

No. 714,773.

Patented Dec. 2, 1902.

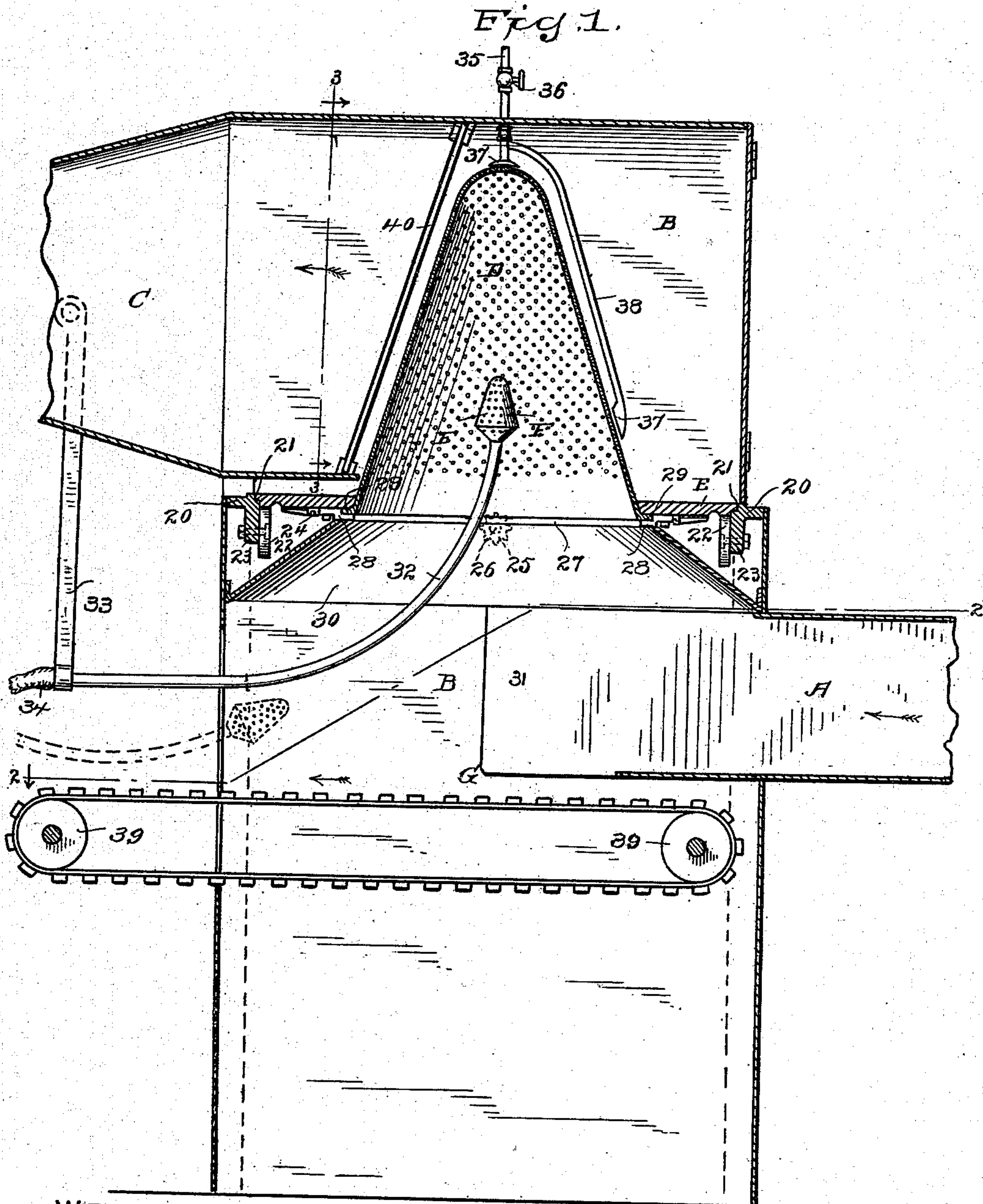
D. J. BREW, H. B. MALLORY & A. TURNER.

HAT FORMING MACHINE.

(Application filed May 15, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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S. H. Arthur.

INVENTORS

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Harry B. Mallory
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Fig. 2.

