

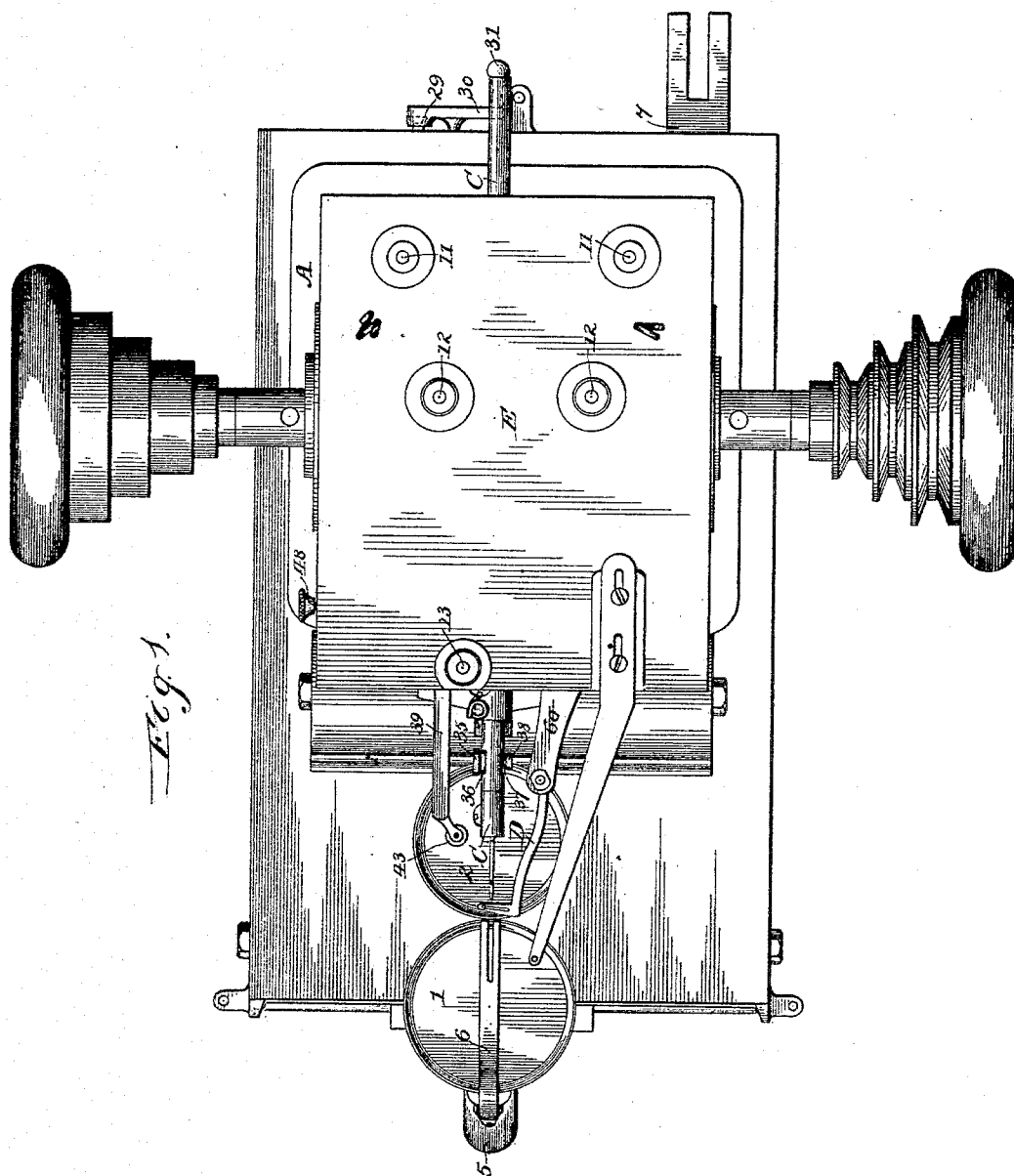
(No Model.)

6 Sheets—Sheet 1.

F. VAN CAUWENBERGH.
GLOVE SEWING MACHINE.

No. 514,635.

Patented Feb. 13, 1894.



Witnesses:

Wm. M. Rheem.

Wm. S. Hanning

Inventor
F. Van Cauwenbergh

By S. J. Kennedy Att'y

(No Model.)

