

L. W. Boynton.

Forming Bats.

Nº 11773

Patented Oct. 10, 1854.

Fig. 4.

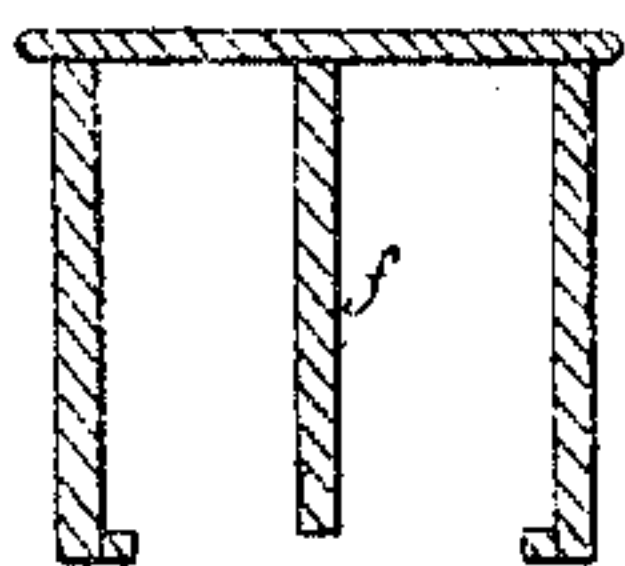


Fig. 1.

