(No Model.) 3 Sheets—Sheet 1.

J. TRIPP.

SEWING MACHINE.

No. 308,390. Patented Nov. 25, 1884.

Fig. 1.

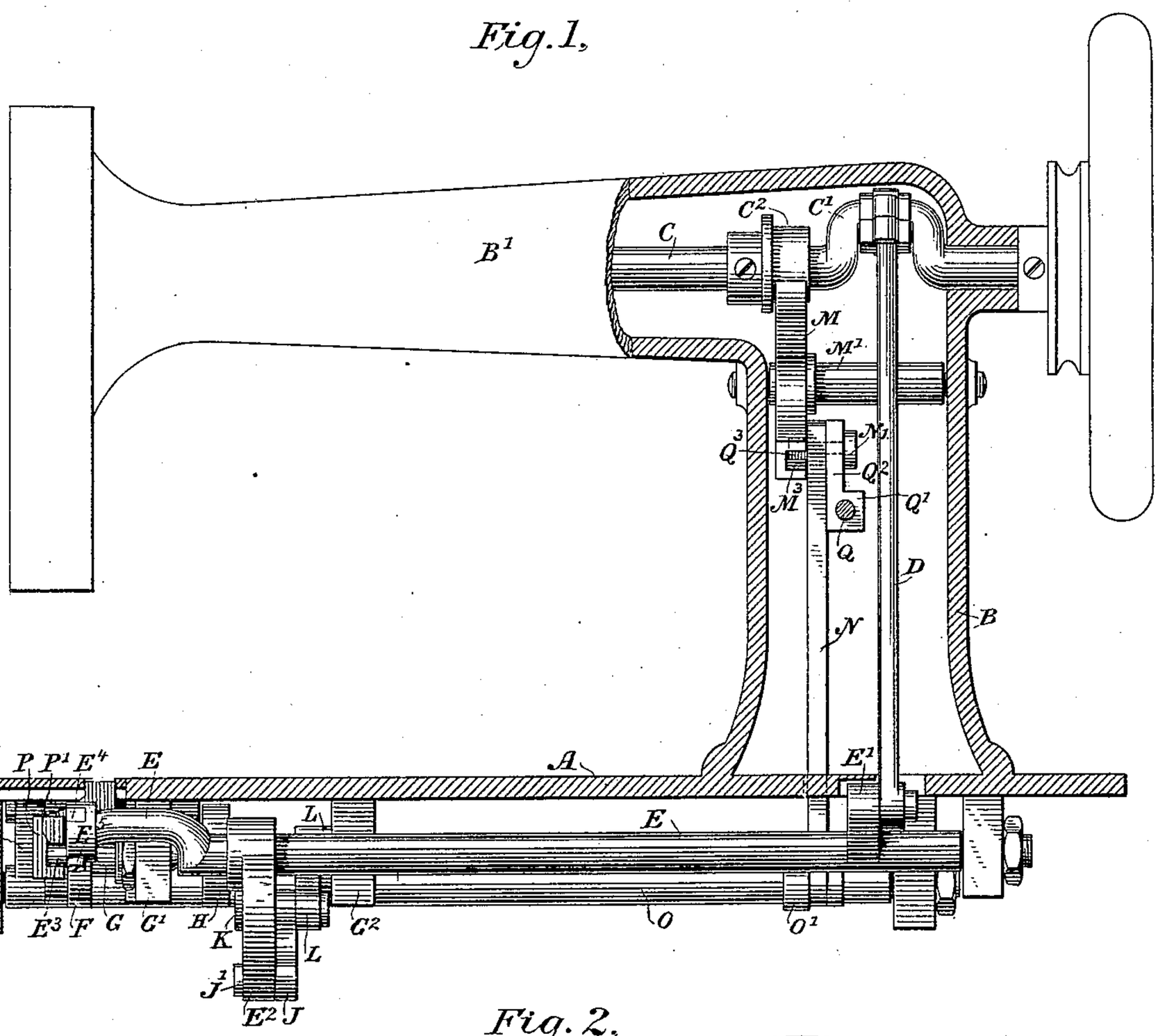
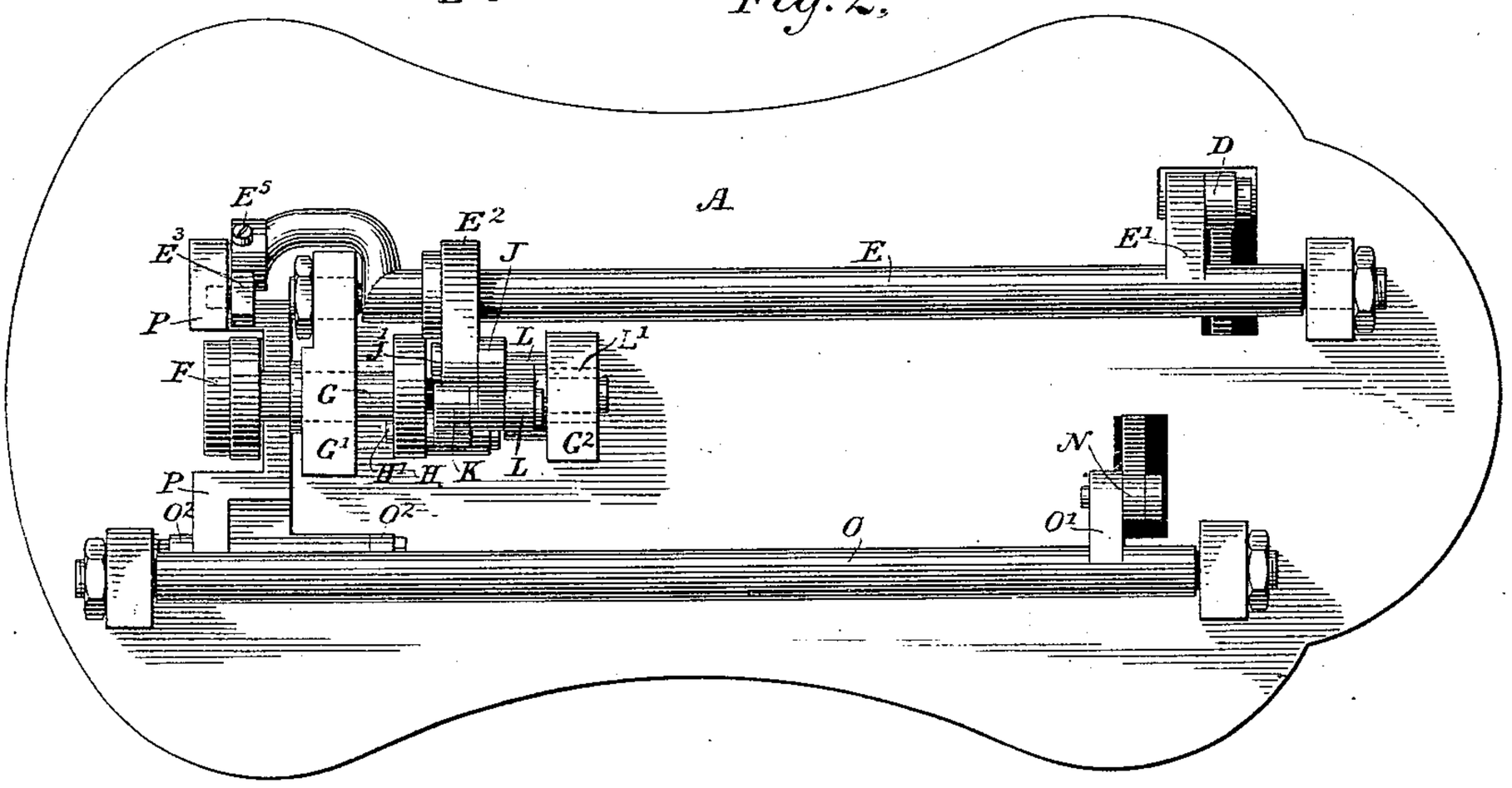


