

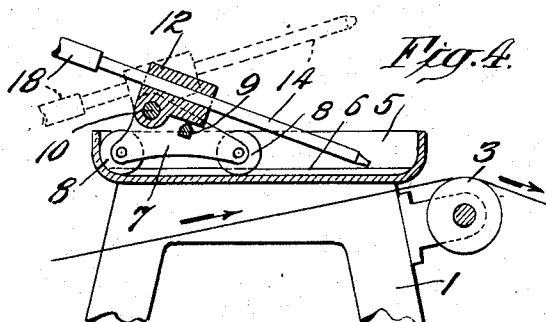
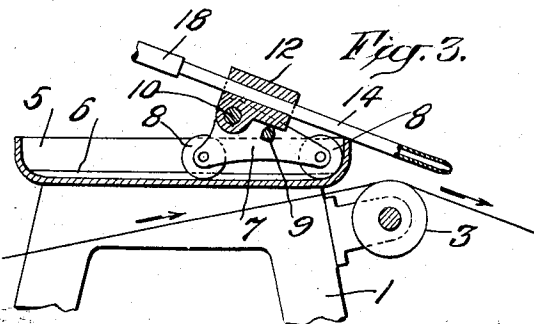
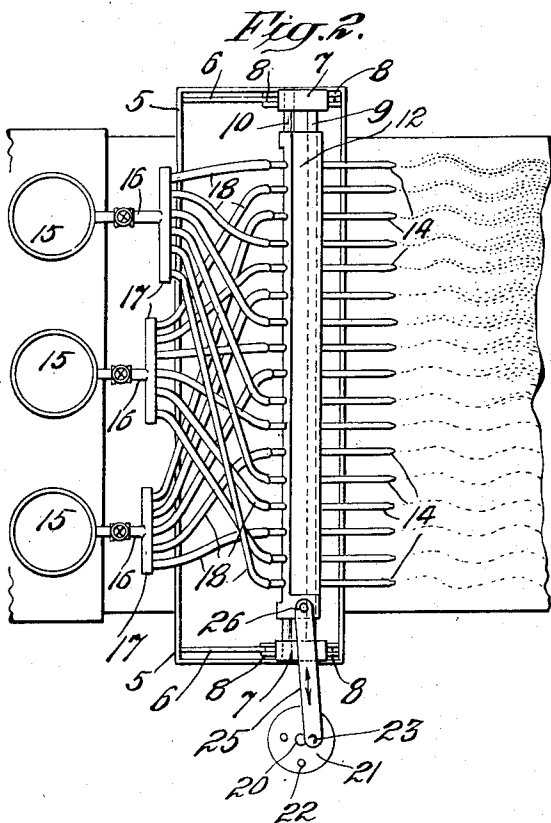
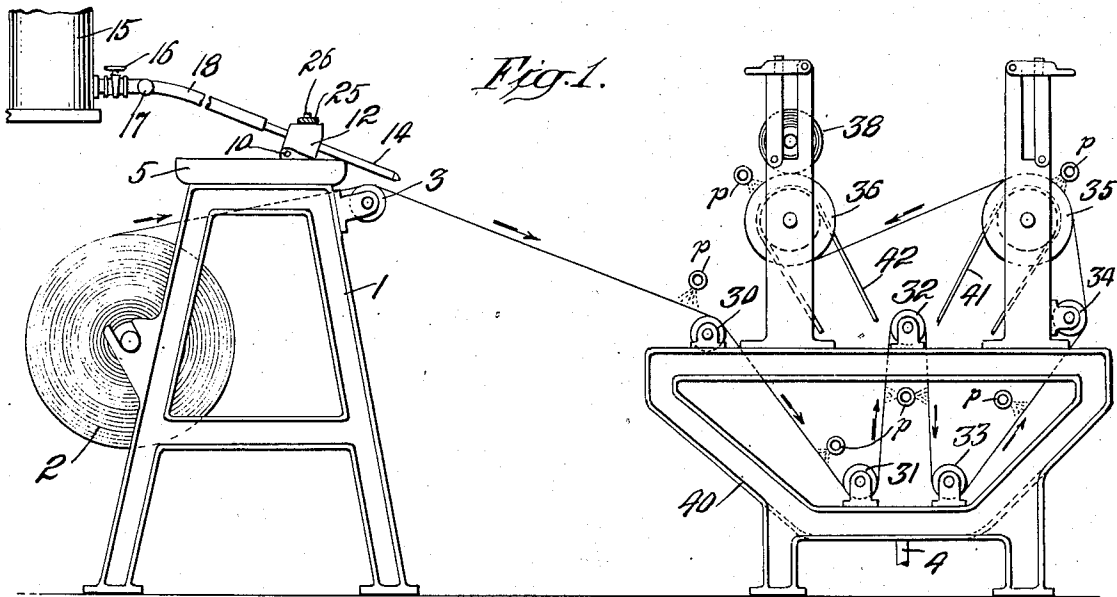
Oct. 22, 1940.

