J. F. WILHELM.

GLOVE AND FUR SEWING MACHINE.

APPLICATION FILED NOV. 28, 1905.

921,774.

Patented May 18, 1909.

3 SHEETS—SHEET 1.

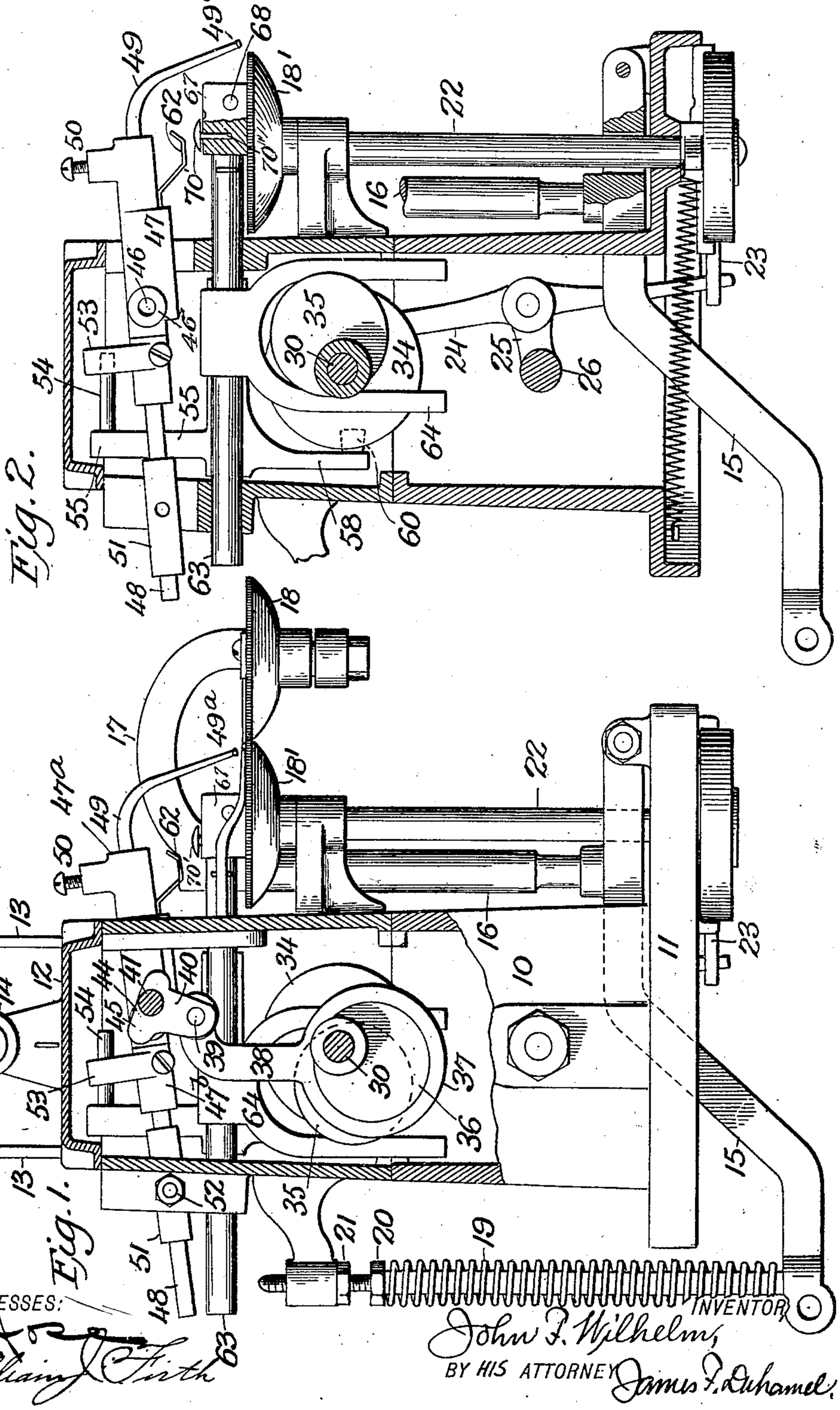


Fig. 2.

