

May 16, 1933.

B. SOROKA

1,909,232

DYEING MACHINE

Filed Sept. 5, 1930

3 Sheets-Sheet 1

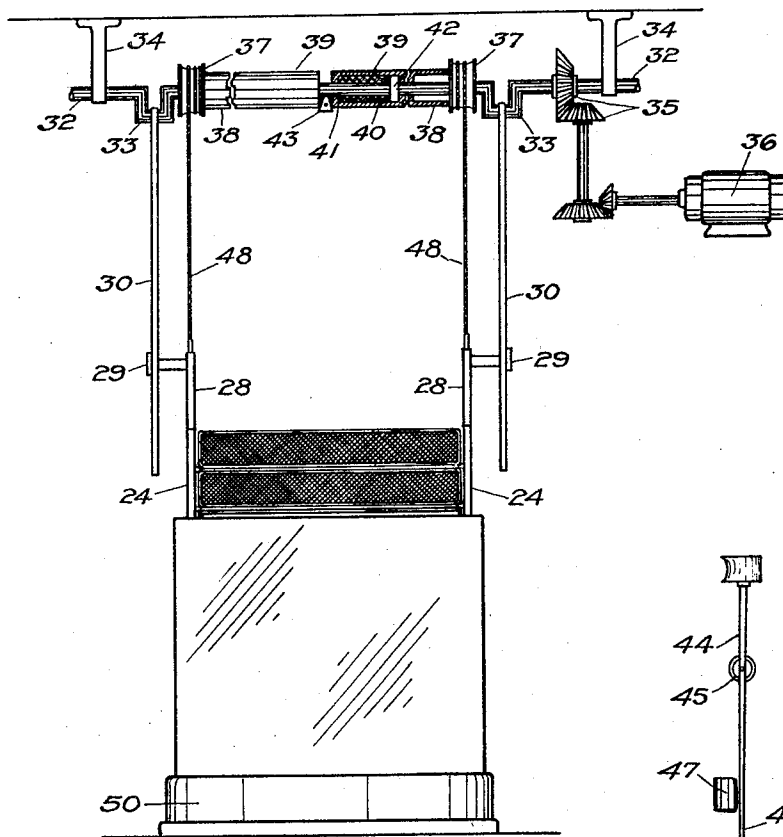


FIG. 1.

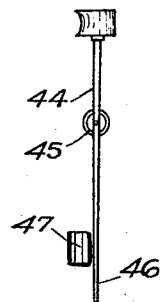


FIG. 10.

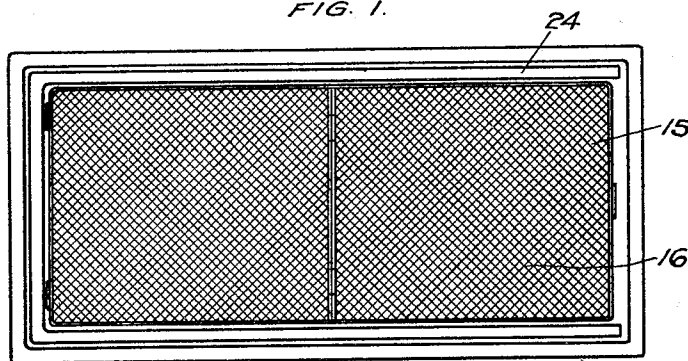


FIG. 2.

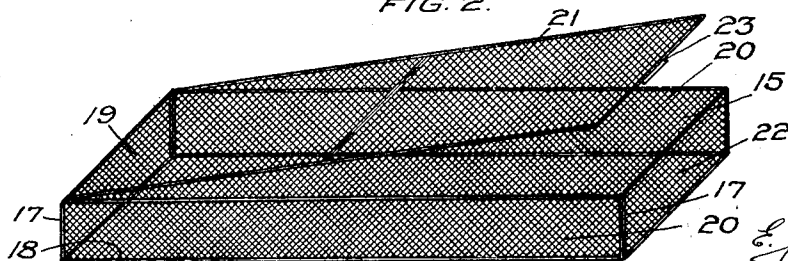


FIG. 6.

