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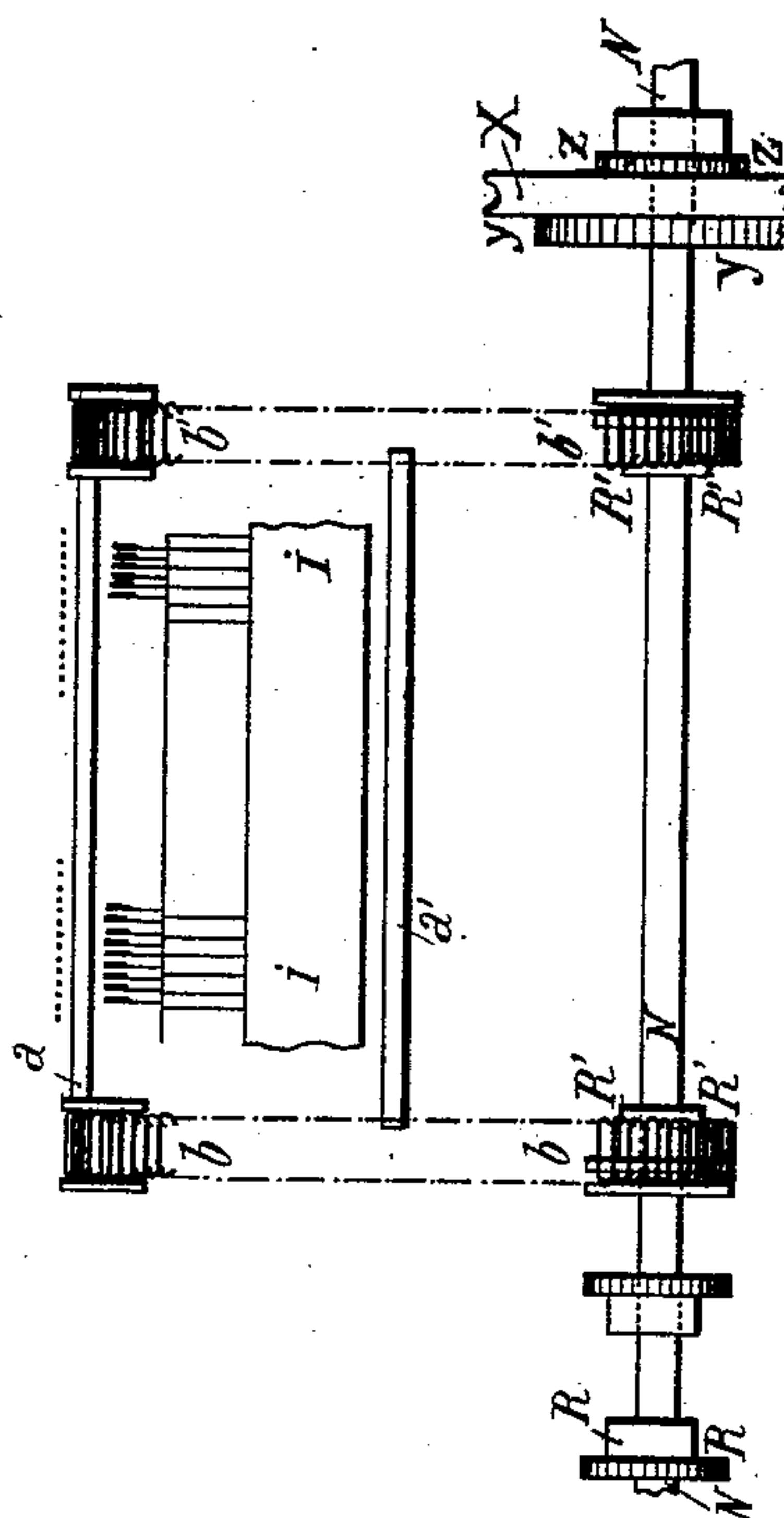
