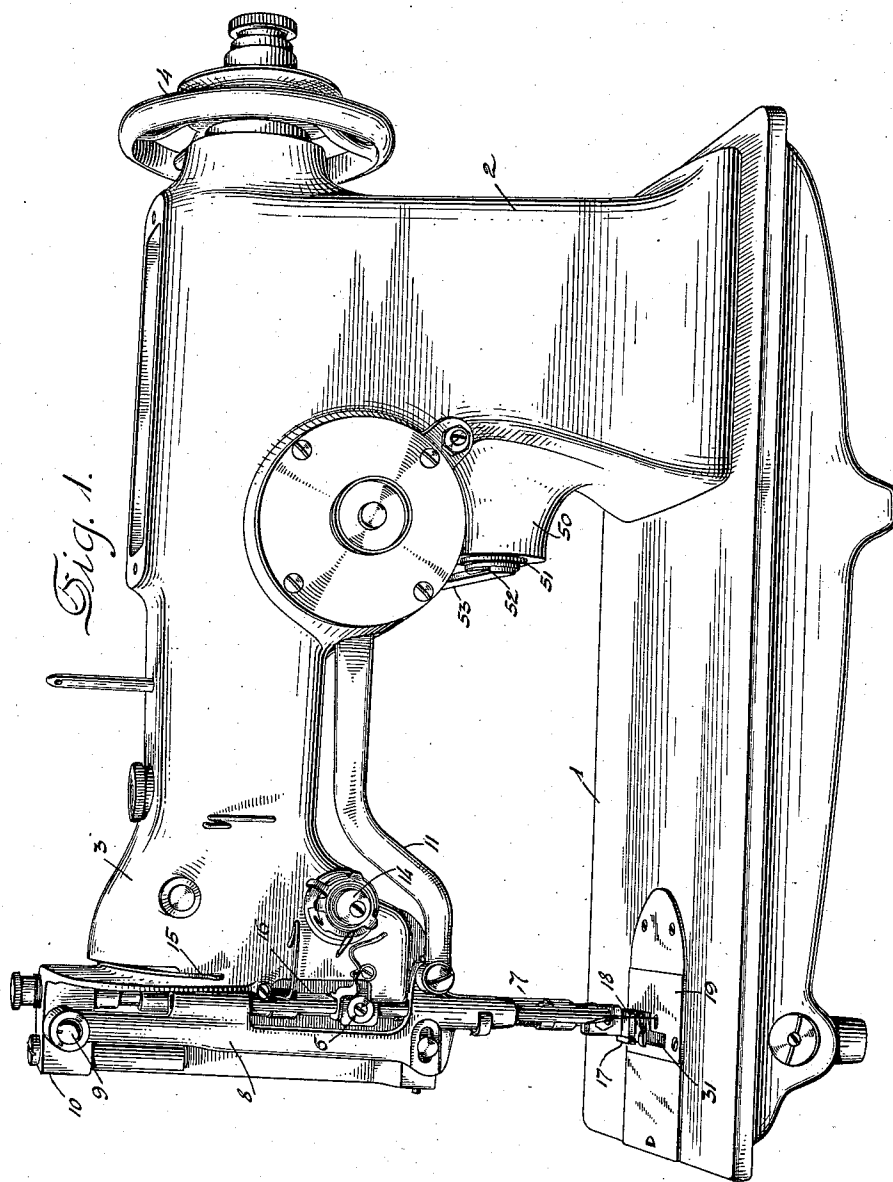


C. F. GRAY.
FEEDING MECHANISM FOR SEWING MACHINES.
APPLICATION FILED APR. 8, 1911.

1,014,298.

Patented Jan. 9, 1912.

