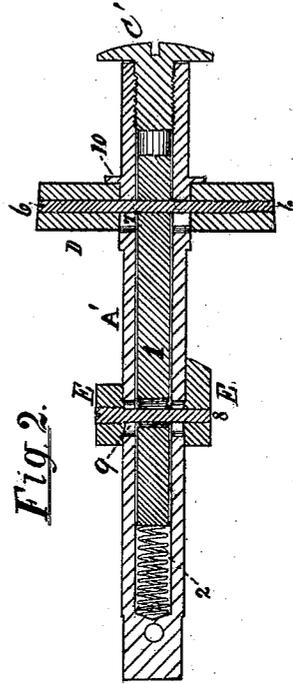
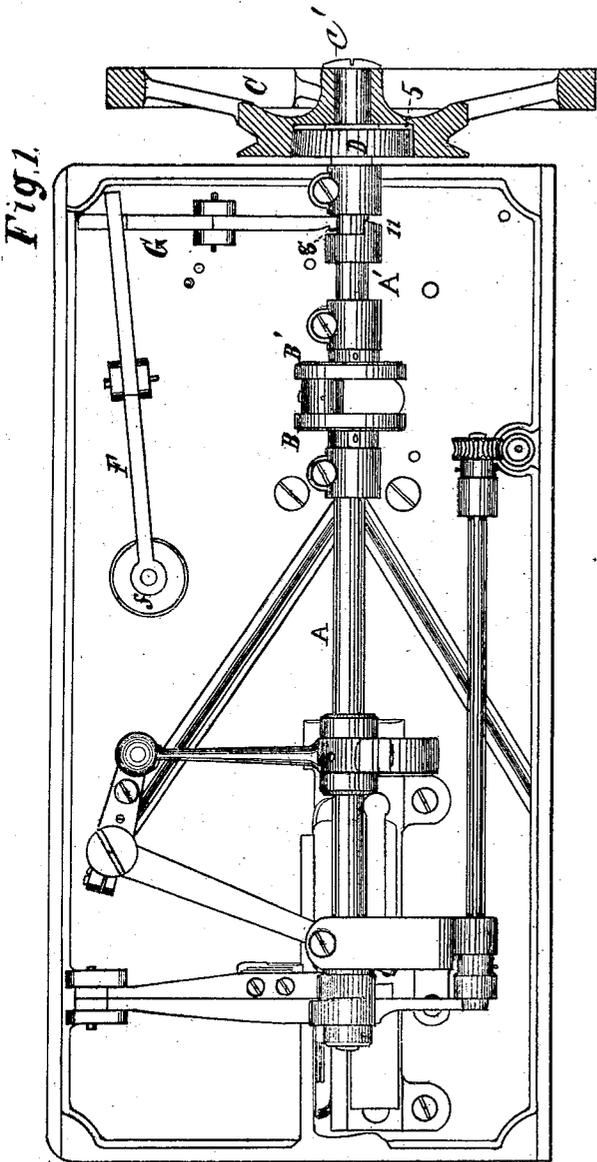


G. A. FAIRFIELD & J. B. PRICE.

Improvement in Sewing-Machines.

No. 130,116.

Patented Aug. 6, 1872.



Witnesses.

W. R. Owen.
Jarvis Moulden

Inventors.

