No. 680,131. Patented Aug. 6, 1901.

W. H. CROMPTON & W. HORROCKS.

MERCERIZING APPARATUS.

(Application filed Mar. 27, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

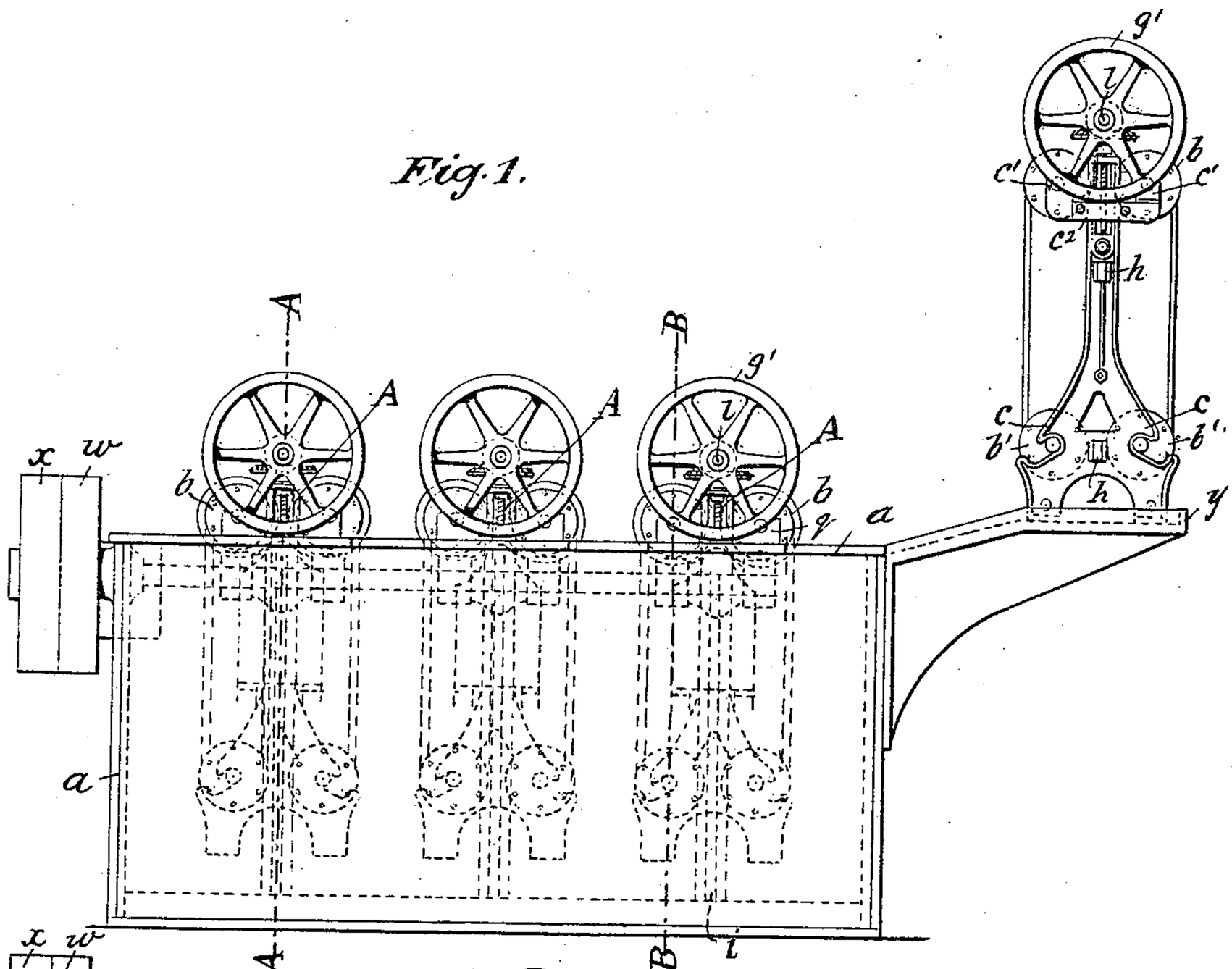
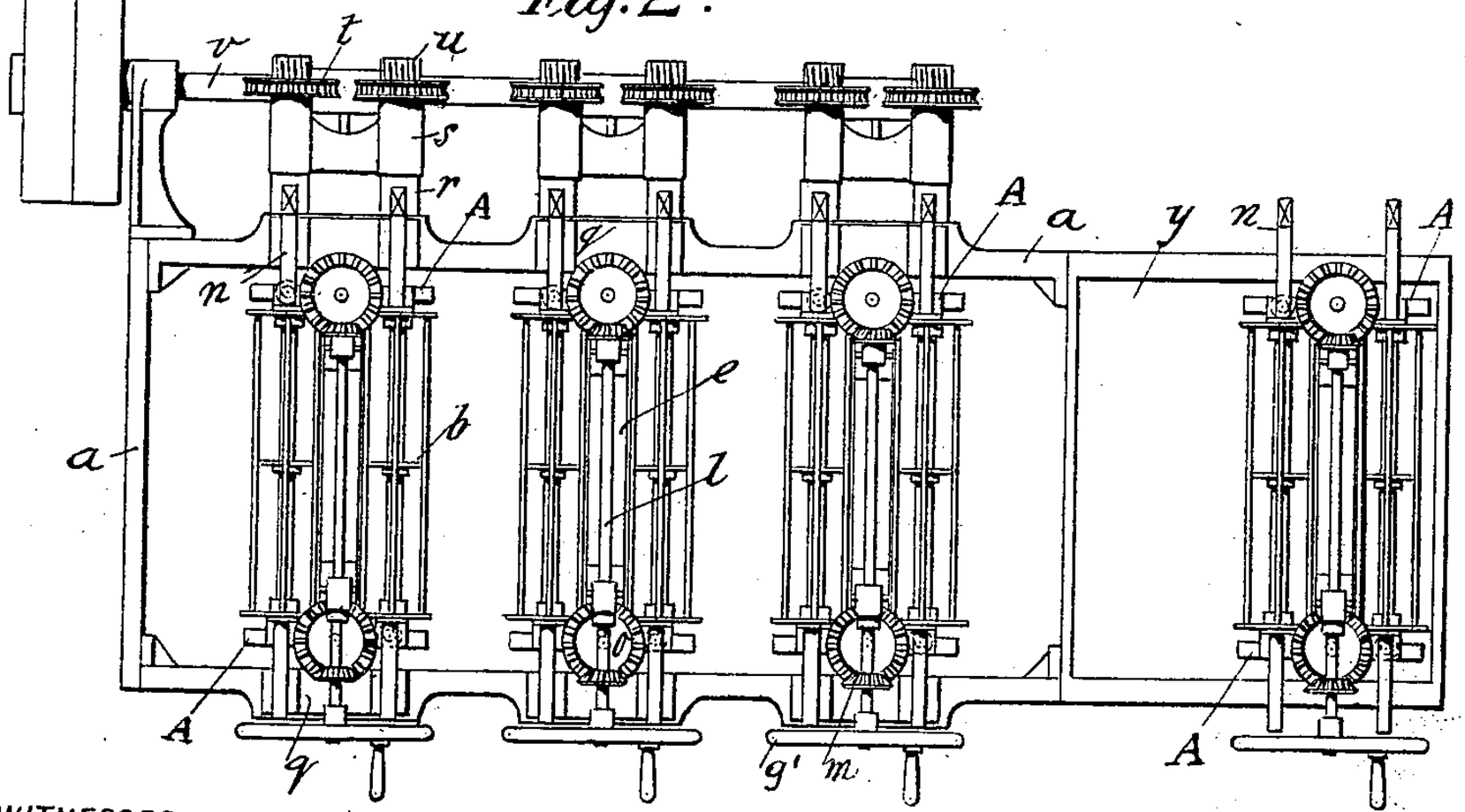


