Nov. 3, 1936. H. W. HONEYMAN, JR 2,059,871

DYE JIG

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Fig. 1.

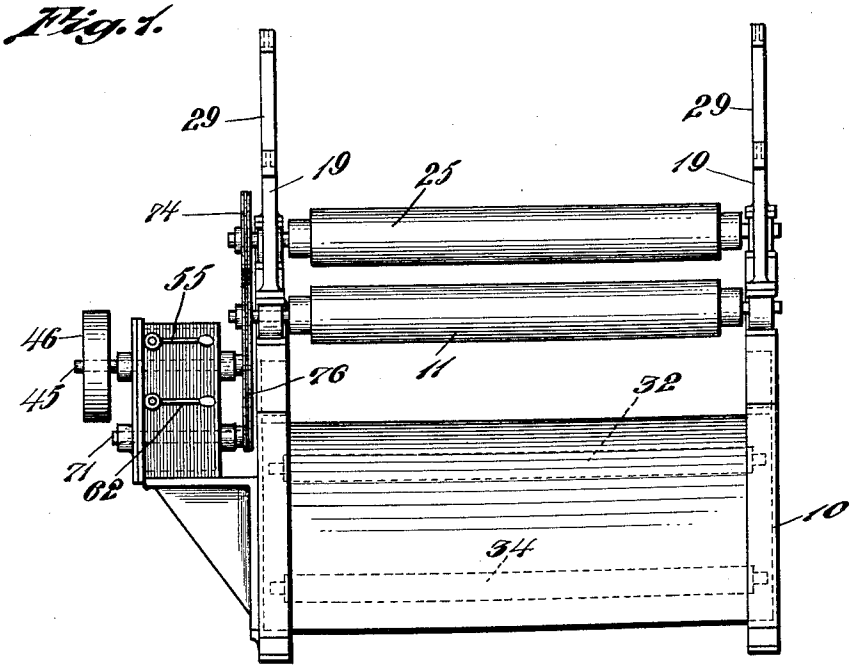



Fig. 2.

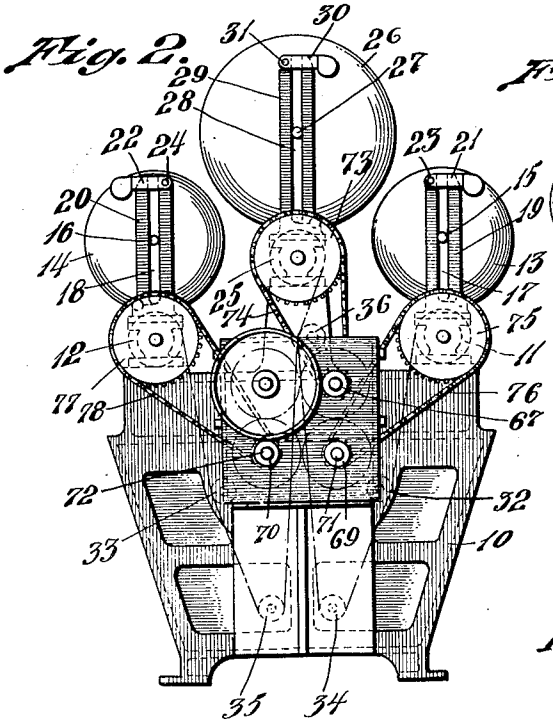
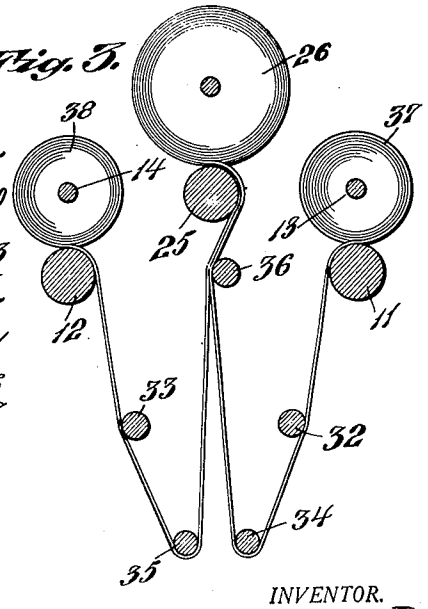



Fig. 3.




