

No. 712,210.

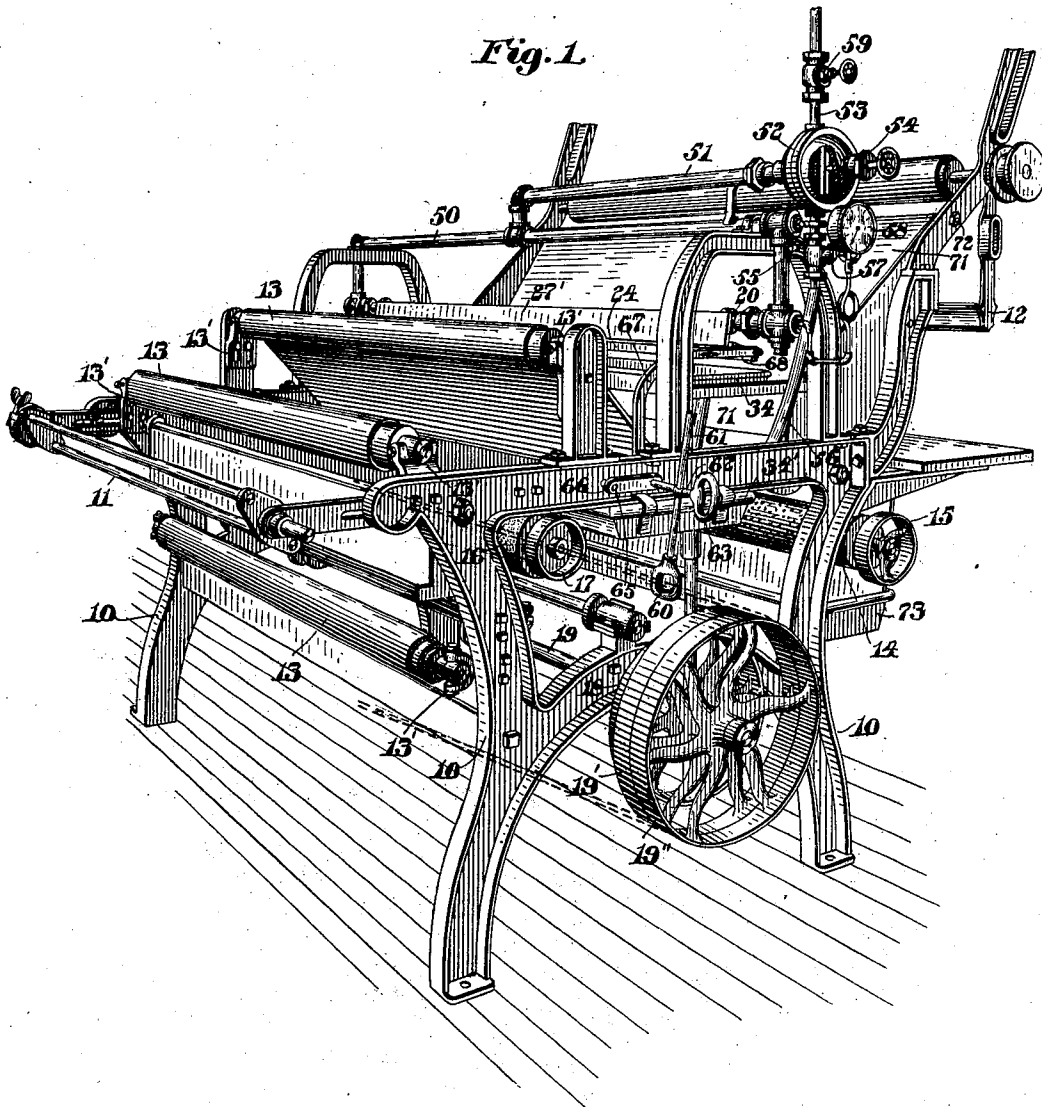
Patented Oct. 28, 1902.

F. STINER.  
CLOTH FINISHING MACHINE.

(Application filed Sept. 20, 1901.)

(No Model.)

