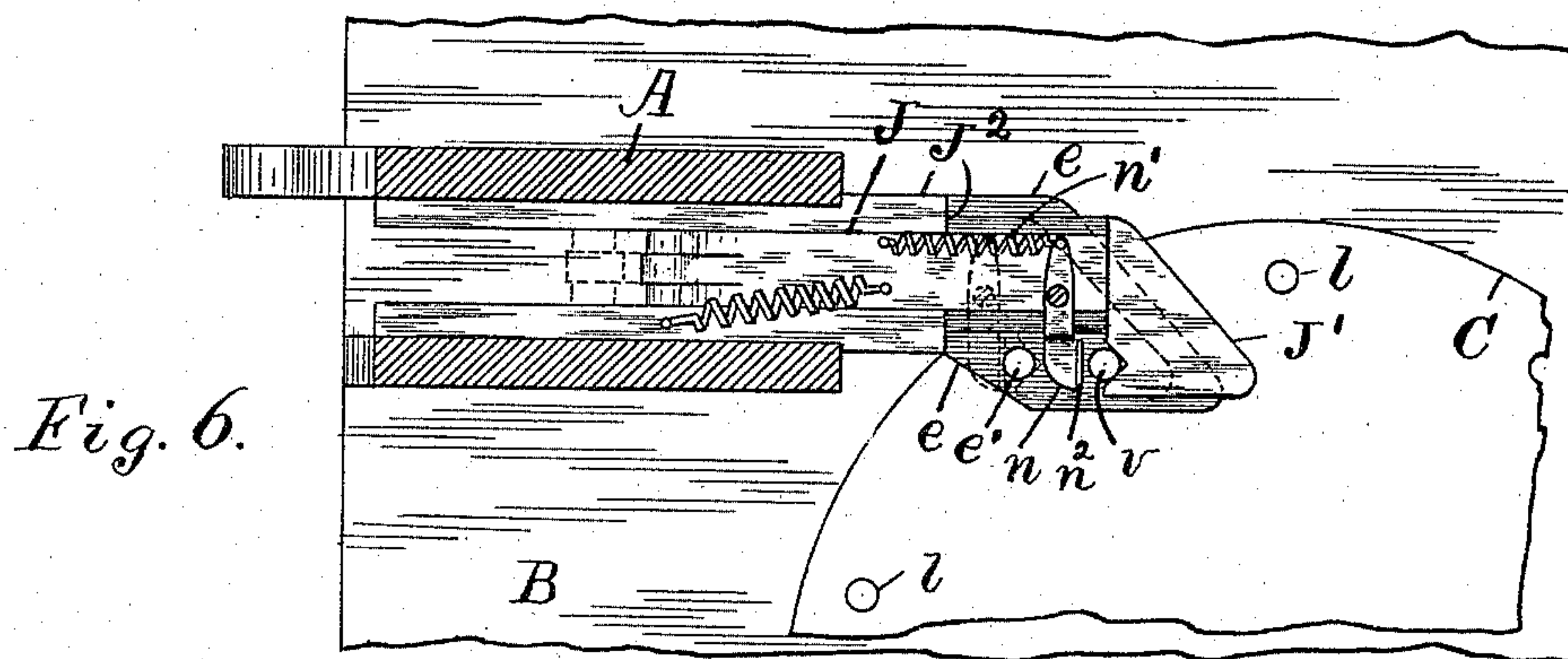
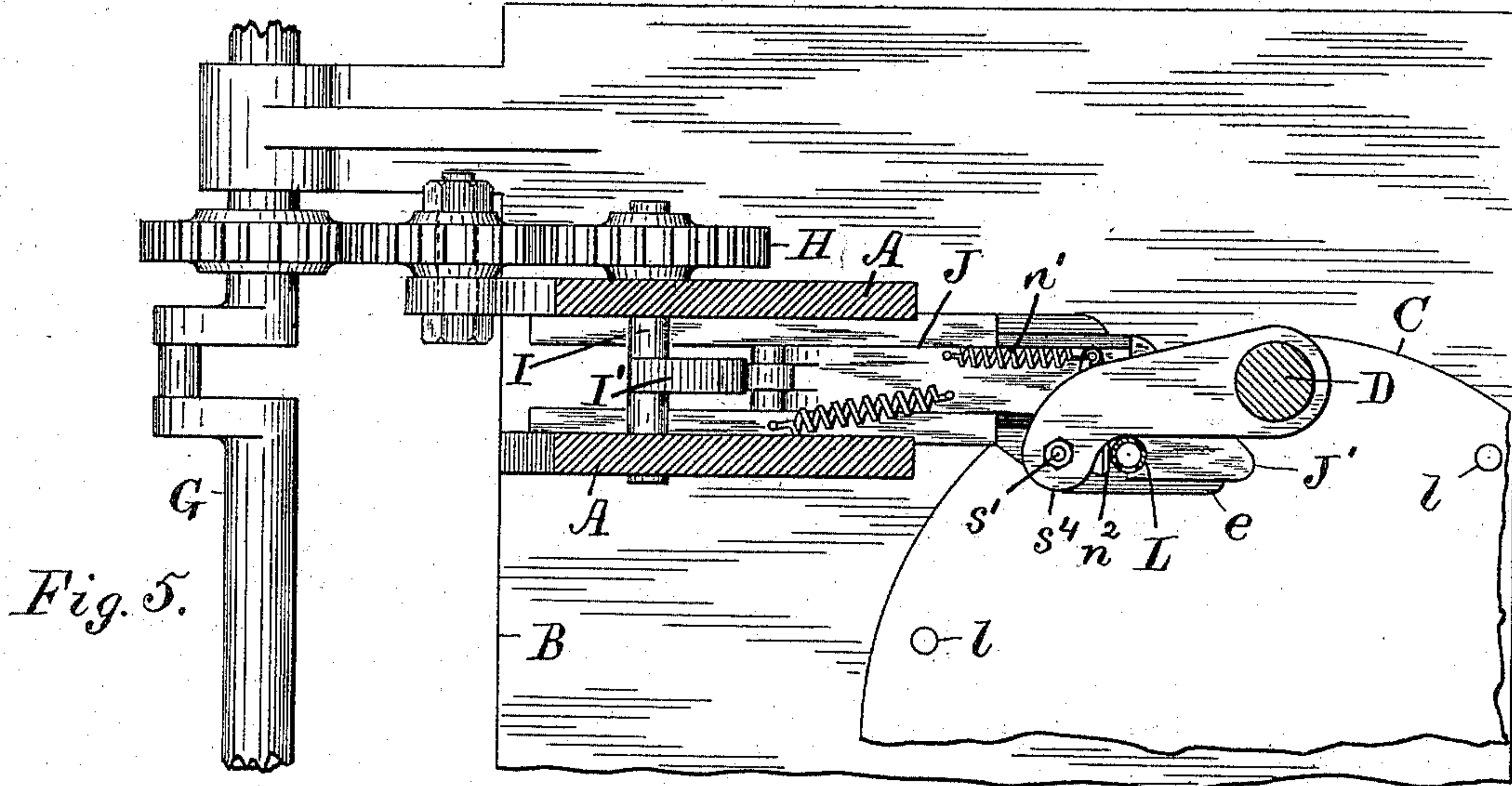