Fig. 2.



WITNESSES:
Isabella Haldrow.
Otto Munk

INVENTORS.
William Henry Crompton
William Horrocks
BY
Richards & Co
ATTORNEYS.

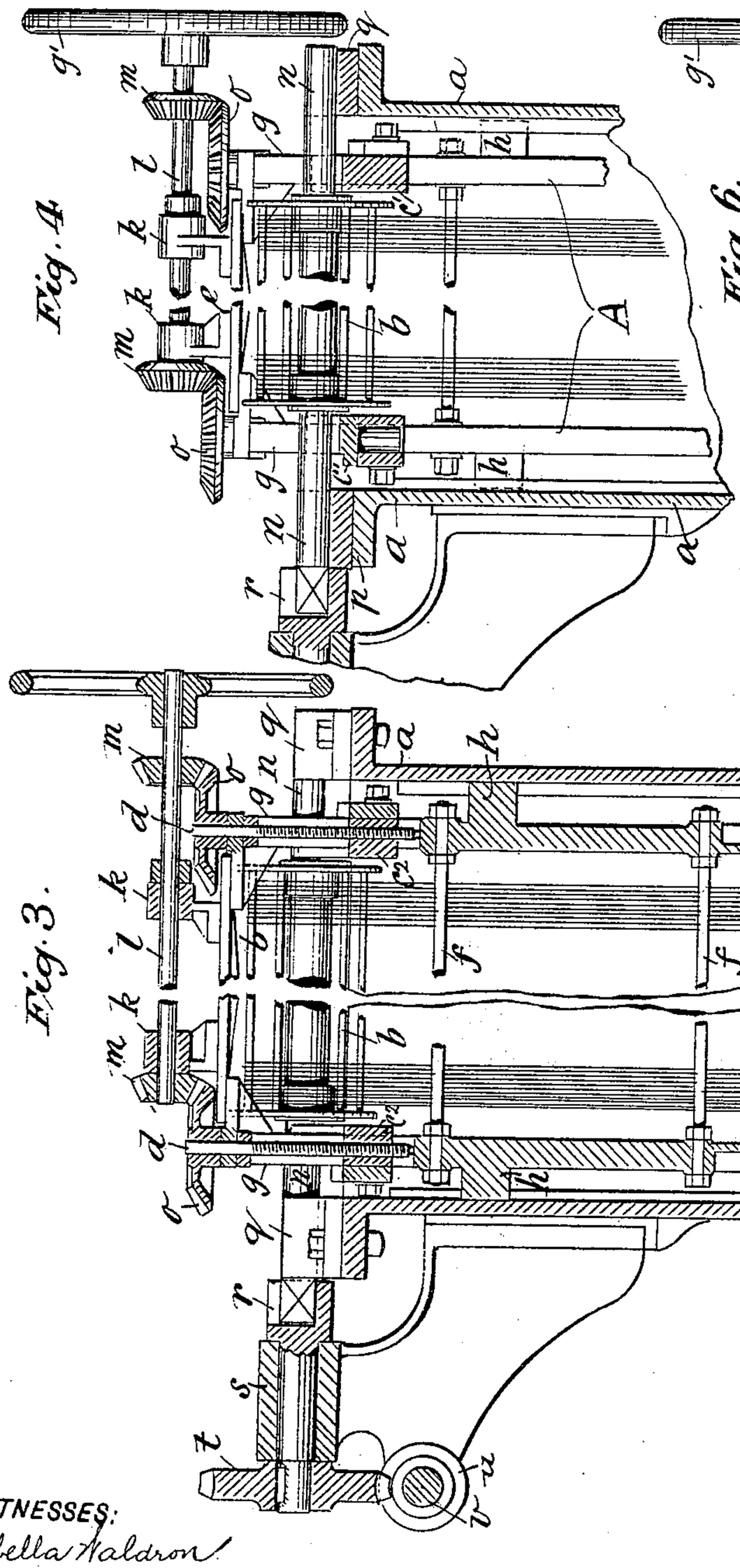
No. 680,131. Patented Aug. 6, 1901.

