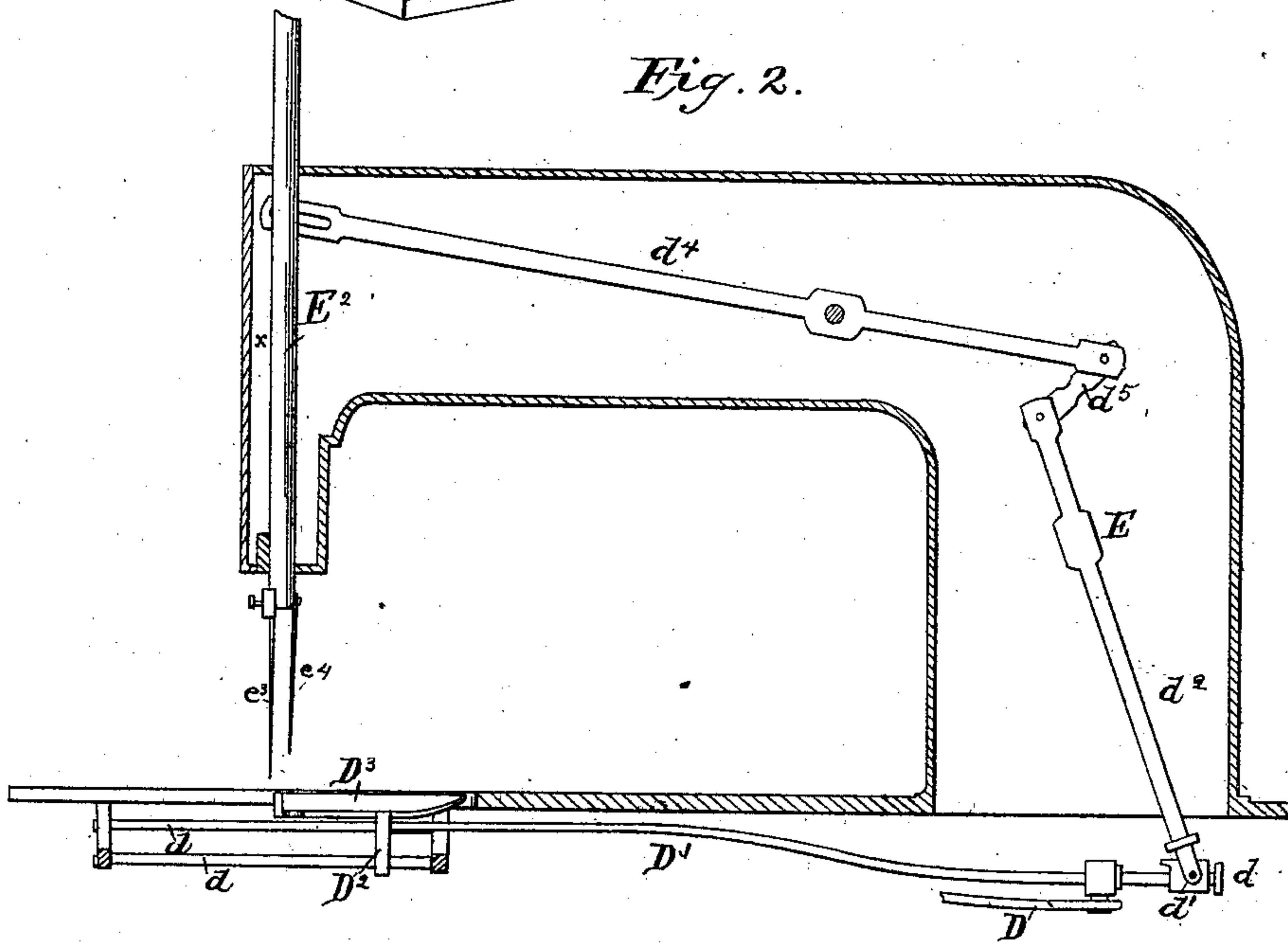
