

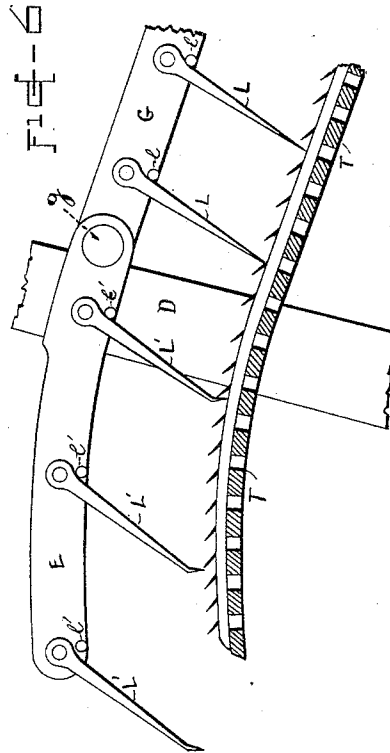
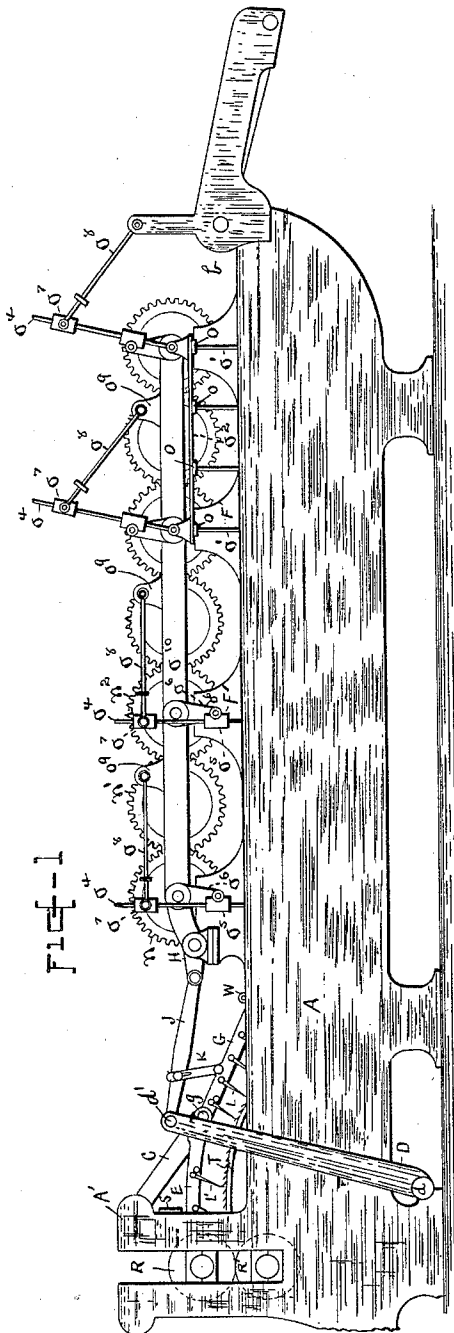
(No Model.)

4 Sheets—Sheet 1.

F. G. SARGENT.
WOOL WASHING MACHINE.

No. 433,581.

Patented Aug. 5, 1890.



