

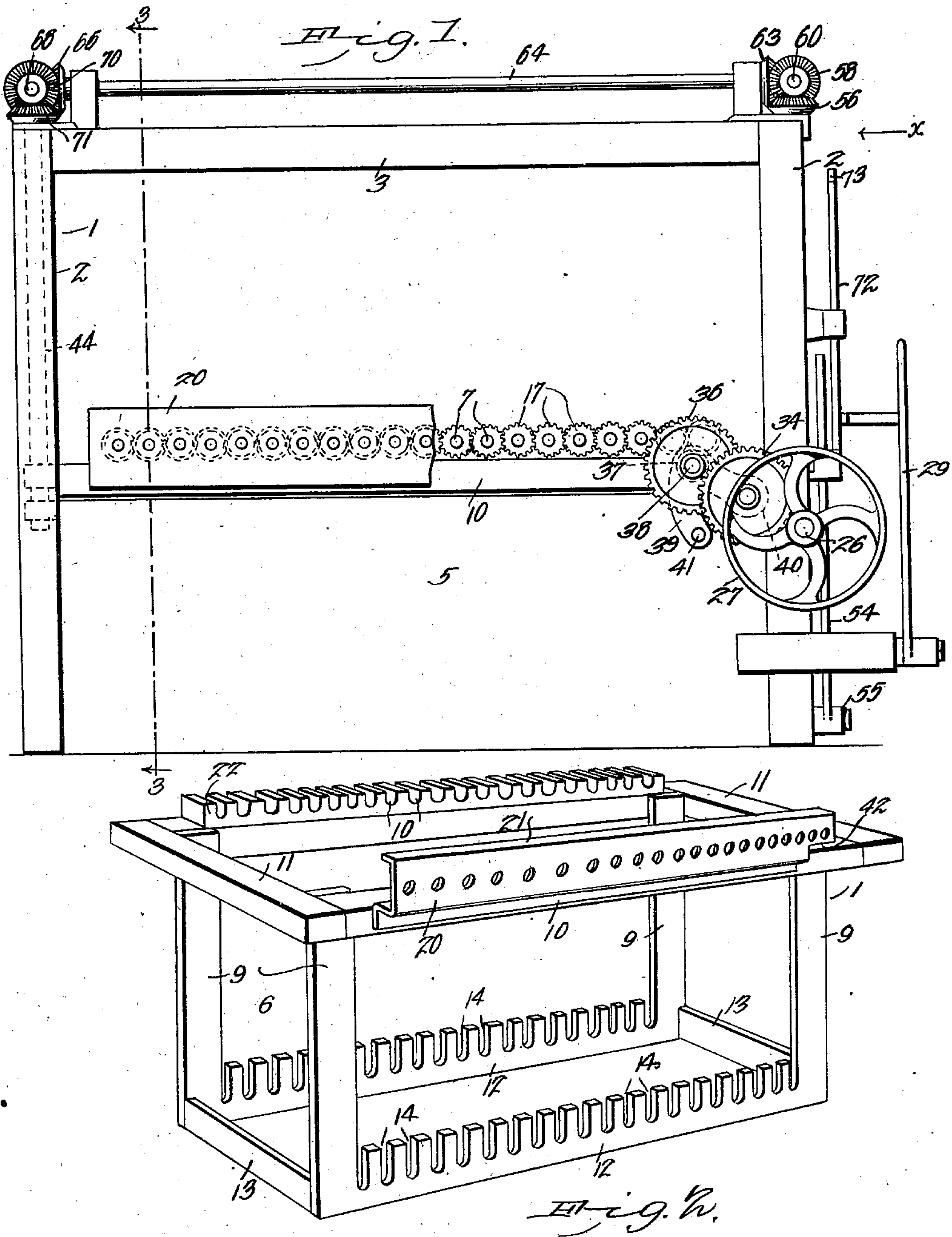
No. 724,562.

PATENTED APR. 7, 1903.

