

No. 742,107.

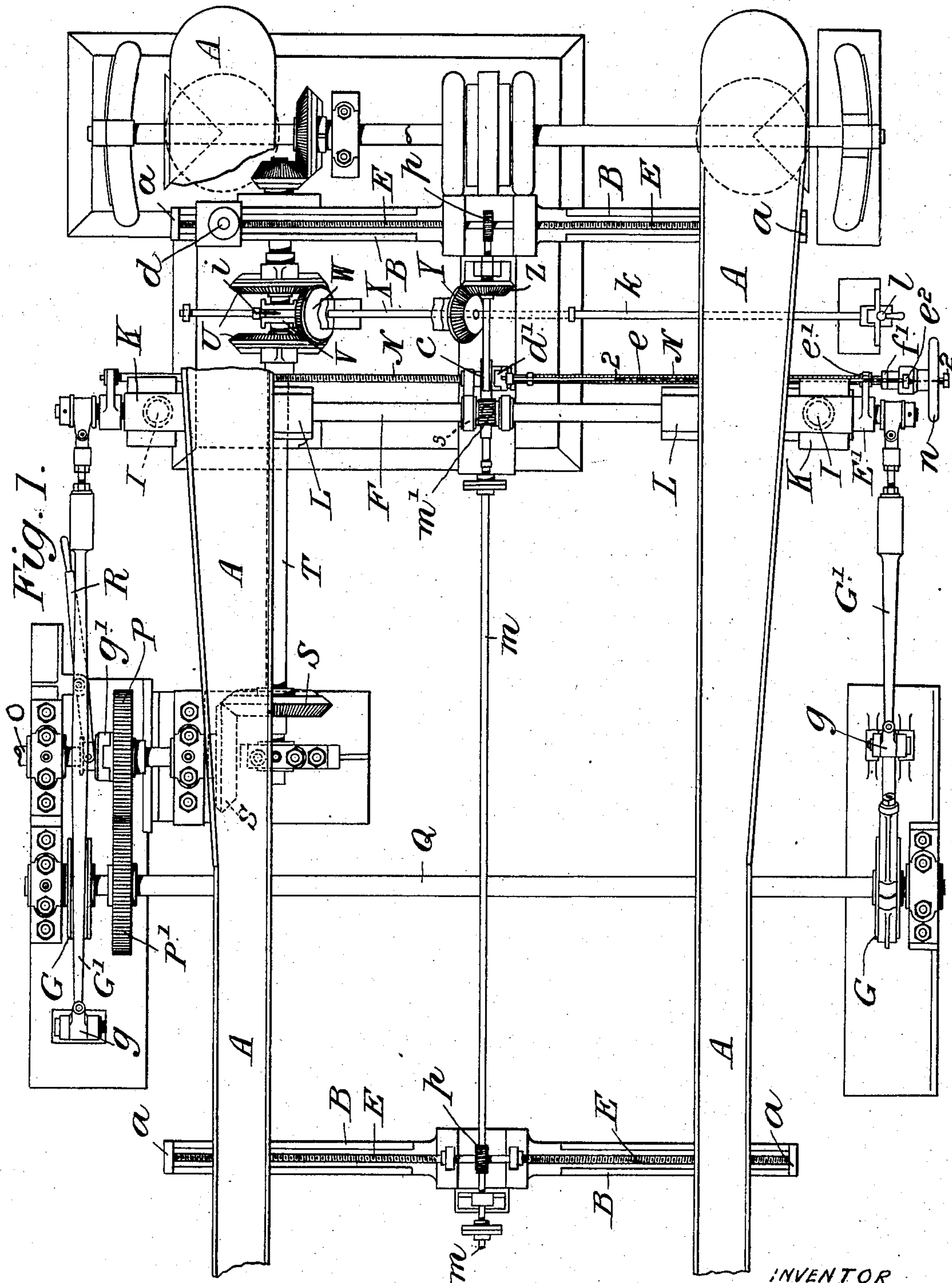
PATENTED OCT. 20, 1903.

