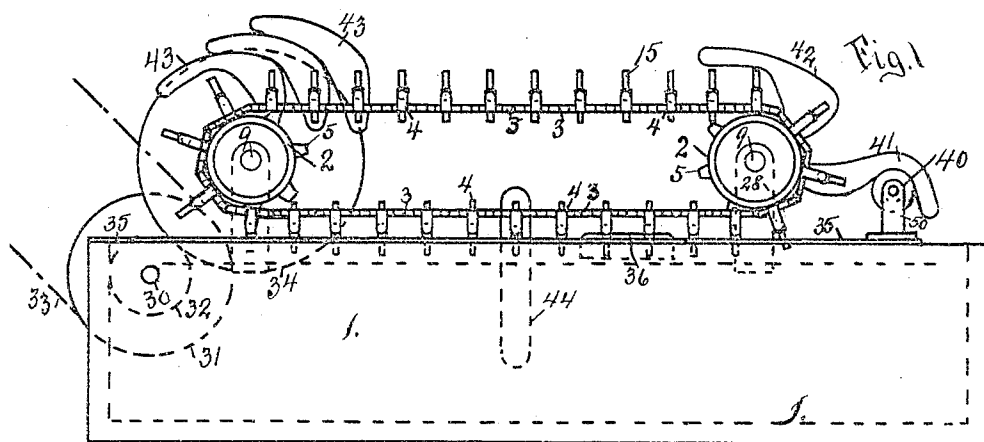
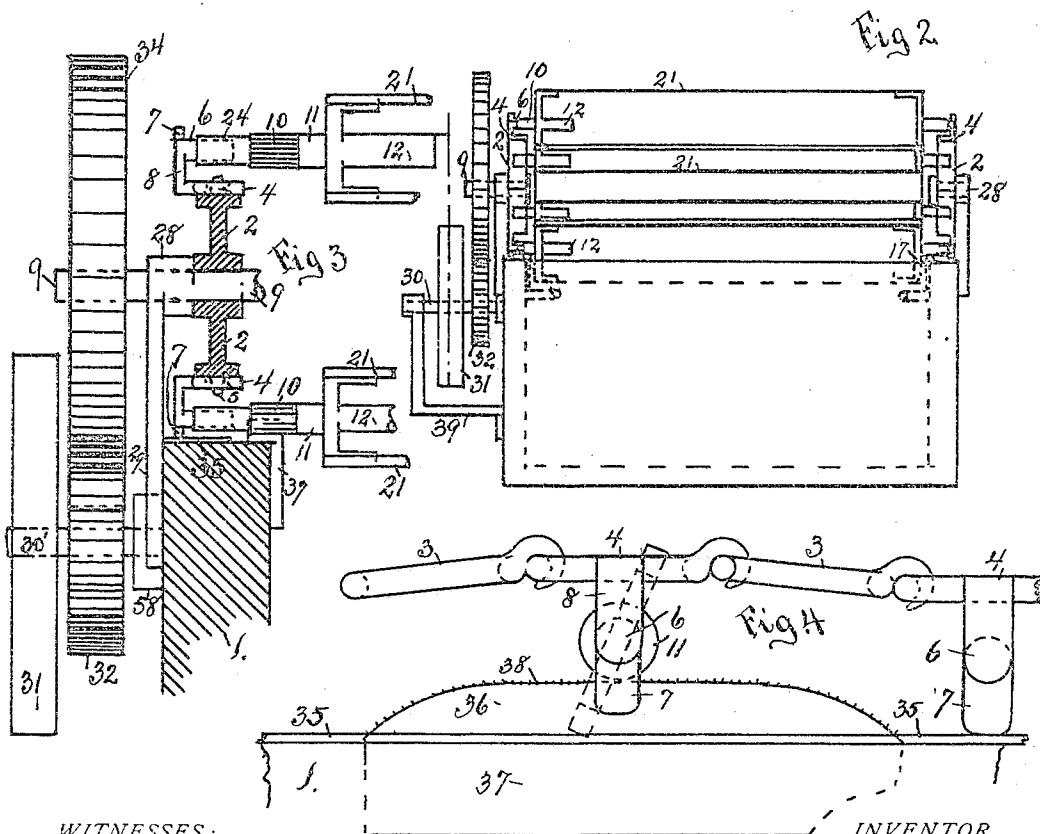


