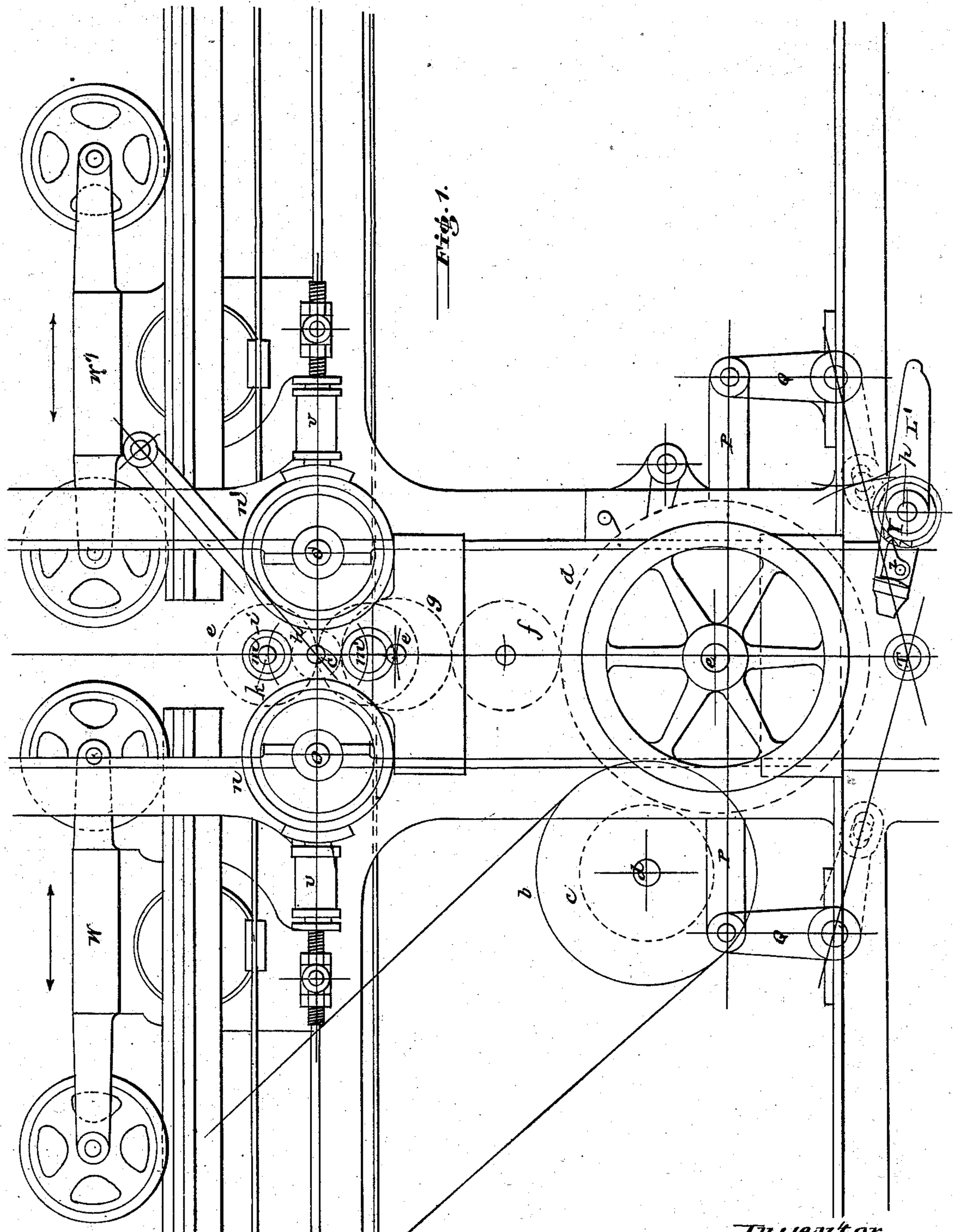
(No Model.) 4 Sheets—Sheet 1.

C. WENNER.

MOTOR FOR EMBROIDERING MACHINES.

No. 255,710. Patented Mar. 28, 1882.



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(No Model.) 4 Sheets—Sheet 2.