3 SHEETS—SHEET 1.



WITNESSES:
Grifa Tewa
W. R. Stewart

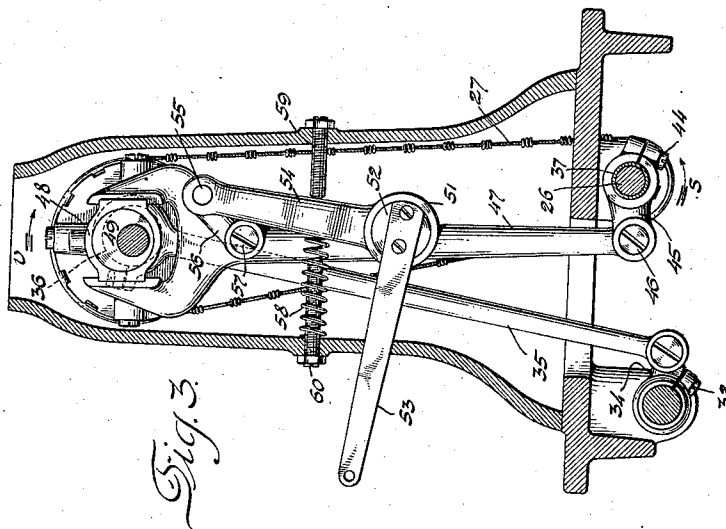
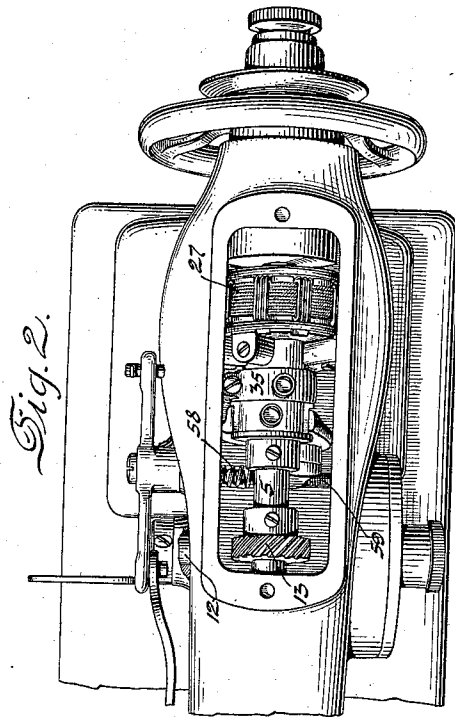
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3 SHEETS-SHEET 3.

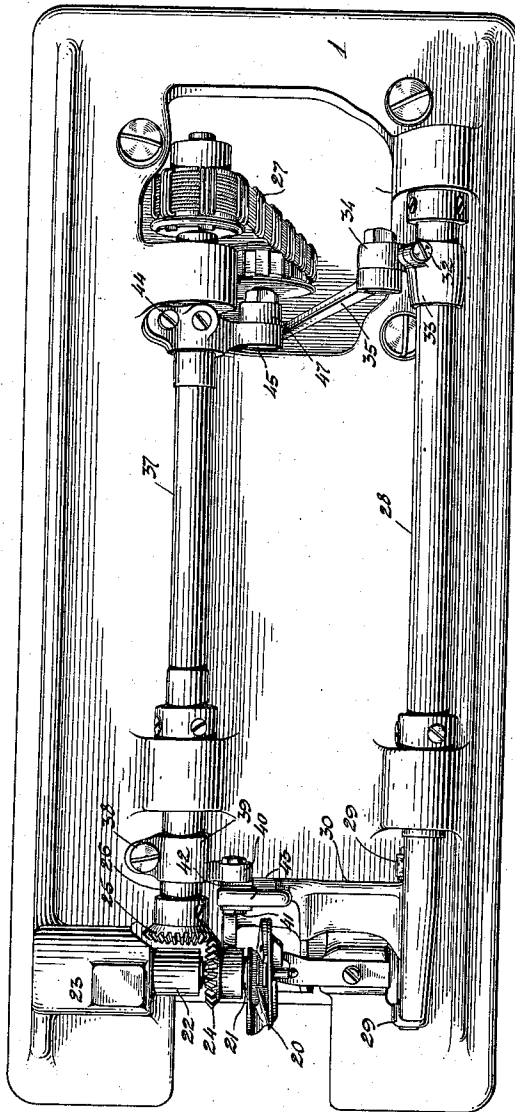


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES FREDERICK GRAY, OF SIERRA MADRE, CALIFORNIA, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

FEEDING MECHANISM FOR SEWING-MACHINES.

1,014,298.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed April 8, 1911. Serial No. 619,645.

To all whom it may concern:

Be it known that I, CHARLES F. GRAY, a citizen of the United States, residing at Sierra Madre, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Feeding Mechanism for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in feeding mechanism for sewing machines, and has for its object to simplify and strengthen the means employed for suspending the feed of the fabric and to facilitate the manual manipulation of the same during the continued operation of the stitch-forming mechanism.