6 Sheets—Sheet 2.

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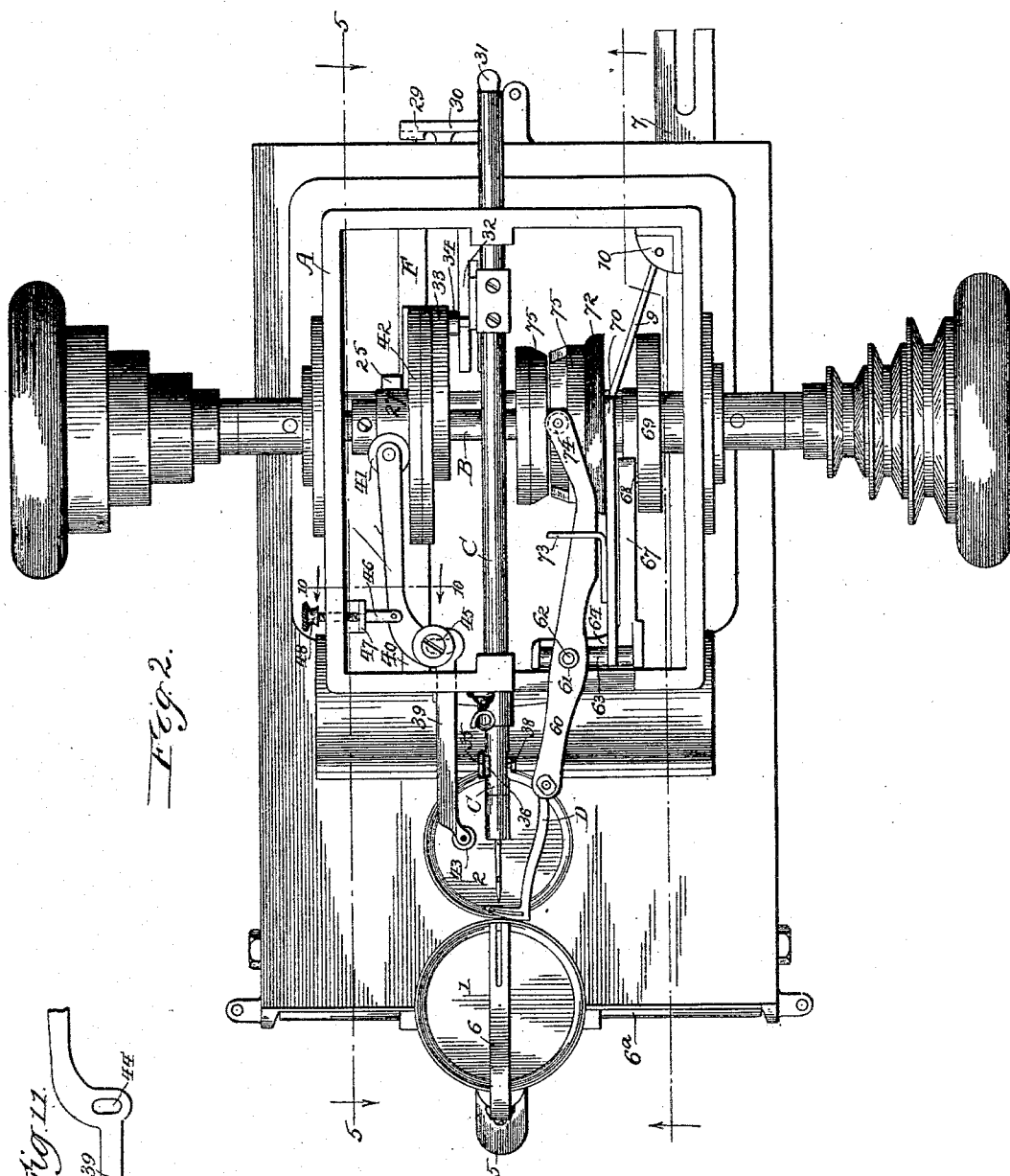


Fig. 2.



Fig. 11.

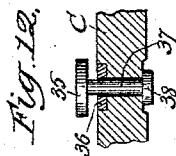


Fig. 12.

Witnesses:

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Frank Van Cauwenbergh
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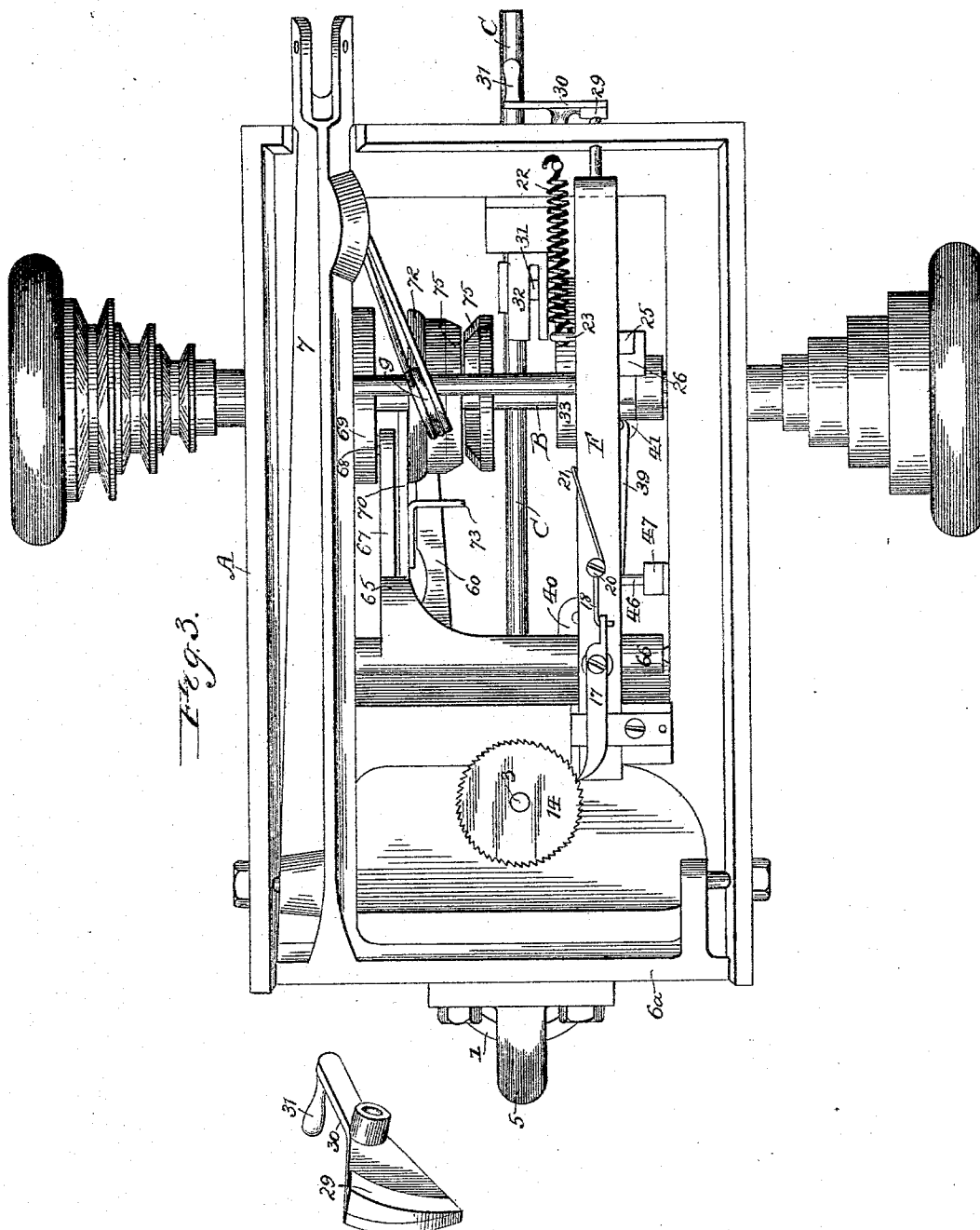
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6 Sheets—Sheet 3.