Fig. 1.

WITNESSES:

William J. Firth

INVENTOR,

John F. Wilhelm,

BY HIS ATTORNEY

James F. Duhamel,

J. F. WILHELM.

GLOVE AND FUR SEWING MACHINE.

APPLICATION FILED NOV. 28, 1905.

921,774.

Patented May 18, 1909.

3 SHEETS—SHEET 2.

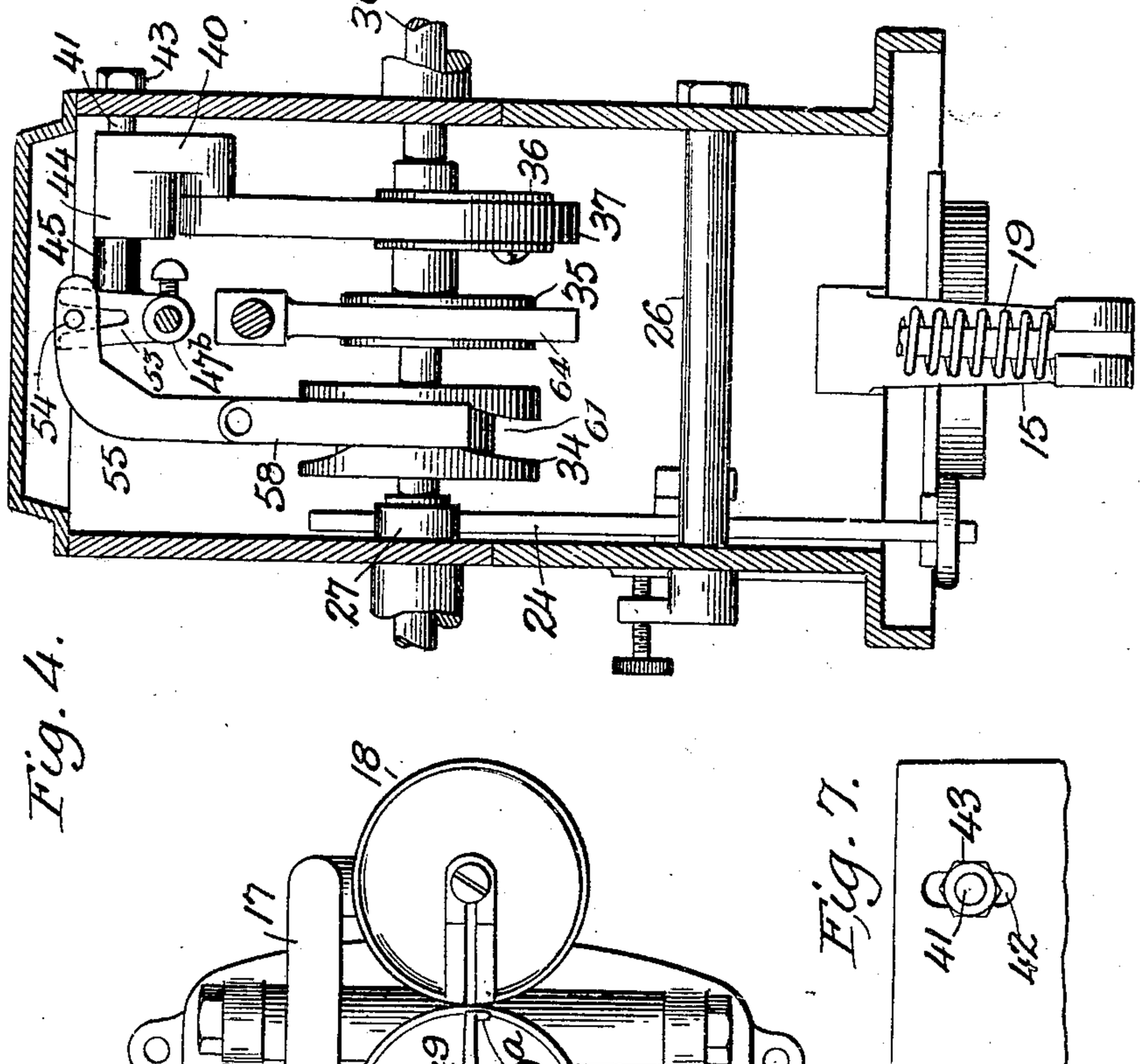


Fig. 4.