W. H. FLETCHER.
SKEIN DYEING MACHINE.
APPLICATION FILED MAR. 10, 1904.

2 SHEETS—SHEET 1.

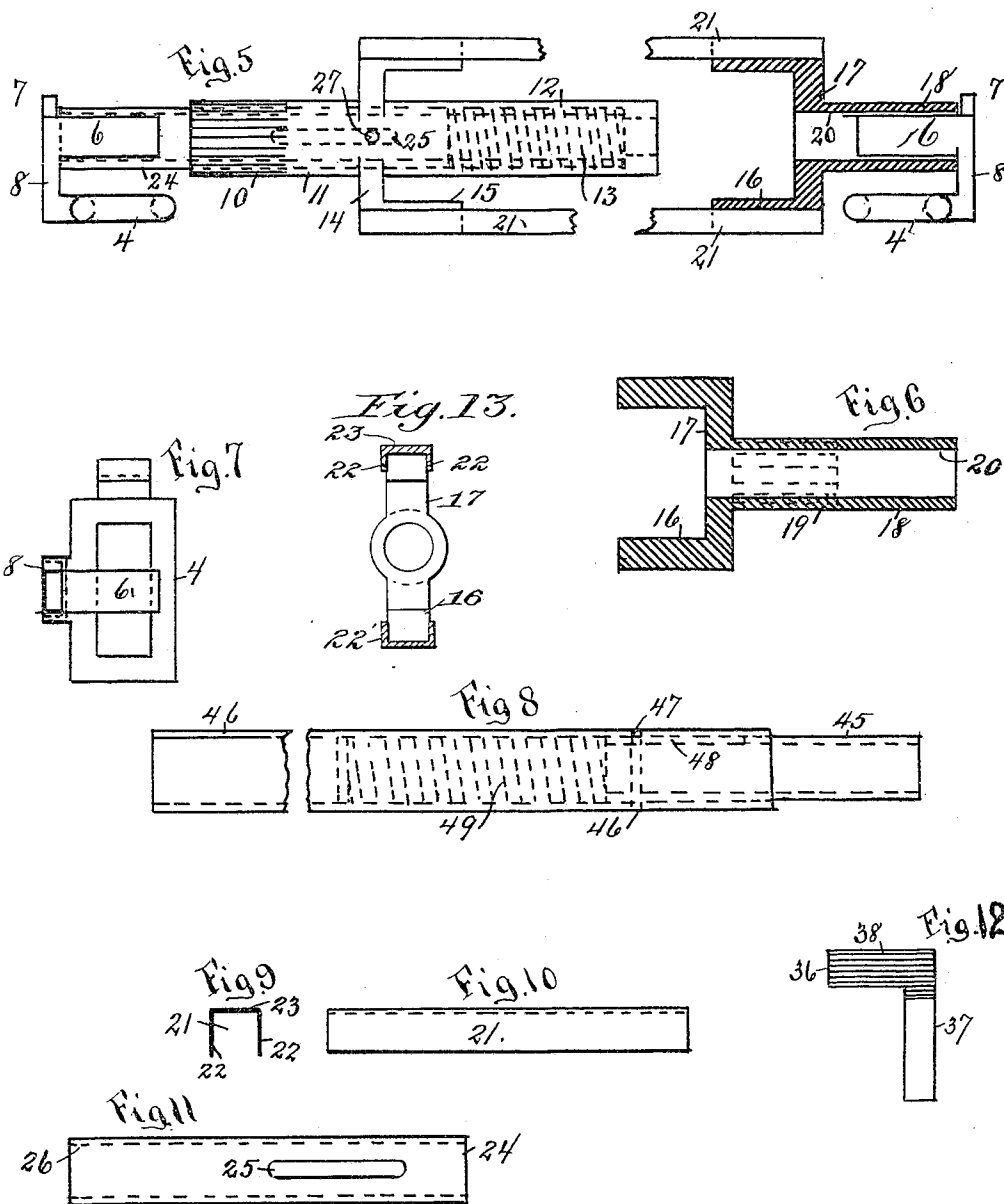


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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM H. FLETCHER, OF PATERSON, NEW JERSEY.

SKEIN-DYEING MACHINE.