Fig. 2.



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(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

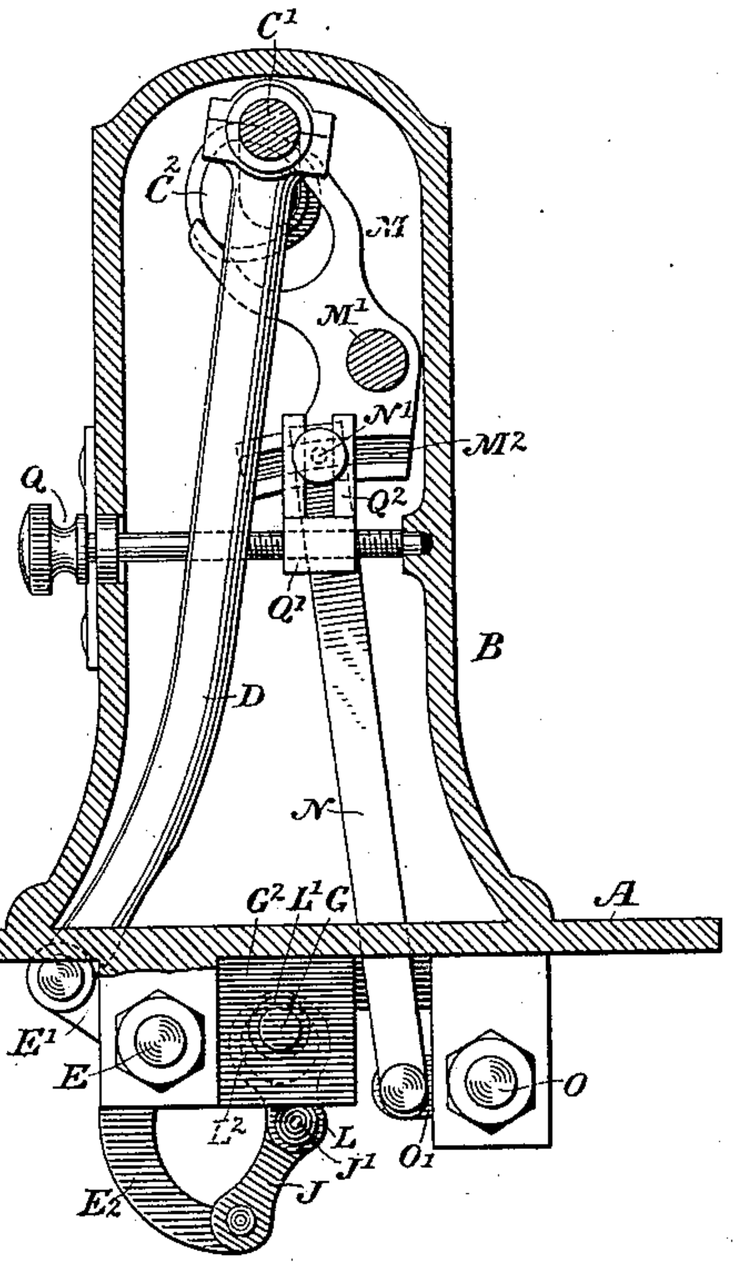


Fig. 4.

