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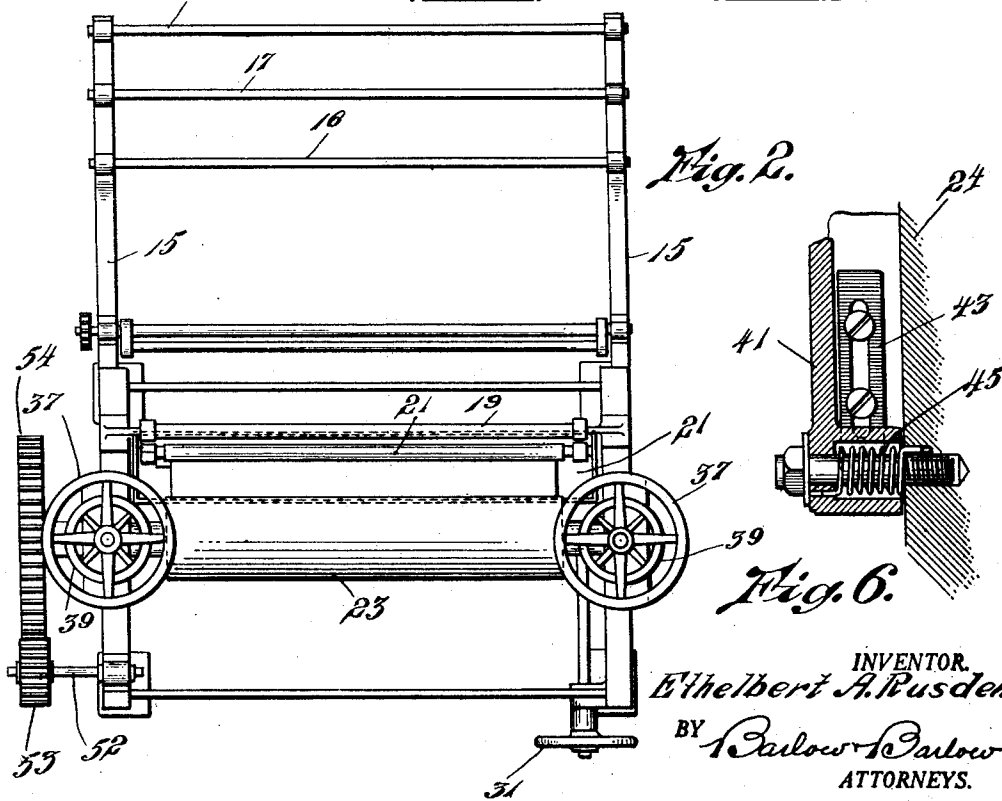
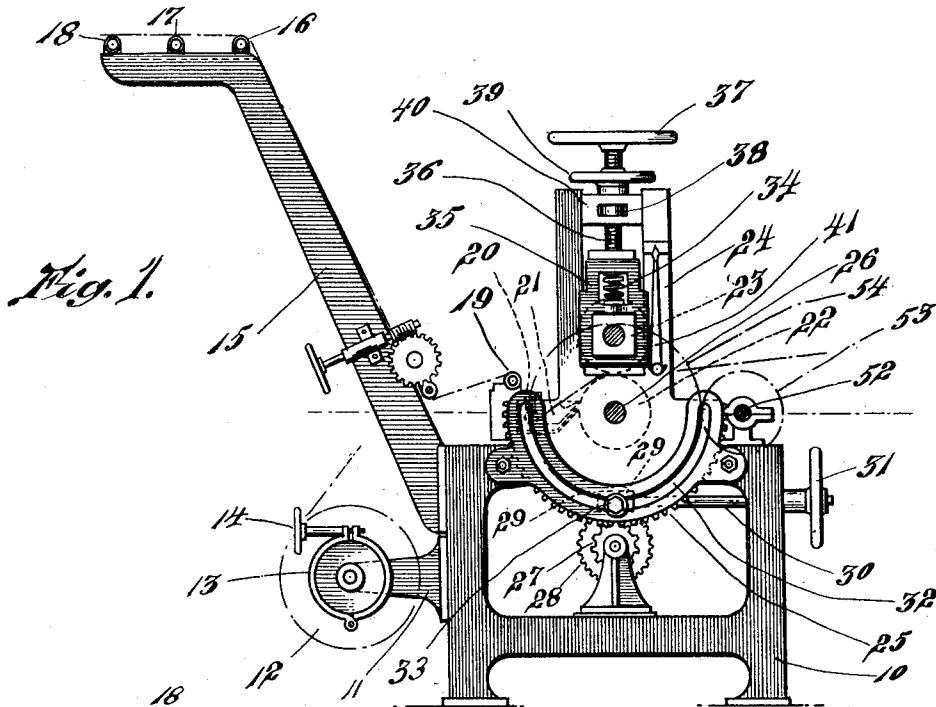
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FABRIC IMPREGNATING MACHINE

Filed Oct. 9, 1929

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Fig. 4.

