

June 6, 1944.

F. PARRY

2,350,807

FEEDING MECHANISM FOR SEWING MACHINES

Filed Sept. 17, 1943

2 Sheets-Sheet 1

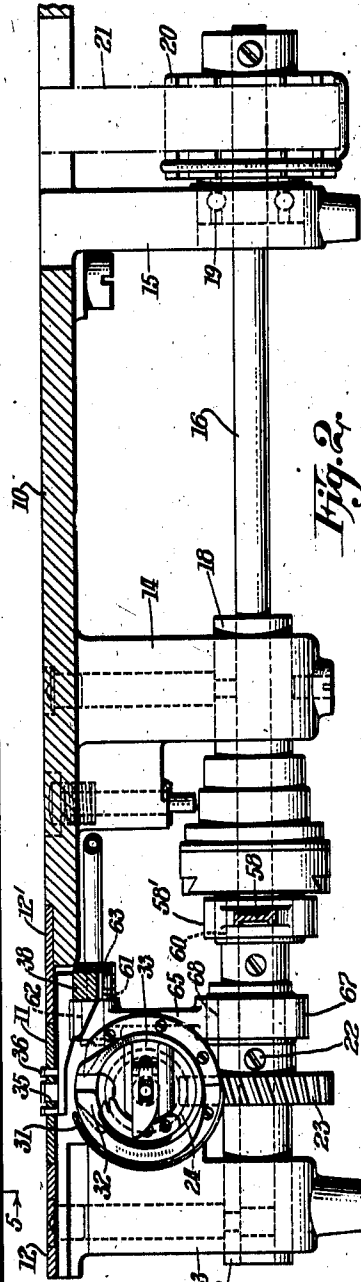
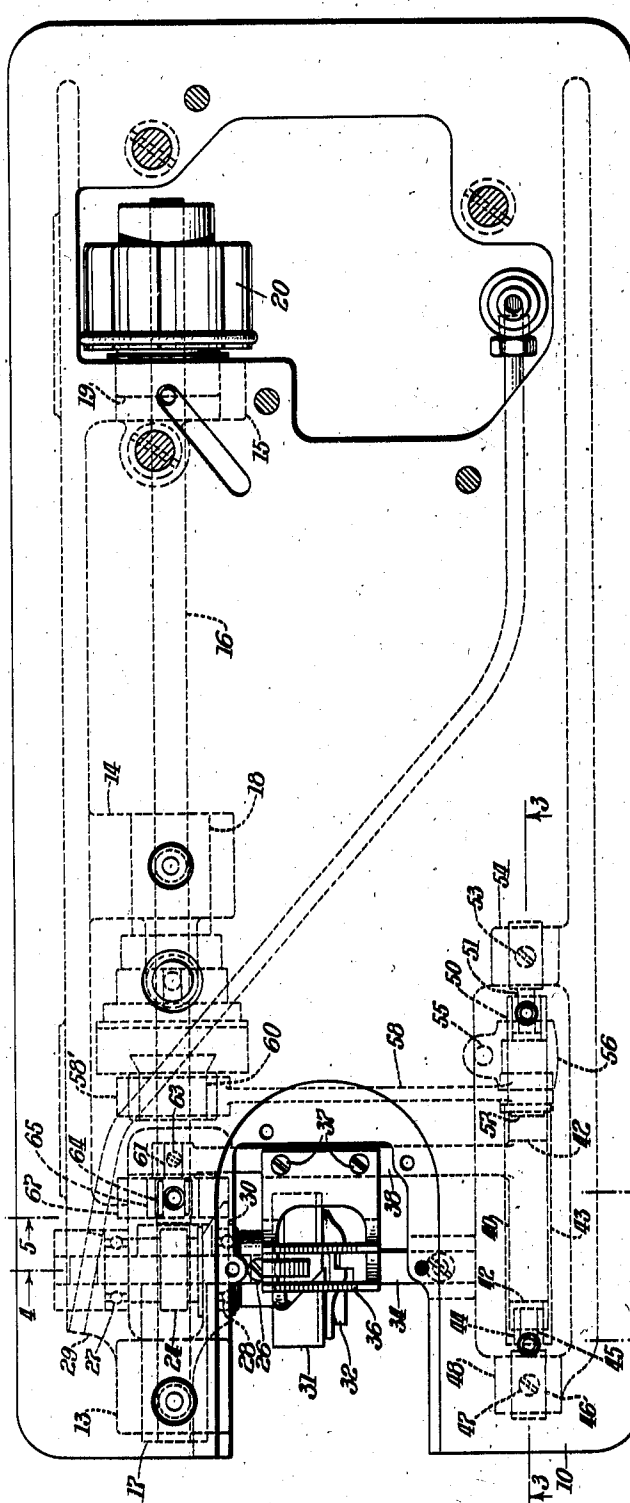


