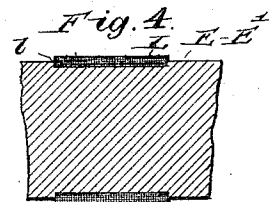
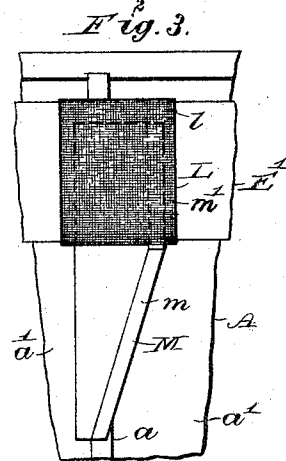
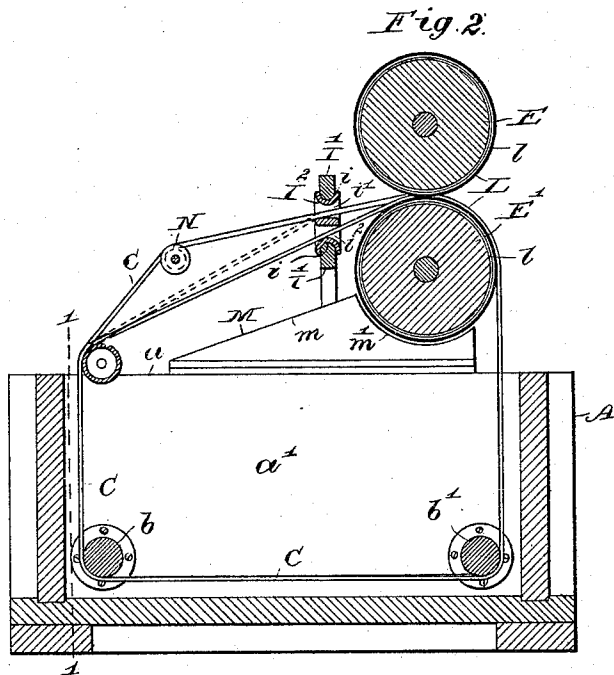
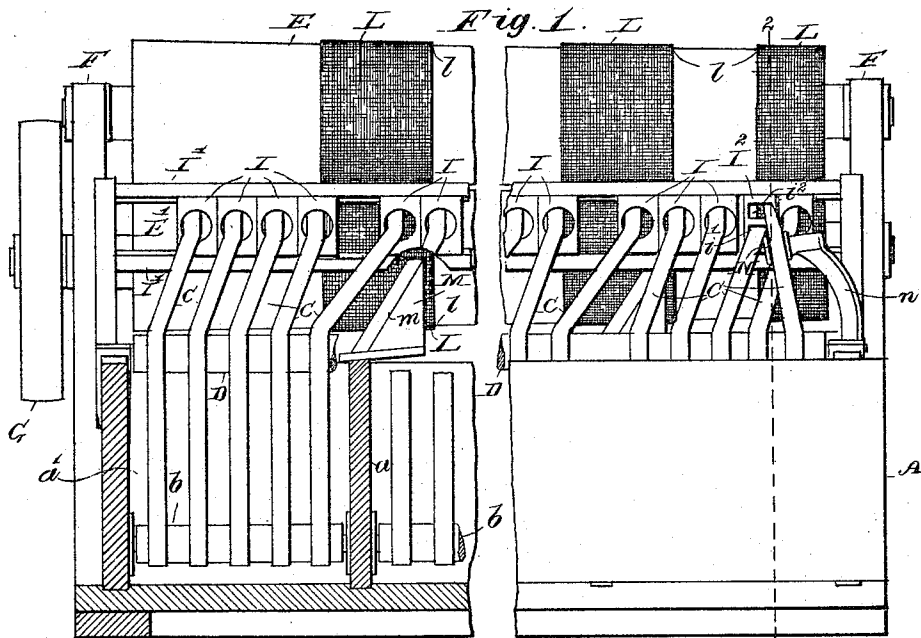


(No Model.)

M. H. KOHLRAUSCH.
CLOTH SCOURING MACHINE.

No. 535,012.

Patented Mar. 5, 1895.



WITNESSES.

Winkley Hyde.
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UNITED STATES PATENT OFFICE.