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2,218,811

DYEING MACHINE

Filed May 5, 1938



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2,218,811

DYEING MACHINE

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Application May 5, 1938, Serial No. 206,097

4 Claims. (Cl. 91-12)

This invention relates to the art of dyeing fabrics and consists of an improved process and machine adapted for the application of liquid dyes or colors to fabrics, particularly to woven fabrics of the light dress goods type. In accordance with my improvements, the web of fabric is progressively fed from a supply roll to a take-up roll and the dyeing liquid is applied thereto as the fabric web passes beneath a plurality of dye feeding elements or applicators in a continuous operation.

As a further feature of my invention, the dye applicators are mounted to be movable transversely of the fabric web and means are provided to impart thereto a reciprocating motion to produce, in conjunction with the movement of the fabric, a wavy or undulating design in the color application which is adjustable to produce varied effects as may be desired. In addition, provision is made for a simplified gravity feed of the varied colored dyes employed with a desirable improved mounting of the applicators which permits of their being readily and quickly retracted to a position overlying a protective pan for the protection of the fabric during periods of adjustment and regulation of the color applying devices.

The foregoing and other desirable features and advantages of my present improvements will be more fully understood by reference to the accompanying drawing wherein like reference characters are applied to the corresponding parts in the several views.

In the drawing:

Fig. 1 is a view in side elevation of my improved dye applying mechanism associated with a co-operating rinsing and winding machine.

Fig. 2 is a plan view of the dye applying mechanism.

Figs. 3 and 4 are detail, sectional views in a vertical plane showing the carriage in operating and in retracted position respectively.

In the approved embodiment of the features of my invention as shown, 1 indicates a supporting frame for the supply roll of fabric to be dyed and the dye applying mechanism; the supply roll being shown at 2 journaled in a recessed bearing in the frame. From the roll 2 the web of fabric is fed forwardly over a journaled guide roller 3 as shown by arrows to a rinsing and winding machine shown at the right in Fig. 1.

The dye applying means is supported upon the upper portion of the frame 1 and in accordance with my invention consists of a supporting pan or tray 5 extending transversely of the fabric

web and positioned thereabove. The pan, at its opposite sides, is provided with parallel rails 6-8 extending longitudinally of the web and upon which is mounted a carriage composed of frame members 7-7, each of which is provided with grooved rollers 8-8 fitted to the rails and journaled on the frame member 7. The oppositely positioned frame members 7 are, as shown, connected by rigidly secured forward and rearward connecting rods or bars 9 and 10 to provide a carriage movable forwardly and rearwardly on the rails 6.

Upon the rearward rod 10 there is pivotally and slidably mounted an applicator tube holder 12 extended transversely of the fabric and at its forward under portion bearing upon the cross bar 9. This holder 12 is bored as shown to receive and to support a series of spaced color applicator tubes or nozzles 14 which in the forward or operating position of the carriage overlie the fabric as it passes from the roller 3. Liquid dyes are delivered to the applicator tubes by gravity from color tanks 15 provided with valved outlet pipes 16 and distributor pipes 17 having ports connected by flexible hose 18 to the applicator tubes. With the arrangement as described varied color striping of the fabric can be produced by employing differently colored dyes from each tank 15 and connecting to the applicator tubes in the desired arrangement.

