

May 18, 1943.

L. MIGLIACCIO

2,319,699

APPARATUS FOR THE TREATMENT OF FABRICS

Filed April 1, 1942

3 Sheets-Sheet 1

Fig. 1.

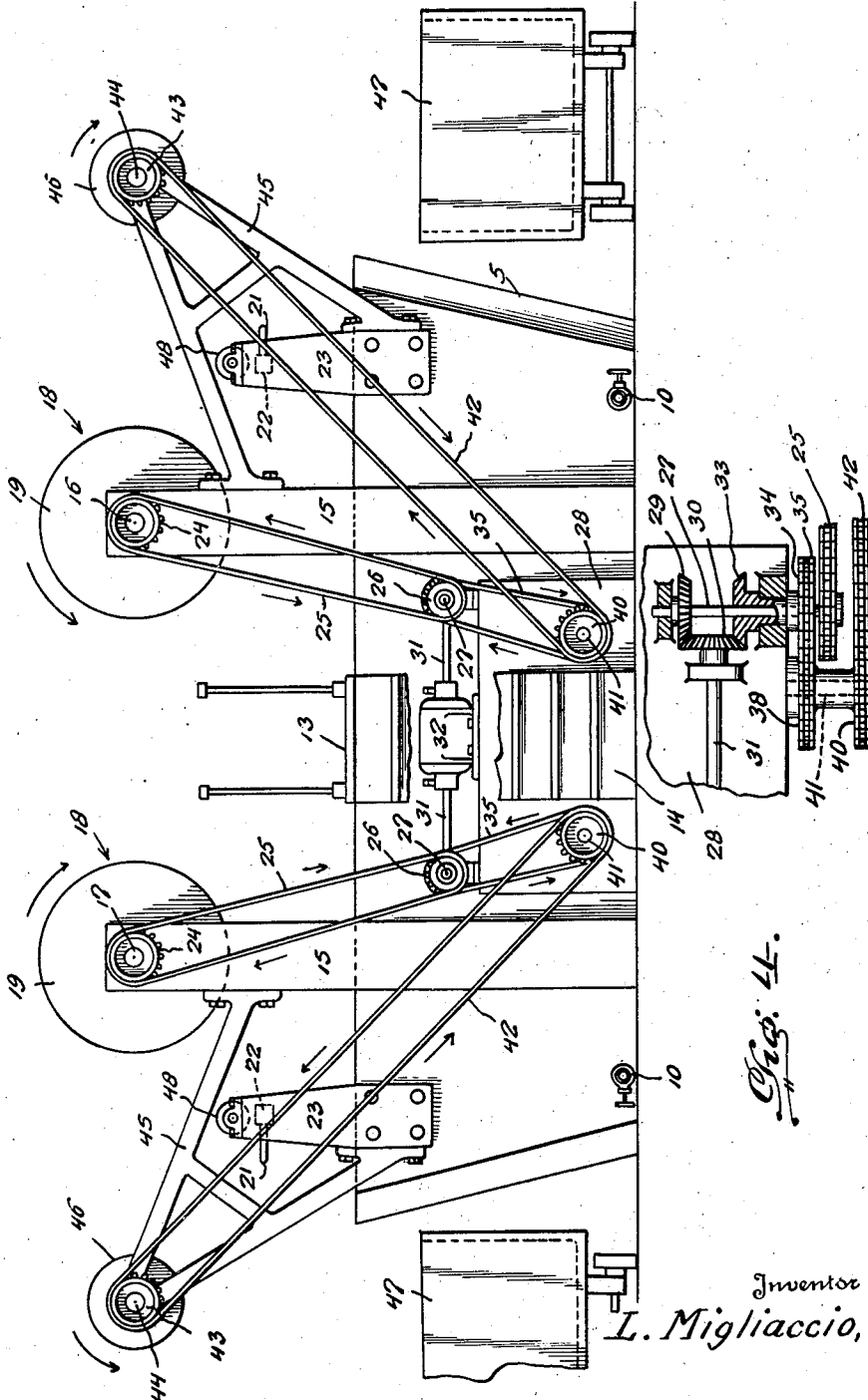


Fig. 4.

Inventor
L. Migliaccio,

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Mc Morrow & Bertram
Attorneys

May 18, 1943.

