(Model.) 4 Sheets—Sheet 1.

F. W. MERRICK.

FEED MECHANISM FOR SEWING MACHINES.

No. 490,854. Patented Jan. 31, 1893.

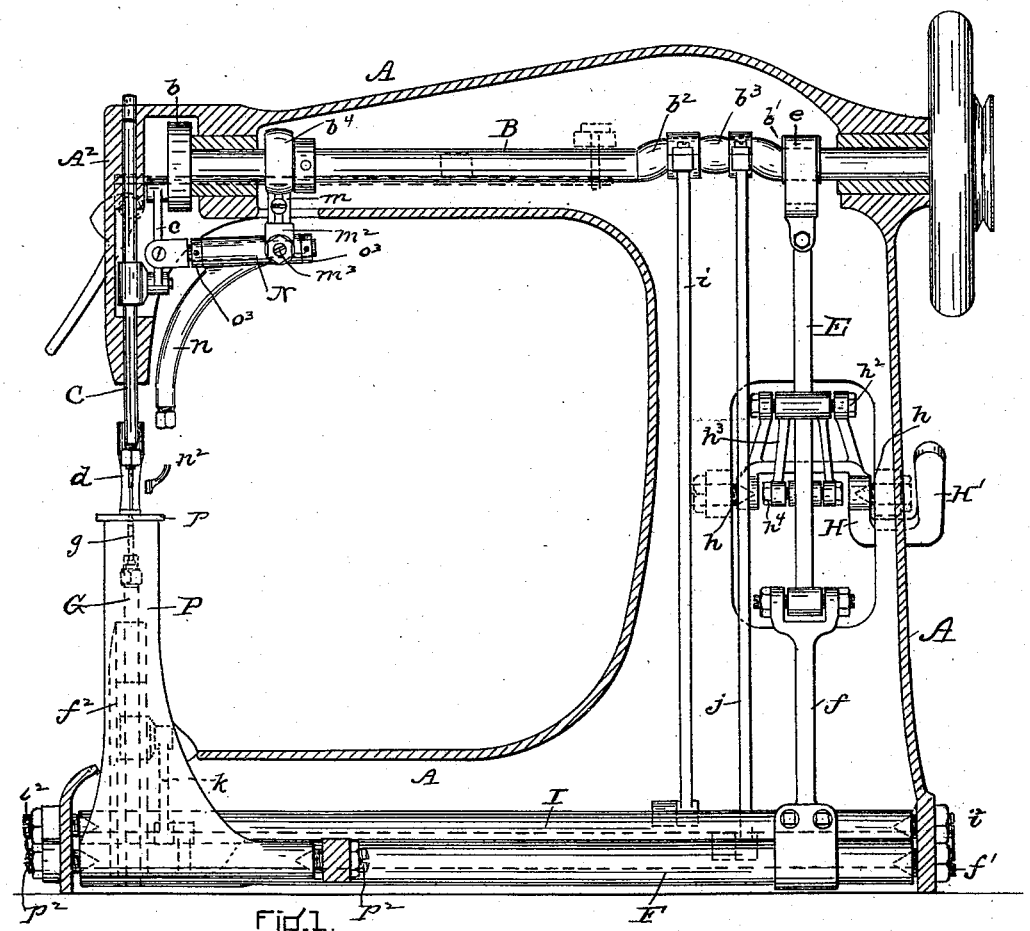

Fig. 1.

