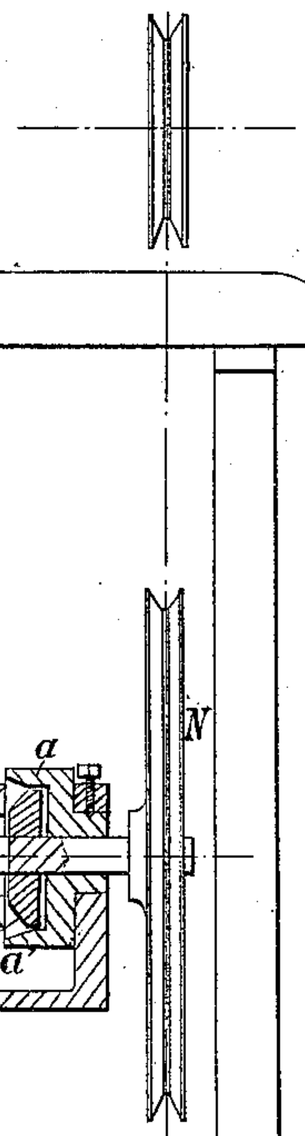
(No Model.) 3 Sheets—Sheet 1.

L. EYNARD.

MOTOR.

No. 446,945. Patented Feb. 24, 1891.

FIG. 1.



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(No Model.) 3 Sheets—Sheet 2.

L. EYNARD.

MOTOR.

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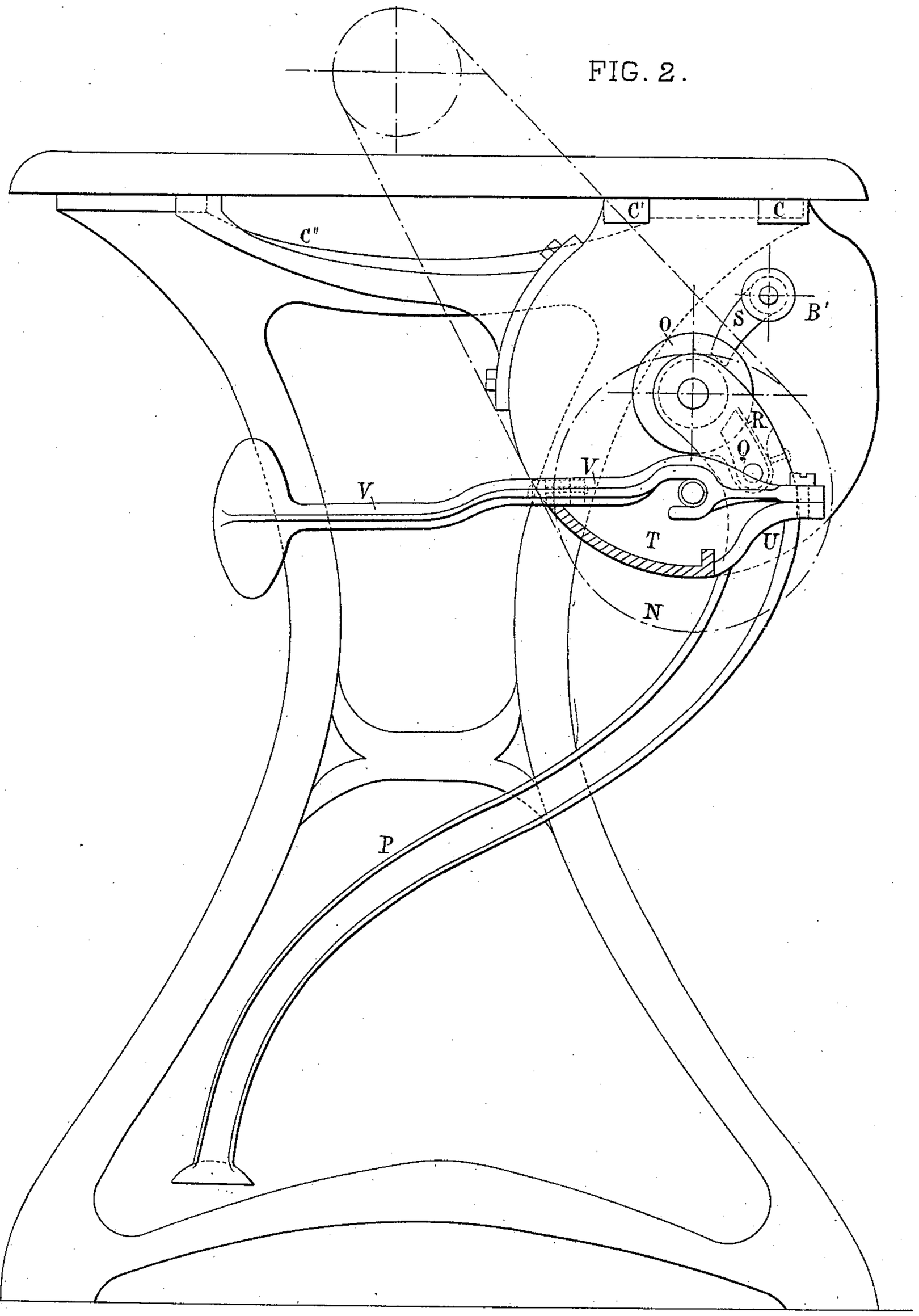
FIG. 2.