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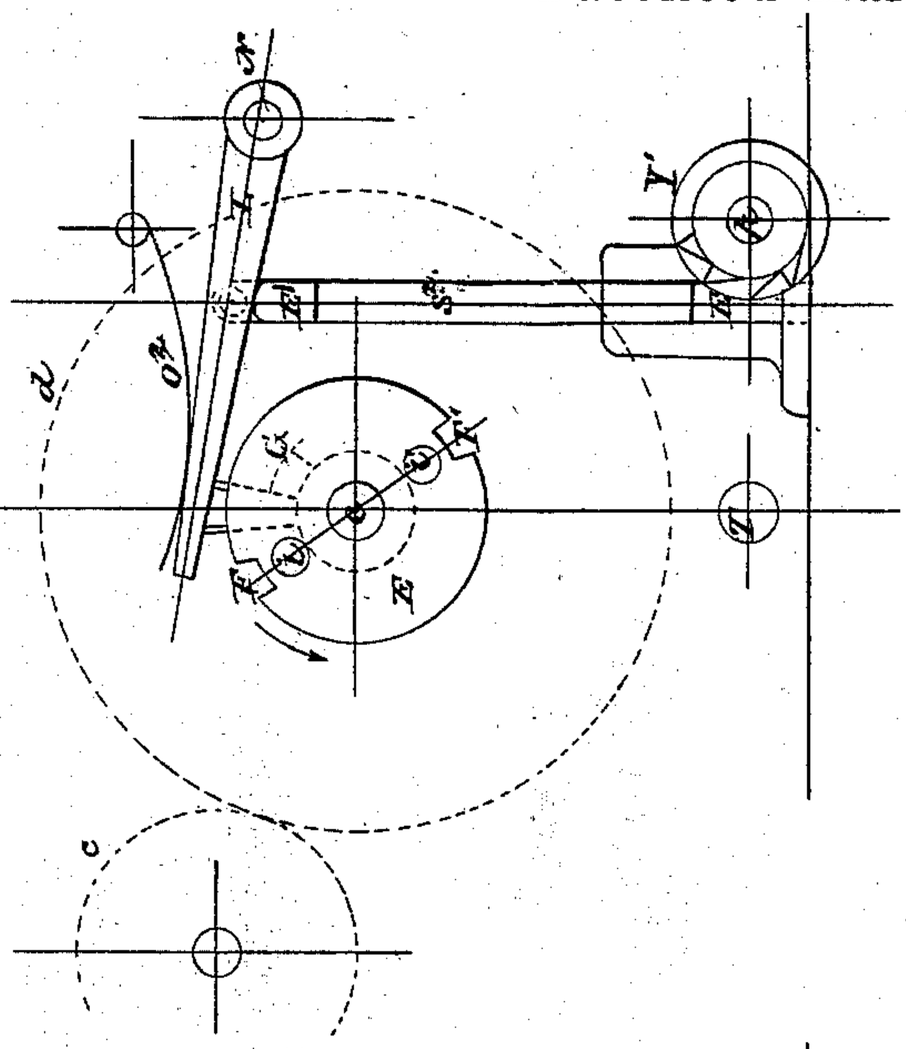

Fig. 3.