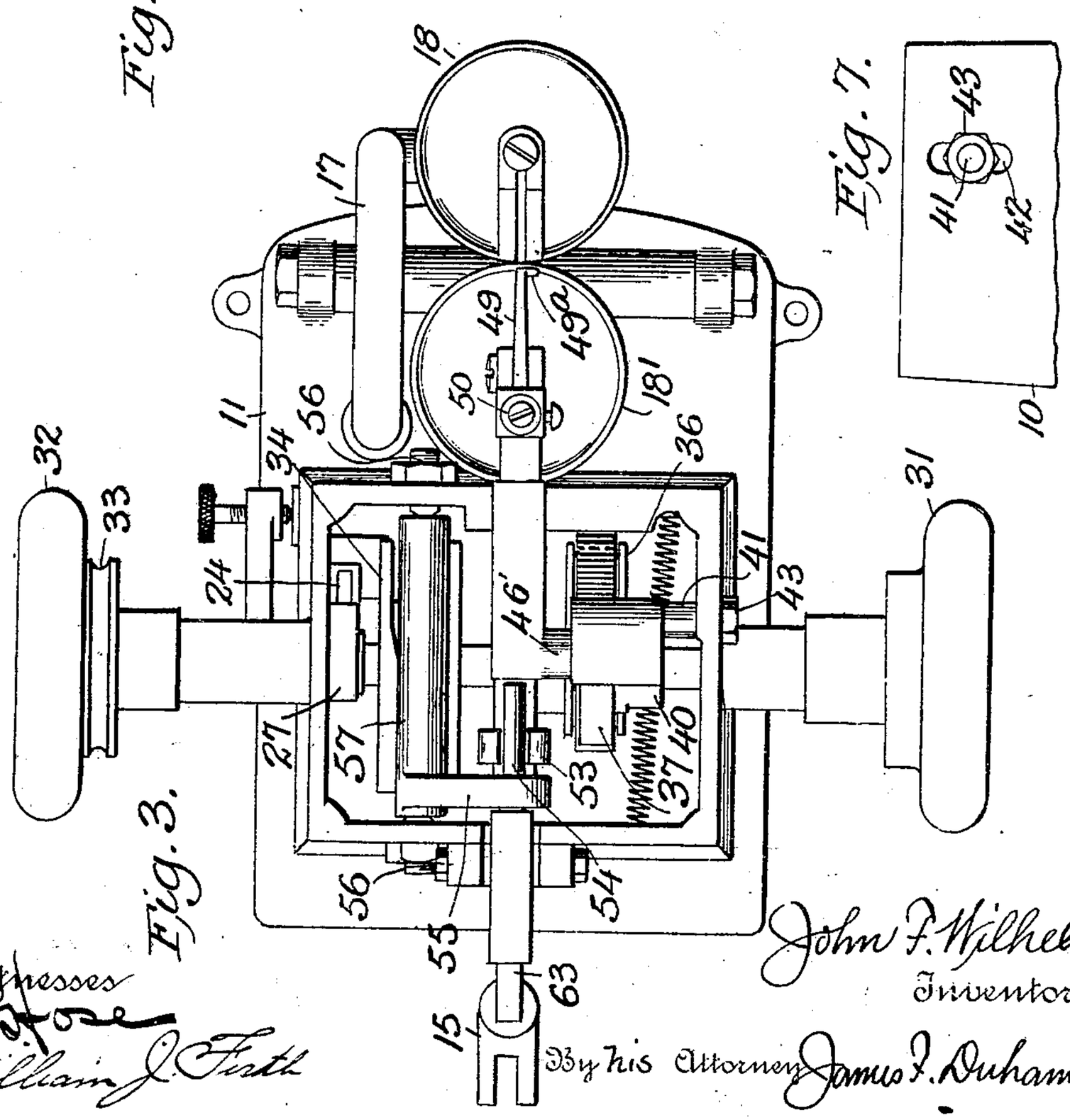


Fig. 3.