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UNITED STATES PATENT OFFICE

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FABRIC IMPREGNATING MACHINE

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This invention relates to a fabric-impregnating device; and has for its object to so position the cooperating pressure rolls of the device that their squeezing nip shall be located at a point close to the receptacle set to catch the surplus liquid as squeezed from the fabric being treated so as to reduce to the minimum the time of exposure to the air and consequent oxidization of the returning liquid which in dyes of certain characters is of importance.

A further object of the invention is to provide a mounting for one of the pair of cooperating squeeze rolls which may be shifted to locate the nip of these rolls at a point close to the bath to prevent undue exposure to the air of the draining liquor.

A further object of the invention is the positioning of a pair of squeeze rolls horizontally with respect to each other and the providing of a dam or wall adjacent each end of these rolls which cooperate with that portion of the two rolls immediately above their nips to form a basin or receptacle for the treating liquid and so form a bath or pool through which the goods are passed, which bath is designed to contain the minimum amount of liquid necessary for properly treating the goods as fed therethrough, and to also provide means for replenishing this pool or bath at a rate substantially equal to the amount taken up or absorbed by the traveling goods in passing therethrough.

A still further object of the invention is the provision of means for indicating the pressure adjustment between the two rolls so that the same pressure may be applied to both ends of the rolls to cause an even nipping pressure on the goods throughout their width as they pass therethrough.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is a side elevation of a portion of a cloth impregnating apparatus.

Fig. 2 is a plan view thereof.

Fig. 3 is an enlarged detail showing the

rolls inclined to position their point of pressure or nip of the cloth adjacent the bath, with the scraper or doctor blade engaging the lower roll.

Fig. 4 is a fragmental perspective view somewhat diagrammatic illustrating the rolls as in horizontal position with the dam engaging the surface of the rolls and cooperating with the crevice between the rolls to form a container for a bath supplied by a pump operated in time with the machine.

Fig. 5 is an enlarged fragmental view in elevation showing the indicating pointer for denoting the pressure between the rolls.

Fig. 6 is a fragmental sectional view showing the return spring for the pointer illustrated in Fig. 5.

In the dyeing of fabrics, there are certain kinds of dyes which oxidize very rapidly upon exposure to the air, which oxidation is detrimental and is to be avoided as much as possible. A large part of this oxidation occurs as the dye is tricking back into the bath after having been squeezed from the traveling goods and to minimize the distance of this return travel and consequently the amount of exposure I have so mounted these squeeze rolls that they may be moved from vertical position and inclined toward the bath, as illustrated in Fig. 3, so as to position their point of nip close to the bath and so reduce to a minimum the time of exposure of the dye to the air, which is found to be of material advantage over the old style stationary vertically-disposed rolls.

Then again, where the dyes employed are particularly sensitive to an oxidizing action, in order that they shall be still less exposed to the air I may place these squeeze rolls horizontally with respect to each other or so that a line through the axis of the rolls is substantially horizontal and I utilize the crevice between the rolls by the forming of a dam or wall for engaging the surface of the rolls at either end thereof providing a container for a bath or pool to which the dye may be supplied substantially as absorbed or taken up by the traveling goods in which case there is no exposure of the dye to the air after being pressed from the goods, and in order that I

may have an even or equal amount of squeezing pressure along and at both ends of each roll, I have provided an indicator at each end of the rolls to register the amount of pressure applied thereto which may be equalized so that the same amount of pressure will be had throughout the length of these rolls; and the following is a detailed description of the present embodiment of this invention illustrating the preferred means by which these advantageous results may be accomplished:

With reference to the drawings, 10 designates the support which is provided with a bracket 11 upon which is mounted the drum 12 or roll of fabric to be treated in the machine. A suitable brake 13 is illustrated, which is operated by a hand wheel 14 for controlling the tension on the goods as drawn through the machine, while in other instances the goods may be led from a truck or the like (not shown) up over the support 15 having anti-friction rollers 16, 17 and 18 at its upper end.

The goods in traveling from either of these different points of entry travel over the idler roll 19 beneath the roll 20 in the bath 21 and thence through the press or squeeze rolls 22 and 23 and on thru a dryer of a common type (not shown).

The rolls 22 and 23 are so mounted that the plane of their axes may be moved to different positions. This is accomplished by means of a frame 24 which has an arcuate rack 25 for swinging it about the fixed axis 26 of the fixed roll 22 as a pivot to any one of the number of different positions, and carrying with it the movable roll which rotates upon an axis movably mounted in the frame. This swinging of the frame is accomplished by a pinion gear 27 meshing with the rack 25, the gear 27 being operated by a worm gear 28, worm 29 which is on shaft 30 and rotated manually by the hand wheel 31. An arcuate slot 32 is formed thru which a securing bolt 33 extends for clamping the frame in any desired adjusted position.

The movable roll 23 is slidably mounted in the swinging frame and is resiliently forced towards the roll 22 by a spring 34, the pressure of which is adjusted by means of a slide 35 moved by means of a threaded shaft 36 and hand wheel 37, the same operating thru a nut 38 and being held in position by a check hand wheel 39 having threaded engagement with the shaft 36 and adjustable thereon for engaging abutment 40 and locking the shaft in adjusted position.

