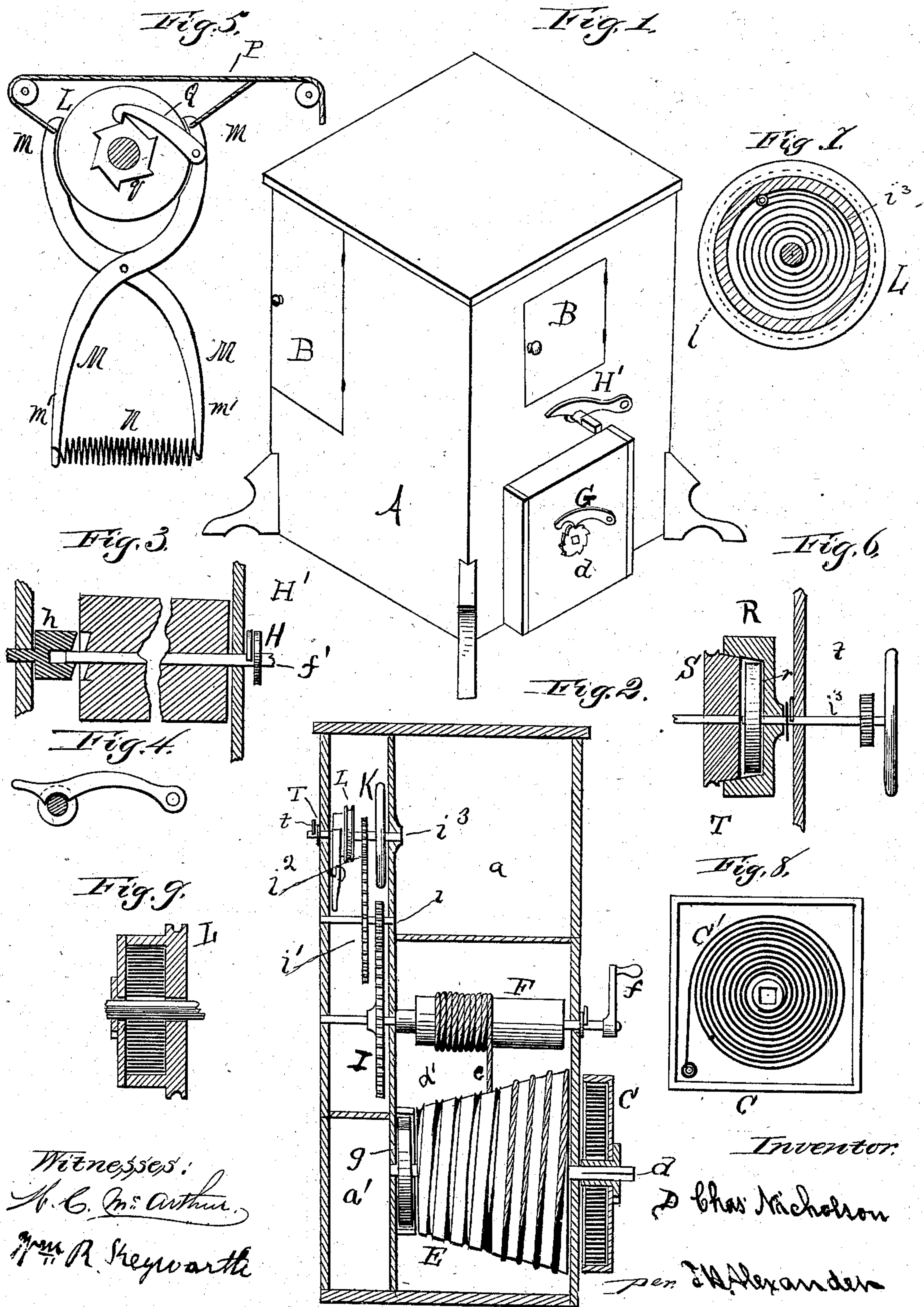


(Model.)

C. NICHOLSON.
SEWING MACHINE MOTOR.

No. 255,084.

Patented Mar. 14, 1882.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES NICHOLSON, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
OF ONE-HALF TO ROBERT M. THOMPSON, OF SAME PLACE.

SEWING-MACHINE MOTOR.

SPECIFICATION forming part of Letters Patent No. 255,084, dated March 14, 1882.

Application filed August 18, 1881. (Model.)

