

No. 668,028.

Patented Feb. 12, 1901.

R. C. ULBRICH.
HUMIDIFIER.

(Application filed Oct. 29, 1900.)

(No Model.)

2 Sheets—Sheet 1.

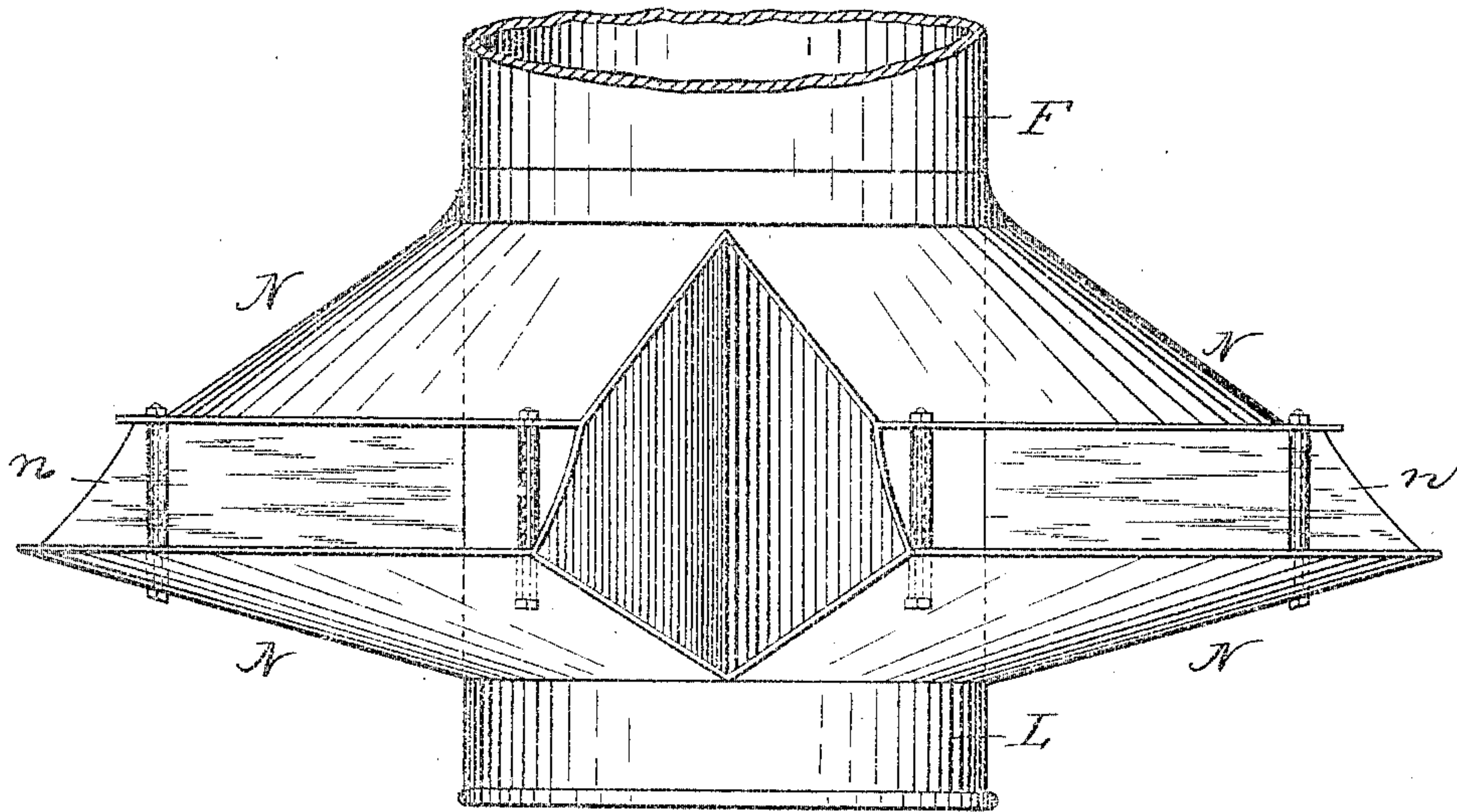


Fig. 1.

