

(No Model.)

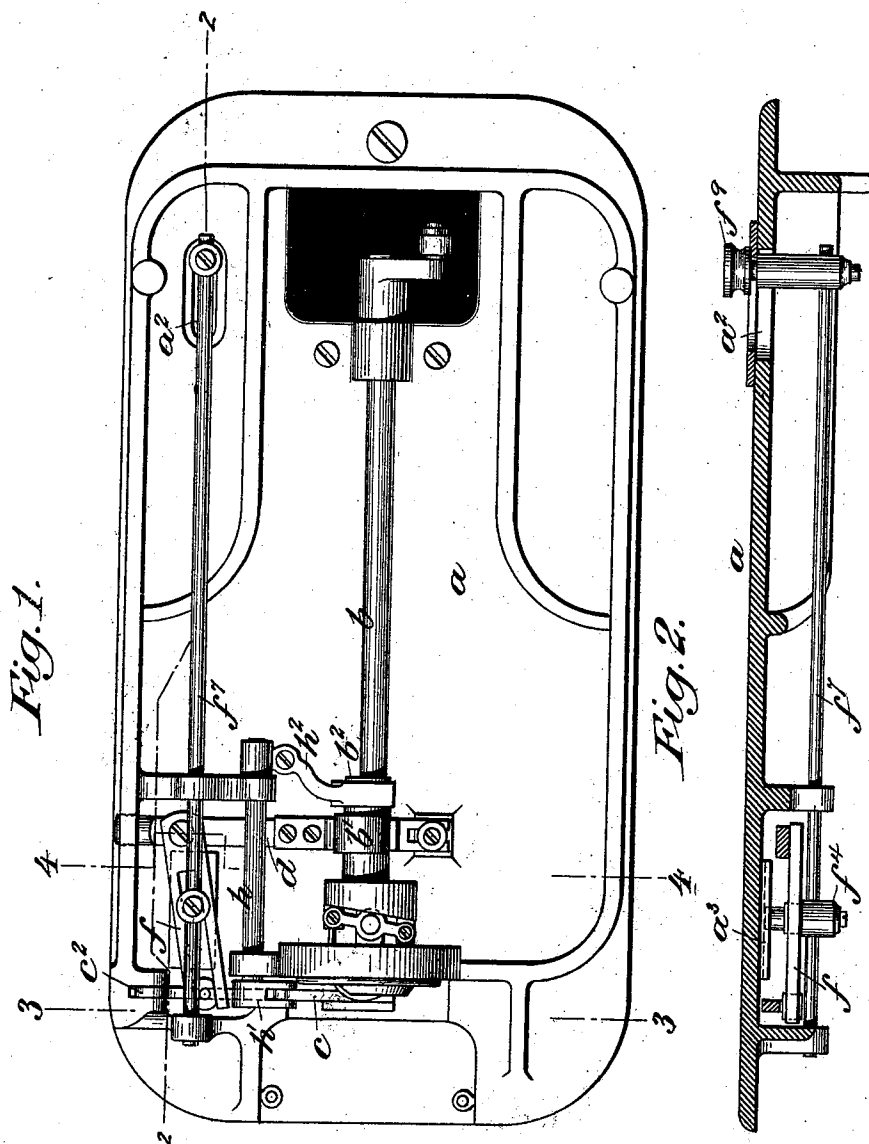
2 Sheets—Sheet 1.

W. A. MACK.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 510,868.

Patented Dec. 12, 1893.



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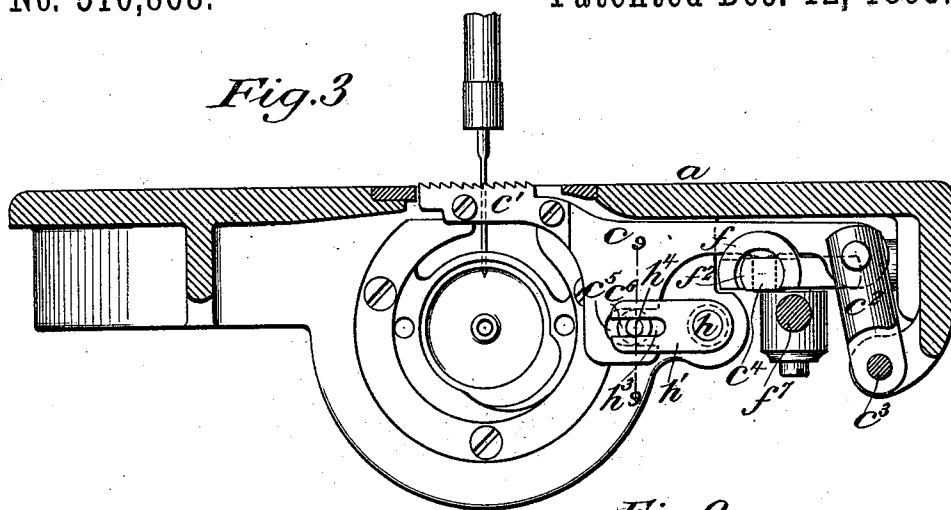


