

No. 672,203.

Patented Apr. 16, 1901.

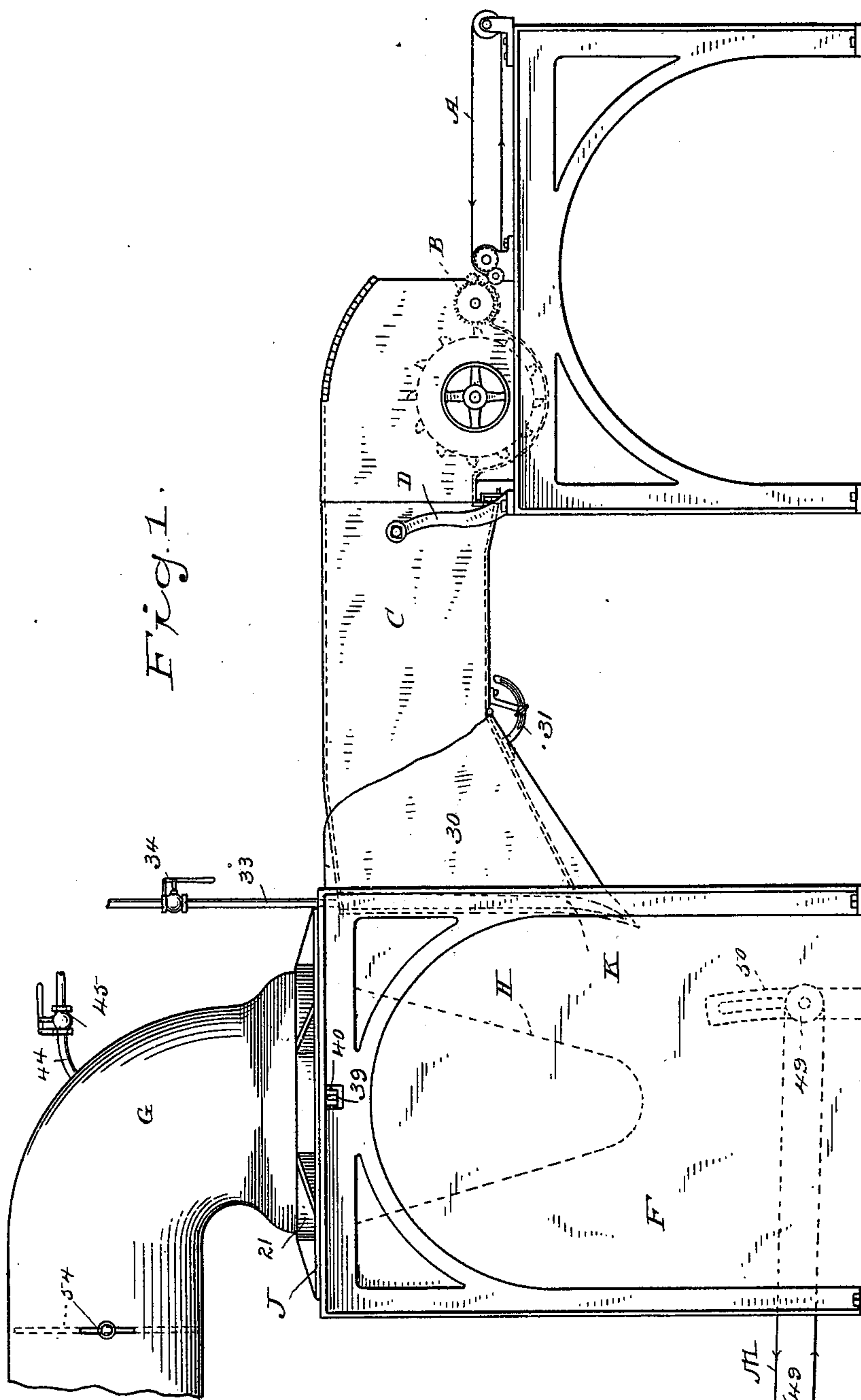
D. J. BREW & H. B. MALLORY.

HAT FORMING MACHINE.

(Application filed Jan. 2, 1900.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES

