

**No. 666,056.**

**Patented Jan. 15, 1901.**

**C. L. JACKSON & E. W. HUNT.**  
**APPARATUS FOR DYEING, &c.**

(Application filed Oct. 16, 1900.)

(No Model.)

**3 Sheets—Sheet 1.**

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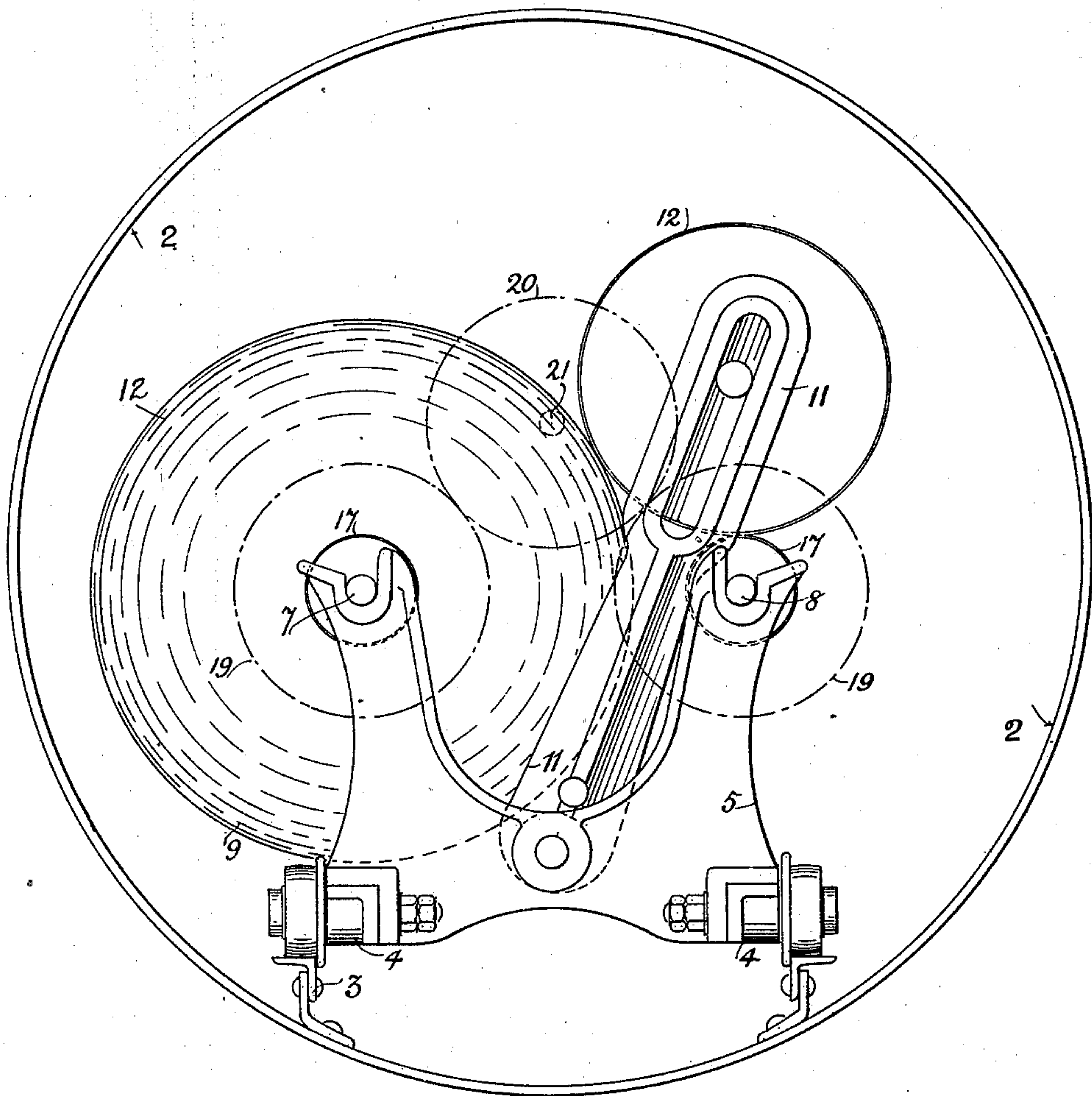
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3 Sheets—Sheet 2.