Fig. 4.

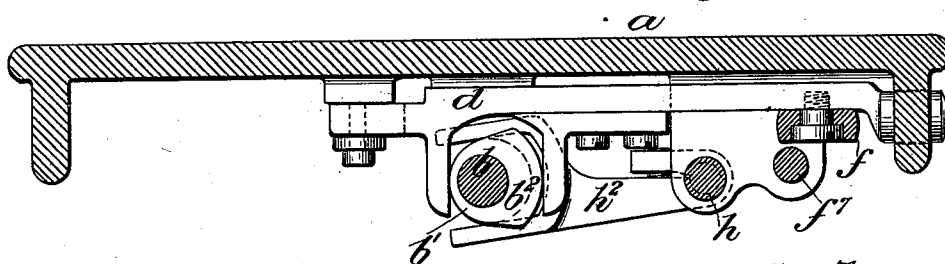


Fig. 5.

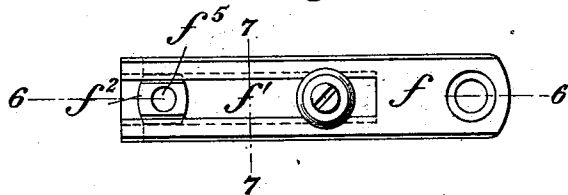


Fig. 7.

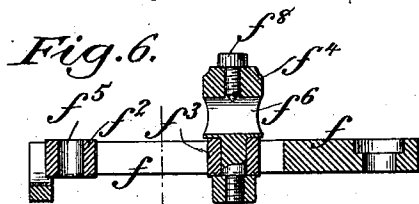
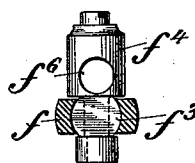
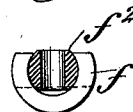


Fig. 8.



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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 510,868, dated December 12, 1893.

Application filed December 19, 1892. Serial No. 455,561. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. MACK, a citizen of the United States, and a resident of Norwalk, county of Huron, and State of Ohio, have invented new and useful Improvements in Feeding Mechanism for Sewing-Machines, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

My present invention relates more particularly to the feeding mechanism of the sewing machine, and has for its objects, first, to so support and connect the several operating parts forming the feed operating and regulating mechanism as to insure a minimum degree of friction to the same in their several movements and operations; second, to have the several parts so conform to each other in their movements as to require a less degree of care in adjusting the same to or in their respective positions in relation to each other, thus insuring the easier and better operation of the parts and at the same time reducing the expense of fitting up and assembling the same; and thirdly, to simplify the construction of such mechanism whereby the same is rendered more easy and convenient of adjustment. These objects I accomplish by means of the construction, arrangement and combination of the several parts as will be hereinafter set forth in detail and pointed out in the claims.

Referring to the drawings:—Figure 1, represents a bottom view of the bed-plate of a sewing machine provided with my improved feed operating and regulating mechanism; Fig. 2, a sectional view through line 2—2 of Fig. 1; Fig. 3, an enlarged end view through line 3—3 of Fig. 1; Fig. 4, an enlarged sectional view through line 4—4 of Fig. 1; Fig. 5, a bottom view of a slotted lever forming part of the feed mechanism, showing the parts supported thereby which form the medium for the connection of other parts therewith; Fig. 6, a sectional view through line 6—6 of Fig. 5; Fig. 7, a sectional view through line 7—7 of Fig. 5; Fig. 8, an end view of the slotted lever with the part f^2 in section, and, Fig. 9, a sectional view through line 9—9 of Fig. 1.