J. W. FINEGAN.  
MACHINE FOR SCOURING AND DYEING SKEINS.  
APPLICATION FILED SEPT. 12, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
*C. E. Stewart*  
*R. M. Elliott*

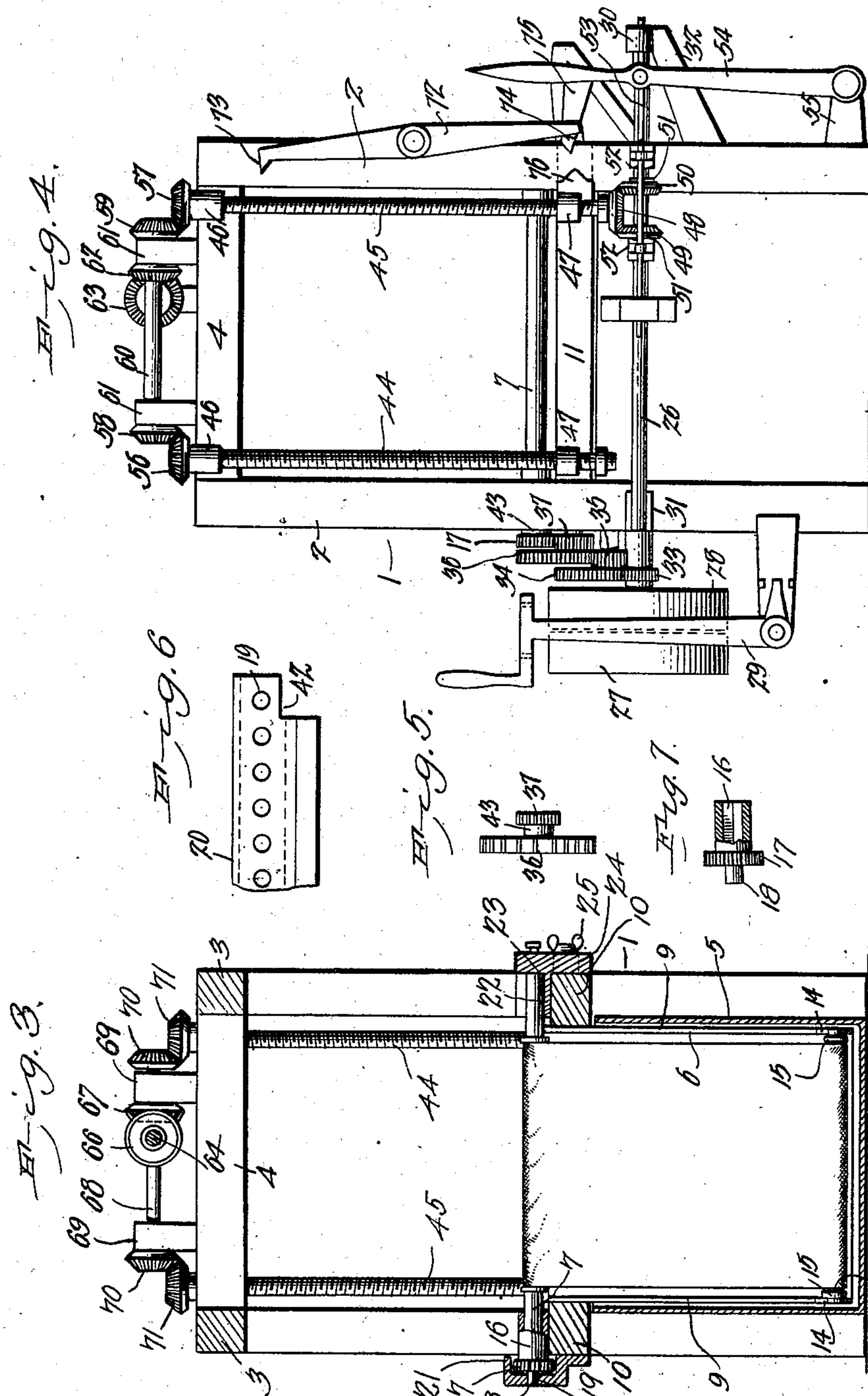
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# UNITED STATES PATENT OFFICE.