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Fig. 4.

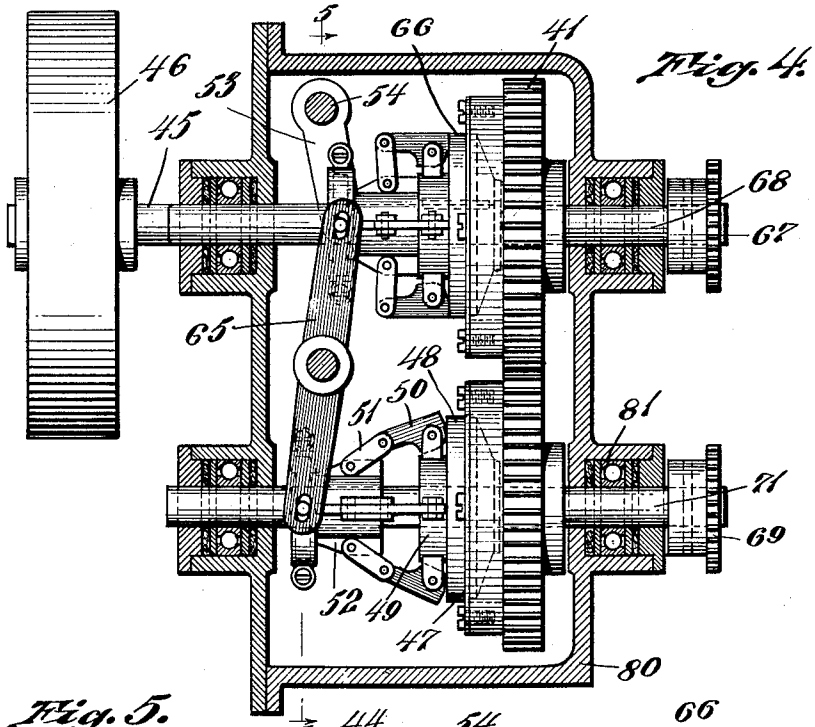
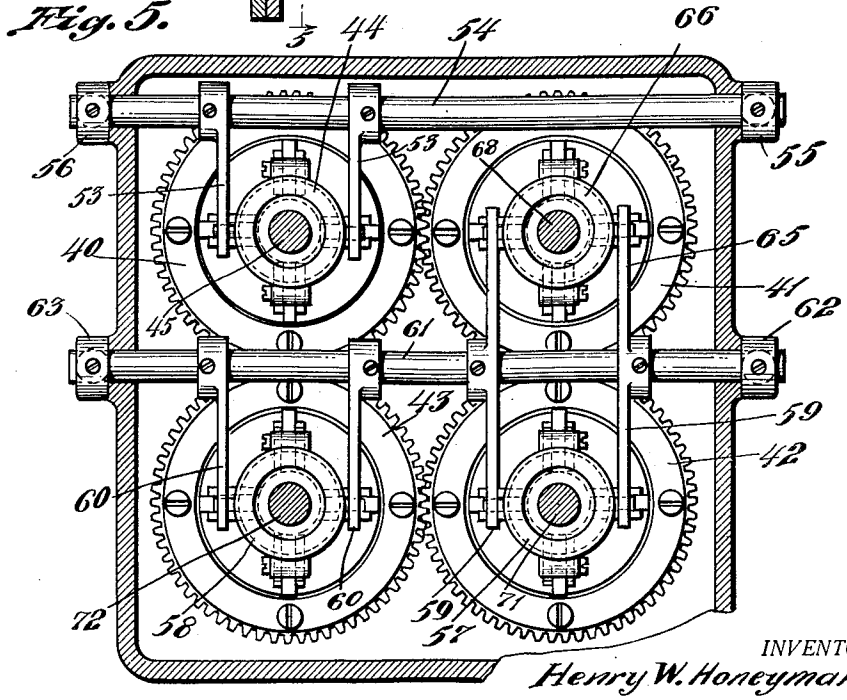



Fig. 5.