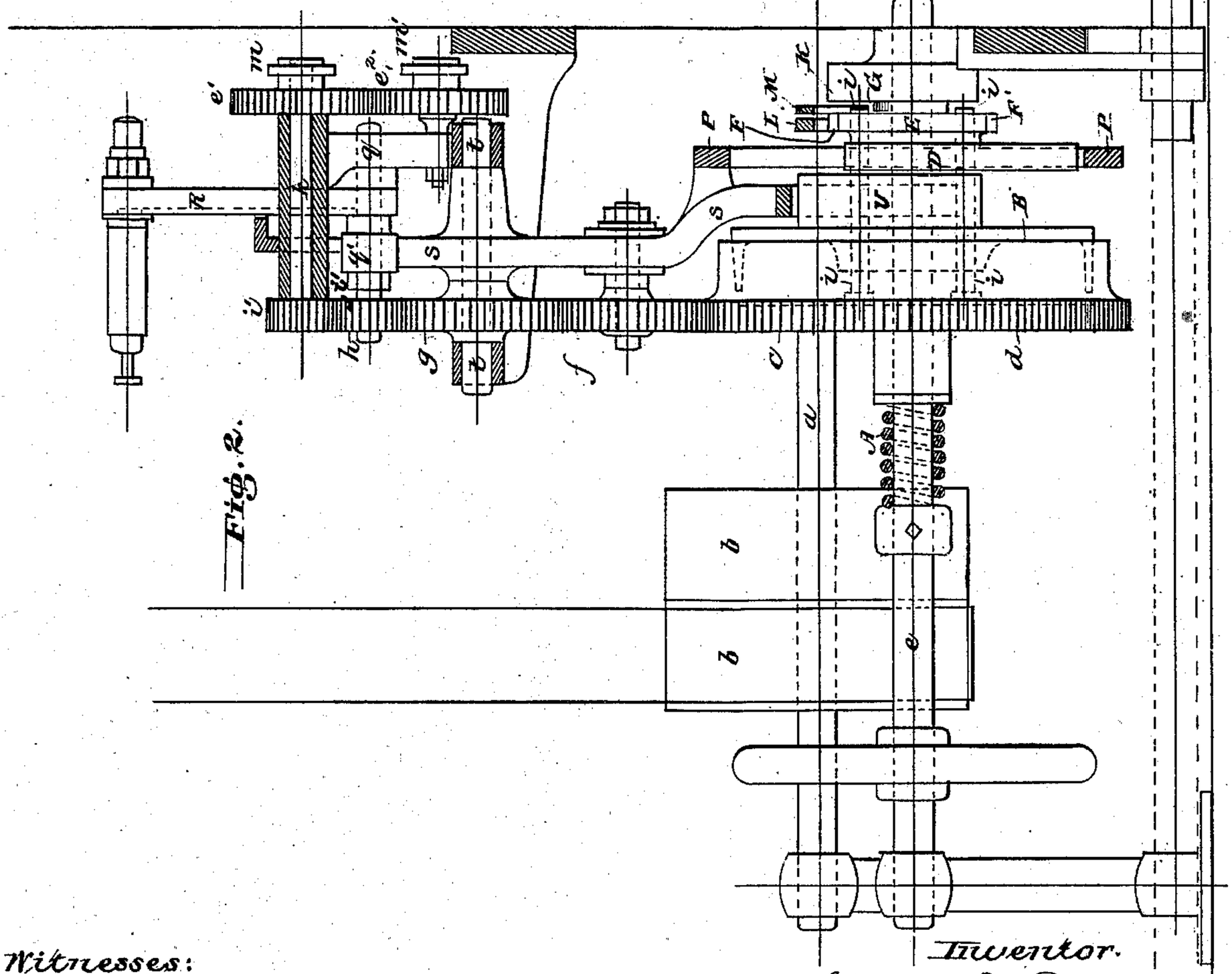

Fig. 2.

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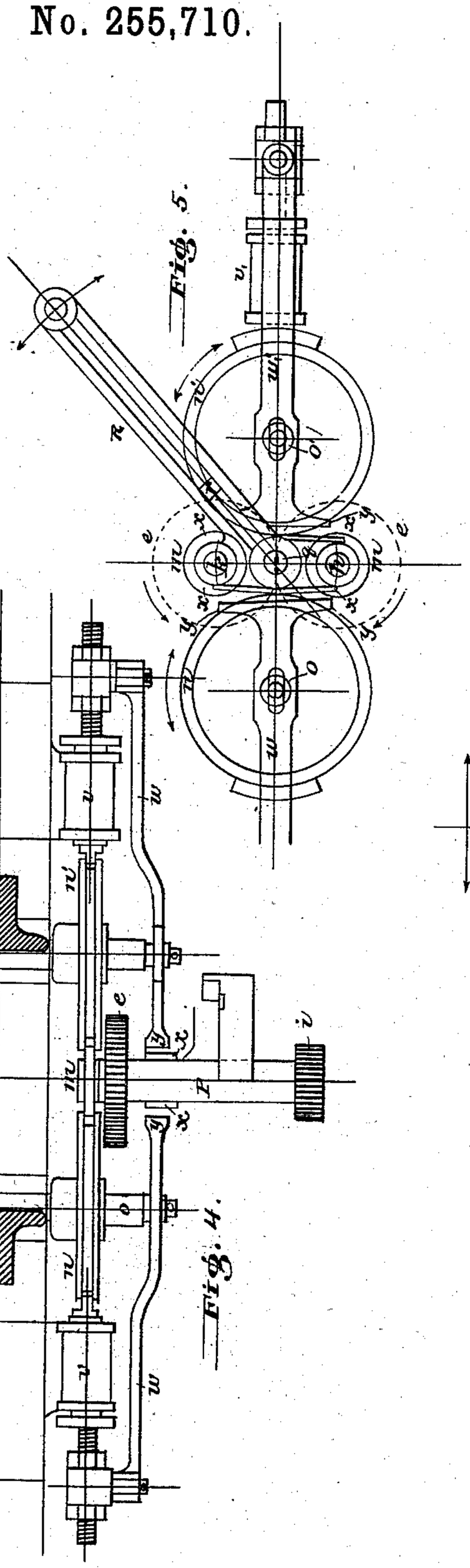

Fig. 5.