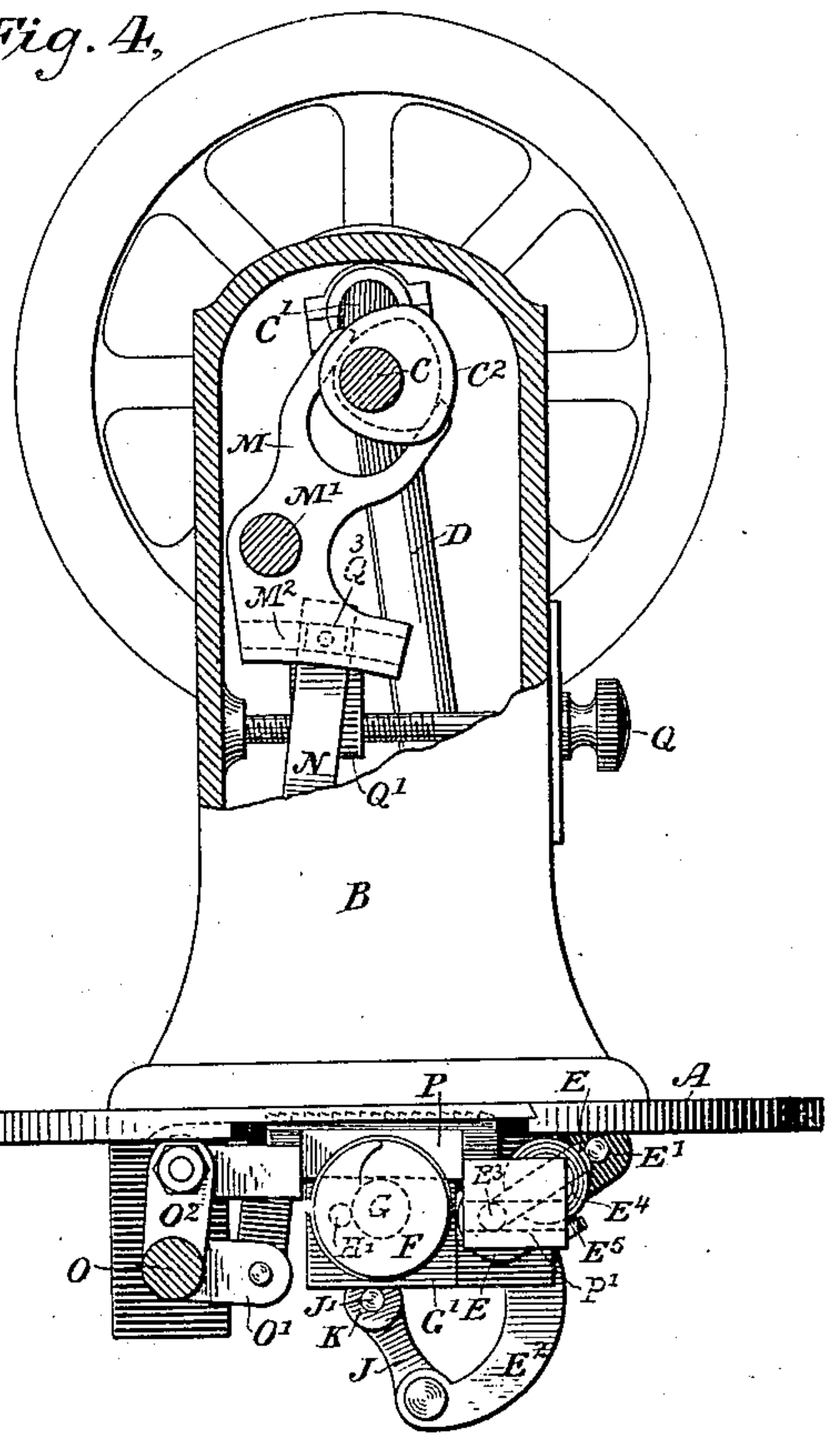


Fig. 6.

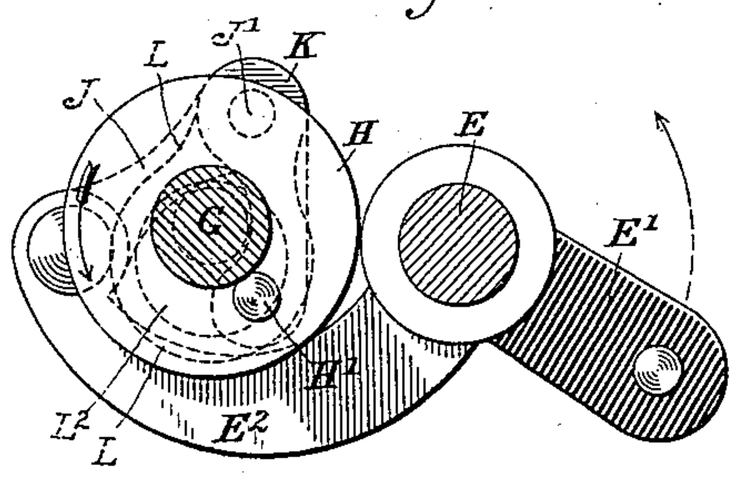
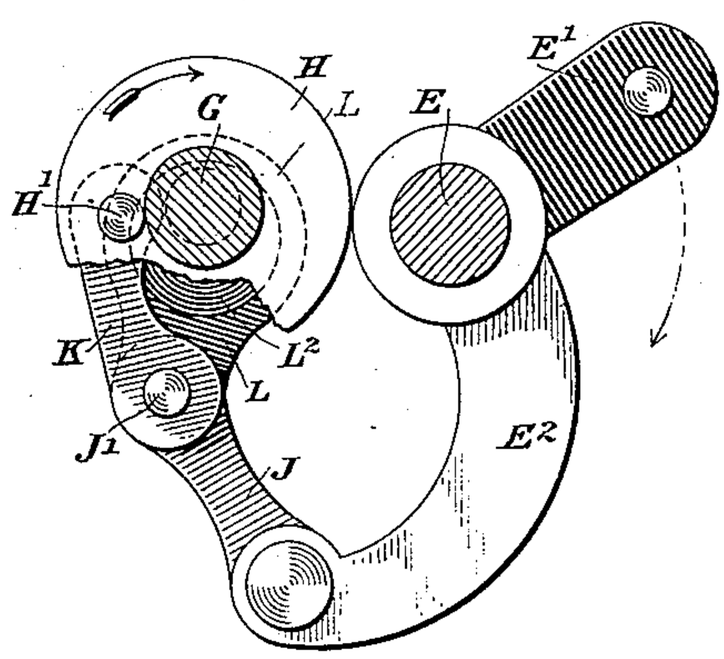