4 Sheets—Sheet 1.



*Witnesses:*  
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Edwin T. Luce

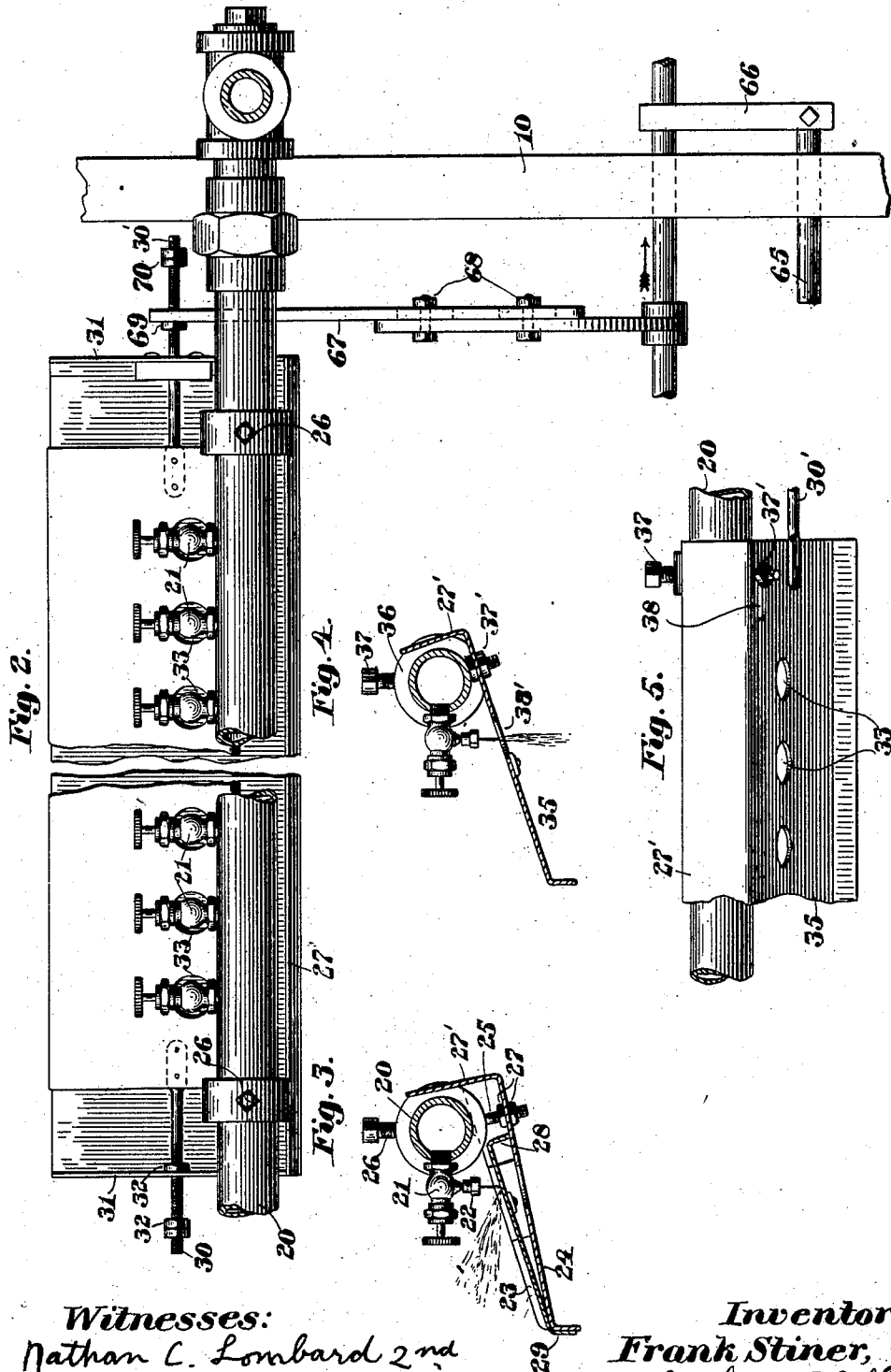
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4 Sheets—Sheet 2.