George A. Fairfield and
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by J. H. Alsted.
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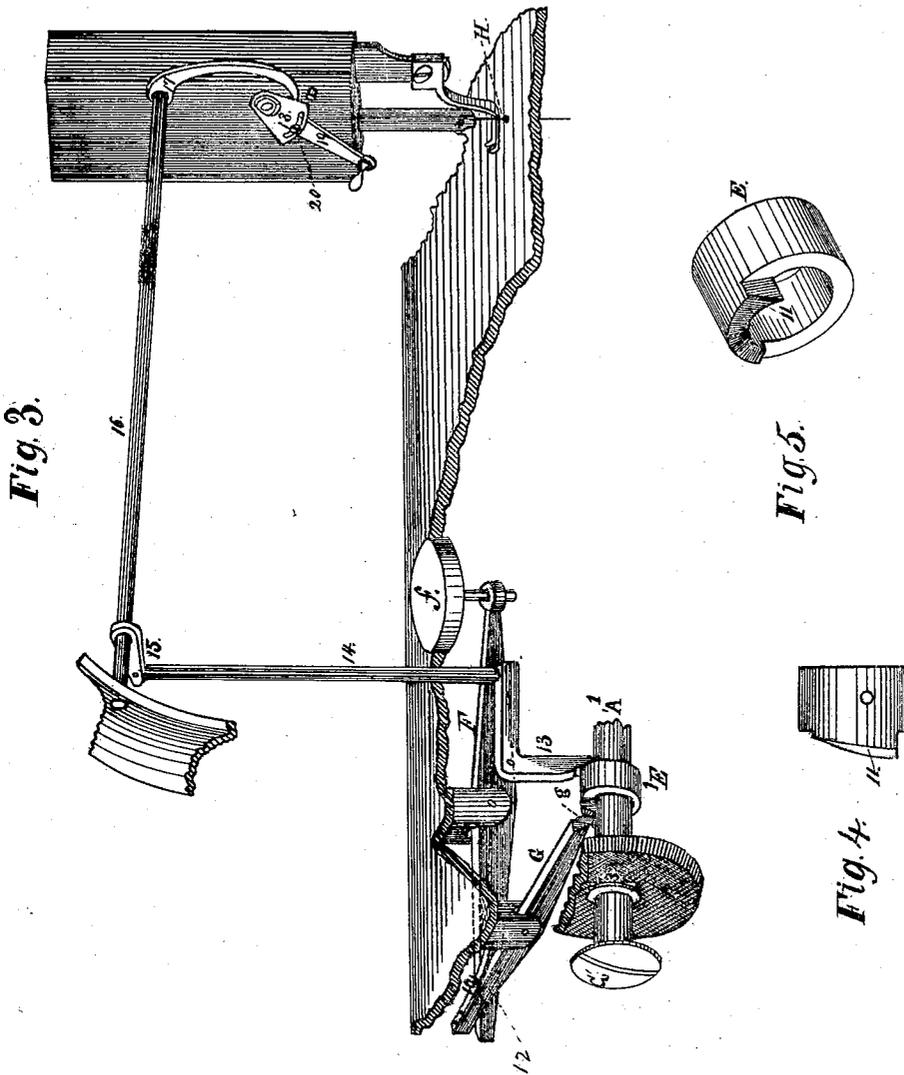


Fig. 3.

Fig. 5.

Fig. 4.

Witnesses.

W. R. Adams.
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George A. Fairfield
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their Atty.

UNITED STATES PATENT OFFICE.

GEORGE A. FAIRFIELD AND JOHN B. PRICE, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 130,116, dated August 6, 1872.

SPECIFICATION.

To all whom it may concern:

Beit known that we, GEORGE A. FAIRFIELD and JOHN B. PRICE, both of Hartford, in the State of Connecticut, have invented certain Improvements in Sewing-Machines; and we do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

Our improvements relate to a specific construction of friction-clutch and its adjuncts, whereby the operative parts of the machine may be thrown into or out of action at will, while the driving-wheel and treadle may continue their motions; to a means whereby the clutch is actuated to stop the machine, and in such manner as to overcome all momentum of the operative parts; to a specific means for positively lifting the presser free from the fabric; to a combination of the stop-motion with the presser-lifter, whereby the presser is lifted from the cloth by the same act which arrests the motions of the feed and of the needle while the latter is about at its lowest point and in the cloth; to the construction and operation of a cam-sleeve as a means for effecting these results; and to the construction and application of an adjustable plate, employed in connection with the presser-lifting lever, whereby the presser may be at discretion lifted just enough to free the fabric, whether thick or thin, and whereby an undue and needlessly strong blow of the presser upon the goods when the presser drops may be avoided.

In the drawing, Figure 1 represents, reduced, a bottom view of a machine embodying our present improvements, the fly-wheel being shown in section. Fig. 2 is a longitudinal section of that portion of the shaft and its adjuncts from which the stop-motion is effected, the fly-wheel not being shown. Fig. 3 is a perspective view, showing the devices for effecting the lifting of the presser by the act of stopping the stitching and feed mechanism. Figs. 4 and 5 show two different views of the shifting cam-sleeve.

We will omit, as far as practicable, any detailed description of the ordinary parts of a sewing-machine, alluding to them only to the

extent that may be necessary to define our present invention.

