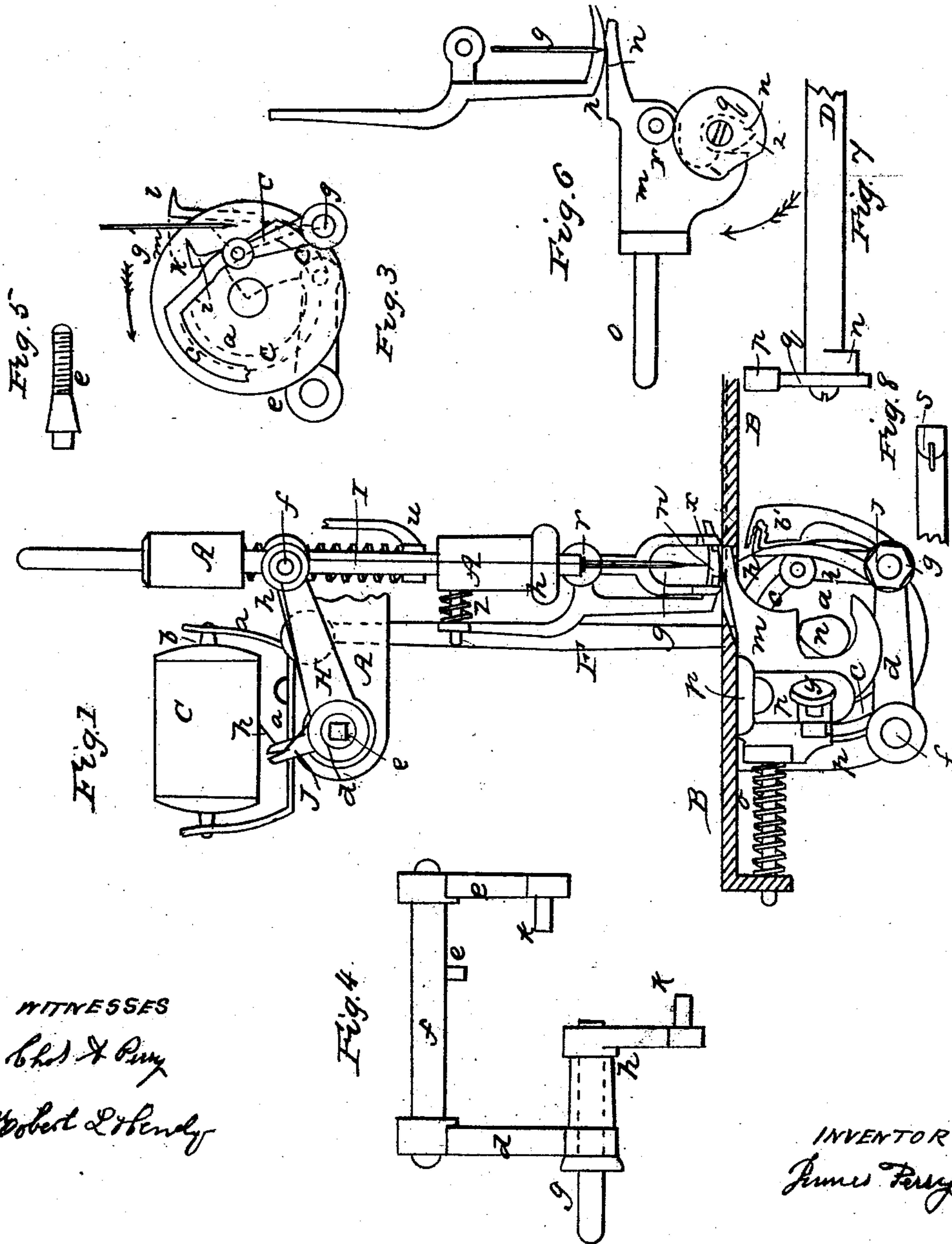


J. PERRY.  
Sewing Machine.

No. 22,148.

Patented Nov. 23, 1858.



