J. H. BURR.

Sewing-Machine.

No. 161,478. Patented March 30, 1875.

FIG I

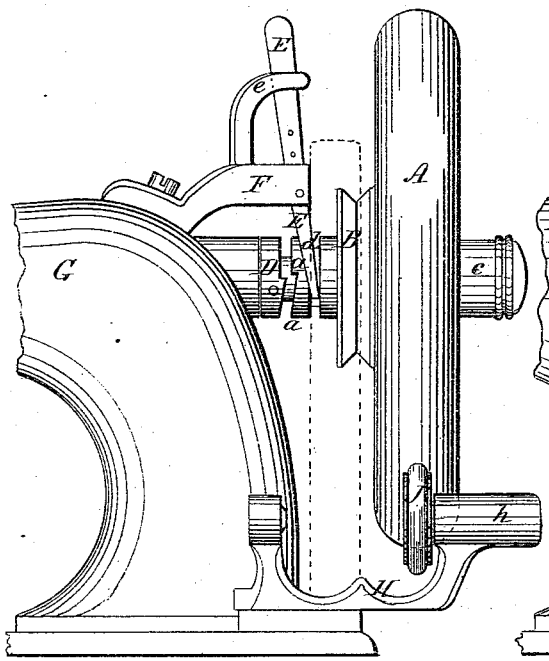


FIG II

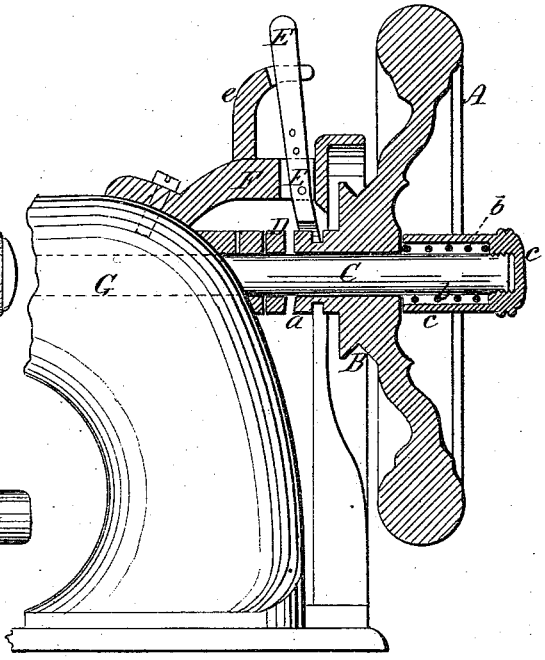


FIG III

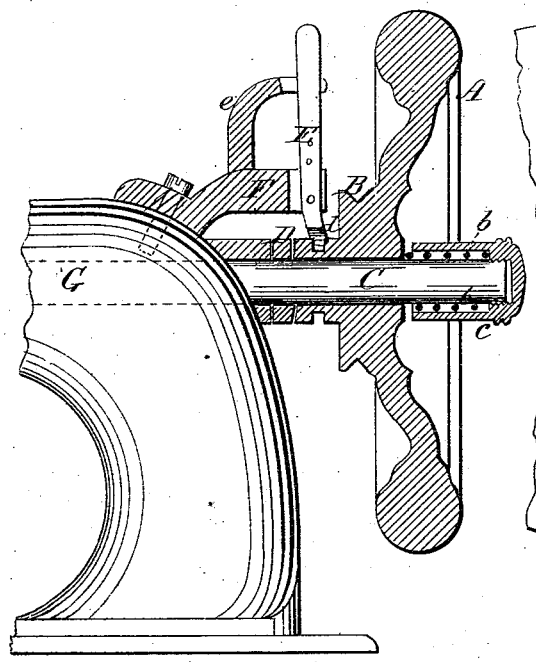
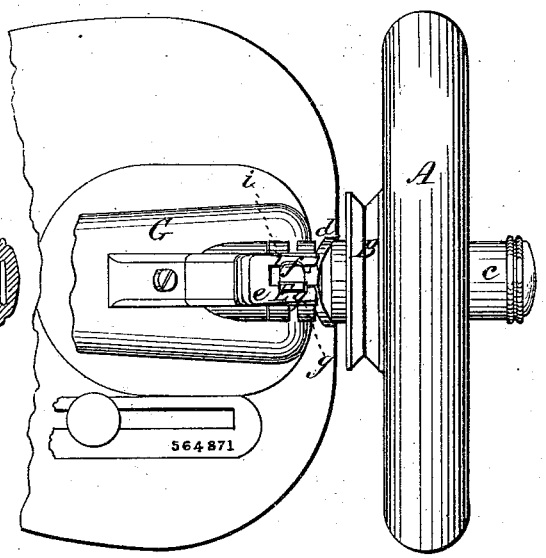


FIG IV



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES H. BURR, OF CAHOKA, MISSOURI, ASSIGNOR OF ONE-THIRD HIS RIGHT TO GILMAN WHITE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **161,478**, dated March 30, 1875; application filed December 26, 1874.

To all whom it may concern:

Be it known that I, JAMES H. BURR, of Cahoka, in the county of Clarke and State of Missouri, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

My invention relates more particularly to the construction and operation of devices having relation to the driving-power of sewing-machines for effecting several separate and distinct purposes, among which is to utilize the driving-power of the machine to operate the bobbin-winder without operating the machine or disturbing the work.