F. VAN CAUWENBERGH.
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Witnesses:
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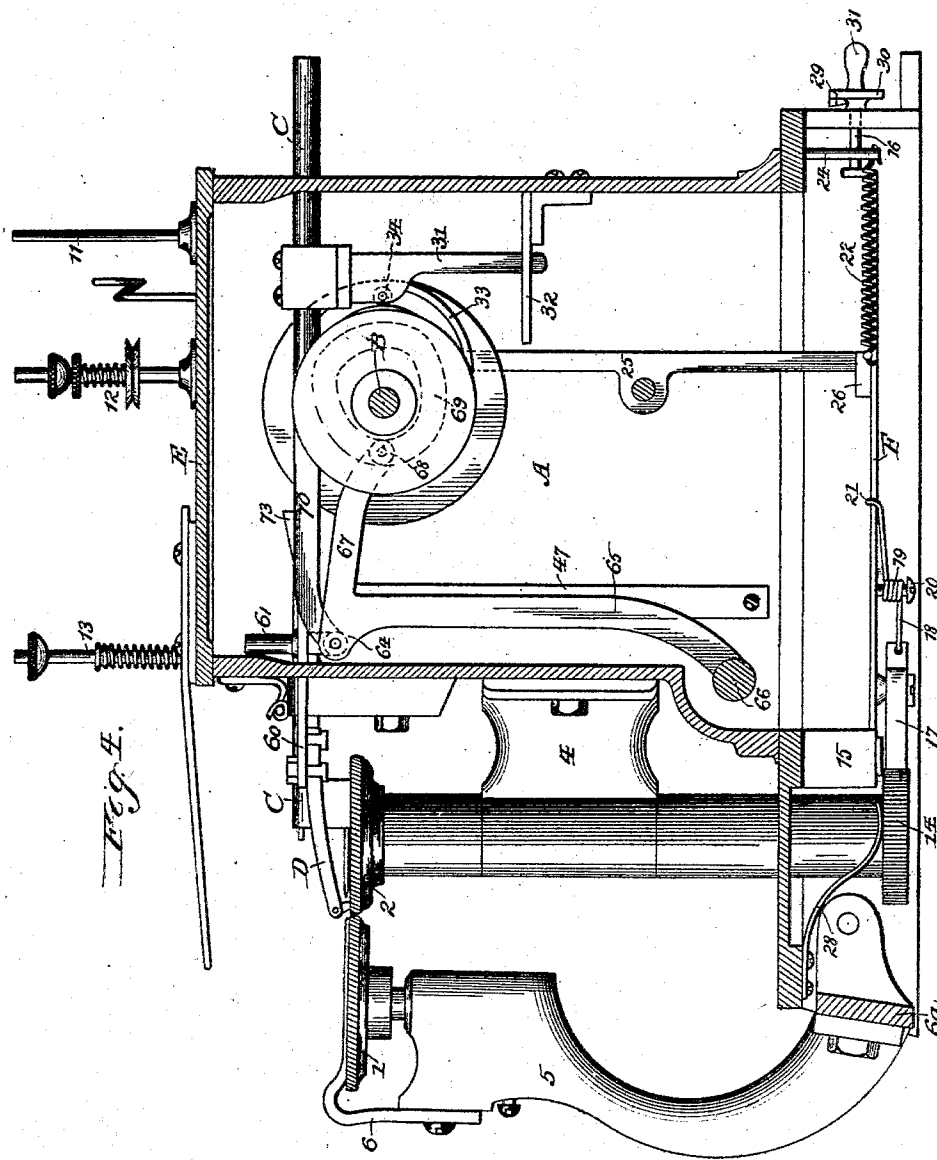
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6 Sheets—Sheet 4.

F. VAN CAUWENBERGH.
GLOVE SEWING MACHINE.

No. 514,635.

Patented Feb. 13, 1894.



