

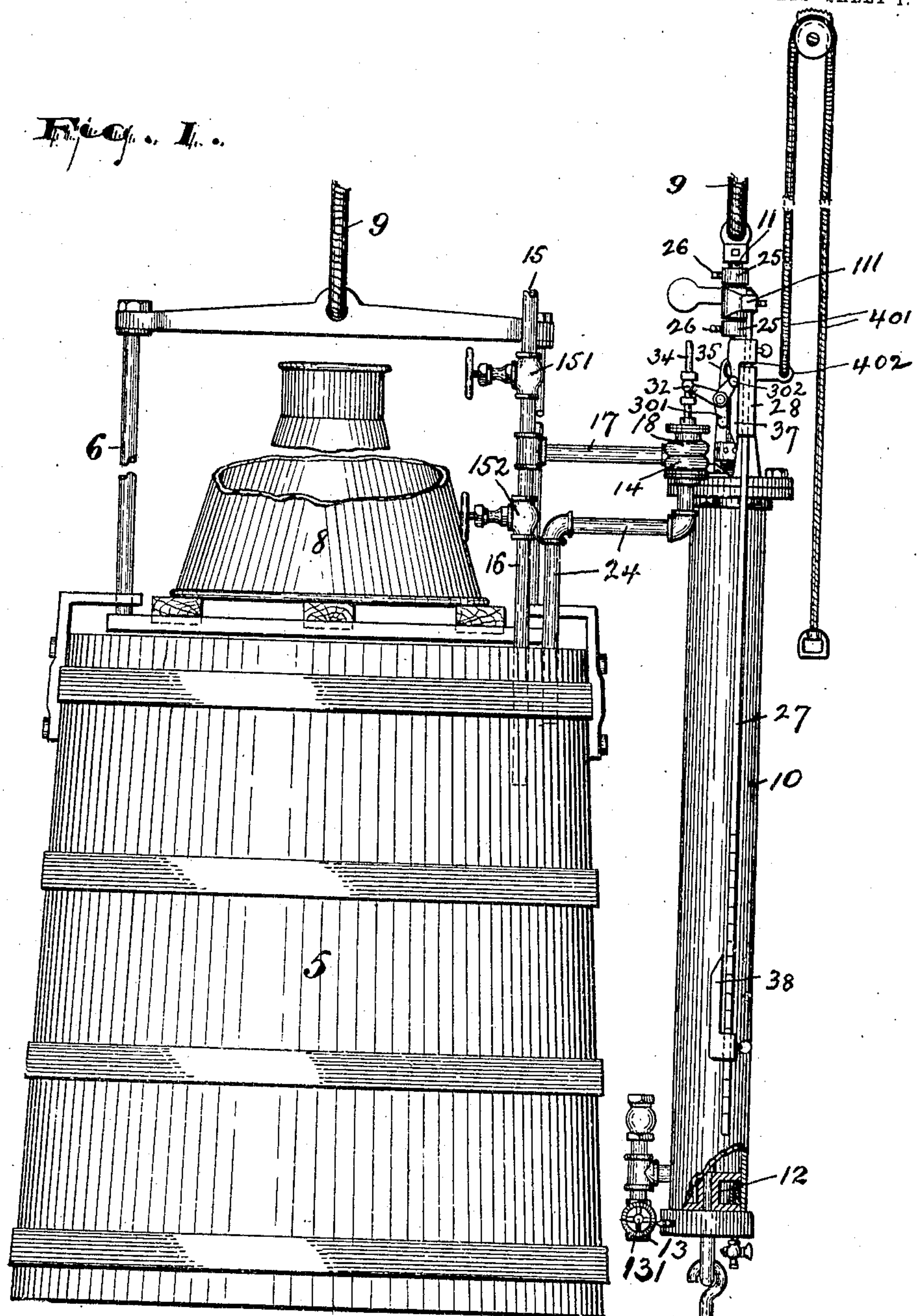
No. 851,809.

PATENTED APR. 30, 1907.

A. W. HILSINGER.
HAT DIPPING APPARATUS.
APPLICATION FILED APR. 20, 1903.

2 SHEETS—SHEET 1.

Fig. 1.