In the earlier forms of constructions for effecting a dwell in the feed of the fabric during the stitching operation, it has been common to connect the controlling means with the means for giving to the feed-dog its feed movements. In the present construction the controlling mechanism acts upon the elements for giving to the feed-dog its feed-lift movements, to which end the feed-lift connection is linked to a stationary part of the sewing machine, said link when in its normal position acting, through said connection, to transmit feed-lift movements to the feed-dog, and also being adjustable for the purpose of suspending the effective action of said connection.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a front side elevation of a zigzag sewing machine of well-understood construction equipped with the present invention. Fig. 2 is a top plan view of the rear end portion of the machine shown in Fig. 1. Fig. 3 is a view in section through the arm standard, looking from the front of the machine, showing in full lines the elements more directly connected with the present invention. Fig. 4 is an underside view of the machine shown in Fig. 1.

The invention is herein shown and will be described as applied to the Singer zigzag sewing machine, but it is to be understood that it is equally applicable to other forms of sewing machines employing four-motion feeding mechanism; and as it has to do only with the means for giving to the feed-dog

its vertical movements, it is not deemed necessary to refer to the elements comprising the stitch-forming mechanism, except in a general way.

Referring to the drawings, 1 represents the bed-plate of the sewing machine upon which is mounted the bracket arm comprising the standard 2 and arm 3, 4 the hand or band wheel carried by the main or needle-bar-driving shaft 5 which, at its forward end, is operatively connected by the usual needle-bar link (not shown) with the needle-bar collar 6 carried by the needle-bar 7, said shaft, through said link, acting to give to said needle-bar its vertical or stitch-forming movements.

8 represents the needle-bar frame pivoted at its upper end, by stud screw 9, to the head 10 of the bracket arm, and to said frame is pivoted one end of the needle-bar-vibrating connection 11, the opposite end of said connection being connected with a suitable eccentric (not shown), common to zigzag sewing machines of the variety herein illustrated, said eccentric being carried by the shaft 12 which receives motion from the main shaft 5 through suitable coacting spiral gears, as 13 (one only of which is shown).

14 represents one form of commonly-employed needle thread tension, 15 the needle thread take-up, 16 the cloth-presser-carrying bar, 17 the cloth-presser, 18 the usual eye-pointed needle, and 19 the throat or needle plate.

20 represents the loop-taker carried by the loop-taker shaft 21, which latter is mounted to rotate in the bushing 22 secured in the lug 23 formed integral with the bed-plate 1, said loop-taker shaft carrying a bevel gear 24 which meshes with a like gear 25 carried by the loop-taker-driving shaft 26 operatively connected by belt 27 with the main shaft 5.

28 represents the feed rock-shaft provided at its forward end with suitable lugs, as 29, between which is pivotally mounted one end of the feed-dog-carrying bar 30 carrying the feed-dog 31, and upon the opposite end of said feed rock-shaft is secured, by pinch screw 32, a collar 33 having an arm 34 to the free end of which is pivotally attached the lower end of the feed connection 35, the upper end of said connection encircling the feed eccentric 36 carried by the main shaft

5 (shown in dotted lines only, Fig. 3), thus, through the connections 36, 35, 33, 30 and 28, feed movements are transmitted from said main shaft to the feed-dog 31.

5 37 represents a feed-lift rock-shaft of tubular construction mounted to oscillate on the loop-taker-driving shaft 26, said rock-shaft having secured to its forward end, by pinch screw 38, a collar 39 provided with an arm 40 into the free end of which is threaded a bolt 41 carrying a slide block 42 which tracks the usual slot (not shown) formed in the end 43 of the feed-dog-carrying bar 30. Upon the rear end of the feed-lift rock-shaft 37 is secured, by screw 44, a second collar having an arm 45 into which is threaded a stud bolt 46 upon which is pivoted the lower end of the feed-lift connection 47, the opposite end of said connection being forked to embrace an eccentric block 48 mounted upon an eccentric 49 carried by the main shaft 5.

The connections so far described for transmitting vertical movements from the main shaft 5 to the feed-dog 31 would lack effectiveness, due to the forked construction of the upper end of the feed-lift connection 47 which, in the earlier devices, directly embraces the eccentric 49 and thus receives from said main shaft vertically arranged movements which, through the connections pointed out, would effect vertical movements of the feed-dog 31. To effect the object of the invention, viz: to position the connection 47, at the will of the operator, so as to hold the effective surface of the feed-dog below the upper surface of the needle-plate during the continued operation of the stitch-forming mechanism, the vertical movements of said feed-lift connection are controlled by a link connected with a stationary part of the sewing machine frame, as will now be described.