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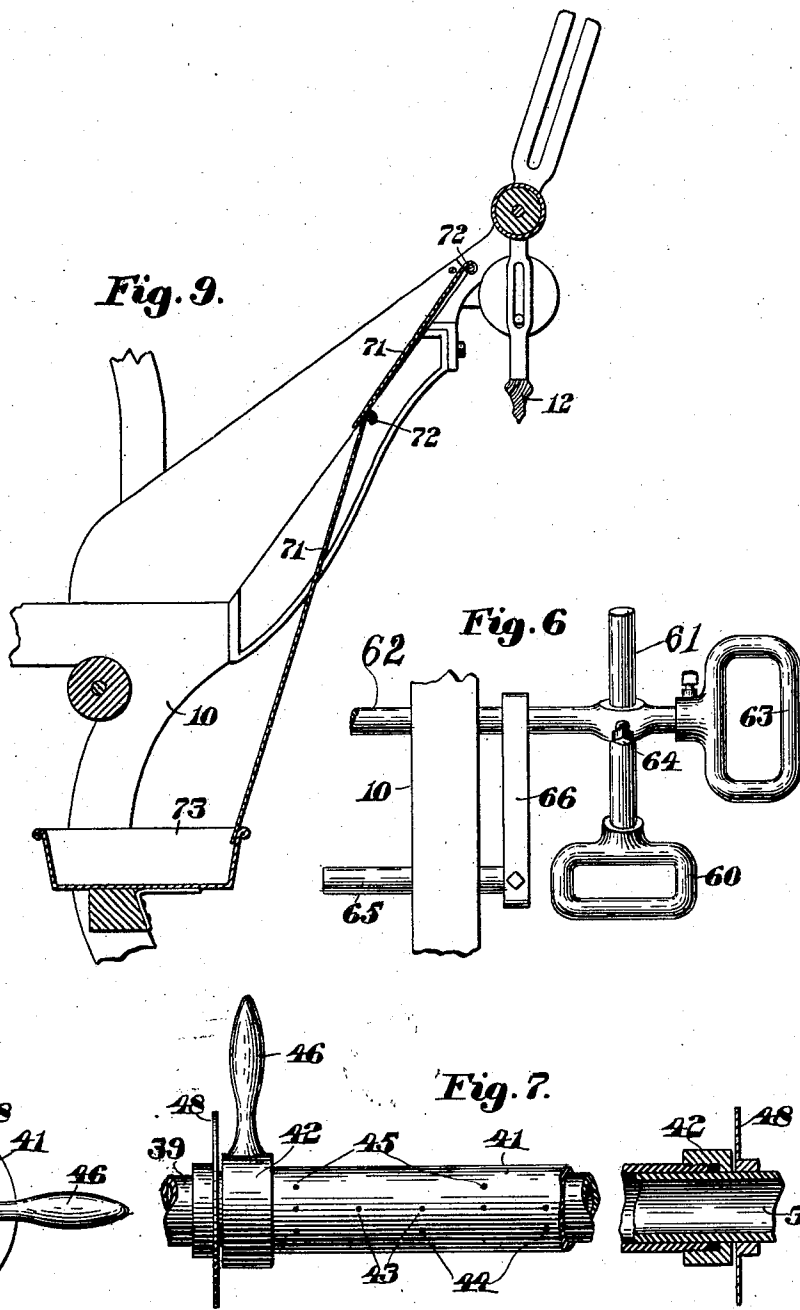
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4 Sheets—Sheet 3.