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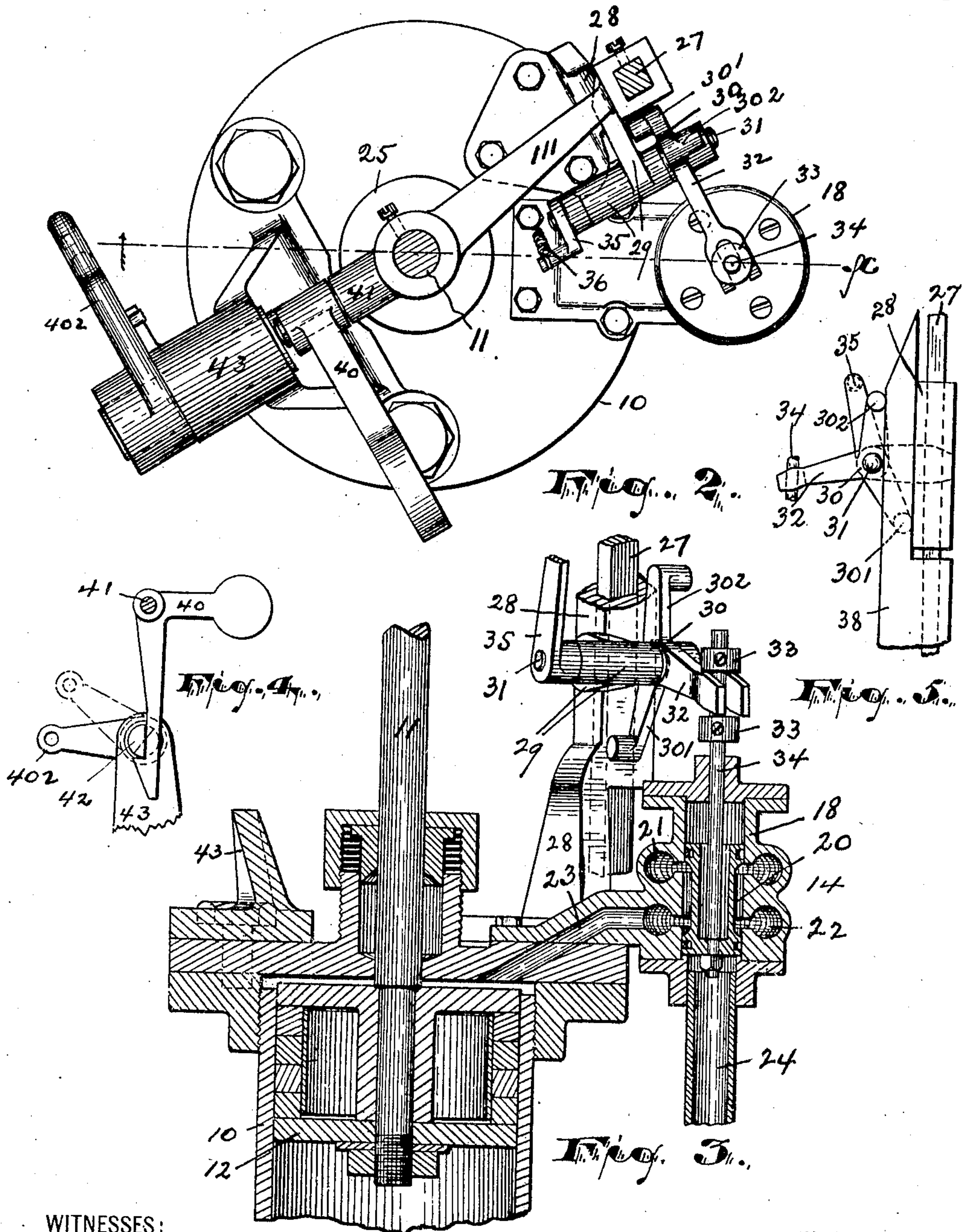
ATTORNEY

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Russell M. Everett

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UNITED STATES PATENT OFFICE.

ADIN W. HILSINGER, OF ORANGE, NEW JERSEY.

HAT-DIPPING APPARATUS.

No. 851,809.

Specification of Letters Patent.

Patented April 30, 1907.

Application filed April 20, 1903. Serial No. 153,395.