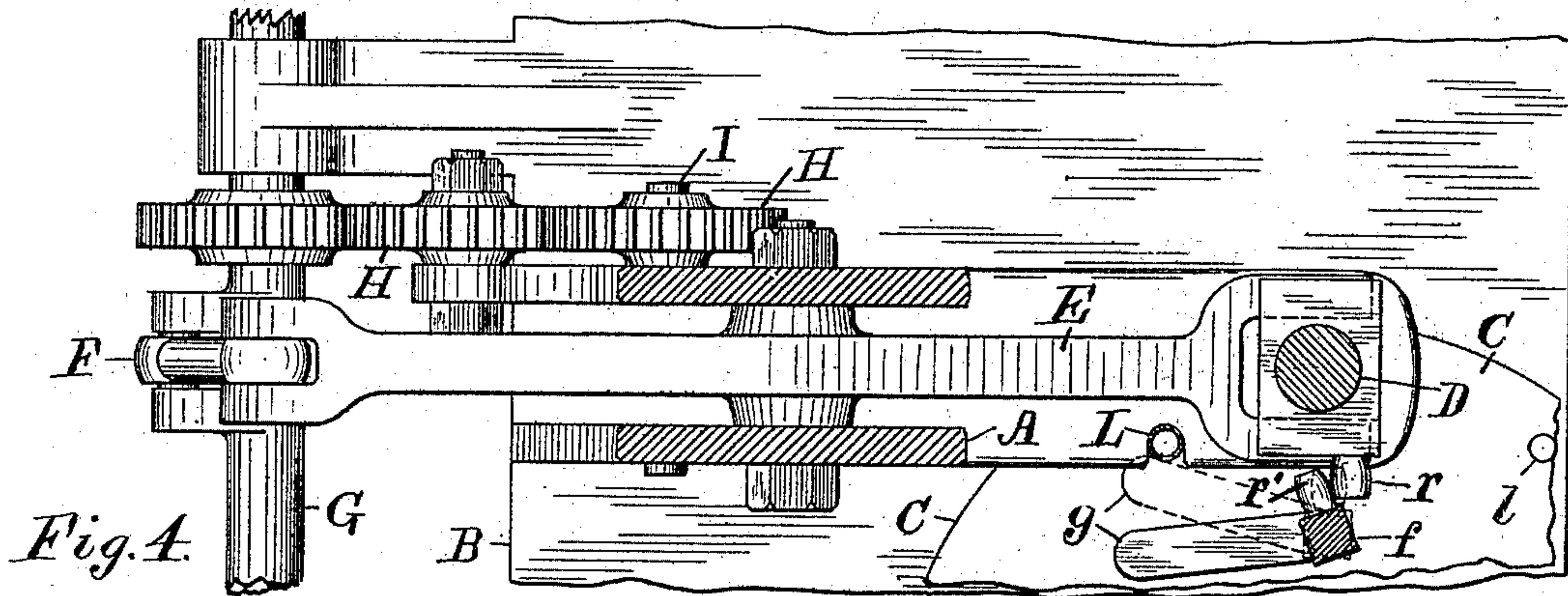
Inventor.
W. P. Devine, per
Crane & Miller, attys.

