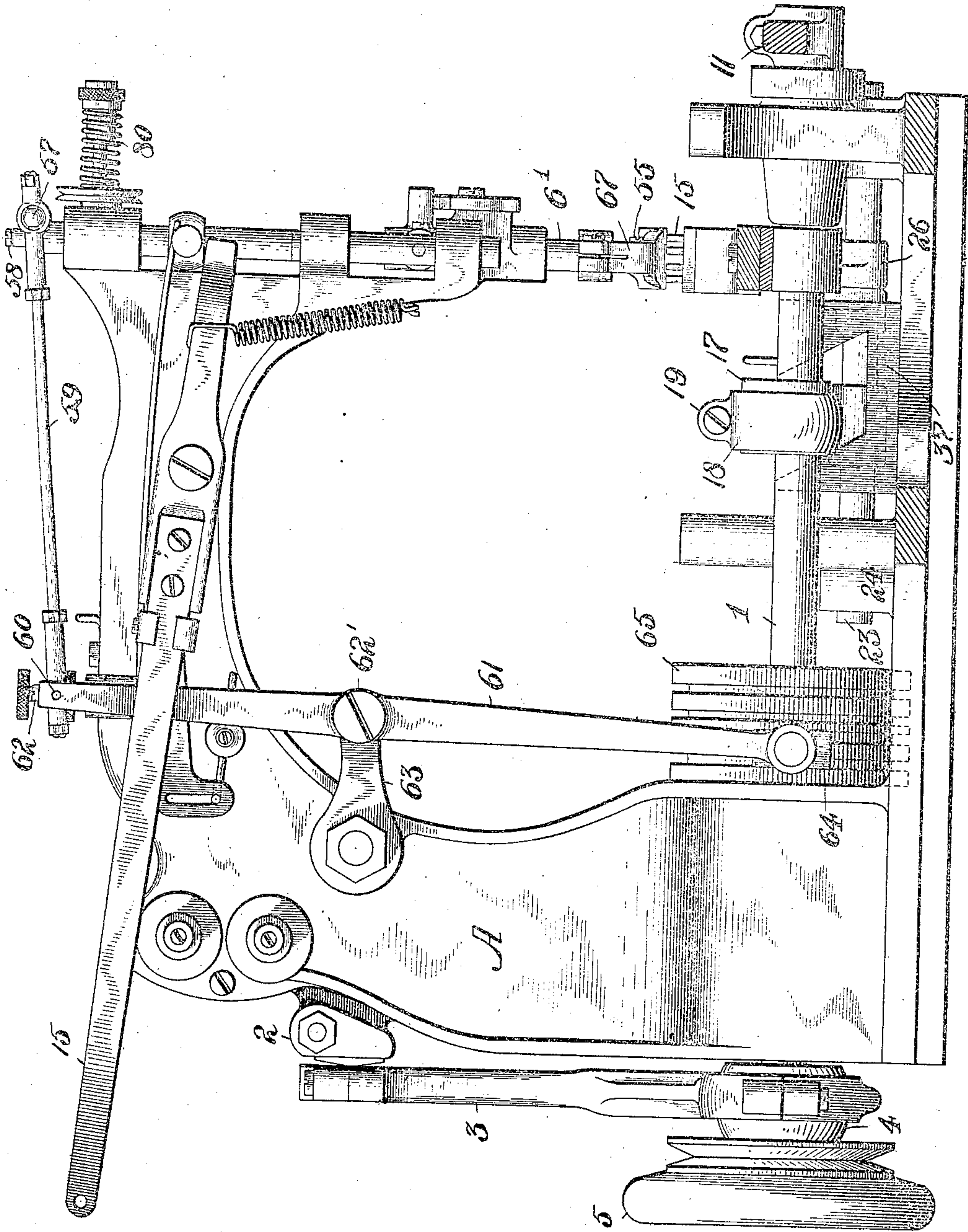


No. 875,615.

W. N. PARKES.
SEWING MACHINE.
APPLICATION FILED OCT. 3, 1903.

PATENTED DEC. 31, 1907.