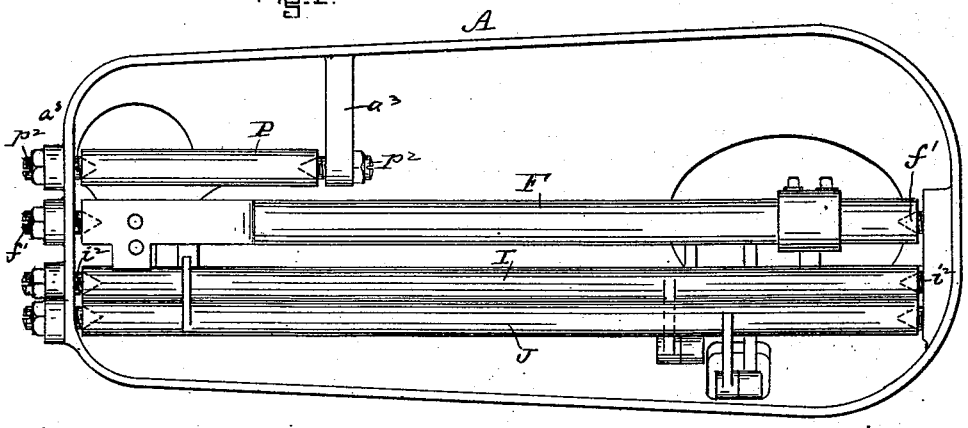

Fig. 2.

WITNESSES.
Robert Wallace.
Charles E. Moss.

INVENTOR.
Frank W. Merrick.
by Macleod, Calver & Randall
Attorneys.

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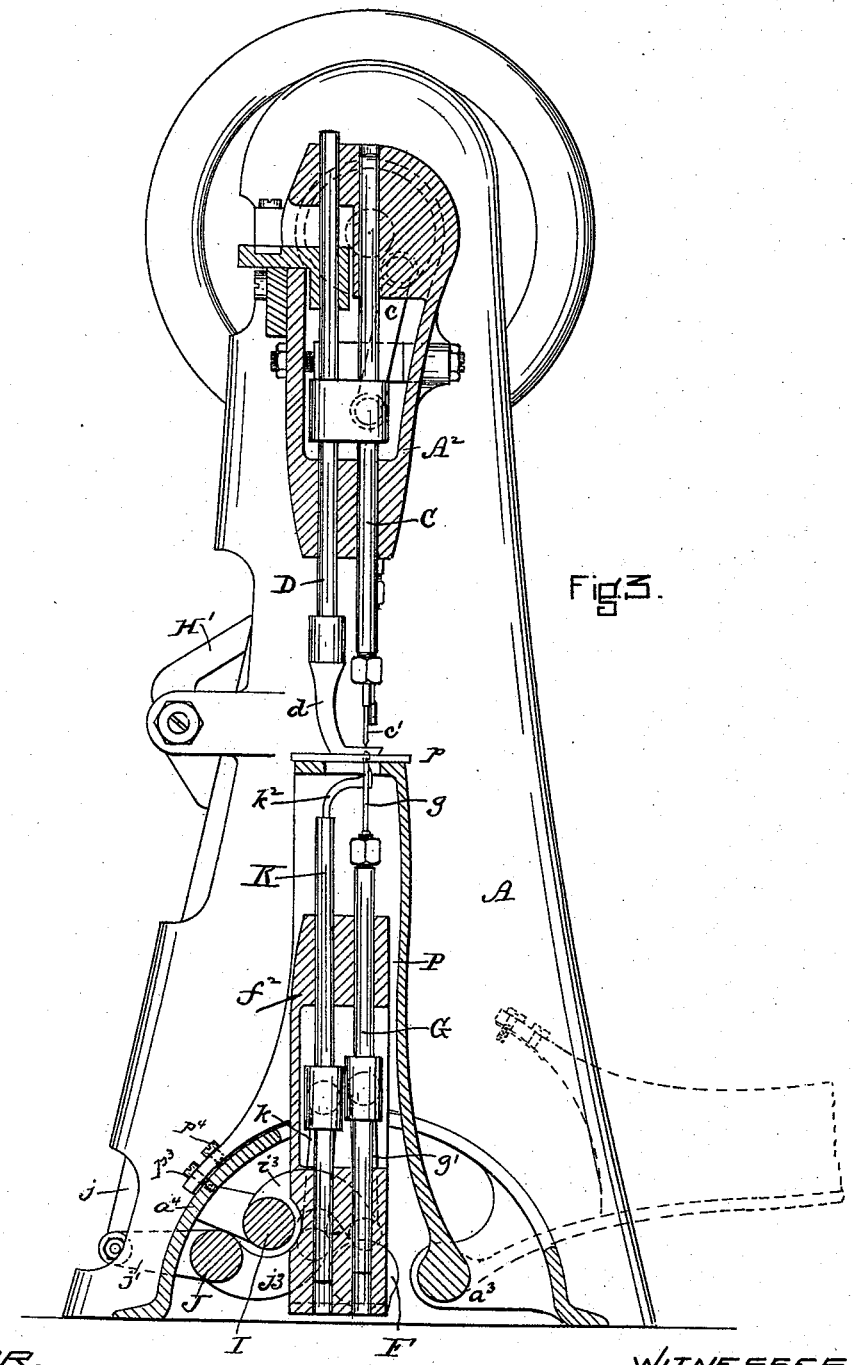