Fig. 7.

Witnesses

J. F. Rose

William J. Finth

John F. Wilhelm,
Inventor

By his Attorney James F. Duhamel

J. F. WILHELM.

GLOVE AND FUR SEWING MACHINE.

APPLICATION FILED NOV. 28, 1905.

921,774.

Patented May 18, 1909.

3 SHEETS—SHEET 3.

Fig. 6.

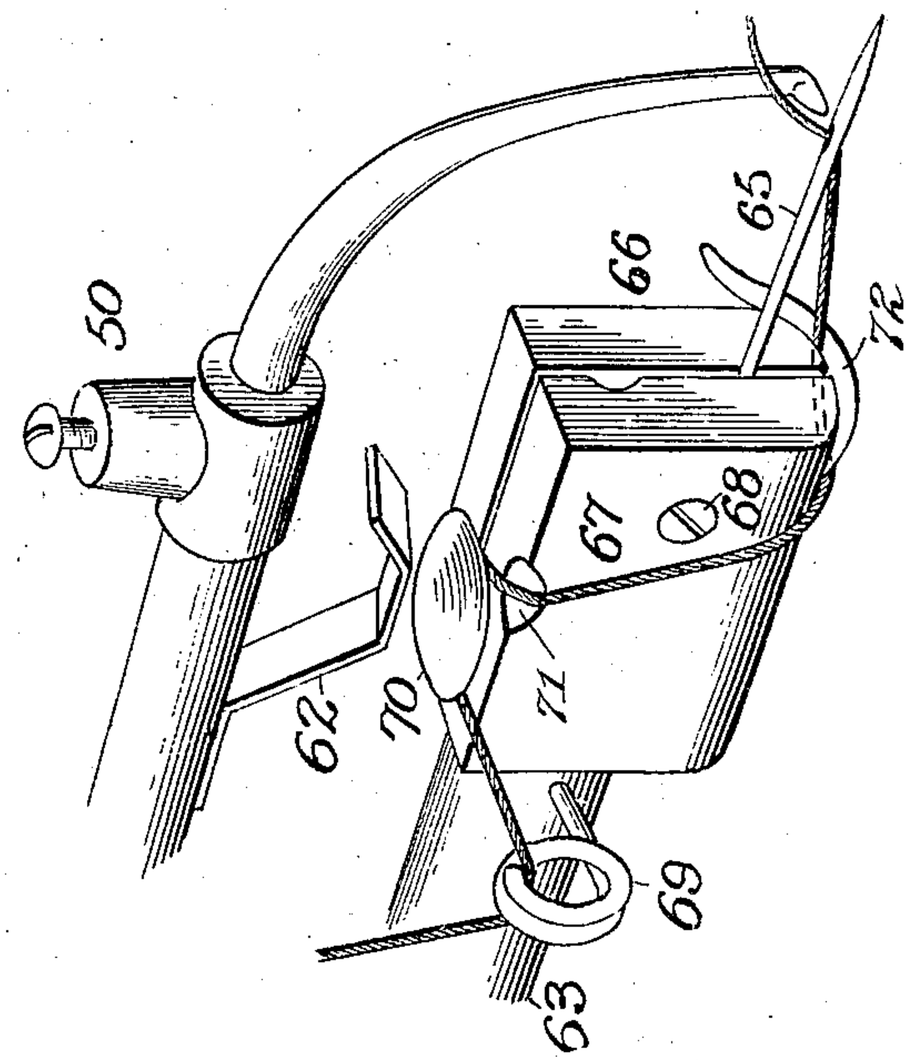
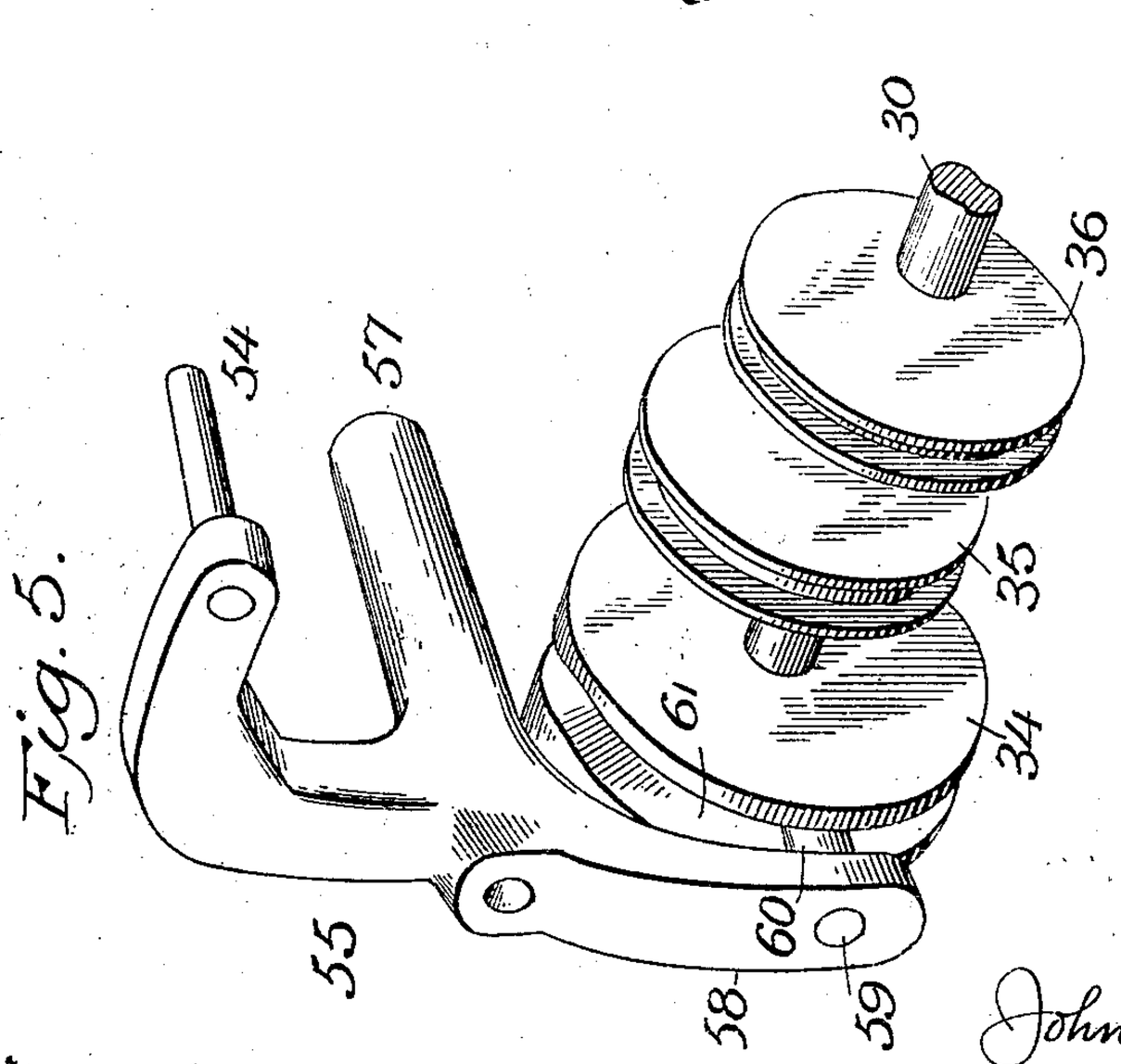


Fig. 5.