Fig. 1.

Fig. 2.

Inventor
Frank Parry

384
John F. Kline

Attorney

June 6, 1944.

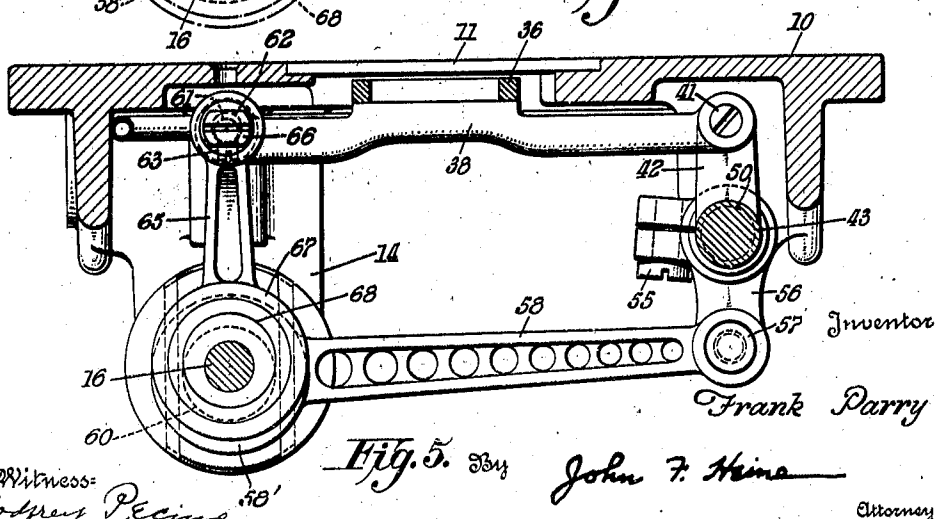
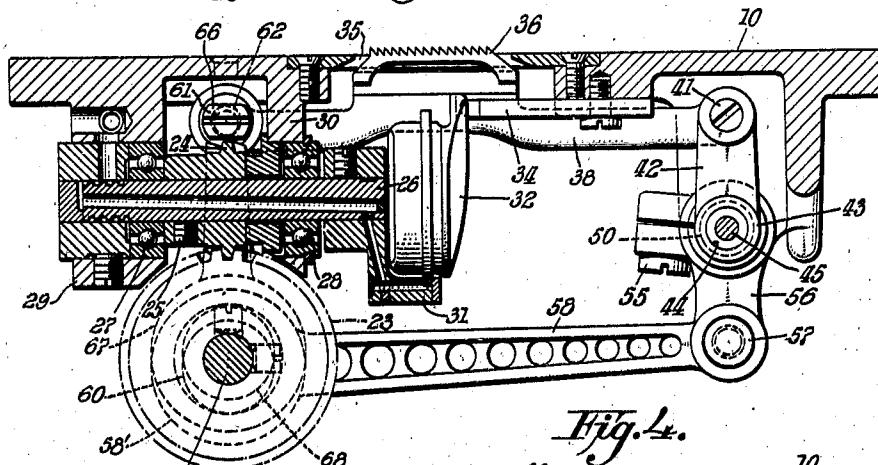
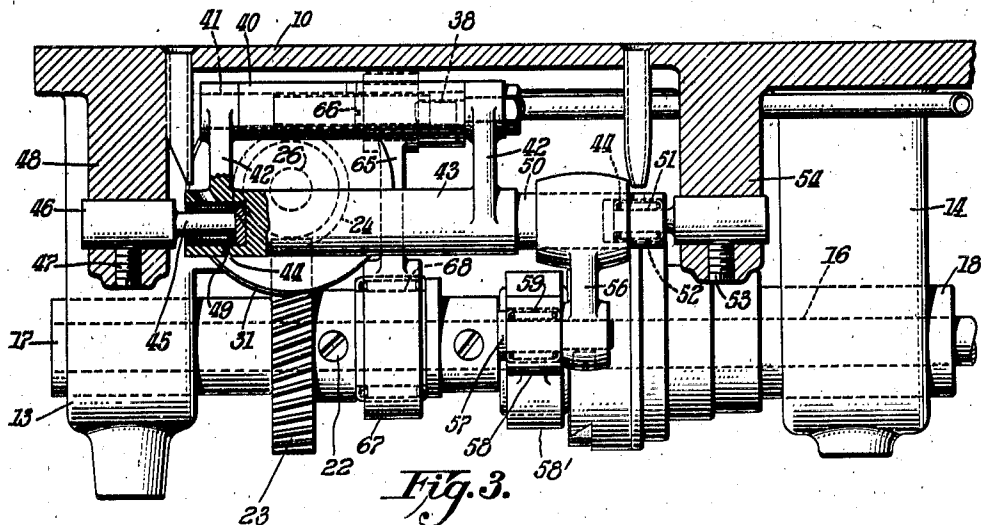
F. PARRY