As a further feature, provision is made for reciprocating the holder member 12 transversely of the web as the latter advances through the machine for obtaining varied wavy or undulating stripe effects. To this end a suitably driven vertical shaft 20 is provided with a circular crank element 21 provided with pin apertures 22 in varying radial distance from the axis of the shaft and adapted to receive a depending pin 23 of a connecting rod 25 having a depending bearing pin 26 at its opposite end fitting a bearing aperture in the holder when the latter is in advanced, operating position. This arrangement permits of readily detaching the connecting rod and for changing the degree of its operating stroke as will be readily understood.

The pivotal support of the applicator tube holder, as best shown in Figs. 3 and 4, and the detachable arrangement of the connecting rod 25, permits of retracting or moving rearwardly of the carriage to the position as shown in Fig. 4 to then position the discharge ends of the applicator tubes over or within the supporting pan and removed from the fabric during periods of adjustment or alteration of the coloring mechanism.

nism thereby to protect the fabric from the coloring dyes during adjustments of flow, changing of stroke or color alteration.

From the dyeing mechanism as described the web of fabric passes forwardly to a rinsing and winding machine where it is passed over journaled rollers 30, 31, 32, 33 and 34 and over power driven feed rollers 35 and 36 to the take-up roll 38. In its transit over the rolls the web is rinsed by water sprays from perforated pipes *p* for the removal of excess dye, the rinsing water falling into trough 40 from which it is carried off by drain 4. The feed rolls are suitably driven by belts 41-42; the take-up roll arrangement permitting of the alternation of the position of the take-up roll, in the conventional manner, to be above either roll 35 or 36.

While I have shown and described an approved embodiment of the features of my invention, it will be understood that varied modification may be made therein without departing from the scope of the invention as defined in the appended claims.

Having described my invention, I claim:

1. A dyeing machine of the character described comprising supporting means, a pan on the supporting means, a carriage member mounted to be movable forwardly and rearwardly above the pan, a holder member pivoted on the carriage and adapted to be laterally shiftable, a plurality of applicator tubes carried by the holder member, dye tanks suitably supported above the tubes, flexible hose connections from the tanks to the tubes, means for feeding the fabric to be dyed beneath the tubes and means for transmitting reciprocating motion to the holder member in the direction transverse of the fabric.
2. A dyeing machine of the character described comprising supporting means, a pan member on the supporting means, a carriage mounted to be movable forwardly and rearwardly within the pan, a holder member pivoted on the carriage and adapted to be laterally shiftable, a plurality of applicator tubes carried by

the holder member, dye tanks suitably supported, flexible connections from the tanks to the tubes, means for feeding the fabric to be dyed beneath the tubes, means for transmitting reciprocating motion to the holder member transversely of the fabric and said means being adjustable to vary the degree of reciprocal motion.

3. A dyeing machine of the character described comprising supporting means, a pan member on the supporting means, a carriage mounted to be movable forwardly and rearwardly within the pan, a holder member pivoted on the carriage and adapted to be laterally shiftable, a plurality of applicator tubes carried by the holder member normally to project forwardly of the pan member, dye tanks suitably supported, flexible connections from the tanks to the applicator tubes, means for advancing the fabric to be dyed beneath the applicator tubes, adjustable means for transmitting reciprocating motion to the holder member in the direction transverse of the fabric and said means including a detachable connection to permit retracting of the carriage to position the tubes above the pan.

4. A dyeing machine of the character described comprising supporting means, a pan member on the supporting means, a carriage mounted to be movable forwardly and rearwardly within the pan, a holder member pivoted on the carriage and adapted to be laterally shifted thereon, a plurality of applicator tubes carried by the holder member projecting forwardly of the pan when the carriage is in advanced position, dye tanks suitably supported, flexible connections from the tanks to the tubes, means for feeding the fabric to be dyed beneath the tubes, a rotatable crank member suitably journaled and provided with pin apertures in varied radial distance from the axis thereof, a detachable connection from the crank member to the holder member and said carriage being retractable to a position to move the applicator tubes above the pan for the protection of the fabric.

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