A. A. WHITLEY.  
TENTERING MACHINE.

APPLICATION FILED JULY 17, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

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*Geo. L. Abbe.*

INVENTOR  
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By *Howman and Howman*  
HIS ATTORNEYS

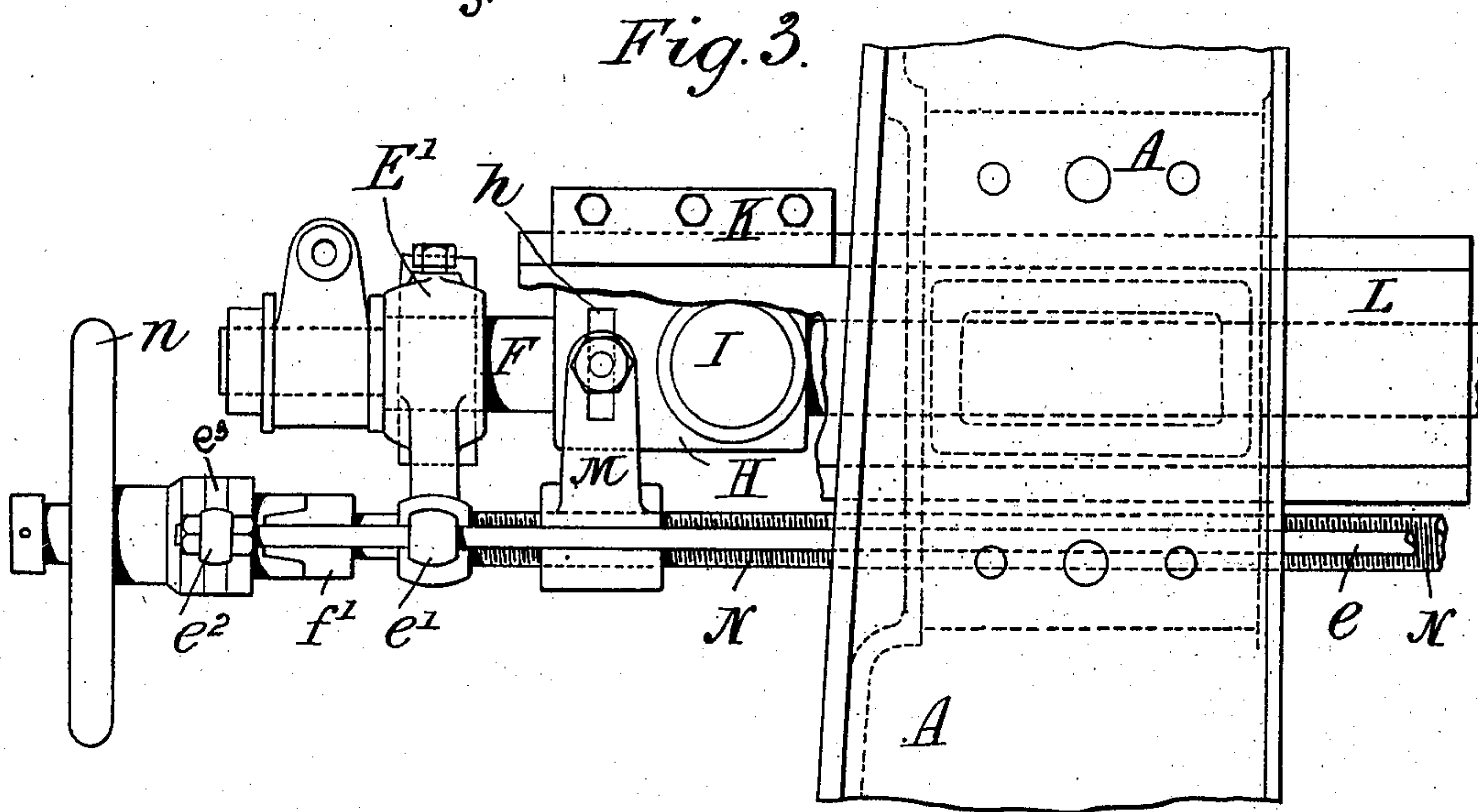
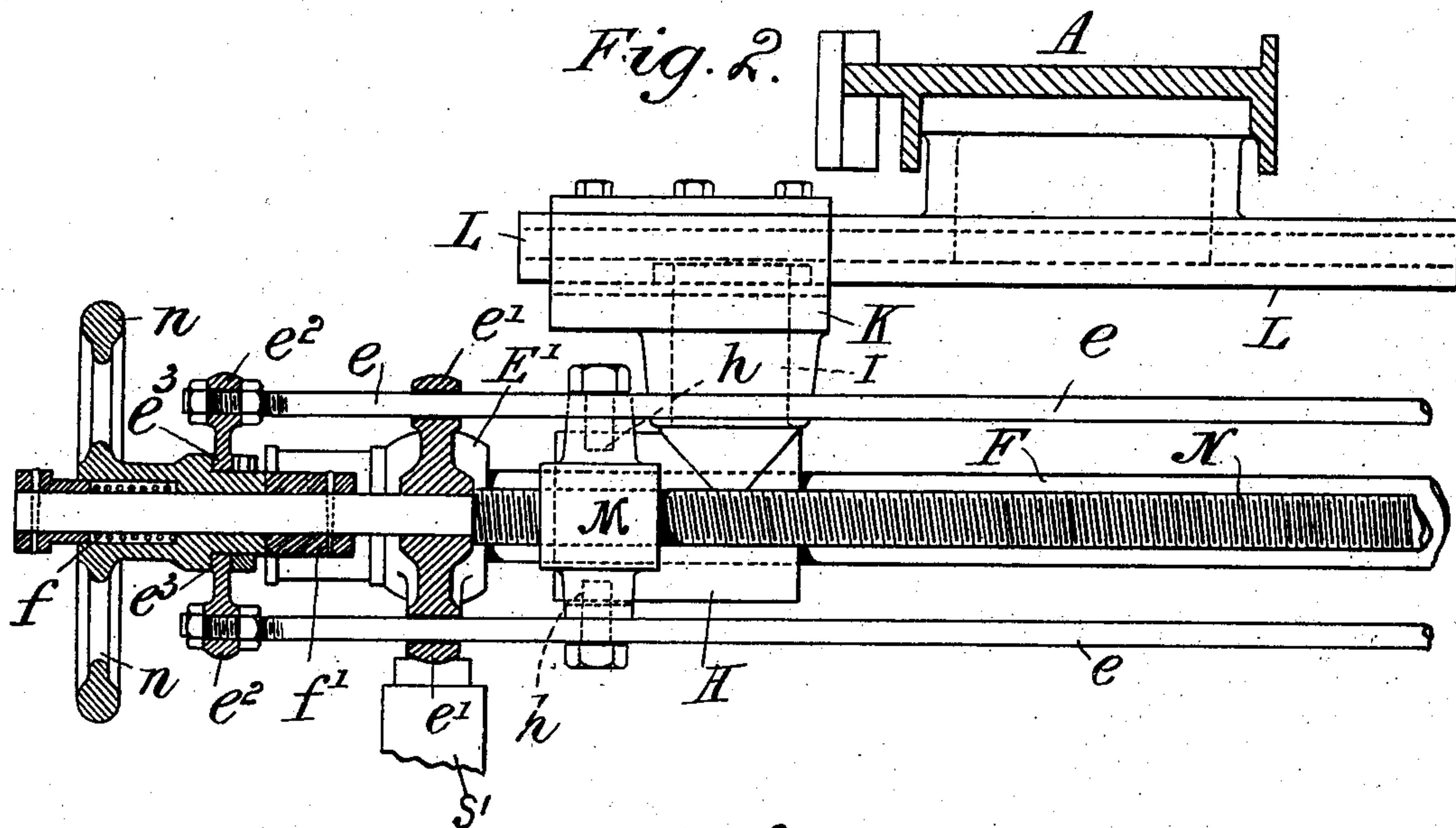
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3 SHEETS—SHEET 3.

