

No. 659,721.

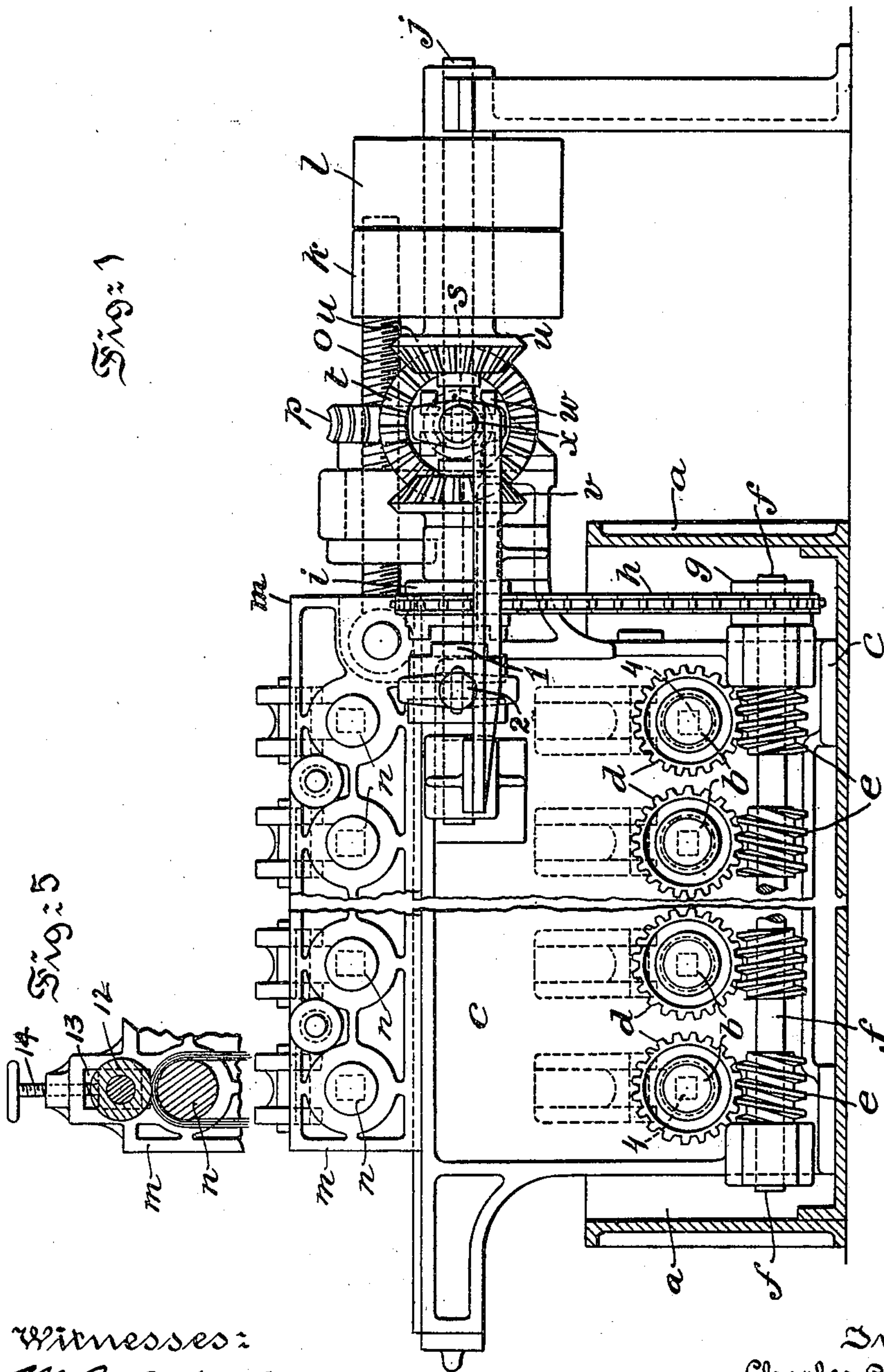
Patented Oct. 16, 1900.

C. L. WEICHEL.
MERCERIZING MACHINE.

(Application filed Jan. 3, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
W. A. Schaefer.
Craig Shure

Inventor:
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By his attorney Chas A. Patton

