

**No. 620,385.**

**Patented Feb. 28, 1899.**

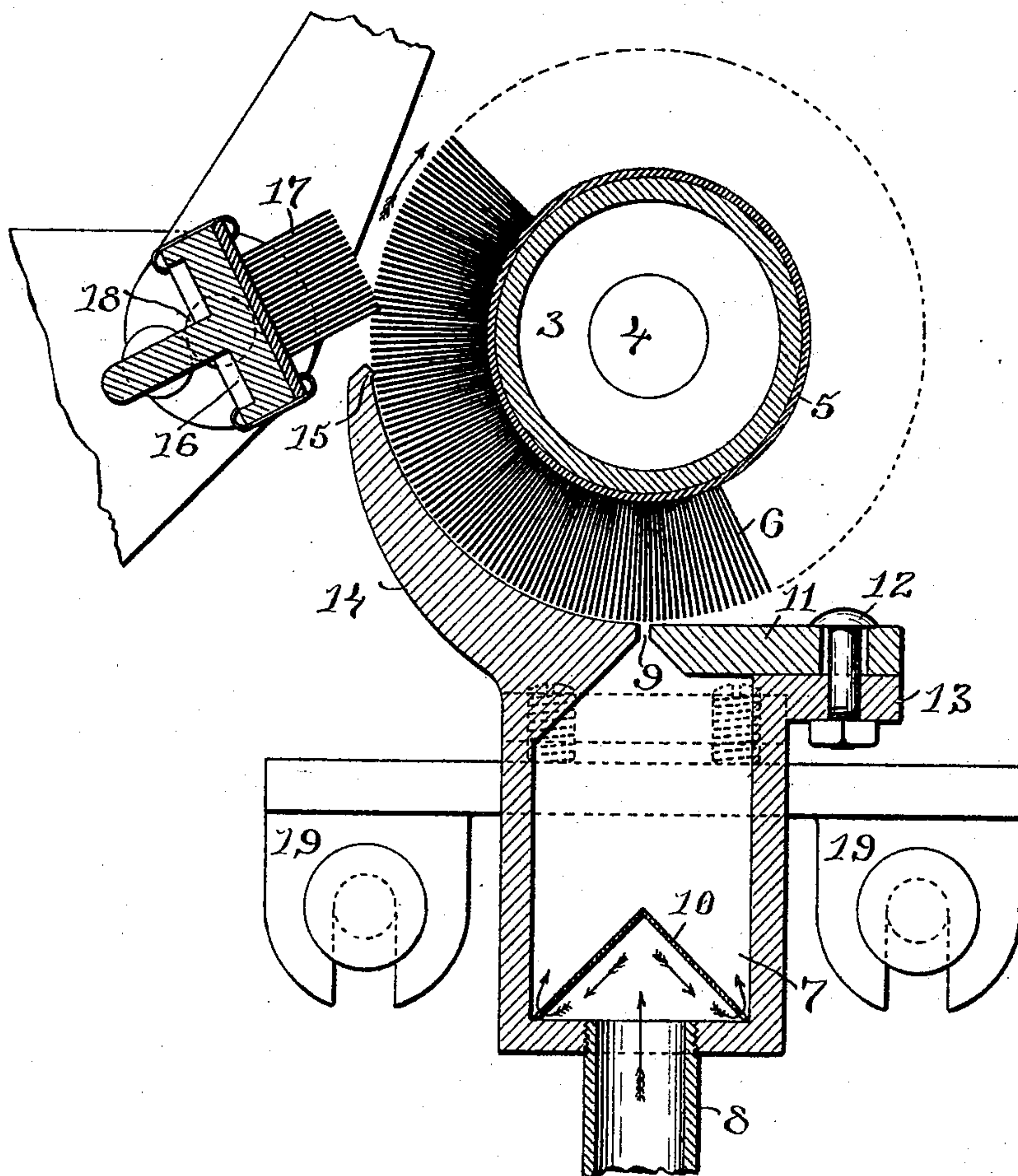
**G. W. VOELKER.**  
**HUMIDIFIER.**

(Application filed Nov. 12, 1897.)

