W. G. CUMMINS.

SEWING-MACHINE.

No. 187,822. Patented Feb. 27, 1877.

Fig. 1

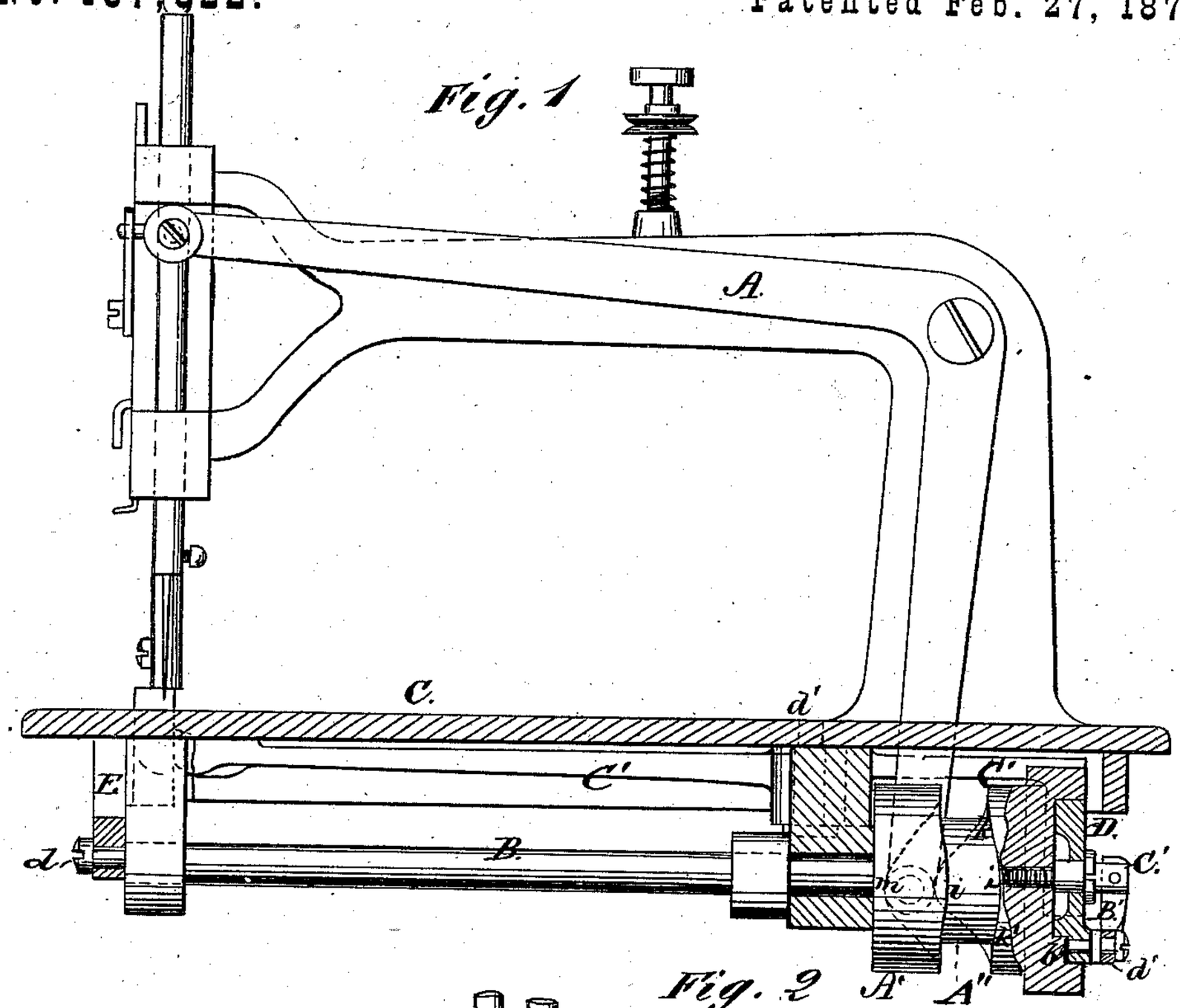


Fig. 2

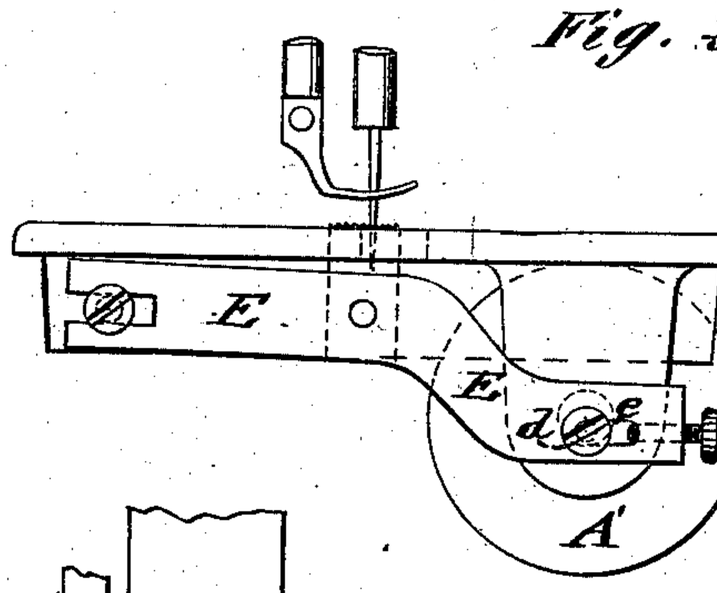