Fig. 4.

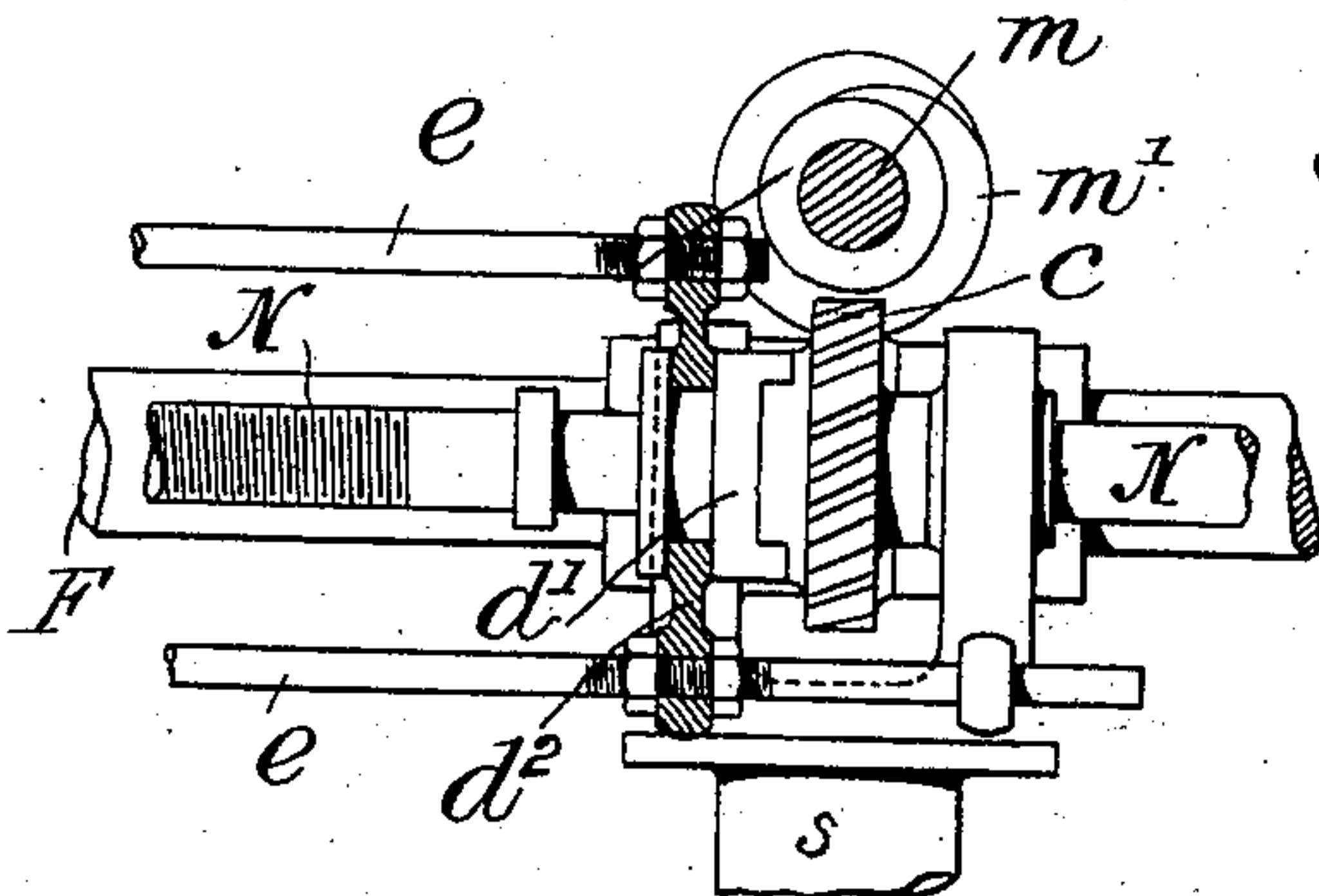


Fig. 5.