Witnesses:
J. M. N. Rhein
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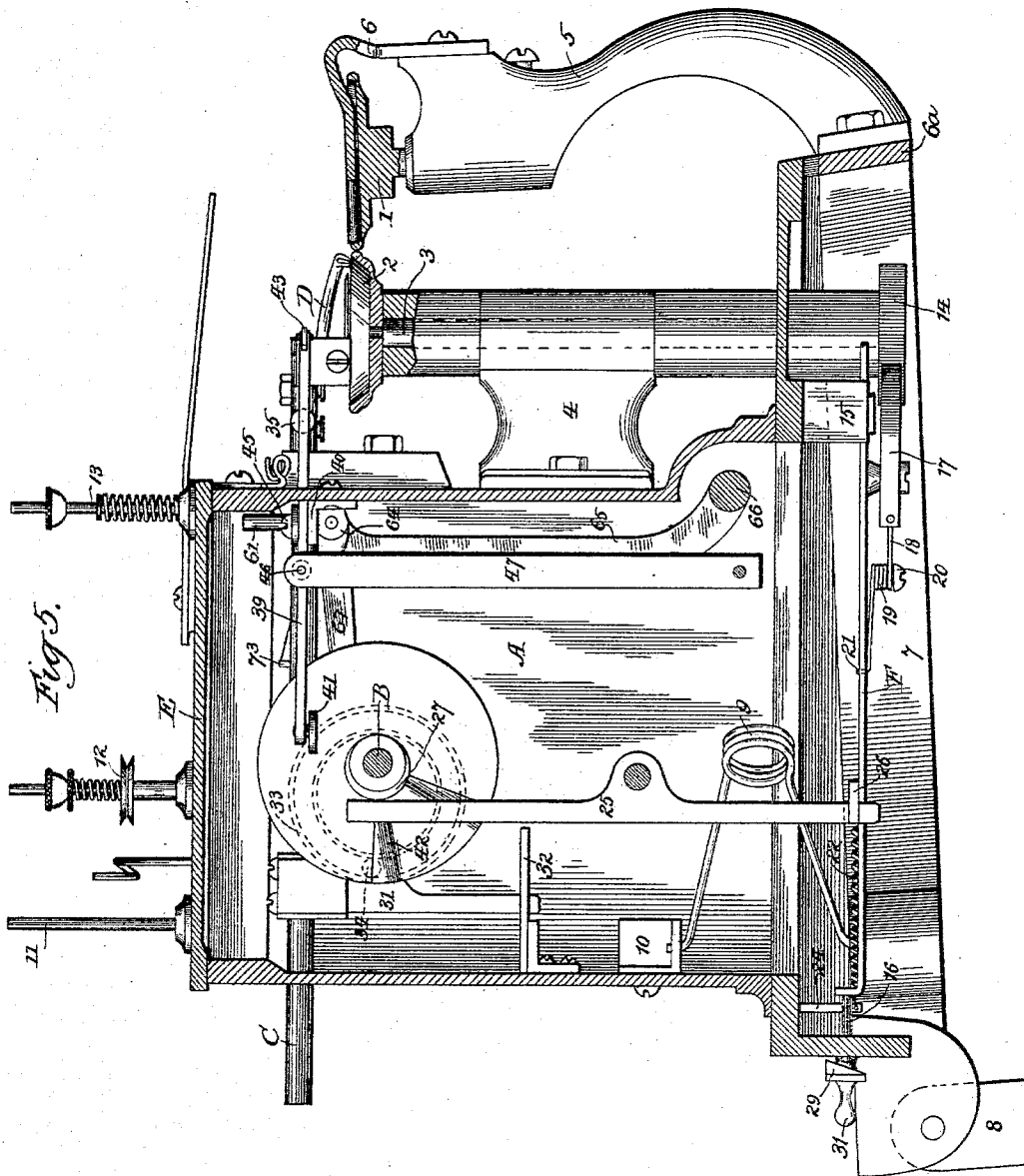
(No Model.)

6 Sheets—Sheet 5.

F. VAN CAUWENBERGH.
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Patented Feb. 13, 1894.



Witness:
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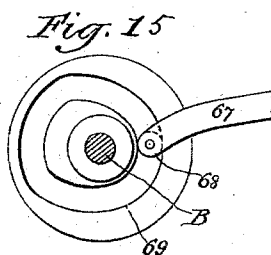
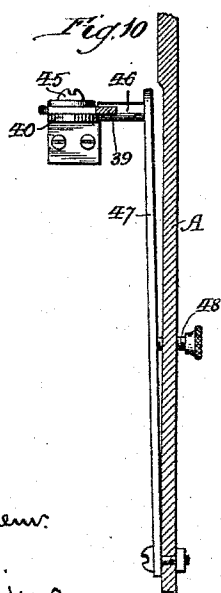
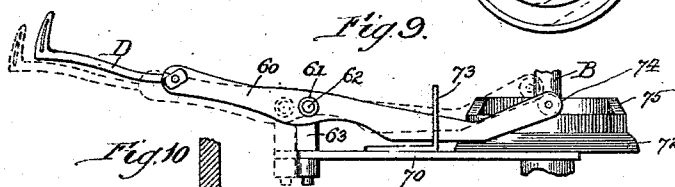
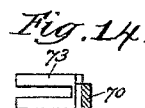
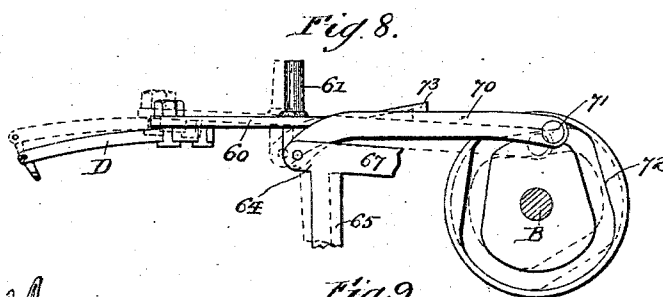
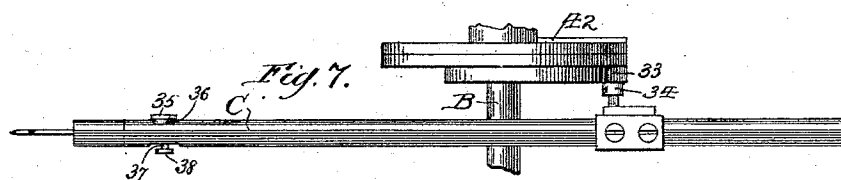
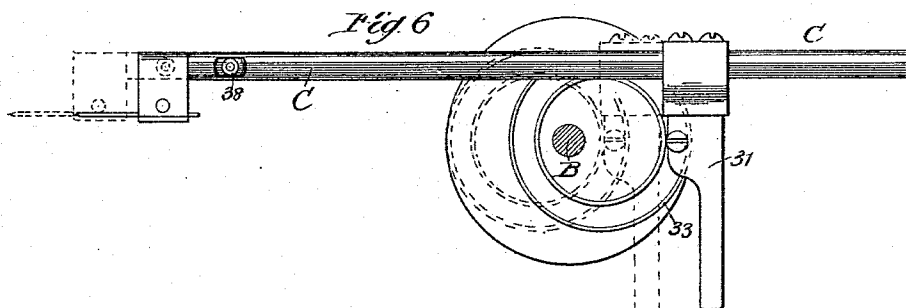
(No Model.)