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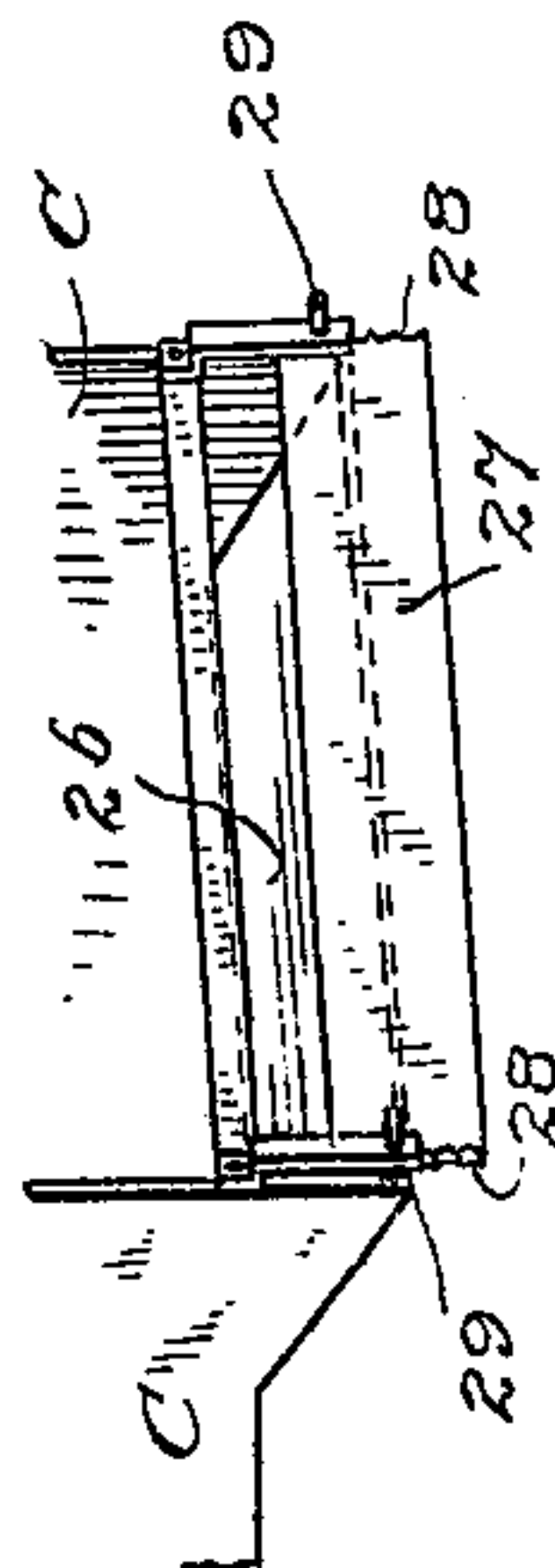


Fig. 1a.

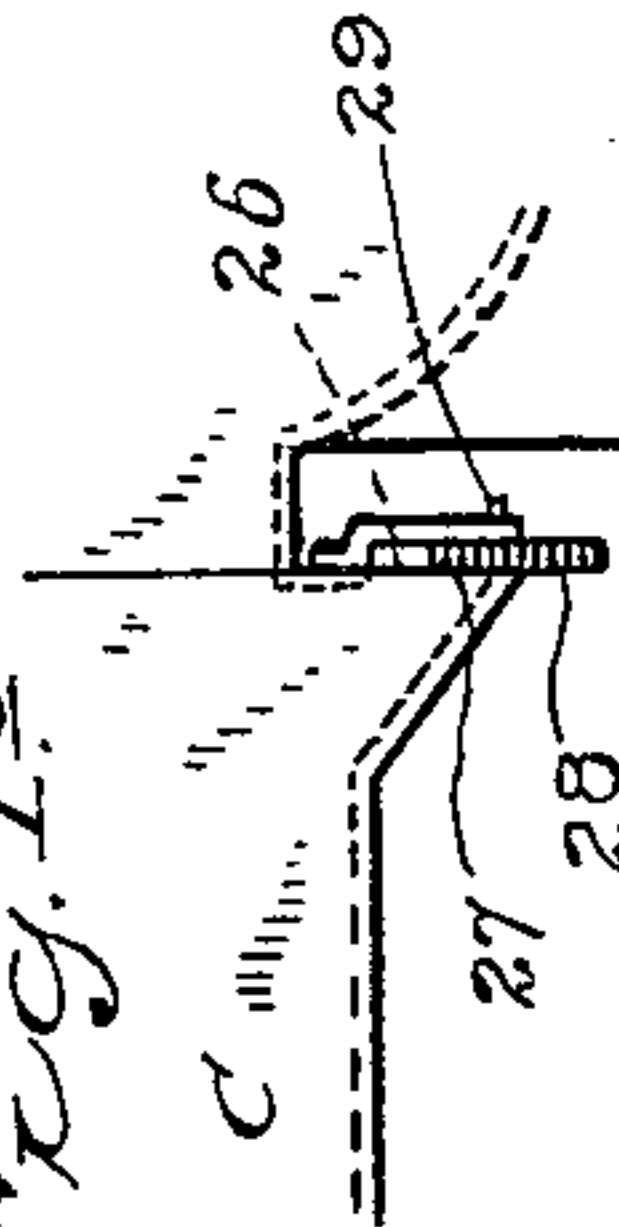


Fig. 1b.