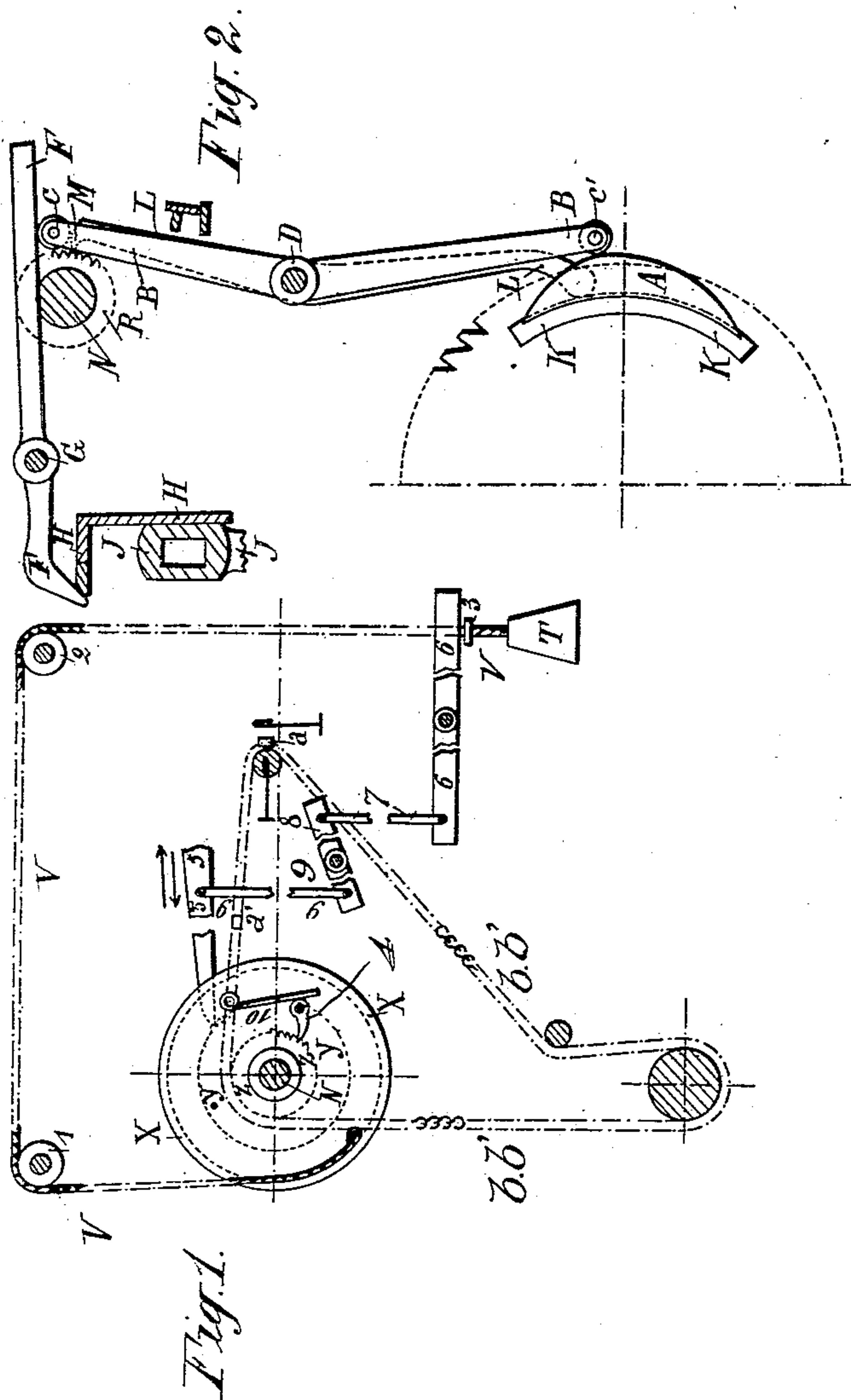
**Patented Nov. 18, 1902.**