6 Sheets—Sheet 6.

F. VAN CAUWENBERGH.
GLOVE SEWING MACHINE.

No. 514,635.

Patented Feb. 13, 1894.



Witnesses:
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Wm. F. Hemming.

By

Frank Van Cauwenbergh
S. J. Kennedy
Attorney's

UNITED STATES PATENT OFFICE.

FRANK VAN CAUWENBERGH, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT
AND MESNE ASSIGNMENTS, TO HENRY HARTMANN, OF SAME PLACE.

GLOVE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 514,685, dated February 13, 1894.

Application filed June 9, 1892. Serial No. 436,174. (No model.)

To all whom it may concern:

Be it known that I, FRANK VAN CAUWENBERGH, a subject of the King of Belgium, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvement in Glove-Sewing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to sewing-machines, and more particularly to that class of machines commonly known as "glove sewing-machines," and has for its object to provide for certain improvements in this class of machines serving to increase the efficiency thereof.

The invention consists in the features of construction and combinations of parts hereinafter fully described and pointed out in the appended claims.

In the accompanying drawings illustrating my invention,—Figure 1 is a top plan view of a glove sewing-machine constructed in accordance with my invention. Fig. 2 is a similar view with the top plate removed. Fig. 3 is a bottom plan view. Fig. 4 is a longitudinal vertical section taken on the line 4—4 of Fig. 2. Fig. 5 is a longitudinal vertical sectional view taken on the line 5—5 of Fig. 2. Figs. 6 and 7 are detail views in side and top elevation, respectively, of the needle rod and the means for reciprocating the same. Figs. 8 and 9 are detail views in side elevation and top plan, respectively, of the looper and the devices serving to impart thereto the backward and forward and side movements of the same. Fig. 10 is a detail view of the devices for adjusting the needle thread tightener. Figs. 11, 12, 13, 14 and 15 are detail views.

It will be understood that my invention relates only to certain features of improvements in glove sewing-machines, and that it will, therefore, be unnecessary to describe with particularity the entire machine shown in the drawings, as such is the ordinary construction of this class of machines and will be readily understood by those skilled in the art to which it appertains. I will, therefore,

only briefly refer to such construction and indicate the leading points thereof, to the end that my improvements can be clearly and fully understood.

Referring now to said drawings, A indicates the frame of the machine which can be secured in any suitable manner to a frame or table in the usual way. At one end of said frame are located the front or outer feed cup 1 and the back or inner feed cup 2 of familiar construction. The said inner feed cup is supported by a spindle 3 mounted in a bracket 4 upon said frame, and the said spindle extends down into the lower part of the frame and is there provided with devices for turning the same, to be hereinafter fully described. The outer feed cup 1 is mounted upon a holder 5 which also supports the needle guide 6, and said holder extends downwardly and is joined to a pivot bar 6^a (Figs. 3 and 5) that is pivoted in the sides of the frame (Fig. 3) and is provided with a rearwardly extending arm 7 that is pivoted at its rear end to a pedal lever 8. The pedal lever 8 is connected with any suitable pedal (not shown) by means of which it can be elevated, and when it is elevated it will elevate the rear end of the arm 7 and thus turn it on its pivot and throw the outer feed cup outwardly. It will thus be noted, that by elevating said pedal lever the outer feed cup will be separated from the inner feed cup, but that when said outer feed cup is not under the influence of the pedal lever it will be held with the correct tension against the inner feed cup by spring 9 that bears at its opposite ends against the rear end portion of the arm 7 and a bracket 9 on the inside of the frame A.

B indicates the operating shaft of the machine, which is supported in suitable bearings in the frame A and extends transversely through the same in the usual manner. Said shaft B is provided exteriorly to said frame with suitable pulleys for driving the shaft. Within said frame, and mounted upon said shaft, are located the said devices by which the machine is operated, and which will be duly described.

