

C. PARHAM.

Feeding Mechanism for Sewing-Machines.

No. 135,579.

Patented Feb. 4, 1873.

Fig. 1.

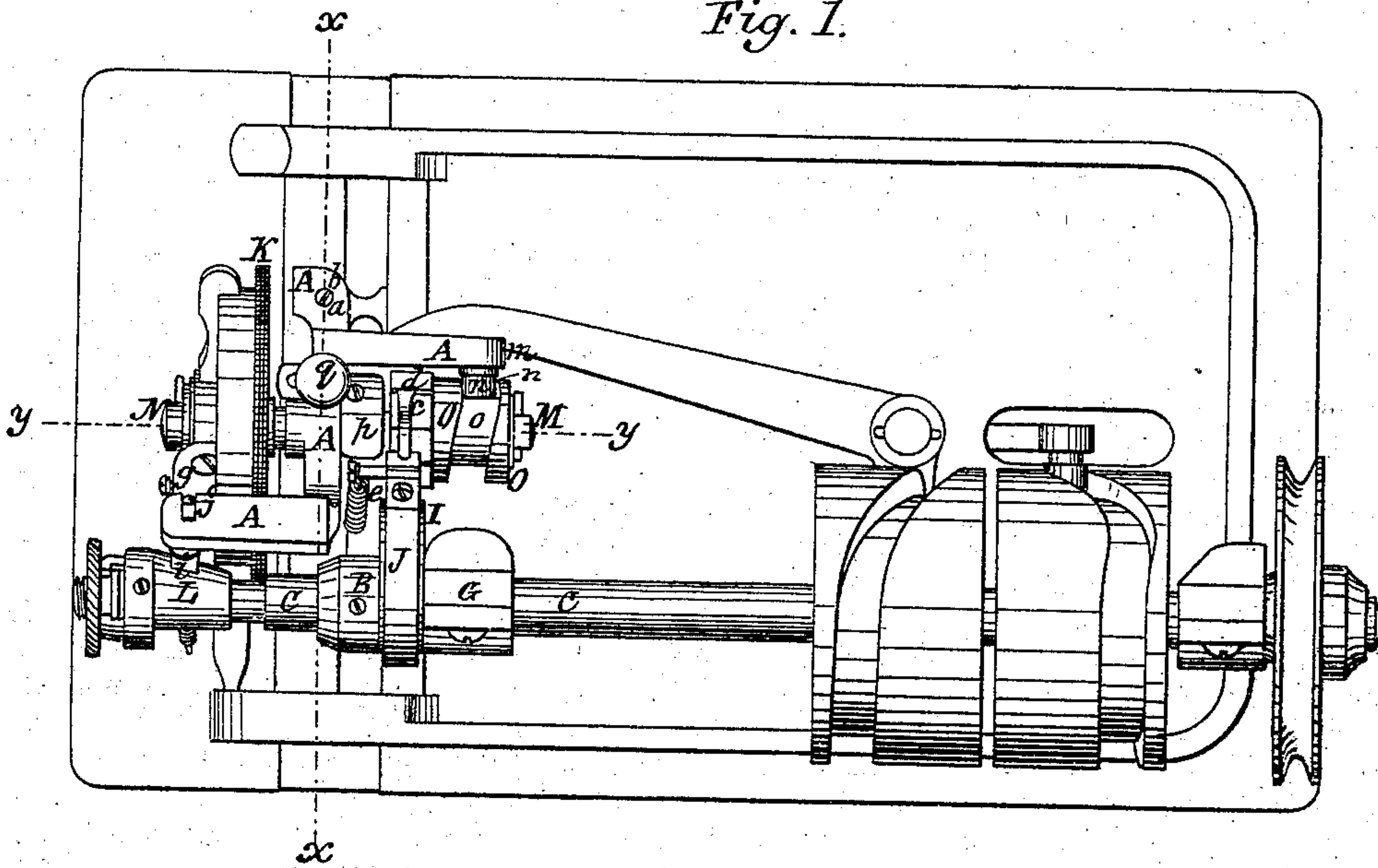


Fig. 2.