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3 Sheets-Sheet 2

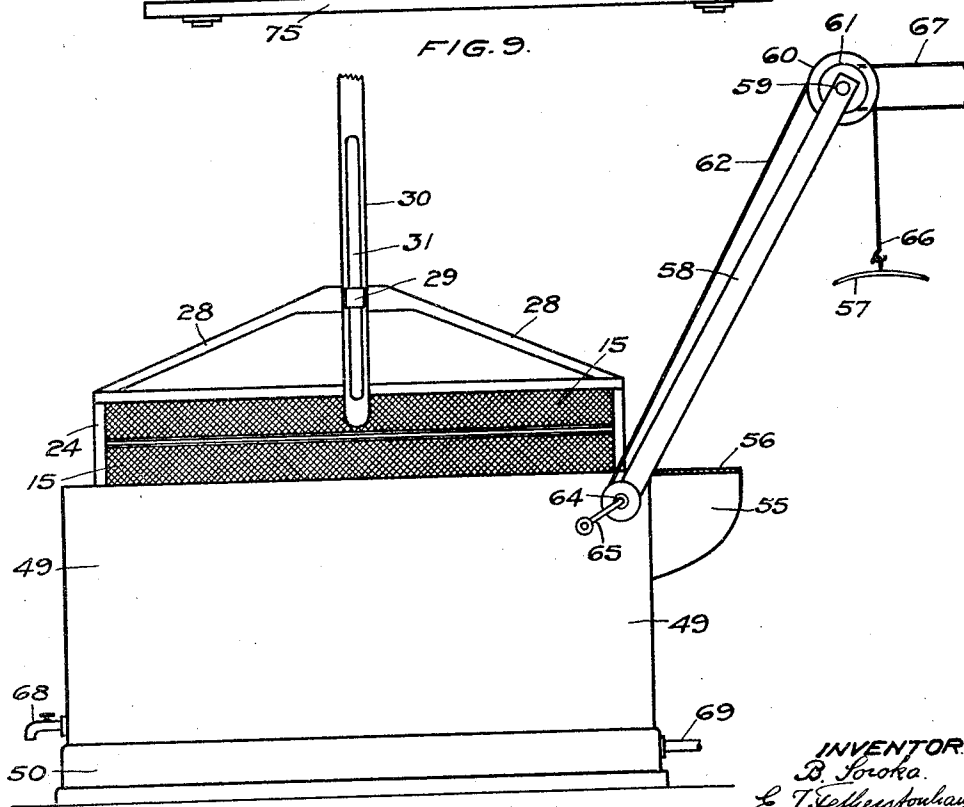
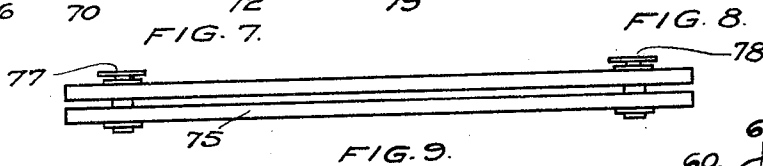
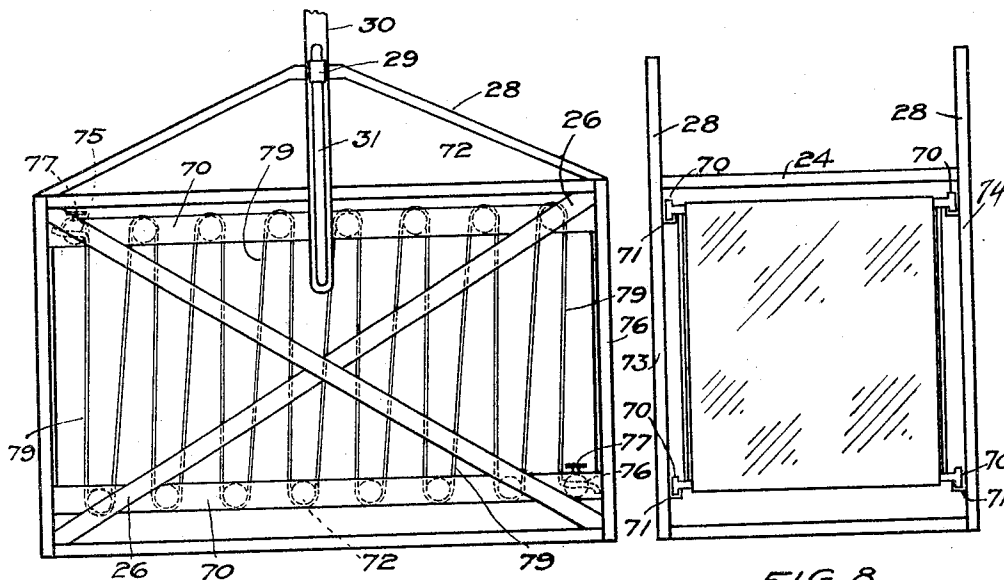