Witnesses

N. P. Dickinson
C. J. Toland

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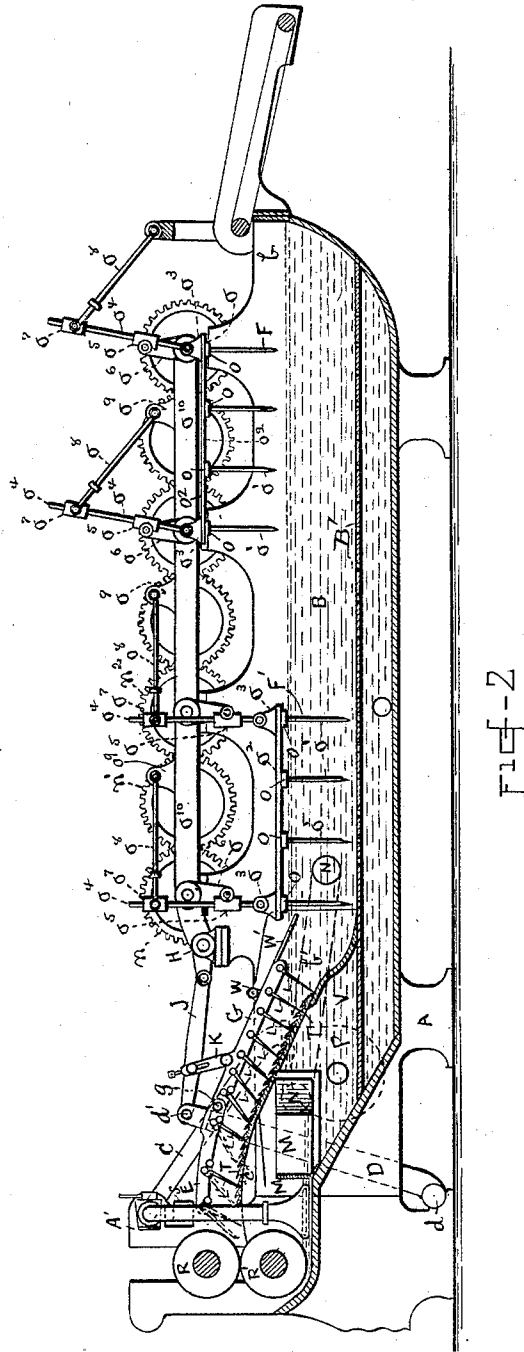
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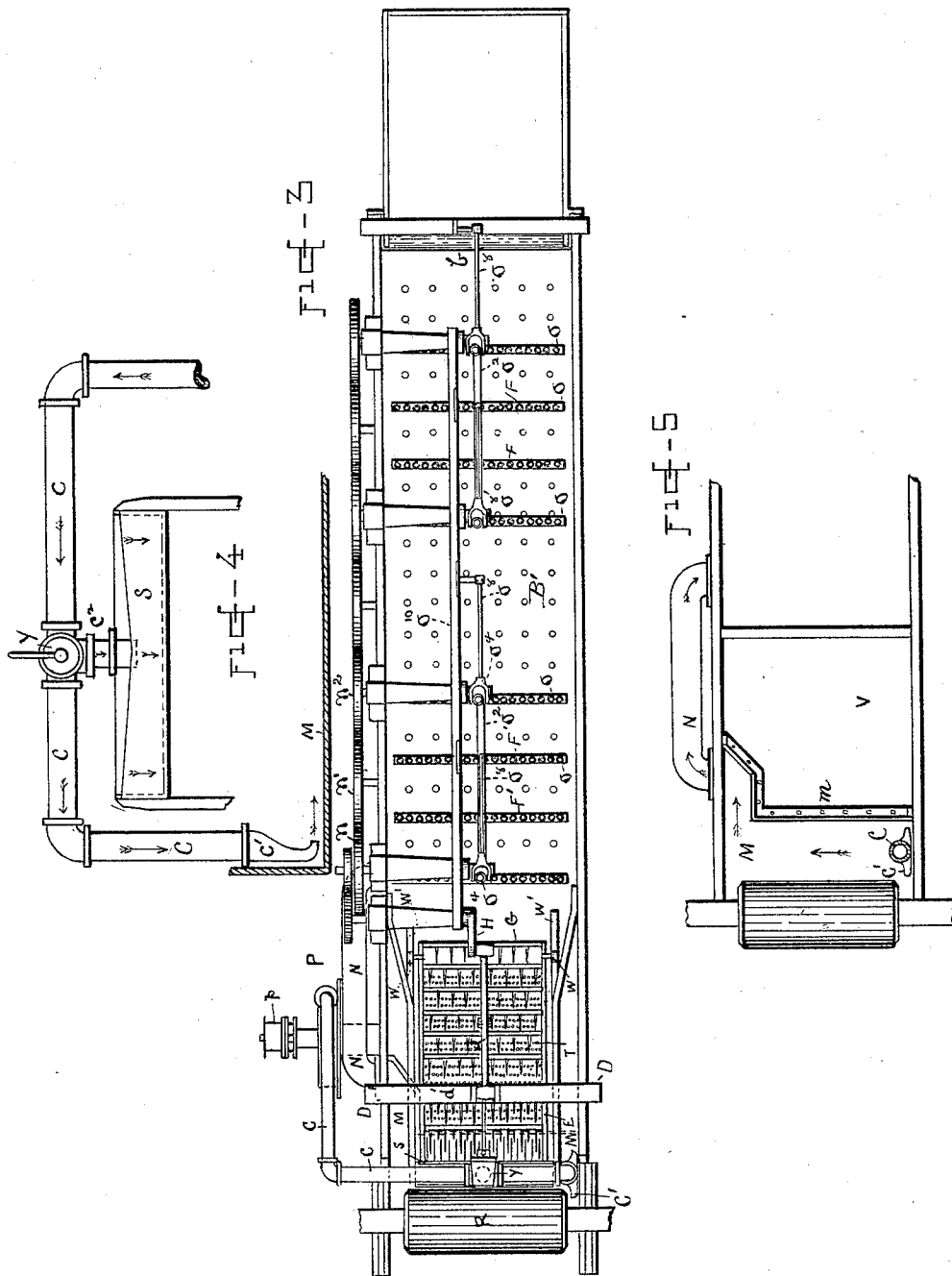
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Fig. 7.