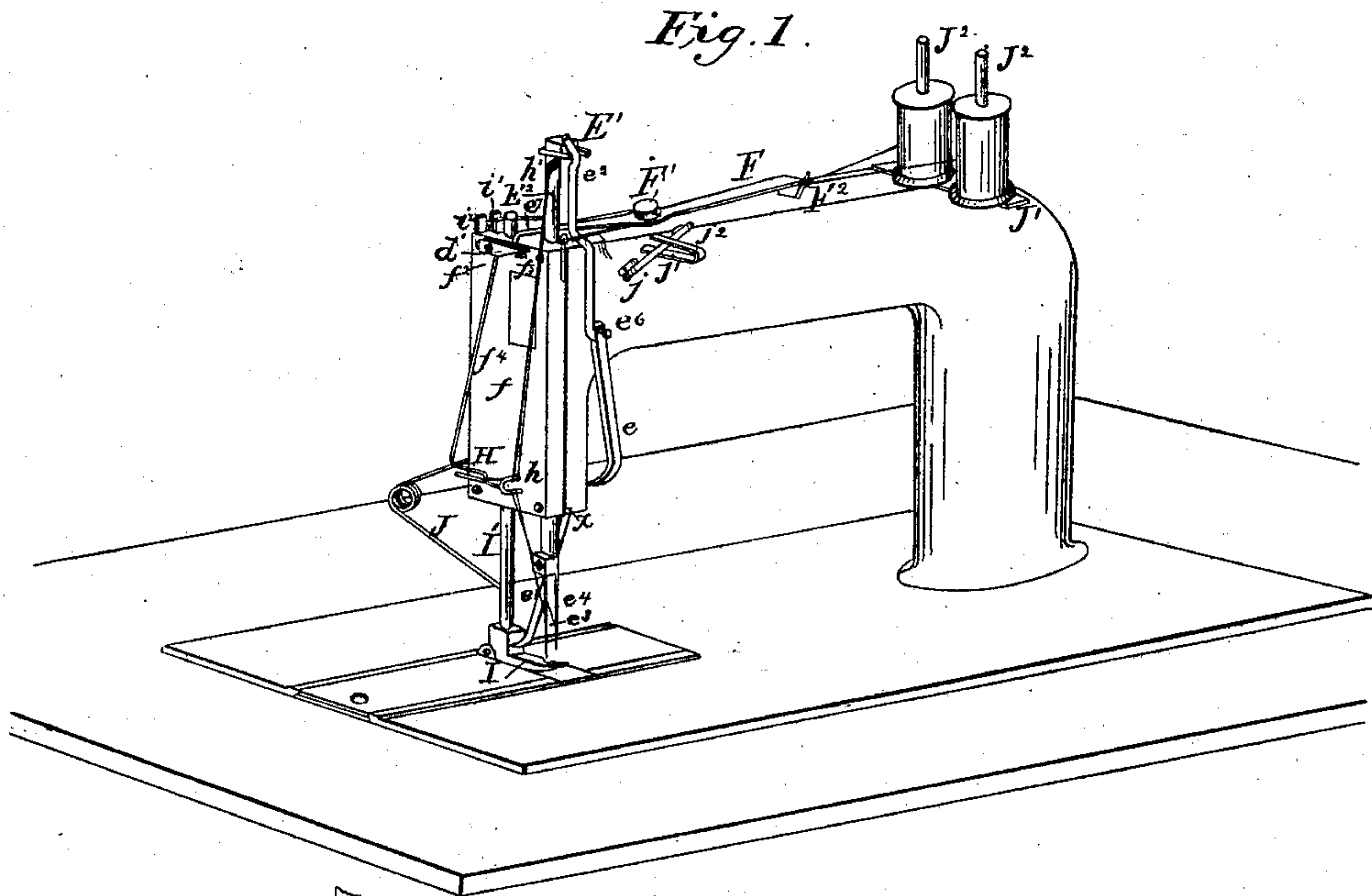