To all whom it may concern:

Be it known that I, CHARLES NICHOLSON, of Washington city, District of Columbia, have invented certain new and useful Improvements in Sewing-Machine Motors; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in motors for sewing-machines and other light machinery; and it has for its objects to provide an improved means whereby the power necessary to drive such machines may be stored up and applied when required, as more fully hereinafter specified. These objects I attain by the apparatus and mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a perspective view of my apparatus; Fig. 2, a vertical sectional view thereof. Fig. 3 represents a detached sectional view of the mechanism for winding the apparatus; Fig. 4, a detached view of a portion of the winding mechanism; Fig. 5, a detached view of the clutch mechanism for holding the parts when not in operation; Fig. 6, a detached sectional view, showing a method of connecting the driving mechanism with the driving-wheel of a sewing-machine. Fig. 7 shows a detached view of the friction or brake wheel, by means of which the operation of the apparatus is regulated. Fig. 8 represents a view of the main driving-spring and its casing, and Fig. 9 a detached sectional view of the friction or brake wheel.

The letter A indicates a casing for the mechanism forming the subject of my invention. The said casing is adapted to stand upon the floor or upon a suitable stand or table; or, if desired, it may be secured to the table of a sewing-machine. Any ordinary fastening devices may be employed for connecting the said casing with a sewing or other machine. The space in the casing not occupied by the operative parts of the mechanism may be utilized as a receptacle or receptacles for holding various articles, or for drawers, the casing, as illustrated in Fig. 2, having two compart-

ments, *a a'*, which, if desired, may be subdivided into smaller compartments.

In Fig. 1, the letter B indicates two hinged doors for closing the compartments. When drawers are employed of course such doors will be omitted. The casing is designed to be made of any suitable material and neatly finished, so as to form an ornamental article of furniture.

The letter C indicates a small casing containing a coiled spring, *C'*, one end of which is secured to the said casing and the other to a hollow rotating hub, D, which has its bearings in the sides of the casing.

Within the lower portion of the main casing A is journaled a rotary shaft, *d*, one end of which projects out from the side of the casing, and is square in cross-section. The hub D is adapted to fit upon the said squared end of the shaft when the casing C is secured to the main casing A, as indicated in Figs. 1 and 2, the small casing being secured to casing A in any suitable manner.

The letter E indicates a conical winding-drum mounted upon the shaft *d* within the main casing. On the periphery of this conical drum is formed a spiral groove, *d'*, which serves as a guide for the rope *e*. The said rope is attached at one end to the said drum E, and at the other to a cylindrical winding-drum, F, located above the conical drum, and upon which the rope is wound as it unwinds from the lower drum, and vice versa. The upper or winding drum, F, is of less diameter than the lower drum, in order to render the operation of winding easy and convenient. The shaft of said upper drum is provided with a crank, *f*, by means of which it may be rotated to unwind the rope from the drum E. When the rope is thus unwound from the drum E the hub D will be rotated, winding the spring *C'* in the casing C. The spring *C'* will be prevented from unwinding by the ratchet *d'* on the hub D and the pawl G, pivoted to the small casing, the said pawl being adapted to engage the said ratchet.

Within a small frame or casing, and upon the inner end of shaft *d*, is arranged a coiled spring, *g*, one end of which is attached to the shaft and the other secured to the said casing. When the spring *C'* is wound up by rotating the drum

F, so as to unwind the cord from the conical drum the spring *g* will also be wound up. When the spring *C'* in the casing *C* is fully wound it may be removed and a casing containing an unwound spring substituted. In removing the casing containing the wound spring the shaft *d* will be released, allowing the spring *g* to recoil and rewind the cord upon the conical drum, thus putting the apparatus in readiness to wind the fresh spring.

It will be understood that the small casings are removable and interchangeable, and that any number may be employed and wound as above described and set aside for use as required, when the spring in one has run down another being substituted in its place, so as to keep up the operation of the machine without serious interruption for any desired length of time. The spring *g* not only serves to cause the winding of the cord upon the conical drum, but also offers sufficient resistance to the rotation of the drum to keep the cord taut between the two drums. It also serves to store up the power, which will constitute an auxiliary for starting the machine.