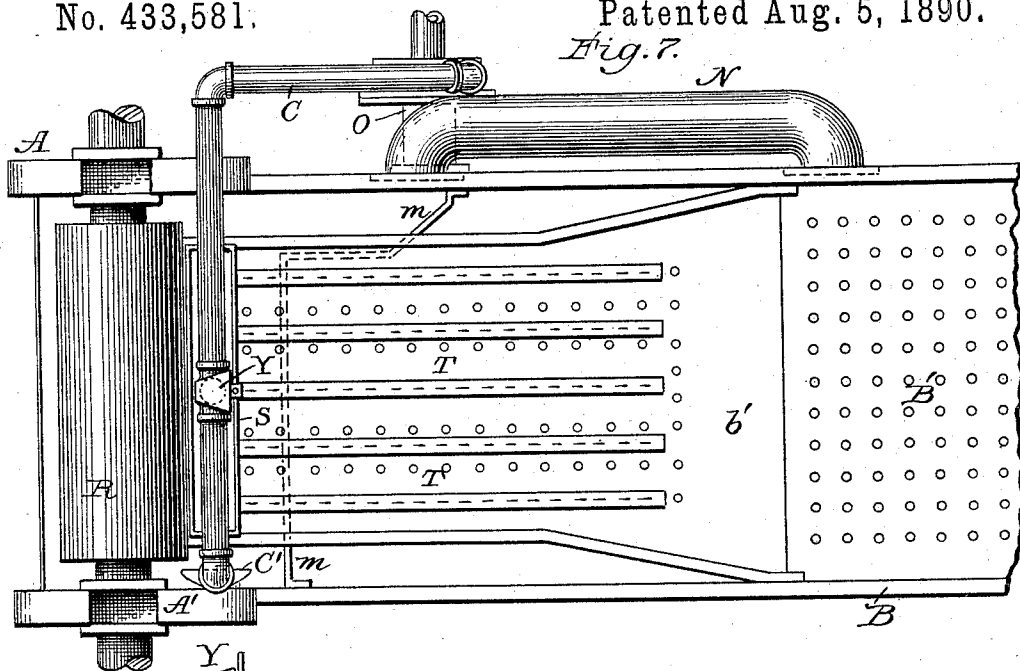
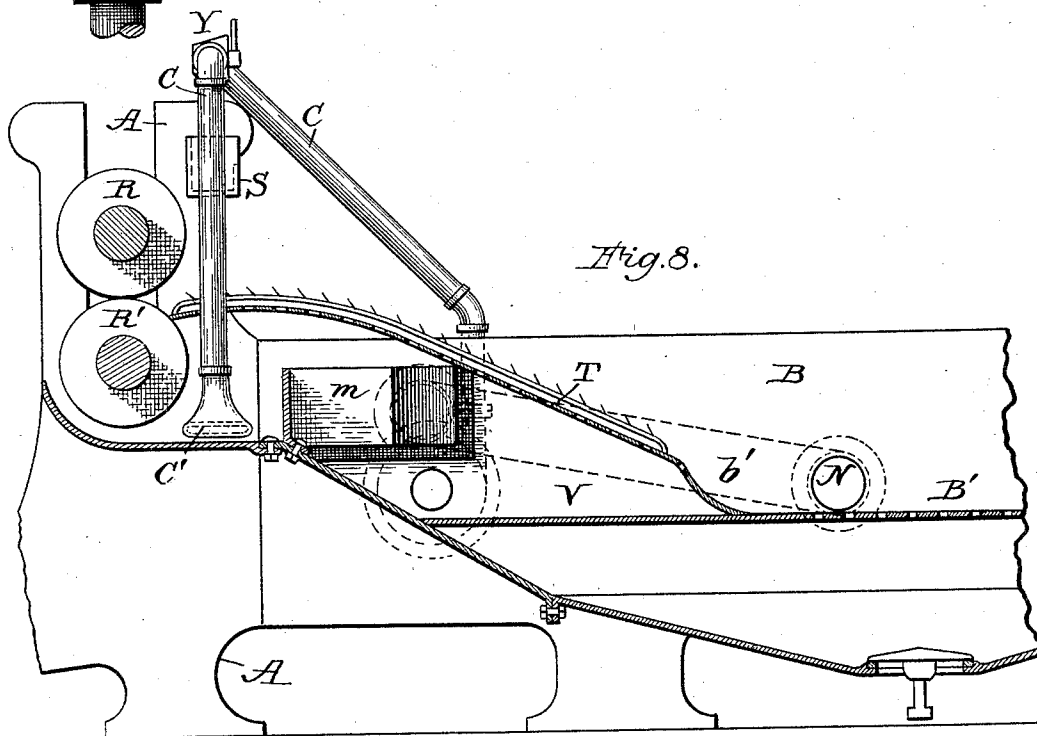


