(No Model.) 2 Sheets—Sheet 1.

M. PARTINGTON.

ATOMIZER FOR DAMPENING FABRICS.

No. 410,188. Patented Sept. 3, 1889.

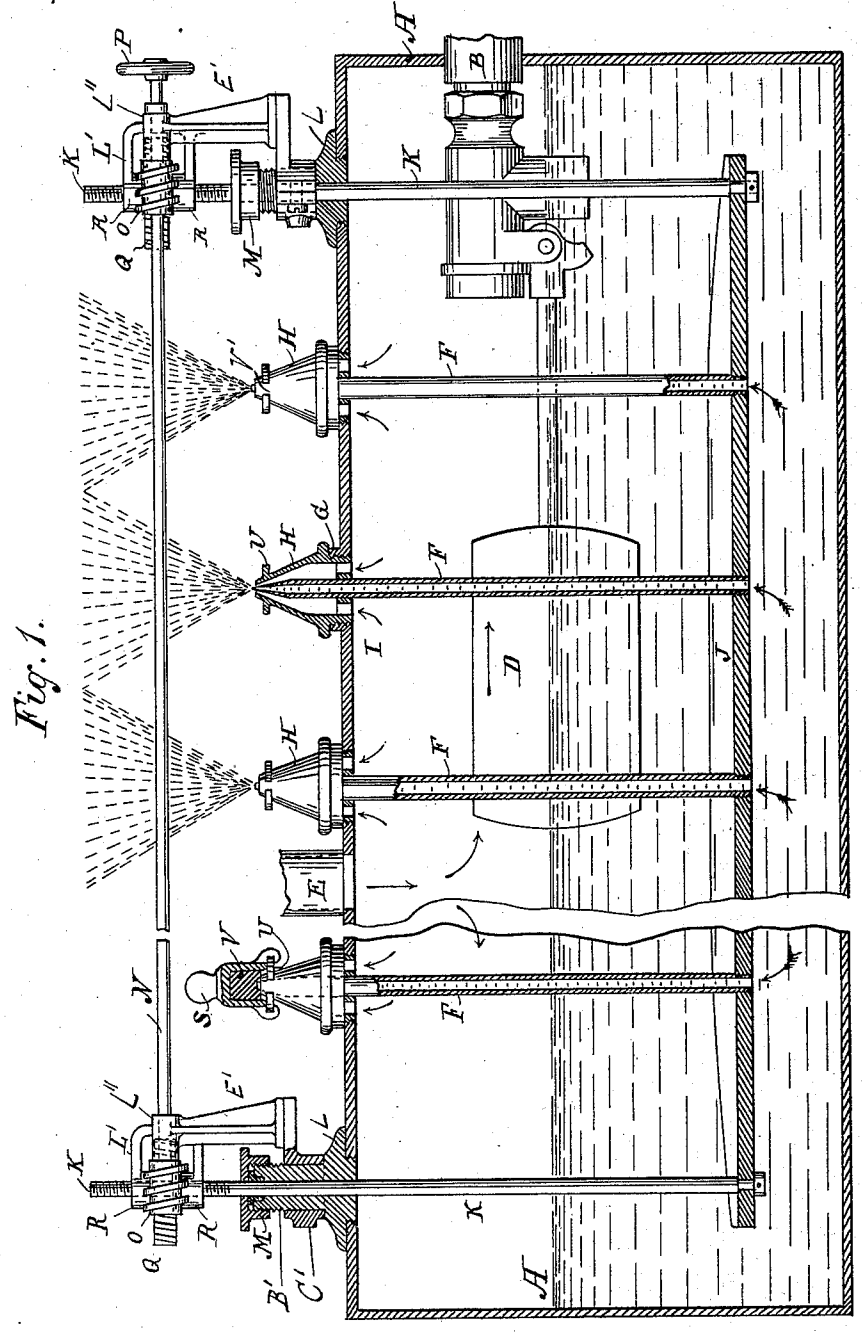


Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

M. PARTINGTON.

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Fig. 2.

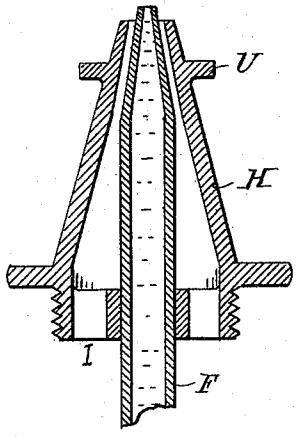


Fig. 3.

