

(No Model.)

2 Sheets—Sheet 1.

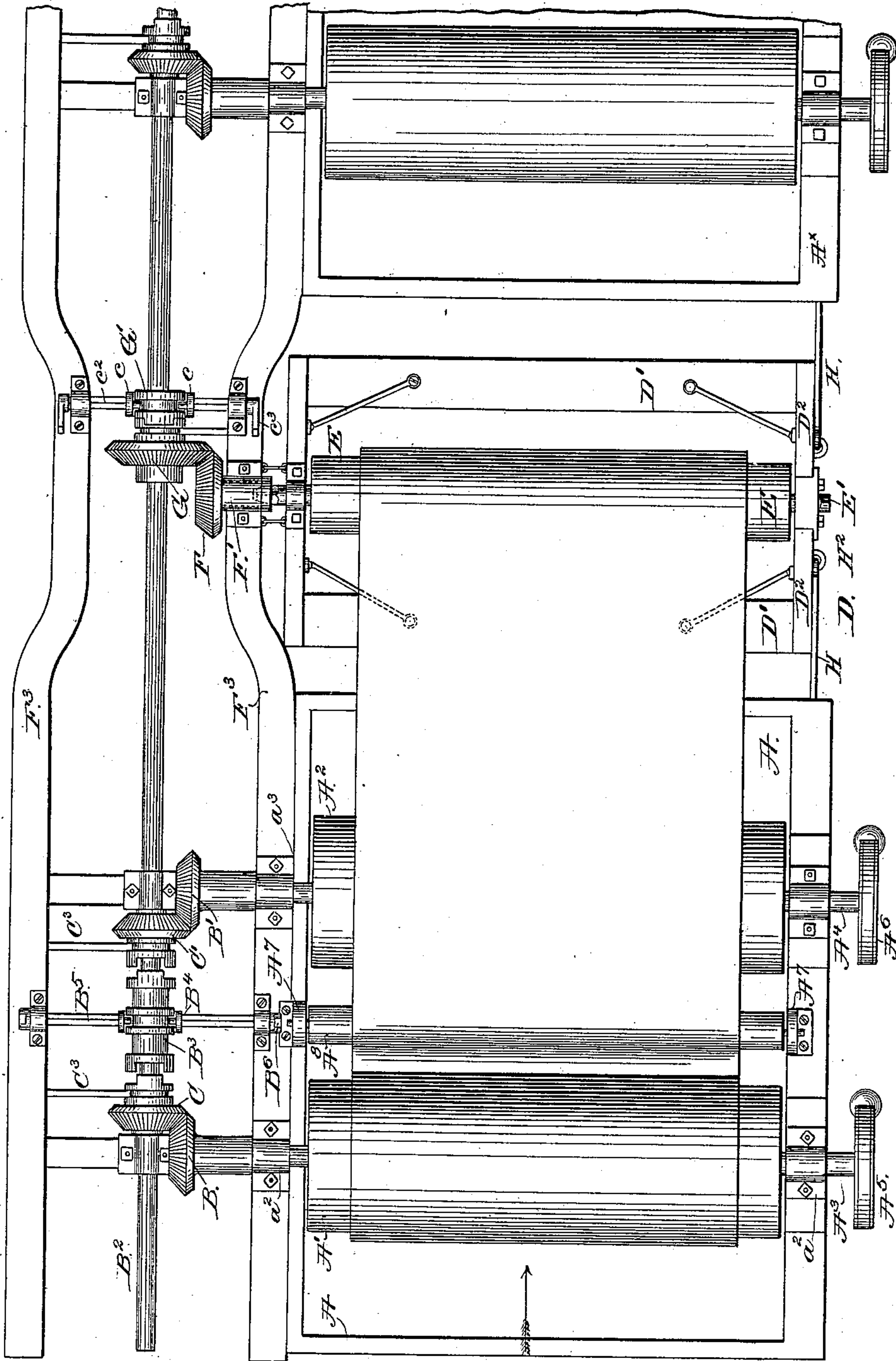
W. H. RANKIN.