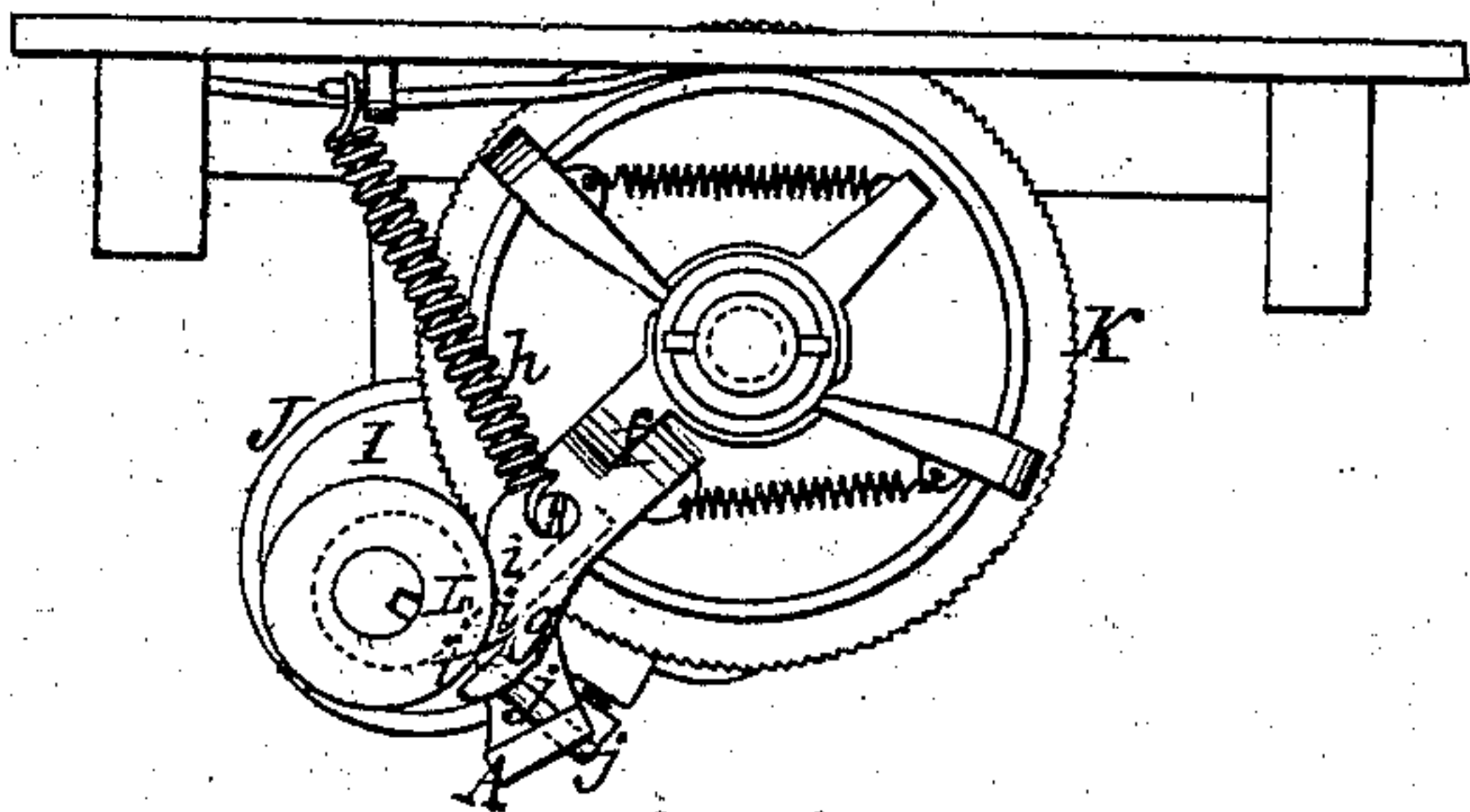


Fig. 3.