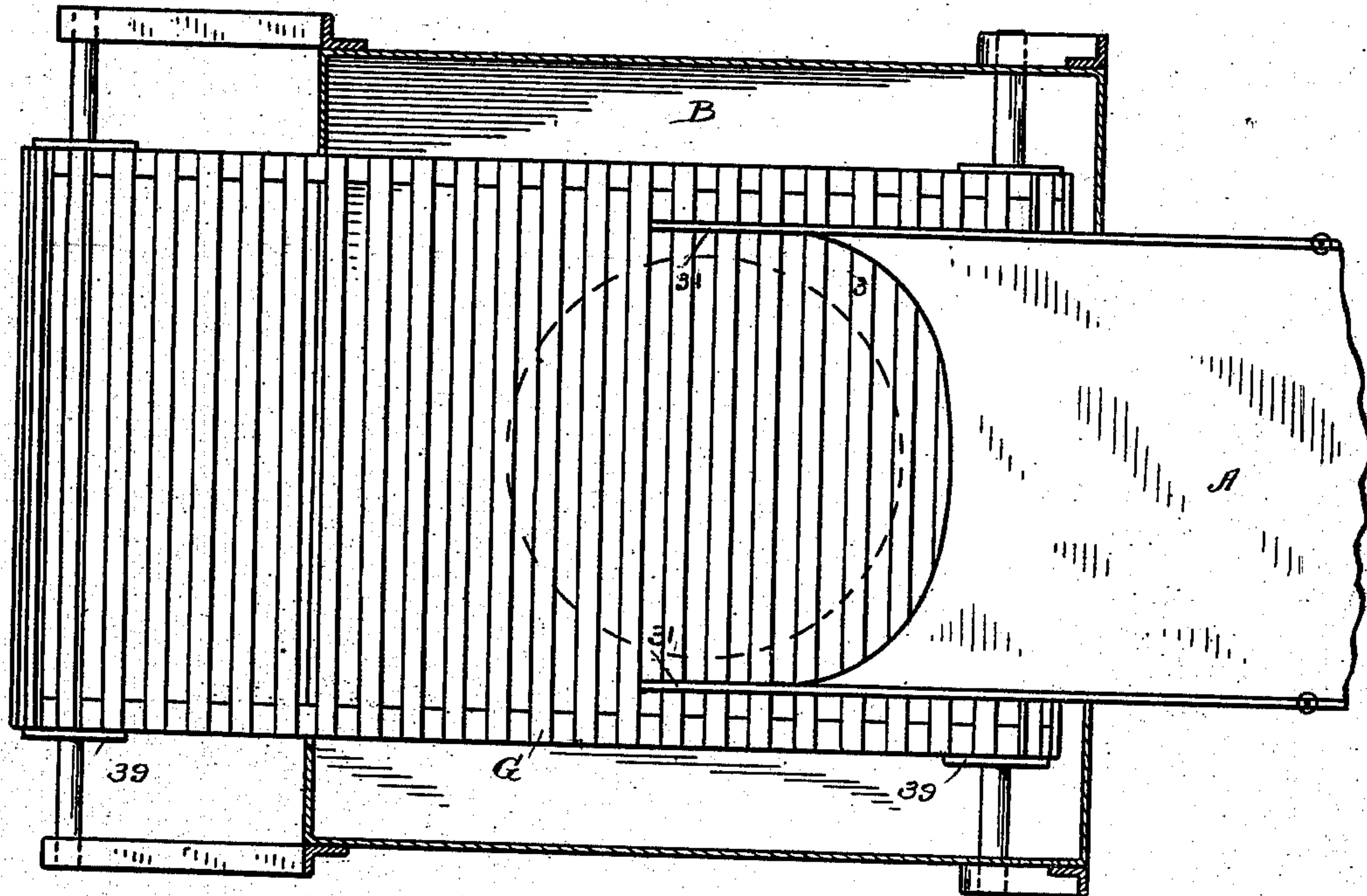
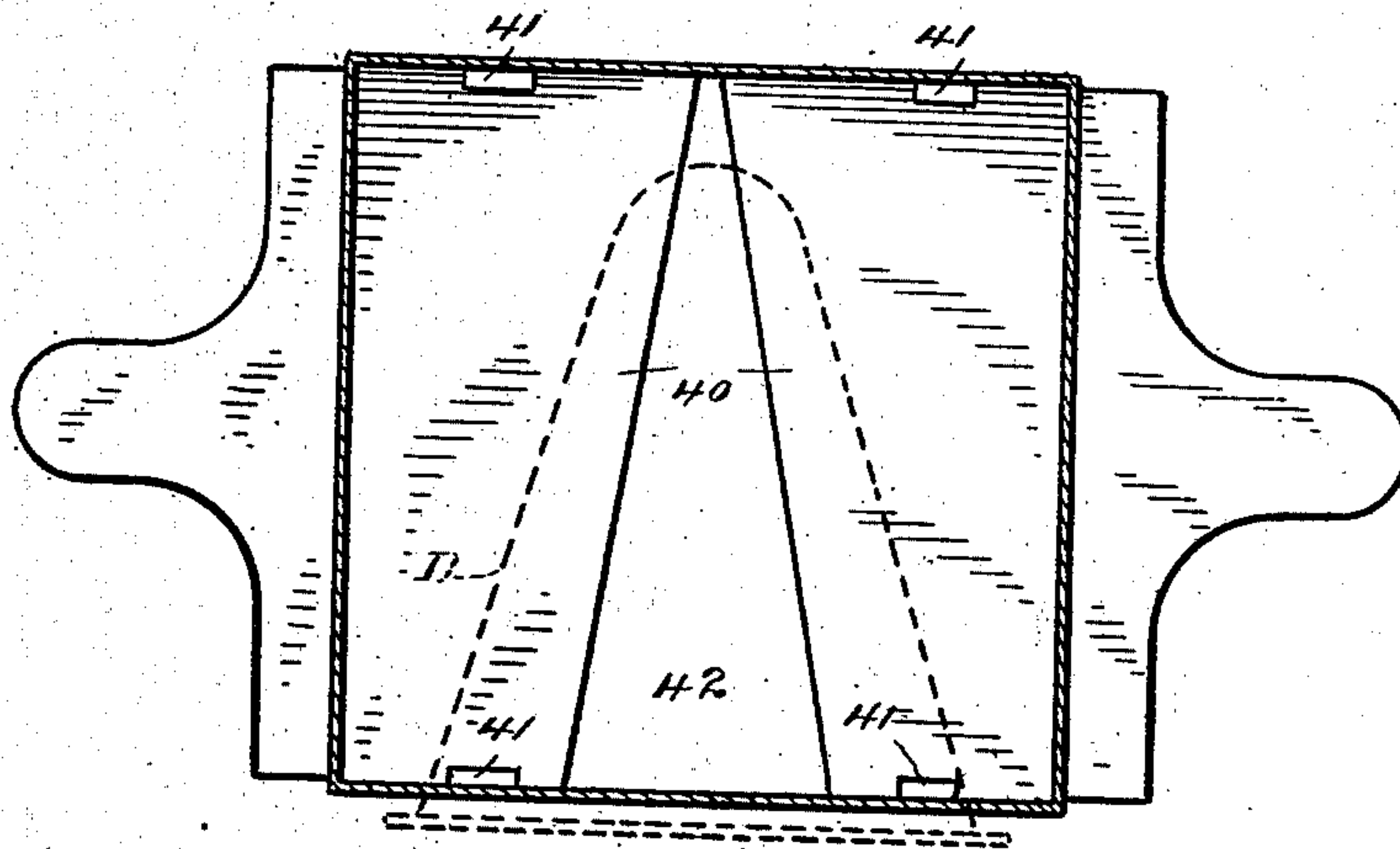