**F. CORPELET & A. DUPRÉ.**  
**HOSIERY MACHINE.**

(Application filed Feb. 23, 1899.)

(No Model.)

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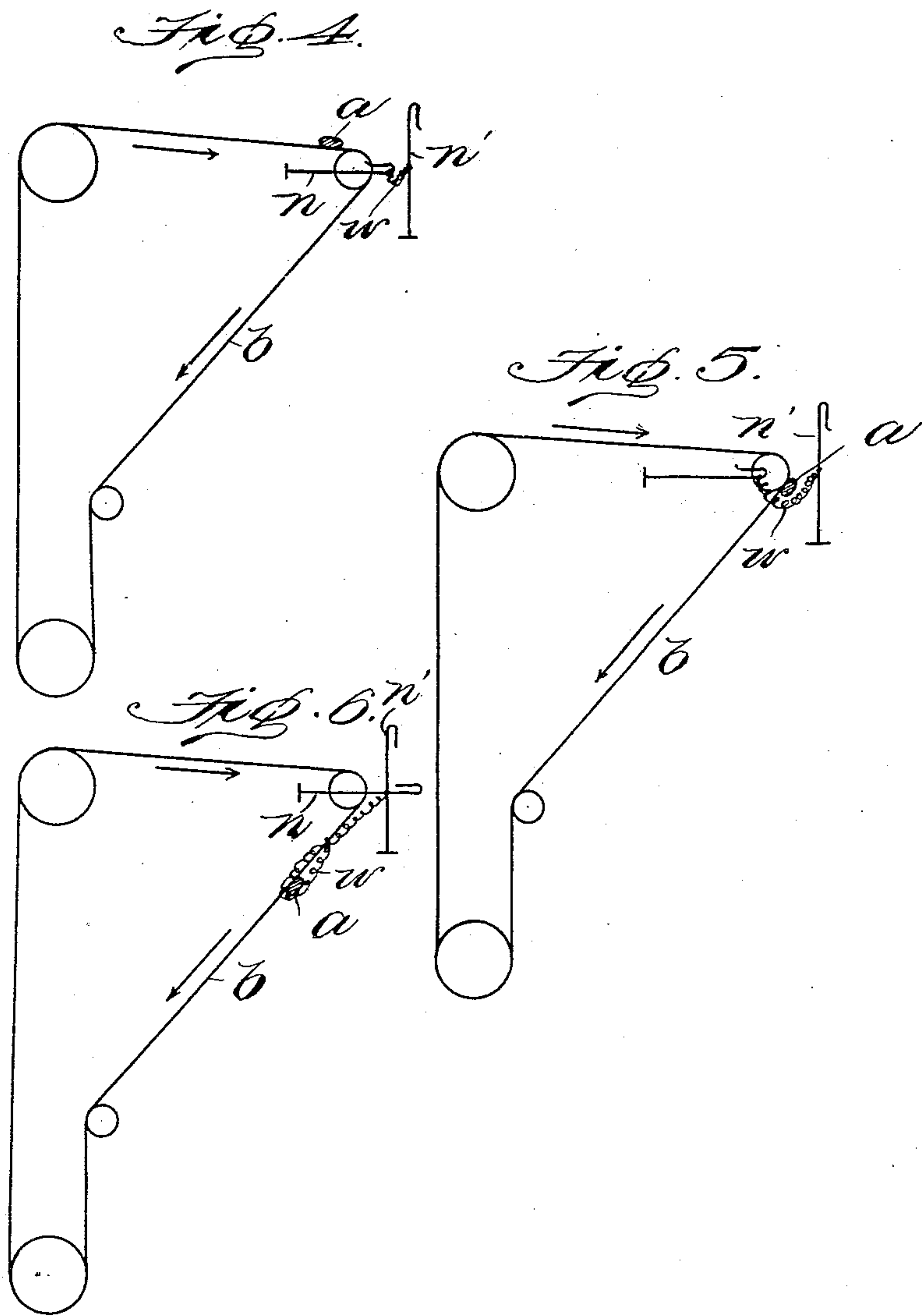