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# UNITED STATES PATENT OFFICE

2,059,871

## DYE JIG

Henry W. Honeyman, Jr., East Providence, R. I.

Application November 18, 1933, Serial No. 698,633

1 Claim. (Cl. 8—19)

This invention relates to a dye jig; and has for one of its objects the provision of an arrangement by which there may be a conserving of dyeing liquor and labor in the operation of the same.

Another object of the invention is the provision of a dye jig in which by a simple arrangement two or more webs of cloth may be simultaneously passed thru the same bath of dyeing liquor as has heretofore been used for dyeing a single web of material.

Another object of the invention is the provision of a dye jig in which the beams of web material to be dyed may be either driven directly thru the axis of the beam on which they are mounted or may be driven by a surface drive from a drive roll.

A further object of the invention is a simple arrangement of driving gears for the positive and simultaneous operation of the beams and the easy control thereof.

A still further object of the invention is a method by which a plurality of webs may be passed thru a bath of dyeing liquor reeled on the same roll and then reversed to again return to their individual rolls by again passing thru the same bath of dye liquor.

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 claim.

In the accompanying drawings:

Fig. 1 is a side elevation of a dye jig.

Fig. 2 is an end view thereof, showing the beams in position thereon.

Fig. 3 is a diagrammatic view illustrating the travel of the webs thru the machine.

Fig. 4 is a sectional view thru the driving gears and clutches for the operation of the jig.

Fig. 5 is a sectional view showing the back gears on line 5—5 of Fig. 4.

In the operation of dye jigs, it is usual to pass a single web of material from a beam on one side of the jig thru a tub of dye liquor and then reel it upon a beam at the other side of the jig, the drives being reversed to return the web to the first beam by passing it again thru the tub of dye liquor on its return, the web being passed back and forth between these beams until sufficiently dyed. Several jigs are usually utilized in the dye room for each job and after the material has been dyed the dye liquor must be thrown away or disposed of and in order to reduce the number of jigs necessary and consequently the dye liquor and the labor necessary in operating these jigs, I have arranged to place one full beam of web material at each side of the machine and draw the web from both beams simultaneously to reel it upon a receiving beam which is added to the dye jig and thus reel two of the webs together upon a single beam and then by reversing the drive pass the material back thru the dye liquor to the separate beams from which it started. By this arrangement, I may work a plurality of webs of material by simply adding a third beam and drive therefor to the jig; and the following is a more 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 tub for containing the dye liquor, which may be made of any suitable material, such as is common in the trade for containing dye liquors of various characters. Upon one side of this tub I have mounted a drive roll 11 and on the other side a drive roll 12, which rolls contact respectively, with the beams of web material 13 and 14 to suitably rotate the same for the reeling of web material thereon by driving the same thru surface contact.

Each of the beams 13 and 14 has its axis 15 or 16 suitably mounted in slots 17 or 18 of the guides 19 or 20, whereby they may be moved upwardly or downwardly maintaining their surface contact with the drive rolls 11 and 12. These axes 15 and 16 are inserted in the top of the guides 19 and 20 and there held by swinging the retaining members 21 and 22 which are suitably pivoted at 23 and 24 over the top of the guides 19 and 20 to prevent the beam from jumping out of place should unusual action occur.

Between the drive rolls 11 and 12 and above the same a distance sufficient to provide clearance for the beam of cloth to be driven, I have provided a drive roll 25 which is in surface contact with a beam 26 of webs of material, which beam has an axle 27 suitably mounted in a slot in the guide standard 29 with a closure member 30 pivoted as at 31 and similar to the guide and closure for the beams 13 and 14, just described.