C indicates the needle rod extending longitudinally through the frame and having

suitable bearings therein, and D indicates the looper which will be fully described hereinafter. The said needle rod and looper have the same movements as the similar parts of machines of this kind now in use, and it will therefore be unnecessary to describe the movements by which the stitch is made, as such does not form part of my invention. These parts have simply the usual movements of this class of sewing-machines and accomplish the making of the stitch in the usual manner.

E indicates the top plate of the frame A upon which is located the usual spool holders 11, tension plates 12, tension guide 13, and the other usual guides for the thread.

I will now proceed to describe the construction of the devices that operate the inner feed cup 2. The spindle 3 is provided at its lower end and within the frame A with a horizontal ratchet wheel 14. F indicates the longitudinally reciprocating bar that is guided at its forward end in a guideway 15, and at its rear end is provided with a pin or extension 16 that passes through an opening in the lower part of the frame A and thus serves to confine the bar F to its longitudinal reciprocating movement. Near the forward end of said bar F is located a pawl 17 that engages the ratchet wheel 14 on spindle 3 and is held in engagement therewith by a spring 18 which engages with said pawl 17 in the rear of its pivotal connection with the bar F, and is coiled between its ends as at 19, through which coil passes a pivot pin 20 to secure such pin on the bar F. At its other end said spring is hooked as at 21, and is sprung back over the other end of the bar and serves thereby to hold the pawl under tension against the ratchet wheel. The bar F is normally held at the rearward limit of its movement by spring 22 that is secured at one end to a pin 23 upon said bar, and at its other end to a pin 24 upon the frame. It will thus be seen that the forward movement of this bar F serves to turn the ratchet wheel and thereby the inner feed cup, and such forward movement is accomplished through the intermediacy of a lever 25 that is pivoted to the side of the frame A. The lower end of this lever 25 is located to engage the rear face of a hook or shoulder 26 projecting laterally from said rod F, so that when the lower end of the lever is moved forwardly it will serve also to move the bar in that direction, but on the other hand will have no influence upon the bar when it moves to the rear, for, as before described, the spring 22 returns the bar to its rearward position. The upper end portion of this lever 25 is located to engage an eccentric 27 upon the shaft B which serves to impart a vibratory motion to said lever during the rotation of said shaft. It will, of course, be understood that the shaft of said eccentric is so located with relation to the devices for operating the needle rod and looper, that said lever will be operated to move the feed cup,

through the intermediacy of the gearing described, at such time when the needle is withdrawn from the work in the usual manner. To prevent the accidental backward rotation of said feed cup, I employ a tension spring 28 that is secured to the frame and bears at its free end with sufficient tension upon the upper face of the ratchet wheel.

To regulate the extent of feed of said feed cup, and consequently the length of stitch, I employ a lever cam 29 that is pivoted upon the frame of the machine, so as to be located opposite the end of the pin or extension 16 upon the bar F. The plate 30, upon which said cam is secured, is provided with a handle 31 for rotating the same, and it will be noted that by moving said cam lever the extent of the rearward movement of the bar F under the influence of the spring 22 is regulated, and thereby the number of teeth on the ratchet wheel 14, over which the pawl passes, is also regulated, and in an obvious manner regulates the extent of movement of the inner feed cup. It will also be noted, that by reason of the separable connection of the lever 25 and bar F, by which connection the said bar F is under the influence of the lever only at such times when the lower end of the lever moves forwardly, said bar F can be arrested at any desired point during its rearward movement by reason of the location of the cam lever 29, and that in such case said lever will have no effect upon the rod until it commences to move forwardly.

The devices for reciprocating the needle rod C are constructed as follows: As before described, said needle rod is supported in suitable bearings in the frame of the machine and carries at its forward end the usual needle, and is subject to an oscillating backward and forward movement in the usual manner. To hold said needle rod during such longitudinal oscillating movement from turning on its axis, I employ a downwardly projecting arm 31 which is rigidly secured to said needle rod C, and is located at its lower end in a guide 32 secured to the frame of the machine, which guide is located parallel with the axis of the needle rod, and as a convenient construction such guide consists of a bifurcated plate between the arms of which the end of the arm 31 is located. The backward and forward movement of the needle rod is attained by a side grooved cam or eccentric 33 which is located upon the shaft B and engages with an anti-friction roller 34 secured to the arm 31. In this way it will be seen that the movement of the needle rod is positive and direct, and that therefore a greater speed can be reached in the operation of the needle rod than would be possible with the devices now employed for this purpose, for the guide serves to hold the needle rod from axial rotation and the connection between the anti-friction roller and the side grooved cam is such that they are at all times in engagement with each other, which insures a

positive, even and regular oscillating movement of the needle rod.

The devices for regulating the tension of the needle thread tightener form a feature of my improvements and is connected and operates as follows: It will be noted that as the needle commences to recede, after having reached the forward limit of its movement, it is necessary to bring a tension upon the thread to hold the same from feeding forward, so as to form the loop which is to be taken up by the looper. To this end the thread passes between the tension disks 35 and 36. The tension disk 36 is stationary and rigid with the needle rod, while the tension disk 35 is movable with relation to the disk 36 and is provided with a pin 37 that passes through the disk 36 and the needle rod and is confined by a head 38 on the opposite side of said needle rod. The said disk 35 and pin 37 are freely movable, so that unless pressure is brought to bear thereon the thread can pass freely between said disks.