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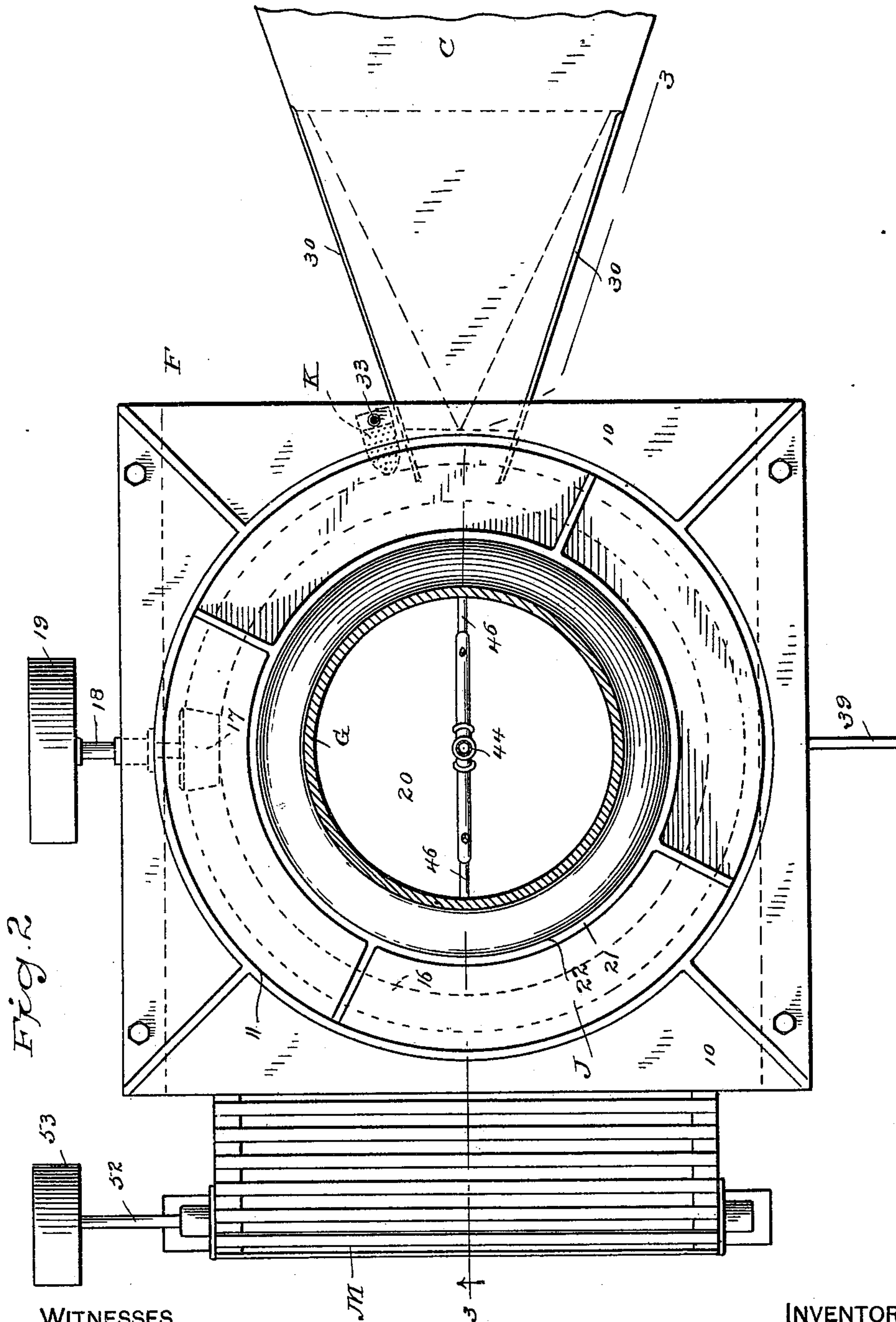
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WITNESSES

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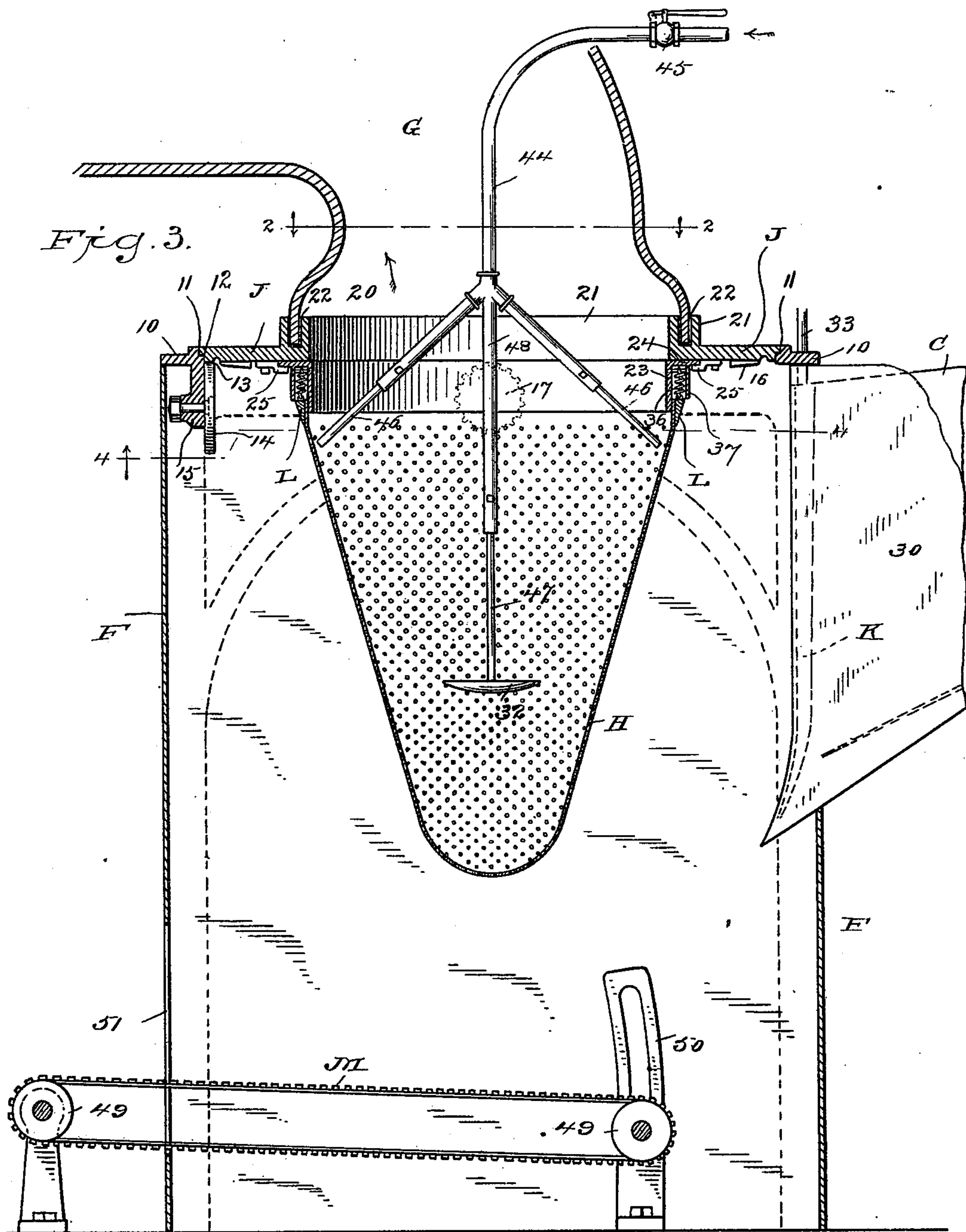
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HAT FORMING MACHINE.