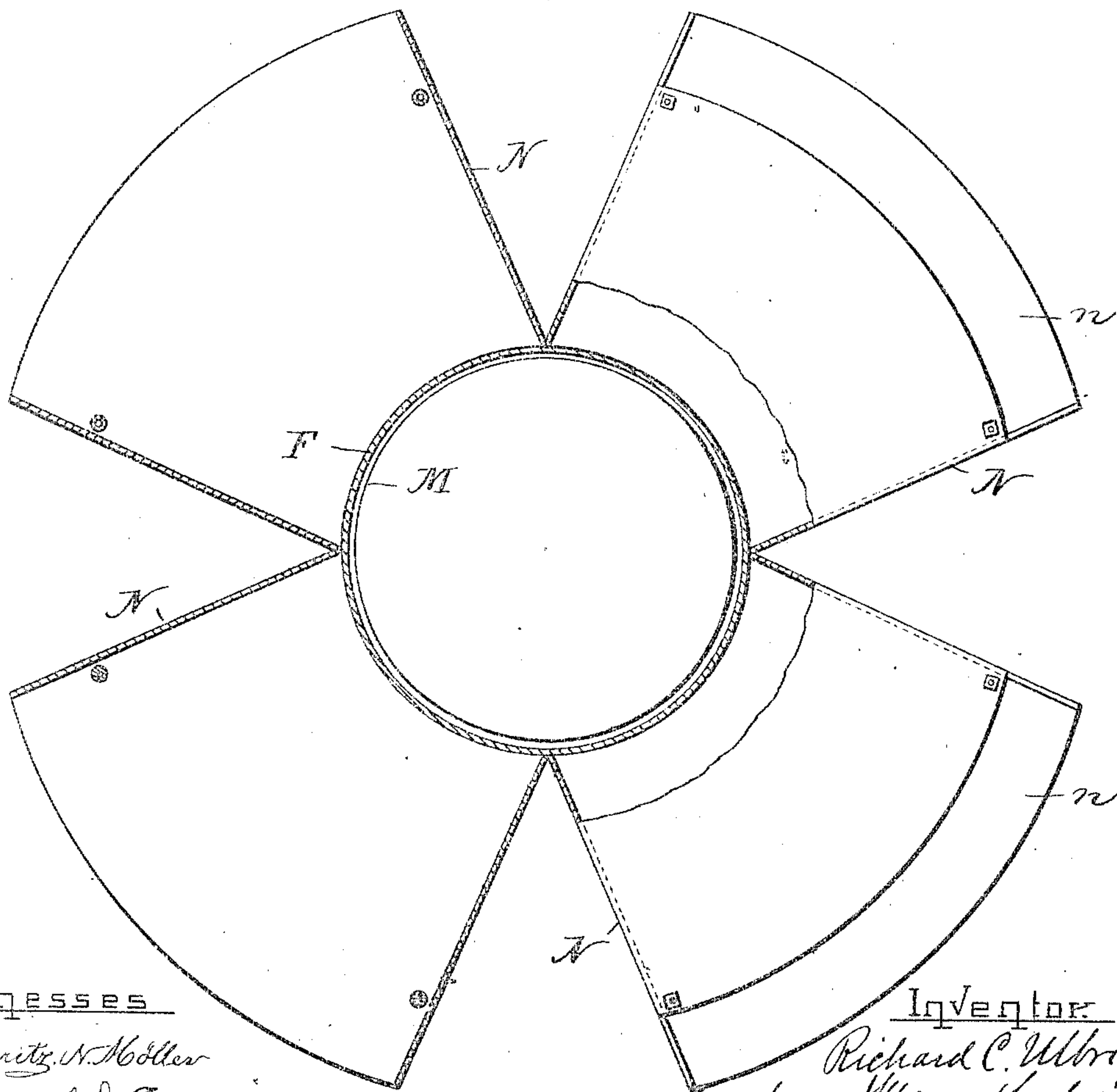


Fig. 2.

Witnesses

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2 Sheets—Sheet 2.

