

No. 685,889.

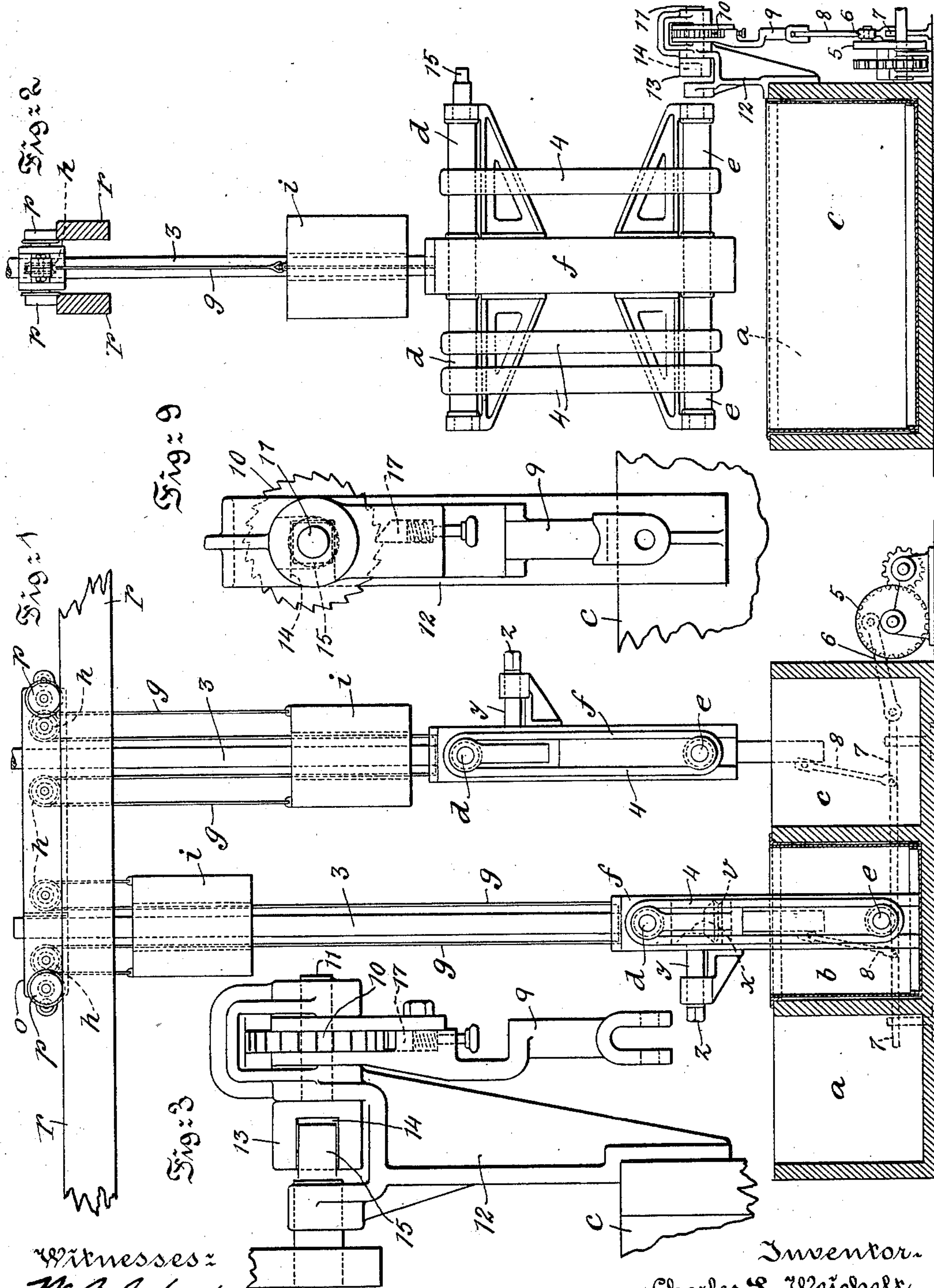
Patented Nov. 5, 1901.