To provide means for applying the pressure to the disk 35 at the desired moment, I employ a tightener bar 39 that is pivoted on a bracket 40 inside of the frame A and is provided at its rear end with an anti-friction roller 41 in the path of a side cam 42 secured to the shaft B. The front end of said bar 39 is provided also with an anti-friction roller 43 that is located to engage the tension disk 35 at certain intervals, and the said cam 42 is so arranged and constructed with relation to said tightener bar and tension disks, that the forward end of said tightener bar will be thrown against the tension disk 35 at such period during the receding motion of the needle bar when it is desired to form the loop that is to be taken up by the looper. And the location and construction of said cam 42 are also such that after said loop has been formed and engaged by the looper, the anti-friction roller 43 will be retracted from the tension disk 35, so that the thread can then freely pass between the said disks 35 and 36. It will, of course, be understood that it is necessary to provide devices for holding the anti-friction roller 43 on the forward end of the tightener bar against the tension disk 35 under a tension that can be adjusted or regulated to accommodate the said tension disk 35 to the different thicknesses of thread or silk that may be used upon the machine, for it will be obvious that threads of different sizes will necessitate a varying tension to hold the same from slipping between the tension disks at the time that the loop is being formed. To attain this result the said tightener bar has a shifting pivotal connection with the bracket 40, which is secured by forming a slot 44 in said tightener bar 39 and passing the pivot 45 of said bar through said slot. In the rear of such slotted pivotal connection a laterally extending pin 46 is pivoted to the bar 39 and is secured at its outer end to an upright plate spring 47. The said

spring 47 is secured at its lower end to the frame of the machine (as shown in detail in Fig. 10) and an adjusting screw 48 passes through the side of the frame A and is adapted to bear at its inner end against said plate spring and between the ends of the latter.

From the foregoing description it will be seen that when the parts are located in the position shown in Fig. 2, the spring 47 acts upon the rear end of the bar 39 and serves to hold the anti-friction roller 41 at the rear end of said bar against the flat face of the cam 42, with the pivot 45 located at one end of the slot 44 and with the forward anti-friction roller 43 held out of the path of the tension disk 35. When, however, during the operation of the machine the said forward anti-friction roller 43 is thrown against the tension disk 35 by the action of the cam 42 upon the rear end of said bar 39, the pivot or fulcrum point of the tightener bar is then changed from the pivot 45 to the pivotal connection of said tightener bar with the pin 46 attached to the spring 47, for it will be noted that when the anti-friction roller 43 on the front end of said tightener bar is thrown against the disk 35, and the cam is still pressing against the rear end of said tightener bar, that the tightener bar will be moved bodily outward so as to bring the pivot 45 between the ends of the slot 44. When this position is reached, the pressure or tension exerted by the front end of the tightener bar or the disk 35 will, of course, be subject to the strength of the spring 47 and that, therefore, by screwing up or unscrewing the adjusting screw 48 the pressure with which the spring 47 will press against the tightener bar can be regulated in an obvious manner.

As a further improvement in glove sewing-machines, I provide a novel construction of the devices for operating the looper. As will be obvious the looper has several combined movements, but which are made up of three movements, namely: a vertical movement, a lateral movement, and a backward and forward movement, but these three movements are so combined as to impart to the looper the necessary compound movement for taking up the loop and forming the stitch. The looper D is carried by a bar 60, which bar is between its ends provided with a sleeve or collar 61 that receives a pivot 62 that is secured upon a horizontal pivot pin 63. The said pivot pin 63 is pivotally secured within the upper bifurcated end 64 of a lever 65. The said lever 65 extends downwardly near the bottom of the frame A and is there provided with a cross bar 66 that is pivoted to the sides of the said frame of the machine in a convenient manner. Near the upper end of the lever 65 is located a rearwardly extending arm 67 that is provided at its rear end with an anti-friction roller 68 that engages a side grooved cam 69 mounted upon the shaft B. It will be noted that during the rotation of the cam 69 the arm 67 will be moved back

and forth and will therefore impart a corresponding movement to the upper end of the lever 65, and therefore the looper which is mounted upon the upper end of said lever 65 will also be moved back and forth.

The devices for moving the looper up and down comprise a rearwardly extending arm 70 that is rigidly secured at its forward end to the pivot pin 63, and is provided at its rear end with an anti-friction roller 71 that engages a side grooved cam 72 rigidly secured to the shaft B. It will be noted that by reason of the rotation of the cam 72 the rear end of said arm 70 will be elevated and depressed and will thus serve to rock the pivot pin 63, thereby imparting to the forward end of the looper the up and down movement. To the side of the arm 70, adjacent to the bar 60, said arm 70 is provided with the laterally extending guide 73 which receives the rear end portion of said bar 60 and serves to guide the said bar 60 in its lateral movements, which is obtained by the engagement of an anti-friction roller 74 located on the rear end of said bar 60 with the side disk cams 75 between which the said anti-friction roller 74 is located. It will, of course, be clearly understood that said cams for operating the looper are so arranged and constructed with relation to each other, as to serve to impart to said looper the desired movement thereof. And it will be further understood that to obtain this movement on the part of the looper, the said cams and other parts serving to attain such motion can operate simultaneously or separately as found necessary to give to the looper this desired movement, and since I do not claim as my invention any improvements in the looper itself, or in its operation and functions, it will not be necessary to describe with greater particularity the arrangement and construction of the said cams referred to.

By the arrangement above described for operating the looper, it will be noted that I obviate the employment of springs to impart to the looper any of its movements, and therefore by making each one of all the movements subject to the operation of a cam it will be possible to run the machine with greater speed and accuracy than has been possible heretofore, for every one of the movements of the looper is positive and direct and will always occur with great accuracy at the desired moment.