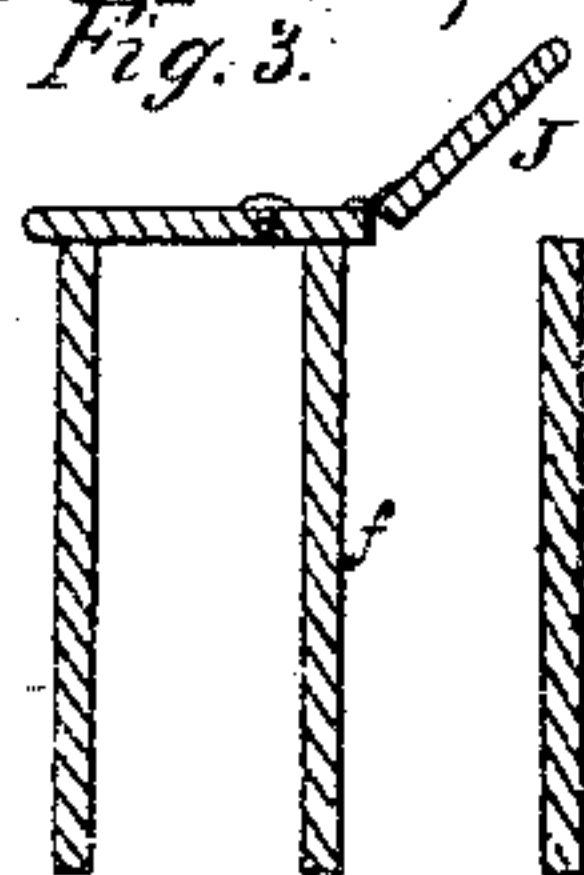
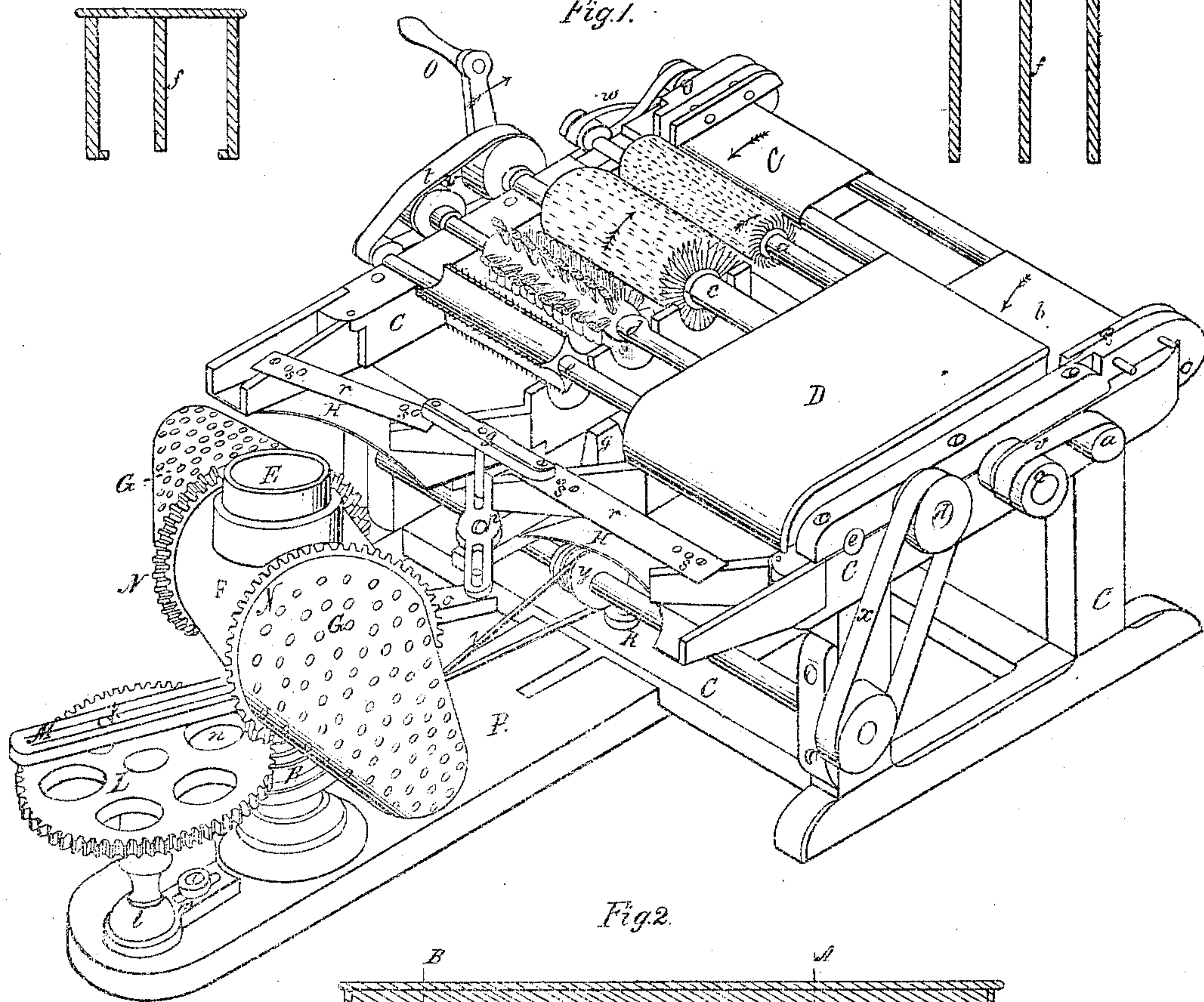
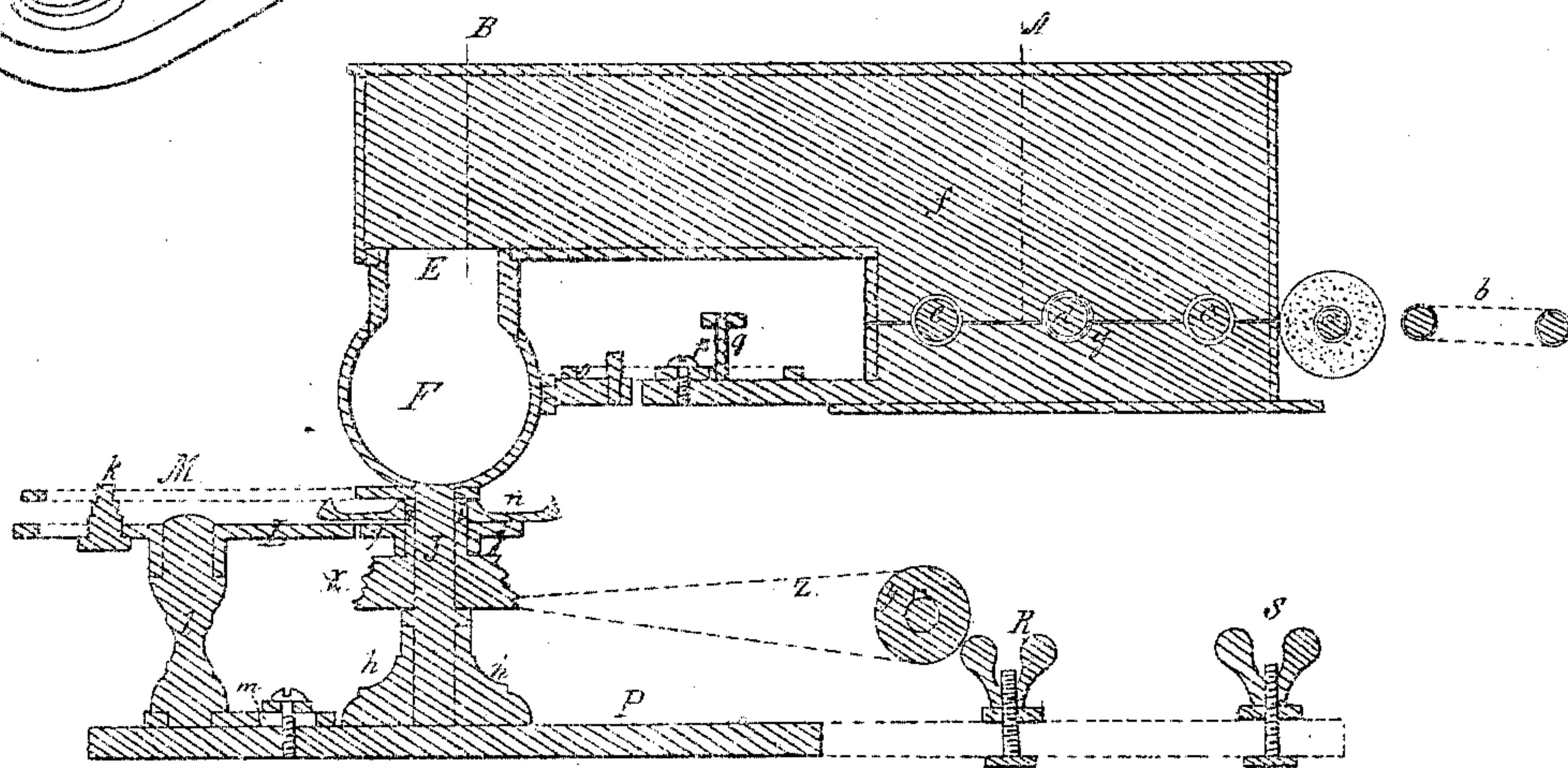