Fig. 3.



WITNESSES.

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UNITED STATES PATENT OFFICE.

DANIEL J. BREW, HARRY B. MALLORY, AND ARNOLD TURNER, OF
DANBURY, CONNECTICUT.

HAT-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 714,773, dated December 2, 1902.

Application filed May 15, 1901. Serial No. 60,297. (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, and ARNOLD TURNER, a subject of the
5 King of Great Britain, all 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.

10 Our invention has for its object to provide a hat-forming machine constructed and arranged to form hat-bodies upon the innerside of a cone while said cone is in an upright position—that is, with the apex of the cone
15 upward—and also to spray the hat-bodies while still in place upon the inner side of the cone and also to slip or remove the formed hat-bodies from the cone.

20 With these ends in view our invention consists, broadly, in a machine for forming hat-bodies upon the inner side of a cone while the cone is in an upright position.

Our invention furthermore consists in the combination, with a cone adapted to form hat-
25 bodies upon the inner side thereof, of mechanism for spraying the bodies while they are still in place upon the inner side of the cone.

Our invention furthermore consists in the combination, with a cone adapted to form
30 hat-bodies upon the inner side thereof, of mechanism for spraying the hat-body and for slipping and removing the sprayed hat-body from the cone.

Our invention furthermore consists in certain details of construction, as hereinafter
35 fully described and then specifically pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical sectional view fully illustrating the construction and operation of our novel machine;
40 Fig. 2, a horizontal section on the line 2 2 in Fig. 1 looking down, and Fig. 3 is a vertical section on the line 3 3 in Fig. 1 looking toward the right.

