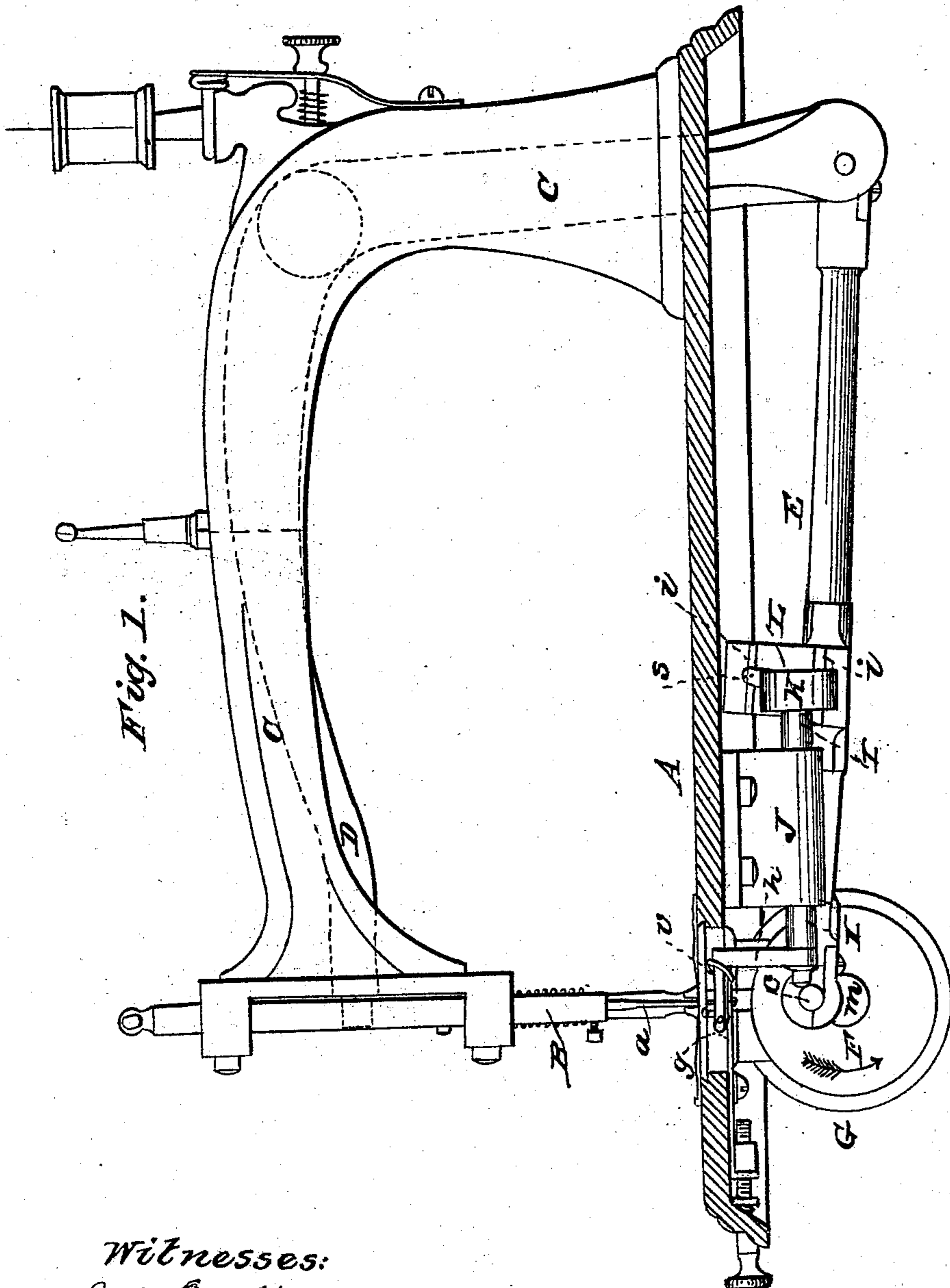


M. G WILDER.
Sewing Machine.

2 Sheets—Sheet 1.

No. 32,323.

Patented May 14, 1861.