To explain in detail,— a , represents the bed-plate of the machine, b the lower driving shaft which is rotated to operate the several parts of the feeding mechanism having connection therewith, and c the feed-bar which carries the serrated feed-dog c' . The feed-bar c receives its longitudinal movement from a connecting vibrating lever f , which latter operates on an adjustable fulcrum and is pivotally connected at one end with a reciprocating bar d by which it is operated. Said reciprocating bar d is operated by a cam or eccentric b' , which is located on the driving shaft b and engages two arms or projections of said bar as more clearly shown in Figs. 1 and 4.

One end of the feed-bar c is pivotally connected with and supported by a pivotal bar or link c^2 which has connection with the bed-plate a or part thereof as more clearly shown at c^3 in Fig. 3. This pivotal bar or link c^2 moves in a direction to allow for the longitudinal movement of the feed-bar, and is employed to support the connecting end of the same in lieu of the usual stationary ways or guides and obviates the friction caused by the latter.

The vibrating lever f which communicates to the feed-bar its longitudinal movement, is provided with a longitudinal slot f' therein, having concave sides as more clearly shown in Figs. 7 and 8, in which are located two blocks, represented at f^2 and f^3 , having rounded or convex sides to conform to the sides of said slot in order to slide and fulcrum thereon for the purpose as will be described.

The connection between the feed-bar and the vibrating lever f is secured by means of a pin or other projection c^4 located on the feed-bar (see Fig. 3) which extends into an opening f^5 formed in the sliding and pivotal block f^2 . In this manner, that is, by reason of the sliding and pivotal action of the block f^2 , allowance is made for the vertical movement of the feed-bar by reason of the loose connection between the connecting pin or projection c^4 and the block f^2 , and also for any slight irregularities in the movement or location of the several connecting parts in their relation to each other that might cause any

undue strain or binding of the same, and thus insure their free and proper operation as will be readily understood.

The sliding and pivotal block f^3 forms the adjustable fulcrum upon which the vibrating lever f operates, and also the means by which the throw or movement of the feed-bar is regulated, the latter being accomplished by shifting or adjusting the position of the block in the slot f' of the lever as will be readily understood. This adjustable fulcrum or block f^3 is provided with a pivotally connected extension or part f^4 having an opening f^6 therein, through which a rod or shaft f^7 , which is loosely supported in lugs or projections on the under side of the bed-plate, is passed and made fast with the same by means of a set-screw f^8 . This rod or shaft f^7 is operated from the upper surface of the bed-plate to adjust the position of the connecting fulcrum f^3 for the purpose as set forth, by means of a thumb-screw f^9 which projects through a longitudinal slot or opening a^2 in the bed-plate and has connection with said rod or shaft f^7 as more clearly shown in Figs. 1 and 2. The inner end of the extension f^4 extends into a groove in the under side of the bed-plate as shown at a^3 in Fig. 2, by which it is supported and guided. One of the advantages of the pivotal or rocking movement of this fulcrum f^3 , secured by its peculiar connection with the lever f as described, is that its connecting part or extension f^4 may be shifted or moved laterally or otherwise to receive the connecting rod or shaft f^7 , and consequently less care is required in locating these several connecting parts in their relation to each other to insure their proper operation; the advantage of which as regards time and care and therefore expense, which is thus saved will be obvious.

The vertical or up and down movement of the feed-bar is secured by means of a rock-shaft h , which is supported in suitable lugs or bearings on the under side of the bed-plate, and at one end has connection with the feed-bar through the medium of an arm h' in a manner as will be described, and at or near its opposite end is provided with an arm h^2 , which at its free end is bifurcated and embraces a cam or eccentric b^2 located on the driving shaft b as more clearly shown in Figs. 1 and 4, by which it is operated to rock the shaft h and thereby raise and lower the outer end of its said arm h' and the feed-bar connected therewith as will be readily understood.

In the present instance and according to my invention, the connection between the arm of the rock-shaft and the feed-bar is secured as follows: The arm h' is provided with a vertical slot or opening therein forming two arms or extensions, between which a portion of the feed-bar extends as more clearly shown in Figs. 1, 3 and 9, and each of said parts is provided with a longitudinal slot or opening therein, as shown at c^5 and h^3 in Fig. 3, arranged in line with each other; the slot c^5 in

the feed-bar being, in the present instance shown, of greater width than the slot in the arm h' for the purpose to be described. A roll h^4 is located and has its bearings in the slot h^3 in the arm of the rock-shaft, and is provided with a centrally arranged flange c^6 thereon for location in the slot c^5 in the feed-bar as more clearly shown in Figs. 3 and 9, which serves to retain the roll in position and prevent its lateral movement or displacement from position. By this means a most desirable anti-friction bearing and connection between the feed-bar and its vertically operating lever is secured. It will be obvious that the flange c^6 on the roll h^4 might be dispensed with and other means be employed for preventing displacement of the latter, without departing from the spirit of my invention.