Fig. 5.



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(No Model.) 3 Sheets—Sheet 3.

J. TRIPP.

SEWING MACHINE.

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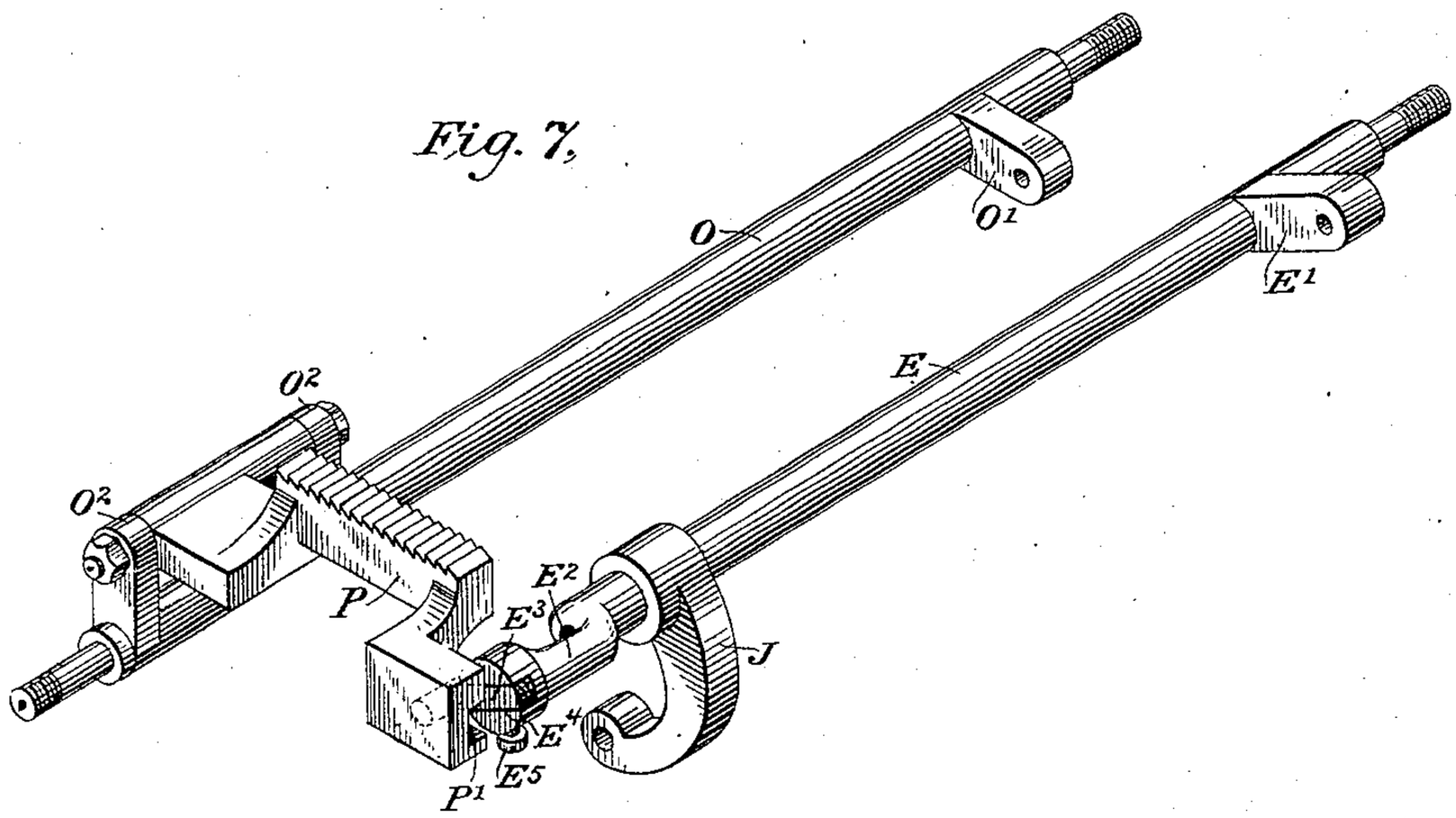
Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES TRIPP, OF NEW YORK, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 308,390, dated November 25, 1884.