Witnesses:
C. S. Renwick
W. L. Bannum

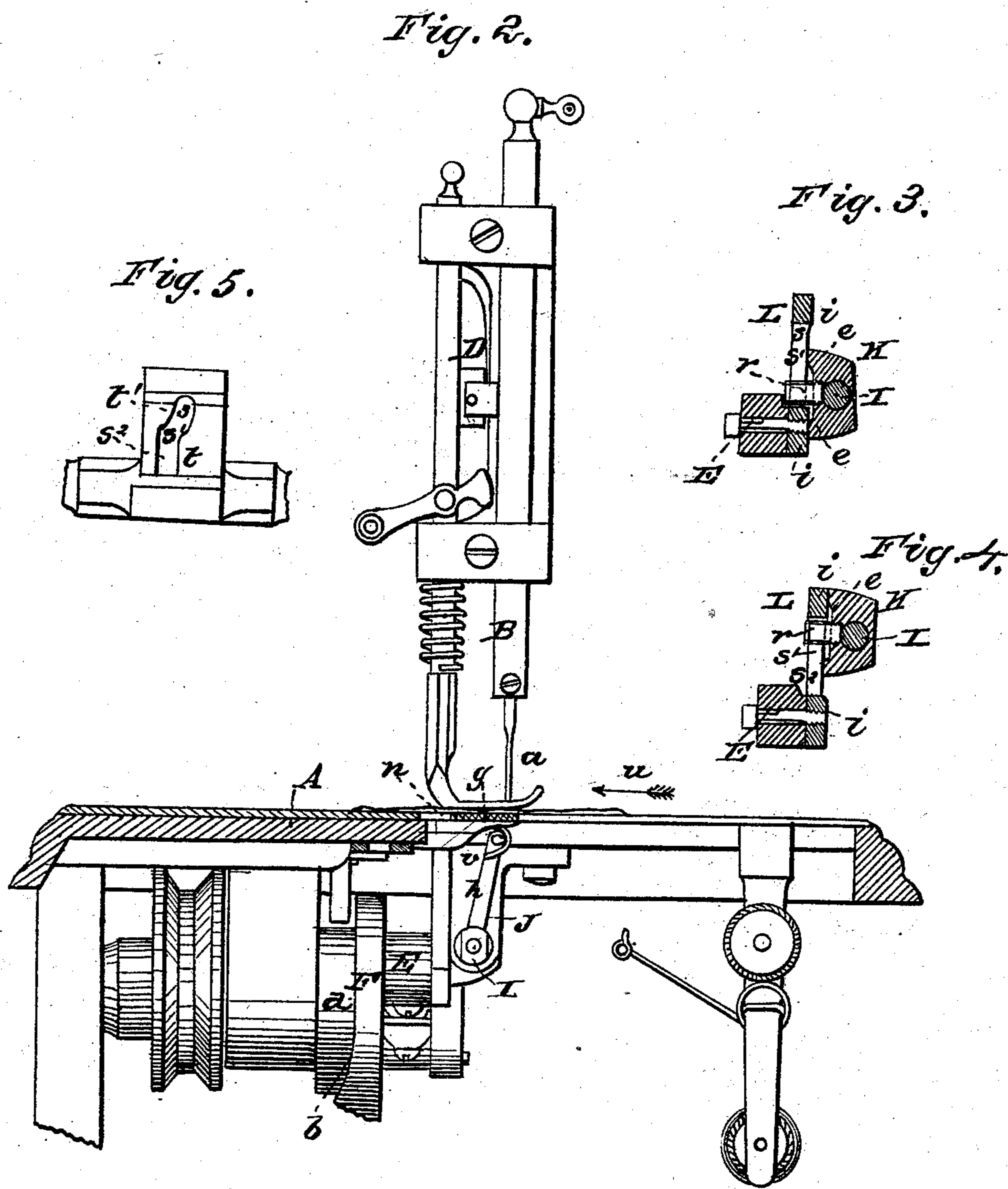
Inventor:
M. G. Wilder.

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Witnesses:
E. S. Kenwick
W. L. Berner

Inventor:
M. G. Wilder

UNITED STATES PATENT OFFICE.

M. G. WILDER, OF MERIDEN, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 32,323, dated May 14, 1861.

To all whom it may concern:

Be it known that I, M. G. WILDER, of Meriden, in the county of New Haven and State of Connecticut, 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 of my said invention, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of a sewing-machine constructed according to the principles of my invention, a portion of the bed-plate and the spool and tension for the lower thread being removed to permit the remainder of the machine to be seen more clearly. Fig. 2 represents a front elevation of the machine with the portions to the left of the line *xx* of Fig. 1 removed. Figs. 3 and 4 represent sectional views of certain parts of the machine in two different positions, and Fig. 5 is a face view of a part of the machine.

My invention has reference to that class of sewing-machines which make what is known as the "double-thread loop-stitch;" and it consists in certain combinations of mechanical devices by means of which the operation of the looper that carries the under or looping thread is rendered more certain, while at the same time the construction of the parts is such that the machine can be made at a low cost.