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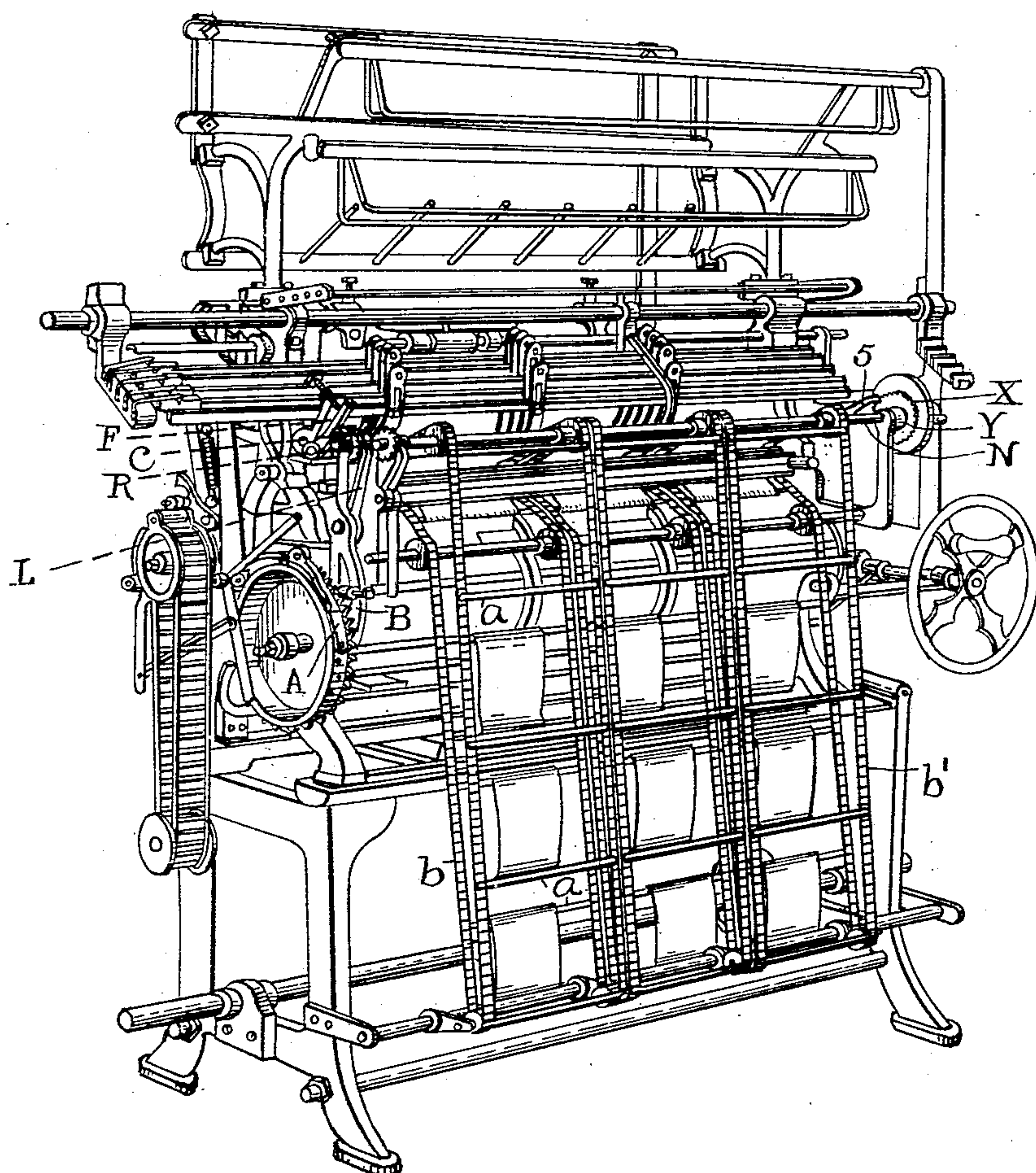
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Fig. 7.