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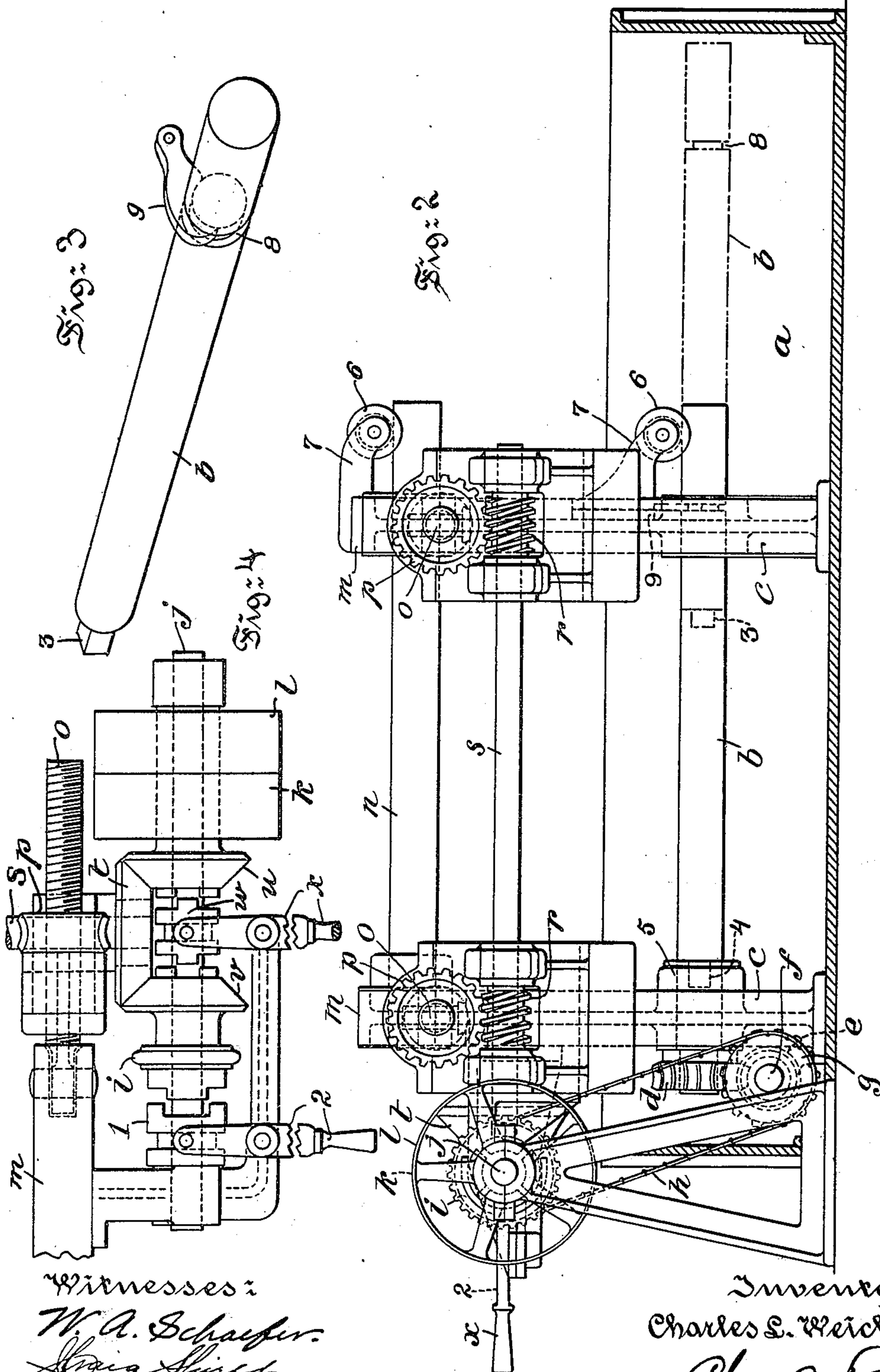
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UNITED STATES PATENT OFFICE.

CHARLES L. WEICHELT, OF PHILADELPHIA, PENNSYLVANIA.

MERCERIZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,721, dated October 16, 1900.

Application filed January 3, 1900. Serial No. 225. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. WEICHELT, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Mercerizing-Machines, of which the following is a specification.

My invention relates to improvements in machines for mercerizing yarn or for dyeing yarn; and the object of my invention is to furnish a machine for these purposes which will be simple, inexpensive, and efficient and in which the means for stretching the yarn to prevent shrinkage will be at all times under perfect control.

My invention consists of a box or tank for containing the mercerizing or dyeing liquid, in which is placed one or more rollers, preferably a series of rollers, which are lubricated by the solution and which pass through one end of the hanks of yarn, and of a traveling frame carrying a roller or series of rollers corresponding in number to the number of rollers in the box or tank. Suitable means are employed for driving the rollers in the box or tank and for moving the traveling frame, as hereinafter fully described.

In the accompanying drawings, forming part of this specification, and in which similar characters of reference indicate similar parts throughout the several views, Figure 1 is an end elevation of part of my mercerizing or dyeing machine, the liquid tank or box being shown in section; Fig. 2, a front elevation of the machine, the liquid tank or box being shown in section; Fig. 3, a perspective view of one of the rollers and the latch for normally holding the same in place in the frame; Fig. 4, a plan of the clutch mechanism for controlling the driving of the rollers and traveling carriage; Fig. 5, a transverse section through upper yarn-carrying rollers and press-rollers, showing means for carrying and for operating the same.

a is a tank or box adapted to contain a mercerizing or dyeing solution, and *b* rollers free to turn in frames *c*. The rollers *b* are wholly or partially submerged in the solution held by tank or box *a*, which solution, in addition to its action upon the yarn, lubricates the bearings of the rollers.

d shows worm-wheels driving the rollers *b*, and *e* worms carried upon a shaft *f*, gearing into and driving wheels *d*.

g is a sprocket-wheel fast upon shaft *f*, and *h* a chain belt passing around this sprocket and around a sprocket carried upon a shaft *j*, which carries fast and loose pulleys *k l*, which are driven by a belt (not shown) which receives its motion from any suitable source of power.