Application filed March 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES TRIPP, of the city, county, and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the same in the following full, clear, and exact description thereof, reference being had to the accompanying drawings.

The invention relates to means for transmitting motion to the feed-bar from the main shaft, and it has particular reference to machines in which such motion is derived from the main shaft through the medium of a cam thereon and a lever-arm arranged between ıch cam and the rock-shaft or other device onnecting such lever to the feed-bar. Genrally in such mechanism the fulcrum-point of the lever-arm is arranged nearer the main shaft than the rock-shaft, in order to use as small a cam as possible; but thus applying the driving-power to the shorter arm of the lever makes the resulting action inefficient, slow, its adjustment difficult, and causes an undue straining and wearing of the parts most desirable to avoid. This feature of invention consists, therefore, of an elbow-lever whose longer arm is acted upon by the main or driving shaft cam, and whose shorter arm acts to reciprocate the feed-bar rock-shaft, and improved means for regulating the length of the feed by changing the operative length of the shorter arm of said lever.

In the drawings, which illustrate a sewing-machine embodying my improvements, Figure 1 is a side elevation in partial section. Fig. 2 is an inverted plan view. Fig. 3 is a rear view in partial section; Fig. 4, a front view in partial section. Figs. 5 and 6 show, respectively, the parts of the mechanical motion at the beginning and end of its oscillatory movement; and Fig. 7 shows a detail perspective view of the feed-bar and its immediate connections.

Referring to these drawings in detail, A is the bed or base plate of the machine. B is the hollow standard or post rising therefrom, which supports in suitable bearings the upper main shaft, C; and B′ is the overhanging arm that carries the needle-bar on its outer end, all of which parts are of common form.

C′ is a crank or eccentric formed in or attached to the main shaft, to which is secured the upper end of the pitman D, the lower end of which is connected to the crank-arm E′ of the main rock-shaft E, which is suitably journaled on the under side of the base-plate and carries the oscillating arm E^2.

F indicates the shuttle, which may be of any of the various forms known to the art. It is carried on the end of the rock-shaft G, which is hung from the under side of the base-plate in bearings G′ G^2, and carries the crank-disk H. The swinging end of the rock-shaft arm is connected to the crank-pin H′ of the looper-shaft by two driving-links, J and K, one end of each of which are pivoted together at J′, and the other ends of which are respectively pivoted to said arm and said pin.