C. L. WEICHELT.  
MERCERIZING MACHINE.

(Application filed Jan. 21, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:  
W. A. Schaefer.  
Arthur C. Scott.

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By his Attorney Chas. A. Rutter.

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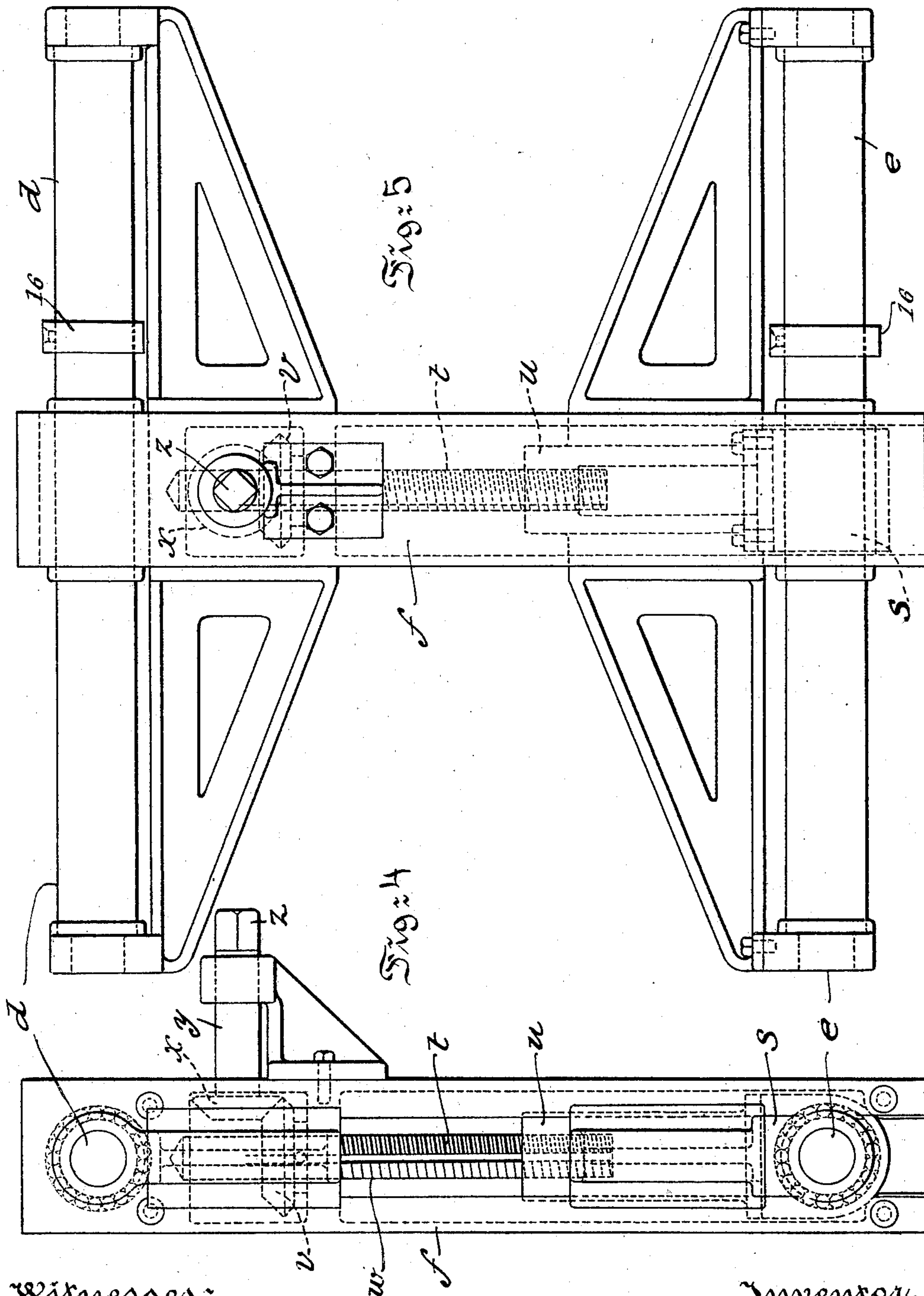