MATTHEW H. KOHLRAUSCH, OF BILLERICA, MASSACHUSETTS.

CLOTH-SCOURING MACHINE.

SPECIFICATION forming part of Letters Patent No. 535,012, dated March 5, 1895.

Application filed September 29, 1893. Serial No. 436,773. (No model.) Patented in Canada March 19, 1894, No. 45,580.

To all whom it may concern:

Be it known that I, MATTHEW H. KOHLRAUSCH, a citizen of the United States, residing at Billerica, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Machines for Scouring and Rinsing Cloth, of which the following is a specification, and for which a patent was granted in Canada, No. 45,580, dated March 19, 1894.

My invention relates to machines for scouring and rinsing cloth, of the class which employs a series of liquid-containing tanks, in which the cloth is successively immersed, and squeeze-rolls which extract from the cloth the liquids absorbed by the cloth in the tanks, and comprises means whereby such liquids are more perfectly extracted, as the cloth passes from one tank to the next and from the last tank of the series, means for preventing the liquid absorbed in one tank from dripping into the next and of causing such liquid to be returned to the tank from which it was taken, and means whereby the feed of the cloth by the squeeze-rolls is proportioned to the length of the cloth as affected by the temperature of the liquids in the tanks.

In the accompanying drawings, Figure 1 is a front elevation of a machine constructed in accordance with my invention, the part of the figure at the left being in vertical section on the line 1 1 in Fig. 2; Fig. 2, a section of the machine on the line 2 2 in Fig. 1; Fig. 3, a plan of parts of the squeeze-roll, adjacent tanks and drip-catcher; Fig. 4, a central longitudinal section of a part of a squeeze-roll through one of the annular cushions.

In the drawings A represents a long tank divided by vertical partitions *a* into a series of laterally-adjacent smaller water-tight tanks *a'*; *b b'*, submerging-rolls; D, a carrier-roll, all substantially as shown and described in United States Letters Patent No. 493,627, granted to me March 21, 1893, said carrier-roll and submerging-rolls being driven by friction of the cloth C thereon, as described in said patent.

The squeeze-rolls E E' extend above all the tanks *a'* and turn in stout standards F, at opposite ends of the series of tanks, but instead of being cylindrical in shape taper

slightly and uniformly from end to end, both of said squeeze-rolls tapering in the same direction. The lower squeeze-roll E' may be driven by a belt on the pulley G, fast on the shaft of said lower squeeze-roll from any convenient source of power, the upper squeeze-roll being driven by friction on the lower squeeze-roll or on the cloth C passing between said squeeze-rolls.

The cloth C, gathered laterally into the form of a string may be introduced into the machine, as described in said patent, and is caused repeatedly to pass under the submerging rolls, over the carrier-roll D and between the squeeze-rolls E E', each turn of the cloth being deflected by guides I in such a manner that the cloth moves laterally from end to end of the squeeze-rolls, as described in said patent, passing in succession through all the tanks *a'*, of which four are represented in Fig. 1.

The guides I are represented as eyes of metal or porcelain, provided at top and bottom with grooves *i*, to receive rigid bars I', fixed in the frame of the machine in such a manner as to prevent, by pressure and friction, any lateral displacement of said eyes, these guides being of well-known form and secured in a well-known manner, except as hereinafter stated.

The machine represented in Fig. 1 with four tanks *a'*, when used as a rinsing machine, would contain hot water in the first two tanks and cold water in the last two, the water however decreasing in temperature from tank to tank in the direction in which the cloth passes through them, and the cloth contracting in length as the temperature of the tanks diminishes and the rolls being tapered, as above stated, to accommodate the shrinking of the cloth and to prevent stretching the cloth out of shape. The cloth being bunched laterally into a string, the pressure of the squeeze-rolls squeezes the cloth nearly dry in the middle of the string or where the string is thickest, forcing the water from the middle of the string to its sides or outer edges. This is not of so much importance where the cloth is to be again submerged in the same tank, but it is desirable that the cloth should not carry the liquid from one tank to the next, especially