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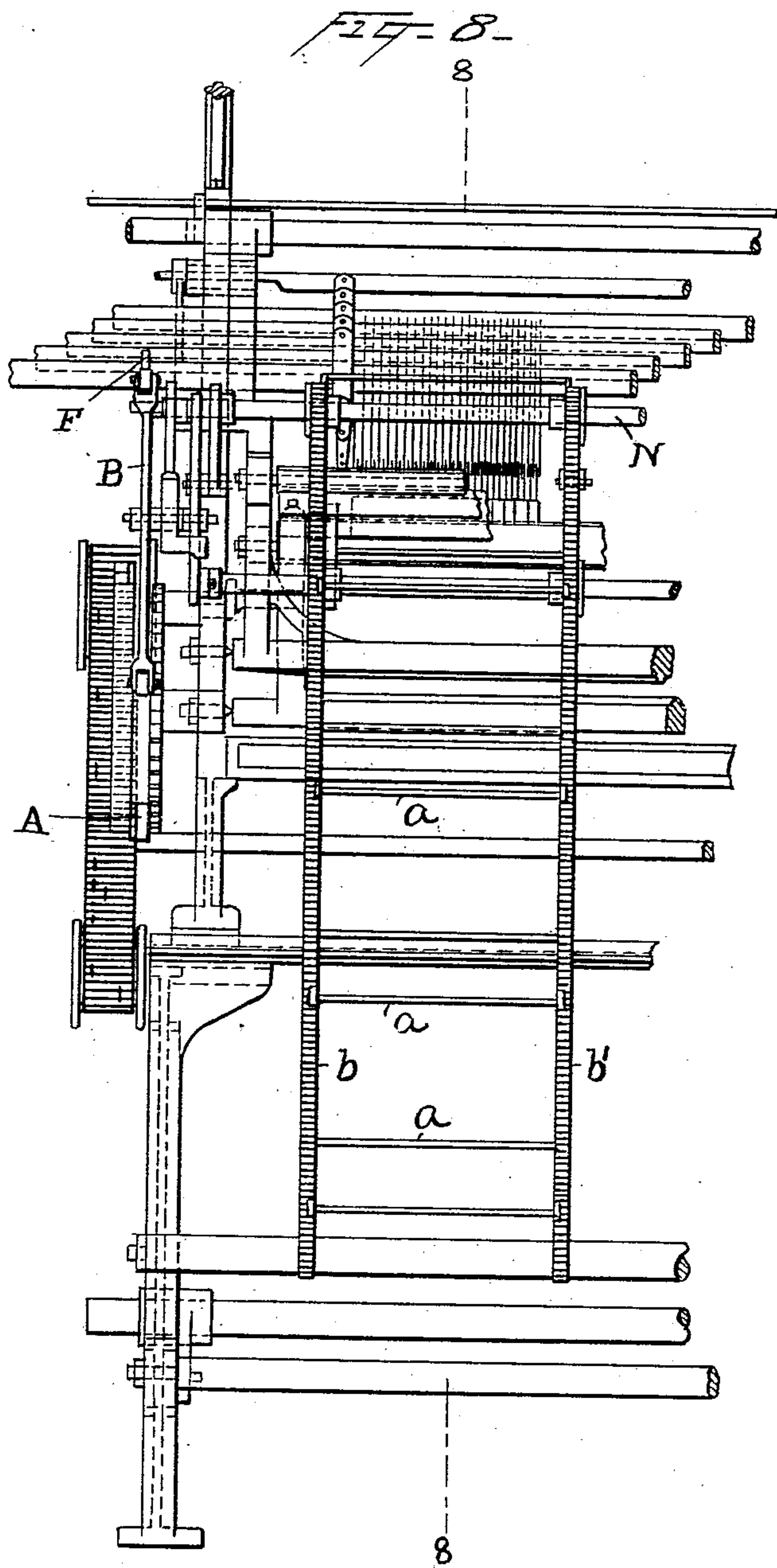
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