ATTACHMENT FOR DYE VATS.

No. 333,157.

Patented Dec. 29, 1885.

Fig. 1.



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(No Model.)

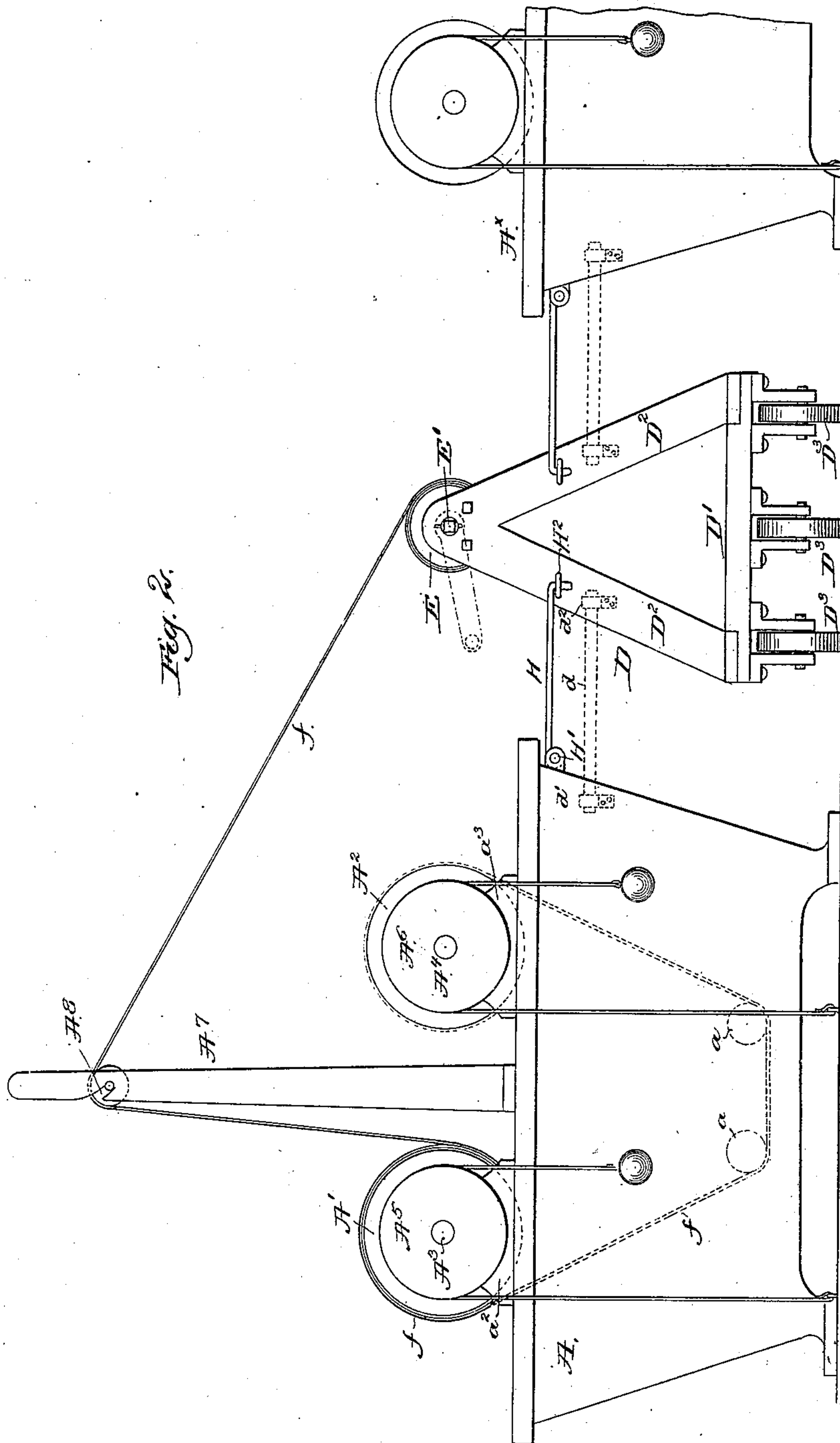
2 Sheets—Sheet 2.