SPECIFICATION forming part of Letters Patent No. 787,285, dated April 11, 1905.

Application filed March 10, 1904. Serial No. 197,483.

To all whom it may concern:

Be it known that I, WILLIAM H. FLETCHER, residing at Twelfth avenue, in the city of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Dyeing-Machines, of which the following is a specification.

My invention relates to improvements in the manner of dyeing skeins of silk, cotton, or other similar fabric.

The objects of my improvements are, first, to economize on the cost of handling and the amount of liquid used in dyeing; second, to dye evenly and without tangles in the thread, and, third, to facilitate the rapid loading and unloading of the machine. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a dye-tub with my invention attached and forming a part thereof. Fig. 2 is an end view of Fig. 1. Fig. 3 represents a section of a portion of Fig. 2. Fig. 4 shows the position of the chain-rack on the sides of the tub. Fig. 5 is a front view of the part that carries the skein and its supports. Fig. 6 is one of the ends of the reel for the skein. Fig. 7 is a view of one of the links. Fig. 8 is a plain skein-support. Fig. 9 is a part of the reel on which the skein rests. Fig. 10 is a side view of Fig. 9. Fig. 11 is a sleeve in the end of the reel. Fig. 12 is an end view of the portion which revolves the reel. Fig. 13 is an end view of Fig. 6 with the channel-piece in position.

Similar numerals of reference indicate corresponding parts throughout the several views.

In the drawings, 1 represents the dye-tub as ordinarily used. On the top of the tub supports 29 are secured, in the upper portions of which shafts 9 turn. On these shafts sprocket-wheels 2 with teeth 5 are placed, and on the one end of one of these shafts 9 a gear-wheel 34 is secured. This gear meshes into another gear 32 on a shaft 30, which is secured to the side of the tub by means of a bracket for the purpose 58. On the shaft 30

there is a pulley 31, driven by a belt 33. This belt drives the machine by means of the gears 32 and 34, which revolve the shaft 9, on which the gears 2 are. The gears on the opposite ends of the tub are connected and driven by means of an endless chain, the links of which are indicated by 3 and 4. There are two of the chains connecting the sprocket-wheels, one on each side of the box.

The chain is composed of links 4 with attachments, which are a part of the said link. This consists of a portion 8, a round portion 6, and a projection 7. These are placed alternately on the chain with a plain link 3 without the parts 8, 7, or 6.

The reel consists of two end portions having fork-shaped parts 16, connected by channel-shaped pieces 21, the sides 22 of the channels fitting over the sides of 16. The one end of the reel consists of a sleeve 18 with a hole 20, the fork-shaped portion 16 forming a part of this sleeve. The hole 20 fits freely over the part 6 of the link. The other end of the skein-supporter consists of a cylindrical piece 12, the portions 14 and 15, which correspond to 17 and 16 in the other end, and the cylindrical part 11, with its end portion 10 rough or with teeth to cause resistance or catch on the attachment for the purpose of revolving it. The body portion formed by 10, 11, and 12 is bored out to admit of a tube 24, which is free when inserted in the body. The hole in the opposite end of the body is partially closed to form a base for a spring 13, which is also placed in the drilled-out portion of 12. There is a pin in the body (indicated by 27) which is free in a slot 25 in the tube 24. The tube 24 when inserted in the body 11, the spring 13 having been previously inserted and the pin placed in the slot 25, completes the arrangement for removing the skeins. The spring pressing and acting on the end of the tube 24 forces it back to the position shown in Fig. 5 when it has been pressed in the body 11, the pin in the slot 25 preventing it from falling out when being handled.

To remove the skein-support from the chain-rack and also the tub, the body of the support is slid over the tube 24 until the opposite end 18 of the holder is sufficiently free from the part 6 to lift it away from it. The holder is in this way removed from the chain-rack by then drawing the tube 24 from off the part 6.

In some cases where the fabric is heavier and is more easily kept from entangling a support like that shown in Fig. 8 is used, which consists of an outside tube 46 and an inner tube 45, sliding freely in the tube 46. The tube 45 has a spring 49, with one end bottomed on a pin in the tube 46 and the other end acting on the tube 45. The tube 45 is retained in position by a pin 47 in the slot 48, similar to that shown in Fig. 5. These skein-holders are sometimes placed alternately with the ones shown in Fig. 5. Along the top of the tub a strip 35 is placed. Along on this strip the projection 7 of the link slides. This prevents the sag in the chain-rack and keeps it nearly on a level when running.