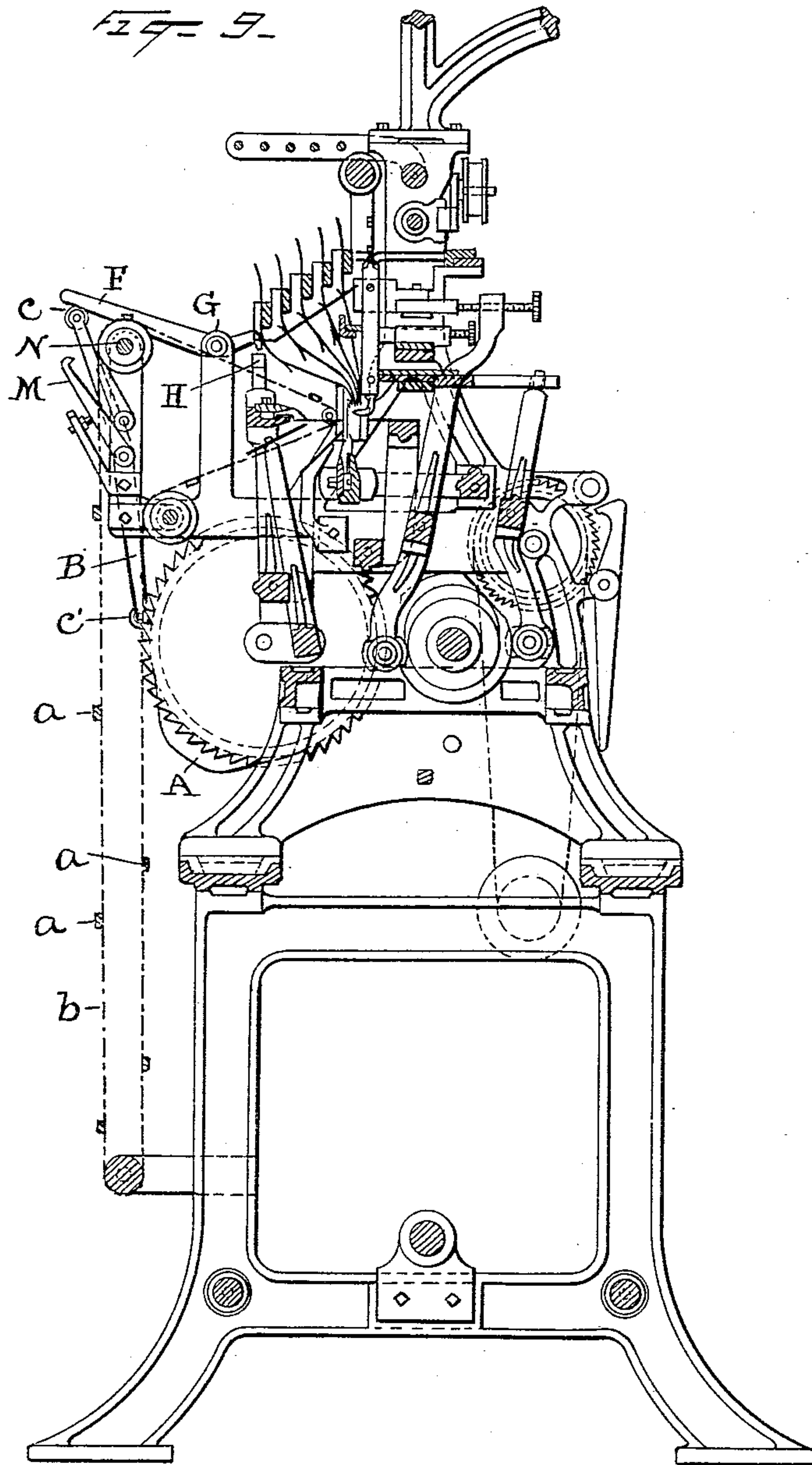
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(Application filed Feb. 23, 1899.)

