

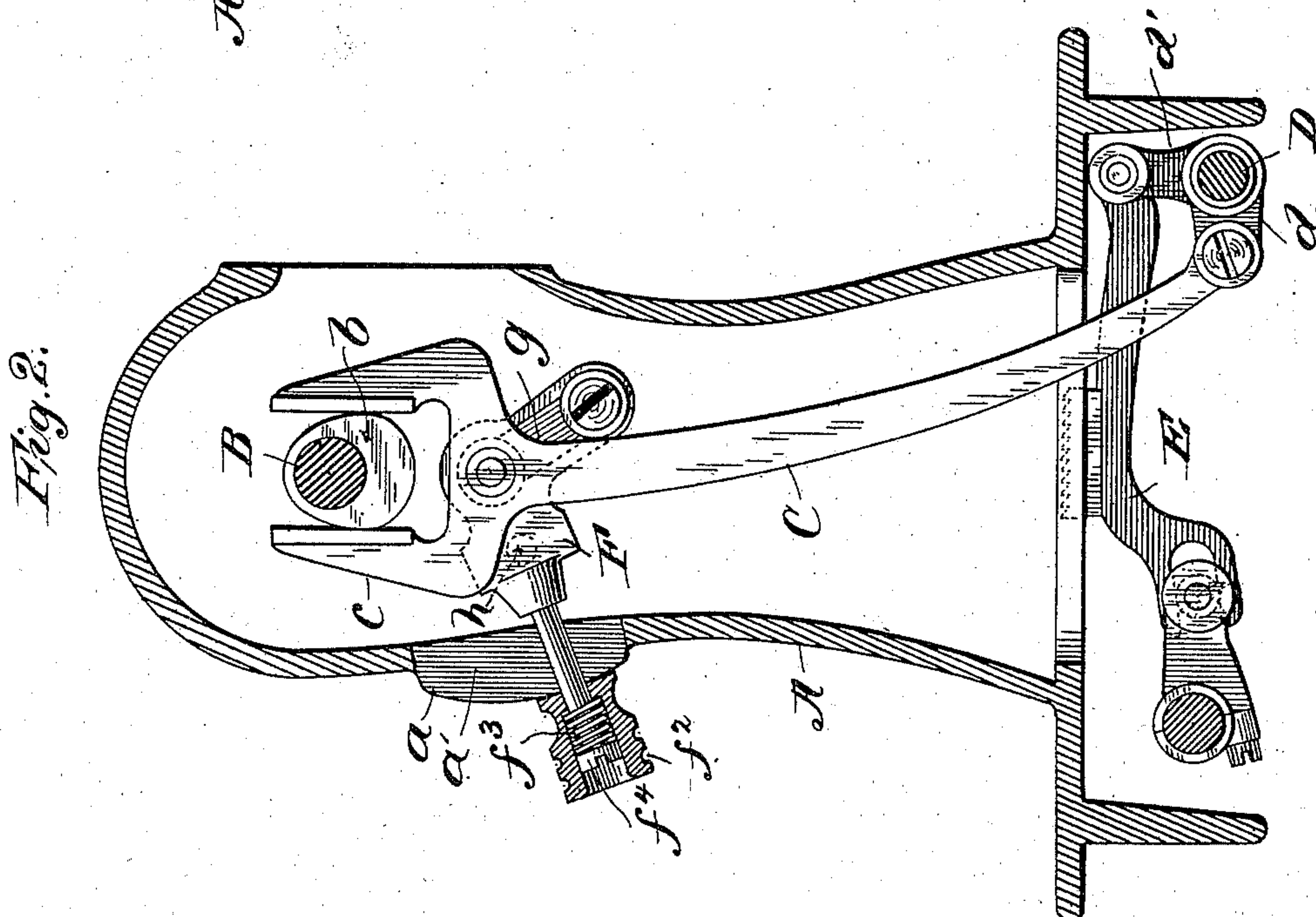