(Application filed Jan. 2, 1900.)

(No Model.)

4 Sheets—Sheet 3.



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**No. 672,203.**

**Patented Apr. 16, 1901.**

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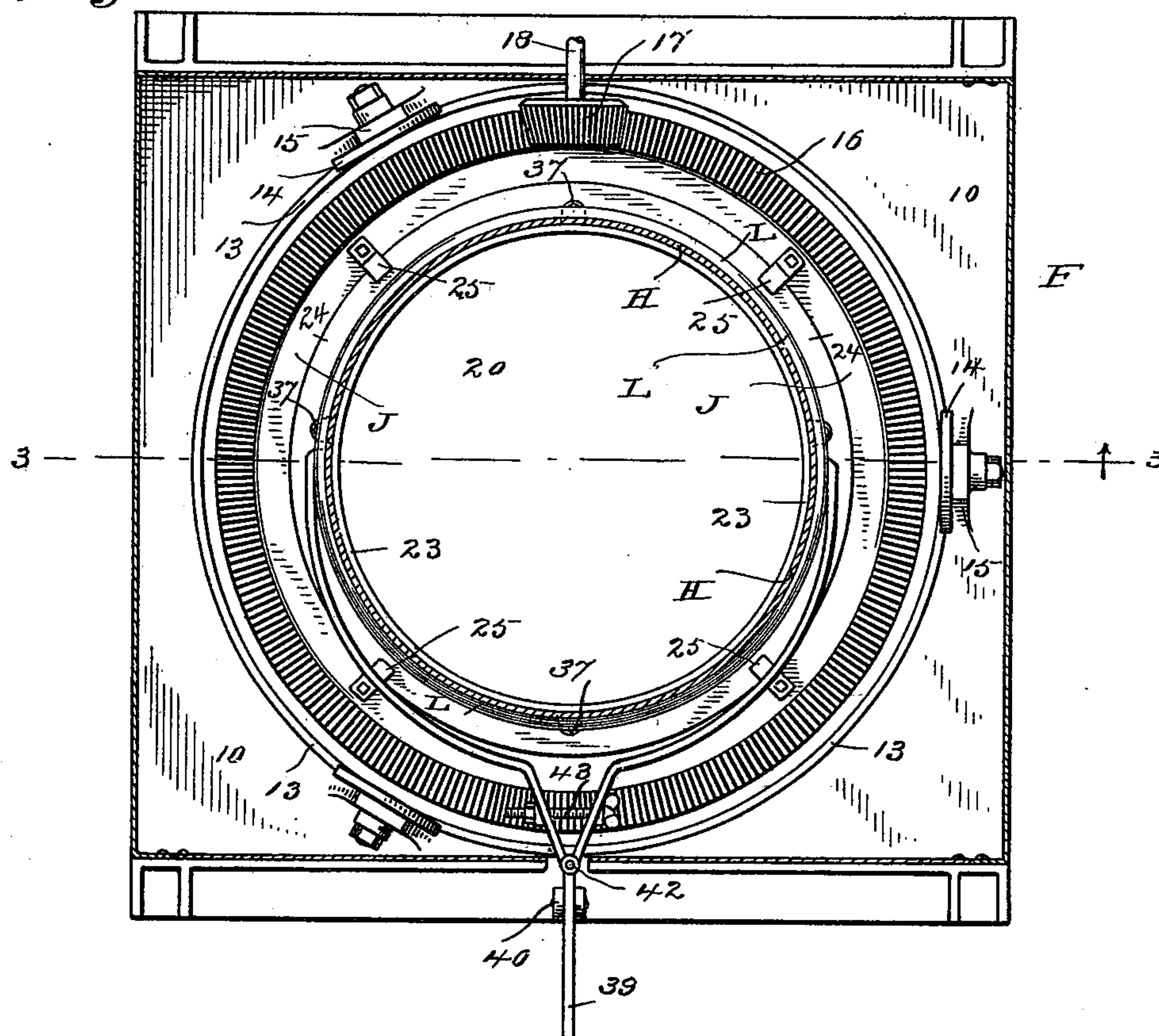
## HAT FORMING MACHINE.

(Application filed Jan. 2, 1900.)