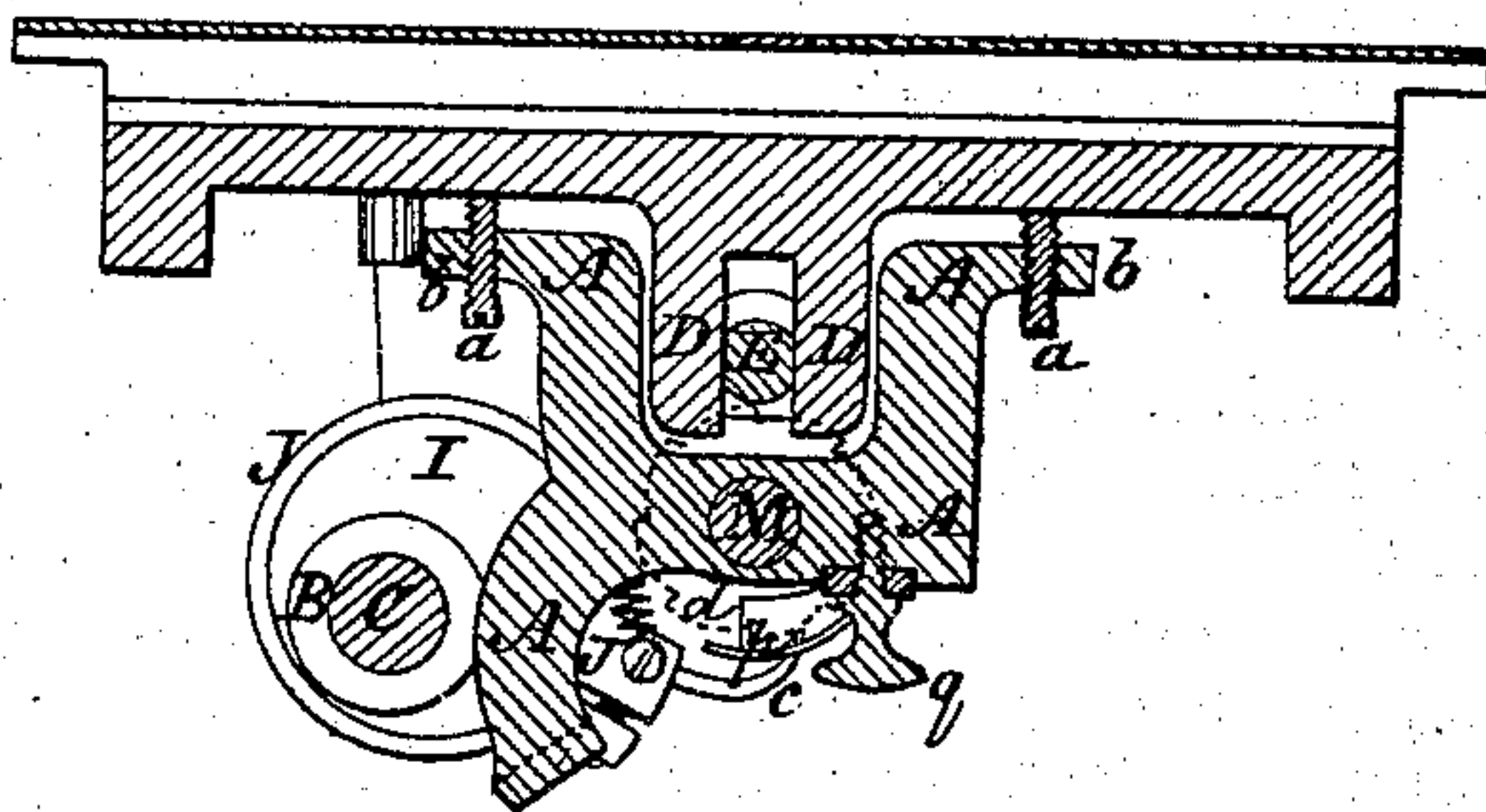


Fig. 4.