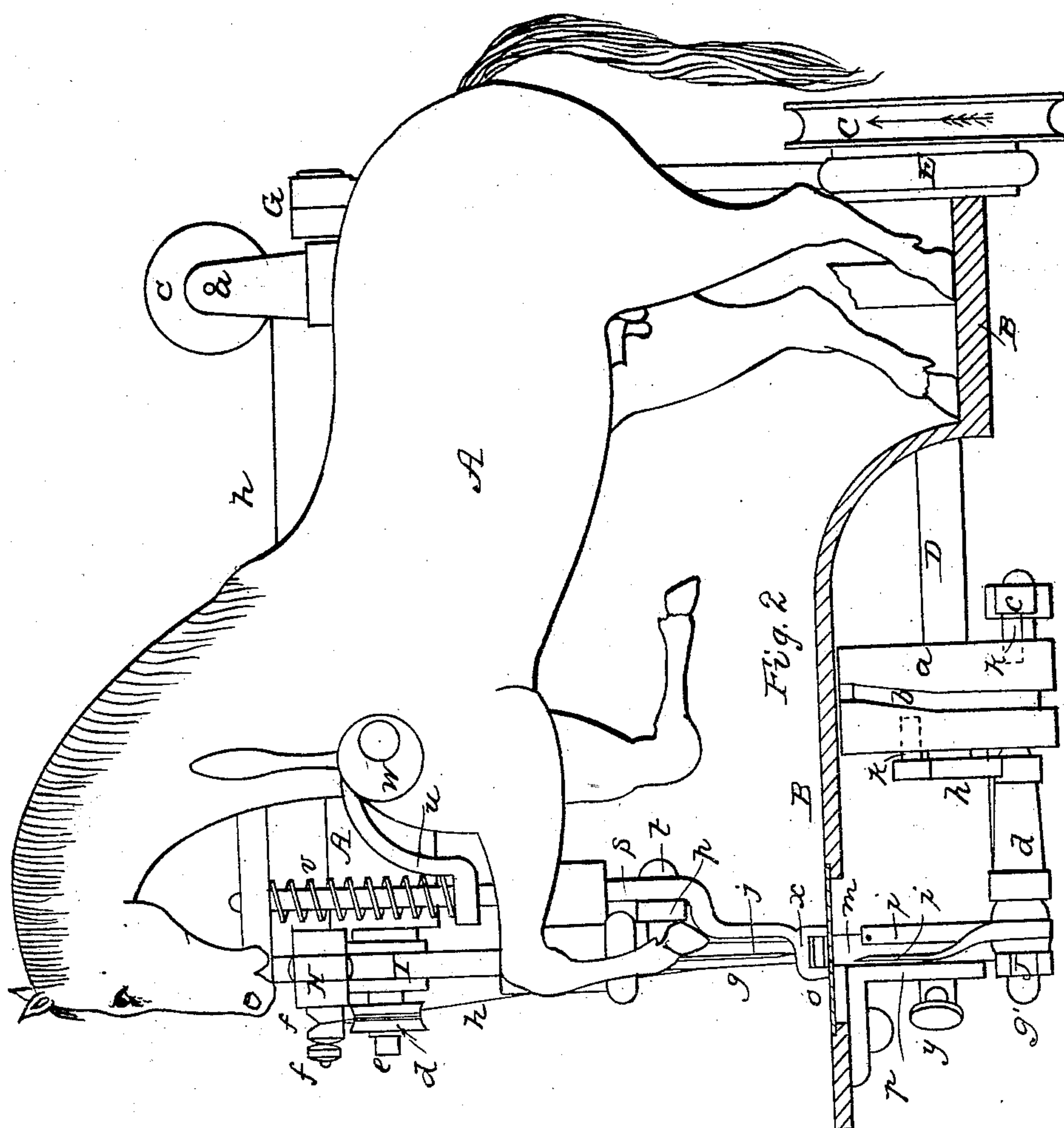
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Sewing Machine.

No. 22,148.

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## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 22,148, dated November 23, 1858.

*To all whom it may concern:*

Be it known that I, JAMES PERRY, of the city, county, and State of New York, have made certain new and useful Improvements on the Sewing-Machine; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an end elevation; Fig. 2, a side elevation; Fig. 3, a view to aid in the illustration of the looping mechanism, and Fig. 4 also a view of a part of the same for the same purpose.

The same letters refer to like parts in all the figures.

Among the objects of the improvements to be herein described there are five especial ones, to wit: first, a looping mechanism adapted more particularly to the movement of the needle produced from a crank, eccentric, or easy-movement cams; second, a combination of parts to effect a smooth-surface feeder; third, a tension to maintain a proper and uniform strain upon the thread in the act of sewing; fourth, a loop-instrument with shield to prevent the loop forming on the wrong side of the needle; and, fifth, a movement of the looping hook or catch to prevent its re-entering a previously-formed loop, as hereinafter described.