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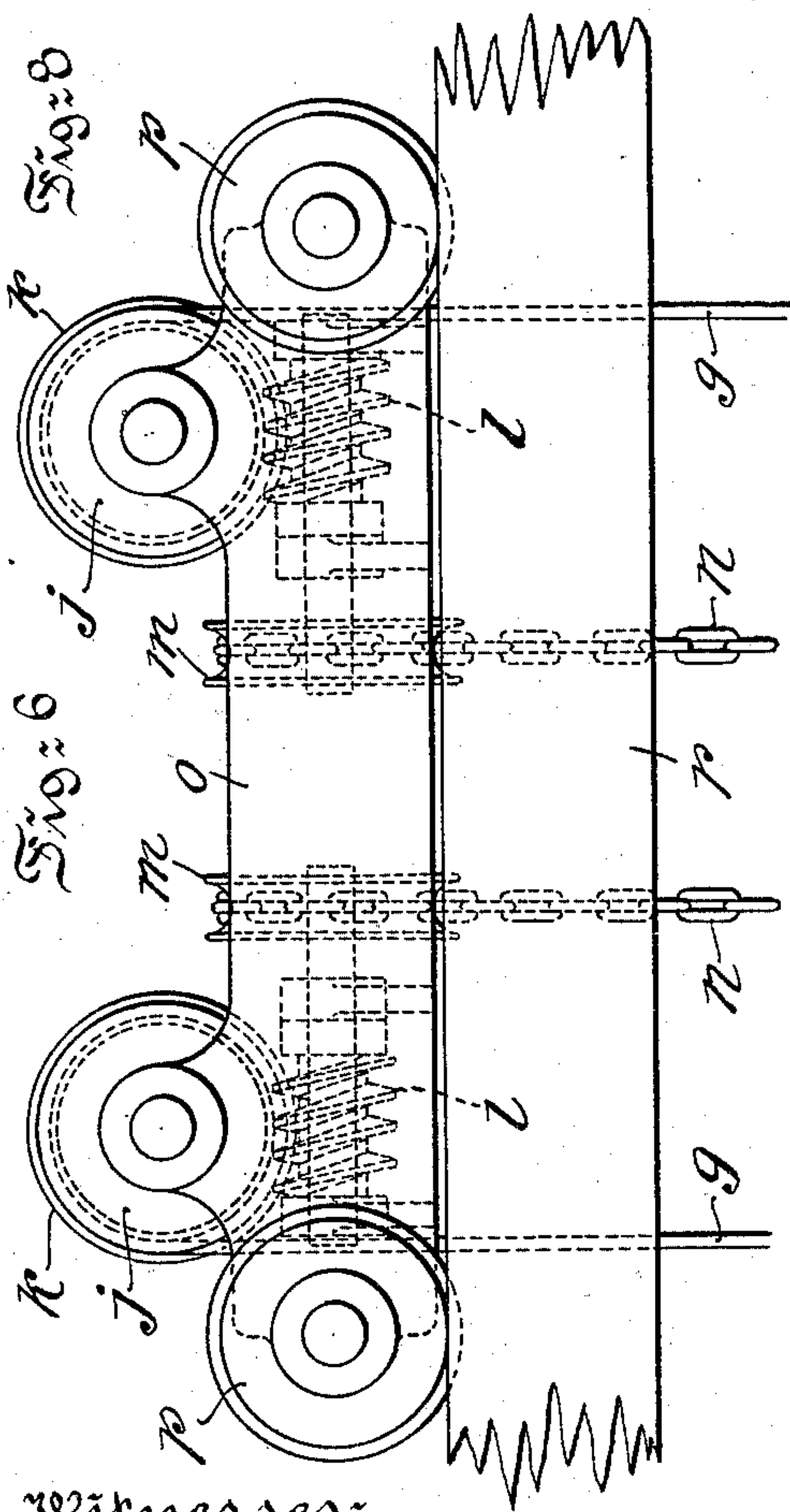
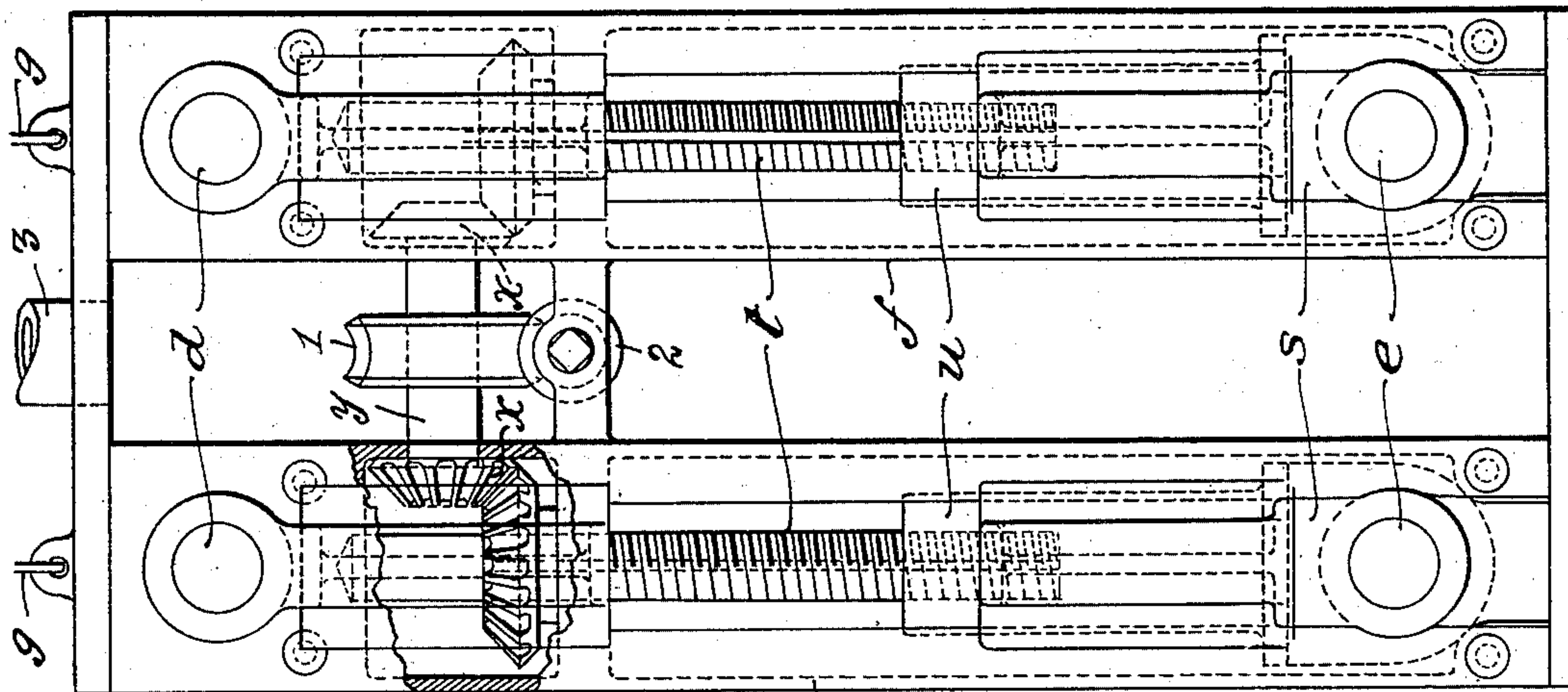