FIG. 3.

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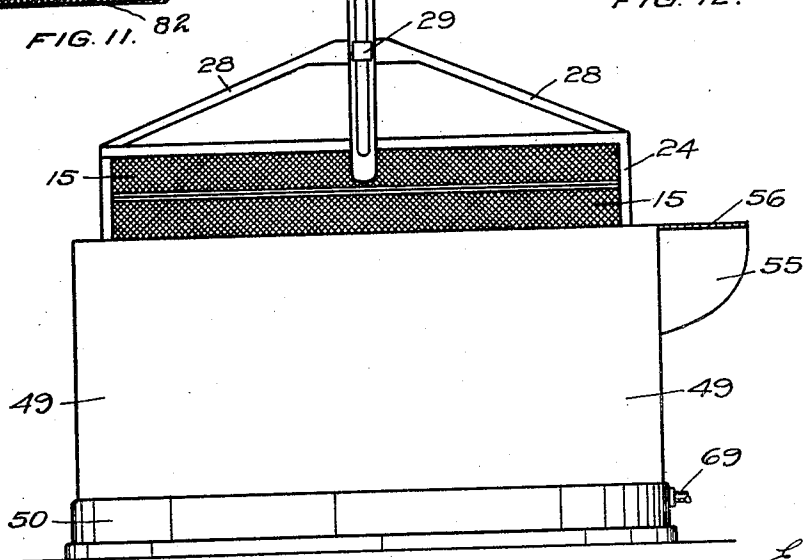
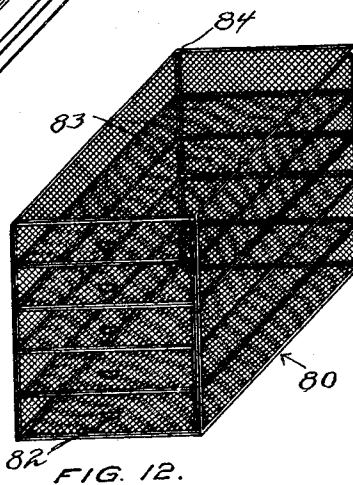
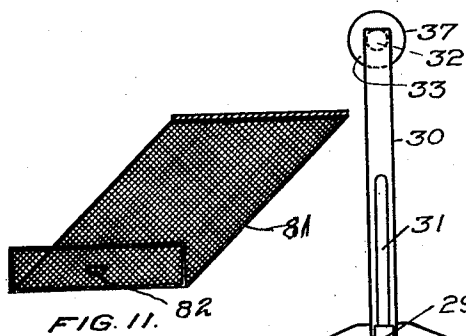
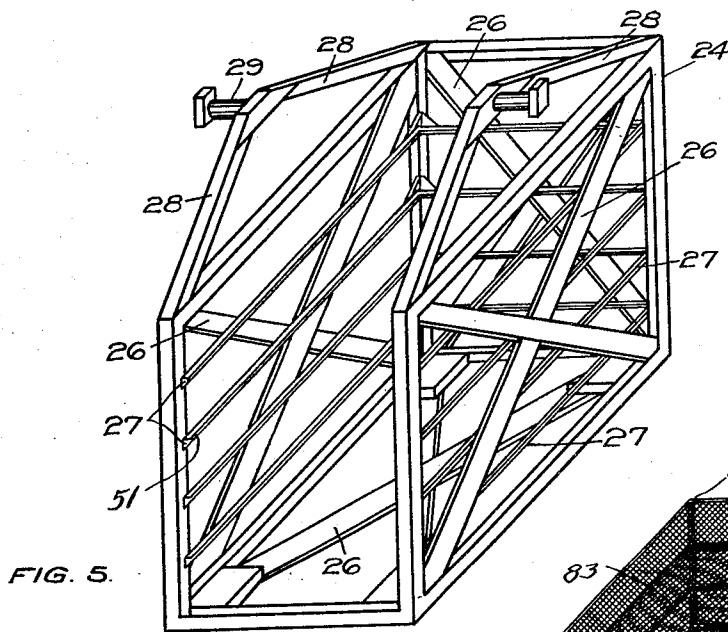
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DYEING MACHINE