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(No Model.) 3 Sheets—Sheet 3.

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MOTOR.

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FIG. 3.

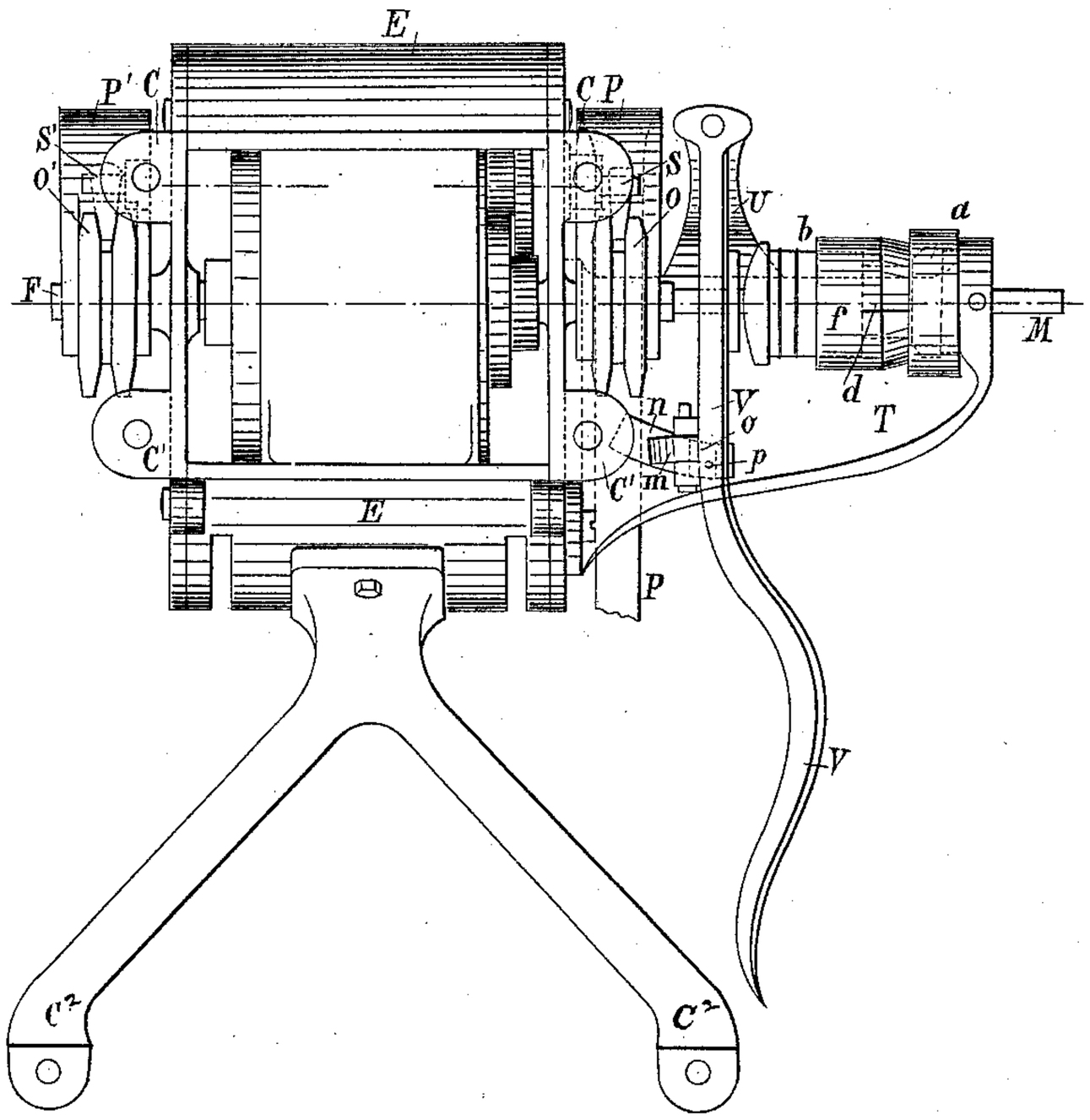
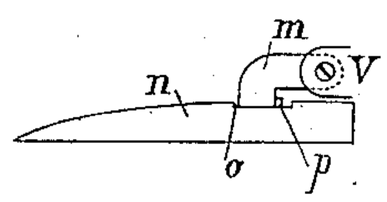