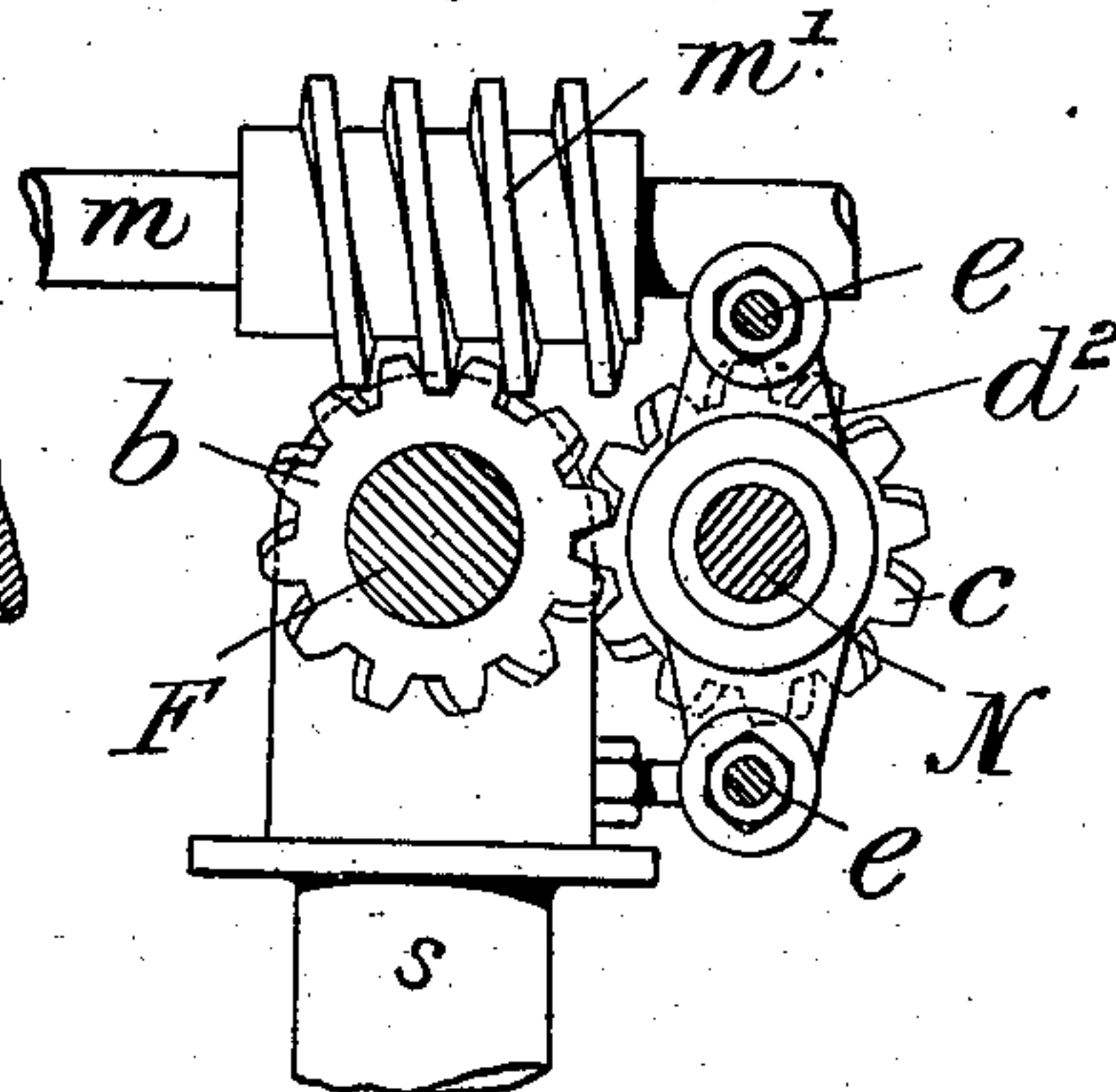
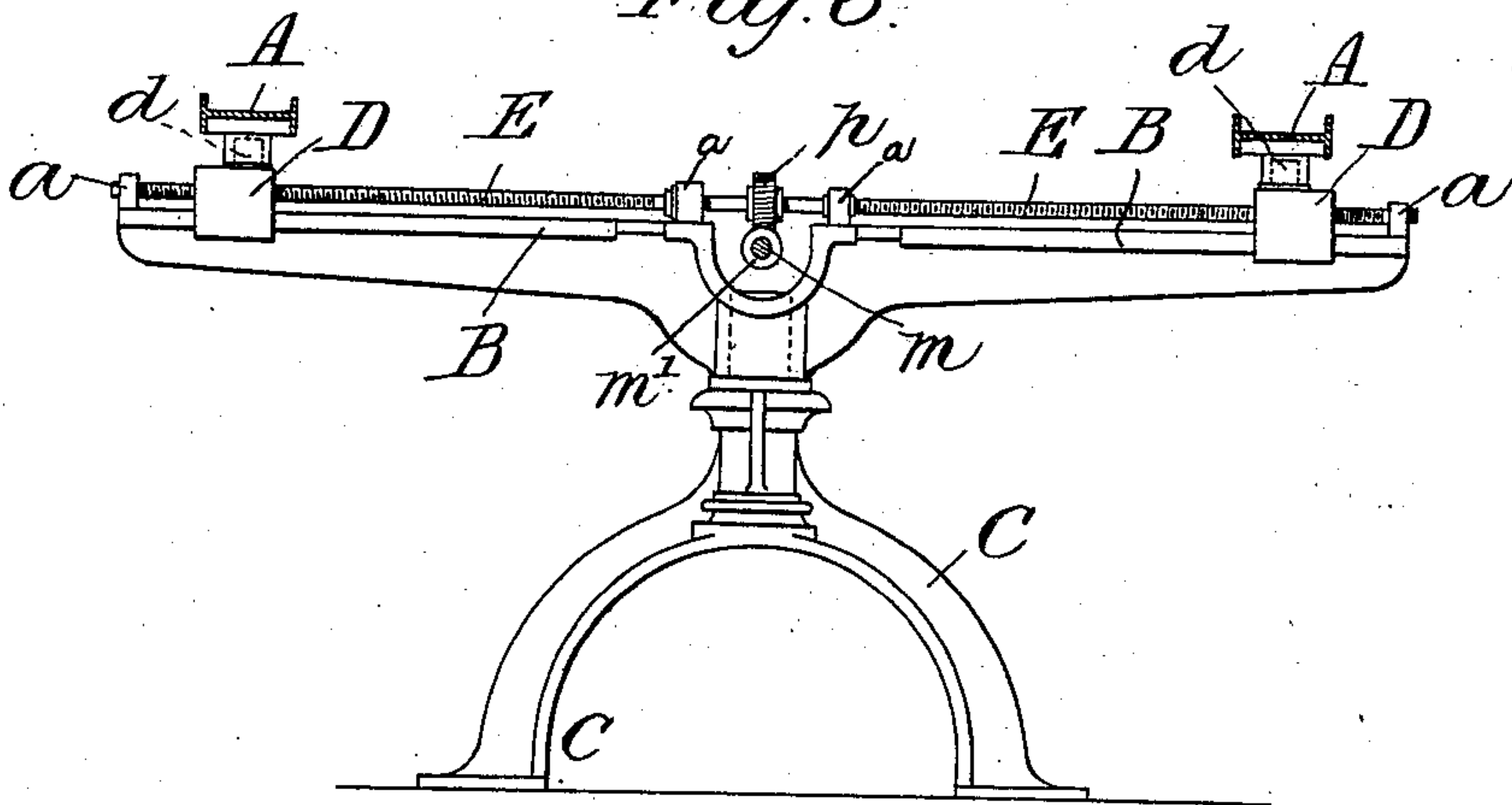