To enable others skilled in the art to make and use my improvements, I will proceed to describe their construction and operation.

In Figs. 1 and 2, A is the frame, and B the bed-plate.

*The looping mechanism.*—*a* is a cylinder, having a groove, *b*, on its convex surface and grooves *c c'* on each end. *d* and *e* are arms secured to the shaft *f*; and *g* is a shaft with an arm, *h*, secured to it at one end, and the looping-instrument, with shield *i*, at the other. *j* is a nut to secure and adjust the looping-instrument to the shaft *g*. *k k* are pins secured to the arms *h* and *e*, and project into the grooves *c c'* in the cylinder *a*. *l* is a pin secured to the shaft *f*, Fig. 4, which projects into the groove *b* in the convex surface of the cylinder *a*.

*The combination of parts to produce a smooth-*

*surface feeder.*—*m* is a movable piece operated by the cam *n* and the spring *o*, and held in its place by the bracket *p* and lug *q*. The circular bottom piece, *r*, is attached to the rod *s* by the screw *t*. The crooked lever *u* is secured to the rod *s*, and the spring *v* encircles it, and the eccentric *w*, attached to the frame A, is designed to move the rod *s* and clamp *x*. *y* is a thumb-screw passing through a lug on the bracket *p* and resting against a lug on the piece *m*. *z* is a spring.

*The tension.*—*a* is an elastic strip of metal secured to the frame A, and *b* is a mandrel passing through the spool *c*. *d* is a concave circular roller attached to the center of the shaft *e* by the pivot-screw *e*, Fig. 5. *f* is a piece of cork, leather, or other suitable substance attached to the pin at *f*.

*The looping-instrument with shield.*—*i i'* represents the shape of a piece of metal hooked at the end *i* and flattened at the other, *i'*, and bent round, so as to partly cover the hook, leaving just room enough for the needle *g* to play between the parts *i i'* as they vibrate in their movements.

The remaining parts of the machine are as follows: C is a pulley secured to the shaft D, on which the cylinder *a* is adjusted, and the cam *n* secured to the end of the same. E is an eccentric, and its rod F is connected with the arm G, secured to the shaft *e* at one end, and the arm H, secured to the same at the other. The arm H is connected with the needle-rod I by the pin *f*, and *p* secures all of Fig. 4 to the bed-plate B.

*Operation and principles of action.*—The thread *h*, being brought from the spool *c*, is passed through the arm *j* and wound several times around the concave roller *d* to obtain sufficient friction to cause the roller *d* to revolve when the thread is drawn off the spool in the act of sewing. The thread is then passed into the notch in the cork *f*, and thence through the eye of the needle. The pivot-screw *e*, Fig. 5, is ground to fit smoothly into the roller *d*, and by screwing the same into the shaft at *e* until the pivot presses the roller gently against its collar and the shaft a nice degree of tension is obtained, suitable for the kinds of thread used and the work to be sewed. Power being



transmitted to all the moving parts of the machine by turning the pulley C in the direction shown by the arrow, the arms G and H vibrate and cause the mandrel I and needle *g* to rise and fall alternately; and at the same time any cloth applied to the feeder at the point of contact of the circular bottom piece, *r*, and reciprocating piece *m*, the needle passing through it at the same point, in rising forms a loop, which is caught and held by the looping-instrument until the return of the needle, when the same disengages itself from the loop and assumes the same office in the next and each succeeding stroke of the needle. In Fig. 3, *g* shows the position of the needle in its upstroke with the loop just formed, and the cam *a* with its grooves *c c'* in the positions to act upon the pins *k k* of the arms *e* and *h* as it revolves in the direction shown by the arrow. The cam-grooves *c c'* act simultaneously upon the arms *d e h* at this time, and the compound movement of a forward and upward motion is given to the looping-instrument *i, k* showing its position at the instant the cam-grooves begin to act, and *l* when they have ceased to act, or while the pins *k k* are in the concentric parts of the grooves *c c'*. The pin *l* in the shaft *f*, Fig. 4, acted upon by the groove *b* in cam *a*, moves laterally, as well as all the parts shown in Fig. 4, and the looping-instrument *i*, being also secured to the shaft *g*, moves with them, and this movement serves to place the hook *i*, with the loop formed by the thread passing around it, opposite to the needle when it descends. When the point of the needle has passed a little way through the loop, the looping-instrument is made to move laterally in the contrary direction, and this movement places the hook of the looping-instrument in the position it had when it just finished its upward and forward motions—to wit, in the position shown in Fig. 2. The opposite part of the cam-groove *c* is now made to act upon the arm *h*, and consequently to cause the shaft *g* to oscillate on its center, while the cam-groove *c'* keeps the arm *e* in its upper position; and hence the looping-hook withdraws from the loop moving in the arc *m*, and as soon as this movement is finished the other groove, *c'*, in cam *a* brings the looping-hook into its original position *k*, so far removed below the disengaged loop as to make it impossible that the hook can re-enter it again. When the hook *i* of the looping-instrument is returning through the arc *m*, the shield *i'* of the same passes closely by the eye of the needle and covers it until after the loop is formed by the upward movement of the needle, and the shield thus operating each time a loop is formed prevents it from forming on the wrong side of the needle. The cam *n*, revolving in the direction shown by the arrow in Fig. 3, moves the piece *m* toward and against the spring *o*, and as the piece *r* is free to move around its axis on the pin *t*, Fig. 2, the pieces *m* and *r* move together while they are in contact at *w*, or while they are