The first part of my invention has reference to the lateral movement of the looper, by which it is caused to shift from one side of the needle to the other, so as to hold a loop of the thread it carries open for the entrance of the needle after it has entered the loop of needle-thread. This part of my invention consists in combining the rock-shaft of the looper with a pitman, which I prefer to be that of the crank that operates the needle, by means of blocks or plates fitted with wedge formed or inclined projections in such manner that the transverse ascending movement of the pitman causes the looper-shaft to rock in one direction, and the transverse descending movement of the pitman causes it to rock in the opposite direction.

The second part of my invention has reference to the longitudinal movement of the looper; and its object is to cause a looper which is driven by a crank-pin and by a pitman that is parallel, or thereabout, (when in its mean position,) to the looper to pass by the needle and seize the loop of needle-thread sooner than

it otherwise would, and to back out of the loop of needle-thread seized by it sooner than it otherwise would. This part of my invention consists in combining the shaft of the looper with the pitman of the crank-pin by means of a pin and slotted cam-plate, the slot of which is composed of two parts, both of which extend transversely to the pitman, but are not located in the same perpendicular line to the length of the pitman, the one part being in advance of a perpendicular line drawn midway between the two when the pitman is moving in one direction, and the other part being in advance of the same perpendicular line when the pitman is moving in the opposite direction, and each part acting in succession with the pin. This part of my invention enables me to operate the looper by the same crank-pin and pitman that operates the needle, and nevertheless cause the looper to enter the loop of needle-thread soon enough after its formation to seize it with certainty, and also to back out of and release the said loop before the needle has completed its descending movement for the next stitch, thus permitting the stitch to be pulled tight by the descent of the needle.

The third part of my invention consists in the combination of the crank-pin and connecting-rod that operates the needle-arm with the shaft of the looper by means of plates fitted with the wedge-formed projections, cam-groove, and pin before mentioned, so that both parts of my invention are combined together in the same machine, whereby I am enabled to derive both the before-described longitudinal and lateral movements of the looper from the same crank-pin and pitman that operate the needle.

The object of the fourth part of my invention is to facilitate the threading of the looper; and it consists in combining a looper having an eye at its point with a hook near its butt for retaining the thread by the side of the looper, in place of a second eye. This improvement renders it only necessary to pass the second thread through one eye upon the looper instead of through two, and facilitates the threading of the looper, as the thread can be slipped over the hook with much greater ease than it can be passed through a second eye.

The sewing-machine represented in the accompanying drawings embodies my invention in the best form that I have devised. In this machine the needle *a* is secured to a needle-

bar, B, which is held in guides secured to a fixed arm, C, that projects from the bed-plate A of the machine, and is caused to ascend and descend by means of a bent lever or needle-arm, D, pivoted to the fixed arm C. The lower end of the needle-arm D is connected by a pitman or connecting-rod, E, with a crank-pin, *c*, secured to the hub F of a shaft, *m*, to which a rotating motion is imparted by means of a belt applied to a belt-pulley, G, secured to this shaft, so that as the crank revolves the needle is caused to ascend and descend. The revolving shaft *m* also operates the feed-bar *n* by means of a face-cam, *b*, and an edge cam, *d*, in the usual manner.

The looper *g*, that carries the lower or looping thread, is secured to an arm, *h*, that projects upward from a rock-shaft, I, which forms the looper-stock. This looper has an eye at its point for carrying the second thread, and at its butt there is a hook, *v*, around which the second thread is passed, and which holds this thread alongside of the looper. The rock-shaft I is supported in a long bearing or stationary sleeve, J, that is secured to the bed-plate, and permits the rock-shaft I both to move to and fro longitudinally and to rock. The hinder extremity of the rock-shaft is fitted with a cross-block or head-plate, K, having two projections, *e e*, Figs. 3 and 4, at the margins of one of its faces, and the parts of these projections that are nearest to each other are inclined or wedge formed. The face of the cross-block which has the projections bears against the face of a plate, L, that is secured to and projects upward from the pitman E, that drives the needle-arm. The margins of that face of the pitman-plate L which is adjacent to the head-plate K of the looper-shaft are fitted with projections *i i*, Figs. 3 and 4, and the parts of these projections that are nearest to each other are inclined or wedge-formed. From this construction of the head-plate of the looper and of the pitman-plate it follows that as the pitman is caused by the rotation of its crank-pin to rise above and descend below its mean position, the lower and upper wedge-formed projections of the pitman-rod plate L are caused to act alternately upon the corresponding projections of the cross-plate K of the looper-shaft, and this shaft is caused to rock, thereby carrying its looper at intervals from one side to the other of the line of motion of the needle.