2,350,807

FEEDING MECHANISM FOR SEWING MACHINES

Filed Sept. 17, 1943

2 Sheets-Sheet 2



Witness:
Godfrey P. King

Fig. 5. 334

John F. Hime

Attorney

UNITED STATES PATENT OFFICE

2,350,807

FEEDING MECHANISM FOR SEWING MACHINES

Frank Parry, Bridgeport, Conn., assignor to The Singer Manufacturing Company, Elizabeth, N. J., a corporation of New Jersey

Application September 17, 1943, Serial No. 502,731

2 Claims. (Cl. 112—215)

This invention relates to work-feeding mechanisms for sewing machines and has for its object to simplify and to improve the efficiency of the feed-dog actuating mechanism of a sewing machine having a loop-taker rotating in a plane transverse to the line of feed of the work.

Other objects of the invention will be apparent from the following description and claims.

The invention consists in the devices, combinations and arrangements of parts hereinafter described in connection with the accompanying drawings, which illustrate a preferred embodiment of the invention and in which:

Fig. 1 is a top plan view of the bed-plate of the sewing machine; the throat-plate and adjacent slide-plate having been removed and the bracket-arm securing bolts and pins being shown in section. Fig. 2 represents a vertical section longitudinally of a portion of the bed-plate, the section being taken substantially centrally of the width of the bed-plate. Fig. 3 represents an enlarged vertical section taken longitudinally of a portion of the bed-plate and substantially on the line 3—3 of Fig. 1. Fig. 4 represents an enlarged vertical section taken crosswise of the bed-plate on substantially the line 4—4 of Fig. 1. Fig. 5 represents an enlarged vertical section taken crosswise of the bed-plate on substantially the line 5—5 of Fig. 1.

The sewing machine shown in the drawings has a frame including a bed-plate 10 which, together with the usual throat-plate 11, slide-plate 12 and cover-plate 12' suitably secured upon the bed-plate, provide a horizontally disposed work-support.

Depending from the bed-plate 10 at the rearward side thereof are three spaced bearing-lugs 13, 14 and 15, in which is journaled a horizontally disposed rotary bed-shaft 16; the bearing-lugs 13 and 14 being provided with bearing-bushings 17 and 18, respectively, and the bearing-lug 15 being provided with a ball-bearing 19 for the shaft 16. One end of the shaft 16 carries a peripherally grooved belt-pulley 20 engaged by a belt 21 for driving the shaft 16.