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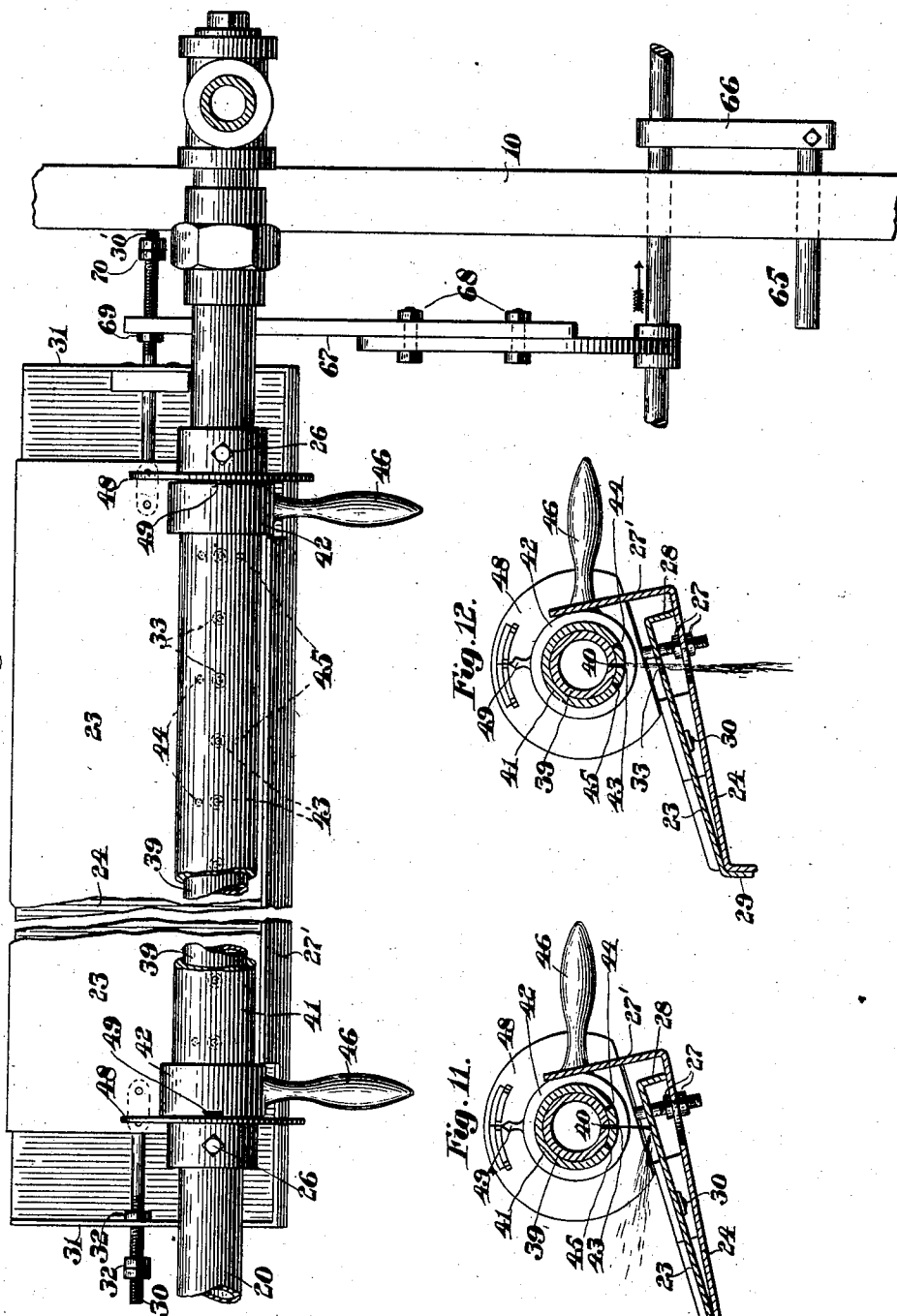
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4 Sheets—Sheet 4.

Fig. 10.



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# UNITED STATES PATENT OFFICE.

FRANK STINER, OF LAWRENCE, MASSACHUSETTS.

## CLOTH-FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 712,210, dated October 28, 1902.

Application filed September 20, 1901. Serial No. 75,697. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK STINER, a citizen of the United States of America, and a resident of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Cloth-Finishing Machines, of which the following is a specification.

My invention relates to improvements in cloth-finishing machines, and more particularly to such machines which are used to dampen a fabric to shrink it preparatory to pressing, having for its objects the various features hereinafter particularly described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of one form of my machine. Fig. 2 is a broken top plan view of the spraying device, showing the parts in their ineffective position. Fig. 3 is a vertical transverse section thereof, but with the parts in their effective or spray-producing relation. Fig. 4 is a similar view of another form of spraying device. Fig. 5 is a partial rear elevation thereof. Fig. 6 is a detail of the actuating portion of the shifting mechanism and adjacent parts. Fig. 7 is a bottom plan view, parts being broken away and in section, of another form of sprinkling-pipe. Fig. 8 is a vertical transverse section thereof. Fig. 9 is a vertical longitudinal sectional detail through the rear of the machine. Fig. 10 is a broken top plan view of a spraying device using the jet-pipe of Figs. 7 and 8; and Figs. 11 and 12 are vertical transverse sections thereof, showing the parts, respectively, in their effective and ineffective positions.

Similar characters designate like parts throughout the several figures of the drawings.