(No Model.)

2 Sheets--Sheet 1.

III. 1.



**WITNESSES:**

Chas. H. Luther Jr  
B. M. Simme

**INVENTION:**

George W. Voelker  
by Joseph A. Miller & Co  
Atty's

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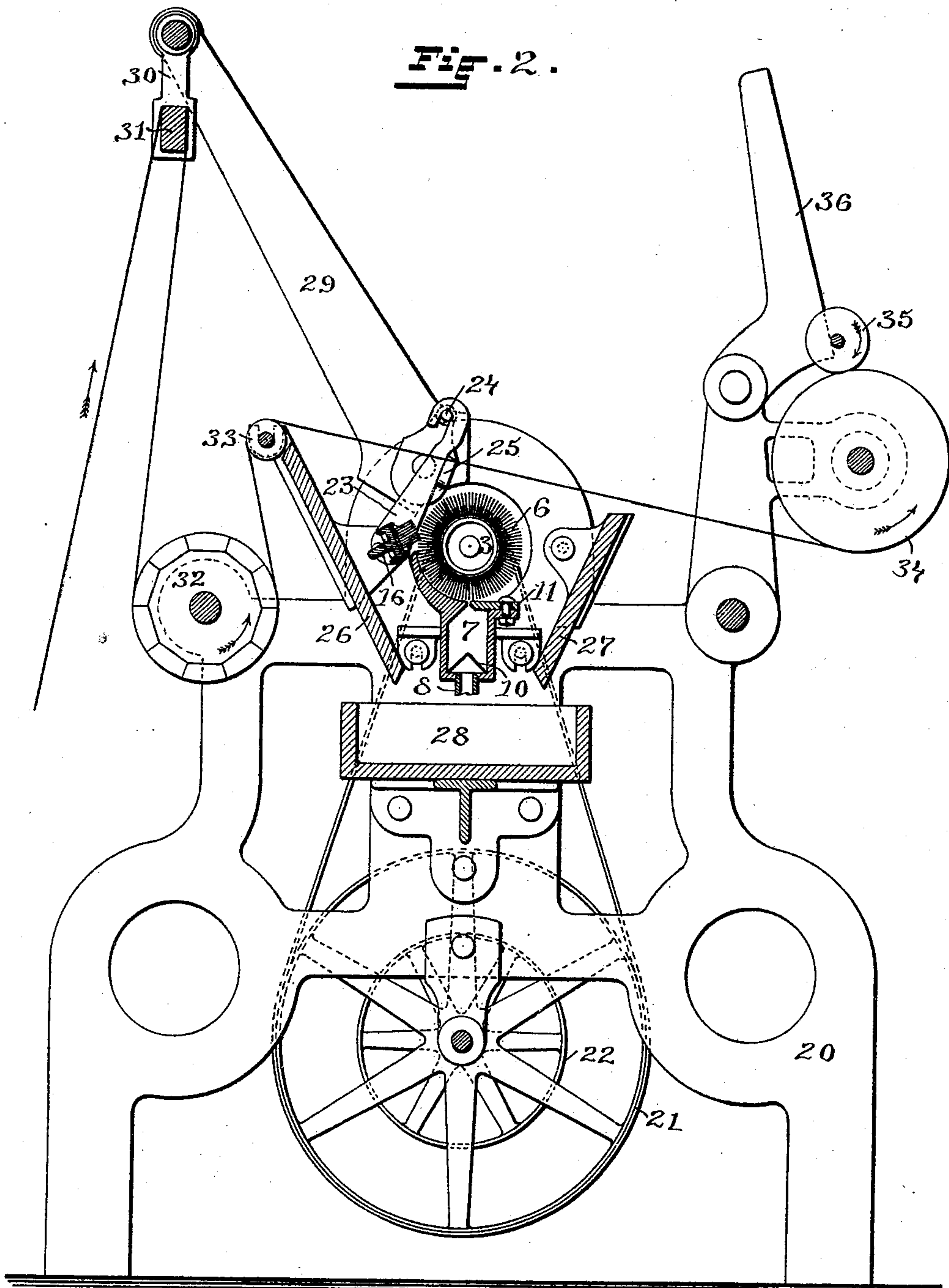
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2 Sheets—Sheet 2.