FIG. 2.



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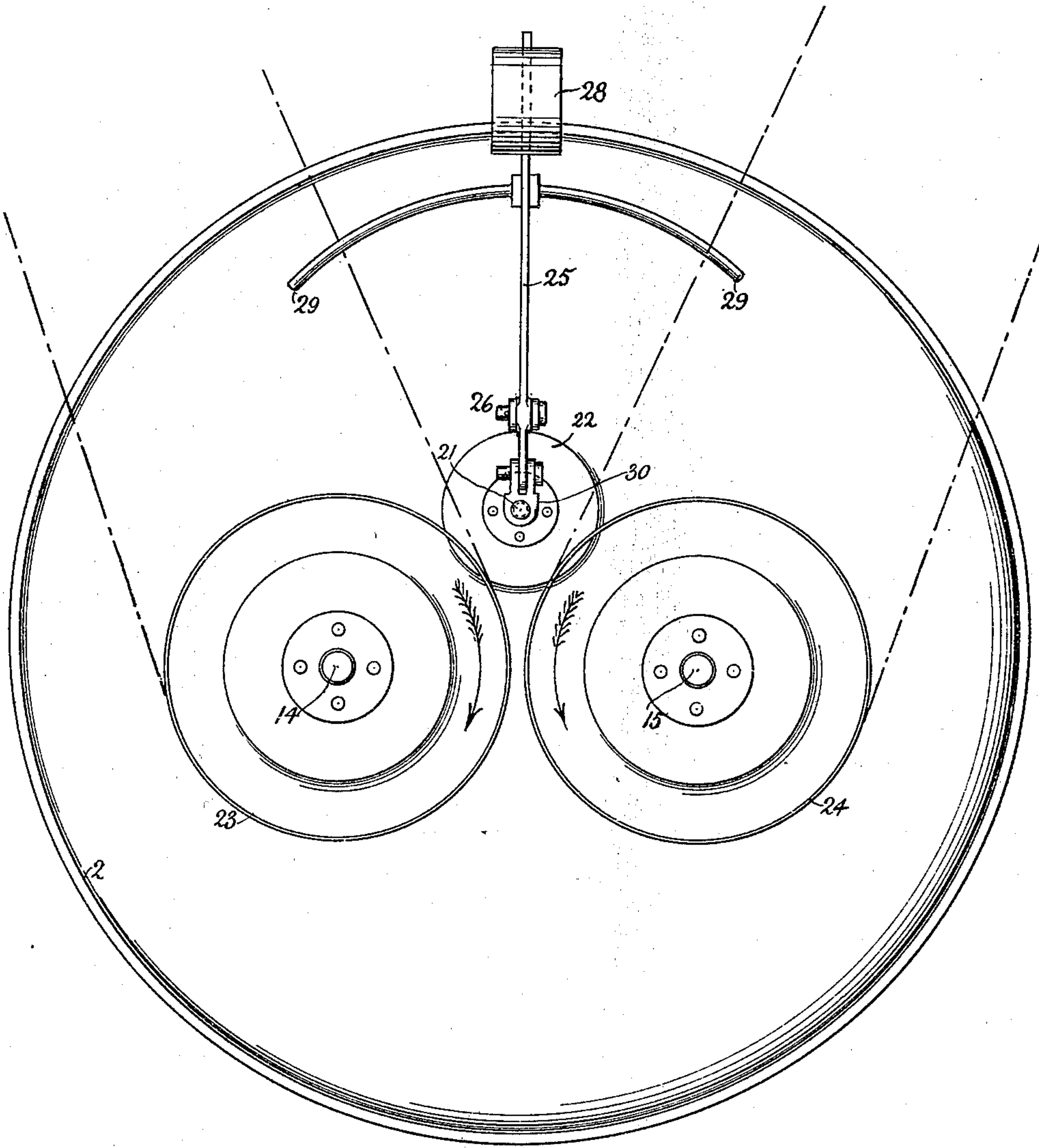
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3 Sheets—Sheet 3.

FIG. 3.



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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR DYEING, &c.

SPECIFICATION forming part of Letters Patent No. 666,056, dated January 15, 1901.