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3 Sheets-Sheet 3



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DYEING MACHINE

Application filed September 5, 1930. Serial No. 479,382.

The invention relates to a dyeing machine, as described in the present specification and illustrated in the accompanying drawings that form part of the same.

5 The invention consists essentially in the novel means employed of segregating and handling pieces of work and in the means employed of distributing the dye, as pointed out in the claims for novelty following a description in detail of the preferred form of the invention.

10 The objects of the invention are to eliminate the bunching of goods and the consequent infolding, whereby the dye stuff will be apt to accumulate and be pocketed thereby disturbing the evenness of the color throughout; to avoid the creasing of clothes in the kettle, thus materially lessening the labor or pressing; to facilitate the operations of dyeing by maintaining a constant agitation of the dyeing solution and of the pieces being dyed; to enable the operator to remove pieces requiring a shorter period of immersion than the other pieces; to economize in so far as time and labor are concerned through the mechanical appliances and through the proper distribution of the dye stuff; and generally to provide for dyeing establishments a systematic and efficient apparatus requiring the minimum of expert attention and at the same time accomplishing the maximum output.

15 In the drawings, Figure 1 is a front elevational view showing the lifting and agitating devices.

20 Figure 2 is a plan view of the kettle and contents.

25 Figure 3 is a side elevational view of the kettle showing the devices used in removing the dyed garments from the boxes or receptacles.

30 Figure 4 is a side view of the machine showing the interior and the moving devices and omitting the lifting and agitating mechanism.

35 Figure 5 is a perspective detail of the receptacle frame.

40 Figure 6 is a perspective detail of the work receptacle or box.

45 Figure 7 is an elevational view of the lift-

ing and agitating frame, containing a modified form of work holder.

50 Figure 8 is a front elevational view of the frame and work holder illustrated in Figure 7.

55 Figure 9 is an enlarged detail of the work clamp for holding piece goods at the ends.

60 Figure 10 is an enlarged detail of the wedge block and operating arm. Figures 11 and 12 show modified holders.

65 Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings, the numeral 15 indicates the work receptacle and this is preferably made of wire mesh 16, closing in the rectangular frames 17 which are rigidly secured together to form the bottom 18, the back 19 and the sides 20, while the top 21 in two sections hinged to one another, is hinged to the back 19 and the front 22 is rigidly secured to the bottom 18, and the sides 20, the top and the front being joined to close the receptacle by the snap fastener 23, thus a box is formed for containing the pieces of goods or work, which are intended to be dyed.

70 There are several of these boxes, as many as will comfortably fill the kettle and they are made of suitable material, such as copper wire or coated wire, or such metal as will not be affected by the dye solution to the detriment of the garments, cloth or other materials being treated.

75 The frame 24 is preferably formed of angle bars of suitable material and braces 26 which are riveted together to form a bottom, sides and back, adapted to contain the receptacles 15 resting on the brackets 27 and slidable thereon.

80 The lifting bars 28 are secured to the ends of the frame and extend upwardly therefrom, each set of lifting bars converging to and carrying at their upper angle ends the pins 29 extending transversely and outwardly therefrom through the connecting rods 30 having the longitudinal slots 31.