It will thus be seen from the foregoing description and accompanying drawings that all the parts are supported and connected in a manner to operate with the greatest freedom and with the least possible degree of friction, the advantage of which, in the increased ease and lightness of running secured, as well as in the other advantages set forth, being obvious.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a sewing machine, the combination of a feed-bar, a link or rod having a hinged connection at its opposite ends with the bed-plate of the machine or part thereof and said feed-bar respectively, a pivoted horizontally arranged vibrating lever for giving the feed-bar its horizontal movement, having a loose sliding connection with the latter, and means for giving the feed-bar its vertical movement, substantially as described and for the purpose set forth.

2. In a sewing machine, the combination of a feed-bar having a slot therein, a rock-shaft provided with an arm extending adjacent to said feed-bar and having a slot therein located in line with the said slot in the feed-bar, a roll located and having its bearing in said slots to form the connection between the parts and operating independently of the latter, and means for giving the feed-bar its horizontal movement, substantially as described and for the purpose set forth.

3. In a sewing machine, the combination with the feed-bar, of a slotted vibrating lever having connection therewith to operate the same horizontally, an adjustable fulcrum for said lever, consisting of a sliding and laterally pivotal block supported in the slot therein provided with a pivotal extension or block, an adjusting rod connected with the latter and having connection with means by which it may be moved and adjusted, and means for giving the feed-bar its vertical movement, substantially as described and for the purpose set forth.

4. In a sewing machine, the combination with the feed-bar provided with a projection

thereon, of a slotted horizontally arranged vibrating lever provided with a sliding pivotal block having an opening therein to receive said projection on the feed-bar whereby connection is secured between the latter and the vibrating lever, and means for giving the feed-bar its vertical movement, substantially as described and for the purpose set forth.

5 In a sewing machine, the combination
10 with the feed-bar, of a horizontally arranged vibrating lever having connection with said feed-bar through the medium of a sliding and pivotal block supported thereby, and a rocking lever having connection with said feed-
15 bar through the medium of an anti-friction roll supported and operating in slots located in said parts, substantially as and for the purpose set forth.

6. The combination in a sewing machine,
20 of a feed-bar provided with a slot or opening therein, a rock-shaft provided with a slotted or bifurcated arm embracing said feed-bar or part thereof and provided with a slot or opening therein in line with the said slot in the
25 feed-bar, an independently operating roll located and having its bearing in the said slots in the arm of the rock-shaft and the feed-bar, and means for giving the feed-bar its horizontal movement, substantially as described and
30 for the purpose set forth.

7. The combination in a sewing machine, of a feed-bar provided with a slot or opening therein, a rock-shaft provided with an arm extending adjacent to said feed-bar and provided with a slot or opening located therein
35 in line with the said slot in the feed-bar, and

an independently operating roll located and having its bearings in said slots or openings to form a connection between the parts, and provided with a flange thereon for location in
40 one of said slots which is of greater width than the other, and means for operating the feed-bar horizontally, substantially as described and for the purpose set forth.

8. In a sewing machine, the combination
45 with the feed-bar, of a slotted vibrating lever having connection therewith to operate the same horizontally, an adjustable fulcrum for said lever, consisting of a sliding and later-
50 ally pivotal block supported in the slot therein provided with an arm or extension, an adjusting rod connected with the latter and means for giving the feed-bar its vertical movement, substantially as described and for
55 the purpose set forth.

9. In a sewing machine, the combination
with the feed-bar, of a slotted vibrating lever having connection therewith to operate the same horizontally, an adjustable fulcrum for
60 said lever, consisting of a sliding and pivotal block supported in the slot therein and provided with a pivotal extension or block which, at one end, extends into a groove or guide-
65 way in the bed-plate, an adjusting rod connected with said extension, and means for giving the feed-bar its vertical movement, substantially as described and for the purpose set forth.

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