Upon the top of the frames *c* are frames *m*, which carry rollers *n*, corresponding in number to the rollers *b*. The hanks of yarn to be operated upon are carried by the rollers *b n*. The revolution of the rollers *b* by the mechanism described carries the yarn down into the liquid and up over the rollers *n*, this operation continuing until the yarn has been thoroughly saturated. In order to prevent shrinkage of the material, the frames *m* may be moved along the top of the frames *c*, thus increasing the distance between each pair of rollers *b n* and stretching the yarn.

The means for moving the frames *m* consist of a threaded shaft *o*, carried by and projecting out from the forward ends of frames *m*; of worm-wheels *p*, centrally furnished with a threaded hole engaging the threaded shafts *o*; of worms *r*, engaging the worm-wheels *p* and carried upon a shaft *s*, which is furnished with a bevel-gear *t*, which is in engagement with bevel-gears *u v*, loose upon shaft *j*, and of a clutch *w*, fast upon shaft *j*, which can be moved by a lever *x* into engagement with either of the bevel-gears *u v*. When the clutch is in engagement with the bevel-gear *u*, it locks this gear to the shaft *j*, and this bevel now drives bevel *t*, which, through shaft *s*, worms *r*, worm-wheels *p*, and threaded shaft *o*, drives the frames *m* inward. If the clutch be thrown out of engagement with the bevel *u*, the driving of the frames *m* ceases. If it be thrown into engagement with the bevel *v*, the driving is reversed and the frames *m* moved outward. The sprocket *i* is loose upon shaft *j*, but can be coupled to this shaft by a clutch 1, operated by a lever 2 in the usual manner. By this clutch the driving of the shafts *b* can be stopped, while the driving of the frames continues. In order to prevent the strain upon the shaft *f*, which would be caused by having all the worms *e* right or left

handed, I make one worm right-handed and the next one left-handed, and so on. Therefore the worms operate against one another and there is no appreciable longitudinal thrust given to shaft *f*.

In order to place the hanks of yarn upon the rollers *b n*, I have constructed them so that they may be drawn away from the heads carrying the worm-wheels *d* or, in the case of the upper rollers, from the bearings in the frames *m*. For this purpose the ends of the lower rollers are furnished with squared tenons 3, adapted to enter corresponding sockets 4 in the heads 5, as shown by dotted lines. The rollers are adapted to be drawn through the bearings in the opposite frames, which carry brackets 7, which are furnished with rollers 6, which bear against the top sides of the rollers *b n* and prevent their inner ends from falling when withdrawn from the heads 5 or from the opposite frame *m* in the case of the upper rollers.

8 are grooves upon the outer ends of the rollers *b n*, which are adapted to be engaged by latches 9, pivotally carried by frames *c m*, in order to hold these rollers in engagement with the heads 5 or frames *m*.

In Fig. 5 an arrangement for wringing the mercerizing solution from the hanks of yarn is shown. This consists of a roller 12, which can be moved so as to press the wet yarn against either the rollers *b* or *n*. In the drawings the press-roll is shown arranged to operate in connection with the upper roll *n*. It is in this case journaled in bearings which can be moved vertically in a slot 13, formed in the frame *m* or in a projection from this frame, screws 14, one at each end of the roller, being used to adjust this roll as desired.

In operating this device the mercerizing solution is pumped or drawn from tank *a* and the rollers 12 operated so that they will press the yarn against rollers *n*, thus squeezing the solution out of the yarn and saving it for future operations. In addition to the saving of the solution the pressing of the yarn while wet imparts to it an additional luster, thus increasing its commercial value.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a mercerizing or dyeing machine, in combination, a tank adapted to contain a mercerizing or dyeing solution, rollers in said tank, frames in which said rollers are journaled, means for revolving said rollers, frames carried by and free to travel laterally on said first frames, rollers carried by said second frames, and means whereby said second frames may be moved to and fro on said first frames.

2. In a mercerizing or dyeing machine, in combination, a tank adapted to contain the fluid, rollers immersed in said fluid, frames in which said rollers are journaled, frames laterally movable on said first frames, rollers journaled in said second frames, threaded shafts secured to said second frames, threaded worm-wheels carried by said shafts, worms gearing with said wheels, a shaft upon which said worms are carried, and means whereby said shaft may be driven in either direction.

3. In a mercerizing machine, in combination, a tank adapted to contain a mercerizing liquid, rollers immersed in said liquid, frames in which said rollers are journaled, frames laterally movable on said first frames, rollers journaled in said second frames, means whereby said second frames may be moved on said first frames, worm-wheels carried by said first rollers, worms gearing with said wheels, a shaft upon which said worms are carried, and means for revolving said shaft.

4. In a mercerizing machine, in combination, a tank adapted to contain a mercerizing liquid, rollers immersed in said liquid, means for revolving said rollers, frames in which said rollers are journaled, frames carried by said first frames, and means for moving said second frames in a direction at right angles to the axes of said rollers.

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