pressing the cloth to be sewed; but when the cam *n* releases the piece *r*, which it does while it is passing through a portion of its revolution, the springs *o* and *z*, Fig. 1, cause the pieces *m* and *r* to return to their first position, which is assumed to be that just prior to the time of contact of the pieces *m* and *r*. That the piece *r* may be acted upon by the spring *z*, the clamp *x* presses the cloth against the plate *o*, Fig. 2, whenever the piece *m* ceases to be in contact with it, (*r*.) And as the clamp *x* projects a little below the circular bottom of the piece *r*, the pressure produced by the spring *v* acts upon the clamp *x*, and hence the piece *r* sustains no pressure while the piece *m* is not in contact with it. The eccentric *w* is designed to raise the clamp *x* off the plate *o*. It having been found practically better to revolve the cam *a*, Fig. 3, in the opposite direction shown by the arrow—that is, in the direction of the arrow in Fig. 6—the cam *n* propels the part *m* toward *o*, while the cam *q*, revolving against the roller *r*, keeps the part *n* (of *m*) in contact with the arc *r*. When the cam *n* ceases to act upon the part *m*, the roller *r*, being then in contact with the cam *q* at 1, follows upon the reduced part of it, and thereby permits the part *m* to drop away from the arc *r*, as both the arc *r* and part *m* return by the action of the springs *o* and *z*, Fig. 1. When the needle in its downstroke is in the position represented at *g*, Fig. 6, that part of cam *q* opposite 2 is in contact with the roller *r*, and consequently the part *m* is elevated and in contact with the arc *r* at *n*—that is, the feed *s*, Fig. 8, which represents the plan at *w*, over which the cloth passes, is raised at each downstroke of the needle in time to support the thrust of the same.

It is obvious that the locking mechanism described in this specification may be applied to sewing-machines having an abrupt or irregular movement to propel the needle; but as it is desirable in all machines that the parts in motion should move with ease and regularity, especially so in machines requiring to be run at a high rate of speed, it was a principal object with the inventor of the improvements herein described, among other objects, to adapt a movement to the looping-hook while it is passing into the loop, which requires no retardation or stoppage in the motion of the needle, in order that there shall be no strain produced upon the thread at this time by the hook's action. To this end, and also to obtain great speed in the movement of the needle and to prevent the possibility of any previously-formed loop catching a second time upon the looping-hook, the inventor has compounded an upward and forward vibratory movement to the looping-hook, and on account of this upward motion, which it receives from the action of the cam-groove *c*, which is the one under consideration, the objects above set forth as being desirable have been obtained.

Having thus fully described the character



or principle of my invention and the manner of constructing and operating the same, I wish it to be distinctly understood that I do not limit myself to the precise construction and arrangement of the parts, as these may be variously modified without affecting the principle or mode of operation which I have invented and claim to be new and useful. Nor do I wish to be understood as claiming any particular device simply to catch a loop and to move the same that the needle may enter it.

I claim—

1. The combination and arrangement of the levers and cams for imparting the three recip-

rocating movements to the looper—namely, that in the arc of a circle, the lateral, and the vertical—in the manner substantially as described, for the purposes specified.

2. The shield *i'*, in combination with the looper and needle, arranged and operating in the manner described, for the purpose of presenting the loop to the looper with greater certainty.

JAMES PERRY.

Witnesses:

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DANIEL FITZGERALD.