To all whom it may concern:

Be it known that I, ADIN W. HILSINGER, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented and produced new and original Improvements in Hat-Dipping Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The objects of this invention are to reduce the labor involved in dipping the newly formed hat body preliminary to the sizing operation; to secure a more uniform wetting of the fur thereof; to reduce the cost of manufacturing the hat; to prevent the tip of the new, thin and delicate fabric from being "blown" or irregularly stretched and broken by the air entrapped within the cone, as it descends into the water tank, the stretching and breaking being due to a too rapid lowering of the cone and a consequent unduly rapid escape of air through the delicate fabric; and to obtain other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved dipping apparatus, and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a front elevation of my improved device in connection with a dipping tub or tank; Fig. 2 is a plan on an enlarged scale of a certain controlling cylinder and valves in connection therewith; Fig. 3 is a section taken on line *x* of Fig. 2; Fig. 4 is a detail view of a certain trip lever or catch, and Fig. 5 is a detail side view of a certain rod movable with a piston rod and having attachments which will be duly described.

In said drawings 5, indicates a dipping tub which may be of any usual construction and be adapted to contain hot water into which the newly formed hat body may be dipped and made thoroughly wet preliminary to the sizing operation.

6 indicates the cradle on which the usual perforated cone, and metal cover 8, may be supported when being lowered into and raised out of the tub or tank. The said cradle 6, in turn is carried by a rope or flexible connection 9, which extends from the upper part of said cradle over a sheave or idle pulley or pulleys (not shown) and thence downward to an automatic controller more particularly embracing my improvements.

Heretofore, the cradle, with the hat cone and cone cover carried by said cradle, has most frequently been raised and lowered by hand, and the slow lowering operations have been more or less irregular, and, though such hand movements can be regulated by the attentive operator to suit the particular grade of hat being operated upon, yet because of carelessness or inattention, the dipping has often been imperfectly accomplished to the but partial wetting of the fur, or the "blowing" and tearing and injury of the unsized body, as it lies on the perforated cone. By my improvements, I lower the hat and its cradle, cone, etc., by gravity controlled by governing and regulating means employing steam, air or fluid or by a vacuum, and afterward, I raise the said parts by live steam, air or other form of compressed fluid subject to regulation, as will be hereinafter described. I prefer to employ steam as the motive means for the reason that this fluid may, after service as a motive medium, be employed in heating the water in the tub or tank 5.

At a suitable point near to the tank, I have arranged a cylinder 10, in which is a piston comprising a piston rod 11, and a piston head 12. To the upper end of the piston rod 11, is attached the rope 9, above referred to so that when the piston lowers, the cradle rises, and vice versa. A vent 13, Fig. 1, is provided at the bottom of the cylinder 10, which controls the gravitation of the cradle and its load by permitting a supply of air to slowly enter the cylinder 10, beneath the cylinder head 12, the inflow of air may be regulated by a valve 131. A valve 14, Fig. 3, at the top of the cylinder serves to regulate the supply of steam entering said cylinder from the steam pipe 15, and its branch 17, when it is desired to raise said cradle and its load. Said steam pipe 15, has an extension 16, into the tub or tank 5, by which the live or exhaust steam may be conducted into the water in said tank and the latter heated preliminary to the dipping

operations. The branch 17, leading to the valve cylinder or casing of the valve 14, is connected to the pipe 15, at a point between two valves 151-152, stationed on said pipe. Said valve cylinder or casing 18, as shown in Fig. 3, contains a piston 20, adapted to permit direct communication from the passage 21, communicating with the branch 17, to the passages 22, 23, the latter communicating with the top of the chamber of the cylinder 10, so that the live steam may enter said cylinder 10, force down the piston head 12, and rod 11, draw on the rope 9, and elevate the cradle. Furthermore, said valve 14, is adapted to open communication between the top of the chamber in the cylinder 10, and an exhaust steam pipe 24, leading into the tub or tank 5, as in Fig. 1, whereby on the upward or return movement of the piston head 12, the steam in the cylinder 10, may be forced into the said tub or tank to heat the water therein to maintain the proper temperature of said water. The construction of pipes 15, 16, 17, thus enables either live or exhaust steam to be employed as the heating medium for the water.

To govern the movements of the valve 20, I have provided automatic devices which I will now proceed to describe.