In order that the adjustment of the roll may be indicated I have pivotally mounted a pointer 41 having a shoulder 42, (see Fig. 5), to engage a slotted plate 43 which serves as an abutment and causes the pointer to swing over the scale 44 to the desired position. The pointer is moved into engagement with the

abutment by means of a tension spring 45 housed in the hub thereof. In operation the upper roller 23 which may be of rubber or softer material than the lower roller 22 is adjusted to rest lightly upon the roller 22. The slotted plate 43 is then adjusted so as to cause the pointer 41 to read zero after which the desired tension is applied and the pointer on each end of the machine caused to read alike.

Where an extremely small amount of dye bath is desired to be used, as in the case of vat dye colors or hydro sulphate colors and the like, and become quickly oxidized I may rotate the frame 24 to dispose the rolls in a horizontal position such as illustrated diagrammatically in Fig. 4, in which position a crevice 50 is formed between the rolls 22 and 23 which I utilize to form a container for a bath by positioning a dam 47 which is of generally triangular shape adjacent the ends of the roll and in frictional contact with the surface of the rolls and supply the bath to this container so formed by means of a pump 48 and supply pipe 49 which is operated in time with the machine to supply the quantity of dye bath to this containing compartment in a quantity substantially as absorbed by the fabric or other material being treated, the dye being pressed from the material as it emerges from the bath so that no excessive oxidization of the dye occurs.

The squeeze rolls 22 and 23 are herein shown as being driven from the drive shaft 52, pinion 53 and large gear 54.

In some instances instead of mounting one of the cooperating squeeze rolls in an adjustable frame to be swung from one position to another about the center of the other roll; the required working position of these rolls may in some instances be predetermined and the rolls permanently located in that position.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a fabric impregnating machine, a pair of cooperating pressure rolls, a frame in which one of said rolls is mounted, means for swinging said frame with its roll about the axis of the other roll to vary the angularity of a plane that shall pass through the axes of both of said rolls, and means to hold said frame and its roll in any various adjusted position along its path of movement.
2. In a fabric impregnating machine, a pair of cooperating pressure rolls, a frame in which one of said rolls is mounted, an arcuate rack on said frame, and gear means engaging said rack to move the frame to different

adjusted positions about the axis of one of said rolls.

3. In a cloth impregnating machine, a frame, a pair of pressure rolls, mounted therein, means for mounting said frame to swing about the axis of one of said rolls to dispose said rolls at varying points from a vertical to a horizontal position about the axis of the other roll, means cooperating with said rolls to form a container for a fabric bath, and means for supplying liquid to the bath to supplement that absorbed by the goods.

4. In a fabric impregnating machine, a bath receptacle through which goods are passed, upper and lower cooperating squeeze rolls located adjacent the bath receptacle, the upper roll pivotally mounted to swing about the axis of the lower roll and means for varying the distance between the nip of the rolls and the bath.

5. In a fabric impregnating machine, a pair of cooperating squeeze rolls, a support for said rolls, one of said rolls mounted to swing about the axis of the other roll, a bath receptacle located adjacent the nip of the rolls and means for varying the distance between the nip of the rolls and the bath.

6. In a fabric impregnating machine, a pair of cooperating squeeze rolls, a support for said rolls, one of said rolls mounted to swing about the axis of the other roll, a bath receptacle located adjacent the nip of the rolls, a guide extending longitudinally approximately the length of the rolls and extending from the liquor to a point adjacent to the nip of the rolls and in contact with one of said rolls, and means for varying the distance between the nip of the rolls and the bath.

7. In a fabric impregnating machine, a pair of cooperating squeeze rolls, a support for said rolls, a bath receptacle located adjacent the nip of said rolls, a guide located adjacent the nip of the rolls by which the impregnating material squeezed from impregnated goods is returned to the bath, and means for varying the distance between the nip of the rolls and the bath.

8. In a fabric impregnating machine, a pair of cooperating squeeze rolls, a support frame for said rolls, one of said rolls mounted to swing about the axis of the other roll, a bath receptacle located adjacent the nip of the rolls and means for adjusting the distance between the nip of the rolls and the bath and means for retaining said frame and its roll in adjusted position.

9. In a cloth impregnating machine, a fixed roll, a movable roll, means for swinging the movable roll about the axis of the fixed roll, means at each end of said movable roll for resiliently pressing the same toward the fixed roll, independent means for adjusting said resilient means at each end of said movable roll and indicators connect-

ed to each end of said movable roll for showing the relative adjustments thereof.

10. In a cloth impregnating machine, a fixed roll, a movable roll, means for swinging the movable roll about the axis of the fixed roll, means at each end of said movable roll for resiliently pressing the same toward the fixed roll, separate means for adjusting said resilient means to selectively vary the pressure at each end thereof and an indicator device at each end of said movable roll and actuated by the movement of the latter to indicate the applied pressure at each end of said movable roll.

In testimony whereof I affix my signature.

ETHELBERT A. RUSDEN.

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