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# UNITED STATES PATENT OFFICE.

FELIX CORPELET AND ALBERT DUPRÉ, OF ROMILLY, FRANCE.

## HOSIERY-MACHINE.

SPECIFICATION forming part of Letters Patent No. 713,609, dated November 18, 1902.

Application filed February 23, 1899. Serial No. 706,484. (No model.)

*To all whom it may concern:*

Be it known that we, FELIX CORPELET and ALBERT DUPRÉ, citizens of the Republic of France, residing at Romilly-sur-Seine, in the department of Aube, France, have invented certain new and useful Improvements in Hosiery-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

These improvements, which may be applied to any type of straight-bar knitting-machine in which ribbed or plain fabrics are produced, have for their object to permit the production in unlimited length of those parts of the knitted fabrics at the ends of ribbed tops, ribbed hose and half-hose, plain hose, and other articles, which consists of a folded-over or flap part knitted into the fabric along its edge, so as to constitute a doubled part called the "welt."

By the existing method of manufacture the welt consists of a very few rows of plain fabric knitted upon the frame needle-bar, into which a welt-wire is inserted by hand after the first rows of welt are knitted. The welt-wire then has weights hooked upon each of its ends to pull upon the work until the completion of the welt, when the wires are withdrawn.

According to the present improvements, the welt-wires are removably attached by their ends to a pair of parallel chains or flexible bands, to which positive motion is communicated from the machine-shaft. In their travel the welt-wires have to pass between the needle-bars, and it therefore becomes necessary to provide means for their separation.

The accompanying drawings illustrate in what manner this invention may be carried into effect and will be hereinafter referred to.

Figures 1 and 2 represent sectional side views, and Fig. 3 a partial plan. Figs. 4, 5, and 6 are diagrams representing the engagement of the welt by the welt-wires. Fig. 7 is a perspective view of a machine embodying our improvements. Fig. 8 is a front elevation of the left-hand end of the machine shown in Fig. 7. Fig. 9 is a cross-section on line 88, Fig. 8.

The essential portions of the new apparatus

consist of means for separating the needle-bars for the passage of the welt-wires, for moving the chains carrying the welt-wires, and automatic means for maintaining the weight constantly at about the same height from the floor.

A series of welt-wires *a a*, spaced at distances apart having relation to the lengths of the welts to be produced, are held by any suitable means—as, for example, by the endless pitch-chains *b b'* or their equivalent—and are removably connected therewith by any known convenient devices.

At the commencement of the welt the welt-wire approaches, and to enable it to pass into the welt the needle-bars are separated. For this purpose a cam *A* is fixed upon the automatic welt-wheel. During the production of the welt the welt-wheel moves, carrying with it the cam *A*, which thus acts upon the lever *B*, which is fulcrumed at *D* and carries on its opposite ends the friction-rollers *c c'*. Because of the shape of the cam, which will vary according to the type of machine to which these improvements are applied, the lever when acted on by the cam first moves outward at its lower end. It consequently moves in the opposite direction at its upper end, where its friction-roller *c* exerts a pressure upon the lever *F*, fulcrumed at *G*. This pressure compels the opposite end of the lever *F*, which is beveled, to rest upon the angle-iron *H*, fixed to the shaft *J* of the machine needle-bar. The pressure being exerted gradually, the beveled end of the lever *F* draws the shaft of the machine needle-bar toward the front of the machine. The space thus obtained suffices for the passage of the welt-wire. The welt-wire having passed, the welt-wheel continues its movement, carrying with it the cam *A*, whereupon the levers move in the reverse direction and cause the displaced needle-bar to resume the working position. The welt-wheel also carries a second cam *K*, which by the movement of the wheel acts upon a lever *L*, fulcrumed at *D* and carrying at its upper end a click *M*, engaging with the ratchet-wheel *R*, fixed upon the machine-shaft *N*. Under this condition the ratchet-wheel is immovable, and since it is fixed upon the weight-driven machine-shaft, which drives the welt-wire chains, a stoppage of the movement of



the wires ensues so long as the ratchet-wheel is held by the click. The length of action of the cam is calculated in such a manner that the stoppage may be obtained for the length 5 of time necessary to knit one-half of the walls of the welt. The cam K having passed, the click leaves the ratchet-wheel, and the shaft N thus becomes free again.

The diagram Fig. 4 shows the commence- 10 ment of the welt *w* with the welt-wire approaching at *a*. As the knitting of the welt proceeds the machine needle-bar is moved away from the frame needle-bar, as already described, to permit the passage of the welt- 15 wire into the welt, as indicated by the diagram Fig. 5. The diagram Fig. 6 shows the welt after it has been closed and with its welt-bar imprisoned in it and pulling the work by its connection with the chains *b b'*. 20 A counterweight T, suspended from the cord V, tends to turn the machine-shaft N by means of the grooved pulley X, to which the cord is attached, and the two ratchet-wheels Y Z. The ratchet-wheel R, being no longer 25 held by the click M, the machine-shaft N, on which the pulley X is mounted and to which it is indirectly secured by being engaged with the ratchet-wheel Z, keyed upon M, is subject to the pull of the counterweight and turns, 30 moving with it the welt-chains and welt-wires by means of chain-wheels R' R', also keyed upon the shaft N, as shown by Fig. 3. The advancing chains introduce the wire *a* into that part of the fabric constituting the welt 35 produced during the stoppage, and from this moment the tension of the fabric is produced by the motion of the chains derived from the counterweight and transmitted through the welt-wire imprisoned within the welt. When 40 the fabric is completed, it can be separated by making two strokes without moving the thread-carrier, so that during these two strokes no fabric is produced. After the separation thus effected the welt-wire is with- 45 drawn, the fabric removed, and the welt-wire is replaced on the chains.