4 SHEETS—SHEET 1.



WITNESSES:

J. B. McGirr.
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Fig. 1.

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4 SHEETS—SHEET 2.

Fig. 4.

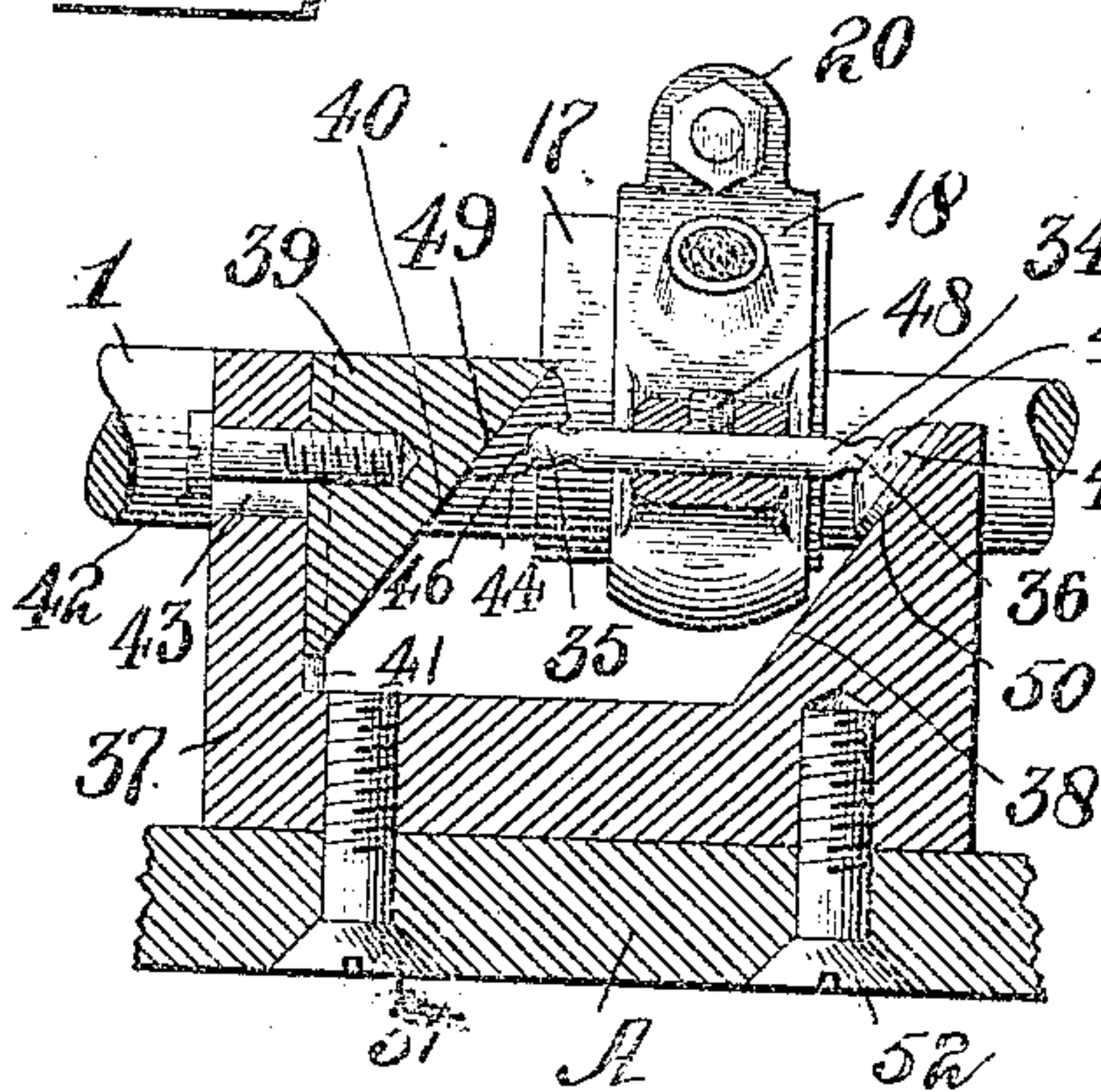


Fig. 2.