Similar reference characters denote like parts in the several figures of the drawings.

It is of course well understood by those familiar with the art of hatting that the stock
50 from which hat-bodies are formed must be

thoroughly picked before passing to the forming mechanism. As the picking mechanism, however, has nothing to do with our present invention—that is to say, it being wholly un-
important by what style of picking mechan- 55
ism the stock is prepared for the forming mechanism—we have not shown picking mechanism in the drawings.

A denotes a chute by which the picked stock is conveyed to a forming-box B, C an
60 exhaust-pipe above the chute, and D a cone carried by a rotary table E. Within the forming-box is a ledge 20, rigidly secured in place and having a circular opening 21, which
65 receives the table, the edge of the opening and the edge of the table being preferably stepped, as shown in Fig. 1, so as to provide
a practically air-tight joint and also to provide a support for the table, if required. In practice, however, the weight of the table is pref-
70 erably supported by rollers 22, carried by brackets 23, which are rigidly secured to or made part of ledge 20. Rotary motion may be imparted to the table, and with it, of course,
75 to the cone, in any ordinary or preferred manner. In the present instance we have shown the table as provided on its under side with
a circular rack 24, which is engaged by and receives motion from a pinion 25, carried by
80 a shaft 26, said shaft and pinion appearing only in dotted lines in Fig. 1. At the center of the table is a circular opening 27, which corresponds approximately with the diameter
of the lower end of the cone. The cone may be of any ordinary or preferred construction
85 and is shown as provided at its lower edge with a flange 29, which is adapted to engage the under side of the table outside of opening
27. The cone may be secured to the table in
90 any simple and convenient manner, as by catches or turn-buttons 28 on the under side of the table, so that it may be readily removed
down through opening 27 by releasing the catches.

30 denotes a guard which we preferably use
95 and which extends from the edge of opening 27 outward and downward obliquely and is attached to the forming-box, which may of course be of any ordinary or preferred shape
or size, depending upon the special use to 100

which the machine is to be placed or the taste and judgment of the manufacturer.

31 denotes wings which we preferably place at the inner end of the chute within the forming-box to assist in deflecting the stock toward opening 27 in the table.

F denotes a sprinkler which is so shaped as to effectually spray the whole of the interior of a formed hat-body while it is still upon the interior of the cone. In order that the formed and sprinkled hat-bodies may be conveniently removed from the cone, we provide convenient means for moving the sprinkler downward and out of the way of the cone either automatically or at the control of the operator, our invention being in no way limited by any special means of or mechanism for removing the sprinkler from within the cone after a formed hat-body has been sprinkled. In the present instance we have shown the sprinkler as carried by a rigid curved pipe 32, itself carried by an arm 33, which may be bifurcated and pivoted on opposite sides of the exhaust-pipe or may be pivoted at one side of the exhaust-pipe, as clearly shown by dotted lines in Fig. 1, and curved partly around the exhaust-pipe. A flexible hose 34 is shown as attached to pipe 32. We have in Fig. 1 indicated by dotted lines the position of the sprinkler-pipe 32 and arm 33 when the sprinkler is being moved to the retracted position to permit the removal of a formed and sprinkled hat-body from the inner side of the cone. We do not, however, as stated above, limit ourselves to any special means of manipulating the sprinkler, as it is obvious that it may be swung outward to the retracted position by hand or mechanically at the control of the operator or automatically.

After a formed hat-body upon the inner side of the cone has been sprinkled and the sprinkler has been swung backward out of the way the body may be slipped and removed from the cone by means of a current of steam directed upon the exterior of the cone in one or more places, as may be found necessary or desirable.

35 denotes a steam-pipe, shown as provided with a valve 36 and having a rose or spreader 37 directly over and close to the apex of the cone, on the outer side thereof. The steam-pipe may have one or more branches 38 extending down upon the side of the cone and terminating in a similar rose or spreader 37, lying close to the outer side of the cone. The operator in the present instance by manipulation of valve 36 allows just steam enough to pass through the pipe to easily, but without the slightest harshness or tearing effect, slip and remove the hat-body from the cone.

The formed and sprayed hat-body when removed from the cone drops down upon a receiving-apron G, shown as carried by rollers 39, by which the body is removed from the machine.

In order that we may be enabled to regulate and control the suction in the exhaust-pipe and also regulate the deposit of stock upon the cone, we provide oppositely-moving slides 40 contiguous to the cone and adapted to be moved toward or from each other in guides 41.