Fastened on the piston rod 11, by means of a connecting arm 111, and preferably adjustably fastened by means of collars 25, and set screws 26, for setting said collars at opposite sides of said arm, as shown in Fig. 1, is a vertical rod 27, arranged and adapted to slide in a bracket or bearing 28 secured on the top or head of the cylinder 10. Thus fastened, the said rod 27, moves vertically with the piston 11, and its connection. On the bracket or bearing 28, is fixed an arm 29, in which a crank lever 30, has its pivotal shaft 31, said lever 30, has arms 301 and 302, and a third arm 32, which last is preferably forked at one end, the arm 32, being adapted to enter between adjustable collars 33, on the piston rod 34, of the piston 20, the parts being arranged so that when the lever 30, is moved on its fulcrum, the piston rod 34, will be moved longitudinally to effect a sliding of said valve 20, from the position shown in Fig. 3, in which the steam is permitted an open course from the pipe 15, to the chamber of the cylinder 10, to a position in which the live steam is cut off and the contents of the cylinder 10, may be exhausted into the tub or tank through the pipe 24, or vice versa. Said lever 30, is also provided with an arm 35, to which a spring 36, Fig. 2, is attached adapted to hold one or the other of the arms 301, 302, toward the rod 27, the spring being disposed to hold the said arm in the positions in which they are placed by the arms 37, 38, after said arms 37, 38, are disengaged from the arms 301, 302, respectively. On the vertical rod are the said arms 37, 38, which

extend oppositely as shown and are provided with inclined surfaces. One of said arms is disposed at or near the top of said rod and the other is arranged near the lower end of said rod. Said inclined or wedge-like arms 37, 38, enter automatically into engagement with the arms of the lever 30, one with the lever arm 301, and the other with the lever arm 302, to effect an automatic change in the position of the valve 20.

The down movement of the cradle, cone, etc., and the up movement of the piston 11, and rod 27, are continued because of the weight of the cradle, inflow of air through the vent 13, and outflow of exhaust steam through the passage 23. On arriving at the desired lower limit of the dipping movement, the arm 38, which is adjustable on the rod 27, so that the downward movement into the liquid may be greater or less in accordance with the size of the hat or cone, engages the arm 302, and throws the valve 20, down to its lower limit, as in Fig. 3, cutting off the exhaust pipe 24, and opening communication between the live steam passage 21, and the top of the cylinder 10. The live steam enters said cylinder and forces down the piston 10, and correspondingly elevates the cradle 6, to raise the wet hat body out of the water.

On the arrival of the cradle to its elevated position, an automatic weighted trip lever or catch 40, carried by the piston rod 11, on a pivotal arm 41, extending laterally therefrom, as indicated in Fig. 2, engages a half round shaft or cooperating catch 42, Fig. 2 and 4, arranged on a bearing 43, of the cylinder 10, the engagement of the catches serving to hold the cradle in its elevated position until the wet hat may be removed and a dry one substituted. The catches may be disengaged by means of a hand operative cord or device 401, in connection with the arm 402, of the cooperating catch 42.

Coincident with the above operation, the arm 37, enters into engagement with the arm 301, to raise the arm 32, of the lever and with it the valve piston 20, and thus permit the steam to exhaust into the tank or tub.

Having thus described the invention, what I claim as new is:—

1. The improved hat-dipping machine herein described, comprising a tank, a cone cradle, means for suspending said cone cradle over said tank, a cylinder having a bracket or bearing on the outside for a vertical rod, and a piston within said cylinder in connection with said means for suspending the cradle, means for conducting the motive fluid to the cylinder and an exhaust passage and a vent at the bottom of the cylinder, a vertical rod 27, adjustably connected to said piston and movable therewith in said bracket or bearing, an arm secured to the cylinder and having a crank lever having three arms 301, 302, 32, one of which is forked, a

valve stationed on said cylinder and having
a cylinder and piston for regulating the sup-
ply of motive fluid, the last said piston hav-
ing collars between which the forked arm
5 extends and controlling the supply passage
of motive fluid and the exhaust passage or
duct, said crank lever having another, a
fourth, arm 35, a spring attached thereto
and adapted to hold one or the other of the
10 arms 301, 302 toward the rod 27, and arms
37, 38, on said vertical rod and having in-
clines to engage the arms of the lever.

2. In combination, in a dipping tank and
its cradle, with the cylinder and piston con-
15 trolling the dipping operation, a valve con-

trolling the motive fluid and the movement
of the piston, a crank lever fulcrumed on
suitable bearings, a rod connected to the pis-
ton and adapted to engage the crank lever
to effect an automatic operation of the valve, 20
and a catch for holding the cradle in its ele-
vated position, substantially as set forth.

In testimony, that I claim the foregoing, I
have hereunto set my hand this 31st day of
March, 1903.

ADIN W. HILSINGER.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.