I claim as my invention—

1. The combination substantially as hereinbefore set forth in a sewing-machine, with the needle rod and devices for operating the same, and the tension disk 35 located adjacent to a tension disk 36 upon said needle rod and movable with relation thereto, of a tightener bar having a shifting pivotal connection with the frame of the machine, a cam carried by the operating shaft of the machine and located to engage the rear end of said tightener bar so as to throw the forward end of said tightener bar against said tension disk

35, and a spring acting against said tightener bar at its rear end portion and serving to hold its rear end against said cam.

2. The combination substantially as hereinbefore set forth in a sewing-machine, with the needle rod and devices for operating the same, and the tension disk 35 located adjacent to a tension disk 36 upon said needle rod and movable with relation thereto, of a tightener bar having a shifting pivotal connection with the frame of the machine, a cam carried by the operating shaft of the machine and located to engage the rear end of said tightener bar so as to throw the forward end of said tightener bar against said tension disk 35, and an adjustable spring acting against said tightener bar at its rear end portion and serving to hold its rear end against said cam.

3. The combination substantially as hereinbefore set forth in a sewing-machine, with a needle rod and devices for operating the same, said needle rod being provided with a tension disk 35 located adjacent to a tension disk 36 and movable with relation thereto, of a tightener bar provided between its ends with a slot through which passes a pin 45 secured to the frame of the machine, a cam upon the operating shaft of the machine located to engage the rear end of said tightener bar, a spring secured to the frame of the machine and acting against said tightener bar in the rear of its slot and pin connection with the frame of the machine.

4. The combination substantially as hereinbefore set forth in a sewing-machine, with a needle rod and devices for operating the same, said needle rod being provided with a tension disk 35 located adjacent to a tension disk 36 and movable with relation thereto, of a tightener bar provided between its ends with a slot through which passes a pin 45 secured to the frame of the machine, a cam upon the operating shaft of the machine located to engage the rear end of said tightener bar, an adjustable spring secured to the frame of the machine and acting against said tightener bar in the rear of its slot and pin connection with the frame of the machine.

5. The combination substantially as hereinbefore set forth in a sewing-machine, with the needle rod and devices for operating the same, said needle rod being provided with a tension disk 35 located adjacent to a tension disk 36 and movable with relation thereto, of a tightener bar provided between its ends with a slot through which passes a pin 45 secured to the frame of the machine, a cam upon the operating shaft of the machine located to engage the rear end of said tightener bar, and a plate spring 47 secured at one end to the frame of the machine and having its other end secured to said tightener bar in the rear of its slot and pin connection with the said frame of the machine.

6. The combination substantially as hereinbefore set forth in a sewing-machine, with the needle rod and devices for operating the same,

said needle rod being provided with a tension disk 35 located adjacent to a tension disk 36 and movable with relation thereto, of a tightener bar provided between its ends with a slot through which passes a pin 45 secured to the frame of the machine, a cam upon the operating shaft of the machine located to engage the rear end of said tightener bar, a plate spring 47 secured at one end to the frame of the machine and having its other end secured to said tightener bar in the rear of its slot and pin connection with the said frame of the machine, and an adjusting screw 48 located to bear against said spring 47, for the purpose set forth.

7. The combination substantially as hereinbefore set forth in a sewing-machine, with the needle rod and devices for operating the same, said needle rod being provided with a tension disk 35 located adjacent to a tension disk 36 and movable with relation thereto, of a tightener bar provided between its ends with a slot through which passes a pin 45 secured to the frame of the machine, a cam upon the operating shaft of the machine located to engage the rear end of said tightener bar, and a plate spring 47 secured at one end to the frame of the machine and provided at its upper end with a laterally extending pin that is pivotally connected with said tightener bar in the rear of its slot and pin connection with the said frame of the machine.

8. The combination substantially as hereinbefore set forth in a sewing-machine, of a looper lever 60 having an upright pivotal connection with a pivoted pin 63 that has a horizontal pivotal connection with the upper end of a pivoted frame 65, an arm 70 connected with said pivoted pin 63, a cam 72 mounted upon the operating shaft of the machine and engaging the rear end of said arm 70 to ele-

vate and depress the rear end of said arm, and devices constructed practically as described, to impart a lateral movement in said looper lever and a backward and forward movement to said pivoted frame.

9. The combination substantially as hereinbefore set forth in a sewing-machine, of a looper lever 60 having an upright pivotal connection with the pivot pin 63 that has a horizontal pivotal connection with the upper end of a pivoted frame 65, an arm 70 connected with said pivot pin, a cam 72 mounted upon the operating shaft of the machine and engaging the rear end of said arm 70 and adapted to elevate and depress the rear end of said arm, a lateral guide 73 upon said arm 70 in which the rear end of the looper lever is located, and devices constructed practically as described to impart a lateral movement to said looper lever and a backward and forward movement to said pivoted frame.

10. The combination substantially as hereinbefore set forth in a sewing-machine, of a looper lever having an upright pivotal connection with a pivot pin 63 that has a horizontal pivotal connection with the upper end of the pivoted frame 65, an arm 67 upon said pivoted frame 65, a cam 69 mounted upon the operating shaft of the machine and engaging the rear end of said arm 67 and adapted to impart a backward and forward movement to said arm 67, and devices constructed for imparting to said looper lever an up and down movement and a lateral movement.

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

FRANK VAN CAUWENBERGH.

Witnesses:

HARRY COBB KENNEDY,
RUDOLPH W. LOTZ.