50 represents a boss or hub formed integral with the bracket arm standard, and in this hub is suitably secured a bushing 51 which receives a shaft 52, the latter carrying at its outer end a shifting lever 53, and at its inner end a link-adjusting lever 54 provided at its upper end with a pivot pin 55.

56 represents a link pivoted at one end on the pin 55, its opposite end being pivoted upon a stud screw 57 threaded into the connection 47. The outer end of said shifting lever is, in practice, connected with a suitable foot or knee treadle (not shown) located below the bed-plate of the sewing machine. The link 56 and link-adjusting lever 54 constitute a link connection for connecting the feed-lift connection with a stationary part of the sewing machine.

In the ordinary operation of the machine, the link-adjusting lever 54 is held by the spring 58 against the inner end of the screw

59, and as the upper end of the connection 47 is moved, by the action of the eccentric 49, in the direction indicated by the arrow *v*, the link 56 is swung into substantially vertical alinement with the axis of the pivot pin 55, which action, as will be readily understood, causes the connection 47 to be moved downward and, through the connections pointed out, effects a like movement of the feed-dog, the action of said eccentric upon said connection in an opposite direction giving to said connected parts their return movements.

When, for any purpose, it is desired to suspend the feed of the fabric and continue the stitch formation, as when tacking off the end of a seam, the shifting lever 53 is moved downward sufficiently to adjust the link-adjusting lever 54 in contact with the inner end of the screw 60, which positions the axes of the pin 55 and stud screw 57 in substantially vertical alinement and in substantially parallel relationship with the connection 47, such adjustment causing the latter and its connected feed-dog to be moved to their lowest operative positions, and owing to the parallel relationship of the elements 47, 54 and 56, the connection 47 is held against movement in the direction of its length, thus suspending the feed-lift movements of the feed-dog and holding the effective surface of the latter below the upper surface of the needle-plate.

Claims:—

1. In a feeding mechanism for sewing machines, a main shaft, a feed-dog, means for transmitting feed and vertical movements from said main shaft to said feed-dog, said means including a feed-lift connection pivoted at one end to oscillate on a given axis, its opposite end being operatively connected with said main shaft, and a link connection located between a stationary part of the sewing machine and said feed-lift connection for suspending or effecting vertical movements of said feed-dog, at the will of the operator.

2. In a feeding mechanism for sewing machines, a main shaft, a feed-dog, means for transmitting feed and vertical movements from said main shaft to said feed-dog, said means including a feed-lift connection pivoted at one end to oscillate on a given axis, its opposite end being operatively connected with said main shaft, and a link connection located between a stationary part of the sewing machine and said feed-lift connection for suspending or effecting vertical movements of said feed-dog at the will of the operator, said feed-lift connection being forked to permit of its being oscillated on said given axis when held against vertical movement.

3. In a feeding mechanism for sewing machines, a main shaft, a feed-dog, means for

transmitting feed and vertical movements from said main shaft to said feed-dog, said means including a feed-lift connection pivoted at one end to oscillate on a given axis, its opposite end being operatively connected with said main shaft, a manually operated link connection located between a stationary part of the sewing machine and said feed-lift connection for suspending or effecting vertical movements of said feed-dog at the will of the operator, and means for limiting the adjustment of said link connection.

4. In a feeding mechanism for sewing machines, a bracket-arm, a main shaft, a feed-dog, means for transmitting feed and vertical movements from said main shaft to said feed-dog, said means including a feed-lift connection pivoted at one end to oscillate on a given axis, its opposite end being operatively connected with said main shaft, and a shaft mounted to oscillate in a bearing formed in the bracket arm and provided at its outer end with a shifting lever and at its opposite end with a link-adjusting lever, the latter being pivotally connected to a link having pivotal connection with said feed-

lift connection, said shifting lever, shaft, link-adjusting lever and link comprising means for suspending or effecting vertical movements of said feed-dog, at the will of the operator.

5. In a feeding mechanism for sewing machines, a main shaft, a feed-dog, means for transmitting feed and vertical movements from said main shaft to said feed-dog, said means including a feed-lift connection pivoted at one end to oscillate on a given axis, its opposite end being operatively connected with said main shaft by an eccentric and an eccentric block, and a link connection located between a stationary part of the sewing machine and said feed-lift connection for suspending or effecting vertical movements of said feed-dog at the will of the operator.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES FREDERICK GRAY.

Witnesses:

SUSAN H. MEAD,
A. S. MEAD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."