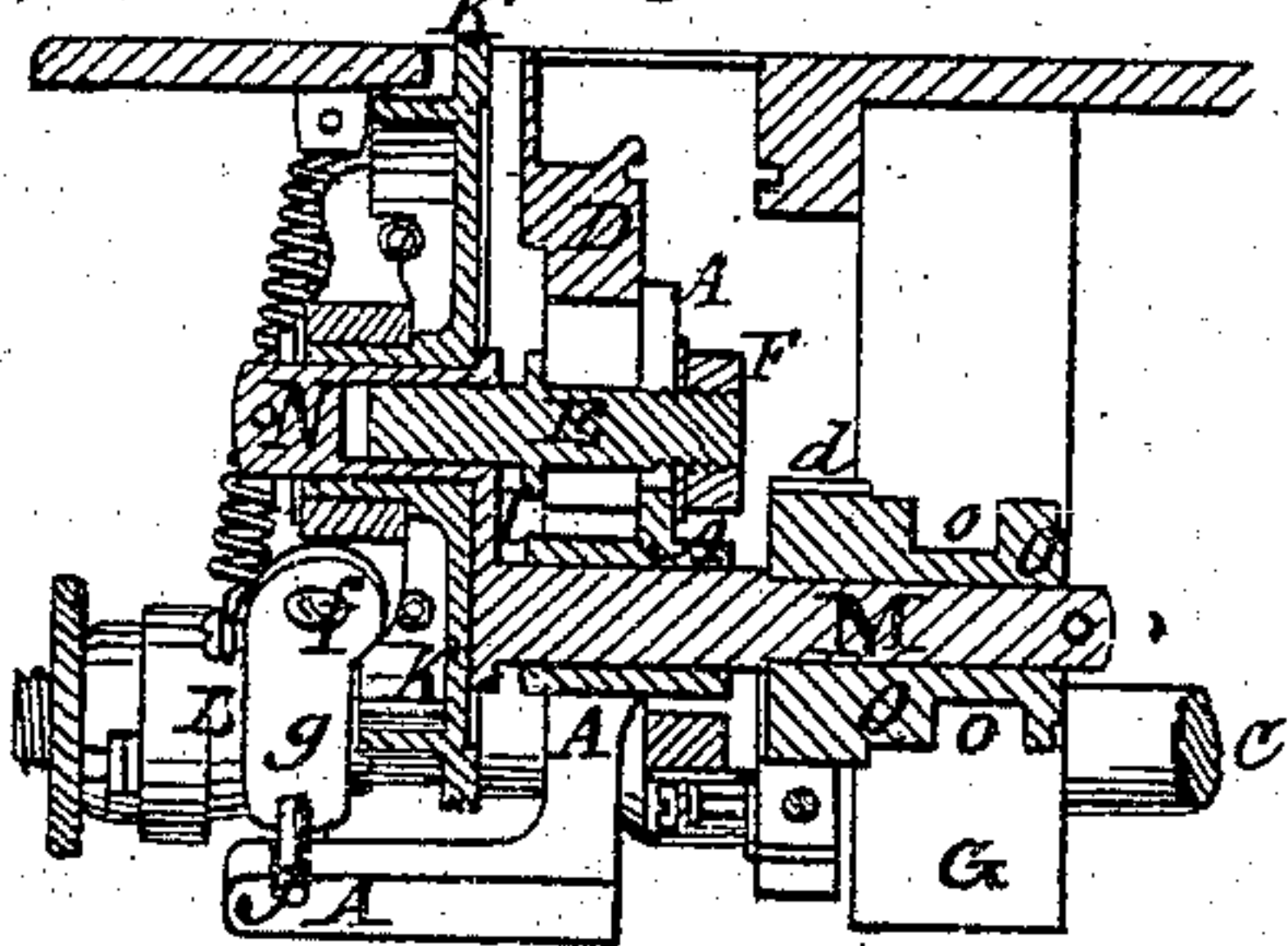