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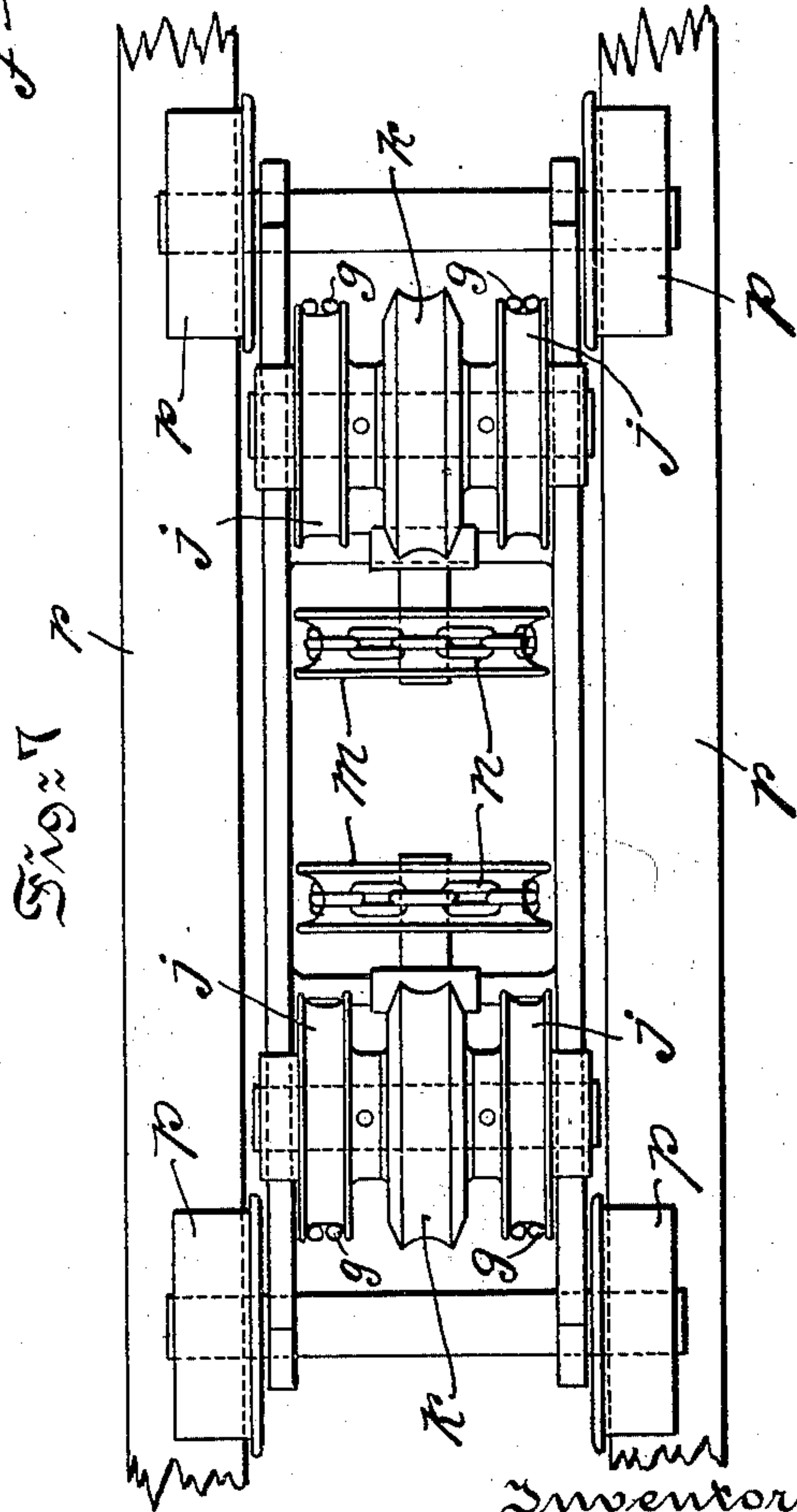
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(No Model.)