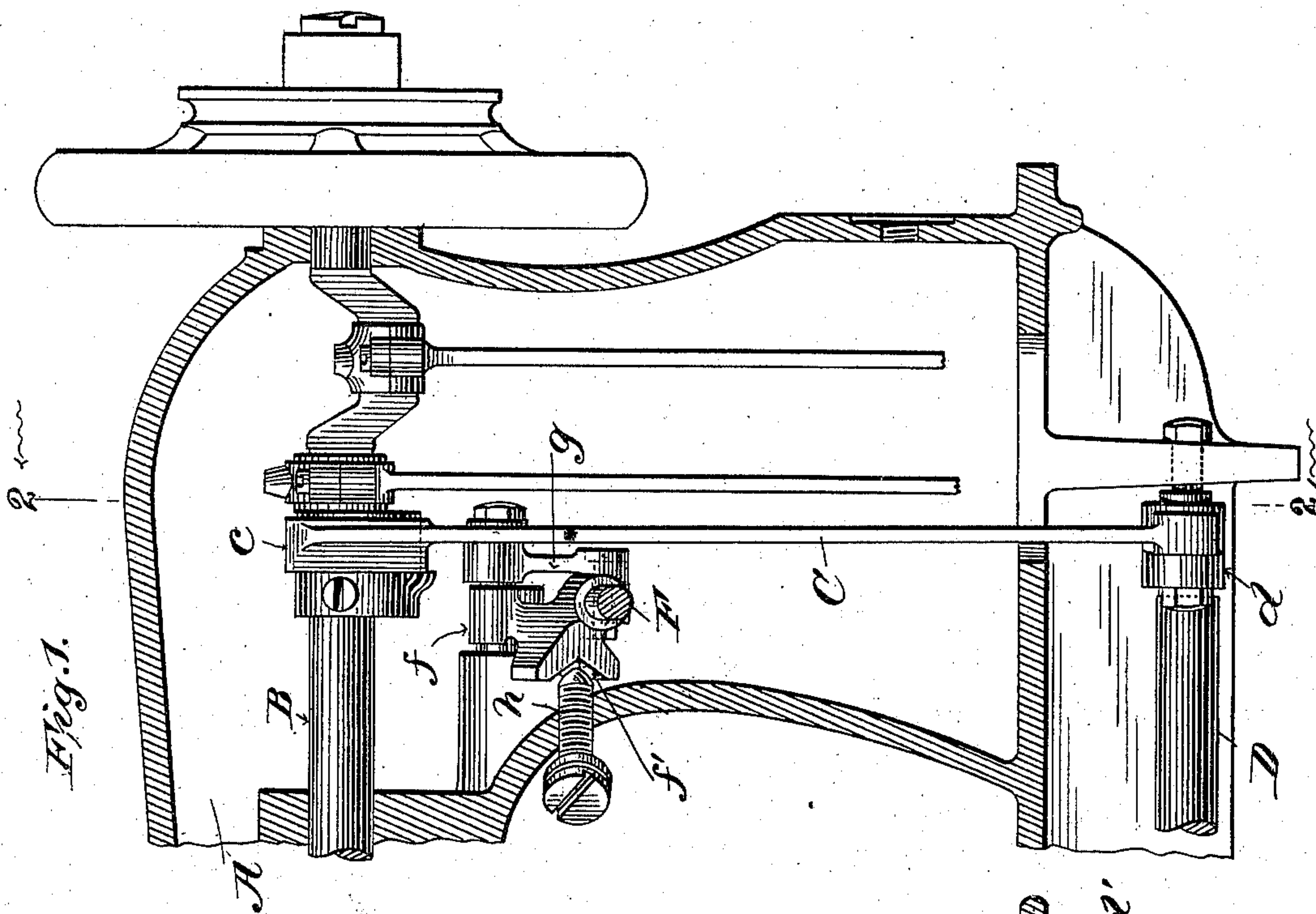
(No Model.)