Secured upon the shaft 16, adjacent the opposite end thereof and by screws 22, is the hub of a spiral gear 23 disposed adjacent the left-hand bearing-bushing 17 of the shaft 16. The spiral-gear 23 is in driving engagement with a reduced spiral-gear 24 secured by a screw 25 upon a horizontally disposed loop-taker shaft 26 intermediate the ends of said shaft 26. The loop-taker shaft 26 is disposed above the level of and extends transversely of the rotary shaft 16; said

shaft 26 being journaled adjacent its opposite ends in ball-bearings 27 and 28 disposed in bearing-lugs 29 and 30, respectively. The driving-gear 23 and driven gear 24 have a ratio such as to transmit two rotations to the shaft 26 for each rotation of the shaft 16.

At its forward end, the shaft 26 carries a loop-taker 31 of the horizontal axis rotary hook type particularly adapted for use in zigzag stitching machines. The loop-taker 31 is disposed substantially medianly of the width of the bed-plate. Journaled in the loop-taker 31 is the carrier 32 of a thread-case 33 which is removably latched in the carrier; said carrier being notched to receive a stationary arm 34, thereby to restrain the carrier against rotation with the loop-taker 31.

The throat-plate 11 is provided with the usual feed-slots 35 to receive the several serrated sections of a lower four-motion type of work-advancing feed-dog 36, whereby the feed-dog may operate through the work-support to advance the work crosswise of the bed-plate. The feed-dog 36 overhangs the loop-taker 31 and is secured by screws 37 upon a horizontally disposed feed-bar 38 which extends horizontally crosswise of the bed-plate 10.

The forward end of the feed-bar 38 is formed into a sleeve 40 which is elongated and apertured transversely of the feed-bar to pivotally receive a fulcrum-pin 41 carried by the upstanding and laterally spaced arms 42 of a feed-advance rocker 43. The left-hand end of the hub of the feed-rocker 43 has an axial cylindrical opening 44 entered lengthwise of the bed-plate 10 by the reduced cylindrical extension 45 of a pintle 46; said pintle 46 being endwise adjustably secured by a screw 47 in a suitably apertured bearing-lug 48 depending from the forward portion of the bed-plate 10. Interposed between the pintle-extension 45 and the bearing-wall of the feed-rocker opening 44 are a plurality of needle-rollers 49.

At its opposite end, the hub of the feed-rocker 43 has a reduced cylindrical portion 50 thereof extending beyond the right-hand feed-rocker arm 42; the extension-portion 50 likewise having an axial opening to receive the reduced portion of a pintle 51 and the needle-rollers 52 which form a bearing for that end of the feed-rocker. The pintle 51 is secured by a screw 53 for endwise adjustment in a bearing-lug 54 depending from the bed-plate 10. The described construction provides for rocking movements of the feed-advance rocker about an axis parallel to the bed-

shaft 16; said axis being located at the front side of the bed-plate 10 and spaced a substantial distance forwardly from the loop-taker 31.

Clamped upon the feed-rocker hub-extension 50, by a screw 55, is the split hub of a depending rock-arm 56 which is radially opposed to the upwardly directed arms 42 of the feed-advance rocker. Secured in the apertured lower end of the rock-arm 56 to extend laterally from said rock-arm is a connection-pin 57 which also extends through the transversely apertured forward end of a horizontally disposed pitman 58; needle-bearing rollers 59 being preferably interposed between the pin 57 and the pitman 58. The rearward end of the pitman 58 has a strap 58' embracing an adjustable feed-advance eccentric 60 carried by the bed-shaft 16. The eccentric 60 may be of any usual or suitable construction; the eccentric shown in the accompanying drawings being structurally similar to that fully disclosed in the U. S. patent of W. Myers, No. 2,128,031, Aug. 23, 1938.

The rearward end of the feed-bar 38 is transversely apertured to receive the eccentrically reduced portion 61 of a connection-pin 62; said reduced portion 61 of the pin being releasably secured in set position in the feed-bar by a screw 63. The connection-pin 62 is journaled by means of needle-bearing rollers 64 in the apertured upper end of a vertically disposed feed-lift pitman 65. The connection-pin 62 is preferably provided with an externally slotted head 66 to facilitate turning adjustment of said connection-pin, thereby adjustably to reposition the feed-dog 36.