Upon a suitable framework 10, preferably at its opposite ends, are supported a tension device 11, over which the fabric to be operated upon enters, and such a device as a folder 12, by which the fabric is arranged for removal from the machine. Journaled in the framework between these devices are a convenient number of guide-rolls 13, preferably adjustably supported at 13', over which the fabric passes and by which it is guided in the desired direction. In its passage through

the machine it comes in contact with a draft-roll 14, having a suitably-roughened surface, which is rotated through a pulley 15, and with a preferably cylindrical brush 16, rotated through a pulley 17, by which the face of the fabric may be dressed. The pulleys 15 and 17 may be driven by suitable belting operating over a pulley 18 upon a shaft 19, which also carries loose and fast pulleys 19' 19'', over which runs a belt to some suitable source of power.

At a convenient point, preferably near the rear of the machine, after the fabric has passed the draft-roll it is subjected to the dampening action of a spray of liquid, which is here shown as delivered in a finely-atomized condition from a series of jets issuing from a sprinkling-pipe and impinging against a deflector. In the embodiment of my invention illustrated in Figs. 2 and 3 of the drawings a jet-pipe 20 is shown as provided with a longitudinal series of openings, preferably at one side, in which are mounted valves 21, the outlets of which may be covered by perforated screw-caps 22, reducing the size thereof. These valves may be opened to a greater or less extent to regulate the quantity of liquid discharged by the sprinkler. They also enable any one of the jet-openings to be entirely closed, allowing the caps to be readily removed and cleaned of any obstruction without disturbing the others.

Below the outlets of the valves is situated the deflector, which may consist of a plate 23, conveniently formed of sheet metal, situated at a suitable angle to direct the spray arising from the impact of the jets upon the run of cloth passing beneath it. It is carried by a support or shelf 24, which may be mounted upon the sprinkling-pipe by arms 25, embracing it, and provided with set-screws 26, contacting with the pipe, to adjust the support, and therefore the deflecting-plate, at various inclinations. The arms are preferably threaded and the deflector adjustably retained in position thereon by pairs of nuts 27 27', this adjustment permitting a variation in the distance of the deflector from the jet-openings to control the force of impact of the jets. The support 24 may be provided at its rear or highest side with an upwardly-projecting wall 27' to prevent the passage of

spray in that direction. The plate 23 is shown as formed with a flange 28 at its inner edge resting upon the support and a flange 29 at its outer edge overhanging and contacting with the outer bent edge of the support. It has preferably secured at its ends rods 30 and 30', projecting through openings in upturned flanges 31 at each end of the support, by which it is retained in place and guided for longitudinal movement thereon, this movement being limited by nuts 32 upon a threaded portion of the rod 30. The deflecting-plate is provided with a series of openings 33, corresponding in number to the jet-openings and situated beneath them in the same vertical plane. Longitudinal movement of the plate permits it to be located with either the openings directly in alinement with the jet-openings, in which case the jets pass there-through and are received by a trough 34, preferably situated below the sprinkler, from which trough the water may be conducted to any desired point, as a larger trough 34', provided with a suitable outlet. In this position of the plate the jets are ineffective to dampen the fabric; but if a plate is moved longitudinally until the portions between the openings lie in the path of the jets they impinge against its surface and break into a fine spray, being deflected by the inclination of the plate upon the fabric.

The use of separate deflecting and supporting plates is not essential, and a single plate may be used instead. In Figs. 4 and 5 one form of such an arrangement is illustrated. Here a deflecting-plate 35, formed in a general way like the supporting-plate 24, previously described, is supported by collars 36, encircling the spray-pipe and adjustably secured thereon by set-screws 37. These collars also carry screws 37', cooperating with longitudinal slots 38 in the deflecting-plate and serving to support it. By turning the collars upon the spray-pipe the inclination of the deflector may be varied, while the length of the slots 38 allows its longitudinal movement to bring either openings 38' or the intermediate solid portion in the path of the jets.