L^2 is an eccentric block borne on a sleeve, L′, fast to the journal-post G^2, and in this instance constitutes the bearing of that end of the shuttle-shaft. This block carries one end of the guide-link L, its other end being pivoted to the joint J′ between the driving-links, and it is set eccentrically to the looper-shaft, and so that its link will be at the farthest practicable point of eccentricity (the point where the outer end of guide-arm is farthest from center of looper-shaft) at the beginning of the oscillation of the main rock-shaft arm—that is, just in advance of the lower dead-center point between such arm and the center of the eccentric block. The action of this device is this: As the main rock-shaft arm vibrates upward, the guide-link causes the joined ends of the driving-links to move in a circle about the eccentric-block center, and as that circle constantly approaches the circle in which the crank-pin moves it is obvious that the crank-disk must have a greater angular motion, and so move faster than the guide-link, and hence that when the guide-link has gone through one hundred and eighty degrees and reached its nearest point of eccentricity (the point where the outer end of guide-arm is nearest the center of looper-shaft) the crank-arm will have gone very much farther. An important feature to be noted in this connection is that the speed of the shuttle-shaft constantly increases from the beginning to the end of its oscillation, and the reverse when returning; for this is just the requisite movement demanded to effect the best work of the looper.

C^2 indicates the main-shaft cam, and M the

elbow-lever, supported on a fulcrum, M′, with the fork of its longer arm engaging with the cam, and its shorter arm attached to the upper end of connecting-rod N, whose lower end is pivoted to the crank-arm O′ of the rock-shaft O, from which the feed-bar P, which is of the four-motion kind, derives its longitudinal motion through the crank-arm O^2 O^2, to which it is pivoted.

Q is a thumb-screw rotarily fixed to the standard, and bears a traveling nut, Q′, provided with a guide, Q^2, which receives the neck of the pivot-screw N′, that secures the upper end of the connecting-rod to the slide or block Q^3, moving in the circular groove M^2 of the elbow-lever, which groove is circular, and has the lower pivot-point of the connecting-rod as a center. It will now be seen that turning the thumb-screw causes the operative length of the shorter arm of the lever to be changed, and, correspondingly, the throw of the feed-bar and length of stitch; and in this connection the special advantage of the movable connection is that since the adjustments are made on an arc of which the connecting-rod is a radius, and hence without moving it vertically, such changes alter the throw of the feed-bar from the same fixed starting-point, and not, as is generally the case, from a variable starting-point. So, also, the operating thumb-screw being fixed renders it possible to make the adjustments while the machine is running, and for the same reason this screw cannot be shaken loose and the adjustment changed by the rapid vibration of the moving parts, as would be likely to occur if the screw moved with the other parts. To thus confine the necessary lever action to a small stout elbow-lever adapted more particularly to change the direction of the motion than to extend it, and using a direct-acting connecting-rod to transmit the motion, I am enabled to avoid binding or straining of the parts and to materially increase their speed of action. The up-and-down movement of the feed-bar is taken from the main rock-shaft through the agency of a crank-arm, E^3, the wrist of which enters a longitudinal slot, P′, in the frame of the feed-bar, which crank is so positioned as to cause the feed-bar to rise and fall at proper time. For the purpose of vertically adjusting the feed-bar this crank is made radially adjustable in a slot, E^4, in the end of its shaft, and is secured in position by a screw, E^5.

The devices connecting the lower main rock-shaft and the shuttle-shaft form the subject-matter of a separate application filed as a division of the present application on June 24, 1884, Serial No. 135,854. Such devices, therefore, so far as concerns their specific use and construction, are not herein claimed.

What is claimed as new is—

1. The combination of the main shaft, the lower oscillating shaft, E, and its connection with the main shaft, the oscillating shuttle-shaft, and its connection, E^4 H J K L, with the shaft E, substantially as set forth.

2. The combination, with the main-shaft cam C^2 and the feed-bar and its rock-shaft, of the elbow-lever M, circularly slotted, as shown, the rod N, connecting said rock-shaft and said elbow-lever, and provided with the pivot N′, moving in the circular slot in the lever, and the fixed screw Q, provided with the guide-nut Q′, for adjusting the upper end of said rod N relatively to the said elbow-lever M, substantially as described, and for the purpose set forth.

3. In combination with the feed mechanism M N O P Q Q′, the lower oscillating shaft, E, provided with the crank-arm E^3, for raising and lowering the feed-bar, and having connection, D, with the main shaft, as and for the purpose set forth.

4. In combination with the feed mechanism M N O P Q Q′, the lower oscillating shaft, E, provided with the adjustable crank-arm E^3, for raising and lowering the feed-bar, and having connection, D, with the main shaft, as and for the purpose set forth.

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