Fig. 3

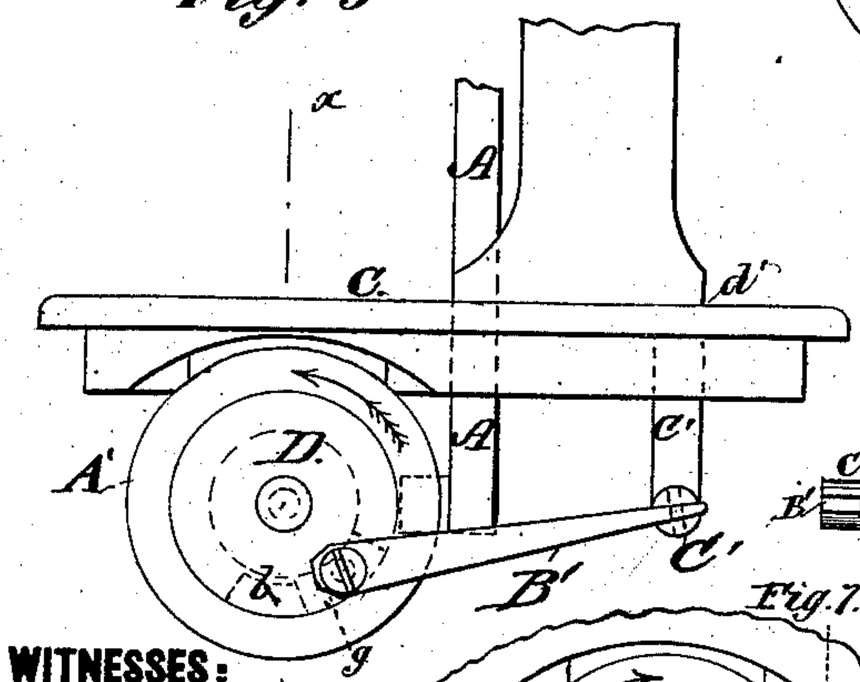


Fig. 4.

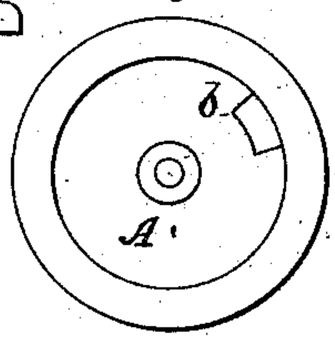


Fig. 5.

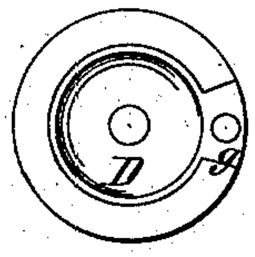


Fig. 6.