Fig. 3.

INVENTOR.
Robert Wallace,
Charles E. Moss.

WITNESSES.
Frank W. Merrick,
by Macleod, Calver & Randall,
Attorneys.

(Model.)

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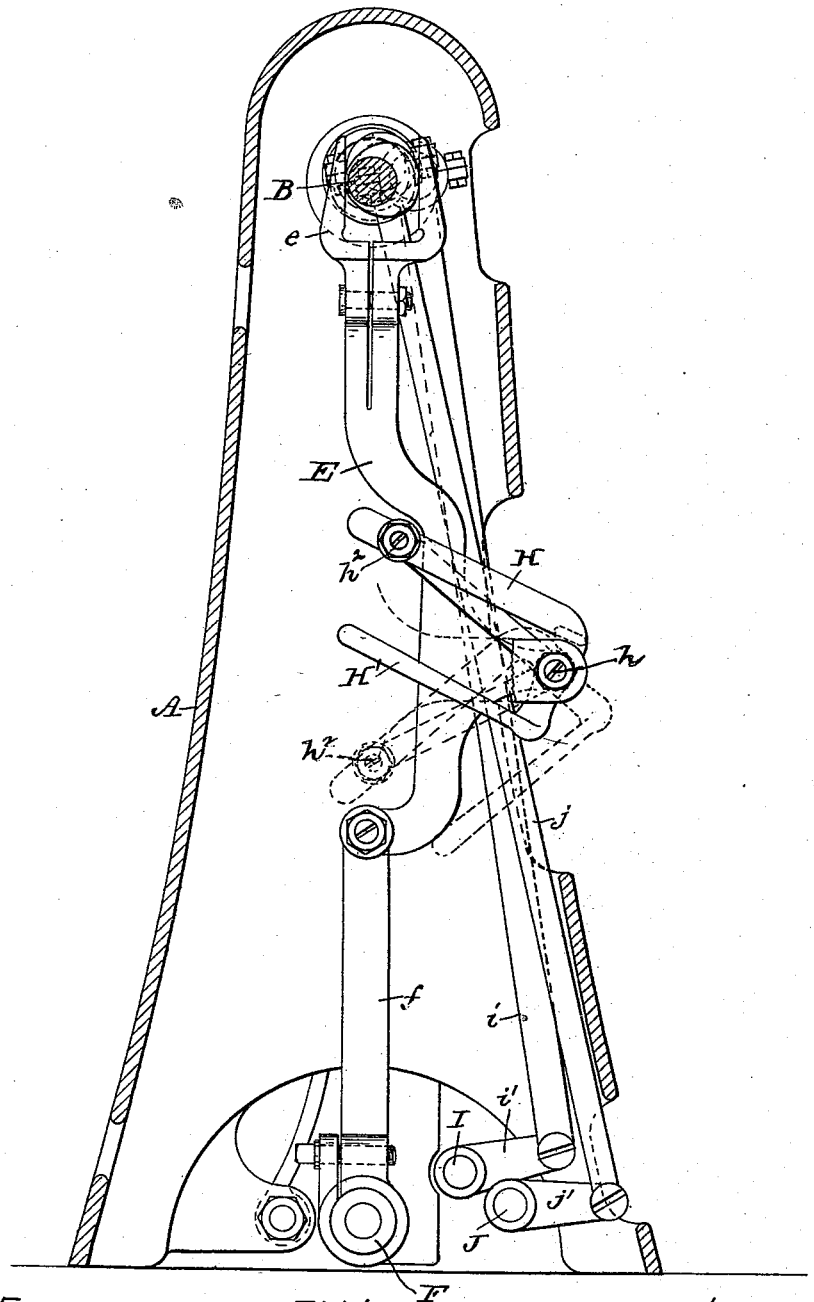