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UNITED STATES PATENT OFFICE.

WILLIAM P. DEVINE, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF
TO WILLIAM D. DONOVAN, OF SAME PLACE.

AUTOMATIC DEVICE FOR FEEDING BLANKS.

SPECIFICATION forming part of Letters Patent No. 488,389, dated December 20, 1892.

Application filed January 27, 1892. Serial No. 419,373. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. DEVINE, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Automatic Devices for Feeding Blanks, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to machines in which disks of paper or metal or other objects are fed intermittently into a die to be operated upon by a suitable punch, and the apparatus is especially applicable to the manufacture of
15 covered or metal buttons in which it is common to use a filling of thick paper or pasteboard. The feeding of paper blanks of disk-like character is especially difficult, because of their lightness, the roughness and fibrous
20 character of their edges, and the tendency for the fibers to become detached and to clog the apparatus.

The present invention consists, partly, in a special construction for the hopper and for a
25 brush to discharge the blanks into a vertical tube, partly, in a beater attachment for vibrating the tube to facilitate the descent of the blanks, and partly, in means connected with a feeder slide to grasp each blank and
30 center it accurately over the die.

The invention will be understood by reference to the annexed drawings, in which

35 Figure 1 is a side elevation of a button machine with many of the parts removed, which do not relate to the invention, and the hopper being shown in section on a line with the oscillating shaft. Fig. 2 shows the hopper with a part of the feeding tube; the parts being in section where hatched, at right angles to the
40 oscillating shaft. Fig. 3 is an end view of the feeder slide; Fig. 4 is a plan in section on line x, x , in Fig. 1; Fig. 5 is a plan on line y, y , in Fig. 1; and Fig. 6 is a plan on line z, z , in Fig. 1.