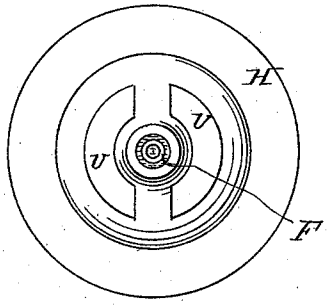


Fig. 4.

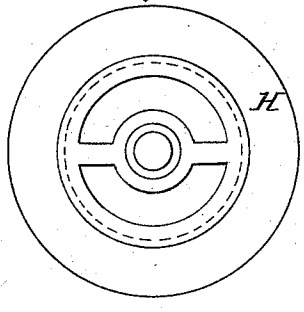


Fig. 5.

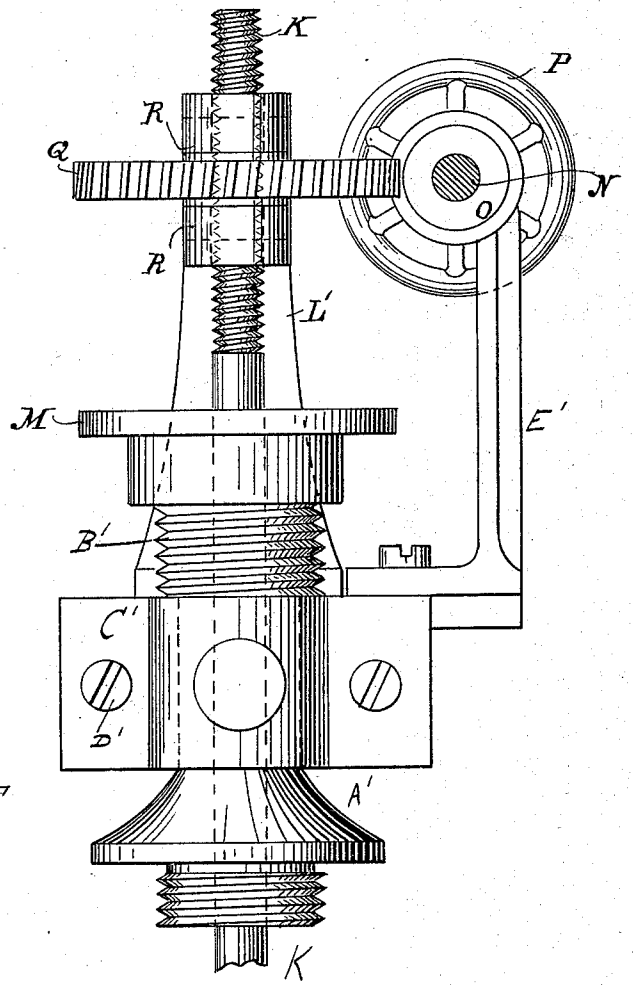
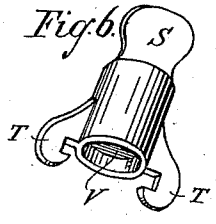


Fig. 6.



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UNITED STATES PATENT OFFICE.

MICHAEL PARTINGTON, OF FALL RIVER, MASSACHUSETTS.

ATOMIZER FOR DAMPENING FABRICS.

SPECIFICATION forming part of Letters Patent No. 410,188, dated September 3, 1889.

Application filed April 20, 1889. Serial No. 307,958. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL PARTINGTON, a citizen of the United States, residing at Fall River, in the State of Massachusetts, have invented certain new and useful Improvements in Atomizers for Dampening Fabrics, of which the following is a description in such full, clear, concise, and exact terms as will enable any one skilled in the art to which my invention appertains, or with which it is most nearly connected, to make and use the same, reference being had to the annexed drawings, making part of this specification, and to the letters and figures of reference marked thereon.

Similar letters of reference indicate corresponding parts in all the figures of the drawings.

As is now well understood in the arts, cotton goods, before they are calendered are conditioned by dampening or sprinkling in bleaching, dyeing, or print works. The ordinary means of sprinkling or dampening such goods consists of a circular brush, the ends of the bristles of which dip into a trough containing water, which water, when the brush is revolved by centrifugal action, is thrown upon the goods. There are many objections to such a device when employed for this purpose. It is desirable that the water be sprinkled upon the goods in as small drops or as fine spray as possible, and that it be supplied evenly over the entire surface. Besides the inherent defects of a brush as a means for dampening the goods may be mentioned the fact that the bristles are apt to become loosened and fall out, and that part of the brush becomes inefficient for sprinkling purposes, since it causes the goods to be unevenly and unsatisfactorily dampened. It is also impossible to regulate with accuracy and with uniformity the amount of water thrown upon the goods by such a device; nor is it possible to insure an even distribution of the water over the entire surface. This regulation and uniformity is a matter of the utmost importance in conditioning the cloth, because if too little water be thrown upon the goods they will not be properly ironed in passing through the calender-rollers, and if too much be thrown upon them they are apt to mildew after being calendered, and they invariably have a heavy or lifeless feeling which depreciates the value. Another objection to the present means of conditioning the goods by means of a sprinkling-brush consists in the fact that the cloth, after it is dampened, must be laid aside for several hours in order that the water may have time to soak into and spread evenly through the entire mass. The time necessary to this end is greatly diminished if the water be thrown upon the goods in fine spray and evenly over the entire surface.