Witnesses

W. C. Fox

William J. Finth

John F. Wilhelm
Inventor

By his Attorney James F. Duhamel.

UNITED STATES PATENT OFFICE.

JOHN FREDERICK WILHELM, OF NEW YORK, N. Y., ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

GLOVE AND FUR SEWING MACHINE.

No. 921,774. Specification of Letters Patent. Patented May 18, 1909.

Application filed November 28, 1905. Serial No. 289,439.

To all whom it may concern:

Be it known that I, JOHN FREDERICK WILHELM, a citizen of the United States of America, residing at New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Glove and Fur Sewing Machines, of which the following is a specification.

My invention relates to sewing machines and more particularly to that class of machines adapted to sew furs and gloves and where it is desired to conceal the stitching and preclude its marring the fur on the outer surface of the material.

The object of the invention is to provide a longitudinally reciprocating movement to the bar carrying the needle and a similar movement to a bar carrying a looper-hook and in addition thereto to give the latter bar a tilting movement at one end and a rocking motion on its longitudinal axis. The looper-hook bar is also provided with means operating in conjunction with means carried by the needle bar to firmly hold the thread as it is gathered by the looper-hook and the stitch thereby tightened. These and other objects and details of my invention are more fully described in the following specification and set forth in the appended claims.

In the drawings accompanying this specification and forming a part thereof like reference numerals are used to designate like parts in the several figures, and Figure 1 is a side elevation of my improved sewing machine with the casing partly removed to show the interior mechanism. Fig. 2 is a vertical sectional view taken at the right of the cam 35 in Fig. 4, and representing partly in section the needle clamping head of the needle-bar. Fig. 3 is a top plan view of the machine with the top removed. Fig. 4 is a transverse sectional elevation of the machine taken in a plane intermediate the rear wall of the box or casing 10 and the member 58, the lever 15 and a portion of the spring 19 being represented in end elevation. Fig. 5 is a perspective view of the main shaft and its cams and the rocking lever of the looper-hook bar. Fig. 6 is a perspective view of the front ends of the needle and looper-hook bars showing the thread tightening device. Fig. 7 is a detail view of the means for adjusting the pivot of one of the operating parts.

The frame or casing of the machine is similar to that of this class of sewing machines, and consists of a box 10 with base 11 and top 12, the latter having spool posts 13 and a tension pulley 14 through which the thread passes while to the base is fulcrumed a lever 15 with an upright 16 having an arm 17 which carries one of the feed wheels 18. Pressure is exerted on the outer end of lever 15 by the spring 19 whose tension is regulated by the nuts 20 and 21 and the wheel 18 is forced toward its companion wheel 18^1, or against the material passing through them. This mechanism is in common use as is also the driving mechanism of the feed wheel 18^1 the lower end of whose shaft 22 is provided with a ratchet wheel, actuated by a pawl on the lever 23 and motion is given the latter by a lever 24 pivoted on an arm 25 of the shaft 26 and is rocked by the cam 27 on the main driving shaft 30.

Passing through the machine from side to side, and journaled therein, is the driving shaft 30 carrying at each end hand or balance wheels 31 and 32, the latter provided with the pulley 33 by which power is supplied to the machine. The shaft 30 carries four cams 27, 34, 35 and 36, and they are so secured to the shaft as to rotate with it. The cam 36 is encircled by a strap 27 of the pitman 38, the upper end of the pitman being pivoted at 39 to a depending arm of the belt-crank or rocker 40, which is journaled to one side of the casing 10 on an adjustable fulcrum stud 41 which can be moved in a slot 42 and held at a desired point by a nut 43. One arm 44 of the bell crank or rocker carries a lateral stud 45 which projects into the socket 46 formed in a lateral boss 46^1 of the loose sleeve 47 which is carried by the looper bar 48. A collar 47^a is made fast to the forward end of the bar and to this is secured the looper-hook 49 by means of a set screw 50, while the rear end of the bar 48 slides in a sleeve 51 which is trunnioned on studs 52 carried by the side walls of a slot at the rear of the casing 10.