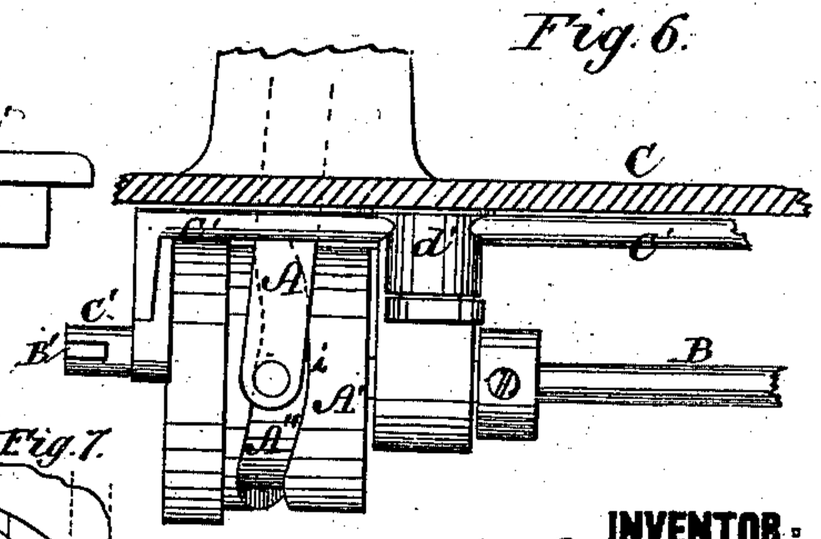
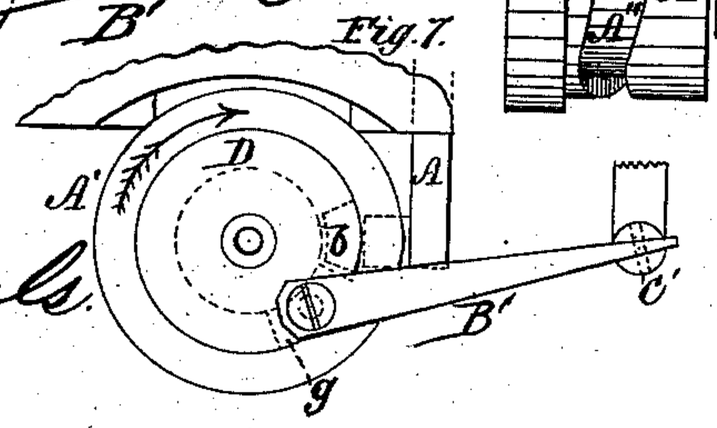


Fig. 7.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM G. CUMMINS, OF COKEVILLE, TENNESSEE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **187,822**, dated February 27, 1877; application filed July 22, 1876.

To all whom it may concern:

Be it known that I, WILLIAM G. CUMMINS, of Cokeville, in the county of Putnam and State of Tennessee, have invented a new and Improved Sewing-Machine, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a front elevation of my improved sewing-machine, partly in section to show adjustment of shuttle and feed motion. Fig. 2 is a detail end view of the feed-bar. Fig. 3 is a detail end view of self-adjusting shuttle-operating wheel and pitman, and Fig. 4 is an end view of the cam with the reversible disk detached. Fig. 5 is an inside view of the reversible disk detached. Fig. 6 is a detail view of a fragment of the machine, representing the cam and connected and adjacent parts in elevation. Fig. 7 is a detail view, showing the end of the cam and the parts attached or connected thereto in elevation.

Shuttle-machines have been invented which are capable of sewing backward when the shaft is reversed.