Fig. 8.



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UNITED STATES PATENT OFFICE.

FREDERICK G. SARGENT, OF GRANITEVILLE, MASSACHUSETTS.

WOOL-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,581, dated August 5, 1890.

Application filed July 25, 1887. Serial No. 245,195. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK G. SARGENT, of Graniteville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Wool-Washing Machines, of which the following is a specification.

My invention relates to wool-washing machines in which the wool is removed from the bowl of the washing-machine and carried thence to the squeezing or wringing rolls by a series of inclined teeth set in a carrier-bed; and it consists in an improved method of constructing and hanging the forks so as to give them as much throw as possible and keep their tines perpendicular, and in the construction and arrangement of the teeth aforesaid, whereby the wool is more certainly and evenly fed to the rolls, and in certain cleansing devices hereinafter described and claimed, whereby the squeezing-rolls and adjacent parts are freed from the filaments of wool sticking to them and the same returned to the bowl of the machine, and whereby the fiber on the carrier-bed is more effectively sprayed with the washing-fluid.

In the drawings, Figure 1 is a side elevation of the wool-washing machine embodying my improvements. Fig. 2 is a side elevation of the same with the side removed. Fig. 3 is a plan view of the same. Fig. 4 is a side view of the water-conduit C and sprinkling-box S. Fig. 5 is a plan view of a portion of the bowl of the machine, showing the squeeze-rolls and the trough M below and behind them. Fig. 6 is an enlarged side view of a portion of the reciprocating carrier E and the teeth by which the wool is removed from the bowl of the machine, showing a portion of the carrier-bed in section. Fig. 7 is an enlarged plan view of the carrier squeeze-roll end of the bowl with the carrier and its mechanism removed, to clearly show the carrier-bed and the shape and arrangement of the spray-receiving trough beneath it. Fig. 8 is an elevation of the same with the side of the bowl removed.

The machine is supported upon a frame A, and consists of a long bowl or trough B, which contains the cleansing-liquid, and into which the wool is fed at the point *b*. At the opposite end of the bowl B are placed the squeez-

ing-rolls R R', through which the wool passes on leaving the machine. The wool on entering the trough at the point *b* is fed over the perforated false bottom B' of the bowl toward the wall of the chute *b'* by the forks F and F', which have at the same time a vertical and a horizontal reciprocating motion, such that the point of each tine of the forks describes a complete ellipse at each stroke.