Fig. 4.

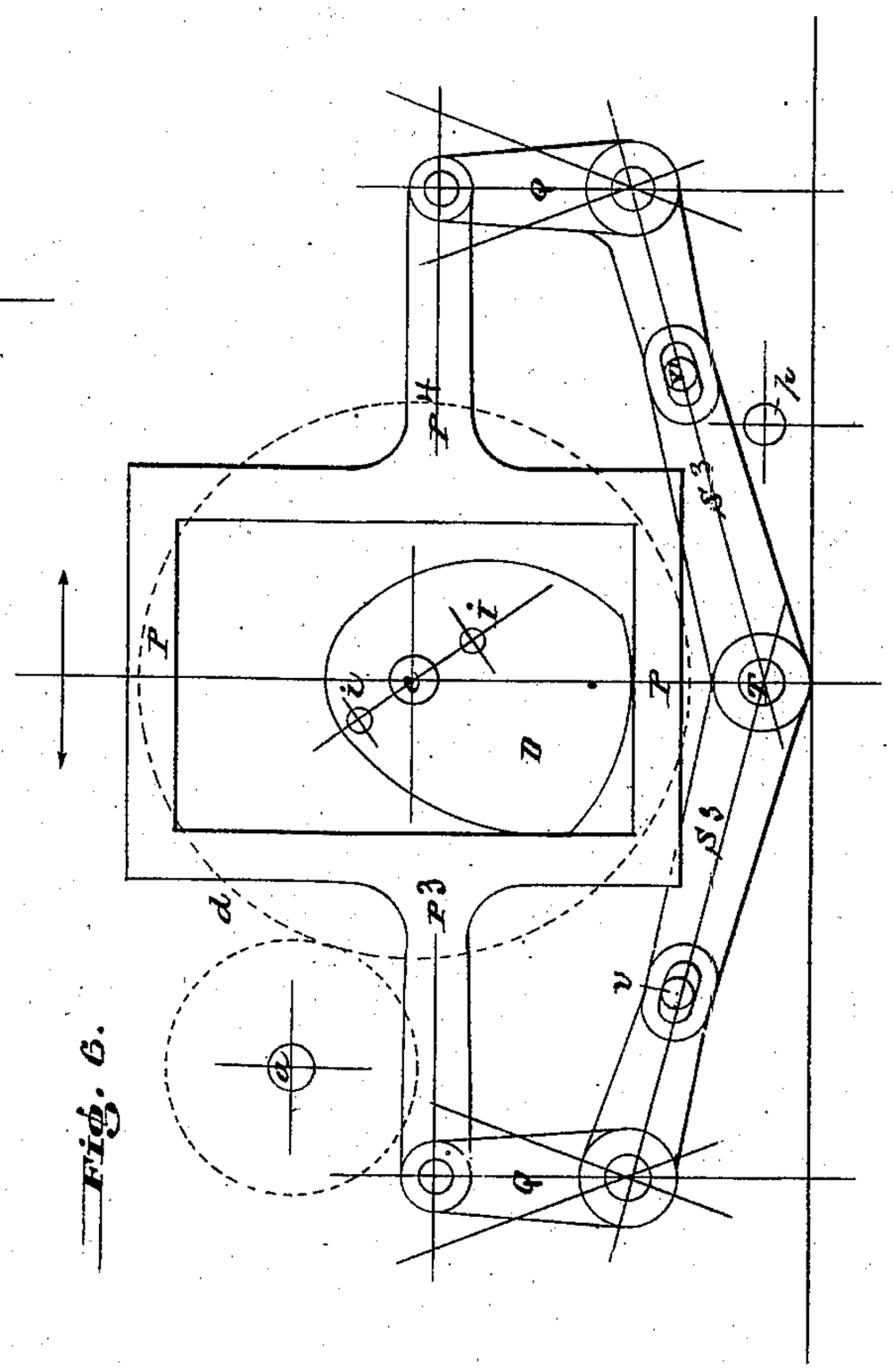

Fig. 6.