Fig. 4.

WITNESSES.
Robert Wallace.
Charles E. Moss.

INVENTOR.
Frank W. Merrick,
by Macleod, Calver & Randall,
Attorneys.

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F. W. MERRICK.

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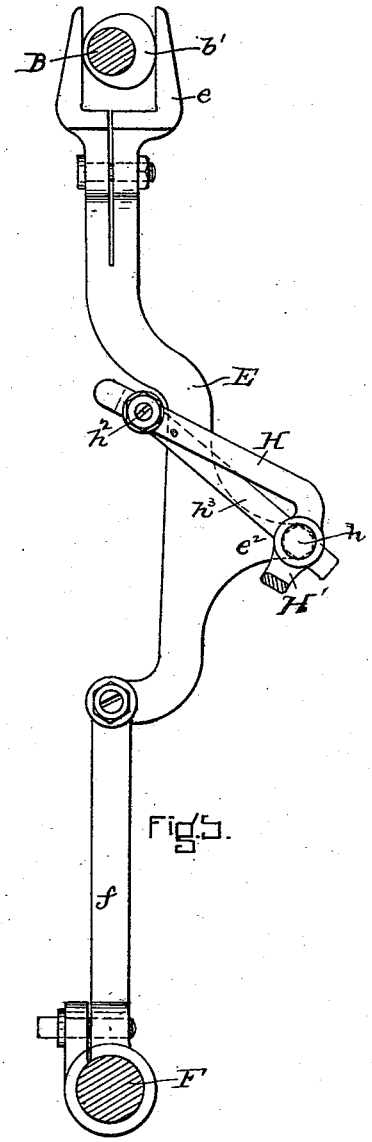

Fig. 5.

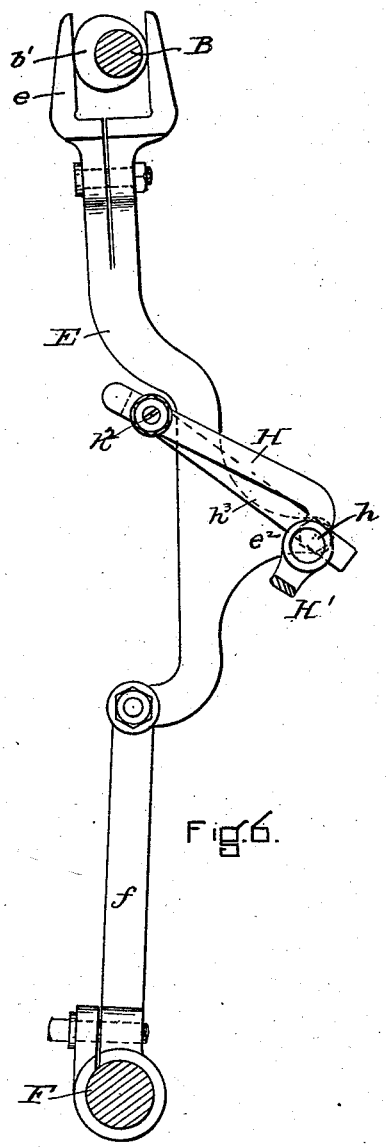

Fig. 6.