J. F. ANDREWS.

SEWING MACHINE.

No. 93,511.

Patented Aug. 10, 1869.



Witnesses:
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Chas. F. Brown.

Inventor:
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Fig. 3.

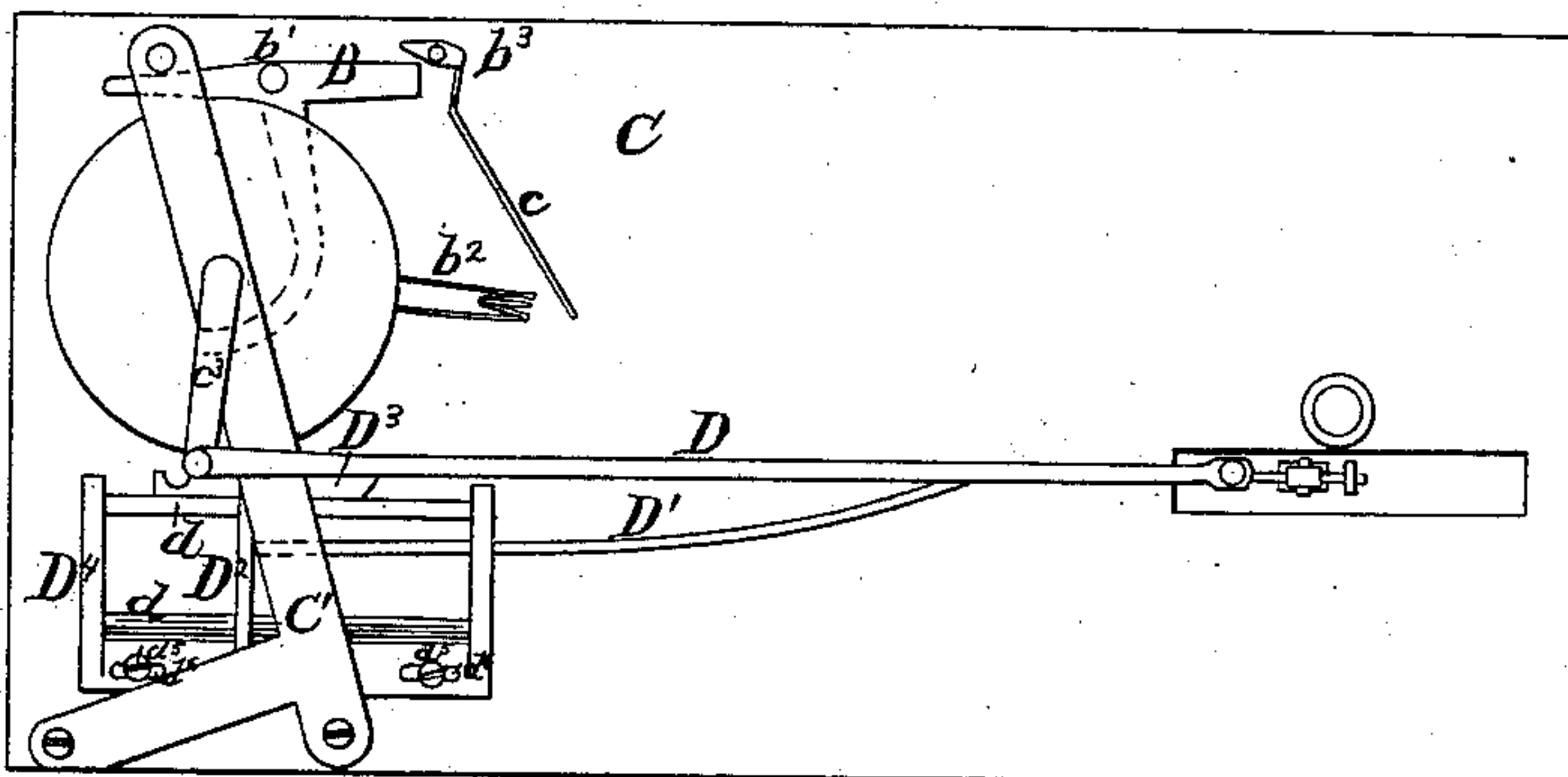


Fig. 4.