85 The connecting rods 30 connect the lifting bars 28 to the crank shaft 32, and particularly to the cranks 33, the crank shaft 32 being journaled in the bearings 34 and operated through the gear mechanism 35 by the motor 100

36, thus as the crank shaft 32 is slowly turned, the cranks are rotated and lift the frame 24 through the lifting bars 28 and as this frame is lifted the boxes or receptacles 15 are also lifted, and as the boxes or receptacles 15 are lowered, the dye solution is thoroughly distributed, that is to say, the lifting of the work in the boxes has a tendency to disturb the solution which recovers on the lowering of the boxes or receptacles, causing a continuous swishing of the fluid and a shaking up of the work that effects a thorough penetration of the dye stuff into the garment or other article being treated.

The cord drums 37 are loosely mounted on the shaft 32, but not slidable thereon and the clutch members 38 extend inwardly towards the center of the shaft and coast with the clutch members 39 keyed to the shaft 32 and slidable thereon, the clutch members 39 encircling the springs 40 between the bearing and keyed ends 41, said springs 40 engaging the fixed collars 42 on the shaft 32 and exerting pressure against the inner ends of the clutch members 39, in order to hold said clutch members 39 from the clutch members 38 at all times except during the operation.

The wedge block and brake member 43 is intended to split the clutch members 39 and force them into engagement with the clutch members 38, this wedge block being carried at the end of the pivoted arm 44 which is pivoted in the bracket 45 and which has the handle end 46 adapted to be locked under the catch 47 during the operation.

This clutch is operated to bring the cord drums into lifting engagement with the lifting bars 28, through the cords 48 wound on said drums and attached to said lifting bars, and it will be noticed that as the shaft rotates, the cords wind on the drums and draw on the lifting frame 24 and the result of this is that the pins 29 slide upwardly in the slotted connecting rods 30, therefore the cranks 33 are rotating idly until the frame 24 is again lowered.

In Figures 3 and 4 the means for removing the dyed garments from the boxes or receptacles is shown and it will be seen in these figures that the kettle 49 has the extending basin 55 at one end on which is mounted a grating 56, this basin 55 supports the boxes or receptacles containing the garments when they are first pulled out from the frame and as a general rule, it is not necessary to pull the box completely out, for half way is sufficient to remove the garments, that is to say, the outer hinged half of the top of the box is turned up and the garment grasped and pulled out.

The dye solution dripping from the garment flows back into the kettle through the grating 56. In suits, it is better to remove them on a hanger indicated by the numeral 57.

The arms 58 extend upwardly and frontwardly from the kettle 49 and are joined by the shaft 59 which carries the pulley 60 and a smaller pulley 61 journalled on said shaft 59.

A cord 62 winds on the reel 63 fixedly secured on the shaft 64 journalled in suitable bearings from the side of the kettle, the crank handle 65 being secured to the end of the shaft 64.

The said cord is trained over the pulley 60 and hangs therefrom having the hook 66 at the end thereof which is intended to grasp the hanger 57 with the garment thereon and be elevated to the clothes line 67 trained around the pulley 61 and around a smaller pulley beyond.

The faucet 68 is mounted on the kettle 49 at the lower end thereof and forms the means of draining the solution from said kettle.

In the same views Figures 3 and 4 the steam connection is shown in the pipe 69 to the steam jacket around the kettle for heating purposes. Of course the dye stuff may be heated by means of an open steam connection into the kettle. There are several ways of doing this.

In Figures 7 and 8, another form of work holder is shown, somewhat different from the box or receptacle. In this form the racks 70 slide in the same kind of slideways already described, but herein indicated by the numeral 71, and these racks have the rails 72 in staggered arrangement from the bar 73 to the bar 74.

The end rails 75 and 76 form clamps and are split, the split pieces in each case being held together by the screws 77 and 78.

These racks 70 may be bodily removed from the frame and doused in a receptacle of cold water after which the piece goods indicated by the numeral 79 are removed.

Briefly the operation of the machine is as follows:—

The pieces of goods, which are to be segregated are laid in the different boxes or receptacles, which, as has been stated before, may be made of any suitable material, that is to say, they may be perforated boxes or they may be wire mesh receptacles as found desirable, the only necessity being the free circulation of the dyeing solution through the ends, top, bottom, back and front of the enclosure.

In the beginning the garments or stuff material or furs, are laid in the open box, which at the moment has the top wide open, then the top is fastened as explained so as to leave a perfectly flat top surface.