Fig. 6.



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# UNITED STATES PATENT OFFICE.

ALFRED AUSTIN WHITLEY, OF BURY, ENGLAND.

## TENTERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 742,107, dated October 20, 1903.

Application filed July 17, 1902. Serial No. 115,980. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED AUSTIN WHITLEY, engineer, a subject of the King of Great Britain and Ireland, residing at 2 Malvern Villas, Chesham Road, Bury, in the county of Lancaster, England, have invented certain new and useful Improvements in Tentering-Machines, of which the following is a specification.

10 This invention relates to tentering-machines, and has for its object to provide improved means whereby the extent of longitudinal reciprocating motion imparted to the side rails on which the endless chains of tenter hooks or clips travel can be varied as required without varying the stroke of the swiss rod or shaft and the distance between the side rails can be varied to suit fabrics of different widths without varying the stroke of the side rails.

15 In the accompanying drawings, Figure 1 is a plan of so much of a tentering-machine as is necessary to illustrate my invention. Fig. 2 is a vertical section on the line 2 2, Fig. 1, showing on a larger scale the mechanism for varying the extent of movement of the side rails. Fig. 3 is a plan corresponding to Fig. 2. Figs. 4 and 5 are sectional elevations at right angles to each other of a portion of the gearing by which the distance between the side rails can be varied, and Fig. 6 is an elevation of one of the bridges or supports for the side rails.

20 The side rails A, on which the endless chains of clips travel, are supported at or near each end and also at suitable intermediate parts upon pairs of arms or brackets B, mounted so as to be free to pivot on supports or bridges C, as shown in Fig. 6. Fitted to slide on each arm or bracket is a block D, provided with a stud or projection  $d$ , which studs enter sockets in the under side of the rails A. Mounted in bearings  $a$  on each pair of arms B is a rod E, having right and left handed screw-threads, which work in corresponding screw-threaded holes in the blocks D, so that by rotating the rods E in their bearings  $a$  the blocks D will be caused to slide on the arms B and carry with them the side rails A nearer to or farther from each other, according to the direction in which the rods E are rotated.