FIG. 4.



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UNITED STATES PATENT OFFICE.

LOUIS EYNARD, OF PARIS, FRANCE.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 446,945, dated February 24, 1891.

Application filed October 9, 1890. Serial No. 367,541. (No model.) Patented in France March 14, 1890, No. 204,345.

To all whom it may concern:

Be it known that I, LOUIS EYNARD, a citizen of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in or Relating to Motors for Operating Sewing-Machines and the Like, (for which I have obtained Letters Patent of France, No. 204,345, dated March 14, 1890,) of which the following is a specification.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a vertical section, Fig. 2 a side elevation, and Fig. 3 a plan, of the motor, and Fig. 4 is a detail view of portions of the brake mechanism thereof.

Like letters indicate like parts throughout the drawings.

The motor mechanism is inclosed in a box A, closed at its ends by two end plates B B′, preferably integral therewith and each provided with lugs C C′, by which the motor may be fixed to the under side of the table by means of screws or the like. A coiled spring D is contained in a spring box or case E, and one of its extremities is fixed to a shaft F (herein termed the "spring-shaft") and the other to the wall of the spring-box E, which is mounted loosely on the said shaft F. The spring-box E at one side carries an internally-toothed wheel or ring G, which gears with a pinion H, preferably cast in one with another wheel I, which gears with a pinion J, similarly cast in one with another wheel K, which transmits the movement to a pinion L, keyed or otherwise secured to one end of the driving-shaft M, carrying at its other extremity a grooved driving-wheel N, which transmits motion from the motor to the machine to be operated by a band or other equivalent means. The wheels and pinions mentioned above are all loose on their respective shafts, excepting the pinion L, secured on the driving-shaft M. The spring-shaft rotates in bearings formed in the two ends B B′ of the box, and on each of its extremities is secured a grooved pulley O O′. Two arms P P′ (designated by the name of "stirrup-levers") are forked at their upper ends, where they are pivoted on the spring-shaft F, and between the two cheeks or prongs of each arm is one of the before-mentioned grooved pulleys. On each of the stirrup-levers P P′ is a catch or pawl Q Q′, the free end of which is pressed into engagement with the groove of one of the pulleys O O′ by a spring R or R′. Each of the before-mentioned ends B B′ has also pivoted on it a catch or pawl S S′, the free end of which engages in the same manner in the groove of one of the pulleys O O′. To the end B′ is fixed a bracket or support T, terminating at its extremity in a socket and carrying an arm U, to which is jointed a lever V, by which the brake of the motor is controlled or operated, as hereinafter explained.

To the front of the box A may be secured a fork, each of the prongs C^2 of which terminates in a lug, which, like the lugs C′ on the box ends, may be fixed to the table.