The forks F and F' consist of a series of cross-bars *o o*, provided with downwardly-projecting tines *o' o'*. The cross-bars *o o* are attached rigidly to a central longitudinal bar *o²*. The latter is provided on its upper side and near its ends with the ears *o³ o³*, which are formed with transverse pivot-holes. The arms *o⁴ o⁴* are pivoted to the bar *o²* by pivots passing through these holes and the lower ends of said arm. Each arm is rigidly attached at its central part to the sleeve *o⁵*, which is in turn attached to the wrist-pin of the crank *o⁶*, so that the latter can revolve freely therein. Near the upper end of each arm *o⁴* is attached rigidly the sleeve *o⁷*. To the latter is pivoted the bifurcated end of the link *o⁸*, which has its other end pivoted to an ear *o⁹* on the bar *o¹⁰* of the frame, which latter is held in position by the pipe-sleeves in the usual manner, as shown. The cranks which revolve their wrist-pins in sleeves *o⁵ o⁵* are attached to shafts which are geared together, as shown, by the train of gears *n n' n²*, &c. The effect of this construction is that the arms *o⁴ o⁴*, pivoted to each end of the bar *o²*, serve to give the rake, composed of this latter bar and the cross-bars *o* and tines *o'* a greater amount of longitudinal movement in the bowl, while at the same time they carry the tines in the same vertical position at all parts of their movement, thus causing them to enter and leave the wool in the bowl without dragging through it, as is the case when only one of the bars *o⁴* is rigidly attached to a fork, and it is provided with the crank-sleeve *o⁵* and sleeve *o⁷* and link *o⁸* to drive it, the improvement in action being due to the supporting of each fork F' or F pivotally by two of these bars *o⁴*, instead of by one rigidly.

The inclined carrier-bed T extends from the wall *b'* of the bowl B to the squeezing-

rolls. It is provided with teeth which incline toward the upper end of the bed and serve to prevent the wool from traveling down.

5 The bars D D are pivoted to the frame of the machine at the points *d d*, and are connected at their upper ends by the tie *d'*. They have rigidly attached to them near their upper ends a carrier E, which is provided with teeth.

10 The supplemental carrier G is pivoted to the carrier E at the points *g g* and is also provided with teeth. Its lower end is supported by the rollers W W, which travel on the rails W' W'. The crank H is connected to the tie *d'* by the connecting-rod J. The link K is pivoted at its lower end to the carrier G, and its upper end is slotted and engages with a pin on connecting-rod J. The crank H, being caused to revolve to the right, imparts a reciprocating motion to the bars D D and the carriers E and G, and the connecting-rod J, rising on its backward stroke and falling on its forward stroke, by means of the link K, raises and lowers carrier G correspondingly.

25 The teeth L L' (see Fig. 6) are pivoted, respectively, to the carriers G and E, being inclined forward, and have stop-pins *l l'* placed behind them to prevent their swinging backward. They are therefore free to swing forward only, and as the carriers G and E move backward glide easily over the wool on the bed T; but as the carriers G and E move forward they take hold of the wool and force it toward the rolls R R'. When the wool arrives at the point *b'* of the bowl, it is seized by the teeth L of the supplemental carrier G and propelled up the bed T, and the teeth L' of the carrier E carry it to the rolls R R'. Now, it has been found that the carrier E, having a reciprocating motion only and no rise and fall, its teeth L' do not readily take hold of the wool. To avoid this, I make the teeth with backwardly-bent points, as shown in Fig. 6, making the angle such that the points will be as nearly perpendicular as possible at the beginning of the forward stroke of the carrier. This causes the teeth to take a more rank hold of the wool, while swinging downward to their place, as the carrier begins to move forward, as they thus present a greater angle to a horizontal plane at the beginning of said movement. The rotary pump P is driven from the pulley *p* and takes its liquid from the inclosed chamber V under the carrier-bed, discharging it through the conduit C. The chamber V receives its fluid, to supply the place of that withdrawn by the pump, only from and through the perforations in its upper portion, which are made in the carrier-bed T, and this fluid in passing from the main portion of the bowl B to the chamber V is therefore drawn through the fiber upon the carrier-bed, which is beneath the supplemental carrier G. The chamber V is formed so as to hold the washing-fluid by means of the wall *b'*, the sides of the bowl B, the false bottom B',

(which is unperforated beyond the wall *b'*), and by the upwardly-inclined part of the bottom of the bowl and the vertical wall *m* of the trough M, as particularly shown in Figs. 70 7 and 8. The trough M extends across bowl B, underneath and partly around the roll R', and when partially full of liquid washes off from the roll all of the fiber, which then drops to the bottom of the trough. This trough is 75 formed on one side by the bottom of bowl B, which curves upward around the lower squeeze-roll R', and on its ends by the sides of the bowl B, and on its other side by the vertical wall *m*, which divides it underneath the carrier-bed from chamber V. This wall *m* is carried back longitudinally at one end parallel with the side of the bowl for some distance, and thence to the side of the bowl, as shown in dotted lines in Fig. 7, and it is 80 provided with a tight bottom in this extended part joined to the side of the bowl B. This arrangement leaves room for the pipe N to be carried through the side of the bowl and into the extension of the trough M to carry off the 90 washing-fluid, as hereinafter described.