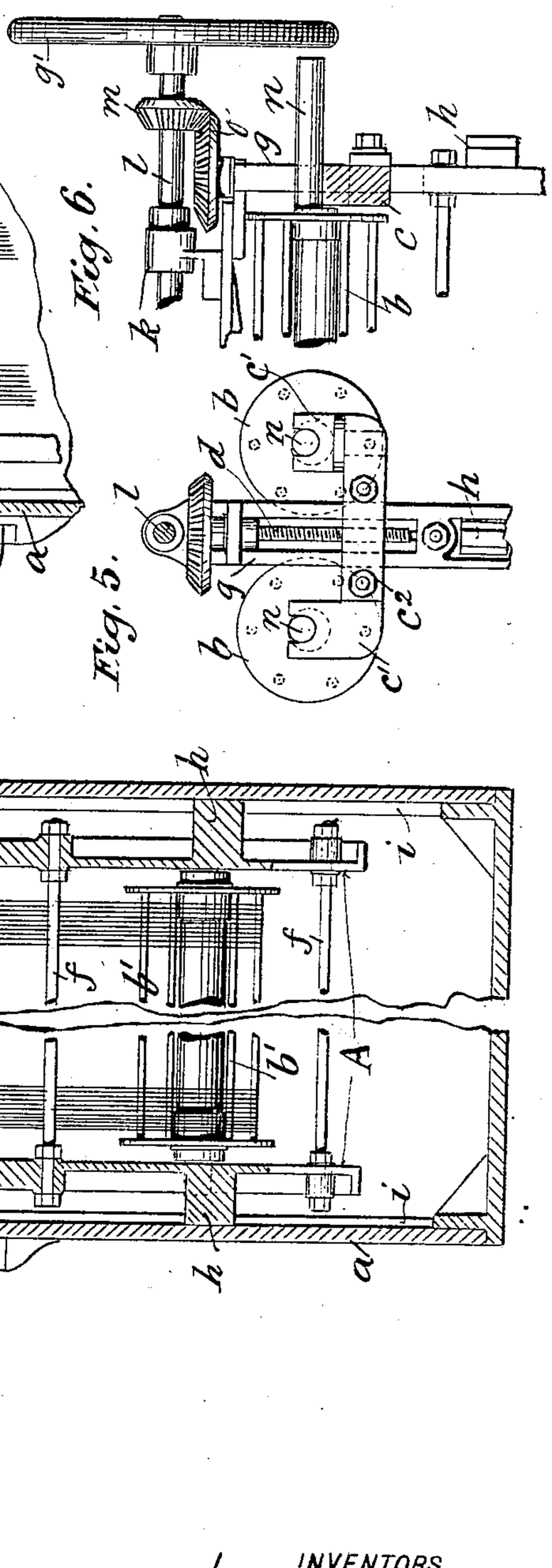
W. H. CROMPTON & W. HORROCKS.

MERCERIZING APPARATUS.

(Application filed Mar. 27, 1901.)

(No Model.) 2 Sheets—Sheet 2.





WITNESSES:
Isabella Haldron
Odrummond

INVENTORS.
William Henry Crompton
William Horrocks
BY
Richards & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM HENRY CROMPTON AND WILLIAM HORROCKS, OF RADCLIFFE, ENGLAND.

MERCERIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 680,131, dated August 6, 1901.

Application filed March 27, 1901. Serial No. 53,140. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM HENRY CROMPTON and WILLIAM HORROCKS, subjects of the King of Great Britain, residing at Radcliffe, in the county of Lancaster, England, (whose post-office address is Water Lane Mill, Radcliffe,) have invented new and useful Improvements in Machines for Mercerizing, Scouring, Bleaching, Dyeing, Washing, Sizing, and Like Treatment of Yarn in Hank Form, (for which we have made applications for patents in Great Britain, No. 11,077, dated June 19, 1900; in Germany, dated July 14, 1900, and in Spain, dated December 5, 1900,) of which the following is a specification.

Our invention relates to improvements in machines for mercerizing and the like treating—say scouring, bleaching, dyeing, washing, and sizing—yarn in hank form, the object being chiefly to provide a machine whereby the mercerizing of yarn in hank form is rendered continuous and a better silk luster can be obtained than heretofore has been the case. We attain this object by the mechanism illustrated in the accompanying two sheets of drawings, in which—

Figure 1 is a front view, and Fig. 2 a plan, of the machine complete. Figs. 3 and 4 are cross-sections on an enlarged scale at lines A A and B B of Fig. 1, respectively. Figs. 5 and 6 are respectively a front and a sectional side view of a modification in the method of mounting the top rollers of the machine.

Similar letters refer to similar parts throughout the several views.