L. MIGLIACCIO

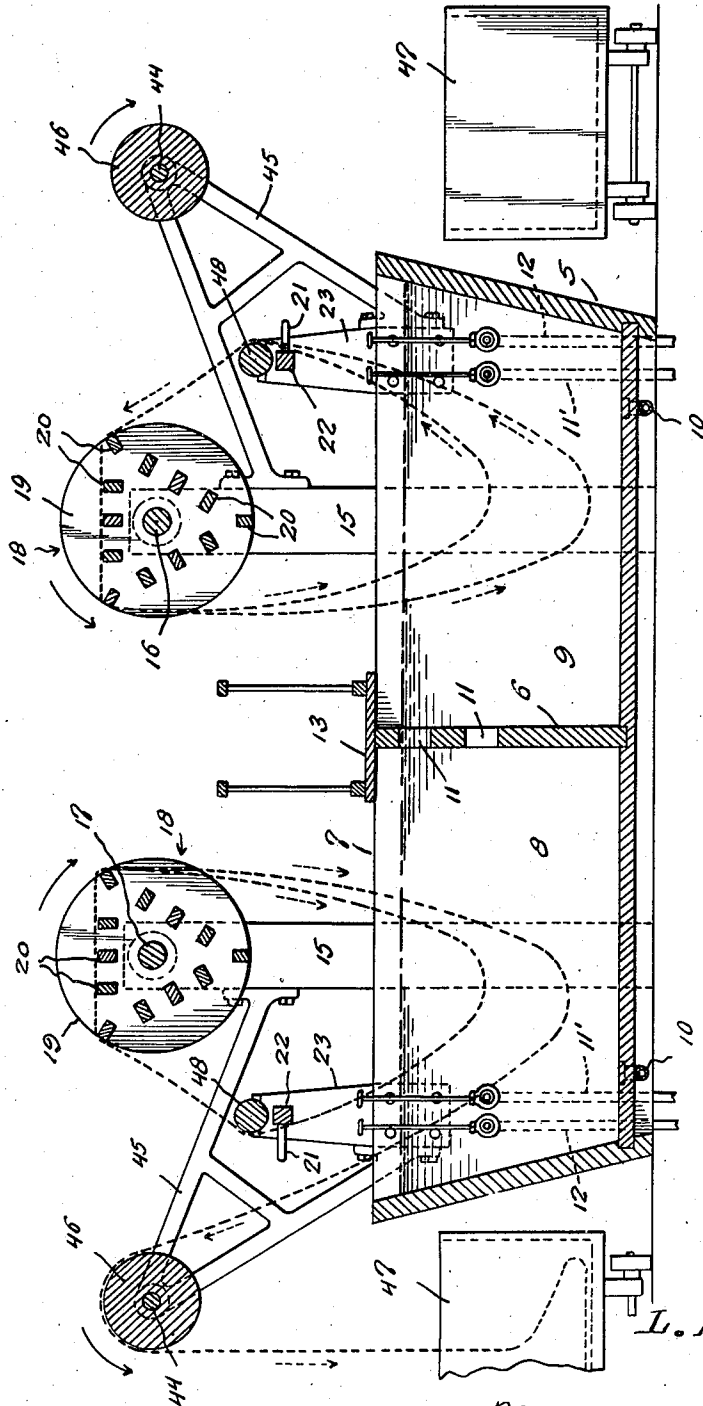
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Fig. 2.