45 For illustration, the invention is shown applied to a button machine having a goose-neck standard A mounted upon a base B with a rotating die plate C, a portion only of which is shown.

50 D is a punch spindle mounted in bearings D' and carrying a punch D²; E is a lever ac-

tuating the same by a link F from a crank shaft G. A cam shaft I is connected by gears H with the crank shaft G, and is provided with a cam I' operating upon the feeder slide
55 J. The hopper K is formed with hemi-spherical bottom so that the gravity of the blanks shall direct them exclusively toward the inlet of the feeder tube L in the nozzle K'. The hopper is mounted above the standard or
60 frame A upon a post K², and an oscillating shaft a is inserted through the side of the hopper and provided with a brush holder b from which bristles c are projected toward the inlet of the tube L. The bristles would
65 be inserted in the holder b in tufts secured within holes, as in any ordinary brush block, but the sides of the holder are formed with ribs or guards t projected downward by the
70 sides of the bristles, and curved internally to prevent the bristles from bending abruptly against the sides of the holes, which is likely to cut the bristles and greatly diminish their durability.

The shaft a is oscillated by a crank a' and
75 a link a^2 connected with lever E.

A vibrating shaft f is journaled upon the bearings D' of the punch spindle D, and is formed with two beater arms g adjacent to the feeder tube. A spring g' is applied to the
80 shaft f to press the arms normally toward the tube, and a roll r attached to the punch spindle is arranged at each stroke of the spindle to press upon a roll r' projected from the shaft
85 f and slightly twist the shaft, which draws the beater arms g away from the tube L and permits them to fly back under the influence of the spring g' . This action occurs both at the upward and downward stroke of the punch spindle D, and the beaters g thus jar the feeder
90 tube continuously, and loosen any blanks that may be stuck therein. It also discharges any dust or fibers through the slot. The blanks are thus maintained in a horizontal position in the tube, as shown in Figs. 1 and 2. The
95 brush holder b is vibrated back and forth in contact with the bottom of the hopper, its extreme movement being indicated in dotted lines in Fig. 2, and it thus operates in its reverse movements to tip over any blanks that
100 may be jammed in the mouth or inlet of the feeder tube. Such an operation is materially

different from that of a continuously rotating brush, which may push the blanks into an improper position.

To adapt the hopper for use with feeder tubes of various sizes, I form upon each feeder tube a collar O and nozzle O' of uniform size, the nozzle being adapted to fit within the nozzle K', and to penetrate flush with its inner surface, while a threaded socket p serves to clamp the collar and tube removably to the hopper. The tubes L in Figs. 1 and 2 are shown of different sizes to illustrate the use of this invention. A thin plate e is fixed to the guides J² of the slide J between the bottom of the feeder tube and the rotary die plate C, and is formed with a hole e', coincident with the die holes l in the plate C when the latter is intermittently rotated. The bottom of the feeder tube is set a little way from such hole, and the feeder slide J is provided to transfer the blanks one at a time from the bottom of the tube to the hole and deposit them in the die plate. The slide, as shown in Fig. 6, is provided with a detachable tongue J' which may be thus made of the same thickness as the blanks and perforated with a V-shaped cavity which coincides with the bottom of the tube L when the slide J is pushed forward in the position shown in Fig. 1. The cavity is thus adapted to receive a single blank; and to press the blank firmly toward the angular side of the cavity a finger n is pivoted upon the slide, with the outer end resting upon the plate e. The finger is pressed toward the blank by a spring n', and is provided with a toe n² which is intercepted by the tube L when it approaches the same, and the toe is thus held from interfering with the descent of the blank. The retraction of the slide and the tongue J' in transferring the blank, operates immediately to release the toe n² from contact with the feeder tube, and the finger n then presses the blank firmly into the angular sides of the cavity, and thus centers each blank accurately in the same position. To release the blank from the grip of the finger when it is over the die l in the plate C, a stud s is attached by an arm s' to the punch spindle and is beveled at its lower end to intercept the toe n² and push it laterally; as indicated by dotted lines in Fig. 1. The stud is fitted to the arm s' by a sliding shank s² and spring u, which permits it to press upward automatically, if a misplaced blank should permit the toe to get directly underneath the stud.