The object of my present invention is to provide a more efficient sprinkler, and its advantage when used in bleaching, dyeing, or print works for conditioning the goods before calendering consists in the economy of power employed, and in the fact that the water is more evenly applied to the goods, that it is divided into smaller drops or particles before it reaches the goods, and that it diminishes the time necessary to elapse between the sprinkling of the cloth and passing it through the calender-rollers. By means of my improved sprinkler the goods are in an improved condition when they leave the calender-rollers, and the time necessary to dry them is diminished.

The following is a description of the accompanying drawings and of the devices illustrated therein, while the novel features of my invention will be specifically pointed out in the claims concluding this specification.

Figure 1 shows a sprinkling-box in longitudinal section with some of the sprinklers in section and some in elevation. Fig. 2 is a vertical section through one of the sprinkling-nozzles. Fig. 3 is a top view of the same, and Fig. 4 is a bottom view of the said nozzle attached to a sleeve supporting it. Fig. 5 is a view of the mechanism at one end of the sprinkling-box, by means of which the adjustment of the water-tubes is effected. Fig. 6 is a perspective view of the closing-cap for stopping the flow of water or spray through some of the nozzles without interfering with its flow through the others.

Referring to Fig. 1, A is a closed trough supplied with water through the pipe B, the valve of which is automatically regulated by the float D, which keeps the water at an approximately constant level. E is a duct lead-

ing from a blower to maintain a given air-pressure within the trough. F is a tube, one end of which is below the surface of the water in the trough, and the other end of which projects outside of the trough. Arranged on the top of said trough are a series of sleeves G G, to which the nozzles H are attached. The tubes F pass up through the webs at the bottom of the nozzles H, which webs have air-passages I I from the chamber to the interiorof said nozzles. The air flows into the trough through the duct E, creating a pressure on the surface of the water contained therein, which pressure forces the water up, as shown by the arrows, through the tubes F and out of their upper ends. The air under pressure in the trough also passes up in the nozzles H, as shown by the arrows, and out through the annular space between the ends of the nozzles H and the tubes F. The action of this air-column not only aids in causing the water to pass up through the tubes F, but it also acts to atomize or spray the water which is discharged. The character of the spray discharged from these several nozzles will be varied for any given pressure of air by the position of the upper ends of the tubes F with relation to the upper orifices of the nozzles H, thus causing a coarser or finer spray to be thrown upon the goods, since the farther the tubes F project the coarser will be the spray. It is therefore desirable that a means be provided for very accurately adjusting the relation of said parts, and it is further desirable that they should all be simultaneously adjusted and that the spray from all should be uniform. To accomplish this end, I have attached to all the tubes F a bar or plate J, so that by varying the adjustment of the plate J all the discharging-pipes will be adjusted at the same time and in the same way. As a means of adjusting the plate J, I have shown two rods K K, one attached to each end of the plate and having screw-threaded ends, which pass through the sleeves L L, fixed to the top of the trough. These rods K are surrounded by the stuffing-boxes M, to prevent the escape of air from the trough. Any suitable device may be employed to cause these rods K at the same time or one at a time to be lifted or depressed to vary the adjustment of the plate J; but if the rods be not raised or lowered simultaneously the adjustment of the several tubes within their respective nozzles will not be uniform and the tubes by being tipped will cease to maintain their proper relative positions. To avoid these defects and to construct a machine in which the character of the spray may be varied and the position of the tubes accurately adjusted while the work of dampening the goods is proceeding, I have shown a rod N, on each end of which a worm O is carried, which rod is provided with the wheel or handle P. This shaft N is supported in brackets E′ E′ at each end of the box A. L is a flanged tube embracing and forming a journal for the rod K below its screw-threaded upper end, the lower end of which tube is provided with an external screw-thread, which screws into a corresponding perforation in the top of the box A. The upper end of this tube is also provided with a screw-thread B′, to receive the stuffing-box M.