Inventor
L. Migliaccio,

By *Mc Morrow & Berrian*
Attorneys

May 18, 1943

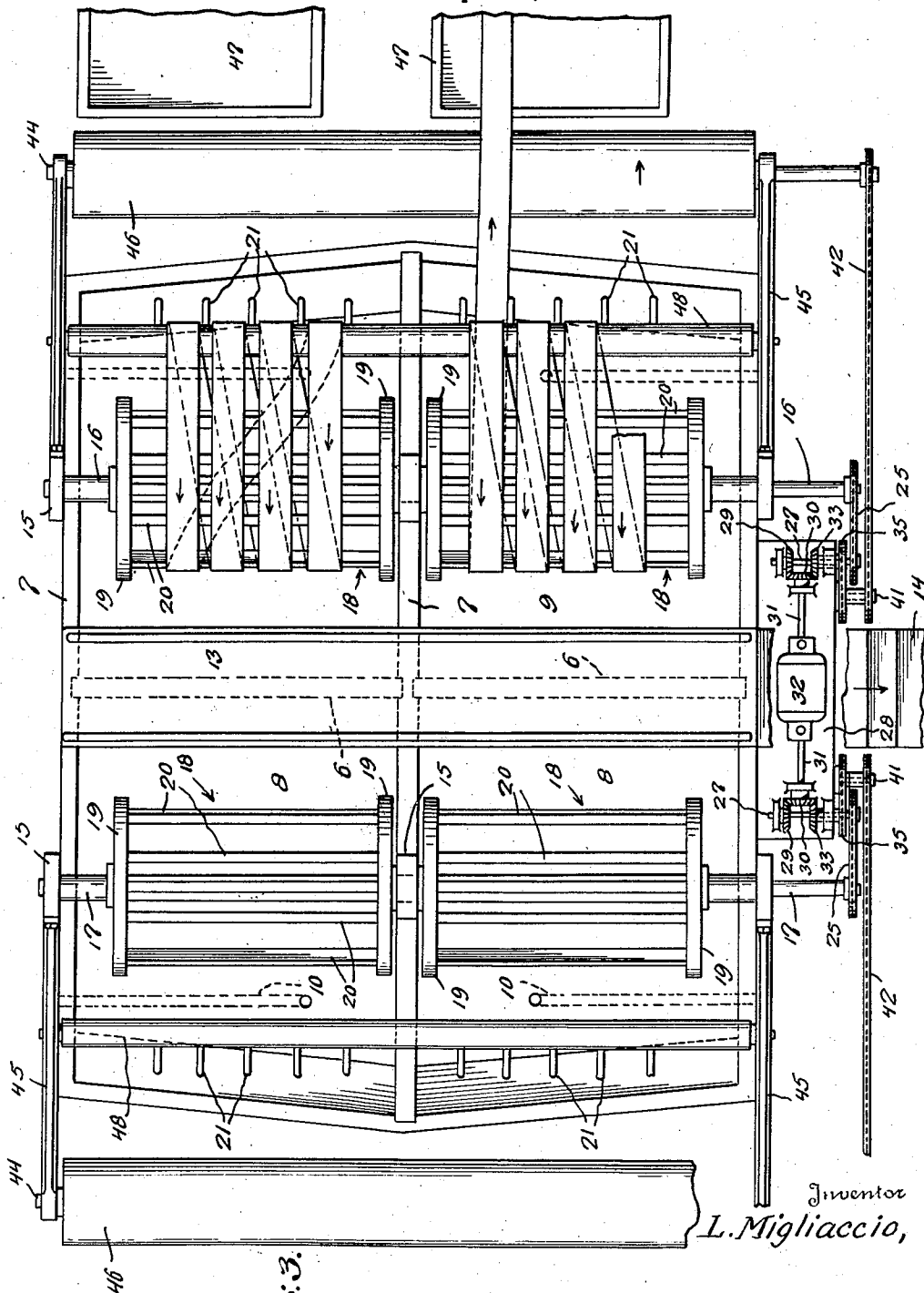
L. MIGLIACCIO

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By

McMorrow & Perriall

Attorneys

UNITED STATES PATENT OFFICE

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APPARATUS FOR THE TREATMENT OF FABRICS

Luigi Migliaccio, Paterson, N. J.

Application April 1, 1942, Serial No. 437,255

1 Claim. (Cl. 68—176)

This invention relates to an apparatus for the treatment of fabrics and more particularly to the dyeing thereof, and has for the primary object the provision of a device of this character whereby large quantities of various kinds of fabrics may be dyed and subjected to baths for the proper fixing of the dyes and color and which will permit such operation to be rapidly and economically carried out with a minimum expenditure of manual effort and also to permit at any one time the fabrics to be each dyed a different color or all of the same color, depending on which may be desired.

With these and other objects in view as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts as will be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a side elevation illustrating an apparatus for the treatment of fabrics and constructed in accordance with my invention.

Figure 2 is a vertical sectional view illustrating the device and showing how the fabrics are arranged and passed through the treatment solution.

Figure 3 is a top plan view illustrating the device.

Figure 4 is a fragmentary sectional view illustrating a portion of the drive mechanism.

Referring in detail to the drawings, the numeral 5 indicates a vat of considerable size equipped with transverse and longitudinal partitions 6 and 7 for dividing thereof into pairs of compartments or chambers 8 and 9. Each chamber or compartment is provided with a valve controlled drain medium 10 whereby the emptying thereof of a liquid can be easily carried out.

The partitions may be provided with ports 11 any one of which or all of them may be closed or opened at the will of the operator through the employment of suitable closure plugs or stoppers (not shown). The purpose of the ports is to give communication between the various chambers or compartments whereby the liquid may readily transfer or flow from one compartment to another. This is desirable when dyeing fabrics all of one color and treating such fabrics to a bath after the dyeing operation.

However, when the fabrics are to be dyed different colors it is then preferable that the ports be closed to prevent the different colors from

commingling in the compartments or chambers. Each compartment or chamber is provided with a valved steam supply medium 11' and a water supply medium 12 of a similar construction. Thus it will be seen that water may be introduced into any one of the chambers or compartments or all of them and then heated to a desired temperature by admitting steam to the water. The dye or dyes may be added to the water after the same has reached a proper temperature.

Further, it is to be understood that clear water is employed for fixing the dyes in the fabric after the dyeing operation.

Arranged transversely of the vat 5 is a walkway 13 on which the operator may stand and move and steps or stairways are provided for the walkway, as shown at 14.