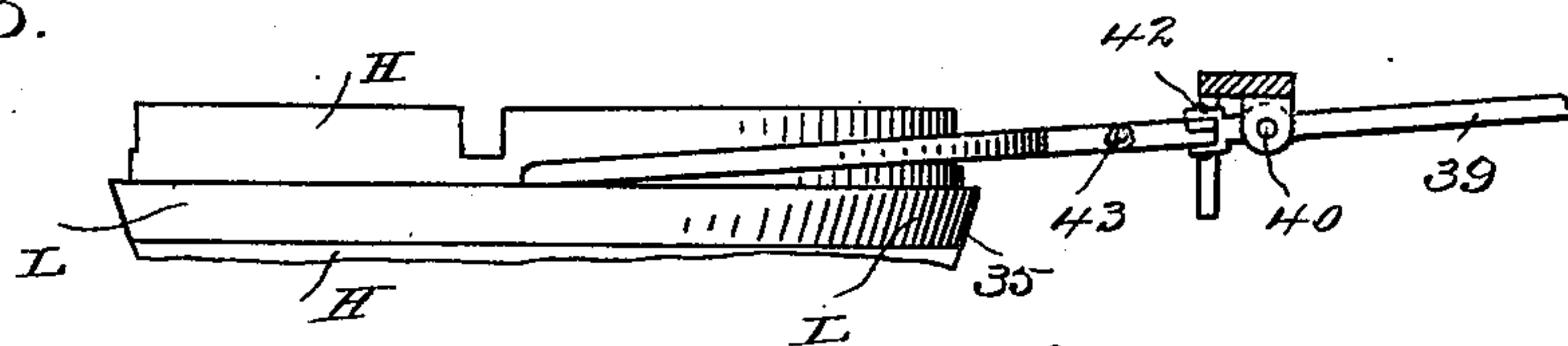
(No Model.)

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*Fig. 4.*



*Fing. 5.*



Fr. 6.