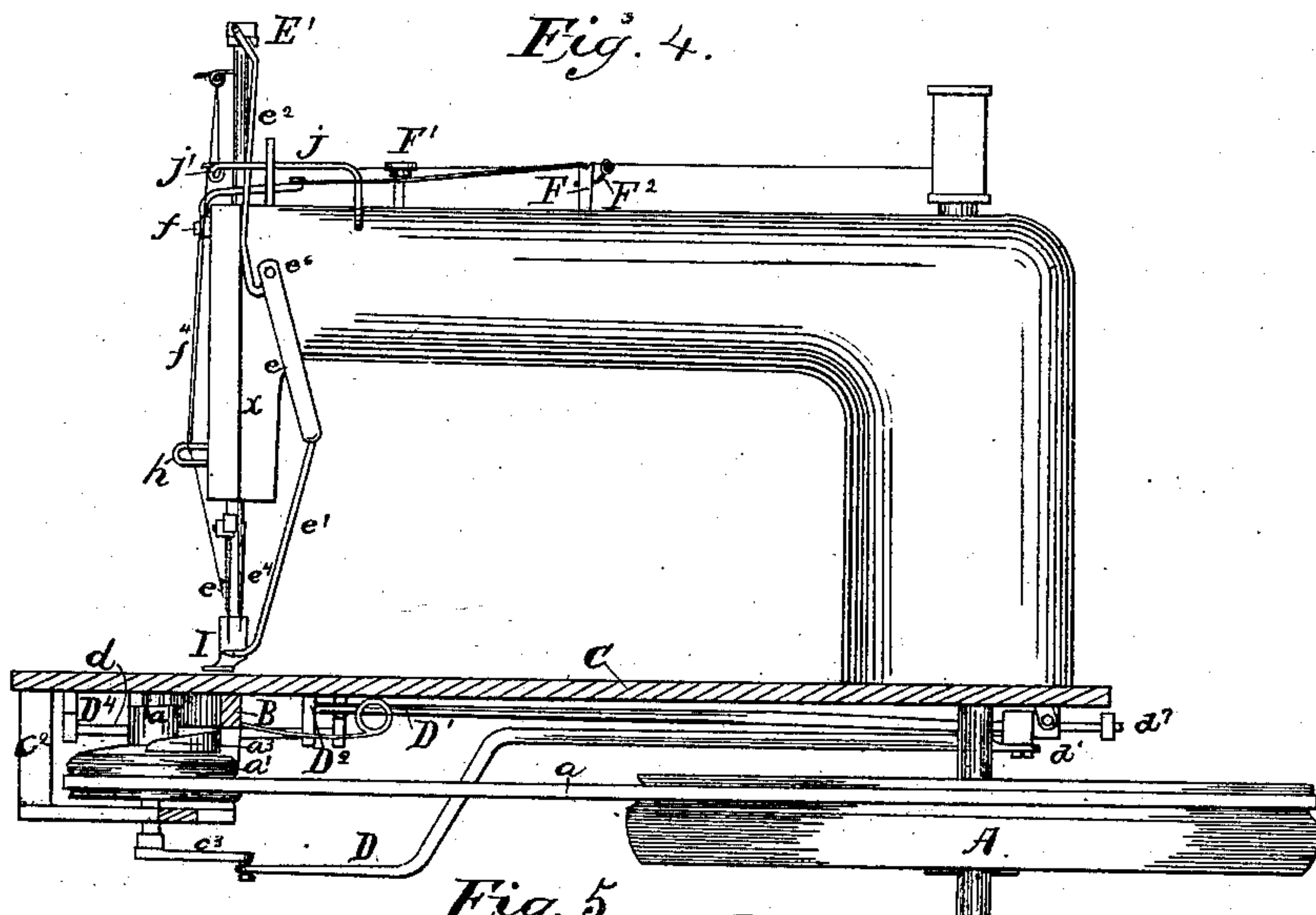
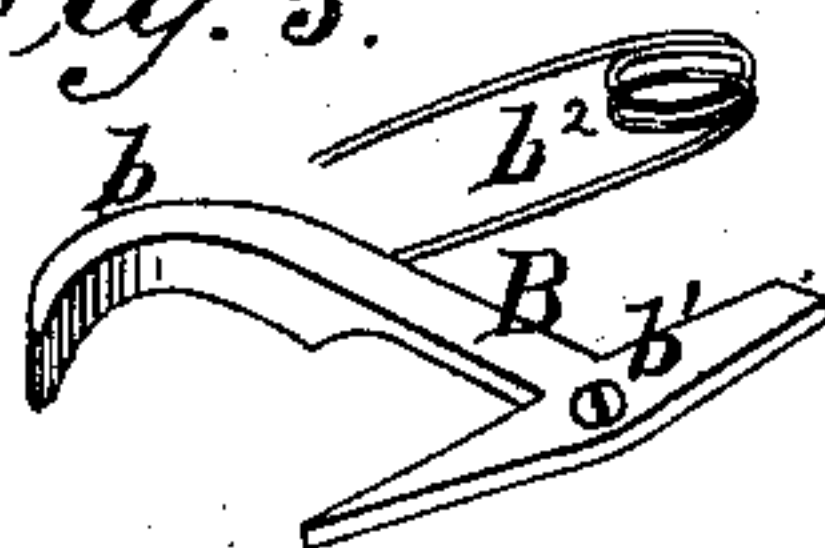


Fig. 5.



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United States Patent Office.