**3 Sheets—Sheet 3.**



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# UNITED STATES PATENT OFFICE.

CHARLES L. WEICHELT, OF PHILADELPHIA, PENNSYLVANIA.

## MERCERIZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,889, dated November 5, 1901.

Application filed January 21, 1901. Serial No. 43,987. (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 mercerizing-machines; and it consists in certain devices and combination of devices, as will be fully described hereinafter.

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 a side elevation of my mercerizing-machine; Fig. 2, a front elevation; Fig. 3, an enlarged front elevation of part of the mechanism for driving the yarn-carrying rolls; Fig. 4, an enlarged side elevation of the yarn-carrying rolls and their carrying-frames, showing the means for separating the rolls to stretch the yarn; Fig. 5, a front elevation of Fig. 4; Fig. 6, a side elevation of traveling carriage which carries the mercerizing-rollers, showing a worm and worm-wheel apparatus by means of which the carrying-cables may be operated; Fig. 7, a plan of Fig. 6; Fig. 8, a side elevation of a compound or double arrangement of mercerizing-rollers, &c.; Fig. 9, a side elevation of Fig. 3.

Referring to Figs. 1 and 2, *a b c* are tanks. The central tank *b* contains the mercerizing liquid. The end tanks *a c* contain a washing liquid.

*d e* are the rollers which carry the yarn to be mercerized.

*f* is the frame in which rollers *d e* are carried. The frame *f* is carried by a cable or cables *g*. In Figs. 1 and 2 the cables *g* are shown passing over pulleys *h* and attached to a counterweight *i*, which counterbalances the weight of frame *f* and its connected parts. In Figs. 6 and 7 the cable *g* passes around a drum *j*, which is operated through a worm-wheel *k* and worm *l* and a chain-wheel *m* and chain *n*.

*o* is a carriage carried upon wheels *p*, which travel upon beams or tracks *r*. In Fig. 1 the carriage carries the pulleys *h*, and in Figs. 6 and 7 it carries the hoisting-gear above de-

scribed, and in both cases, through the cables *g*, the mercerizing-rollers and connected parts.

The carriage *o* is adapted to carry two frames *f*, each of which may be independently raised or lowered. The tank *b*, containing the mercerizing liquid, is placed between the tanks *a c*, carrying the washing or neutralizing liquid, and when one of the frames *f* is lowered, so as to bring the yarn which it carries into the mercerizing liquid in tank *b*, the other frame *f* may be raised, as shown in Fig. 1, in which position the rollers may be threaded or stripped. Supposing the raised rollers are to be threaded while the lowered ones are being mercerized, the latter after the yarn has been mercerized are moved into the washing-tank *a*, and the former are at the same time lowered to tank *b*. After the yarn on the latter frame has been mercerized, during which time the yarn on the former has been washed, the frames are both raised, and the carriage *o* is pushed back and the latter frame is lowered into the washing liquid in tank *c*. While the yarn on this frame is being washed, the yarn on the first frame is stripped from the rollers and new yarn is threaded on them, after which the operation proceeds as above. One of the rollers—the upper one, for instance—is carried in a fixed bearing in the frame *f*. The other or lower one is carried in a movable bearing *s*, which may be moved toward or away from the fixed bearing in order to adjust the tension upon the yarn. The means for moving the bearing are as follows, (see Figs. 4, 5, and 8:) *t* is a screw passing through a nut *u*, carried by or forming part of the movable bearing; *v*, a bevel-gear carried by frame *f*, through which the upper unthreaded portion of screw *t* passes; *w*, a spline-connecting gear *v* and screw *t*; *x*, a bevel-gear gearing with gear *v* and furnished with a stem *y*, the outer end *z* of which is adapted to receive a crank or wrench. By revolving stem *y* bevel-gear *x* will be revolved, which will revolve gear *v*, which will revolve screw *t*, which will through nut *u* raise or lower the bearing *s* and the roller carried thereby.