The motor operates as follows: The operator applies his feet to the stirrup-levers P P′, which, as shown in Fig. 1, may preferably each terminate in a loop for the reception of the feet, and pushes on them either alternately or simultaneously, so that by means of the catches or pawls Q Q′, carried on the stirrup-levers, both the grooved pulleys O O′ and the spring-shaft F, on which they are secured, will be rotated, and the spring D will be coiled around the shaft F and will impart rotary motion to the spring-box E. The two motions—namely, that of the spring-shaft F and that of the spring-box E—are independent of each other, these being connected by the spring D. The catches or pawls S S′ on the ends B B′ prevent backward rotation of the shaft F after each movement of the stirrups P P′. The pressure which the spring D thus coiled around its shaft F exercises on the spring-box E is transmitted to the machine by means of the gearing above described. This movement is checked by means of a brake, which is described farther on, and which the operator works by the aid of the before-mentioned brake-lever V, on which he exercises a pressure with his knee in proportion to the speed with which he desires the machine to work. This brake both moderates or retards the speed and stops the machine, and is constructed with a cup *a*, which is carried by the before-mentioned bracket T, a socket *b*, which is rotated with the driving-shaft M by means of a pin *c*, which can be moved longitudinally

in a slot *d* in the said shaft, a disk *e*, which serves as the retarding medium by being pressed against the interior of the before-mentioned cup *a*, and a preferably coned sleeve *f*, which serves for stopping the machine by being pressed into frictional contact with the cup *a*. Springs *g* and *h* tend always to hold in their inoperative positions the disk and sleeve, which are both mounted so that they may be moved longitudinally toward the cup *a* when the brake-lever V is moved by the knee of the operator. Such a movement of the brake-lever communicates motion to the socket *b*, and in turn to the sleeve *f* by means of the spring *h*. The outer face of the disk *e* is plain and comes into contact with the correspondingly-plain face of the cup *a*, which is stationary. The friction caused thereby retards the rotation of the driving-shaft M, the brake in this case acting as a moderator. If the operator desires to stop the machine, he has only to move the brake-lever V farther, so that the exterior conical face of the sleeve *f*, which until then has remained apart from the cup *a*, will come into contact with the correspondingly internally-coned surface of the stationary cup *a*, against which it is pressed by the spring *h*, which action will stop the machine immediately. When the motor is thus stopped, the brake-lever V is retained by means of a catch or pawl *m*, pivoted to it, and which during the pushing of the said lever moves over a preferably inclined plane *n*, provided, as shown in Fig. 4 on an enlarged scale, with a recess or notch *o*, and with a stud or pin *p* projecting up from the bottom of the said recess. When the brake is being moved so as to stop the machine, the catch or pawl *m* on the brake-lever V slides along the inclined plane *n* and its free end descends into the notch *o*, which arrests it, and thus retains the lever V in the position necessary to keep the machine at rest. In order to start the machine again, it is sufficient to give a sharp blow to the brake-lever V, so that the back of the catch *m* will strike against the stud or pin *p*, which raises the free end of the catch *m*, and in consequence releases it from the recess *o*. On account of the instantaneousness of the movement and by the action of the springs *g* and *h* the brake-lever V returns to its inoperative position, thus withdrawing the parts of the brake out of frictional contact and allowing the machine to operate at the desired speed.

I claim—

1. In a mechanism such as described, the combination, with the box or casing, the spring-shaft journaled therein, the stirrup pivoted on the end of the shaft, the friction-clutch uniting the shaft and stirrup, and the retaining-pawls to prevent the backward movement of the shaft, of the spring, the spring drum or casing, the drive-shaft rotated by the spring, and the brake for said shaft, whereby the spring may be retained under tension, substantially as described.

2. In a mechanism such as described, the combination, with the driving-shaft having the slot *d*, of a cup *a*, socket *b*, pin *c*, disk *e*, sleeve *f*, springs *g* and *h*, and brake-lever V, substantially as described.

3. In a mechanism such as described, the combination, with the brake-lever, of a pawl *m*, inclined plane *n*, having recess or notch *o*, and pin or stud *p*, substantially as described.

4. In a mechanism such as described, the combination, with the box, the shaft journaled therein, the spring connected at one end to the shaft, and the stirrups having clutch connections with the shaft, of the spring drum or casing to which the outer end of the spring is connected, having the overhanging internally-toothed flange, the train of gears driven from said flange, the drive-shaft rotated by a gear in said train, the pulley, and the brake on the drive-shaft, substantially as decribed.

5. In a mechanism such as described, the combination, with the casing or box having the extension at one end thereof, the spring-shaft journaled in the box or casing, and the drive-shaft journaled in the end extension, of the stirrups having clutch connections with the spring-shaft, the spring, the spring drum or casing, and the train of gearing connecting the drum and drive-shaft, substantially as described.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

LOUIS EYNARD.

Witnesses:

JEAN CHANAS,

JEAN ROBELET.