J. F. ANDREWS, OF LANCASTER, PENNSYLVANIA.

Letters Patent No. 93,511, dated August 10, 1869.

IMPROVEMENT IN SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, J. F. ANDREWS, of Lancaster, in the county of Lancaster, and State of Pennsylvania, have invented new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to certain improvements in sewing-machines, whereby both plain sewing and the working of button-holes are effected; also, to an improved tension-device, and other improvements, to which end, certain details of construction are employed, which will be more particularly described hereinafter.

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

A represents the horizontal balance-wheel of the machine, which is propelled in any suitable manner, and is connected by the belt *a* with pulley *a*¹, which has on its upper surface the cams *a*² *a*³, the latter of which, *a*³, engages with the bevelled under surface of the feed-bar B, and imparts an upward motion to the feed-plate, and the former, *a*², engages with the curved arm *b*, and imparts a lateral motion to the same.

The feed-bar B is T-shaped, and loosely pivoted at *b*¹ to the bed-plate C, the inner end of the same being provided with the spring *b*², for the purpose of keeping it depressed when not acted upon by the cam *a*³.

The position of the feed-bar is regulated by the feed-gauge *b*³, which is pivoted to the bed-plate C, and is provided with the arm *c*, for operating it, which is effected by moving the same in either direction laterally.

When the point of the feed-gauge *b*³ is moved inward, it engages with one arm of the feed-bar B, and forces the curved arm *b* of the same into close proximity with the cams *a*² *a*³, thereby increasing their action. The pressure of the feed-gauge being removed, the spring *b*² forces the bar back to its original position.

Beneath the pulley *a*¹, which has its upper bearing in the bed-plate C, and its lower bearing in the triangular plate *c*¹, between the projections *c*², &c., is the crank-arm *c*³, to which is pivoted one end of the bent connecting-rod D, the other end of which is pivoted to the shaft D¹, which is also somewhat bent, and runs nearly longitudinally with the bed-plate C, its outer end being rigidly attached to the arm D², of the shuttle-carrier D³, which arm is provided with suitable orifices, by means of which it slides longitudinally upon the rods *d* *d*, and allows the point of the shuttle to turn down as soon as it has entered the loop, which form a part of the frame D⁴.

By this arrangement the arm D² has a slight rocking motion as it slides upon the rods, which is produced by the slight vertical movement of the rod D¹.

By this means the carrier gives the shuttle a tilting movement at the proper time, and thus facilitates the passage of the thread.

The inner end of shaft D¹ is attached, by means of a sliding socket, *d*¹, to the bifurcated end of the needle-arm *d*², the socket *d*¹ having a limited play upon the shaft, to admit of a brief stoppage of the needle at its extreme elevation and depression, which latter may be regulated by adding washers, or screwing up the nut *d*³, or the reverse.

The needle-arm is constructed in three portions, *d*², *d*³, and *d*⁴, the former, *d*², being pivoted at E to the walls of the hollow angular case, denominated the "gooseneck," and is connected to the portion *d*⁴, by the short arm *d*³, the arms *d*² and *d*⁴ both being pivoted to the "gooseneck," as shown. To the outer end of the arm *d*⁴, is attached the upper part of the needle-bar E², in such manner as to give the same the necessary play. On the upper end of bar E² is the horizontal clutch E¹, which operates the button-hole looper, the same consisting of the bifurcated arms *e*, pivoted to the gooseneck by the adjustable screws *e*⁶, the bent rod *e*¹, attached at the bifurcation of the arms *e*, constituting the looper, and the upper bent rod *e*², which connects with the clutch E¹, and has a slight longitudinal motion given it by means of the angle in the upper portion of the same, the sides of the clutch being bevelled off correspondingly. At the lower end of the needle-bar, besides the usual needle *e*³, is an additional one, *e*⁴, which is designed for use when sewing button-holes.

F represents the tension-spring, provided with the adjusting-screw F¹, its rear end resting in the projection F², between which and the spring the thread passes, its forward end being bent over the vertical face-plate *f*, and resting in a suitable depression on the edge of a wedge-shaped lever, *f*¹, pivoted at *f*², the long end of which is kept from too great depression, by a projection, *f*³, on the face-plate *f*.

To the short end of the same is attached the vertical wire *f*⁴, having its lower end bent to form a hook, or loop, H, which is situated directly beside a staple-like loop, *h*, through which the thread passes from the loop *h*¹, on the upper end of the needle-bar, and thence through the spring-loop H, thereby constituting a safety-guard, or take-up.