The improvements herein claimed consist in the combination, with the arm which carries the driving-shaft and the adjustable fly-wheel, of a branched bracket and a shifting spring-lever of the clutch device, arranged and held in the notched end of said bracket against the action of a spring on said shaft when the fly-wheel is made free for winding the bobbin, the fly-wheel and its pulley being free to turn and be moved axially upon said shaft; also, in the combination, with the clutch-spring, the fly-wheel, and its shaft, of a removable screw-cap sleeve, arranged upon an extension of said shaft to form both a seat and cover for said spring and protect it from the accumulation of dust, and allow the spring to be easily removed when weakened and replaced by a new one of the requsite strength to force and hold the fly-wheel clutch in gear with certainty when the machine is working.

In the accompanying drawings, Figure 1 represents a side elevation of so much of a sewing-machine as embraces my invention, the balance-wheel and driving-pulley being shown out of gear with the driving-shaft; Fig. 2, a vertical section of the same; Fig. 3, a similar view, showing the parts in gear; and Fig. 4, a top view, with the parts in the position shown in Fig. 1.

The balance-wheel A and the driving-pulley B are fitted to turn upon the driving-shaft C, and a clutch-face, *a*, is formed upon a hub on the inner face of the driving-pulley, while a clutch-collar, D, is fixed upon the driving-shaft to complete the clutch for engaging and disengaging the driving-pulley and balance-wheel with the shaft by a free axial movement of the former upon the latter, toward and from the clutch-collar D. The shaft is extended a short distance beyond the balance-wheel to receive a spiral spring, *b*, and a cap-sleeve, *c*, screwed upon the end of the shaft for inclosing the spring and forming a seat for its outer end. The inner end of this cap-sleeve *c* does not abut against the outer face of the balance-wheel, but a sufficient space is left between them for the movement of the balance-wheel and its pulley upon the shaft to disengage the clutch, the tension of the spring being exerted upon the end of the cap-sleeve and against the hub of the balance-wheel to carry it inward to engage the clutch. A clutch-lever, E, is pivoted in the slotted end of a bracket, F, secured upon the arm G, which carries the driving-shaft, and the forked end *d* of this lever fits into a groove in the clutch-hub, while the arm of the lever passes through a notched slot in a branch, *e*, of the bracket, and is provided with a side plate-spring, *f*, which acts against the side of the slot *i* to force the lever into a notch, *g*, in the opposite side of said slot to hold the clutch out of gear against the force of the spring. When thus out of gear the balance-wheel and driving-pulley turn freely upon the shaft to wind the bobbin; but by releasing the lever E from the holding-notch *g*, the spring *b* instantly forces the balance-wheel pulley into gear with the fixed part D of the clutch to drive the machine. In this locked position, however, the balance-wheel and the driving-pulley are entirely free to turn backward, as is often the case in starting the machine, and thereby prevent the possibility of breaking the thread from this cause. In the disengaged position of the clutch the balance-wheel and the driving-pulley revolve freely upon the shaft, and the pivoted spooler H, that holds the bobbin, is turned upon its pivot to bring the friction-wheel J in contact with the periphery of said balance-wheel A to wind the

bobbin. The clutch, therefore, while serving to shift the driving parts as a bobbin-winder, serves also the important function, while driving the machine, of allowing it to turn backward without breaking the needle-thread, the clutch for this purpose having inclined or cam-interlocking faces, which simply slip over each other when the machine turns backward, but catch upon each other to drive the machine, and being thus held in gear with certainty by the action of the spring against the fly-wheel. The bobbin-winder is pivoted upon the table, so as to be brought into or out of action with the fly-wheel, as shown in Fig. 1, and when winding the friction-wheel J is held in contact with the periphery of the fly-wheel by a hand-hold, *h*, on the outer end of the bobbin carrier. The device described also serves as a stop-motion for the machine by simply shifting the clutch-lever to disengage the driving-pulley from the driving-shaft. This is done in a moment and the machine stopped at once without the least jar, while the driving-power continues to move, and thereby avoid the trouble and difficulty of having to stop the machine by stopping the fly-wheel.

There are many advantages in bringing the machine at rest while winding the bobbin, as if the thread gives out while sewing the work need not be removed or the needle unthreaded, and thereby save the time and trouble of fixing these things, and all the wear and tear of the machine in winding the bobbin.

My improvement is simple, and applicable to any sewing-machine having an upper drive-wheel, and of the four important functions for which it is so well adapted two are automatic and two require only to shift the clutch-wheel to put them in action.

As the spiral spring is liable to lose its strength, I make the cap-sleeve which incloses it removable, so that it can be unscrewed and taken off the end of the shaft to remove and replace the spring by a stronger one to insure the inward movement of the fly-wheel and the holding of the clutch in gear with certainty. As the clutch-faces are inclined and do not project much it is necessary that the spring should always be of a proper strength, and its facility for replacement is on this account important.

I claim—

1. In combination with the arm G, which carries the driving-shaft and the axially-adjustable fly-wheel, of the branched bracket F and the spring-lever E of the clutch device, arranged and held in the notched end of said bracket against the action of the spring *c* when the fly-wheel is made free for winding the bobbin, as herein set forth.

2. The combination, with the clutch-spring *b*, the fly-wheel A, and its shaft C, of the removable screw-cap sleeve *c*, arranged upon an extension of said shaft, and forming both a seat and cover for said spring, as and for the purpose set forth.

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

JAMES H. BURR.

Witnesses:

LUTHER C. BOSTIE,

GEORGE RANSCHER.