In Fig. 8 a modification of the roller-carrying frames shown in Fig. 1 is shown. In this case two frames *f*, each carrying rollers



*d e*, are used instead of the single frame and single pair of rollers shown in Fig. 1. The arrangement for the rollers and the means for separating them are identical with that already described, with the exception that shaft *y* carries a bevel-gear *x* upon each end and a worm-wheel *i* at or near its center, which may be driven by a worm 2 in order to rotate shaft *y* and connected parts.

3, Figs. 1, 2, and 8, is a guide, a pipe preferably, carried by upper end of frame *f* and passing through a hole in counterweight *i* and through a hole in carriage *o*. This guide not only insures a perfectly vertical movement of the frame *f* when lifted or lowered, but also prevents any swaying of the counterweight. The weight *i* is substantially of the same weight as the frame *f* and connected parts, and therefore the latter can be very easily and quickly lifted or lowered by simply pushing the weight down or up by hand.

The hanks of yarn to be mercerized are shown at 4 in Fig. 2. They are carried as endless belts upon the rollers *d e*, and in order to thoroughly bring all their parts into contact with the mercerizing solution it is the usual practice to drive one of the rollers continuously. This driving of one of the rollers drives the hanks of yarn, and through them the other roller is driven. During the driving the lower roller is immersed in the mercerizing solution. I have found in practice that the continuous driving of the rollers is objectionable, for the reason that when so driven the hanks of yarn are on one side drawn tight and are upon the other side loose, the consequence being that the hanks are unevenly stretched and some of the threads flattened. In order to overcome this objection, I drive the rollers intermittently, the mechanism for which is as follows:

5 is a continuously-driven crank connected by a rod 6 with a bar 7.

8 is a rod pivoted to bar 7 and at its upper end connected to a swinging bar 9, which carries a pawl 17, which is adapted to engage with the teeth of a ratchet-wheel 10, which is fast upon a short shaft 11, which is carried in a stationary frame 12. Fast to shaft 11 is a hub 13, which is furnished with a square slot 14.

15 is a square end projecting outward from roller *d*, which is adapted when the frame *f* is lowered to enter the slot 14 in the hub 13.

The projection 15 being in slot 14, the crank 5 is turned and imparts through rod 6 a reciprocating movement to bar 7, and this movement is transmitted through rod 8 to pawl 9, which on one stroke turns ratchet-wheel 10 and is idle on the other stroke. When the ratchet-wheel is turned, the driving-roller *d* is turned with it, and the hanks of yarn are carried around, being stretched by the movement of the driving-roll upon their advancing side more than on their retreating side. As soon as the pawl is disengaged from the ratchet the hanks of yarn readjust themselves, so that the tension upon both their sides is equal.

16, Fig. 5, is an adjustable collar with which the rolls *d e* may be fitted, which may be set so as to lengthen or shorten the effective length of the rolls. By means of the collars but one hank of yarn may be mercerized. Without them it is necessary to completely fill the rolls with yarn, as is necessary when no device is used.

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

1. The combination in a mercerizing-machine of tanks for containing the mercerizing liquid and a neutralizing or washing liquid, an overhead track, a traveling carriage carried by said track, pulleys carried by said carriage, frames carrying yarn-carrying rollers, a vertical guide carried by said frames passing through said carriage, cables attached to said frames and passing over said pulleys on said carriage, a counterweight attached to the other end of said cables, means whereby said yarn-carrying rollers may be moved toward or away from one another, and means whereby said rollers may be rotated.

2. The combination with the roller-carrying frame of a mercerizing-machine, of a traveling carriage, a counterweight with a vertical perforation, ropes or chains connecting said counterweight and said roller-carrying frame, pulleys carried by said carriage over which said ropes or chains pass, and a vertical guide carried by said frame passing through the perforation in said counterweight and through a guide carried by said carriage.

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