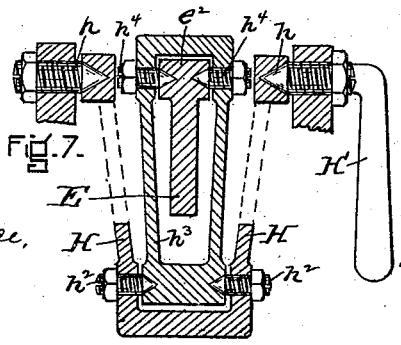

Fig. 7.

WITNESSES.

Robert Wallace.

Charles E. Moss.

INVENTOR

Frank W. Merrick

by Macleod, Calvert & Randall

Attorneys

UNITED STATES PATENT OFFICE.

FRANK W. MERRICK, OF BOSTON, MASSACHUSETTS.

FEED MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 490,854, dated January 31, 1893.

Application filed August 31, 1891. Serial No. 404,354. (Model.)

To all whom it may concern:

Be it known that I, FRANK W. MERRICK, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of sewing machines employing barbed or hooked work-feeding needles, co-operating with which are suitable thread carriers to present the thread to the needles, and suitable cast-offs for disengaging the loops from the needles, machines of this class being usually employed as wax thread sewing machines although adapted for sewing with dry thread as well; and the object of my invention is to provide a machine, of the class referred to, which, while it may be constructed at a minimum cost, will be convenient for use and strong and positive in operation so that it will be capable of high rates of speed.

My present improvements relate to a feeding mechanism more particularly adapted to machines of the class referred to, but which is also capable of use in other classes of sewing machines.

In the accompanying drawings Figure 1 is a side view of my improved machine with the frame work thereof in section. Fig. 2 is a bottom view of my machine. Figs. 3 and 4 are sectional front and rear views, respectively, of the same. Figs. 5, 6, and 7 are detail views of the feeding mechanisms.

A denotes the frame of the machine, in the upper part of which is journaled the driving shaft B having at its forward end a crank-disk b connected by a pitman c with the awl bar C carrying the awl c' and reciprocating in the usual manner in the head A^2 at the forward end of the arm forming a part of the frame of the machine, the presser bar D, carrying the presser-foot d, being also supported by and vertically movable in the said head in the usual manner. The driving shaft B carries near its rear end the feed-operating cam b' embraced by a yoke e at the upper end of the feed-lever E jointed at its lower end to an arm f of a rock-shaft F journaled on center-screws f' tapped in the lower part of the frame A and having at its forward end the arm f^2 in which the needle bar G, carrying the barbed needle g, reciprocates vertically, and which needle-bar and needle are moved horizontally to feed the work as the said arm f^2 oscillates with the said rock-shaft F.

H denotes a feed regulating lever pivoted on the center screws h tapped in suitable lugs or brackets on the frame A, said lever being made in the form of a yoke, as more clearly shown in Fig. 7 and being provided with a suitable operating handle H'.

To the lever H is pivoted by the center screws h^2 one end of a link h^3 made in the form of a yoke (as shown in Fig. 7) surrounding the feed lever E and pivoted at its other end to a lateral arm or extension e^2 of the feed lever by the center screws h^4 the axes of which are co-incident with the axes of the center screws h. The center screws h^2 carried by the feed regulating lever H serve as an adjustable fulcrum for the feed lever E, and by raising or lowering said center screws, and the end of the link h^3 which they engage by changing the position of the feed regulating lever by its handle, the relative lengths of the two arms of said lever E are varied to give different movements to the feeding rock-shaft F and to the needle bar and needle carried by the arm f^2 thereof. The link or yoke h^3 is, in operation, rigid with the arm e^2 of the feed lever E and merely serves to connect said lever with the feed regulating lever H in such a manner as to permit of the adjustment of said regulating lever as the fulcrum point, at the center screws h^2 is raised and lowered to vary the feed.