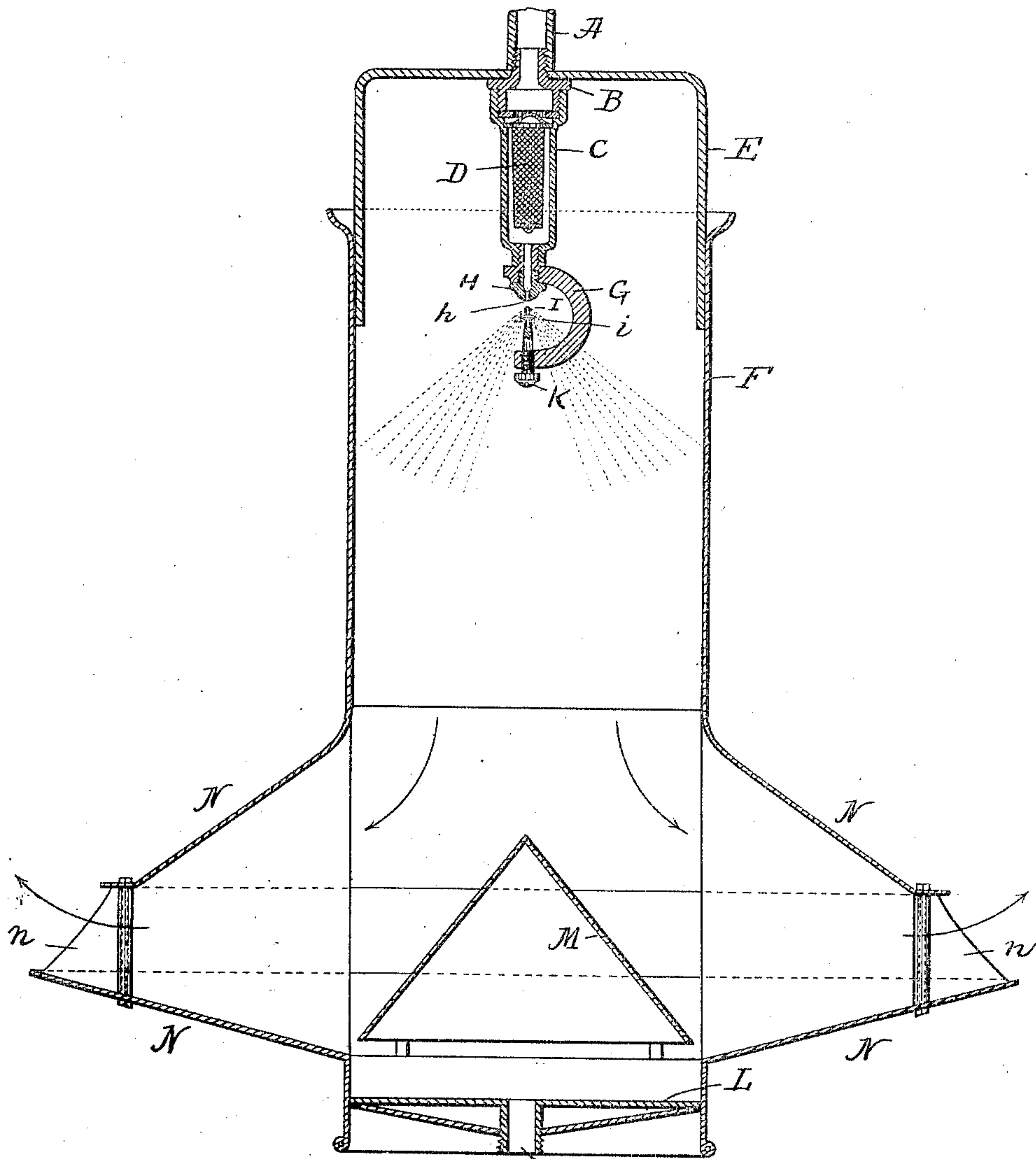


Fig. 3.