Longitudinal reciprocating motion is im-

parted to the side rails A in the known manner by means of a transverse pivoted rod or swiss-shaft F, receiving rocking movement on its pivot by means of eccentrics G, the straps of which are connected to vertical levers  $g$ , having their upper ends connected by rods  $G'$  to the ends of the swiss-shaft F. The oscillating movement of the swiss-shaft on its pivot is always the same; but in order to vary, as required, the extent of longitudinal movement of the side rails A the said swiss-shaft carries near its ends slidable collars H, capable of being adjusted in position along the said swiss-shaft, from which collars project studs I, on which are mounted pieces K, capable of sliding on transverse bars L, which are affixed to the under side of the rails A. Engaging in grooves  $h$  in each of the collars H are forked levers M, having internal screw-threaded bases engaging right and left handed screw-threads on a transverse rod or spindle N, so that by rotating this rod or spindle N by means of a hand-wheel  $n$  the collars H on the swiss-rod F can be adjusted nearer to or farther from each other and from the pivot on which the said swiss-rod oscillates, and thereby vary, as required, the longitudinal movement of the side rails A. Mounted loosely on the swiss-rod F, at the center thereof, is a worm-wheel  $b$ , gearing with a corresponding wheel  $c$ , loosely mounted on the screwed rod or spindle N, the latter wheel having clutch-teeth adapted to engage with a clutch-block  $d'$ , fitted to slide along but rotatable with the screwed spindle N. The clutch-block  $d'$  has a groove therein, in which engages a piece  $d''$ , carried on rods  $e$ , which rods are capable of being slid in bearings in arms  $e'$ , projecting from brackets  $E'$ , which support the ends of the swiss-rod F. As shown in Figs. 4 and 5, a pivot-stud  $s$  supports this swiss-rod at its central point beneath the worm  $m'$  and midway between the rails. At the outer ends of the swiss-rod, Figs. 2 and 3, there is a bracket  $E'$ , secured to the rod and carrying at  $e'$  the guides for the rods  $e$ , as shown in Fig. 2. A block  $s'$  may be located beneath this bracket  $E'$  as a support on which the bracket may slide as the swiss-bar is oscillated on its pivot  $s$ . The rods  $e$  are also connected to arms  $e^2$ , which project from a collar  $e^3$ , engaged in a groove



formed in the boss of the hand-wheel  $n$ , before referred to, which boss is provided with clutch-teeth, caused by a spring  $f$  in the boss of the wheel  $n$  to engage with corresponding teeth in a clutch-block  $f'$ , fast on the screwed rod or spindle N. To turn the spindle N for the purpose of adjusting the position of the collars H on the swiss-rod F without altering the distance between the side rails, the hand-wheel  $n$  is first pulled outward against the counteracting pressure of the spring  $f$  so as to disengage the teeth of the clutch-block  $d'$  from the clutch-teeth on the wheel  $c$ , the teeth on the boss of the hand-wheel  $n$  still remaining engaged with the teeth on the clutch-block  $f'$ . Then by rotating the hand-wheel  $n$  the collars H can be adjusted on the swiss-rod F to any position required. So soon as the hand-wheel  $n$  is released the spring  $f$  by expanding forces the teeth of the clutch  $d'$  into engagement with the corresponding teeth on the wheel  $c$ .

On a shaft O, which receives rotary motion by gearing from a steam-engine or other motor, is loosely mounted a spur-wheel P, gearing with a corresponding wheel P' on a transverse shaft Q, carrying the eccentrics G, which impart the oscillating movements to the swiss-rod F, the boss of the said loosely-mounted spur-wheel P having clutch-teeth with which a clutch-block  $g'$ , slidable on the shaft O and operated by a lever R, is caused to engage when it is desired to oscillate the swiss-rod on its pivot, the wheel P then rotating with the shaft O and transmitting through the wheel P' rotation to the shaft Q, which carries the eccentrics G. The shaft O imparts through bevel-wheels S rotation to a longitudinal shaft T, from which motion is transmitted through gearing in the well-known manner to the chains of clips, which travel on the side rails A. On the longitudinal shaft T are loosely mounted two bevel-wheels U, between which two wheels is a clutch-block V, slidable on the shaft T, but rotatable with the said shaft. This clutch-block is provided on its opposite sides with teeth to engage with corresponding teeth provided on each of the bevel-wheels U, the said clutch-block having an annular groove therein in which engages a forked arm  $i$ , carried on a rock-shaft or spindle  $k$ , provided with a hand-lever  $l$ , by means of which the forked arm can be operated to cause the clutch-block V to engage with either of the wheels U or moved into an intermediate position, so as to be out of gear with both wheels. Gearing with the two wheels U is a bevel-wheel W, fast on the lower end of an inclined shaft X, on the upper end of which inclined shaft is another bevel-wheel Y, in gear with a bevel-wheel Z on a shaft  $m$ , extending longitudinally along the center of the machine above the swiss-rod F and below the right and left handed screw-threaded rods E, hereinbefore referred to. On the shaft  $m$  are worms  $m'$ , one of which gears with the loose worm-wheel

$b$  on the swiss-rod F, the other worms gearing with worm-wheels  $p$ , fast on the screw-threaded rods E, so that when the shaft  $m$  is rotated rotation will be transmitted through the worms  $m'$  and worm-wheels  $p$  to the screwed rods E and also to the rod N through the worm-wheel  $b$  on the swiss-rod F and the wheel  $c$  on the said rod N.