Fig. 2.



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# UNITED STATES PATENT OFFICE.

GEORGE W. VOELKER, OF WOONSOCKET, RHODE ISLAND.

## HUMIDIFIER.

SPECIFICATION forming part of Letters Patent No. 620,385, dated February 28, 1899.

Application filed November 12, 1897. Serial No. 658,271. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. VOELKER, of Woonsocket, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Humidifiers; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improvement in machines for humidifying or dampening cloth, part of which is applicable for other uses, where water has to be broken up into fine spray.

Cloth before it is ironed, pressed, or finished requires to be dampened. To secure the best results, the water should be sprayed on the cloth in such atomic division that no individual drop reaches the cloth. In some of the finer fabrics individual drops produce a clouded appearance on the cloth. In the arts, and particularly in the spinning of cotton, the air requires to be charged with water in so finely a divided state that the air will support the water.

The object of this invention is to break up and subdivide water into the smallest possible atoms; and another object of the invention is to apply the moisture to the cloth in a machine especially designed for this purpose.

The invention consists in the peculiar and novel construction of the humidifier and the cloth-dampening machine, as will be more fully set forth hereinafter.

Figure 1 is a transverse sectional view of my improved humidifier, showing the device for supplying the water to the atomizer and the construction of the devices for breaking up and discharging the atomized spray. Fig. 2 is a transverse sectional view of the operative parts of a cloth humidifying or dampening machine, illustrating the invention.

In the drawings, referring more particularly to Fig. 1, 3 indicates a cylinder provided with the shaft 4, by which it is supported in suitable bearings and connected with driving mechanism to rotate the cylinder at high speed, and 5 the back or base of card-clothing secured to the cylinder, in which the long flexible wires 6 are secured. These wires 6 extend around the cylinder 3. The wires 6 may

be straight, or, if preferred, bent close to the free end.

The water-chamber 7 extends the whole length of the wire-cloth-covered portion of the cylinder 3. It has the water-inlet pipe 8 connected with the lower part and the slit 9 extending along the upper part in close proximity to the wires 6.

To secure an even and uniform delivery of the water into the chamber throughout its length, the conical deflector 10, extending from end to end of the chamber 7, is loosely placed into the same and is preferably provided along the two lower edges with slots or holes through which the water escapes, as is indicated by the arrows. To permit of the insertion of the deflector 10 and allow for a limited adjustment of the width of the slit 9, the plate 11 is secured by a series of bolts 12 to the flange 13, extending along the side of the chamber 7. The holes in the plate 11, through which the bolts 12 pass, are preferably made oval to permit of the adjustment of the plate. The segmental flange 14 extends from the upper part on one side of the chamber. The upper concaved face of the flange 14 follows closely the peripheral line of the ends of the wires 6, and near its upper end is provided with the longitudinal edge 15, nearly in contact with the wires 6.

Supported on the end frames parallel to the cylinder 3 the bar 16, provided with a strip of card-cloth 17, having straight wires, like the wires 6 of the cylinder 3, is adjustably secured, so that it may be partially rotated on the pin 18. The wires of the card-cloth 17 are flexible, preferably brass wires. They may be adjusted to enter more or less between the wires on the cylinder 3 and act as wipers. The brackets 19 project from each side at the opposite ends of the chamber 7. They have slotted openings through which bolts pass, by which the chamber may be secured to the end frames and adjusted vertically. When in use, the water is supplied to the chamber 7, preferably so as to overflow through the slit 9. The cylinder is rotated, preferably, at a speed by which the wires will carry all the water delivered upward on the concaved face of the flange 14. When the wires pass the edge 15 of the flange 14, the surplus water carried upward by them



is retained, the wires are vibrated, and some of the excess of the water is thrown off. The wires 17 wipe off any drops of water held between the wires 6 and also spring the wires 6 sufficiently to vibrate the free ends of the wires, and thereby facilitate the throwing off of the water in a finely-divided state by centrifugal force. This action is facilitated by the air constantly thrown outward by the revolving wires, and a fine mist or fog is produced by which the surrounding air is humidified.