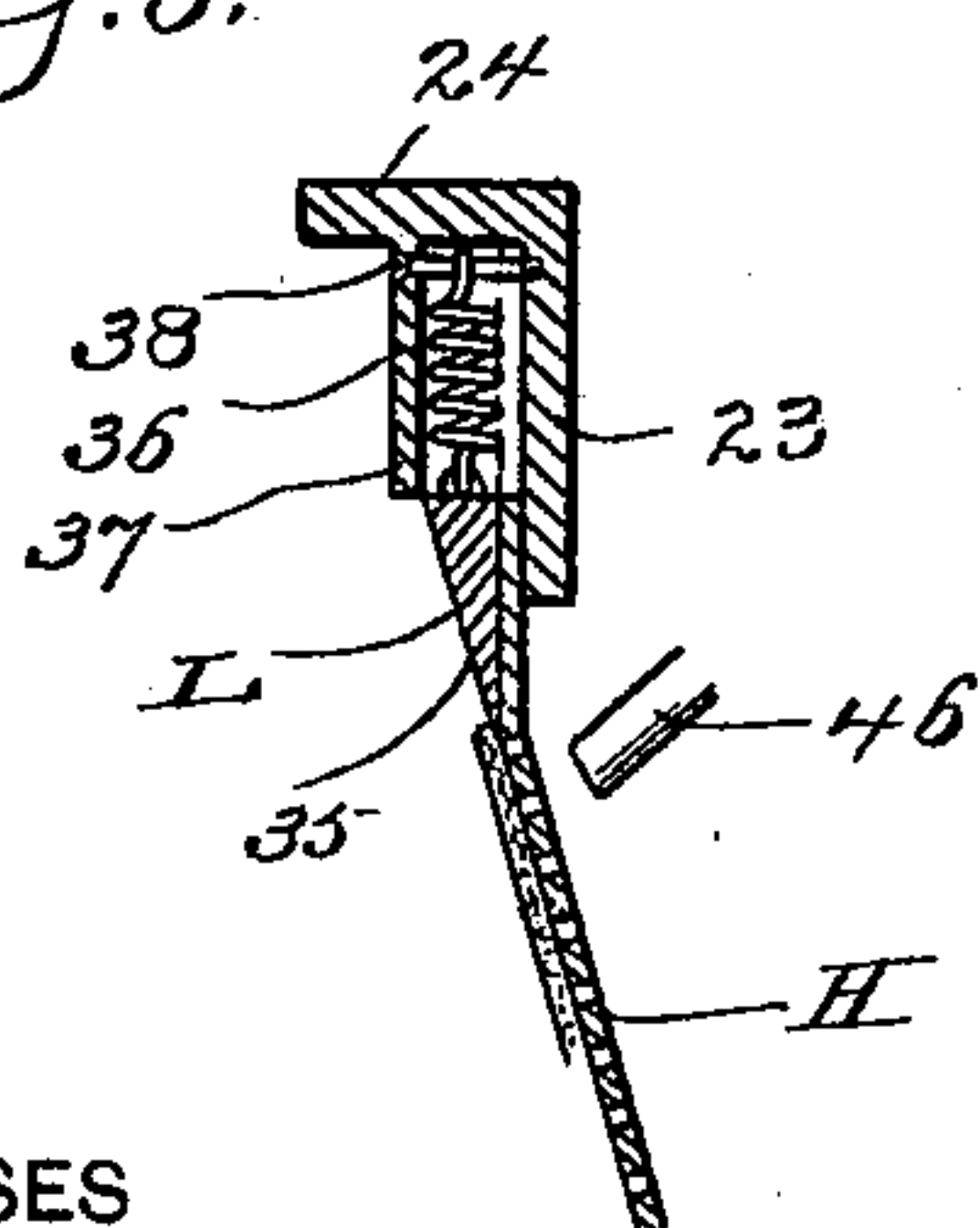
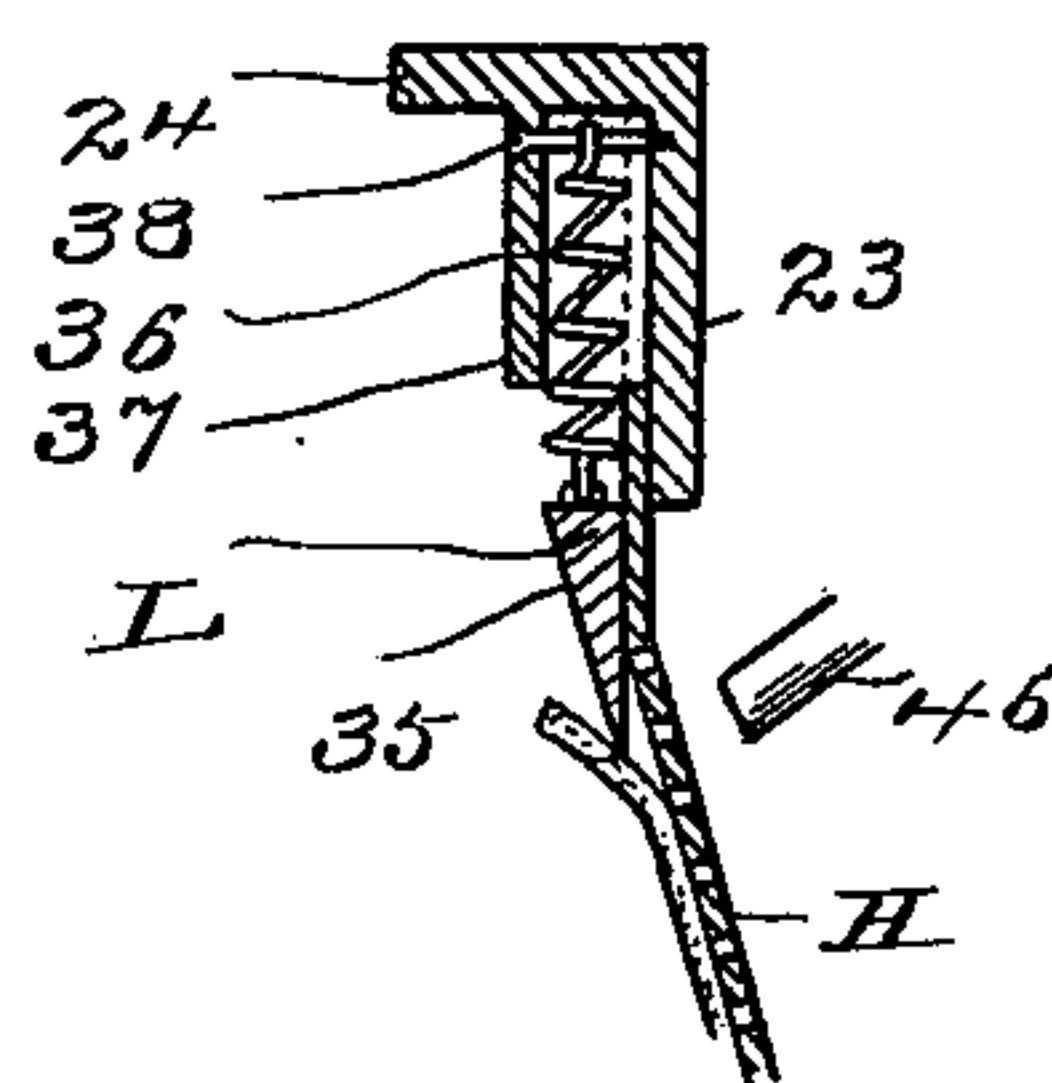


Fig. 7.



**WITNESSES**

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# UNITED STATES PATENT OFFICE.

DANIEL J. BREW AND HARRY B. MALLORY, OF DANBURY, CONNECTICUT,  
ASSIGNORS OF ONE-THIRD TO ARNOLD TURNER, OF SAME PLACE.

## HAT-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 672,203, dated April 16, 1901.

Application filed January 2, 1900. Serial No. 4. (No model.)

*To all whom it may concern:*

Be it known that we, DANIEL J. BREW and HARRY B. MALLORY, citizens of the United States, residing at Danbury, county of Fairfield, State of Connecticut, have invented a new and useful Hat-Forming Machine, of which the following is a specification.

Our invention has for its object to provide a hat-forming machine so constructed that the formed hats may be removed from the cone without removal of the cone itself from the table by which it is carried, thereby effecting a great saving in the cost of production, as the capacity of the machine is increased and the cost of labor in running it is greatly reduced. With these ends in view we have devised the simple and novel hat-forming machine which we will now describe, referring to the accompanying drawings, forming part of this specification, and using reference characters to designate the several parts.