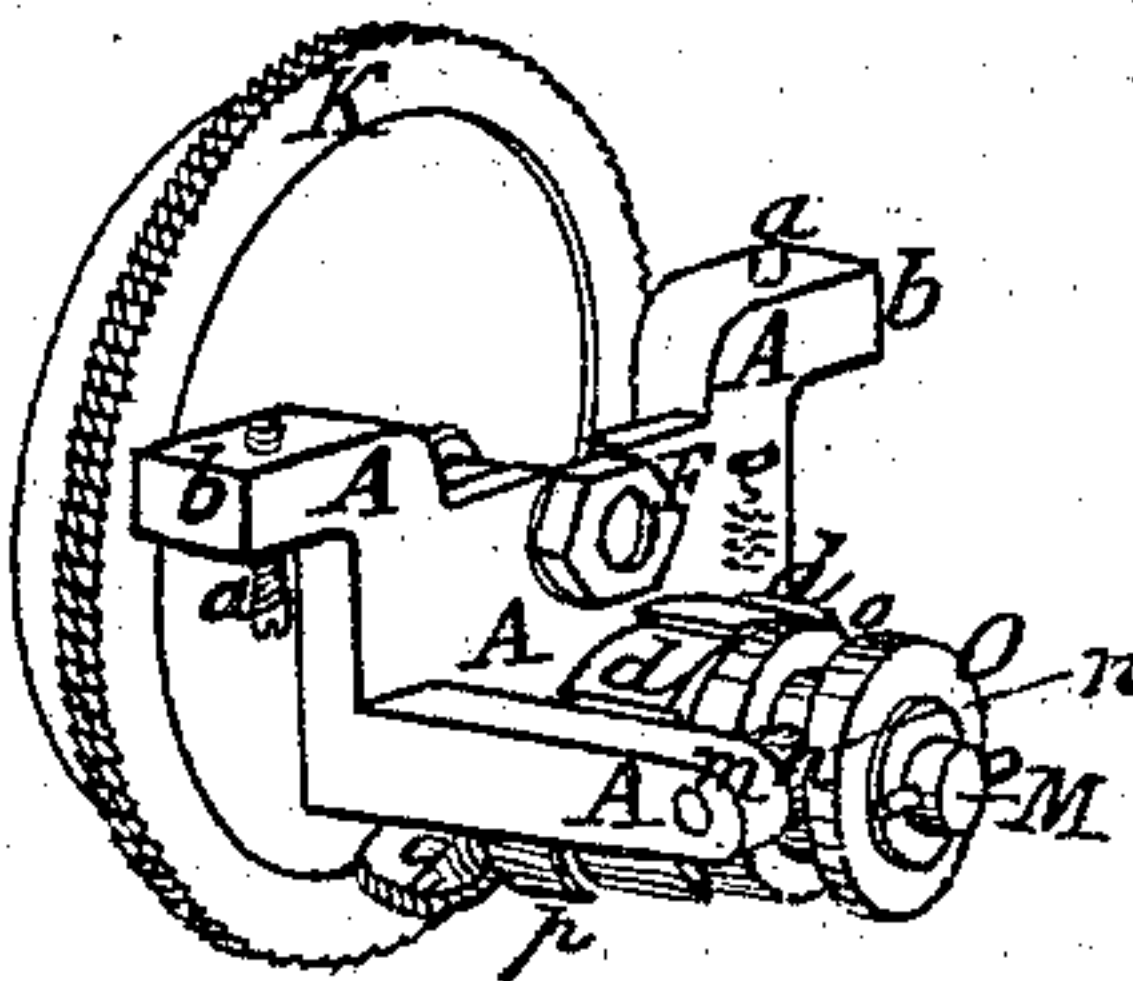