Instead of the valves above described a convenient means for controlling the quantity of water discharged by the sprinkling-pipe, and consequently the degree of moisture imparted to the fabric, is illustrated in Figs. 7 and 8. Here a pipe 39 is perforated with a series of openings 40, preferably at its lower side directly over the deflector. Surrounding and contacting with it over the perforated surface is a second pipe or sleeve 41, which may be closed at each end by a stuffing-box 42, and this sleeve is provided with a plurality of series of openings lying parallel to the series 40. These are here shown as three in number, that in the center, 43, being equal in number to 40, while on each side is a series 44 and 45, having, respectively, an opening corresponding to every second and every third

in the inner pipe. All these perforations in the sleeve 41 are preferably equal in size to those in the pipe 39 and register with them when they lie in the same vertical plane to form jet-openings. The sleeve may have one or more handles 46, by which it can be rotated about the inner pipe, and the two elements conveniently carry secured to them a plate or dial 48 and a pointer 49, the former being suitably graduated and showing by the position of the latter the relation of the openings 43, 44, and 45 to the openings 40. It will be seen that with the sleeve in the position illustrated in Fig. 8 the maximum quantity of water will be ejected, while if the series 44 are brought into alinement the flow will be reduced to one-half, or with the series 45 the reduction will be to one-third. With any of the series the openings may be made to only partially register, so that the effective area will be varied, permitting the operator to secure intermediate rates of discharge. The friction in the stuffing-boxes will be sufficient to retain the sleeve in its adjusted position. The operation of this jet-pipe with the deflecting-plate, as is shown in Figs. 10 to 12, is similar to that previously described, there being an opening 33 in the plate for each opening 43 in the sleeve.

Whatever form of jet-control is used the water may be conveniently delivered to the sprinkling-pipe by a feed-pipe 50, connected to opposite ends, thus equalizing the pressure, the water entering at or near the center of the feed-pipe from a service-pipe 51. In the pipe 51 is preferably located a filter 52, serving to remove the sediment from the water to avoid the clogging of the jet-openings. The delivery to this filter may be at 53, and it may be supplied with a rotatable cleaning device 54 for the filtering-surface and with a cleaning-outlet or blow-out for accumulated solids at 55, connected by a pipe 56 with any desired receptacle, as the trough 34', and controlled by a valve 57. If desired, a pressure-gage 58 may be connected with the sprinkling-pipe to aid in securing uniform spray at different times.

It sometimes happens that an operator in shutting down the machine in stopping work will throw off the power by shifting the driving-belt to the loose pulley, but will forget to close off the water-supply by a valve 59, which is preferably provided in the service-pipe for that purpose. In this event the fabric would cease its motion, but the spray would continue to be thrown upon it, causing it to become soaked for a considerable length at that point and perhaps spoiling it and always necessitating special treatment to put it in proper condition. My present invention renders such a mistake impossible by providing a means for simultaneously and automatically stopping the delivery of spray to the fabric when the travel through the machine is stopped. In the form here illustrated a belt-shifter is provided, which may consist of a

loop 60, encircling the belt, and a stem 61, passing through an opening in a rod 62. This rod carries an actuating-handle 63, and the stem is adjustably secured inside the opening by a set-screw 64. The rod 62 passes through an opening in the side of the frame, being held against rotation while permitted to move longitudinally by a parallel rod 65, secured to it by a cross-bar 66 and working in an adjacent opening in the frame. To the rod 62 is connected a bar or arm 67, extending upward to the guide-rod 30' at that side of the machine and preferably having an opening through which said rod passes. This arm may be made in two sections, which are slotted and connected together by bolts 68, permitting an adjustment as to length. The rod 30' is shown as threaded and carries nuts or members 69 and 70 at the inner and outer sides of the bar, respectively.

As shown in Figs. 1 and 2, the machine is out of operation, the belt being upon the loose pulley, rendering the draft mechanism ineffective, the openings in the deflecting-plate beneath the jet-openings allowing the water to pass off without forming spray, and the bar 67 in contact with the nut 69. To start the machine, the operator pulls the handle 63 outward, causing the belt-shifter to move the belt upon the fast pulley and start the rotatable parts of the machine, causing the fabric to begin its travel. When the belt-shifting motion has been partly effected, the arm 67, which serves as a connector between the belt-shifter and deflector, comes in contact with the nuts 70 and during the remainder of the motion shifts the deflecting-plate, bringing the deflecting-surface beneath the jets and causing the resulting spray to be thrown upon the passing fabric. The play or lost motion between the shifting-arm and the rod 30' compensates for the difference in travel necessary between the belt-shifting mechanism and the deflecting-plate. To stop the machine, a reverse movement of the handle only is necessary, the single operation both stopping the travel of the fabric and rendering the jets ineffective.