Rising vertically from opposite sides of the vat 5 are pairs of posts or uprights 15 which extend a selected distance above said vat and rotatably support shafts 16 and 17. The shaft 16 extends across the pair of compartments 9 while the shaft 17 extends across the compartments 8 and the shafts have mounted thereon and fixed for rotation therewith reels 18.

Each reel 18 includes disc-like end portions 19 to which is secured a group of slats or similar members 20 arranged in a group of triangular formation and on which the fabric to be treated is wound with the ends suitably connected together whereby the ends may be separated at the will of the operator. In applying the fabrics to the reels as stated, each convolution consists of a comparatively long loop extending down into the liquid of the compartments thereunder so as to submerge in said liquid.

By referring to Figure 3 it will be seen that one of the loops is longer than the remaining loops and extends diagonally so that the loops as before stated may be spirally wound and fed onto and off of the reels. To prevent the loops of fabric from tangling or coiling one upon the other during the rotation of the reels, spaced guide fingers 21 are provided. By referring to Figure 3 it will be seen that the guide fingers 21 are arranged on bars 22 supported by uprights 23 secured on the vat 5. The reels are arranged in pairs with the reels of each pair mounted on a shaft and also it is to be noted that the pairs of reels rotate opposite to each other as indicated by the arrows in Figure 1. The shafts of the reels have secured thereto sprocket gears 24 over which sprocket chains 25 are trained. The sprocket chains are in turn trained over sprocket gears 26 secured to shafts 27 suitably mounted in

journals carried by a platform 28 secured on one side of the vat 5. The shafts 27 have gears 29 secured thereto which mesh with gears 30 secured on power shafts 31 driven by an electric motor 32 mounted on the platform 28.

Gears 33 which mesh with the gears 30 at an opposite side of said gears 30 from the gears 29 are journaled on the shafts 27 and have secured thereto sprocket gears 34 over which endless chains 35 travel. The endless sprocket chains 35 are in turn trained over sprocket gears 38 connected integrally with sprocket gears 40 and said gears 38 and 40 are journaled on stub shafts 41 secured on the platform 28.

The sprocket gears 40 have endless sprocket chains 42 trained thereover which are in turn trained over sprocket gears 43 secured to shafts 44 journaled in brackets 45. The shafts 44 have secured thereto rollers 46 disposed adjacent the ends of the vat and in a plane thereabove for the purpose of feeding over the ends of the vat from the chambers or compartments, as well as from the reels, fabric after it has been dyed and washed for deliverance into transportation vehicles 47 arranged for movement at the ends of the vat.

The gearing and shafts heretofore described driven by the electric motor, bring about the rotation of the reels as indicated by the arrows in Figure 1 and the rotation of the rollers also indicated by arrows in Figure 1. The rollers rotate in opposite directions to each other as well as to the pairs of reels adjacent thereto. The brackets 45 are mounted upon the uprights or posts 23 and 15.

In operation, water is admitted to the compartments by the water supply mediums and is then heated to a desired temperature whence the dye matter is introduced into the water in any well known manner to obtain the desired color. Lengths of fabric are then wound upon the reels in the manner specified and shown in Figure 3. The reels are then driven by the electric motor causing the long loops of fabric to pass into and out of the liquid of the compartments so as to become thoroughly saturated therewith and dyed. After the fabrics have been dyed, the compartments are drained and thoroughly washed and clear water introduced therein whence the fabrics are then caused to move through the clear water for washing the fabrics and fixing the dyes.

After this operation has been completed, the ends of the fabrics are unfastened and an end of each strip of fabric is passed over the rollers adjacent thereto so that on the rotation thereof the length of fabric will be fed into the vehicles.

Thus it will be seen that lengths of fabric can be easily, quickly and economically dyed, washed for the purpose of setting the dyes therein, and then delivered to carriers. It will be apparent that the complete operation can be economically carried out with a minimum expenditure of manual labor and that the entire device can be quickly cleansed when necessary.

Rollers 48 are journaled on the uprights 23 over which the loops of fabric may pass when moved by the reels 18.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described my invention, what I claim is:

1. In a fabric treating apparatus, a liquid containing vat, a reel located above the vat and supporting fabric with the ends thereof detachably connected together and with draping runs for movement through the liquid of the vat during rotation of the reel, standards secured to the vat and rotatably supporting the reel, guide means for the runs of the fabric and located laterally of and in a plane below the reel and above said vat, standards secured to the vat and supporting said means, substantially V-shaped brackets having the ends thereof secured to the standards with the apexes thereof located laterally of the reel and one end of the vat and in a plane above and laterally of said guide means, a fabric takeoff roller journaled on the apexes of the brackets for feeding the fabric from the vat and the reel and out of engagement of said guide means when said ends of the fabric have been detached and one end placed over and in engagement with said roller, and a power operated drive means connected to the reel and the roller for rotating said reel and roller in opposite directions to each other.

LUIGI MIGLIACCIO.