Fig. 5.



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## IMPROVEMENT IN FEEDING MECHANISMS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 135,579, dated February 4, 1873.

*To all whom it may concern:*

Be it known that I, CHARLES PARHAM, of the city of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Construction and Operation of Feed Mechanism for Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 represents a plan of the under side of a sewing-machine table or base with the feeding mechanism in place thereon. Fig. 2 represents an end view of the table or base, and of the feed mechanism connected thereto. Fig. 3 represents a section taken through the line *xx* of Fig. 1. Fig. 4 represents a section through the line *yy* of Fig. 1. Fig. 5 represents a perspective view of the feed mechanism detached from the table or base.

Similar letters of reference where they occur in the several separate figures denote like parts in the drawing.

I am aware that a feeding mechanism for sewing-machines which has a combined rectilinear and lateral motion imparted to it is not new, and to this I lay no claim, independent of the mechanism that I employ for such purpose.

My invention relates to a feed mechanism which is susceptible of being used as a simple progressive or rectilinear feed, or as a compound rectilinear and lateral feed, for zigzag stitching, as may be required, and which can be applied to sewing-machines already constructed by removing but two of the parts so constructed, and applying my mechanism in their stead and place, and without impairing the parts so removed or changing the sewing-machine, so that the removed parts may not at any time be interchanged with the compound mechanism, and so have two kinds of feed mechanism applicable to one and the same sewing-machine, and interchangeable at pleasure, or to suit the kind of work to be done; and my invention consists in the construction, combination, and co-operative action of the several mechanical devices that I employ for the above purpose, as will be hereinafter fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawing.

A is a metal frame, which carries, supports, or controls the entire new feeding mechanism, except one single piece or part, B, which is slipped onto, secured to, and operated by the driving-shaft C of a previously-constructed machine. This frame A, containing and carrying the feeding mechanism almost entire, as above stated, is secured to the down-hanger D of a previously-constructed machine by means of a bolt, E, and nut F, occupying the same position that the bolt and nut of the removed rectilinear-feeding mechanism occupied in and on the sewing-machine; and that this new compound feed mechanism may be accurately fitted and adjusted to the other unremoved parts of the sewing-machine, two set-screws, *a a*, are employed, which pass through projections *b b* of the frame A, and bear against the under side of the bed of the sewing-machine, so that said frame may, with its parts, be adjusted to accurately work in connection with the unchanged parts of the sewing-machine.

The ordinary sleeve or boss which is used on the driving-shaft C, and which bears against the down-hanger G that is cast upon the under side of the bed of the sewing-machine, and which boss is designed to prevent end motion to said shaft, is removed, and in its place and stead I put a collar or boss, B, which has upon it or connected to or with it a cam, I, that has a collar or yoke, J, around it, which collar or yoke carries a pawl, *c*, that works in connection with a ratchet, *d*, to give lateral motion to the feeding-wheel K, as will be hereinafter explained. To the collar or yoke J is connected one end of a coiled spring, *e*, the other end being attached to the bed of the machine, and this spring acts to keep the collar J, and particularly the pawl *c*, which it carries, in operative connection with the ratchet *d*. The collar and cam B I, which may be made in one piece, the yoke J, its pawl *c*, and restraining-spring *e* are the only parts or pieces that are not connected to or with the frame A, these parts or pieces being connected to or with the driving-shaft C.

The feed-wheel K receives its progressive motion in the ordinary well-known way—viz., by a cam, L, on the end of the driving-shaft C—that works in connection with the clamping-arms of the feed-wheel, and turns the latter intermittently by striking the wedge or tapering foot, loosely fixed in one arm of the clamping mechanism. With this arm of the clamping



mechanism, which has heretofore been a rigid arm, commences my change or improvement in the feeding mechanism. This hitherto rigid arm I very much shorten, and then hinge to it, as at *f*, a piece, *g*, which is controlled by a reactionary spring, *h*, and in this hinged piece *g* I place the tapering foot *i*, that works against the cam *L* on the shaft *C*. The axis or pivot of the hinge-joint *f* is at right angles to the axis of the journal or bearing of the feed-wheel, so that when the feed-wheel is moved laterally the hinge may yield to such movement; but the foot *i* in the end of said hinged arm does not move with the feed-wheel, but maintains a uniform position on the cam *L*. If it did move with the feed-wheel it would get onto a different part of the conical-shaped cam *L*, and change the feed or length of stitch at every such movement; and to hold the foot *i* at a uniform point or position on the cam while the feed-wheel is moved laterally, a pin, *j*, in the end of the hinged arm *g* drops into a recess in the frame *A* and holds it and the foot in one position, the hinge-joint at *f* yielding when the feed-wheel is moved laterally. The cam *L* can be adjusted in the usual way to regulate the length of feed or stitch, and the foot *i* is self-adjusting, as in the usual well-known way.