To prevent any chance excess of moisture from reaching the fabric as it is arranged by the folder and to protect said fabric at this point when the end of a piece has passed the spraying device, overlapping baffle-plates 71 may be placed at the rear of the machine conveniently supported or hung from cross-rods 72, extending between the sides of the framework. The end of the lower plate may project over a trough 73, into which any water striking the plates is deflected.

The general operation of the machine will be clear. The fabric to be dampened first being passed in the proper direction over the various rolls and the valve 59 being open, the machine is started by shifting the belt and deflecting-plate through the handle 63, as has been previously described. The intensity of

the spray may now be adjusted by controlling the jet-openings or inclination of the deflecting-plate until the exact desired degree of dampness of the fabric is secured, the excess of water from the jets passing over the edge of the deflecting-plate into the trough 34, which extends beneath it. In the passage of the fabric the face is freed from lint and dressed by the rotating brush. If at any time during the run of the fabric the operator wishes to stop the machine, his neglect is guarded against by the automatic checking of the spray, and when it is again started the amount thrown upon the goods will be the same as before, because none of the adjustable controlling elements have been varied. The use of the filter, which may be readily cleaned, in the service-pipe keeps the feed-water practically free from all solid substances which might clog the jet-openings; but if such stoppage should occur in the use of the valve type of sprinkler it may be readily removed, as has been described, without disturbing the discharge from the others or substantially affecting the dampening of the fabric.

Having thus described my invention, I claim—

1. In a cloth-finishing machine, a sprinkler comprising a means for delivering liquid-jets, a deflector having a series of openings through which the jets may be permitted to pass when desired, and means for interposing a surface of the deflector in the path of the jets and thus rendering them effective.

2. In a cloth-finishing machine, a sprinkler comprising a means for delivering liquid-jets, a plate located in the path of the jets and provided with openings, and means for preventing or permitting the discharge of the jets through the openings.

3. In a cloth-finishing machine, a sprinkler comprising a means for delivering liquid-jets, a plate located in the path of the jets and provided with openings, and means for moving the plate to prevent or permit the discharge of the jets through the openings.

4. In a cloth-finishing machine, a sprinkler comprising a pipe provided with jet-openings, a deflector having one or more openings through which the jets may be permitted to pass when desired, means for interposing a surface of the deflector in the path of the jets, and means for varying the inclination of the deflector.

5. In a cloth-finishing machine, a sprinkler comprising a pipe provided with jet-openings, a deflector having one or more openings through which the jets may be permitted to pass when desired, means for interposing a surface of the deflector in the path of the jets, and means for varying the distance of the deflector from the jet-openings.

6. In a cloth-finishing machine, a sprinkler comprising a pipe provided with jet-openings, a support, and a deflecting-plate movable upon the support and having a series of openings

which may be brought into alinement with the jet-openings.

7. In a cloth-finishing machine, a sprinkler comprising a pipe provided with jet-openings, a supporting-plate having openings in alinement with the jet-openings, and a deflecting-plate movable upon the supporting-plate and having one or more openings which may be brought into alinement with both the jet-openings and those in the supporting-plate.

8. In a cloth-finishing machine, a sprinkler comprising a pipe provided with jet-openings, collars encircling the pipe, a deflecting-plate provided with openings which may be brought into alinement with the jet-openings movably supported upon the collars, and means for adjusting the collars upon the pipe whereby the inclination of the deflecting-plate may be varied.

9. In a cloth-finishing machine, a sprinkler comprising a pipe provided with jet-openings, collars encircling the pipe, and a deflecting-plate movably supported upon the collars and having a series of openings which may be brought into alinement with the jet-openings.

10. In a cloth-finishing machine, a sprinkler comprising a pipe provided with jet-openings, collars encircling the pipe, screws carried by the collars, and a deflecting-plate having slots cooperating with the screws and also having one or more openings which may be brought into alinement with the jet-openings.

11. In a cloth-finishing machine, the combination with a pipe provided with jet-openings for applying a liquid to the cloth and draft mechanism for moving said cloth in proximity to the sprinkler, of means for simultaneously starting and stopping the movement of the cloth and causing the liquid from the jets to fall upon or be diverted from said cloth.