If it be required to alter the distance between the side rails without altering the stroke of the said side rails, the clutch-block  $d'$  is first disengaged from the clutch-teeth on the worm-wheel  $c$  and held out of gear while the shaft  $m$  is being rotated to adjust the position of the said side rails.

The rods E and N may both be rotated by rod  $m$  to cause each side rail and transverse bar L to be moved toward or away from the other side rail and transverse bar, according to the direction in which the shaft  $m$  is rotated, and thus alter the distance between the side rails A. The shaft  $m$  is rotated in the direction required by sliding the clutch-block V on the shaft T by means of the hand-lever  $l$ , so as to cause the said clutch-block V to engage with the teeth on one or other of the loosely-mounted bevel-wheels U, the wheel thus engaged being then caused to rotate with the shaft T and impart through the bevel-wheels W and Y on the inclined shaft X and the wheel Z on the shaft  $m$  rotation to the said shaft  $m$ .

I claim as my invention—

1. A tentering-machine having side rails a swiss-rod, connections between the swiss-rod and side rails and means to oscillate said swiss-rod, in combination with screw-rods adapted to move the rails toward or away from each other, means for operating said screw-rods, and means for adjusting the connections between the swiss-rod and side rails to change their extent of movement, substantially as described.

2. In a tentering-machine, the combination of side rails, an oscillating swiss-rod and means for imparting movements of oscillation thereto, collars loosely mounted on the swiss-rod, slidable pieces pivoted on the collars, and transverse bars, said collars supporting the side rails and movable transversely with relation to said bars, a rod parallel to the swiss-rod and having right and left hand screw-threads, forked levers engaging the threads on the screw-threaded rod and grooves in the collars on the swiss-rod, and means for rotating the screw-threaded rod so as to simultaneously adjust the position of the collars on the swiss-rod, substantially as and for the purpose described.

3. In a tentering-machine, the combination of side rails, a swiss-rod, means for imparting oscillating motion thereto and screw-threaded rods for adjusting the distance between the side rails, with loose collars on the swiss-rod, a worm-wheel on the swiss-rod and on each of the screw-threaded rods, a shaft carrying worms gearing with the worm-wheels



on the screw-threaded rods, and means for rotating it in either direction and thereby simultaneously rotating all of the said screw-threaded rods, and means whereby the screw-threaded rod, by which the collars on the 5 swiss-rods are adjusted, can be put out of action while the distance between the said rails is being adjusted, substantially as described.

10 4. In a tenting-machine, the combination with siderails and means for imparting thereto reciprocating motion, and a swiss-rod to which the side rails are connected, of a right and left hand screw-threaded rod arranged 15 parallel to the said swiss-rod, collars slidably connected to the swiss-rod, grooves in the collars, internally-screw-threaded forked levers on the said screw-threaded rod engaging the grooves in the slidable collars, a worm-wheel 20 loosely mounted on the screw-threaded rod in gear with a worm-wheel mounted loosely on the swiss-rod, clutch-teeth on the worm-wheel on the screw-threaded rod, a clutch-block rotatable with and slidable on the screw-threaded rod and normally engaged 25 with the clutch-teeth on the worm-wheel, a shaft having a worm in gear with the worm-wheel on the swiss-rod and means for rotating in either direction, as desired, the shaft 30 having the worm, so as to impart through the worm-wheels on the swiss-rod and the screw-threaded rod rotation to the latter, to adjust the position of the collars on the swiss-rod, and means for disengaging the clutch-block from the clutch-teeth on the worm-wheel on the screw-threaded rod, whereby 35 the screw-threaded rod can be rotated to adjust the position of the collars on the swiss-rod without rotating the aforesaid shaft carrying the worm, substantially as hereinbefore 40 described.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED AUSTIN WHITLEY.

Witnesses:  
SAML. F. BUTCHER,  
RATCLIFFE WALLACE TAYLOR.