The object of my invention is to furnish a simple, light-running, durable, and cheap machine of this class; and to this end the construction and arrangement of parts are as follows:

The needle is operated vertically by the ordinary form of bent pivoted arm or lever A and a grooved cam, A′, fixed on a shaft, B, arranged horizontally beneath the bed-plate C. The four-motion feed consists of a curved bar, E, arranged at right angles to the shaft B, and connected therewith by an eccentric wrist-pin, *d*, as will be readily understood without further description. The said wrist-pin works in an elongated slot, *e*, which may be, practically, shortened or lengthened by a set-screw, *f*, for the purpose of limiting the feed, as required for various kinds of sewing. The bent lever C′, for operating the shuttle, is pivoted to the bed-plate C at the point *d′*, and horizontal circular reciprocating or vibrating motion is imparted to it by means of the link B′ and grooved disk D. The link is pivoted, at its respective ends, to the disk and the shorter arm of the lever C′. The disk fits loosely in a circular cavity, formed in the outer end of the cam A′, and is also mounted loose on the shaft B, so that it may turn freely thereon. An inward projection, *b*, is formed at the edge of said circular cavity of the cam, Fig. 4, and an outer projection, *g*, in corresponding position on the inner side of the disk D. This combination forms what may be termed an "interrupted clutch," since the projection *g* of the disk D will engage with either side of the projection *b* of the cam, according as the latter rotates in one direction or the other, thus causing the reciprocation of the shuttle in due time relation with that of the needle, and effecting the formation of the stitch whether the drive or band wheel be turned toward or from the operator.

I will proceed to describe with more particularity the movement of the individual parts of the machine, and their combined operation.

After passing through the fabric or goods to be sewed, the needle is raised a little, to spring the thread-loop sufficiently for the point of the shuttle to enter, and is then carried down again, to allow the loop to pass easily on the body of the shuttle, after which it is held stationary, to give the shuttle time to pass through the loop before it is drawn up. The needle is then raised while the shuttle-thread is tight, or before the shuttle starts back. These operations or functions are necessary in whichever direction the feed may operate. The movements are effected by the form of the groove A″ in cam A′. Thus the slight upward movement of the needle, just after passing through the fabric, is caused by the curve at *i*, Figs. 1 and 6, and the succeeding downward movement, for enlarging the loop, is caused by one of the contiguous curves, *k* or *k′*—by *k* when the driving-shaft is turned in one direction, and by *k′* when turned in the other direction. The needle is thrown to its highest point, as shown in Fig. 1, by the sharp projection or curve at *m*, (dotted lines, Fig. 1,) said curve being diametrically opposite the gentler curve *i*. The shuttle-action is necessarily made to correspond with these movements of the needle. When the driving-shaft C′ is turned from the operator the cam-projection *b* engages the rear side of the disk-projection *g*, as in Fig. 7, thus holding the end of the link or connecting-rod B at a point on the cam, so related to the groove A″ in the latter

as to drive the shuttle forward at the right time to enter and pass through the loop of the upper thread, and when the driving-shaft is reversed or turned toward the operator the disk and shuttle will stand still until the cam turns around far enough to bring the other side of its projection *b* in contact with the front side of the disk-projection *g*, when the cam and disk will rotate together, Fig. 3, the end of link B, which is attached to the disk, being again brought into proper position with reference to the cam-groove A″ to drive the shuttle at the proper time to enter and pass through the needle-loop.

Thus the shuttle movement is rendered self-adjusting, always adapting itself, in point of time, to the movement of the needle in whichever direction the driving-shaft is run.

It is obvious the feed will correspond in movement and action with the direction of rotation of the driving-shaft B, and carry the fabric from or toward the operator accordingly.

The machine is thus adapted to sew from or toward the operator at will. This function is especially useful when it is desired to double or duplicate a row of stitches, and thereby strengthen or fasten a seam, as at the edge of a fabric, without the delay and difficulty of turning the goods for that purpose.

I do not claim, broadly, a reversing mechanism in which the needle-arm is operated by a cam, and the movements of the feed and shuttle so timed, by means of a device in the nature of an interrupted clutch, that the machine will continue to sew in the same direction whether the driving-shaft be rotated in one direction or the other.

What I claim is—

The improvement in reverse-feed sewing-machines hereinbefore set forth, consisting in the cam A′, for operating the needle-arm, having the circular cavity and the projection *b*, the disk D, provided with the projection *g*, the link B′, the shuttle-lever C′, arranged beneath the bed-plate, and the four-motion feed-bar E, connected to the eccentric wrist-pin *d* of the driving-shaft, all combined, as shown and described, to operate as specified.

WILLIAM G. CUMMINS.

Witnesses:

MIKE MOORE,

ROBERT PECK.