Fig. 2.



UNITED STATES PATENT OFFICE.

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MACHINERY FOR MAKING HAT-BODIES.

Specification of Letters Patent No. 11,773, dated October 10, 1854.

To all whom it may concern:

Be it known that I, LEANDER W. BOYNTON, of South Coventry, in the county of Tolland and State of Connecticut, have invented a new and useful Improvement in Machinery for Making Hat-Bodies; and I do hereby declare that the following is a full, clear, and exact description of the construction, character, and operation of the same, reference being had to the accompanying drawings, which make a part of this specification, in which—

Figure 1 is a perspective view of the machinery, with a part of the shell, or upper part of the case, &c., removed, showing one set of the cards, &c., which picks and prepares the material, and produces the vacuum, and also the machinery which operates the hollow cones, &c. Fig. 2, is a longitudinal section cut vertically through the center partition (*p*, Figs. 3 and 4,) showing the inside of the cylindrical tube onto which the perforated cones are placed, the form of the conductor through which the air passes to supply the pans, &c., and a section of the gearing, &c., which works the cones, &c. Fig. 3, is a cross section of the conductor, cut vertically in the line A, Fig. 2, showing one door open. Fig. 4, is a cross section of the same, in the line B.

My improvement consists in the method of revolving, and vibrating, two hollow perforated cones, in connection with an exhausting, picking, and blowing apparatus; and in so varying, and governing the direction of the blast, that by putting the fur, (in its ordinary state,) onto the feeding aprons, and setting the machine in motion, (by any convenient power,) there will be formed two complete hat bodies, ready for hardening, with the quantity of stock duly proportioned to the several parts.

I make the frame, C, C; of posts and bars, in a suitable form, as in Fig. 1. Upon this frame I mount a picking machine, composed of a small cylindrical card, *a*, made in the usual way with bent teeth, which run backward, (as indicated by the dart,) which receive the fur from the endless apron, *b*; a large cylindrical cord *c*, made with radiating teeth; a cylindrical brush, *d*, and a fan shaped picker, *e*, and inclose the whole four by a case, or shell, like D, under which there is another set of cards, &c., on the same arbors, *a*, *c*, *d*, *e*, (this being the arrangement

used by me for more than twenty years past for picking wool, &c., or any other convenient series of cards, brushes, pickers, &c., may be used to prepare the fur which will, at the same time, serve both as exhausting, and blowing, fans, in the manner hereafter described. To complete the case, or shell, I put on a double spout, or conductor, A, B, as shown in longitudinal section in Fig. 2, (and in cross section in Figs. 3 and 4) the center piece, or partition, *p* of which rests on a center-piece, *g*, Figs. 1 and 2, attached to the main frame, through which partition, thus formed, the arbors, *c*, *d*, *e*, of the cards, brushes &c. pass, as shown in Fig. 2. This double spout, or conductor, A, B, at its front end, receives the upper end of vertical cylindrical tube, E, which is connected with the horizontal cylindrical tube, F, (on the ends of which the two perforated hollow cones, G, and G, are placed, as shown in Fig. 1) thus forming a connection between the insides of the hollow, and perforated, cones, G, and G, and the exhausting fans, *e*, while the same fans, (*e*), serve for blowing, being sufficiently connected with the out side of the cones, G, and G, by the mouths, or apertures, H, and H, Fig. 1.