In order that the looper may have a longitudinal movement imparted to it by the pitman E, the cross-plate K of the looper-shaft I is fitted with a pin, *r*, that protrudes from its face through a slot, *s s' s²*, in the pitman-plate L, so that as the pitman moves longitudinally the opposite edges of this slot bear against the pin *r* and carry the looper-shaft to and fro with the pitman. In order that the looper may be in a sufficiently-advanced position to insure its entrance into the loop of needle-thread, the slot *s s' s²* of the plate L is formed in two parts, *s* and *s²*, which are not in

line with each other, and are connected by an intermediate inclined or curved third part, *s'*, as represented in Fig. 5. Hence as the pitman E is carried upward by the movement of the crank-pin the side *t* of the part of the slot *s²* bears against the pin *r*, moves the looper-shaft forward, and compels the looper to move past the track of the needle in ample time to enter into and seize the loop of needle-thread before the needle is withdrawn from the cloth. When, on the other hand, the pitman is carried downward the side *t'* of the part *s* of the slot bears against the pin *r* and causes the looper to re-pass the track of the needle and therefore back out of the loop of needle-thread sufficiently before the needle has completed its descending stroke to permit the needle to tighten the stitch by its descending movement.

The machine thus described is fitted with suitable spindles for holding the spools of thread, with suitable thread-tensions, with a presser-foot, with a feed-motion to cause the cloth to progress stitch by stitch in the direction of the arrow *w* in the drawings, and with a presser-foot; but as these form no part of my present invention and do not differ materially from devices of the usual construction for these purposes it is not deemed worth while to describe them minutely.

From the relative position and arrangement of the wedge-formed projections on the head-plate of the looper-shaft and on the pitman-plate it ensues that when the pitman is moved upward by the upward movement of the crank-pin *c* the shifting of the position of the pitman-plate L with reference to the head-plate K causes the looper-shaft I to rock and move the looper laterally in the direction of the feed, so that when the looper is moved forward it passes by that side of the needle which is toward the finished seam and enters the loop of needle-thread spread by the rise of the needle. The parts are then in the positions in which they are represented at Fig. 3. When, on the other hand, the pitman E is caused to descend by the rotation of the crank-pin, the shifting of the position of the pitman-plate L with reference to the head-plate K causes the looper-shaft to rock and move the looper in the opposite direction to the feed, thereby moving the looper laterally across the track of the needle and spreading the loop of second thread carried by the looper, so that the needle is certain to descend into this loop at its next descending movement. The parts are then in the positions in which they are represented at Fig. 4. The projections on the pitman-plate are of such breadth that the looper is maintained in each of its two extreme lateral positions during more than a quarter of a revolution of the crank-pin. Hence the lateral movement of the looper is intermittent, and each lateral movement is followed by a period of rest.

In the machine represented and described, the first and second parts of my invention are combined together, and this I believe to be the best arrangement; but the first part of

my invention may be used without the second and the second without the first, if cases should occur that render such separate use expedient.

The crank-shaft *m* of the machine represented is arranged to revolve in the direction of the arrow; but it is obvious that it may be arranged to revolve in the opposite direction, provided the slot and inclined plates upon the pitman are adapted to this change in the revolution of the crank-shaft. It is also obvious that the slot may be transposed to the head-plate *K* and the pin to the pitman-plate, provided the slot be adapted to this change in its location.

Having thus described a sewing-machine embodying my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the shaft or stock of the looper with a pitman that rises and descends in directions transverse to the longitudinal movement of the looper by means of plates fitted with inclined projections, whereby an intermittent lateral movement is imparted to the looper, substantially as herein set forth.

2. The combination of the looper shaft or stock with a pitman operated by a crank-pin by means of a pin and slotted cam-plate, the form of the cam-slot being such that the point of the looper, when moving in both directions, is caused to pass by the track of the needle sooner than it would if moved by the crank-pin alone, substantially as herein set forth.

3. The combination of the shaft or stock of the looper with a pitman by means of blocks or plates fitted with inclined projections and with a pin and cam-slot, whereby the before-described longitudinal and lateral movements of the looper are derived from the movement of a pitman operated by a crank-pin, substantially as herein set forth.

4. The combination of an eye-pointed looper with a hook at its butt, substantially as herein set forth.

In testimony whereof I have hereunto subscribed my name.

M. G. WILDER.

Witnesses:

D. R. WRIGHT,
J. B. BISSELL.