The upper drum, *F*, is mounted upon a sliding shaft, *f'*, upon which is secured a collar, *H*, near one end. The opposite end of the said shaft sets into a recess in the end of a clutch hub or collar, *h*, upon the inner end of the shaft carrying the gear-wheel *I*. The clutch hub or collar has at its end beveled teeth or suitable clutch projections, and the contiguous end of the drum *F* is provided with corresponding teeth or clutch projections. In winding up the apparatus the rotation of the drum will cause it to unclutch from the aforesaid clutch hub or collar, and in so doing its shaft will have an endwise movement. This moves the collar *H* a sufficient distance from the side of the casing to allow a pivoted stop, *H'*, to be let down between the collar and the casing, thus keeping the parts unclutched and preventing the transmission of motion to the mechanism actuated by the gear-wheel *I* during the process of winding. When the pivoted stop is raised and the spring power applied the reverse rotation of the drum *F* will cause the said drum *F* to clutch with the hub or collar *h*, and thereby rotate the gear-wheel *I*, which in turn impels the train of gear-wheels *i*, *i'*, and *i''*, the last of which is mounted upon a shaft, *i'''*, carrying the fly-wheel *K*. This shaft also carries a hollow pulley and friction-wheel, *L*, containing a coiled spring, *l*, one end of which is attached to the wheel and the other to the shaft *i'''*.

The letter *M* indicates a brake employed in connection with the wheel *L*. The said brake is composed of two bent levers crossed and pivoted together, so as to form friction-jaws *m* and arms *m'*, the arms being connected by means of a suitable spring, *N*. The tendency of this spring is to draw the arms together, so as to close the jaws upon the friction-wheel *L*. When the wheel is so held by the brake-jaws the rotation of the shaft caused by the mo-

mentum of the fly-wheel will cause the spring *l* to wind up, whereby power will be stored for starting the machine again. To release the wheel *L*, which is loosely mounted upon its shaft, and which is connected by a cord or belt or clutch with the machinery to be driven, the operator will press upon a treadle or any other suitable device connected by the cords *P* with the jaws of the brake. These cords pass over pulleys so arranged that tension upon the jaws will open the same and thus release the wheel, the power stored up in the same serving to start or give the initial movement to the apparatus, which will be followed up and continued by the spring *C'* in the casing *C*.

In case the machine to be driven is too heavy to be readily started by such spring, *I* pivot to one of the brake-jaws a pawl, *Q*, arranged to engage a ratchet, *q*, upon one side of the wheel *L*, so that as the jaws are opened the pawl engaging the said ratchet will give a positive initial movement to the parts.

In case it is desired to connect the machine directly with the motive apparatus without the use of belts and pulleys, the wheel *R* containing the coiled spring *r* may be beveled on its inside, so as to receive the beveled periphery of the driving-wheel *S* of the sewing or other machine, and carry or rotate it by frictional contact.

The shaft *i'''* is provided with a collar, *T*, outside of the casing, and the latter is provided with a stop, *t*, which, when dropped between said collar and casing, holds the wheel *R* and the bevel-wheel *S* in clutch. The spring within the wheel *R* is employed for storing up power, as in the case of the spring hereinbefore described for such purpose.

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

1. In combination with a rotary shaft and suitable winding mechanism, the main driving-spring secured in a suitable movable casing, and the hollow rotary hub, the latter being adapted to fit upon the rotary shaft when the casing is in place upon the main casing, substantially as and for the purposes specified.

2. In combination with the conical drum and the winding-drum and connecting-rope, the auxiliary spring secured to the shaft of the conical drum and to a suitable casing, and adapted to operate to rewind the conical drum when the small casing is removed, substantially as and for the purposes set forth.

3. In combination with the winding-drum provided with clutches on its inner end, the hub provided with similar clutches and a bearing for the shaft of the drum, and the collar and stop for holding the drum unclutched during the operation of winding, substantially as specified.

4. The combination, with the clutch or wheel loosely mounted upon a rotating shaft, and the gearing for transmitting power to said clutch or wheel, of the spring located in said clutch or

wheel and secured thereto and to the shaft for the purpose of storing up power for the initial movement of the parts, substantially as set forth.

5 5. In combination with the clutch or wheel, its shaft and spring, and the gearing for imparting motion to said shaft, the friction-brake adapted to hold the clutch or wheel, and the mechanism for operating the said brake to re-
10 lease the clutch or wheel, substantially as specified.

15 6. In combination with the clutch or wheel, its shaft and driving mechanism, the ratchet on said shaft, and the pawl and cord for operating the ratchet to give a positive initial movement to the shaft, substantially as specified.

7. The clutch or wheel provided with a bev-

eled recess on its face adapted to receive the driving-wheel of a sewing-machine, in combination with a spring interposed between the
20 hub and clutch, and rotate the same directly by frictional contact, substantially as specified.

8. The combination of the fly-wheel K, shaft
25 i^3 , clutch R, and spring r , all arranged in such manner as to store up sufficient power to give the initial movement to the apparatus in starting, substantially as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

C. NICHOLSON.

Witnesses:

T. H. ALEXANDER,
WM. R. KEYWORTH.