I make the cones, G, and G, hollow, of any suitable metal, and of the proper size for the hat bodies, and perforate them as represented in Fig. 1.

I make the cylindrical tube, F, of wood, or any other suitable material, of about the same diameter with the bases of the cones, and of a length suited to the size of the machine, and connect its central part by any suitable means, as the tube E, with the conductor A, B, which connects the inside of the tube, F, and the cones, with the exhaust fans *e*. I sustain this cylindrical tube, F, on a suitable support, or shaft, I, Fig. 2, which rests in an appropriate bearing, *h*, *h*, Fig. 2, in which it is revolved, (in part), to give a vibratory motion to the tube, F, to vibrate the cones, G, and G.

On the upper part of the shaft, I, Fig. 2, I place a pulley, K, with a hollow shaft, *i*, *i*, extending upward. On this hollow shaft I fit a pinion, *j*, *j*, which gears into, and works, the spur wheel, L, (which by means of the crank pin, or stud, *k*, and the slotted bar M, vibrates the cones.) This wheel, L, is supported on the upright standard, *l*, and is

adjusted by means of a slot, and secured by means of the binding screw, *m*. Above the pinion *j*, *j*, on the same hollow shaft, I place a bevel gear wheel, *n*, which works in the two bevel gear wheels, *N*, and *N*, to revolve the cones *G*, and *G*, so as to present all parts of their circular surfaces equally to the apertures, *H*, and *H*. These wheels *N*, and *N*, revolve freely on the ends of the cylindrical tube, *F*, (being held in place by any of the usual methods,) and the cones *G*, and *G*, are pressed onto circular projections on these wheels, and are held there by their own friction, or otherwise.

I attach the slotter bar *M*, rigidly to the cylindrical tube, *F*, and have the slot pass over the pin, or stud, *k*, so that when the wheel *L*, is revolved, the tube, *F*, and the cones, *G*, and *G*, will receive a vibratory motion, so as to bring the different parts of each cone alternately, directly before apertures, *H*, and *H*, to receive the fur. On the back side of the tube, *F*, I have another inflexible bar, *o*, which by means of the vibrating slotted bar, *p*, the bar, *q*, and the plates *r* and *r*, vary the position of the apertures, *H*, and *H*, so that the fur will be blown at all times onto the middle of each of the cones, and a part of the time extending, alternately, to the ends, so as to make the middle part of the hat body the thickest, (as is always required.) The plates *r*, and *r*, are adjustable by means of the holes at *s*, *s*, so that the apertures, *H*, and *H*, may be increased, or diminished, as may be desired in any case.

Having made and arranged the several parts, as before described, I apply the power to the crank, *O*, and revolve it in the direction indicated by the dart, which, by means of the bands, *t*, *u*, *v*, working on pulleys on the shafts, *a*, *c*, *d*, *e*, as seen in Fig. 1, will revolve the two sets of cards, brushes, &c., all in the same direction, as indicated by the darts, while the band, *w*, will work the endless aprons, *b*, and *b*, and the band *x*, will revolve the shaft of the pulley, *y*, which by means of the band, *z*, will revolve the pulley, *K*, to vibrate the cylindrical tube, *F*, and to revolve the cones, *G*, and *G*, as before described. I then spread the fur on the endless aprons, *b*, and *b*, when by their operation it is fed to the cards, *a*, from which it is taken off by the radiating teeth of the cards, *c*, and from them again by the brushes, *d*, and again from them by the combs or pickers on the pans, *e*, and blown out through the apertures, *H*, and *H*. By the same operation of the fans, *e*, (assisted by the brushes, *d*, and the cards, *c*, and *a*, the air will be exhausted from the cones, *G* and *G*, and tubes, *F*, and *E*, through the double spout or conductor, *A*, *B*, Fig. 2 to supply the air for blowing the fur through the apertures, *H*, and *H*, as before