The lower end of the feed-lift pitman 65 has a strap 67 embracing a feed-lift eccentric 68 suitably secured upon the bed-shaft 16 for rotation therewith and disposed between the loop-taker driving-gear 23 and the feed-advance eccentric 60. The feed-bar 38 in its endwise movements imparts oscillatory movements to the feed-lift pitman 65 about the eccentric 68. The feed-advance and feed-lift movements transmitted to the feed-bar 38 through the described connections are timed to impart to the feed-dog 36 the conventional four-motion movements for advancing the work.

The described construction provides a simple form of work-feeding mechanism in a sewing machine having a horizontal-axis loop-taker which is rotated in a plane transverse to the line of feed. According to the present improvement, the feed-advance and feed-lift movements of the feed-dog are both derived from the rotary bed-shaft which is also operatively connected for rotating the loop-taker about an axis substantially parallel to the line of feed. The feed-bar, nevertheless, is of long span between the feed-lift and feed-advance connections therewith, whereby minimum tilting of the feed-dog occurs. The feed-advance pitman 58 is disposed substantially normal to the rock-arm 56 of the feed-rocker, of which the arms 42 are substantially normal to the feed-bar 38, thereby obtaining maximum efficiency in transmitting work advancing and return movements to the feed-dog from the eccentric 60. Likewise, the feed-lift pitman 65 is disposed substantially normal to the feed-bar 38 for the same purpose.

The feed-dog 36 may be conveniently adjusted lengthwise of the throat-plate feed-slots by

slight angular adjustment of the feed-rocker arm 56, while the height of the feed-dog may be readily varied by turning the eccentric connection-pin 62.

Having thus set forth the nature of the invention, what I claim herein is:

1. In a sewing machine having a frame including a work-support, in combination, a rotary actuating shaft disposed below said work-support, feed-advance and feed-lift actuating eccentrics carried by said shaft, a feed-advance rocker fulcrumed upon an axis substantially parallel to the axis of rotation of said actuating shaft and having arms extending in opposite directions from the fulcrum-axis of said rocker, a feed-bar having one end thereof pivotally connected to one of the arms of said feed-rocker, a work-advancing feed-dog carried by said feed-bar, a feed-advance pitman having one end pivotally connected to the other arm of said feed-rocker, said feed-advance pitman having at its other end a strap embracing said feed-advance eccentric, a feed-lift pitman pivotally connected to the end of said feed-bar remote from said rocker and having a strap embracing said feed-lift eccentric, a rotary loop-taker disposed between said feed-advance rocker and said feed-lift pitman, a loop-taker shaft journaled below said work-support for rotation about an axis substantially parallel to the line of feed and disposed above the level of the axis of rotation of said actuating shaft, and loop-taker driving connections between said rotary actuating shaft and said loop-taker shaft.

2. In a sewing machine having a frame including a horizontally disposed work-support, in combination, a rotary actuating shaft disposed horizontally below and extending lengthwise of said work-support at the rearward side thereof, feed-advance and feed-lift actuating eccentrics carried by said shaft, a feed-advance rocker pivotally mounted below and at the forward side of said work-support for rocking movements about a stationary axis substantially parallel to the rotation-axis of said actuating shaft, said rocker having upwardly and downwardly extending arms, means providing for angular adjustment of said arms relatively to each other, a horizontally disposed feed-bar having the forward end thereof pivotally connected to said upwardly extending arm of the feed-advance rocker, a work-advancing feed-dog carried by said feed-bar, a horizontally disposed feed-advance pitman having one end thereof pivotally connected to said downwardly extending arm of the feed-advance rocker, said feed-advance pitman having at its other end a strap embracing said feed-advance eccentric, a vertically disposed feed-lift pitman having the upper end thereof pivotally connected to the rearward end of said feed-bar, said feed-lift pitman having at its lower end a strap embracing said feed-lift eccentric, a rotary loop-taker disposed between said feed-advance rocker and said feed-lift pitman, a loop-taker shaft journaled below said work-support for rotation about a horizontal axis transverse to and disposed above the level of the axis of rotation of said actuating shaft, and intermeshing driving and driven gears carried by said actuating and loop-taker shafts.

FRANK PARRY.