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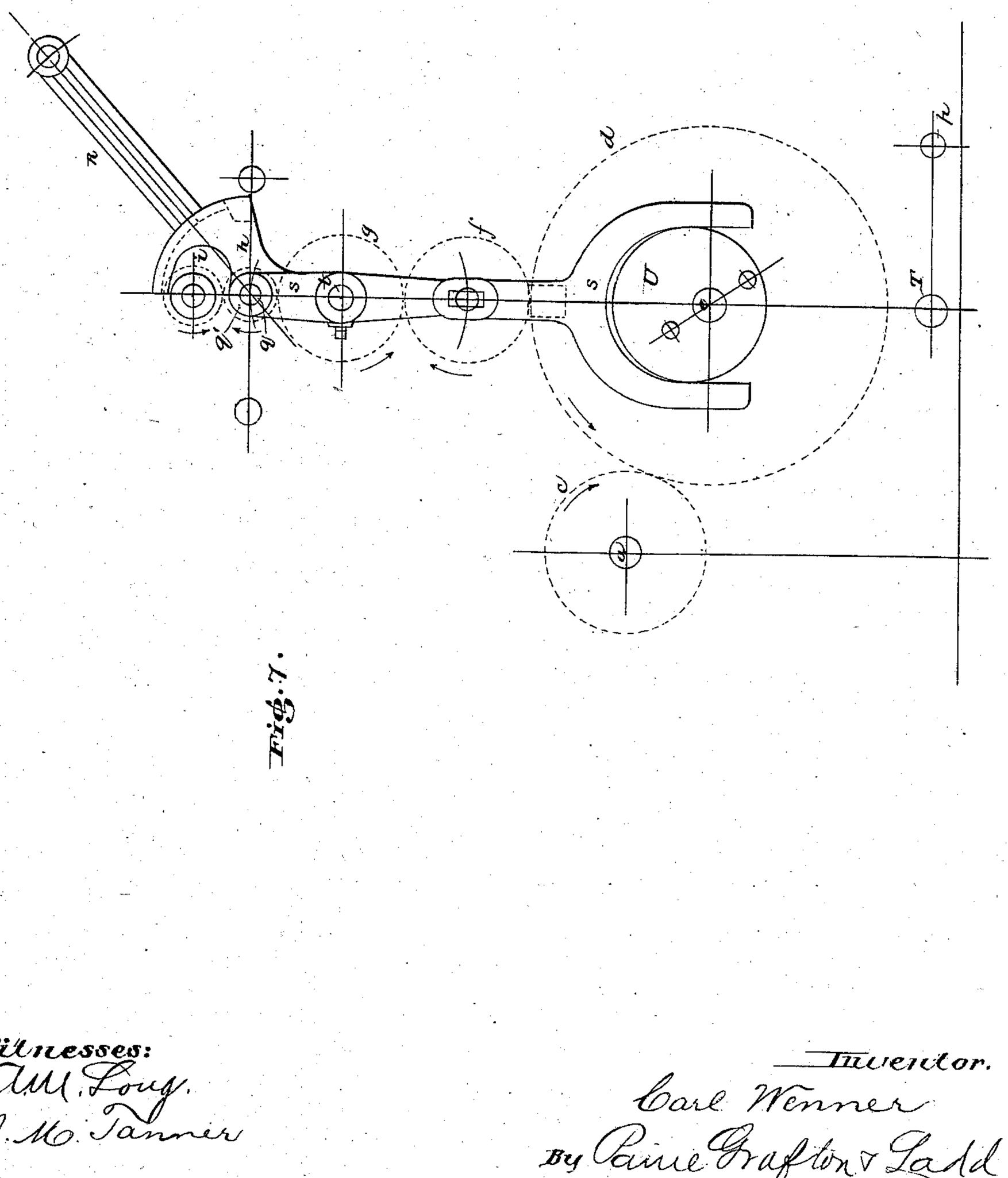

Fig. 1.

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UNITED STATES PATENT OFFICE.

CARL WENNER, OF ST. GALLEN, SWITZERLAND.

MOTOR FOR EMBROIDERING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 255,710, dated March 28, 1882.