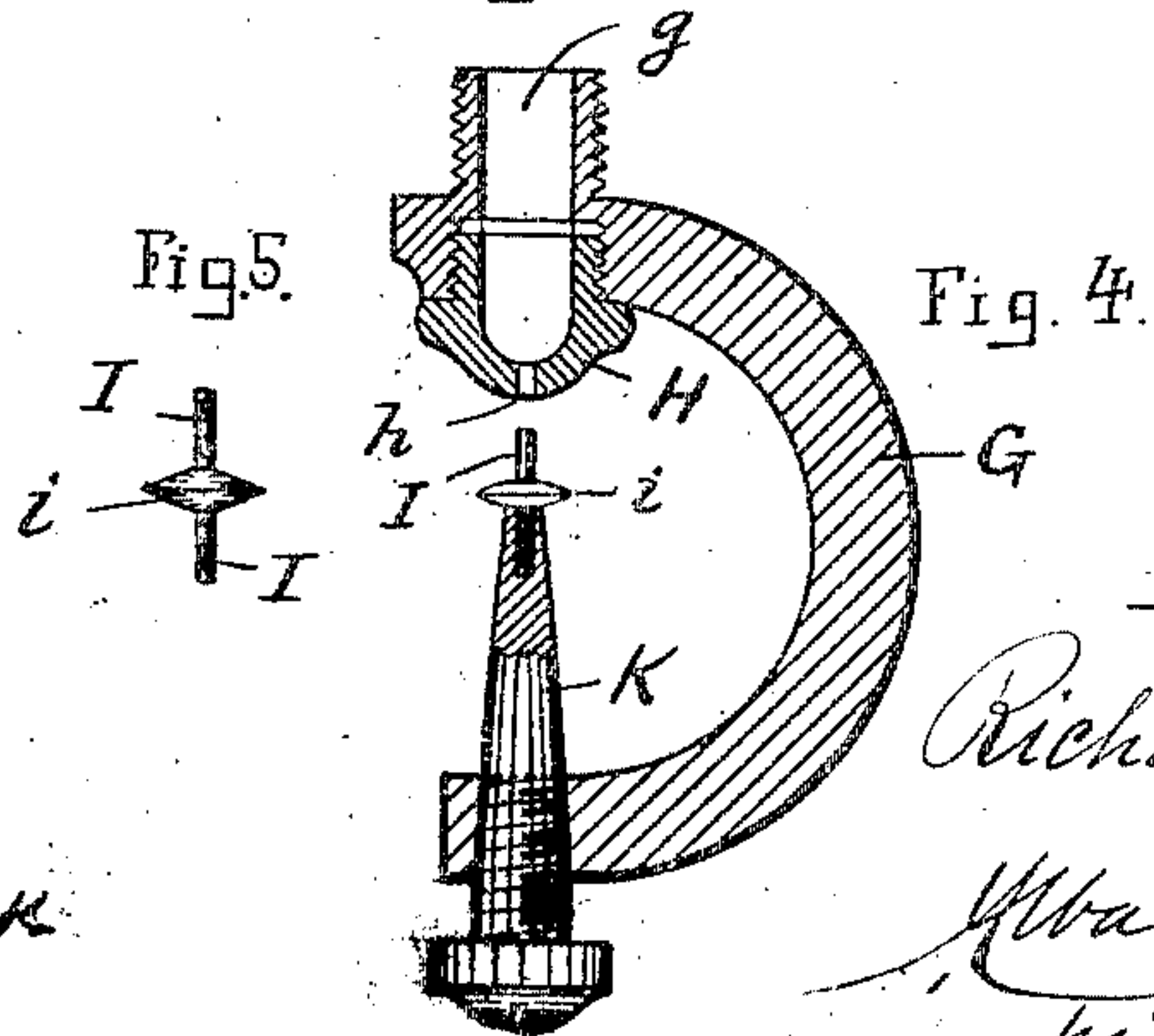


Fig. 5.

Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

RICHARD C. ULBRICH, OF CHELSEA, MASSACHUSETTS, ASSIGNOR OF ONE
HALF TO THEODORE JOHANNIS, OF SAME PLACE.

HUMIDIFIER.

SPECIFICATION forming part of Letters Patent No. 668,028, dated February 12, 1901.

Application filed October 29, 1900. Serial No. 34,362. (No model.)

To all whom it may concern:

Be it known that I, RICHARD C. ULBRICH, a citizen of the United States, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Humidifiers, of which the following is a specification.

This invention relates to improvements in humidifying apparatus for humidifying the air in factories—such as, for instance, cotton or woolen mills and other inclosed places where humidity and a moist atmosphere are required; and it is carried out as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a side elevation of the lower portion of the device. Fig. 2 represents a plan view of Fig. 1, partly shown in section. Fig. 3 represents a central vertical section of the complete humidifying apparatus. Fig. 4 represents an enlarged vertical section of the spraying device, showing parts in elevation; and Fig. 5 represents a detail side elevation of the reversible deflector arranged on said spraying device.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

In Fig. 3, A represents the water-supply pipe leading from any desired source of water-pressure, and to the lower end of said pipe is secured a nipple B, onto which is screwed the upper end of the cylindrical filter-case C, within which is contained the downwardly-tapering filter D, preferably made of wire gauze or netting, for the purpose of preventing impurities, &c., from entering the nozzle, as shown. The said filter D, as shown in Fig. 3, is made smaller in diameter at the bottom as compared with the size at its upper end, and this is very advantageous, as by so constructing it it may readily be withdrawn from within the inclosing case C whenever said filter is to be cleansed from impurities, lint, &c., that may project through the perforations in the netting and clog up the space between the exterior of the said filter and interior of the casing C. In other devices of this kind where the filter-cylinder is straight great force is needed to withdraw the same for cleansing purposes on account of accumulations of lint,

&c., projecting through such filter and filling the space between it and the casing C. This objection is entirely overcome by my arrangement of making the filter-cylinder tapering—that is, smaller at its lower end as compared with its upper end, as shown in Fig. 3.