Stop-motions for arresting the operations of sewing while the fly-wheel or shaft have continued their movements have heretofore been devised, but, so far as we are aware, these have lacked simplicity and directness of action, and have been too complicated and costly. Our aim has been to make them simpler, cheaper, and more efficient in action, and we construct the same as follows: The portion A' of the main shaft A, and which portion is connected with A by the two cranks B B', is made tubular, as seen, for the greater part of its length. Within this tube is a plug, 1, against which a spiral spring, 2, located within the inner end of the tube, exerts a constant force, pressing the plug outwardly—that is, toward the fly-wheel C. This tube A' is made square at 3 to receive the disk or clutch-wheel D, whose periphery is made slightly conical that it may make, when desired, a frictional engagement with a corresponding conical cavity, 5, made at the center of the inner face of fly-wheel C. A pin, 6, passing through wheel D, tubular shaft A', and plug 1, serves to hold them all together; but the hole 7 in the shaft, being elongated, permits a short movement of the clutch-wheel upon the shaft, and, consequently, to or from the fly-wheel when the plug shall be given an endwise movement. Such endwise movement to the left (in the drawing) against the pressure of the coiled spring is effected through the agency of a cam-sleeve, E, which is also secured to the tubular shaft and the plug by a pin, 8, the hole 9 in this shaft permitting the endwise play of the plug, as above stated. I prefer, also, to make the pin-hole in the plug slightly elongated, the better to insure a fullness in its movement outward, that there may be no fail in effecting the engagement of the clutch-disk with the driver. A flange, 10, limits the outward play of the clutch-disk or wheel. The square part of the shank relieves the pin 6 from sustaining all the strain of driving. C' is the bolt which holds the fly-wheel C to place upon its shaft. The cam-sleeve E is provided with a swell or cam, 11, on the face nearest the driving-wheel, this cam, in the revolution of the shaft while in the act of making stitches, running free from

operative contact with anything; but when it is desired to stop the sewing, as above stated, while the needle is in the cloth, the sleeve is shifted to the left, carrying with it the clutch-wheel D, and freeing the latter from the driving-wheel, this action being effected by the following instrumentalities: F is a lever, operated from the upper surface of the table by pressure of the thumb or fingers of the operator upon thumb-piece or button *f*. When so pressed it forces upward the lever G, whose other end is thus correspondingly forced downward, bringing such end within the range of motion of the cam 11. The resistance thus offered by the lever compels the sleeve E to shift to the left enough to release the clutch and stop the movement of the shaft as well as of all the moving parts of the machine, the fly-wheel only continuing its movement. This stoppage is not abrupt and jarring, and being done gently by the action of the incline, and then the fly-wheel continuing its motions without restraint, all momentum of the working parts is overcome, or rather it is borne and sustained by the now detached fly-wheel. Lever G is preferably provided with a swell, *g*, at the part which bears against the cam-sleeve, and it is furnished with a spring, 12, which restores it to its normal position, out of range of the cam, whenever the operator desists from pressing upon the lever F. In such case the coiled spring within the shaft immediately restores the clutch into connection, and sewing proceeds as usual. On the left side of the cam-sleeve E, either in direct contact with it, or very close to it, is one arm of a bent lever, 13, the other arm of which lies just beneath the lower end of a vertical rod, 14, whose upper end is pivoted to a crank or arm, 15, on the rock-shaft 16. At the forward end of this rock-shaft is a laterally-projecting curved arm, 17, which, at its lower end, bears against a plate, 18, on the presser-lifting lever 19. When the sleeve E is shifted to the left it actuates lever 13, which causes the lifting of rod 14, and consequently the rocking of the shaft 16 and the pressure of arm 17 against the plate 18, which, being held by a screw, 20, to the lifting-lever 19, causes the presser-foot H to be raised and held up until the shifting back of sleeve E permits the bent lever 13 to be restored to its normal position. In Fig. 3 the presser-foot is shown as thus raised, the parts being shown

in position to effect this result. The slot and adjusting-screw 20 in plate 18 admit of a shifting of the position of the plate upon the lever 19, so that the tip of arm 17 shall, when actuated, come into action against the rear edge of the plate at an earlier or later period in its movements, as may be desired, this provision of adjustment being for the purpose of graduating at will the height to which the presser shall lift to free the goods at the period of unclutching the driving mechanism. By this means, whether the material being sewn is of the finest muslin or the thickest material ever operated upon by the machine, the presser may be adjusted to lift just the required degree, whatever that may be, and yet barely free itself from the top surface of the goods, and consequently no blow or jump is given to the presser when free to descend again beyond the minimum amount possible.

It will be observed that my novel mechanism for accomplishing this in no wise interferes with the ordinary function of the lifting-lever, which may be operated by hand in the usual manner to lock the presser-bar and its foot to its extreme elevated position.

We claim—

1. In combination with the fly-wheel of a sewing-machine, the friction-clutch mechanism, constructed and operating substantially as shown and described.
2. Also, the same in combination with the levers F and G, the combination operating substantially as described.
3. Also, the combination of the sliding piece or sleeve upon the shaft with the lever 13, rock-shaft 16, and its connections, to lift the presser at the period of stopping, as set forth.
4. Also, the combination, with the friction-clutch and shaft, of the cam-sleeve E, constructed and applied to operate to unclutch the wheel D and actuate the presser-lifter, substantially as described.
5. Also, in combination with the presser-lifting lever, the adjustable slotted plate 18, substantially as and for the purpose set forth.

GEORGE A. FAIRFIELD.
JOHN B. PRICE.

Witnesses:

HENRY C. ROBINSON,
S. C. DUNHAM.