described. And in consequence of the exhaustion of the air from the inside of the cones, the surrounding air will rush in, through the perforations, to restore the equilibrium, and will carry along with it, and deposit on the external surfaces of the cones, the fur which is blown out of the apertures, *H*, and *H*, (as before described;) while the cones, *G*, and *G*, will be continually revolved, (by the operation of the band, *z*, on the pulley *K*,) by means of the bevel gear wheel, *n*, working the bevel gear wheels *N*, and *N*, so as to bring every portion of the circumference of each cone, directly in line, (horizontally,) with the aperture, *H*, by a regular rotary motion, so that the quantity of fur deposited will be equal in every portion of a given cross section. And by the operation of the pinion *j*, *j*, Fig. 2, on the wheel, *L*, by means of the adjustable stud, *k*, and slotted bar *M*, the cones, *G*, and *G*, will be vibrated, horizontally, so as to cause the several longitudinal portions of each cone to, alternately, approach toward, and recede from, the apertures, *H*, and *H*, while those apertures will be continually changing in their directions, by the operation of the bar, *o*, by means of the bars, *p*, and *q*, on the plates *r*, and *r*, as before described, so as to deposit the fur, in the longitudinal section, in the proportions required in any case; thus giving it an automatic power of apportionment according to any particular adjustment of the plates *r*, and *r*, to increase, or diminish, the apertures, *H*, and *H*, and of the stud, *k*, to increase, or diminish, the vibrations of the cones, *G*, and *G*. And the cones *G*, and *G*, may be placed nearer to or farther from the apertures, *H*, and *H*, by lengthening the conductor, *A*, *B*, and adjusting the connecting bar, *P*, by the binding screws *R*, and *S*.

When a sufficient quantity of fur has been deposited on each of the cones, *G*, and *G*, for a hat body, it may be hardened by any of the well known means of felting, (whether by means of water, or steam, or both,) or in any other manner, either while the cones remain in their positions on the tube, *F*, or after their removal; or a part in one position, and a part in another, as thought best in each particular case; and the felting process may be going on while the fur is being deposited on the cones, by any of the well known methods, or otherwise.

When it is desired to remove a cone, or for any reason to prevent exhausting the air from the inside of the cone, either of the doors, or valves, in the back part of the conductor, *A*, *B*, may be opened as shown at *I*, Fig. 3, when the fan will be supplied with air through that passage. And should it at any time be desirable to exhaust the air from one cone only, there may be a partition fitted into the tubes *F*, and *E*, in such a

manner that the partition, J, of the conductor, A, B, may always rest on it, at the top of the tube, E.

5 Instead of using the conductor, A, B, in the way described, and represented in Fig. 2, the cones, G, and G, may be exhausted through a passage made downward through the shaft, I, Fig. 2, and so horizontally through the connecting bar, P, and then up
10 into the fan space, by flexible or inflexible conductors, or the connection may be made in any other convenient way. These cones and the machinery moving them, may be attached to any other frame, &c., if de-
15 sired, as they are only attached by the binding screws, R, and S, Fig. 2. And the apertures, H, and H, and the method of varying them, can readily be attached to any other frame.

20 The advantages of my improvement consist in so constructing the several parts of the apparatus for revolving and vibrating the cones, (G, and G,) and operating the sides of the apertures, (H, and H,) as to
25 bring every part of the outer surface of the cones into the position to receive their due proportion of the fur. And, in that but one fan, (or set of cards, &c.) is necessary for both exhausting, and blowing,—And, in that
30 it will make two bodies at one operation, and in the same, (or less,) time, heretofore required for making one. And in that it is self acting, and self directing, (when prop-

erly adjusted,) for depositing the fur in any desired proportions on the several parts of 35 the surfaces of the cones.

I am aware that the perforated hollow cone has long been used, and that the fur has been deposited thereon by exhausting the air from the cone. And that the apertures 40 through which the fur is blown have been made susceptible of being varied in size, and in direction;—I, therefore, do not claim either of these, as such, as my invention; but 45

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

1. The method of using the cones, by giving them a rotary, and a vibratory, motion in such a manner, as to bring every part of the 50 outer surface of each cone into such a position that each part may receive its due proportion of stock to form a hat body, when constructed, and made to operate, substantially in the manner herein described. 55

2. I also claim the method of varying the direction of the apertures, (H, and H,) by the vibratory motion of the cones, when constructed, and made to produce the effect in the manner and by the means, substantially, 60 herein described.

LEANDER W. BOYNTON.

Witnesses:

JEREMIAH PECK,
R. FITZGERALD.