In the machine shown in Fig. 2 the humidifier is used for dampening cloth. The machine consists of suitable end frames 20. The wire-clothed cylinder is supported in suitable bearings on the end frames 20. A small pulley is secured on the shaft 4 of the cylinder 3, and is connected by a belt with the large pulley 21, on the shaft of which is secured the driving-pulley 22. The water-chamber 7 is secured to the opposite end frames. The bar 16 is secured at opposite ends to brackets 23, provided at their upper ends with a hook by which they are supported from the pins 24, one on each end frame, and rest against the shoulder 25. The deflector-plates 26 and 27 are placed on each side of the cylinder 3 and the water-chamber 7 in the inclined positions shown in Fig. 2 and are secured to the end frames. The deflector-plates serve to conduct any water thrown off by the humidifiers into the tray 28, which is provided with a suitable pipe to carry off the water. The arm 29, one on each end of the machine, is secured to the end frame and supports the bracket 30, on which the friction-bar 31 is secured. The stretch-roll 32, supported in suitable bearings in the end frames, is of the usual construction of stretch-rolls used in calenders and other cloth-finishing machines to give or maintain the desired width of the cloth. 33 is a guide-roll, and 34 the take-up roll, supported in bearings on the end frames and rotated at the required speed by mechanism usually connected and driven from the driving-shaft, as is usual in cloth-finishing and other textile machines. The cloth-roll 35 rests on the take-up roll, its shaft bearing against the inclined face of the fiddle-stick 36.

When the machine is in use, the cloth passes over the friction-bar 31, partially around the stretching-roll 32, over the guide-roll 33, and, passing over the humidifier, is dampened by the moisture thrown off by the

rapidly-revolving wire-covered cylinder 3. In the dampened condition it passes partially around the take-up roll 34 and is wound on the cloth-roll 35, which, as it increases in diameter, rises upward on the face of the fiddle-stick, by which it is continually supported on and rolled by the cloth-roll.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a humidifier, the combination with a cylinder, wires projecting radially from the surface of the cylinder, journals on the cylinder supported in suitable bearings, and means, substantially as described, for rotating the cylinder, of a water-chamber, a slit in the upper part of the water-chamber, a flange extending upward on one side of the slit, a concave surface on the flange in close proximity to the wires on the cylinder, and a wiper consisting of a bar provided with a series of wires the ends of which enter into and between the wires on the cylinder, as described.

2. In a humidifier, the combination with the water-chamber 7, the inlet-pipe 8, the longitudinal slit 9, the flange 14, the concave side of the flange 14, and the edge 15, of the cylinder 3, the wires extending radially from the cylinder 3, the bar 16, the wires 17 projecting from the upper face of the bar 16 and in contact with the wires of the cylinder; whereby the water delivered to the wires by the slit 9 is distributed in a fine spray, as described.

3. In a cloth-humidifying machine, the combination with the end frames of the machine, a friction-bar, a stretch-roll, a guide-roll, a take-up roll, and a cloth-roll supported by the end frames, of a cylinder, metal pins projecting radially from the peripheral surface of the cylinder, a water-chamber, a slit in the upper part of the water-chamber in close proximity to the wires on the cylinder, a wiper consisting of a bar provided with a series of metal pins in contact with the pins on the cylinder, and mechanism for rotating the cylinder and passing the cloth over and across the cylinder; whereby the cloth is charged with moisture, as described.

In witness whereof I have hereunto set my hand.

GEORGE W. VOELKER.

Witnesses:

JOSEPH A. MILLER,  
B. M. SIMMS.