when the machine is used for scouring and the tanks are filled with different solutions of alkalies and soap, and in the tanks last in operation with hot and cold water. Therefore, above the partitions α which separate the tanks, I provide the squeeze-rolls with cushions L, arranged in shallow annular grooves l , formed in the squeeze-rolls $E E'$, these cushions consisting preferably of woolen yarn, wound around each squeeze-roll in the grooves l and projecting slightly above the curved surface of said squeeze-rolls, such cushions being sufficiently elastic to press the string of cloth in the middle and at the sides nearly equally and to extract most of the liquid taken from the tank, through which the cloth last passed before reaching said cushion. Immediately below the cushions L are arranged drip-catchers M, to receive the liquid extracted by the pressure of said cushions on the cloth, each drip-catcher M consisting of a board or table supported upon a partition α and slightly inclined laterally to return the drippings to the tanks from which they were raised by the cloth, and having at its upper side a vertical fence or guide m curved at its rear end at the top, at m' , to receive the lower squeeze-roll, as shown in Fig. 2, each drip-catcher extending forward for some distance in front of the squeeze-rolls and in the other direction back of the bite of said squeeze-rolls.

In order that the cloth may be as nearly dry as possible when it leaves the machine, the string when it last passes between the squeeze-rolls, is laid between two of the preceding turns of the cloth in such a manner that the edges of the flattened string will rest upon the similar edges of said two other turns, and cause a greater pressure on the last turn, squeezing it almost perfectly dry. This is accomplished by making a double eye I^2 , the openings in which are arranged one above the other, as shown in Fig. 1, the cloth passing in regular course through the lower opening i' of said double eye and the last turn of the cloth passing through the upper opening i and being drawn by its tension over the space between two preceding turns of cloth just before the cloth enters between the squeeze-rolls.

It will be seen that the last turn of the cloth is deflected laterally between the carrier-roll and the squeeze-rolls in the opposite direction from that in which the preceding turns of cloth are deflected within the same limits. The double eye I^2 is preferably arranged between the last two guides I. To prevent the last turn of cloth between the carrier-roll and the guide from becoming entangled with the preceding one or more turns, said last turn is carried over a guide-pulley or idle-roll N supported and turning freely on a bracket n , secured on the tank A, said guide-pulley N being arranged at a considerable distance above the plane in which the cloth lies between the carrier-roll and the guides.

The above-described machine may be used for scouring or rinsing, or successively for both operations.

I claim as my invention—

1. The combination of a series of laterally-adjacent tanks, and a pair of continuous squeeze-rolls, arranged longitudinally of said series of tanks, and common to all said tanks, and both tapering uniformly in the same direction, as and for the purpose specified.

2. The combination of a series of laterally-adjacent tanks, and a pair of continuous squeeze-rolls, arranged longitudinally of said series of tanks and common to all said tanks and provided at the side of each tank adjacent to the next tank with annular grooves and with annular cushions arranged in said grooves and projecting from said grooves, as and for the purpose specified.

3. The combination of a tank, submerging rolls, arranged therein, a pair of continuous squeeze-rolls arranged parallel with said submerging rolls, guides, arranged to deflect cloth before entering said squeeze-rolls and to guide said cloth from end to end of said tank, and another guide arranged to deflect said cloth in the other direction and to cause the last turn of said cloth to overlie two preceding turns thereof between said squeeze-rolls, as and for the purpose specified.

4. The combination of a tank, submerging-rolls, arranged therein, a pair of continuous squeeze-rolls arranged parallel with said submerging-rolls, guides, arranged to deflect cloth before entering said squeeze-rolls and to guide said cloth from end to end of said tank, another guide arranged to deflect said cloth in the other direction and to cause the last turn of said cloth to overlie two preceding turns thereof between said squeeze-rolls, and a guide-roll arranged to hold said last turn of cloth out of contact with the preceding turns of cloth until said last turn enters said squeeze-rolls, as and for the purpose specified.

5. The combination of a series of laterally-adjacent tanks, a pair of continuous squeeze-rolls, arranged longitudinally of said series of tanks and common to all said tanks, said squeeze-rolls being provided with annular grooves, arranged above the adjacent sides of adjacent tanks, and with annular cushions, arranged in said grooves and projecting from said grooves, and drip-catchers, arranged below said cushions, to receive the liquid dripping from cloth passing between said squeeze-rolls from one tank to the next and to return said liquid to the tank from which it was absorbed by said cloth, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 8th day of September, A. D. 1893.

MATTHEW H. KOHLRAUSCH.

Witnesses:

ALBERT M. MOORE,
KIRKLY HYDE.