Figure 1 is a side elevation of the machine complete. Figs. 1<sup>a</sup> and 1<sup>b</sup> are detail views illustrating means for regulating the air-current in the chute; Fig. 2, a plan view, on an enlarged scale, of the forming-box, the exhaust-pipe being in section on the line 2 2 in Fig. 3; Fig. 3, a central section on the line 3 3 in Figs. 2 and 4; Fig. 4, an inverted plan view of the top of the forming-box and the table by which the cone is carried, the cone being in section on the line 4 4 in Fig. 3 and the nozzles and regulating device removed; Fig. 5, a detail view of the stripper removed; and Figs. 6 and 7 are enlarged detail sectional views, corresponding with Fig. 3, illustrating the operation of the stripper, Fig. 6 showing the stripper in its normal position, as in Fig. 3, and Fig. 7 showing it in its operative position, as when starting a hat-body from a cone.

A denotes the feeding-apron; B, picking mechanism; C, a chute for conveying the picked stock to the forming-box; D, one of a pair of brackets to which the chute is secured; F, the forming-box as a whole; G, the exhaust-pipe, which is provided with a shut-off 54, and H the cone as a whole. The top of the forming-box, which we have indicated specifically by 10, is provided with a central opening 11, having a shoulder 12, which re-

ceives the table J. The table is provided upon its under side with a circular flange 13, which travels upon rollers 14, carried by brackets 15 on the under side of the top. The table is also provided on its under side with a gear-wheel 16, which meshes with a pinion 17, carried by a shaft 18, driven in any suitable manner, as by means of a belt (not shown) running over a belt-pulley 19. On the upper side of the table and surrounding a central opening 20 therein is a flange 21, having a circular groove 22, which receives the end of the exhaust-pipe, so as to form a relatively tight joint, it being of course essential that the table rotate freely and also desirable to shut off as nearly as possible the passage of air into the exhaust-pipe, except air which passes through the cone. At the larger end of the cone is a ring 23, to which the base of the cone proper is riveted, soldered, or otherwise rigidly secured. This ring is provided with a flange 24, which is adapted to lie parallel with the under side of the top of the forming-box, to which it is detachably secured in any suitable manner, as by turn-buttons 25.

The cone proper may be of any ordinary or preferred construction. The feeding and picking mechanism likewise is of ordinary construction. Air enters the chute to carry along the picked stock at an opening 26 in the under side thereof, (see Figs. 1, 1<sup>a</sup>, and 1<sup>b</sup>,) said opening being provided with a gate 27, by which the quantity of air entering the chute may be regulated. We have shown the gate as provided in its ends with notches 28, which are engaged by pins 29 to hold the gate at any desired adjustment. The forward end of the chute, as at 30, is made of flexible material, and the bottom is pivoted (see dotted lines, Fig. 1) and is provided with an adjusting device 31, by which the bottom may be raised or lowered to modify and regulate the deposit of fur on the cone. The cone is also provided with the usual internal regulating device 32, the adjustment of which increases or diminishes, as required, the relative amount of stock deposited upon the tip of the cone. As already intimated, however, these details of construction are not of the essence of our invention and may be modified or omitted to suit the requirements of the



special use to which the machine may be applied or in accordance with the judgment of the manufacturer.

K (see Figs. 1 and 2) denotes a sprinkler of any ordinary or preferred construction attached to a hot-water-supply pipe 33, shown as provided with a valve 34. It will be understood from the drawings that the sprinkler is located back of the forward end of the chute and at one side thereof, so that water thrown by the sprinkler will not strike the forward end of the chute, so as to cause the stock to adhere thereto. In the drawings we have shown the sprinkler as curved, so as to correspond approximately with the curvature of the tip of the cone. This, however, is a detail of construction that may be adopted or not, depending upon the requirements of use.

L denotes a stripper which is made in the form of a ring adapted to slide over the base of the cone. We have shown the base of the cone as made with vertical parallel sides, over which the inner vertical face of the stripper just slides freely, the outer face of the stripper being beveled, as at 35. This stripper is supported and held at its retracted or inoperative position by a series of springs 36, which are secured to the cone in any suitable manner. In the present instance we have shown ring 23 as provided with sockets 37, in which the springs are secured by pins 38. We have shown the stripper as operated by means of a lever 39, which is pivoted to the under side of top 10, as at 40, and whose forward end consists of branches which rest upon the stripper. In order to provide for convenient adjustment to different-sized cones and strippers, we have shown the branches as hinged to the body of the lever, as at 42, and the branches as retained in operative position by a tie-bolt 43. In practice the ring 23 is made of suitable size to just pass within the base of the special size of cone to which it corresponds. The extreme diameter of the flange 24, however, is always the same, so that cones of different sizes may be secured to the table by the turn-buttons.

As a means of removing the formed and sprinkled hot bodies from the cone after they have been started by the stripper we provide a pipe 44, which supplies air or steam under pressure and is provided with a valve 45. This pipe 44 terminates in one or more nozzles 46 near the inner periphery of the cone. In the present instance we have shown regulating device 32 as provided with a shank 47, which engages a tubular holder 48, attached to or made integral with pipe 44.

M denotes a receiving-apron, upon which the hat-bodies drop from the cone. We have shown the receiving-apron as carried by rollers 49, one of which is within the forming-box, the other outside thereof, the inner roller being adjustable in slotted brackets 50, so as to permit the inner end of the apron to be raised

or lowered as may be required, and the shaft 52 of the outer roller being provided with a belt-pulley 53 to receive a belt, (not shown,) by which the apron is driven. The apron is shown as passing through an opening 51 in the side of the forming-box.