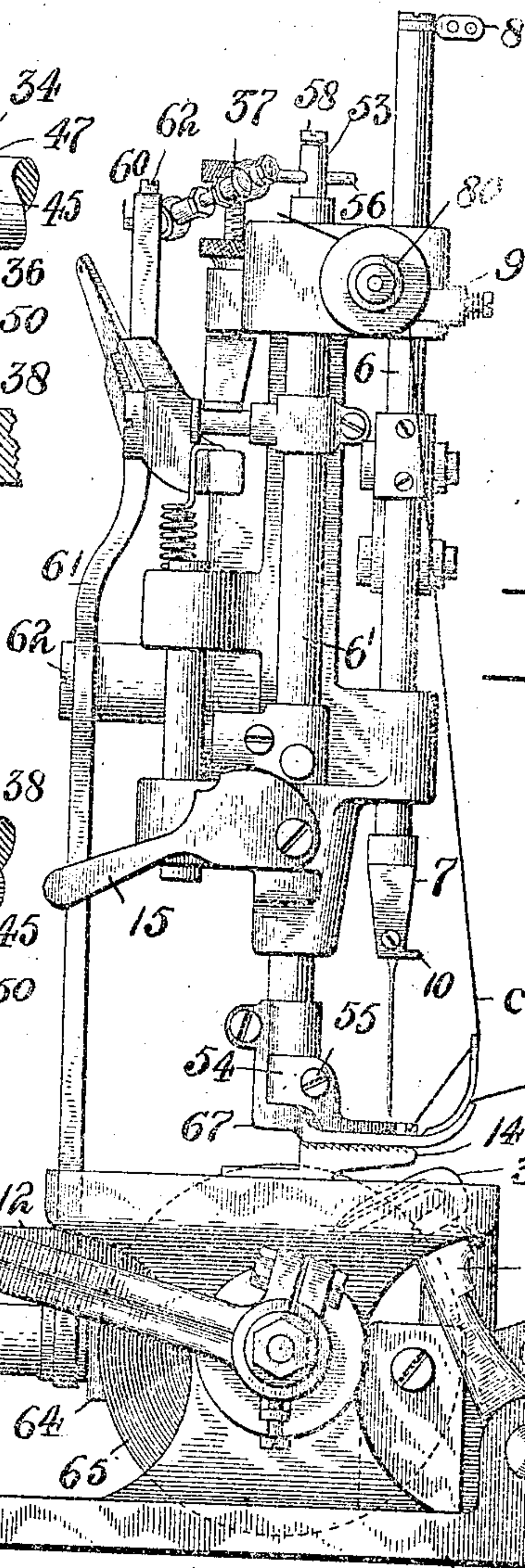


Fig. 5.