Application filed July 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, CARL WENNER, a citizen of Switzerland, residing at St. Gallen, in the canton of St. Gallen, Switzerland, have invented certain new and useful Improvements in Flat-Stitch Embroidering-Machines in Working them by Motive Power; and I 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention consists in the hereinafter-described mechanism, constituting a motor for that class of embroiding machinery in which reciprocating carriages carrying pinchers and needles operate in connection with a work-holding frame controlled by a pantograph.

In the accompanying drawings, Figure 1 is an end view of a flat-stitch embroidering-machine, showing part of the driving apparatus. Fig. 2 is a side elevation of part of the driving machinery. Fig. 3 is a detail view. Fig. 4 is a top view of the brakes and friction-wheels. Figs. 5, 6, and 7 are detail views of the driving and regulating mechanism.

Similar letters of reference indicate corresponding parts.

In the drawings, *a* represents the main axis of the driving mechanism, and is provided with fast and loose pulleys *b b* and a belt or similar means of transmitting power. On the axle *a* is the cog-wheel *c*, which meshes with wheel *d*, running loose on shaft *e*. From wheel *d* motion is transmitted through the train *f g h i* to shaft *k* and wheels e' e^2. The wheels e' e^2 rotate in opposite directions, and with them the friction-wheels *m* m', Figs. 1 and 2. The friction-wheels *n* n', Figs. 1, 4, and 5, of the embroidering-machine are secured on the driving-shafts *o* o', from which reciprocating motion is imparted to the needle-carriages W W′. The friction-wheels *m* m' and *n* n', being alternately brought into contact by the regulating devices, control the motions of the said needle-carriages at the will of the operator in the following manner:

The hand-lever R swings on shaft *q*, and is provided with the arms *p p* on its lower end. On each of said arms is pivoted one of the friction-wheels *m* m', which, by motion of the lever R, may be made to engage with either of the friction-wheels *n* n', the shaft *q* itself being fixed in the upper end of a two-armed lever, S, pivoted on stud *t*, the bifurcated lower extremity of which lever S fits over the eccentric *w* on shaft *e*. With the rotation of eccentric *u* the end q' of lever S is vibrated horizontally, carrying with it the three-armed hand-lever R and friction-wheels *m* m', and according to the position (right or left side) of the lever R brings the forward or backward motion wheels *m* m' into action alternately on the wheels *n* n', and through them to the needle-carriages W W′. When in the central position shown in Fig. 1 the motor is out of gear, though in motion.

Lever R is provided with a latch-bolt, *r*, for locking it in any desired position with respect to the vibrating lever S.

v v, Figs. 4 and 5, are cases secured to the frame of the machine, and contain springs, which tend to hold brake-shoes against the friction-wheels *n* n'. The brake-rods are provided with arms *w w*, having the plates *y y* on their ends. The hand-lever R is provided with the plates *x x* which, when said hand-lever R is moved to the right or left by hand, or as a portion of the escapement of the motor by the vibration of lever S, are brought into contact with plates *y y* and release one of the friction-wheels *n* n' from its brake-shoe and permit the movement of the needle-carriages.

The operation of the treadle mechanism is as follows: On the shaft *e* are the wheels *d* E K and eccentrics U D, the train B U D E receiving their motion from the gear-wheel *d*, against which they are held by the spring A. The wheel K is secured to shaft *e*, and turns independent of B U D E. The friction-gear B is fast to the eccentrics U D and disk E. The disk E is formed with the two notches F F′, and is provided with the pins *i* i', which rest with their heads against the hollow gear-wheel *d* when *d* is in contact with friction-gear B, and (passing through U D E) with their points against fast disk K, which disk K is provided with an offset, G, against which the pins strike at each half-revolution.

Figs. 2 and 3, L and M are latches oscillating on the stud N, Fig. 3, and are held down

by spring o^2. The latch L fits with its nose-shaped part into the notches F F′ of disk E. The nose of the twin latch M fits down between disks E and K, forming a prolongation of latch L, adapted to engage with the ends of the pins *l l′* between the disks E K or the offset G on disk K.