In carrying out our invention we provide for use in a tank *a* a suitable number of frames A, adapted to receive two pairs of reels *b b'*, mounted side by side and each of which is adapted to receive a hank. The lower reels *b'* are mounted in open bearings *c*, formed in the said frame, and the upper ones *b* in open bearings *c' c'*, formed on arms c^2, rendered vertically adjustable by screw-threaded spindles *d*, mounted in the upper end of the frame A. These frames consist each of a cross-plate *e* and rods *f*, connecting together the two frame sides *g* and externally formed with projections *h*, adapted to engage in vertical grooves *i*, formed in the sides of the tank *a*, which is filled with the liquor required for the treatment of the hanks, Figs. 3 and 4. Each of the spindles *d* at its upper end is furnished with a bevel-wheel *o*, gearing into another bevel-wheel *m*, secured upon a common shaft *l*, mounted in suitable bearings *k* on the top of the plate *e* and furnished at one end with a hand-wheel *g'*, whereby the upper reels *b* can be raised at each end simultaneously and equally, and thus any desired uniform tension given to the hanks, which in mercerizing is of the greatest importance. One of the bearings *c'* of each upper reel *b* is pivoted to the arm c^2, so as to allow of moving the reels *b* sidewise and facilitating the removal thereof. All the reels being in skeleton form, the hanks while being rotated are continuously stretched and the liquor has free access thereto.

In order to increase the stretching action, we may form the shaft end *n* of the upper reels *b* slightly eccentric to the axis of the latter, as shown in Figs. 5 and 6.

Each side of the tank *a* is formed with an outwardly-projecting flange *p*, upon which are secured open bearings *q*, adapted to receive the shaft ends *n* of the upper reels *b*, so that when placing the frame A into the tank *a* the bearings *c' c'* on the frames A practically leave the shaft ends of the upper reels *b*, as shown in Fig. 4, and the latter thus being solely supported by the bearings *q* on the tank *a* the shaft ends of the lower reels become the supports for the frame A, so that the whole weight of the frames A rests upon the shaft ends of the lower reels *b'*, which retains the hanks at a stronger elastic tension, which may be regulated at will by the spindles *d* and gearing connected therewith. When raising the said frames out of the tank, the upper bearing *c* on the frame A are brought against the shaft ends *n*, and the upper reels *b* are thereby lifted out of the bearings *q* on the tank *a*. The back ends of the said shafts are formed flat or square and each adapted to engage in an open socket *r*, horizontally mounted and adapted to rotate in brackets *s*, fixed to the back of the tank *a*. Each of the sockets *r* is furnished with a worm-wheel *t*, arranged in gear with a worm *u*, which worms are secured upon a common

driving-shaft v, suitably mounted and furnished with a fast and a loose pulley w x, whereby the reels b b' are simultaneously rotated.

After having the hanks of one pair of reels b b' rotated through the liquor the desired length of time the frame A, carrying the hanks, is raised out of the tank a and placed onto a tray y, arranged in connection with one end of the latter for the purpose of draining the hanks previous to being washed in another tank, (not shown,) the frame so removed being substituted by another one charged with hanks and the drained liquor allowed to run back into the first-named tank. To facilitate the placing of the said frames into the said tank and removal onto the said tray, a suitable overhead crane device is employed.

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

1. In a machine for mercerizing, scouring, bleaching, dyeing, washing, sizing and like treatment yarn in hank form, consisting of a tank a furnished on the top with bearings q and containing one or more removable frames A each carrying pairs of hank-reels b, b', and having a loose connection with the shafts of said reels to allow the frame to fall in relation to the said upper reels the shaft ends of the upper reels being received by the said bearings while the lower reels b' and the frame A are carried by the hanks and the latter thereby subjected to the whole weight of the frame A, all substantially as set forth.

2. In combination, the upper and lower reels, the frame carrying the lower reel and having a loose bearing connection with the upper-reel shaft to permit said frame to be raised and lowered in relation to said upper reel, means for adjusting the said loose bearing vertically in relation to the said frame and a tank having fixed bearings thereon for the reel-shaft substantially as described.

3. The upper reels b, b in combination with vertically-adjustable bearings c', c' on the reel-frame A, the said reels being formed with eccentric shaft ends n adapted to rotate in the said bearings and stretch the hanks intermittently, all substantially as set forth.

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

WILLIAM HENRY CROMPTON.
WILLIAM HORROCKS.

Witnesses:
ALFRED BOSSHARDT,
STANLEY BRAMALL.