JOHN WILLIAM FINEGAN, OF LOWELL, MASSACHUSETTS.

## MACHINE FOR SCOURING AND DYEING SKEINS.

SPECIFICATION forming part of Letters Patent No. 724,562, dated April 7, 1903.

Application filed September 12, 1902. Serial No. 123,168. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WILLIAM FINEGAN, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Machine for Scouring and Dyeing Skein-Yarns, of which the following is a specification.

This invention relates to machines for scouring and dyeing skein-yarn.

The object of the invention is in a ready, simple, thoroughly efficient, and practical manner, and with the output of the minimum of labor, to effect scouring and dyeing of skein-yarn.

With these and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a machine for scouring and dyeing skein-yarns, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like numerals of reference indicate corresponding parts, there is illustrated one form of embodiment of the invention capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof, and in these drawings—

Figure 1 is a view in side elevation of a machine constructed in accordance with the present invention, a part of the framework being broken away to expose certain parts to view. Fig. 2 is a perspective detail view of the skein-roller-supporting frame. Fig. 3 is a view in vertical transverse section, taken on the line 3-3, Fig. 1, and looking in the direction of the arrow thereon. Fig. 4 is a view in end elevation, taken from the right-hand side of Fig. 1 and looking in the direction of the arrow *x*. Fig. 5 is a detail view of one of the driving-gears for actuating the skein-rollers. Fig. 6 is a fragmentary detail view of a portion of one of the roller-bearings. Fig. 7 is a detail view of one of the gears, having an outer pintle and an inner polygonal socket.

Referring to the drawings, 1 designates

generally the supporting-frame of the device, comprising vertical end standards 2 and horizontal side and end braces 3 and 4, the frame as a whole being by preference rectangular in shape and constructed of any suitable material. In the lower portion of the frame is located a tank 5 for containing a suitable detergent or a dyeing liquid, according as scouring or dyeing is to be effected. Arranged within the tank is a frame 6, supporting the skein-rollers 7 and 8. The frame comprises four vertical standards 9, to the upper ends of which are secured side and end frame-pieces 10 and 11, respectively, and to the lower ends side and end frame-pieces 12 and 13, respectively. The side pieces 12 are formed with bearings 14 to receive the ends of the lower skein-rollers 8, which latter, as well as the upper skein-roller 7, has near each end flanges 15 to prevent the yarn from spreading upon the rollers. The parts 9, 12, and 13 are to be made of some non-corrosive material, such as galvanized iron, in order to prevent damage to the yarn being scoured or dyed, as from rust.

The skein-roller-supporting frame 8 has its frame-pieces 10 provided with suitable bearings for the upper skein-rollers 7, or, rather, on one piece with guides for the skein-rollers and on the other piece with similar guides for sockets 16, carried by gears 17, which impart rotary motion to the series of rollers 7. Of these gears and sockets there may be any desired number, and, as will be seen by Fig. 1, the series of gears intermesh, thereby transmitting motion from one to the other in the usual manner.

The opening in the socket for receiving the terminal of a skein-roller 7 is squared, as is also the said terminal, thereby to insure positive rotation of the rollers. Each socket is provided with a pintle 18, adapted to work in bearings 19, formed in a gear-cover 20, secured to the frame-piece 10, the upper edge of the gear-cover being provided with an in-turned flange 21, which serves to cover the gears, and thus to prevent entanglement thereof with of the yarn.