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ATTACHMENT FOR DYE VATS.

No. 333,157.

Patented Dec. 29, 1885.



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UNITED STATES PATENT OFFICE.

WILLIAM H. RANKIN, OF LAWRENCE, MASSACHUSETTS.

ATTACHMENT FOR DYE-VATS.

SPECIFICATION forming part of Letters Patent No. 333,157, dated December 29, 1885.

Application filed July 6, 1885. Serial No. 170,727. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. RANKIN, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Mechanism for Handling Fabric while being Dyed or Mordanted, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Woven goods or fabrics to be dyed or mordanted are passed through dyeing or mordanting mixtures in a vat of a machine called a "jigger," and during such operation the fabric is wound from one upon another roller and back again until sufficiently treated by the mixture, and thereafter the fabric is pulled off from the roller last to receive it, and is deposited in a box, or is taken from the roller by a machine called a "padder," it acting to fold the goods.

While the fabric is first being run into the vat and wound upon one of the rollers, as well as when the fabric is being finally removed from one of the rolls into the padding-machine, it is necessary, in order to prevent accident to the fabric, that an operator guide the fabric by hand.

In accordance with my invention the fabric, to enable it to be more uniformly subjected to the dye mixture or mordant, is taken from a roller or beam mounted upon a horse provided with wheels, the said horse being run into position next one end and locked in place at the end of the vat of the jigger, and from the roller of the horse the fabric is led into the liquid or mixture and wound upon one of the rollers of the jigger, and thereafter the fabric is rewound upon a second roller of the jigger, the rewinding from one to the other roller of the jigger continuing as many times as may be deemed necessary, that depending somewhat upon the dye or mordant being used, and finally the fabric is taken from the last roller of the jigger to receive it and wound upon the roller of the horse, the latter being secured to the end of the vat, and at the same time, if desired, a second piece of fabric may be introduced into the vat and its liquid and be applied to the then empty roller of the jigger, the said fabric being supplied from a roller on a second horse. The horse employed to hold

the roller to receive the fabric from the jigger is locked in train with the jigger, and one end of the shaft of the roll on the horse is engaged with a gear, which is rotated by a second gear then temporarily clutched to the shaft, which drives the jigger-roller, the said shaft opposite each jigger-roller having upon it a bevel-gear, which may be either clutched to the said shaft, so as to be rotated in unison with it, and thus rotate one or the other of the jigger-rolls, or be left loose on the said shaft to permit the jigger-roll in operative connection within it to be rotated only by the pull of the cloth.

My invention consists, essentially, in a vat, and two rollers having gears on their shafts, and a horse having a roller, the shaft of which is provided with a gear and locking devices to retain the horse and vat rigidly in position with relation to each other, combined with a shaft provided with gears, and with clutches to rotate the said gears in unison with the said shaft or to permit them to remain at rest, the gears on the said shaft, when rotated by the said clutches, driving the rolls, substantially as will be described.

Figure 1 in plan view represents a jigger and horse and means for operating the several rollers thereof in accordance with my invention, the fabric being shown by full lines as being removed to the horse; and Fig. 2 is a right-hand elevation of only one side of the machine, looking at it in the direction of the arrow thereon.

The vat A, the bottom rolls, *a a*, therein, to keep the fabric immersed in the mordant or other dye liquid or mixture, the cloth rolls *A'* *A''*, their shafts *A³A⁴*, mounted in usual bearings on usual stands, *a²a³*, and having friction-pulleys *A⁵A⁶*, the uprights *A⁷*, the carrier-roller *A⁸*, the bevel-gears *B B'*, respectively, on the shafts *A³A⁴*, the main rotating shaft *B²*, the double-ended clutch-hub *B³*, splined on the said shaft and made longitudinally movable thereon by the shipper-fork *B⁴* on a rock-shaft, *B⁵*, operated by a handle, *B⁶*, and the two bevel-gears *C C'*, loose on the said shaft *B²*, but restrained from longitudinal movement on the said shaft by fingers *C³*, or it may be in other usual or equivalent manner, are all substantially as usual, and not herein claimed.