The boxes are then laid on the slideways in the frame, one above the other until the frame is completely filled, that is where there is a full load, each van being forced inwardly beyond the spring rubbing catches 51, of course one box may be treated or two, as the

case may be, though as a general rule they will all be well filled and it will be seen that the different pieces of clothes cannot fall against or roll into one another. One box may contain a full suit of clothes, or it may be used for one part of a suit, the chief feature being that there are not a lot of different pieces of clothes all bundled together.

The frame is now lowered into the dye solution in the kettle 49 which is heated by open steam heat or by a steam jacket or by any other heating system, herein indicated by the numeral 50 and as the shaft 32 is free, the boxes or receptacles may be lowered without hindrance though it is a very simple matter to avoid any sudden drop by laying a hand on the shaft or holding back the drums.

As soon as the frame reaches the bottom of the kettle, the power is turned on and the shaft caused to rotate, and as this shaft rotates, the cranks raise and lower the frame 24 through the connecting rods 30, and this operation is continued, until it is thought the dyeing of the work is complete. The handle of the shifting device is then operated, which causes the drums to rotate thereby winding up on the cord and lifting the frame 24 clear of the solution.

This lifting operation may be controlled by the shifting wedge being brought into close contact with the shaft 32 by means of the handle which is depressed to cause a braking action on the shaft. Of course it is obvious that this lifting operation may occur at any time, and the clothes in any receptacle may be examined at any time, so when it is desirable to remove any piece of work it can be done with ease by simply pulling out the box without removing the rest of the boxes or receptacles and then sliding it back again, consequently the work of dyeing is very much facilitated and better results can be obtained, as it is not necessary to leave a piece of goods requiring less immersion in the solution for the full time that is required for other pieces, in fact the operator who understands the work of dyeing goods may use judgment and discretion in the matter of removing pieces which according to their texture and color do not require the same immersion as others.

There are a great many advantages, especially in the mechanical devices employed for removing the goods and for agitating that afford the dyeing establishments opportunities to carry on the work economically and efficiently.

In Figures 11 and 12 the receptacle or holder is a complete wire mesh box 80 of rectangular form having the sliding drawer shelves 81 closing one end and the handles 82 for pulling out the shelves, which slide on the strip brackets 83 secured to the frame 84. This holder is dropped into the lifting and agitating frame.

What I claim is:—

1. A dyeing machine comprising a tub containing a removable frame having tray supports therein, open mesh wire baskets having wire covers and forming the trays supported in said frame and slidable outwardly therefrom over the upper edge of the tub, means for reciprocating said frame and trays in said tub including longitudinally slotted connecting bars and pins rigidly secured to the frame and means for drawing said pins upwardly in said slots, notwithstanding the operation of the reciprocating mechanism.

2. In a dyeing machine, a tub containing a reciprocatory frame, a reciprocating mechanism having a crank shaft and longitudinally slotted connecting bars operatively connected to said frame, suspension and elevating members for drawing up said frame clear of the engagement of said bars with said frame, and means for clutching and de-clutching said elevating mechanism.

3. In a dyeing machine, a tub, a frame slidable inwardly to and outwardly from said tub, trays having openings in the walls thereof, and supported in said frame, pins extending outwardly from the upper end of said frame, an elevating and suspending mechanism formed of cables and drums mounted on a shaft and clutchable thereto, means for operating said shaft, a crank mechanism operated with said shaft and reciprocating longitudinally slotted bars adapted to engage said pins at the lower end of the slot, and to form paths for the slidable upward movement of said pins and means for operating said shaft.

4. In a dyeing machine, a tub having a tray shelf at one end, a frame adapted to be raised and lowered in said tub, and having a limited reciprocatory movement, trays slidably arranged in said frame and withdrawable therefrom on said shelf, a reciprocating mechanism having a shaft suitably driven and connecting rods affording paths for the upward movement of said frame clear of its reciprocating motion and an elevating and suspending mechanism mounted on said shaft and connected with said frame and clutch mechanism for freeing said elevating and suspending mechanism from said frame during the reciprocatory movement.

Signed at Montreal, Canada, this 30th day of June 1930.

BERNARD SOROKA.