Application filed October 16, 1900. Serial No. 33,274. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES LOXTON JACKSON and EDWARD WILSON HUNT, subjects of the Queen of Great Britain, and residents of Wharf Foundry, Bolton, in the county of Lancaster, England, have invented certain new and useful Improvements in Means for Scouring, Bleaching, Dyeing, Mercerizing, or otherwise Treating Piece Goods in the Open State, of which the following is a specification.

Our invention relates to improvements in the means for scouring, bleaching, dyeing, mercerizing, or otherwise treating piece goods in an open or expanded condition and by a simple and economical process which obviates the creases caused by running fabrics in the rope form and prevents the selvages curling up and creasing, such creases subsequently showing and marking the goods when dyed in light and delicate shades.

In one arrangement for carrying our invention into effect we employ a suitable keir of any convenient size and form and strong enough to resist any required steam-pressure. This keir is provided with a door capable of being hermetically closed and with rails on which wagons of a special form containing the piece goods to be bleached or otherwise treated can be run into and out of the keir. The wagon consists of any convenient carriage, upon which are mounted two end frames, with bearings for two batch-rollers, on one of which when the wagon is out of the keir a full batch of cloth is placed, while an empty batch-roller is placed upon the other bearings. The lower part of the carriage supports a transverse shaft upon the ends of which are pivoted two upright arms, slotted at their upper ends. A large hollow drum, preferably perforated, has its bearings in the slots of the pivoted arms, and this drum lies in contact with the cloth on both batch-rollers while it is being wound from one roller to the other, thus preventing the selvages of the cloth from curling or turning up.

In the accompanying three sheets of drawings, Figure 1 is a side sectional elevation of an apparatus made according to our invention for scouring, bleaching, dyeing, mercerizing, or otherwise treating piece goods in the open state. Fig. 2 is an end view, partly in

section, of Fig. 1, with the end of the keir removed; and Fig. 3 is an end view of the outside of the keir, showing the reversing-motion.

In the drawings, 2 designates the keir, which may be of any convenient size and form and strong enough to resist any required steam-pressure. This keir is provided with a door capable of being hermetically closed and with rails 3, on which wagons 4 of a special form containing the piece-goods to be bleached or otherwise treated can be run into and out of the keir. Upon the wagon 4, near each end, is mounted an end frame 5, with bearings for two batch-rollers 7 8, on one of which—say the roller 7—when the wagon is out of the keir a full batch of cloth is placed and led onto the empty roller 8, placed in the other bearings. The lower part of the carriage supports a shaft 10, upon the ends of which are pivoted two arms 11, slotted at their upper ends. A large hollow drum 12, preferably perforated, has its bearings in the slots of the pivoted arms 11, and this drum lies in contact with the cloth 9 on both batch-rollers 7 and 8. The shafts of the batch-rollers 7 8 are connected at the end of the keir opposite the door by catch or driving plates 13 to similar plates secured upon two shafts 14 15, which pass through stuffing-boxes 16, secured to the keir end. These shafts 14 15 are exactly in line with the shafts of the batch-rollers 7 8, and the ends nearly meet when the wagon is in the keir.

In order to wind the cloth backward and forward automatically from one batch-roller to the other roller, we mount loosely on the shaft 7 8 of each roller and near the catch-plates 13, before mentioned, a friction disk or wheel 17 and secure upon the shaft of the drum 12 a large friction-wheel 18 in line with the disks 17. On the boss of each disk 17 is secured a spur-wheel 19 in gear with a spur-wheel 20, secured upon a shaft 21, which is supported in a stuffing-box 22, bolted to the end of the keir, and remains in its position when the wagon is run out of the keir.

On the end of each shaft 14 15 is mounted a pair of fast and loose pulleys 23 24, driven in opposite directions by two belts. (See Fig. 3.) The mechanism for changing the belts to cause one or the other to drive con-



sists of a balanced weighted strap-fork lever 25, pivoted at 26 to a stud carried by a bracket 27, secured to the end of the keir.