E is a bail or cross-bar secured to the nipple B and lower end of the water-supply pipe A, as usual, and to the lower end of said cross-bar is secured the humidifier casing or cylinder F, as is common in devices of this kind.

To the lower end of the filter-casing C is secured my improved spraying device, which is constructed as follows: It consists of a preferably semicircular or equivalent frame G, secured to the lower end of the filter-casing C and provided with a passage *g*, communicating with the lower end of said filter-casing, as shown in Figs. 3 and 4. To said frame G is secured a detachable discharge-nozzle H, provided with a spray-perforation *h*. (Shown in said Figs. 3 and 4.) Directly below the perforation *h* is located the deflector, consisting of a spindle I, having made integral with its middle portion a duplex reversible conical deflector *i*. (Shown in Figs. 3, 4, and 5.) The lower portion of said spindle I is supported in a vertical perforation in the top of the vertically-adjustable screw-bolt K, which is screwed through a screw-threaded perforation in the lower end of the frame G, as shown in Figs. 3 and 4. By turning the screw-threaded bolt K around its axis the deflector I may be adjusted to and from the spray-opening *h* in the lower end of the nozzle H, as may be desired. By this arrangement I provide two deflecting-points against which the water strikes—namely, the upper end of the spindle I and the conical deflecting-surface *i*, as shown.

In devices of this kind a discharge-nozzle is usually employed for discharging a jet of water against a single striking-point or disintegrating-surface, so as to break up the water into a fine shower or spray; but all of such nozzle devices will cause the water to be discharged into the room in the form of a heavy shower as soon as the nozzle or striking-point is slightly worn or bent out of shape, causing the wetting of the machinery and floor and injuring the health of the operators.

In my present invention I make use of a spraying device having two deflecting or striking points—namely, first, the upper end of the reversible spindle I, and, secondly, the conical-shaped disk *i*, the latter being of great importance, for the reason that if the upper end of the spindle I should be worn out of shape the secondary conical deflecting-disk *i* will break up the water and form the desired umbrella-shaped finely-divided spray, which is afterward carried into the lower portion of the casing and ejected therefrom into the room or factory the air of which is to be moistened.

The deflector I *i* may be reversed in position if its upper portion should become worn, and by such arrangement the life of the spraying device is materially increased as compared with other devices for this purpose.

At the lower end of the cylindrical casing F is arranged a drip-pan L, to which is connected a delivery-pipe *l*, as is common in devices of this kind. Above the drip-pan L is arranged the conical spray-guide M for the purpose of properly guiding the moisture out through the exhaust-openings, as will hereinafter be described.

To the lower portion of the casing F are connected four diametrically-arranged exhaust-chambers N N N N, having segmental vents *n n n n*, through which the moisture is discharged into the room or factory the air of which is to be humidified. Each of the four exhaust-chambers and vents are arranged at right angles to one another, and by such arrangement the humidifying device may be placed above the junction of two right-angled passages leading between the looms or other machines in the factory that is to be humidified, and by this arrangement the moisture is caused to be ejected in a line with such passages and prevented from directly striking the looms or other machinery located adjacent to such passages, thus preventing injury to such machinery.

The operation is as follows: The water that is ejected from the perforated spraying-nozzle H is forced against the striking-point I, as well as against the upper surfaces of the reversible conical disk *i*, causing the water to be converted into a finely-distributed spray, which is forced against the interior of the casing F and forced downward through the latter against the conical guide M and out through the four segmental openings *n n n n* into the room the air of which is to be moistened, as shown by arrows in Fig. 3.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a humidifying apparatus, a casing provided with a series of exhaust-passages arranged at right angles to each other, a cylindrical shell, a spraying device secured to said shell, and a downwardly-extending tapering filter arranged within said shell and communicating interiorly with a water-supply.

2. In a humidifying apparatus a spraying device, consisting of a perforated nozzle combined with a post K, adjustable to and from said nozzle and provided at its upper end with a reversible deflector consisting of a spindle I, having arranged upon it a conical or equivalent secondary deflector-disk *i*, substantially as and for the purpose shown and described.

3. In a humidifying apparatus, a casing provided with a series of exhaust-passages arranged at right angles to each other, a shell connected to said casing, a spraying device consisting of a nozzle and reversible deflector, and a downwardly-extending tapering filter arranged in said shell and communicating interiorly with a water-supply.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RICHARD C. ULBRICH.

Witnesses:

ALBAN ANDRÉN,

SAMUEL J. CRADDOCK.