I represents the presser-foot, which is attached to the presser-foot bar I, and is raised and lowered by means of the lever-cam *e*⁷, on the top of the face-plate *f*, one side of which is pivoted to the upper end of the bar I, and the other is provided with a projection, *i*¹, which works in a vertical slotted plate *i*², the same being provided with a slot, through which it is secured to the gooseneck by a screw, being thus rendered adjustable longitudinally. To raise the presser-foot, the long end of the lever-cam must be elevated, by means of which the projection *i*¹ will be raised, and with it the presser-bar.

The bar is depressed by means of the spring J, one end of which is secured to the gooseneck, and the other to the lower part of the bar.

J¹ represents a horizontal plate, to which are attached two vertical projections, J² J³, for the attachment of spools.

X represents a filling of leather, or other suitable material, between the face-plate f and gooseneck, to adjust the wear of the needle-bar.

The shuttle which I employ is similar to that used by many machines, and does not need to be particularly described.

The operation of my machine is as follows:

Motion is imparted in any desired manner to the balance-wheel A, and is transmitted through the belt a to the pulley a', which operates the crank c', connecting-rod D, shaft D¹, and shuttle-carrier D², as will be clearly seen. The inner end of the shaft D¹ operates the pivoted arms d², d³, and d⁴, constituting the needle-arm. As before mentioned, the lower end of the arm d⁴ has a limited play on the shaft D¹, which may be altered at will by turning a nut on the end of the same. The object of this arrangement is to allow the needle to remain depressed by a regular crank-motion, until the shuttle has nearly run its course, and effected the formation of the loop.

The operation of the motive-power being understood, I come to the formation of the stitch, which is as follows:

The needle being threaded in the usual manner, and the mechanism being put in motion, the needle-bar is moved downward, and the shuttle along its course. When the needle-bar has reached its lowest point, and risen again, sufficiently far for the loop to be formed, by the arrangement above described, it remains motionless until the shuttle passes by it, and catches the thread over its point, thus forming the ordinary lock-stitch.

To form the button-hole stitch, an additional spool is employed, the thread from which passes along the same course as the ordinary one, until it reaches the button-hole needle e', which it threads in the usual manner. When the needle-bar is raised, the arm e¹, which is provided with a small hook, and operated by the clutch E¹, catches the main or outer thread in the needle e², and draws it into a loop, through which the needle e⁴ passes in its descent, both needles moving together. The outer needle, e², is prevented from forming the tight lock-stitch by the loop, made by the operation described. Through the loop passes the needle

e⁴, the threads from both needles being caught by the point of the shuttle.

The stitch formed in this operation is represented in fig. 6, the red line, marked 1, representing the outer, or ordinary thread; the blue line, marked 2, the button-hole thread, and the black line, marked 3, the shuttle-thread; the threads 1 and 3 forming the ordinary lock in the cloth, near the edge of the button-hole, in addition to which, the loop formed by the looper is brought over the edge of the button-hole (and is met about half way of the thickness of the cloth) by the thread 3, and forms the hem thereof. It will be understood that the needle e⁴ does not enter the cloth, but passes just outside the edge of the same, and is somewhat shorter than the needle e².

From this description it will be perceived that my invention possesses many points of great utility, being so arranged that it can be used without the button-hole needle, as an ordinary sewing-machine, and is readily adjusted for operation as a button-hole hemmer, thereby combining two very useful qualities; its simplicity and ease of operation being obvious.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, with the needle-bar E, of the portions d², d³, d⁴, and the sliding socket, d', for operating the needle-bar, substantially as and for the purpose described.

2. The tension-spring F, with its adjusting-screw F¹ and projection F², in combination with take-up f¹ and pivoted arm f¹, all arranged and operating substantially as described.

3. The shuttle-operating shaft D¹, having the adjustable nut d', in combination with socket d', as and for the purpose set forth.

4. The needles e² and e⁴, in combination with the looper E², with its arms, e, e¹, e², and adjusting-screws e³, with clutch E, constructed, arranged, and operated substantially as described.

5. The needle-bar E², the portions d² d³ d⁴, rod D¹, arm D², shuttle-carrier D², and rods d d, when combined and arranged as and for the purpose described.

This specification signed and witnessed, this 15th day of January, 1869.

J. F. ANDREWS.

Witnesses:

C. E. HAYES,
JOHN GOOD.