Between the flanged lower end of the tube L and the screw-thread B′ on the upper end of said tube is a plain exterior surface. Surrounding this plain surface is a collar formed of two pieces C′ C″, held together by screws D′. Attached to the part C″ of this collar are the brackets L′ and E′. The bracket L′ carries the hubs R R, which form bearings for the upper end of the rod K. Between the hubs R R is the worm-wheel Q, tapped and screw-threaded at its axis to engage with the screw-threaded end of the rod K. Each bracket E′ carries a sleeve L″, embracing and forming a journal for the rod N, provided with the worms O and the handle P. These worms O mesh into gear-wheels Q, which wheels are held in a fixed position between the hubs R R, (see Fig. 5,) and are provided with a female screw-thread at their axes engaging with the threads on the rod K. Thus when the wheels Q, by means of the revolution of the worms O, are caused to revolve they will raise or depress the rods K and will vary the adjustment of the plate J, which always is maintained level. Of course the nozzles, or both the tubes and the nozzles, might be adjusted, as it is the relative position of the two and not the actual elevation of either that determines the character of the spray thrown.

As the goods to be dampened are not always of the same width, it is sometimes desirable to shut off the spray from the end nozzles, and for accomplishing this purpose I have shown the nozzle-caps S. The cap S is provided with two ears T T, which take over projections U, near the top of the nozzle, which projections are provided with notches V′, so that the engagement of these ears and the projection is something like that of a bayonet-joint. This cap S is provided with an interior packing or rubber piece V, which is pressed upon the holes in the top of the tube and nozzle when the cap is in position. Instead of the sleeves G being made integral with the top of the trough, they may, of course, be made separate therefrom and secured thereto in any suitable manner to preserve an air-tight joint.

By experiment I have ascertained that a pressure of one pound in the trough A will throw a spray from seven to eight feet high. The goods dampened with my improved sprinkler are much better conditioned than those sprinkled in the ways already known and practiced, and the cloth after it has been ironed is in much better condition and has no heavy or lifeless parts, due to overwetting. I have also ascertained that the goods only require to be laid aside after being sprinkled and before being calendered a comparatively short time when dampened with my improved

sprinkler, on account of the fineness of the dampening-spray and the evenness with which it is supplied to the goods.

It will of course be understood that I do not limit myself to the precise elements or combinations of elements illustrated and hereinbefore described, since many modifications not affecting either the principle or purpose of the invention may be employed without departing from its spirit or the scope of the following claims.

It will also be understood that my improved sprinkler is adapted not only to the dampening of goods in bleaching, dyeing, or print works to condition them for the calender-rollers, but that it may be applied to other and analogous purposes.

My sprinkler is especially useful in dampening those materials—such as velveteens—where steam as a dampening agent is now employed. These goods cannot be sprinkled with a brush, as water in drops will spot and ruin them. For this reason steam is employed to dampen these goods, and this not only makes it inconvenient to work in the room where the dampening is being done, but the steam rusts all machinery which may happen to be near it.

My sprinkler will throw the water up in such fine spray that it resembles a fog.

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

1. The combination of a trough for containing water and air under pressure, a plurality of spraying-nozzles in communication with the air contained in said trough, a plurality of tubes in communication with the water contained in said trough, an adjustable plate connected with all of said tubes for adjusting the relation of all of said nozzles and tubes simultaneously, and means for raising and lowering said plates, substantially as described.

2. The combination of a trough for containing water and air under pressure, a plurality of spraying-nozzles in communication with the air contained in said trough, a plurality of tubes in communication with the water contained in said trough, said nozzles being provided with a smooth-bore web through which said tubes pass, and means, substantially as described, for raising and lowering said tubes.

3. The combination of a trough for containing water and air under pressure, a plurality of spraying-nozzles in communication with the air contained in said trough, a plurality of tubes in communication with the water contained in said trough, and caps removably attached to said nozzles provided with a packing—such as rubber—for said nozzles, substantially as described.

4. In combination with a trough adapted to contain fluid, spraying-nozzles and tubes, a support for said tubes, an adjustable rod provided with a threaded portion attached to said support, a worm-gear engaging with the threaded portion on said rod for adjusting said tubes, and a worm for operating said gear, substantially as described.

5. In combination with a trough adapted to contain fluid, a plurality of spraying-nozzles and tubes, a plate attached to said tubes supported by a plurality of adjustable rods, each provided with threaded portions, worm-gears engaging with said threaded portions for simultaneously raising and lowering said rods, and a rod provided with worms connecting said worm-gears to cause them to operate together, substantially as described.

6. In combination with a trough adapted to contain fluid, a plurality of spraying-nozzles and tubes, a plate attached to said tubes supported by two adjustable rods, and means for raising and lowering the said rods simultaneously, substantially as described.

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