The automatic means for maintaining the weight T constantly at about the same height from the floor consists of the grooved pulley 50 X, the cord V, the stop 3, lever 6, connecting-rod 7, lever 8, connecting-rod 9, click 5, engaging with ratchet-wheel Y, and the spring 10 and click 4, engaging with the ratchet-wheel Z. The ratchet-wheel Y and the pulley X 55 are fixed together; but both are mounted free upon the shaft N. The click 4 is pinned upon the pulley X and held in gear by the spring 10. The pulley-wheel X receives its motion from the weight T and in advancing pulls 60 along the click 4, fixed to the grooved pulley X, and this click, which engages the ratchet-wheel Z, produces rotation of the shaft N, on which Z is fixed, and consequently motion of the chains *b b'*, which, through the imprisoned 65 welt-wire, produces tension and exerts a pull upon the fabric. It follows that as the length of the fabric produced increases the weight

T must tend to descend to a certain extent; but immediately upon the development of this motion of the weight the end of the lever 70 6, which rests upon the stop 3, connected with the weight, moves downward, and consequently through the agency of the parts 7, 8, and 9 brings the click or dog 5 into engagement with the teeth of the ratchet-wheel Y, 75 which is then rotated by the continuous reciprocation of the dog 5, which is suitably actuated by connection with some moving part of the machine until the weight has by this means been again so far raised that the 80 stop 3 has once more lifted the lever 6, and thus once more put the click or dog 5 out of action. The ratchet-wheel Z, fixed upon the shaft N, is independent, except through the 85 click 4 of the grooved pulley X and the ratchet-wheel Y.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a knitting-machine, the combination 90 with two parallel endless belts, of welt-wires removably secured thereto; substantially as described.
2. In a knitting-machine, the combination with two parallel endless belts, of welt-wires 95 removably secured thereto, and means for periodically separating the needle-bars; substantially as described.
3. In a knitting-machine, the combination with separable needle-bars, of means for au- 100 tomatically separating them, and means for carrying welt-wires between them; substantially as described.
4. In a knitting-machine, the combination with separable needle-bars, of a cam for sepa- 105 rating the needle-bars, carriers for carrying welt-wires between them, and means for periodically stopping said carriers; substantially as described.
5. In a knitting-machine, the combination 110 with separable needle-bars, of a lever for moving one of said bars, a lever for actuating the first-named lever, and a cam for periodically moving the second lever; substantially as de- 115 scribed.
6. In a knitting-machine, the combination with a stationary frame needle-bar, of a movable machine needle-bar, an angle-iron fixed on the shaft of the machine needle-bar, a lever having a beveled end resting on said 120 angle-iron, and means for periodically causing said lever to exert a pressure on said angle-iron; substantially as described.
7. In a knitting-machine, the combination with endless belts for carrying welt-wires, of 125 a shaft for actuating said belts, a pulley loose on the shaft, means for rotating the pulley, and ratchet-and-pawl connections between the pulley and the shaft; substantially as described. 130
8. In a knitting-machine, the combination with endless belts for carrying welt-wires, of a shaft for actuating said belts, a loose pulley on the shaft, a ratchet-and-pawl connec-



tion between the shaft and pulley, a cord and weight for rotating the pulley in one direction, a dog for turning it in the opposite direction, and means for automatically bringing  
5 said dog into action when the weight falls to a predetermined point; substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

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ALBERT DUPRÉ.

Witnesses:

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