The sleeve 47 is held against longitudinal movement upon the looper-bar 48 by the collars 47^a and 47^b, the latter having an upright arm forked or slotted to form fingers 53 between which plays a lateral pin 54 carried at the upper end of a rock-lever 55 pivoted on the studs 56 within the casing 10, its pivotal points being provided for by an extension 57 which forms a rock shaft and the lower end 58 of the lever has a stud 59 which carries an

anti-friction roller 60. The roller 60 plays in the cam groove 61 of the cam 34 and rocks the lever and its pin 54, the latter through the medium of the fingers 53 oscillating or rocking the sleeve 47, rod 48 and looper-hook 49.

The movement of the parts above described and which is accomplished through the medium of the cams 34 and 36 gives the looper-hook and its bar three movements: a longitudinally reciprocating, a tilting movement to the forward end of the bar and a rocking movement on its longitudinal axis, thus providing the hook 49[a] with the movements necessary to effect the loop which is necessary in the stitch made by this class of machines.

To the under side of the sleeve 47 is secured a flat spring 62 of such a shape as to be dipped or depressed from the sleeve for the purpose hereinafter described.

The needle bar 63 is of usual construction, and is actuated by a depending yoke 64, which is secured to it and straddles the cam 35 whose rotations thrust the bar forward and backward in its bearings and enables the needle 65 to do its work. As shown more clearly in Fig. 6 the head of the needle bar is divided into two parts 66 and 67, the former being a part of the bar 63, while the latter is a block secured thereto by means of the screw 68, to clamp the needle between them. The bar has an eye 69 projecting from it just back of the head through which the thread passes before partly encircling a broad headed pin 70 and having some of its length normally moving loosely between the head 70[1] of the pin 70 and the head of the needle-bar. The pin 70 fits loosely in a socket in the section of the head 66 and during the movements of the looper-hook bar and the needle bar, and when the former end of the former bar is depressed, the spring comes in contact with the head 70[1] of the pin 70 and exerts a pressure thereon firmly holding the thread while the loop is being pulled taut by the hook. When the bars change their relation, as shown in the drawings, the head of the pin is released and the thread is free to form the next stitch. From the broad headed pin the thread passes down beneath the head and around a hook on the lower side of the section 67 and from thence to the eye of the needle.

As is well understood, in this class of sewing machines the needle has a simple rectilinearly reciprocating movement, passing through the goods held by the feeding and pressure rollers 18 and 18[1] and delivering its loop which is seized by the looper 49[a] and carried over the edge of the material and spread for the passage of the needle, the work having in the meanwhile been advanced by the feeding mechanism a stitch length and the loop held by the looper having thus been distended for the passage of the needle in its succeeding reciprocation. The looper has a compound movement which, beginning with the initial forward movement of the needle is lateral across the needle-path, to shed its loop previously entered by the needle, forward and upward across the edge of the work and then downward, then again transversely of the needle to seize a new loop from the latter, then backwardly and upwardly and downwardly to present a second loop for passage of the needle in its succeeding reciprocation.

As will be observed, the upturned forward edge of the spring clamping member 62 avoids engagement with the head 70[1] of the thread-controlling pin 70 in the retracted position of the looper represented in Fig. 1, the descent of such member being backward of said pin to the loop-presenting position of the looper, but in the loop-seizing position of the looper the member 62 imposes a yielding pressure upon the head of the pin 70 and produces a temporary pressure upon the thread beneath such head sufficient to enable the looper in taking the thread-loop from the needle to tighten the limb of the loop attached to the work and thereby complete the preceding stitch, while the continued motion of the looper across the needle-path and backwardly serves to withdraw the pressure from the head of the controlling pin 70 to permit the loop of needle-thread to be readily distended and carried into the position across the edge of the fabric for the entrance of the needle in its succeeding reciprocation. It will thus be observed that the thread controller as above described imposes a drag upon the needle-thread which is hardly more than instantaneous, and that at all other times the needle-thread intermediate the tension device 14 and the work is entirely free.