In Fig. 2 the friction-gear B and geared friction-wheel *d* are shown in contact. Therefore they, with the eccentrics U D, disk E, and pins *i i′*, turn together. As the pin *i* passes the offset G on fast disk K the said pin is forced back, and with it the geared friction-wheel *d*, at least sufficiently so to release the friction-wheel B, and with it U, D, and E. The force of inertia will keep U D E turning until past the offset G, when the pin will rest against the side of the nose-shaped part of the latch M, and the nose of the latch L falling at the same time into the notch F or F′, the motion of B U D E is arrested. The geared friction-wheel *d*, being released by the backward push of pin *i* or *i′*, is not affected by the stoppage.

If, now, the twin latches L and M are lifted and then dropped, the pin *i*, being released, is forced forward by spring A, at the same time *d* and B come into contact, and during the next half-revolution the above-described operation is repeated—viz., the offset G forces back pin *i*, wheel *d*, and spring A, and the latches L and M come into engagement one with the pin and the other with the notch F of disk E. The rotation of B U D E is thus completely arrested at every half-revolution.

The eccentric D is inclosed in a sliding loop, P, Fig. 6, which has alternate lateral motion. The arms P^3 P^4 of the loop P are connected with the bell-cranks Q Q, and these to a double-armed lever, S^3, pivoted at T. The lateral motion is converted by the bell-cranks Q Q into vertical at the points *v v′*, producing the so-called "treadle" in the known manner. At each half-revolution of B U D E the lever S^3 receives its motion, which is communicated to the needle-carriages W W′, as above described.

The operation of the twin latches L and M is as follows: The pedal L′, oscillating on shaft *p* by means of a pawl, operates the ratchet-wheel Y secured on the shaft *p*. At the other end of shaft *p* there is a second and similar ratchet, Y′, with the teeth of which the lower end of the rods S^2 engages. At the top end of said rod S^2 there is a shoulder, E′, on which rest the latches L and M. The depression of pedal L′ rotates the notches Y Y′ to the extent of one tooth and raises the rod S^2, and also liberates it, when it is immediately forced down and onto the next ratchet-tooth. The latches are then ready to engage with the notches F F′ and pins *i i′*, respectively.

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

1. In a motor for an embroidering-machine, gear-wheels *d c f g h i i′ e e′* and friction-wheels *m m′*, the axis *a*, and driving-shaft pulleys *b b′*, in combination with friction-wheels *n n′ o o′* and needle-carriages driven thereby, substantially as shown and described.

2. The shaft *e* and spring *a*, gear-wheel *d*, friction-wheel B, eccentrics U D, disk E, provided with notches F F′, the pins *i i′*, latches L M, and disk K, provided with offset G, substantially as shown and described.

3. The eccentric U, levers S, and three-armed hand-lever R, provided with friction-wheels *m m′*, substantially as shown and described.

4. The eccentric U, lever S, and lever R, provided with friction-wheels *m m′*, in combination with the friction-wheels *n n′*, shafts *o o′*, and needle-carriage W W′, substantially as shown and described.

5. The friction-wheels *n n′*, in combination with the brakes *v v′*, as shown, and means for alternately releasing the wheels *n n′*, as shown and described.

6. The lever R, provided with the plates X X, in combination with the wheels *n n′*, brakes *v v′*, arms *w w′*, and plates *y y′*, as shown and described.

7. The loop P of the lever S, having the arms P^3 P^4, the angle-levers Q Q′, the double lever S^3, pivot T, and the eccentric D, for operation as described.

8. The latch-tripping mechanism, consisting essentially of the pedal L′, provided with pawl Z, ratchet Y Y′, shaft *p*, and rod S^2, provided with shoulder E′, substantially as shown and described.

9. The spring-pressed latches L M and stud N, in combination with the disk E, having notches F F′, and mechanism for releasing said latches from disk E, substantially as shown and described.

10. The combination, with the disk E, provided with notches F F′, and latches L and M, of the rod S^2, provided with shoulder E′, ratchets Y Y′, shaft P, and pedal L′, having pawl Z, substantially as shown and described.

11. The combination of the geared friction-wheel *d*, spring A, friction-wheel B, eccentrics U and D, and disk E with the pins *i i′* and the disk K, provided with the offset G, substantially as shown and described.

12. The combination, with the pins *i i′*, of the wheels *d* and B, latches L M, and spring A, whereby eccentrics U D are at each half-turn released from the action of wheel *d* and momentarily stopped, substantially as shown and described.

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

CARL WENNER.

Witnesses:
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E. BÄRLOCHER-NÄFF.