The operation of the machine is as follows. The blanks are poured promiscuously into the hopper K and by the combined action of the oscillating brush and the beaters g are fed continuously into the tube L and adjusted horizontally therein. The feeder slide is forced forward into the position shown in Fig. 6, upon the upward stroke of the punch, and a blank is then received in the cavity of the tongue J', and is transferred by the slide over the die l. The subsequent descent of the punch brings the stud s in contact with the

toe n², releases the blank, and permits it to fall into the die l. The operation of feeding the blanks into the successive dies in the plate C is continuously repeated at each stroke of the punch d². With the construction described, the feeding of the blanks is effected with absolute certainty, and thousands of the blanks are delivered in succession at the bottom of the tube without any obstruction or interruption of their movements. Where the blanks are dropped in a round hole in the feed slide the hole must necessarily be made a little larger than the blank, and they cannot therefore be centered so perfectly over the die l as when they are clamped in the feeder slide, as with the finger n. The brush holder b is secured adjustably in the oscillating shaft a by a stem b' and set screw b², and the brush may thus be set in contact with or at any desirable distance from the bottom of the hopper K. In the rotary brushes heretofore used for feeding blanks, various sets of bristles have been projected from a circular hub, and no means of adjustment has been provided to set the separate tufts of bristles to or from the sides or bottom of the hopper. Such an adjustment was not considered necessary, as the function of such brushes heretofore has been limited to the mere agitation of the hopper's contents, whereas in my construction only a single brush is used and is operated exclusively to tip backward or forward the particular blank that may be resting edgewise in the inlet of the tube L. Such an action of the brush tends to throw the blank into a horizontal position, and to thus facilitate its descent in the hopper in a regular series.

The improvements described herein may be used in a machine of any character adapted thereto, and any part of the improvements may be used separately, as each of them contributes in a certain degree to the efficiency of the machine. I do not therefore limit myself to the express form and arrangement of the elements shown herein, as such form and arrangement may be slightly modified to adapt the improvements to the particular machine in which they may be used.

Having thus set forth the nature of the invention what I claim herein is:

1. The combination, with the hopper K having the feeder tube inserted in its bottom, of the oscillating shaft a, and the brush holder b secured upon the shaft and provided with the guards t and the bristles projected from the brush holder between the guards, as and for the purpose set forth.

2. The combination, with the hopper K having the perforated and threaded nozzle K', of the feeder tube L provided each with collar O and fitted interchangeably to the nozzle K', and a threaded socket p for securing them thereon, as set forth.

3. The combination, with the hopper K, of the shaft a and vibrating link a² to oscillate the same, the brush holder b secured movably

to the shaft and adjustable to and from the
hopper, a feeder tube extended from the bot-
tom of the hopper, means for removing the
blanks successively from the bottom of the
5 feeder tube, and beaters vibrated automati-
cally in contact with the tube to jar the con-
tents and loosen the same when jammed
therein, substantially as set forth.

10 4. The combination, with a feeder tube sup-
plied with blanks, of a feeder slide having an
angular cavity formed therein, and a finger
pressed normally toward the cavity to clamp
the blank therein, as set forth.

5. The combination, with the hopper K

formed with spherical bottom and having the 15
feeder tube inserted in its bottom, of the os-
cillating shaft *a* and the brush holder *b* se-
cured movably to the shaft and adjustable to
and from the bottom of the hopper, as set
forth. 20

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

WILLIAM P. DEVINE.

Witnesses:

THOMAS S. CRANE,
WM. D. DONOVAN.