In order that the lead of the needle-thread from the thread controlling pin 70 may be to the under side of the needle, the thread is led from the latter through a notch 71 in the edge of the block 67 downwardly around a thread-guiding hook 72, as represented in Fig. 6. It is evident that the guiding member 62 may be of any suitable or approved form, and it is not therefore herein described in detail.

In the construction above described and shown in the drawings a very simple and compact machine is produced, and the working parts are of such solidity and strength as to provide for very easy operation and not liable to get out of order or to wear readily.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a sewing machine, the combination with a casing and a driving shaft journaled therein, of a reciprocating needle having operative connections with said driving shaft, a

rocker having a plurality of arms, a fulcrum-pin secured to said casing for adjustment transversely to its length and upon which said rocker is journaled, a looper-bar, a looper carried thereby, a rocking support for one end of said looper-bar, a loose sleeve fitted to and secured from endwise movement upon said looper-bar and pivotally mounted upon an arm of said rocker, an operative connection intermediate said shaft and another arm of said rocker for imparting to the latter oscillating movements, and means applied to said looper-bar and also operatively connected with said shaft whereby oscillating movements are imparted to said looper-bar in respect of said loose sleeve.

2. In a machine of the class described, the combination with the driving shaft, of a needle-bar carrying a needle, a needle-clamping head thereon, an operative connection between the driving shaft and the needle-bar for imparting reciprocating movements to the latter, a thread-controlling member carried by the needle-bar and adapted to apply a resistance to the passage of the thread to the needle, a thread-guide through which the needle-thread may be led to the thread-controlling member and thence to the needle, a looper-bar, operative connections intermediate the main-shaft and said looper-bar for imparting to the latter vibratory and endwise reciprocating movements, a looper carried by said looper-bar and adapted to cooperate with said needle in the production of stitches, and a pressure-member carried by said looper-bar and adapted to engage the thread-controlling member for imposing a temporary resistance upon the needle-thread.

3. In a machine of the class described, the combination with the driving shaft, of a needle-bar carrying a needle, a needle-clamping head thereon, an operative connection between the driving shaft and the needle-bar for imparting reciprocating movements to the latter, a thread-controlling pin loosely fitted to a transverse aperture or socket in the head of the needle-bar and provided with a head adapted to engage the needle-thread beneath the same, a thread-guide through which the needle-thread may be led under the head of the thread-controlling pin to the needle, a looper-bar, operative connections intermediate the main-shaft and said looper-bar for imparting to the latter vibratory and endwise reciprocating movements, a looper carried by said looper-bar and adapted to coöperate with said needle in the production of stitches, and a pressure-member carried by said looper-bar and adapted to engage the head of the thread-controlling pin for temporarily clamping the needle-thread beneath the same.

4. In a machine of the class described, the combination with the driving shaft, of a needle-bar carrying a needle, a needle-clamping head thereon, an operative connection between the driving shaft and the needle-bar for imparting reciprocating movements to the latter, a thread-controlling pin loosely fitted to a transverse aperture or socket in the head of the needle-bar and provided with a head adapted to engage the needle-thread beneath the same, a thread-guide through which the needle-thread may be led under the head of the thread-controlling pin to the needle, a looper-bar, operative connections intermediate the main-shaft and said looper-bar for imparting to the latter vibratory and endwise reciprocating movements, a looper carried by said looper-bar and adapted to cooperate with said needle in the production of stitches, and a spring pressure-member carried by said looper-bar and adapted to engage the head of the thread-controlling pin for temporarily clamping the needle-thread beneath the same.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this ninth (9) day of November 1905.

JOHN FREDERICK WILHELM.

Witnesses:
PAUL P. RUKE,
M. N. WALSH.