To dye the skein evenly, it is necessary to have all portions exposed to the action of the liquid the same length of time. To do this, it is necessary to turn the skein-holder one or more times on the round pieces 6, which support it. To do this, a bracket 37 is secured to the tub, the upper portion resting on the top of the tub, which has its surface 38 in some cases roughened or even with teeth in it, so as to cause the portion 10 of the holder to revolve by friction gripping contact. One or more of these brackets 37 may be required on either or both sides of the tub, according to the number of times it is necessary to change the position of the skein on the holder.

If it be required to have the revolving arrangement on both sides for more power, the end of the holder is constructed as shown in Fig. 6, in which the portion 19 is roughed or grooved. There is also a roller 40 in the stand 50, which is to prevent the splash of the skein on entering the liquid when the said skein is dropped over when the chain-rack moves.

44 represents the skein as it hangs when in the liquid; 43 and 42, the positions of the skeins as they lie on one another on the upper portion of the rack.

To load the machine, the skeins are placed on the skein-holders, and one end, 24, of the holder is passed over the round projections 6 and pressed, so as to compress the spring 13 by the portion 10 sliding over the tube 24 until the opposite end 18 is in position to have the round piece 6 enter the hole 20. When the machine is filled and started, the skeins pass through the liquid, and as the holder ends come in contact with the portion 36 they are turned, thus making the skein hang in a dif-

ferent position on the holder. As the skeins pass out of the liquid and over the top part of the rack they lie on each other, and drip-pings run back into the tub.

The construction of the holder in having two bars 21 and a distance between them is to prevent the ends of the goods from winding around the holder as it turns, as would be the case with fine yarns on a cylindrical holder.

There is placed in the tub a rod 34, which is a little distance from the sides of the box and has its ends curving toward the said sides of the box. There is a rod on both sides of the tub and is for the purpose of guiding the skeins toward the center of the tub to prevent said skeins from rubbing on the sides of the tub. This patent is an improvement on No. 706,171, of August 5, 1902, for a dyeing-machine, Wm. H. Fletcher.

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

1. In a dyeing-machine for dyeing skeins, a chain-rack operated by sprocket-wheels located on the upper part of a dye-tub, sprocket-chain links so constructed as to support skein-holders, skein-holders consisting of pieces connecting the opposite ends, the one end forked to connect with said bars, and having a hollow opening to pass over and turn on the projection on the link which is constructed for this purpose, and the opposite end of the skein-holder consisting of the forked portion to connect with the connecting-bar, the barrel or cylindrical portion with its recessed center, having its one end closed or partially so, the spring, the sleeve or tube 24 the pin and slot 25 to receive the said pin, and the geared or roughed portion for the purpose of revolving the holder as set forth and described.

2. In a dyeing-machine for dyeing skeins, a double endless chain-rack, one on each side of the tub for supporting and conveying the skein-holders, said rack consisting of links having a projection on which the skein-holders turn, and a projecting piece 7 which is in sliding contact with a guide on top of the tub, and the piece 36 placed on the top of the tub for the purpose of turning the skein-holders as and for the purpose set forth and described.

3. In a skein-dyeing machine the combination between a dye-tub a driving mechanism attached, chain-racks, sprocket shafts and bearings, and a skein-holder consisting of fork-shaped ends, the connecting-channels 21, the cylindrical portions of each end, the recessed portions of each end, the sleeve and the toothed or roughed portion as set forth and described.

4. In a skein-dyeing machine the combination between the tub with the endless chain-

rack and the means for operating the same and the skein-holder supported on the rack by means of the projection of the links, said links are placed alternately with plain links, and the projection on the top of the links which slide over the top of the tub to prevent the rack from sagging, the guide on the top of the tub on which the projections slide and the piece 30 with toothed or roughed tops as and

for the purpose of revolving the holder as set forth and described.

Signed at Paterson, in the county of Passaic and State of New Jersey, this 16th day of February, A. D. 1904.

WILLIAM H. FLETCHER.

Witnesses:

HARRY S. DAY,
RICHARD RAU.