The bearing-plate 22 for the circular ends of the skein-rollers 7 is rigidly secured to the top of the cross-piece 10 opposite that supporting the gear-cover 20 and is provided with



bearings similar to those shown in the frame-piece 12. To the outer side of the bearing-plate 22 a stop-plate 23 is secured, adapted to bear against the ends of the rollers 7, thus to hold the squared ends thereof in engagement with the sockets 16, the said plate 23 being provided with slots, one being indicated by dotted lines at 24 in Fig. 3, through which pass bolts carrying thumb-screws 25 to effect clamping of the plate in position, the slots being provided to permit the plate to drop when it is desired to withdraw the rollers 7 from engagement with the sockets 16. The bottom series of rollers is by preference circular in cross-section and the upper series prismatic, and the rollers are to be made of a suitable non-corrosive material, preferably metal, the lower rollers to be of sufficient weight to keep the skeins of yarn under the requisite tension.

The means for actuating the train of gears 17 comprises a positively-driven shaft 26, (clearly shown in Fig. 4,) that carries at one end a loose pulley 27 and a tight pulley 28, there being a suitable belt-shifter 29 provided for shifting the belt (not shown) from one pulley to another. The shaft is mounted in bearings 30 and 31, respectively, the bearing 30 being associated with a bracket 32, extending from the side of the frame, and the bearing 31 being secured to one of the vertical frame-pieces. The shaft carries a pinion 33, which meshes with a gear 34, carrying a pinion 35, which latter meshes with a gear 36, carrying a pinion 37, the latter meshing with the first of the series of gears 17. The gear 26 is mounted upon a stub-shaft 38, carried by a rock-lever 39, one end of which is journaled on the shaft of the gear 34 at 40 and the other end being provided with an opening to receive a pin 41, by means of which to secure the lever in position to hold the pinion 37 and gear 17 in mesh; but should it be desired to throw the said gear and pinion out of mesh it will only be necessary to remove the pin 41, when the gear 26 will drop. In order to permit the gear-cover 20 to be extended beyond the gear 36 and pin 37, thus to afford bearing of the spindle of the last of the gears 17, the said gear and pinion are separated, as shown in Fig. 5, and the end of the gear-cover is notched or recessed at 42 to straddle the sleeve 43, connecting the said parts.

In the operation of the device vertical reciprocatory movement is imparted to the skein-roller-supporting frame 6 in order to cause immersion of the yarn in the detergent or dyeing liquor or its removal therefrom. To effect this movement, at each end of the supporting-frame 1 there are provided two vertical screws 44 and 45, the screws 44 being right-hand threaded and the screws 45 left-hand threaded. The upper end of each of these screws is mounted in a bearing 46, secured to one of the end braces 4, and the lower ends work in nuts 47, rigidly secured to the

end cross-pieces 11 of the skein-roller-supporting frame. One of the screws 45 carries at its lower end a beveled pinion 48, which is in constant mesh with two similar pinions 49 and 50, loose on the drive-shaft 26, the pinion 49 operating to rotate the screws in a direction to cause lifting of the skein-roller-supporting frame and the pinion 50 to cause lowering thereof. Each of the pinions 49 and 50 is provided at its outer side with a clutch-face 51 of the usual or any preferred construction and which are adapted to be engaged by similar clutch-faces 52, mounted on the shaft 26, the latter clutch-faces being connected with a rod 53, secured to a reversing lever 54, supported for swinging movement to and from the frame—in this instance from a bracket 55. The upper end of each of the screws 44 and 45 carries a beveled pinion 56 and 57, respectively, which mesh with similar pinions 58 and 59, carried by a shaft 60, working in bearings 61, supported on the top of the frame. The shaft 60 carries on the inner side of one of the bearings a beveled pinion 62, which meshes with a similar pinion 63, carried by one end of a shaft 64, the said shaft being extended to the opposite end of the frame and being provided with a pinion 66 to mesh with a beveled pinion 67, carried by a shaft 68, mounted in bearings 69 on the frame, the said shaft carrying beveled pinions 70, meshing with similar pinions 71, carried by the screws 44 and 45 at the last-named end of the machine. Under the arrangement described it will be seen that when the beveled pinion 49 is in mesh with the pinion 48 motion will be imparted to all of the screws simultaneously through the intermeshed gears described, thereby lifting the skein-roller-supporting frame upward to a predetermined distance, and that when the pinion 50 is shifted into mesh with the pinion 48 the direction of rotation of the screws will be reversed, thereby lowering the skein-roller-supporting frame.