The conduit C is supported by the standards A' A' of the frame, and, passing down to one side of the trough M, terminates in a fan-nozzle C', so directed horizontally at the 95 mouth, as shown, as to sweep the trough from side to side of bowl B. In the conduit C is placed a three-way cock Y, adapted to connect it by the conduit C² with the sprinkling-box S, which is also supported by the 100 standards A' A' of the frame. The liquid being turned into this box, it fills; and the liquid pours over the front edge of the box, which is made lowest at its middle point, to insure an even flow over the whole length of 105 the edge, as the water rushes towards the ends of the box when delivered into its bottom. The water from this box falls upon the wool at the upper end of the bed T and additionally sprays it before it passes through the 110 rolls.

By delivering the washing-fluid from the pipe C into the sprinkling-box S and allowing it to overflow the edge of the box, as described, we provide a sprinkling mechanism 115 which is not liable to become clogged by the fibers which are drawn with the washing-fluid from the chamber V, and at the same time sprinkles the wool with an even amount of fluid at all times. The three-way cock Y may 120 be so turned as to deliver the fluid from the pump P partly into the sprinkling-trough S and partly through the fan-nozzle C' or entirely into either, as desired. When the cock is turned so as to deliver the fluid through 125 the fan-nozzle C', it sweeps the contents of the trough M across to one end of the same and out through the conduit N back into the main part of the bowl B, thus carrying with it all of the fiber which may have lodged in 130 the trough M either from the feed-rolls or from the action of the sprinkling-box S upon

the wool on the perforated bed over it. When the fibers are thus carried back by the conduit N into the main portion of the bowl, they are again taken up by the fork F' and carried forward with other wool in the bowl to the squeeze-rolls.

The pump P, in taking water from the chamber underneath the perforated bed T, creates a partial vacuum there, and in consequence draws the fluid through the wool upon the carrier-bed and materially assists in cleansing it. This action also creates a current from the main part of the bowl toward the carrier-bed, which assists in transferring the fiber from the fork F' to the supplemental carrier G.

What I claim as new and of my invention is—

1. In combination, the carrier-bed T, the reciprocating tooth-bearing carrier E, and teeth L' L', pivoted to the carrier E, substantially as set forth, and having their lower ends bent backward, substantially as described.

2. In combination, squeeze-roll R, the squeeze-roll R', the trough M, immediately beneath and partly surrounding it, a delivery-passage leading out of said trough, the water-conduit C and nozzle C', whereby the trough is adapted to be swept and cleansed by a current of liquid, substantially as and for the purpose set forth.

3. The combination of the carrier E, its bed above the surface of the fluid, the conduit C, and the sprinkling-box S, placed over the carrier-bed and adapted to sprinkle the fiber by

the flow of the sheet of fluid over its edge, substantially as described.

4. In combination, the perforated carrier-bed T, the inclosed chamber beneath it, the reciprocating carrier adapted to convey the fiber along upon its upper surface, and the pump P adapted to draw the fluid from the said chamber and downward through the carrier-bed, substantially as described.

5. The combination of the perforated carrier-bed T, the inclosed chamber V beneath it, the pump P, the conduit C, provided with the nozzle C', the squeeze-roll R', squeeze-roll R, the trough M, and the pipe N, leading therefrom into the main portion of the bowl, substantially as described.

6. In combination, squeeze-roll R, the squeeze-roll R', the trough M, immediately beneath and partly surrounding it, the pipe N, leading therefrom into the bowl B, and the conduit C and nozzle C', whereby the trough is adapted to be swept and cleansed by a current of liquid, substantially as set forth.

7. The combination of the rake, composed of the longitudinal bar o^2 and cross-bars and teeth o' , with two bars o^4 , pivoted thereto, two cranks o^6 o^6 , connected to said bars, respectively, and carrying the same near their middle parts, and two links o^8 o^8 , pivoted to said bars, respectively, at their upper ends and to the frame, substantially as described.

FREDERICK G. SARGENT.

Witnesses:

LEROY J. CHERRINGTON,
ARTHUR WRIGHT.