12. In a cloth-finishing machine, the combination with a sprinkler provided with jet-openings for applying a liquid to the cloth and draft mechanism for moving said cloth in proximity to the sprinkler, of a deflector, means for starting and stopping the movement of the cloth, and means for moving the deflector into or out of the path of the jets.

13. In a cloth-finishing machine, the combination with a sprinkler provided with jet-openings for applying a liquid to the cloth and draft mechanism for moving said cloth in proximity to the sprinkler, of means for starting and stopping the draft mechanism, means for controlling the delivery of liquid from the sprinkler, and a connector between said starting and stopping and controlling means, whereby the latter is moved into or out of the path of the jets.

14. In a cloth-finishing machine, the combination with a sprinkler for applying a liquid to the cloth and a belt-actuated draft-roll for moving said cloth in proximity to the sprinkler, of a belt-shifter for starting and stopping the draft-roll, means for controlling the delivery of liquid from the sprinkler, and a

connector between said belt-shifter and controlling means.

15. In a cloth-finishing machine, the combination with a sprinkler for applying a liquid to the cloth and a belt-actuated draft-roll for moving said cloth in proximity to the sprinkler, of a belt-shifter for starting and stopping the draft-roll, a movable plate for controlling the delivery of liquid from the sprinkler, and a connector between the belt-shifter and plate.

16. In a cloth-finishing machine, the combination with a sprinkler for applying a liquid to the cloth and a belt-actuated draft-roll for moving said cloth in proximity to the sprinkler, of a belt-shifter for starting and stopping the draft-roll, an adjustable plate for controlling the delivery of liquid from the sprinkler, and an adjustable connector between the belt-shifter and plate.

17. In a cloth-finishing machine, the combination with a sprinkler for applying a liquid to the cloth and a belt-actuated draft-roll for moving said cloth in proximity to the sprinkler, of a belt-shifter for starting and stopping the draft-roll, a movable plate having a different range of motion from the belt-shifter for controlling the delivery of liquid from the sprinkler, and a connector between the belt-shifter and plate in which some play or lost motion is permitted.

18. In a cloth-finishing machine, the combination with a sprinkler for applying a liquid to the cloth comprising a pipe provided with jet-openings and a deflecting-plate having openings which may be moved into or out of alinement with the jet-openings, of a draft-roll for moving the cloth in proximity to the sprinkler, a belt-shifter for starting and stopping the draft-roll, and an arm connecting the belt-shifter and deflecting-plate.

19. In a cloth-finishing machine, the combination with a sprinkler for applying a liquid to the cloth comprising a pipe provided with jet-openings, a deflecting-plate having openings which may be moved into or out of alinement with the jet-openings and longitudinally-movable rods supporting the deflecting-plate, of a draft-roll for moving said cloth in proximity to the sprinkler, a belt-shifter for starting and stopping the draft-roll, an arm movable with the belt-shifter and having an opening through which one of the supporting-rods passes, and members carried by the rod with which the arm may coact.

20. In a cloth-finishing machine, the combination with a sprinkler for applying a liquid to the cloth comprising a pipe provided with one or more jet-openings, a deflecting-plate having openings which may be moved into or out of alinement with the jet-openings and longitudinally-movable rods supporting the deflecting-plate, of a draft-roll for moving said cloth in proximity to the sprinkler, a belt-shifter for starting and stopping the draft-roll, an arm movable with the belt-shifter and having an opening through which

one of the supporting-rods passes, and adjustable members upon the rods on each side of the arm.

5 21. In a cloth-finishing machine, the combination with a sprinkler and a cloth-arranging device, of a deflector interposed between the sprinkler and cloth-arranging device.

10 22. In a cloth-finishing machine, the combination with a sprinkler and a cloth-arranging device, of rods extending across the frame of the machine between the sprinkler and cloth-arranging device, and baffle-plates hung upon the rods.

23. In a cloth-finishing machine, the combination with a sprinkler and a cloth-arranging device, of rods extending across the frame of the machine between the sprinkler and cloth-arranging device, overlapping baffle-plates hung upon the rods, and a trough beneath the end of the lower baffle-plate. 15 20

Signed by me at Boston, Massachusetts, this 14th day of September, 1901.

FRANK STINER.

Witnesses:

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