The construction above described for varying the feed is much cheaper than a milled slot for an adjustable fulcrum would be, as the parts may be all of cast metal requiring no finishing except merely boring and tapping the holes for the center screws, and moreover the objections incidental to the use of an adjustable fulcrum movable in a slot and liable to become loosened and thus get out of adjustment are avoided, the screws h on which my feed regulating lever is pivoted being set up sufficiently tight to hold said lever firmly and securely in any position to which it may be adjusted.

On the shaft B forward of the feed-operat-

ing cam b' are the cranks or eccentrics b^2 b^3, the former being connected by the pitman i with the rear arm i' of rock shaft I pivoted on the center screws i^2 and having at its forward end the arm i^3 connected by the link g' with the needle bar G and thus serving to reciprocate the said bar vertically in the arm f^2 of the feeding rock shaft F. The crank b^3 is connected by the pitman j with the rear arm j' of rock-shaft J pivoted on the center screws j^2 and having at its forward end the arm j^3 connected by the link k with the cast-off bar K carrying at its upper end the cast off k^2. The cranks b^2 b^3 are so arranged as to give the proper timing to the needle and cast-off bars relative to each other and to the other mechanisms of the machine, and by the described connections of the cast-off bar with the crank b^3 the said bar is positively operated in both directions entirely independently of the needle bar.

The shaft B is provided near its forward end with an eccentric b^4 having a convex surface and surrounded by a strap m provided at its lower end with a fork m^2, in the arms of which are tapped the screws m^3 engaging a rocking sleeve N provided with the depending arm n to the lower end of which is attached the thread-carrier n^2.

Having thus described my invention I claim and desire to secure by Letters Patent—

1. In a sewing machine, the combination with an operating shaft and a feed actuating device or cam carried thereby, of a feed lever operated by the latter, a feeding device operatively connected therewith, a feed regulating lever carrying an adjustable fulcrum for said feed lever, and a link connecting said fulcrum with said feed-lever.

2. In a sewing machine, the combination with an operating shaft and a feed actuating device or cam carried thereby, of a rock shaft, a feeding device operatively connected with said rock-shaft, a feed lever also connected with said rock shaft, a feed regulating lever carrying an adjustable fulcrum for said feed-lever, and a link connecting said fulcrum with said feed-lever.

3. In a sewing machine, the combination with an operating shaft and a feed actuating device or cam carried thereby, a feed lever operated by said cam, a feed regulating lever carrying an adjustable fulcrum, a link connecting said fulcrum with said feed lever, a rock shaft having at its rear end an arm to which said feed lever is jointed and provided at its forward end with a second arm, a needle carrying bar carried by the said second arm, and means for reciprocating said needle bar vertically.

4. In a sewing machine, the combination with an operating shaft and a feed actuating device or cam carried thereby, of a feed lever operated by the latter and provided with a lateral arm or extension, a feeding device operatively connected with said feed lever, a feed regulating lever carrying an adjustable fulcrum for said feed lever, and a link connecting said fulcrum with the said lateral arm or extension of said feed-lever.

5. In a sewing machine, the combination with an operating shaft and a feed actuating device or cam carried thereby, a rock shaft, a feeding device operatively connected with said rock-shaft, a feed lever also connected with said rock shaft and provided with a lateral arm or extension, a feed regulating lever carrying an adjustable fulcrum for said feed-lever, and a link connecting said fulcrum with the said lateral arm or extension of said feed-lever.

6. In a sewing machine, the combination with an operating shaft and a feed actuating device or cam carried thereby, a feed lever operated by said cam and provided with a lateral arm or extension, a feed regulating lever carrying an adjustable fulcrum, a link connecting said fulcrum with the said lateral arm or extension of said feed lever, a rock shaft having at its rear end an arm to which said feed lever is jointed and provided at its forward end with a second arm, a needle bar carried by the said second arm, and means for reciprocating said needle bar vertically.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK W. MERRICK.

Witnesses:

WM. A. MACLEOD,

CHAS. F. RANDALL.