It is desired in practice that when the skein-roller-supporting frame reaches the limit of its upward or downward movement its motion be automatically checked, and to effect this a shifting-lever 72 is provided, which is fulcrumed intermediate of its ends upon one of the vertical uprights of the frame. The upper end of this lever is provided with an inward-projecting angular toe 73, and its lower end engages with the inner side of an angular toe 74, carried by an offset 75, secured to the reversing-lever 54. One of the end cross-pieces is provided with an angular projection 76 to coöperate, respectively, with the toes 73 and 74 to cause shifting of the reversing-lever 54 on the upward and downward movements of the skein-roller-supporting frame and is effected as follows: Upon the gears 48 and 49 being meshed, as described, the skein-roller-supporting frame lifts, and when it reaches a point to bring the upper face of the projection 76 beneath the under face of the toe 73 the upper end of the shifting-lever will be forced



outward, thereby moving the reversing-lever toward the frame and throwing the gears 48 and 49 out of mesh; but this movement is not sufficient to cause meshing of the gears 48 and 50, so that the skein-roller-supporting frame remains stationary. To effect lowering of the said frame, the lever 54 is given a further inward movement, thereby bringing the gears 48 and 50 into mesh, and when the said frame reaches a predetermined point in its lowered position the under face of the projection 76 will engage with the toe 74, thereby throwing the lever 54 outward and unmeshing the gears 48 and 50. The skein-roller-supporting frame will remain in this position until the lever 54 is moved outward a sufficient distance again to bring the gears 48 and 49 into mesh.

In positioning the skeins of yarn within the frame 6 the stop-plate 23 is dropped and the rollers removed and the skeins placed thereon, after which the rollers are first placed in the bearings 22 and then seated in the sockets 16, when the stop-plate is again secured in position to prevent lateral movement of the rollers. The supporting-frame 6 is then raised and the rollers 8 positioned therein. So long as the frame 6 is in its lowered position and the pulley 28 is driven continuous rotary motion will be imparted to the skeins, thereby effecting their even and rapid dyeing or their scouring, as the case may be.

The machine of this invention is exceedingly simple of construction, and will thus not be liable to get out of repair and will in practice be found thoroughly efficient for the purposes designed.

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

1. In a machine of the character specified, the combination with a skein-roller-supporting frame, of skein-roller actuators compris-

ing a plurality of intermeshed gears each provided with an inner polygonal socket and an outer pintle, and a gear-cover associated with the frame and having openings in the side wall thereof adapted to form bearings to receive the pintles.

2. In a machine of the character specified, the combination with a skein-roller-supporting frame, of raising and lowering mechanism therefor comprising a pair of oppositely-threaded screws disposed at each end of the frame, nuts rigidly secured to the frame and through which the said screws project, driving mechanism operatively associated with one of the screws, and means for transmitting motion from the driven screw to the other screws of the series.

3. In a machine of the character specified, the combination with a frame provided with a tank, of a skein-roller-supporting frame, mechanism for moving the frame into and out of the tank, reversing mechanism associated with the supporting-frame, lowering and raising mechanism, and a shifting device actuated on reverse movements of the supporting-frame to shift the reversing mechanism, and thus positively lock the skein-roller-supporting frame against movement.

4. In a machine of the character specified, the combination of a tank, a skein-roller-supporting frame therein, top and bottom skein-supporting rollers, mechanism for driving the top rollers, mechanism for raising and lowering the said frame, reversing mechanism, and an automatically-operating stopping device.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN WILLIAM FINEGAN.

Witnesses:

BERNARD F. GATELY,  
JAMES F. LYONS.