The operation is as follows: The stock for the bodies is weighed and placed upon the feeding-apron, is picked, passes through the chute, and is drawn upon a rotating cone in the usual manner, the novelty of this portion of our invention lying in the fact that the cone is carried by an overhead table. As soon as the stock for a body is blown upon the cone without stopping the rotation of the table the valve in the hot-water-supply pipe is opened in any suitable manner either by hand or automatically, and the body upon the cone is sprinkled, the exhaust acting to draw the hot water into the body and causing it to become thoroughly saturated. An instant later the shut-off in the exhaust-pipe is operated either by hand or automatically to stop the passage of air through the cone and into the exhaust-pipe. We wish it distinctly understood that the special mode in which the shutting off of the air in the exhaust-pipe is effected is not of the essence of our invention. In the drawings we have shown the exhaust-pipe as provided with a shut-off in the form of an ordinary damper. Any other means of stopping the exhaust may, however, be adopted, if preferred, and will be within the scope of our invention. As soon as the body is saturated the stripper is operated either by hand or automatically, and practically simultaneously with the operation of the stripper the valve in pipe 44 is operated either by hand or automatically, allowing air or steam under pressure to escape at the nozzles, and the body is thus gently but quickly removed from the cone and caused to drop down upon receiving-apron M, by which it is removed from the forming-box. All this, it should be understood, takes place not only without removal of the cone from the table, but without stopping the rotation of the table, the operations of opening and closing the hot-water-supply pipe, shutting off the exhaust, operating the stripper, and opening and closing pipe 44 being performed, as already stated, either by hand or automatically, the special mechanism by which these operations are performed not being of the essence of our present invention. The instant a hat-body has been removed from the cone and still without stopping the rotation of the cone the formation of another hat-body thereon may be commenced. We find in practice that the sprinkling of the bodies upon the cone causes sufficient compacting and felting of the stock, so that the bodies may be handled without difficulty, and that with our present forming-machine we are enabled to produce hat-bodies equal to the best, that the capacity of the machine is in excess of any hat-forming machines heretofore built,



and that the cost of running the machine is greatly reduced, thereby effecting an additional and highly-important saving in the cost of production.

5 Having thus described our invention, we claim—

1. In a hat-forming machine the combination with a rotating table and an inverted cone depending therefrom, of means for depositing  
10 stock upon the exterior of said cone.

2. In a hat-forming machine the combination with an overhead rotating table, of a cone depending therefrom and means for depositing stock upon the exterior of the cone.

15 3. In a hat-forming machine the combination with an overhead rotating table, of a cone depending therefrom, means for depositing stock on the exterior of the cone, and means for removing the hat-body therefrom without  
20 stopping the rotation of the cone.

4. In a hat-forming machine the combination with an overhead rotating table, of a cone depending therefrom, means for depositing stock upon the exterior of the cone, and a  
25 sprinkler for compacting and felting the formed body while it is still on the cone.

5. In a hat-forming machine the combination with an overhead rotating table, of a cone depending therefrom, means for depositing  
30 stock upon the cone, and a stripper L.

6. In a hat-forming machine the combination with an overhead rotating table, of an inverted cone depending therefrom, means for depositing stock upon the cone, and a nozzle  
35 for delivering air or steam within the cone to remove the body therefrom.

7. In a hat-forming machine the combination with an overhead rotating table, of a cone depending therefrom, means for depositing  
40 stock upon the exterior of the cone, a sprinkler for compacting and felting the body while on the cone, and a stripper and nozzle for removing the body from the cone without stopping its rotation.

45 8. In a hat-forming machine the combination with an overhead rotating table, of a cone depending therefrom, means for depositing stock upon the exterior of the cone, a sprinkler, means for removing the body from the  
50 cone and an apron which receives the body as it drops from the cone.

9. The combination with cone H having vertical ring 23 and an angle-flange 24, of

stripper L, substantially as shown, for the purpose specified. 55

10. In a hat-forming machine the combination with an overhead rotating table, of a cone depending therefrom, means for depositing stock on the exterior of the cone, and means for removing the hat-body therefrom without  
60 detaching the cone.

11. In a hat-forming machine the combination with an overhead rotating table, of a cone depending therefrom, picking mechanism, a chute leading therefrom to the cone, an exhaust-pipe leading from the cone and provided  
65 with a shut-off, a sprinkler, and means for removing the body without detaching the cone.

12. In a hat-forming machine the combination with a rotating table having a central opening and a flange surrounding said opening and provided with a circular groove, of an exhaust-pipe whose end engages said groove,  
70 a cone depending from the under side of the table, and means for depositing stock upon the cone. 75

13. In a hat-forming machine the combination with an overhead rotating table, of a cone having a ring 23 and flange 24, turn-buttons on the table adapted to engage the flange to  
80 secure the cone to the table, a ring-shaped stripper surrounding ring 23, springs for holding said stripper at the retracted position and means for operating said stripper against the power of the springs. 85

14. In a hat-forming machine the combination with an overhead rotating table, of a depending cone detachably secured thereto, means for depositing stock on the exterior of the cone, and a nozzle within the cone for removing the bodies therefrom. 90

15. In a hat-forming machine the combination with picking mechanism and a chute having an air-opening 26 which admits air in front of the picking mechanism, of a gate in  
95 said opening having notches in its edge and pins engaging the notches which lock the gate in position after adjustment.

In testimony whereof we affix our signatures in presence of two witnesses.

DANIEL J. BREW.  
HARRY B. MALLORY.

Witnesses:

EDWARD M. KEELER,  
CHARLES A. MALLORY.