P. DIEHL.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 575,339.

Patented Jan. 19, 1897.



Witnesses,

C. W. Benjamin

Abnehmen an

Inventor:

Philip Diehl

his Ken Salvo

Atty

UNITED STATES PATENT OFFICE.

PHILIP DIEHL, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, OF NEW JERSEY.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 575,339, dated January 19, 1897.

Application filed October 10, 1896. Serial No. 608,439. (No model.)

To all whom it may concern:

Be it known that I, PHILIP DIEHL, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Feeding Mechanisms for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that form of sewing-machine feeding mechanisms which has long been used in the well-known "Singer" lock-stitch machines, and in which the forward and backward movements of the feed-bar are imparted thereto from a rock-shaft beneath the work-plate of the machine, operated from a cam on a rotating driving-shaft journaled in the upper part of the bracket-arm through a link which is forked at its upper end to embrace said cam and jointed at its lower end to an arm at the rear end of said rock-shaft, said link cooperating with a second link pivoted to the operating-link and to a bell-crank regulating-lever, thereby forming a toggle the relative position of the parts of which, as determined by the position of the said regulating-lever, determining the lengths of the movements of the said rock-shaft, and consequently the lengths of the feed-bar and feed-dog.

The object of the present invention is to improve the feeding mechanism referred to by a construction which will adapt the feed to be instantly reversed without stopping the machine, so that in finishing the end of a seam, or at any other time, a few backward stitches may be made, the construction being such that the feed when thus reversed will have the same length of movement as the forward feed, and the parts may then be restored to their normal operative positions with the forward feed of the same length as at first. I effect this object by so constructing and arranging the parts that the regulating-lever may be sufficiently varied in position as to cause the link connecting said lever with the operating-link to vibrate on one side or the other of a central line running from the center of the driving-shaft to the point of connection of the operating-link with the arm of the feed-operating rock-shaft, and providing

said regulating-lever with a lateral projection having an obtuse V-shaped recess or fork to receive the tapered or rounded end of a controlling-screw which serves as an adjustable abutment to limit the movements of the regulating-lever when the latter is moved in either direction to cause the feed to move the work either forward or backward.

In the accompanying drawings, Figure 1 is a sectional side view of a portion of a Singer sewing-machine embodying my invention. Fig. 2 is a vertical section through the arm of the same on line 2 2, Fig. 1.

A denotes a portion of the arm of the machine, and B the rotating driving-shaft journaled in the upper part of said arm and provided with the cam *b*, embraced by the fork *c* at the upper end of the link C, which latter is jointed at its lower end to an arm *d* of the feed-operating rock-shaft D.

E is the feed-bar, pivotally connected, as usual, to an arm or arms *d'* at the forward end of the shaft D.

F is the bell-crank feed-regulating lever, connected by the link *g* with the link C, as usual, said lever being provided near its fulcrum *f* with a projection in which is formed a V-shaped recess *f'*.

Tapped in the arm A is a controlling-screw *h*, the rounded or tapered inner end of which may, by adjusting said screw, be caused to project more or less into said recess, so that when the regulating-lever is moved to change the direction of the feed one or the other of the side walls of said recess will be brought into contact with the end of said screw, the latter thus serving as an adjustable abutment to limit the adjusting movements of the feed-regulating lever in either direction.

The regulating-lever F is retained in any desired position of adjustment by a collar *f*² on the outer arm thereof, said collar being held in frictional engagement with segmental bearing portions *a* on the arm A by a coil-spring *f*³, interposed between the head *f*⁴ of a screw, forming part of the regulating-lever F, and a shoulder formed in said collar by counter-boring the latter. The slot in the arm or frame A, and through which the outer arm of the lever F projects, is of sufficient length to permit a greater adjustment of said lever than

heretofore in machines feeding only forward, so that by moving the said arm of said lever from the central neutral point toward the bottom or top of said slot the feed will be caused
5 to move the work either forward or backward, as may be desired.

When the outer arm of the lever F is adjusted to the central neutral point referred to, the vibrations of the link *g*, forming part of the
10 toggle and connecting the regulating-lever F with the link C, will be equal on each side of a line running from the center of the shaft B to the center of the point of connection of the said link C with the arm *d* of the shaft D, so
15 that no feeding rocking movements will be imparted to said shaft, but when said lever F is adjusted so as to cause vibrating movements of the said link *g* to be on one side or the other of the central line referred to feed-
20 ing rocking movements will be imparted to said shaft, and these rocking movements will be so timed relative to the usual vertical movements of the feed-bar as to cause the work to be moved either forward or back-
25 ward as the outer arm of the lever F may be moved toward the bottom or top of the slot *a'*, as heretofore stated, the adjusting movements

of the said lever in either direction being controlled by the position of adjustment of the screw *h*, into contact with the point of which
30 the side walls of the V-shaped recess *f'* of the lever F come when the said lever is adjusted to change the direction of the feed.

Having thus described my invention, I claim and desire to secure by Letters Pat- 35 ent—

In a sewing-machine employing a toggle-feed, the combination with the feed-bar, the link C operatively connected with said feed-bar, and means for operating said link, of the
40 regulating-lever F having a part provided with a V-shaped recess, as *f'*, an adjustable abutment, as screw *h*, projecting into said recess to limit the adjusting movement of said lever in either direction, the link *g* joining
45 said lever to the operating-link C, and means for retaining said lever F in any position to which it may be moved.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP DIEHL.

Witnesses:

HENRY CALVER,
HENRY J. MILLER.