To the upper part of the lever 25 are secured  
5 a weight 28 and two pairs of strap-forks 29, one for each belt. The bottom of the lever 25 is slotted, and a screw-nut 30 is connected to the lever by a bolt 31, and through the threaded portion of this nut 30 is passed the  
10 screwed end of the shaft 21, the rotary movement of which shaft moves the nut 30 sufficiently to bring the bolt 31 against one end of the slot and overbalance the lever 25, which falls to one side and so moves the two  
15 strap-forks 29 and shifts the belts one from the fast pulley to the loose and the other from the loose to the fast pulley, and thus automatically reverses the motion of the batch-rollers 7 and 8.

20 When a loaded wagon has been run into the keir and the door closed, the keir is charged with the scouring, bleaching, dyeing, or other liquor, and the liquor is then heated by means of steam-pipes or their equivalents  
25 until the desired pressure within the keir has been attained.

To the bottom of the keir we may fit a pipe connected to a circulating-pump, which is connected by a second pipe to the top of the  
30 keir, so that the liquor may be circulated. At the top of the keir the liquor falls upon the usual spreader-plate for deflecting and distributing it over the perforated drum and the cloth, or instead of circulating the liquor  
35 by means of a pump or equivalent we may immerse the batches in liquor maintained at a suitable level for the purpose.

The shafts 7 and 8 come opposite and into close contact with the shafts 14 15, the catch-  
40 plate 13 interlocking (see Fig. 2) and the friction-disks 17 and 18 being almost in contact while the spur-wheel 19 is in gear with the spur-wheel 20 on the shaft 21. When motion is given to the fast pulley on the shaft 15, the  
45 batch-roller 8 is driven so as to wind the cloth off the batch 9 on the roller 7, and the drum 12 bearing continually upon the cloth on both rollers prevents the selvages curling up and creasing while the cloth is being wound on  
50 the roller 8. The increasing diameter of the batch on the roller 8 moves the friction-wheel 18 away from the disk 17, and so it gradually approaches a similar friction-disk 17, mounted loosely upon the roller 7, and when the  
55 cloth is almost all unwound from the latter the friction-wheel 18 comes into contact with this disk and gives motion to it and to a spur-wheel 19 in gear with the wheel 20 and so turns the shaft 21, the screw on which, turn-  
60 ing in the nut 30, moves it, and the bolt 31, striking the end of the slot in the lever 25,

overbalances the latter and its weighted end falls and changes the belts one from the fast pulley of 24 to the loose and the other belt to the fast pulley of 23 and so reverses the mo-  
65 tion of the batch-rollers automatically and continuously until the cloth has been sufficiently treated. Then the keir is emptied, the door removed, and the wagon run out ready for another batch of cloth. 70

We may also use the mechanism as described above and means for winding cloth from one batch-roller to another for dyeing, mercerizing, or othersaturating processes and also for winding on and off in the dry state, 75 if desired. Again, instead of employing means for the automatic reversal of the driving mechanism we might effect this by hand and cause an alarm, such as a gong, to be automatically sounded and the bath-roller-driving mechanism stopped when the cloth has  
80 been wound off one batch-roller to the other. The attendant would then reverse a starting-lever and cause the other batch-roller to be driven in the opposite direction. 85

What we claim as our invention, and desire to secure by Letters Patent of the United States, is—

1. In combination, a pair of batch-rollers, a drum mounted so as to be self-adjusting  
90 and thereby lie in constant contact with the cloth on both batch-rollers and means for driving the batch-rollers and winding the cloth off one roller and onto the other roller substantially as herein set forth. 95

2. In combination, a pair of batch-rollers, a drum mounted so as to be self-adjusting and thereby lie in constant contact with the cloth on both batch-rollers, means for driving  
100 the batch-rollers and winding the cloth off one roller and onto the other roller and means for reversing the driving mechanism of the batch-rollers substantially as herein set forth.

3. In combination, a keir or other vessel capable of being closed hermetically, a wagon  
105 arranged to be run into and out of said keir, a pair of batch-rollers carried by the wagon, a drum mounted so as to be self-adjusting and thereby lie in constant contact with the cloth on both batch-rollers, means for driving  
110 the batch-rollers and winding the cloth off one roller and onto the other roller and means for reversing the driving mechanism of the batch-rollers, substantially as herein set forth.

In witness whereof we have hereunto set  
115 our hands in presence of two witnesses.

CHARLES LOXTON JACKSON.  
EDWARD WILSON HUNT.

Witnesses:

H. B. BARLOW,  
S. W. GILLET.