There are also located in the tank 10 guide rolls 32 to 35 inclusive, as well as a common guide roll 36 so that a web of material 37, see Fig. 3, on the beam 13 may be drawn over the drive roll 11 back of the guide roll 32 beneath the guide roll 34 and over the guide roll 36 to be reeled upon the beam 26 by the drive-roll 25, while at the same time a web of material 38

on beam 14 will be drawn over its drive roll 12 beneath guide roll 35 and over guide 36 and be at the same time reeled upon the beam 26 by the frictional drive roll 25. Thus I draw webs of material from two beams simultaneously, reeling them upon beam 26, the webs of material being drawn thru the dye liquor in its passage. After the webs of material have been assembled upon the beam 26, the drive is discontinued for this beam and individual drives for drive rolls 11 and 12 are operated to return the webs of material to their individual rolls again thru the dye liquor.

In order to suitably drive these rolls, I have provided a set of gears 40, 41, 42, 43, the gear 40 being driven thru a suitable clutch 44 on the drive shaft 45 actuated by belt pulley 46 or any other suitable source of power, such as an electric motor. This gear 40 in turn drives the gears 41 and 43, which in turn drive the gear 42 so that all of these four gears rotate in unison.

The clutch which is connected to each of these gears consists of a friction plate 47 against which a disk 48 may be moved by means of a collar 49 and toggle levers 50 and 51 which are connected to the collar 52 operated by suitable levers connected thereto.

The clutch 44 on gear 40 is operated by a lever 53 on the rock shaft 54 operated by a handle 55 or 56. The clutches 57 and 58 on the gears 42 and 43 are operated thru levers 59 and 60, both located on the rock shaft 61 operated by a handle 62 or 63. The levers 59 extend to provide arms 65 on the opposite side of the rock shaft 61, which arms 65 engage a collar, such as 52, to operate the clutch 66 connected to the gear 41 so that as the rock shaft throws the clutch 66 into engagement with its gears it throws out of engagement the clutches 57 and 58 connected to gears 42 and 43, or vice versa.

When the clutch 66 is in engagement with the gear 41, it serves to drive the gear 67 thru drive shaft 68 while when the clutches 57 and 58 are in engagement they serve to drive sprocket gears 69 and 70 thru shafts 71 and 72. These sprocket gears are connected to operate the drive rolls. Thus, sprocket gear 67 is connected to the sprocket gear 73 thru chain 74, this gear 73 being on the shaft of the drive roll 25 to operate it; while the sprocket gear 69 is connected to the sprocket gear 75 thru chain 76, which sprocket gear is on the shaft of the drive roll 11 to operate it; and sprocket gear 70 is connected to the sprocket gear 77 thru the chain 78 which sprocket gear is on the drive roll 12 to operate it.

A suitable casing 80 is provided about the gears 40, 41, 42, 43 to enclose them while the supporting shafts for the gears have bearings in this casing such as in the ball bearings 81 suitably mounted in an extension from the casing and providing pockets for the ball bearings which may be suitably lubricated.

By this arrangement, the beams may be surface driven so that the receiving beam 26 may reel up the webs from each of the other beams and then thru suitable controls the webs may be returned to their beams each time thru the liquor. In some instances, it may be desirable to reel the web of material directly upon the drive rolls 11, 12 or 25, which may be easily accomplished, in which case, of course, separate beams may be done away with but the drive will remain otherwise substantially the same.

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

I claim:

A dye jig comprising a tub for the dye liquor bath, means for mounting a plurality of beams of material to be dyed adjacent the bath, means for mounting a receiving beam adjacent said bath, guides in said tub below the surface of the dye liquor bath for guiding the webs of material from the plurality of beams below the surface of the liquor bath and thence to the receiving beam, means for driving the receiving beam to simultaneously draw the webs of material from the plurality of beams thereto, and means to drive the plurality of beams at synchronous speeds to return the web material to them from the receiving beam.

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