The lateral motion of the feed-wheel *K* is attained as follows: A shaft, *M*, is supported in the frame *A* so that said shaft may move endwise in its support or bearing; and to a crank or right-angled arm, *l*, on one end of this shaft, there is attached a hollow hub, *N*, which hub fits over and upon the bolt *E*, by which the frame *A* is held. Over the hub *N*, which may be called a sleeve or boss hub, the hub of the feed-wheel *K* is slipped on, and on it said feed-wheel turns. On what may be termed the rear end of the shaft *M* there is placed a slotted cam, *O*, which cam, though it can turn on the shaft, cannot move endwise thereon, but must go in that direction with said shaft, it being prevented from moving endwise independently of said shaft by a shoulder on the shaft at one end of the cam, and a pin through the shaft at the other end of the cam. Connected with or constructed on this cam *O* is the ratchet *d*, by which said cam is turned intermittently on its shaft by the cam, yoke, and pawl, operated by the shaft *C*. On the end *m* of an arm of the frame *A* is a friction-roll, *n*, which works in the cam-groove *o*, and which moves said cam, its shaft, the hub *N*, and the feed-wheel *K* laterally, to make the zigzag feed. To the frame is attached a movable shield, *p*, which is held by a set-screw, *q*. When the lateral feed of the wheel *K* is not required the pawl *c* is drawn back and out of action with the ratchet *d*, and the shield *p* is moved so as to interpose between the ratchet and pawl. This stops the rotation of the cam *O*, and consequently the lateral movement of the feed-wheel; but the feed-wheel can be

used by the clamp-feed to give it its ordinary progressive or rectilinear motion, so that either feed may be used at pleasure.

Now I have described this feeding mechanism as constructed to be applicable to sewing-machines already constructed, and as interchangeable with the ordinary clamp feeding mechanism of such already-constructed machines.

It is obvious that in building new machines this new feeding mechanism may be constructed with a view to apply them to such new machines; and I do not restrict their use to such previously-built machines, though their capability therefor is one of its principal commendations. The two separate and distinct mechanisms admit of using the sewing-machine with one of them when the other becomes disabled.

The cam *O*, as herein shown, is shaped for forming a zigzag or saw-tooth-shaped line of stitching; other forms of stitching, such as waved, scalloped, or turreted lines, may be made by shaping the cam in accordance with the style of ornamented work desired. A series of these cams with ratchet attached, or of cams alone, attachable to a common ratchet, may be made and used at pleasure.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. In combination with the clutch-arm *g*, the foot *i*, hinged to the clutch, and provided with pin *j*, adapted to a recess in the frame, so as to allow the feed-wheel to move laterally without so moving the foot *i*, as and for the purpose described and represented.

2. In combination with the frame *A*, the bolt *E*, when serving not only to unite the frame and its varied parts to the bed of the machine, but when also serving as a support for the hub-boss *N* that carries the feed-wheel *K*, as described and represented.

3. The combination of the cam *I*, its yoke *J*, and pawl *c*, operated by the shaft *C*, with the ratchet *d*, cam *O*, and shaft *M*, for the purpose of giving a lateral motion to the feed-wheel, substantially as described.

4. The combination, with the ratchet and pawl, of the shield *p* for covering said ratchet, and so preventing the pawl from reaching it, and thus throwing the laterally-moving parts out of action, as and for the purpose described.

5. In combination with the frame *A* for sustaining and carrying most of the feed mechanism, the projections *b* and set-screws *a*, for adjusting said mechanism, so as to work true with parts otherwise sustained on the sewing-machine, as described.

6. The frame *A*, constructed as herein described and represented, and for the purpose set forth.

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