The double-ended clutch-hub is never in en-

gagement with both the gears C C' at the same time, and consequently when one or the other of the rolls A or A² is being rotated positively the other is left free to be rotated only by the pull of the fabric f, as it is being drawn therefrom by the positively-rotated roller.

The devices so far described constitute what is called a "jigger." At the end of the vat of the jigger I have placed a horse, D, it consisting, as herein shown, of a base, D', up-
rights D², and wheels D³, the horse at its top containing bearings for the reception of the roller E on a shaft, E', one end of the said shaft (see Fig. 1) being of irregular shape, and preferably tapering, so as to enter a correspondingly-shaped socket in the hub of a bevel-gear, F, having its bearing F' on or part of the frame F³, projected beyond the vat, and in case two vats are used in the same series connecting the two vats together, the latter plan being shown in the accompanying drawings. The bevel-gear F is engaged by a bevel-gear, G, mounted loosely on the shaft B², but provided at the end of its hub with clutch-teeth to be engaged by the teeth of a clutching-hub, G', splined upon the shaft B², and provided with an annular groove, which is entered by pins of a forked arm, c, of a rock-shaft, c², having a hand-lever, c³, by which to move the said hub longitudinally on the said shaft, to engage the gear G and rotate it with the said shaft to turn the gear F and the roller E when desired, or to withdraw the clutch-hub G' from engagement therewith when it is desired to leave the roller E³ to be turned in its bearings—as, for instance, when the fabric on the said roller is to be taken therefrom and wound upon a roller in a second vat, A^x, or into the vat A, the drawings showing only a part of the said second vat.

When fabric is being wound from one to the other of the rolls A' A², it passes under the vat-rolls a a, as shown by dotted lines; but the fabric having been sufficiently treated, the same being, it is supposed, as herein shown, wound upon the roller A', is led up over the carrier-roll A⁸ and the end of the fabric is joined to the roller E of the horse D, the gear C being unclutched and running loose on the shaft B². The horse D, to enable it to be used in train, as shown and described, has to be locked in place, and as a means for such purpose I have provided hooks H, pivoted at H' on the

vat-frame, and engaging eyes H² on the horse, but instead of the said locking devices I might use any other equivalent means, such, for instance, as a bar, d, engaging hooks d' d², as shown by dotted lines. This horse is removably held at the end of the vat, so that the roll of fabric thereon may be readily and quickly rolled to any other part of the mill to be placed in operative connection with any other usual machinery—as, for instance, a cloth washing or a drying machine—the employment of the horse, as stated, saving very considerable time and labor.

I have shown part of a second vat, A^x, into which the fabric may be taken from the roller E, the said second vat containing a different liquid or mixture and being provided with rollers such as described with relation to vat A, the said rollers having like actuating devices to rotate them.

I have shown mechanism for automatically rotating the roller E; but the employment of the horse would be an improvement over ordinary methods of handling fabric at the jigger, even were the roller rotated by a hand-crank, as represented by dotted lines, Fig. 2.

I claim—

1. The jigger, its shaft B², and a gear, G, and clutch-hub G' thereon, and a shipper to move the said clutch-hub, combined with a horse and an adjustable locking device to connect it with the jigger, and a roller, E, and gear F, driven by the gear G, the hub of the gear F being connected with the end of the shaft of the roller of the horse, substantially as described.

2. The rollers A' A² of the jigger and the detachable horse provided with a roller, E, combined with the rotating shaft B² and with gearing, substantially as described, for positively rotating the roller E in unison with one of the rollers of the jigger, whereby the cloth may be moved at will from either of the said rollers to the other, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. RANKIN.

Witnesses:

G. W. GREGORY,
W. H. SIGSTON.