The operation will, it is believed, be readily understood from the drawings and the foregoing description, and therefore requires to be but briefly stated. In use the steam in pipe 35 is cut off, the sprinkler is withdrawn out of alinement with the cone, as shown by dotted lines in Fig. 1, water being shut off, and the draft in the exhaust-pipe and consequent deposit of stock upon the inner side of the cone is determined by adjustment of slides 40. The picked stock for the bodies passes through the chute and is drawn upon the rotating cone, but not in the usual manner, the novelty of this portion of our invention lying in the fact that the stock is received within the cone, and the hat-body is formed upon the inner side of a cone while said cone is in an upright position—that is, by suction without the assistance of gravity. As soon as the stock to form a body has been drawn upon the inner side of the cone the sprinkler, either by hand or mechanically at the control of the operator or automatically, is placed in its operative position within the cone, and the body upon the inner side thereof is sprinkled, the exhaust acting to draw the water (ordinarily hot water) into the body and thoroughly saturating it. An instant later the suction of air in the exhaust-pipe is shut off in any suitable manner, (no means being shown in the drawings, as the special means for stopping and starting the exhaust is wholly immaterial so far as the principle of our invention is concerned,) the sprinkler is removed to its retracted position—that is, out of alinement with the cone—and steam is let into pipe 35. We wish it distinctly understood that the valve 36 is not of the essence of our invention. We have merely shown it as a means of accomplishing a result. It is, however, within the scope of our invention to control the passage of steam in any ordinary or preferred manner and either by hand or automatically. The effect of the passage of steam in pipe 35 is to quickly slip and remove the sprinkled hat-body from the cone and cause it to drop down upon the receiving-apron. The instant a sprinkled body has been removed from the cone the formation of another body thereon may be commenced in the manner already fully described. 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 after removal from the cone may be handled without difficulty.

The product of the machine is satisfactory in every respect, its capacity is greater than that of any machine now known to the trade,

and the cost of running is reduced to the minimum, thus effecting a highly-important saving in the cost of forming hat-bodies.

Having thus described our invention, we claim—

1. In a machine of the character described the combination with a cone and means for rotating it, of means for delivering stock below the cone and an exhaust whereby the stock is drawn upward upon the inner side of the cone.

2. In a machine of the character described the combination with a chute and a rotary cone having its apex upward, of an exhaust above the chute whereby hat-bodies are formed on the inner side of the cone without the assistance of gravity.

3. In a machine of the character described the combination with a chute and a rotary cone having its apex upward, of an exhaust above the chute whereby hat-bodies are formed on the inner side of the cone and mechanism for spraying the bodies while still on the cone.

4. In a machine of the character described the combination with a rotating table having a central opening and a cone over said opening, of means for depositing stock upon the interior of said cone.

5. In a machine of the character described the combination with a rotating table having a central opening and a cone over said opening, of means for depositing stock upon the interior of said cone and mechanism for spraying the body without stopping the rotation of the cone.

6. In a machine of the character described the combination with a rotating table having a central opening and a cone over said opening, of means for depositing stock upon the interior of said cone and means for removing the hat-body therefrom.

7. In a machine of the character described the combination with a rotating table having a central opening and a cone over said open-

ing, of means for depositing stock upon the interior of said cone, mechanism for sprinkling the body while on the cone to felt and compact it and means for moving the sprinkler out of alinement with the cone.

8. In a machine of the character described the combination with a rotating table having a central opening and a cone over said opening, of means for depositing stock upon the interior of said cone and a steam-pipe having a spreader lying close to the exterior of the cone, whereby hat-bodies may be slipped and removed therefrom.

9. In a machine of the character described the combination with a rotating table having a central opening and a cone over said opening, of means for depositing stock upon the interior of said cone, a sprinkler, means for removing sprinkled bodies from the cone and an apron which receives the bodies as they drop from the cone.

10. In a machine of the character described the combination with a rotating table having a central opening and a cone over said opening, of means for delivering stock below the table, and exhaust whereby stock is drawn upward into the cone and means within the exhaust for regulating the suction and the deposit of stock upon the cone.

11. In a machine of the character described the combination with a rotating table having a central opening, of a cone adapted to pass through the opening from below and having a flange adapted to engage the under side of the opening and means for securing said cone in place and permitting its removal downward through the opening.

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

DANIEL J. BREW.
HARRY B. MALLORY.
ARNOLD TURNER.

Witnesses:

FRANK G. CLARK,
W. E. MALLORY.