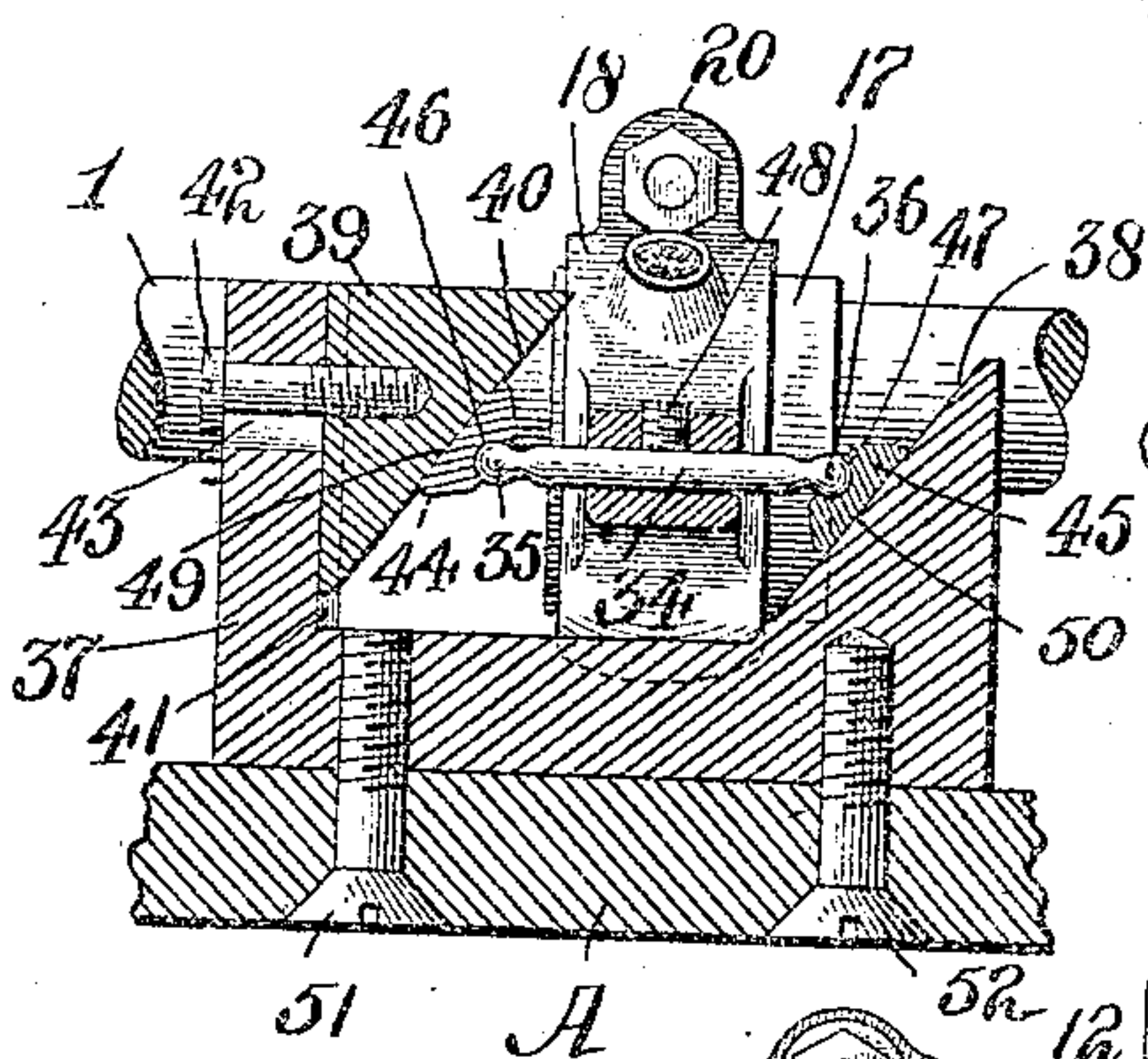


Fig. 17.

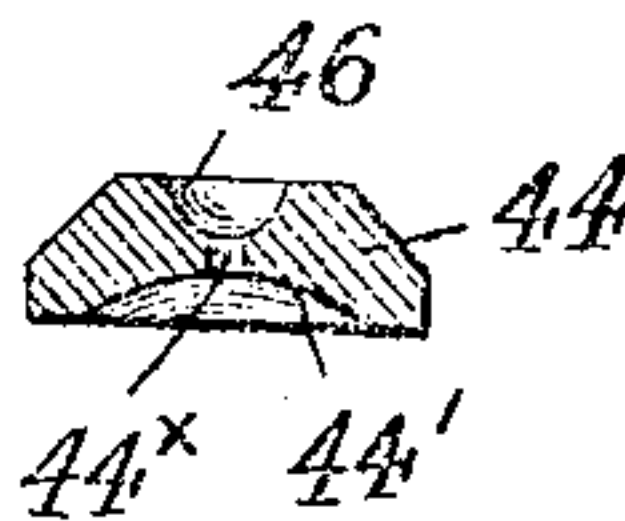
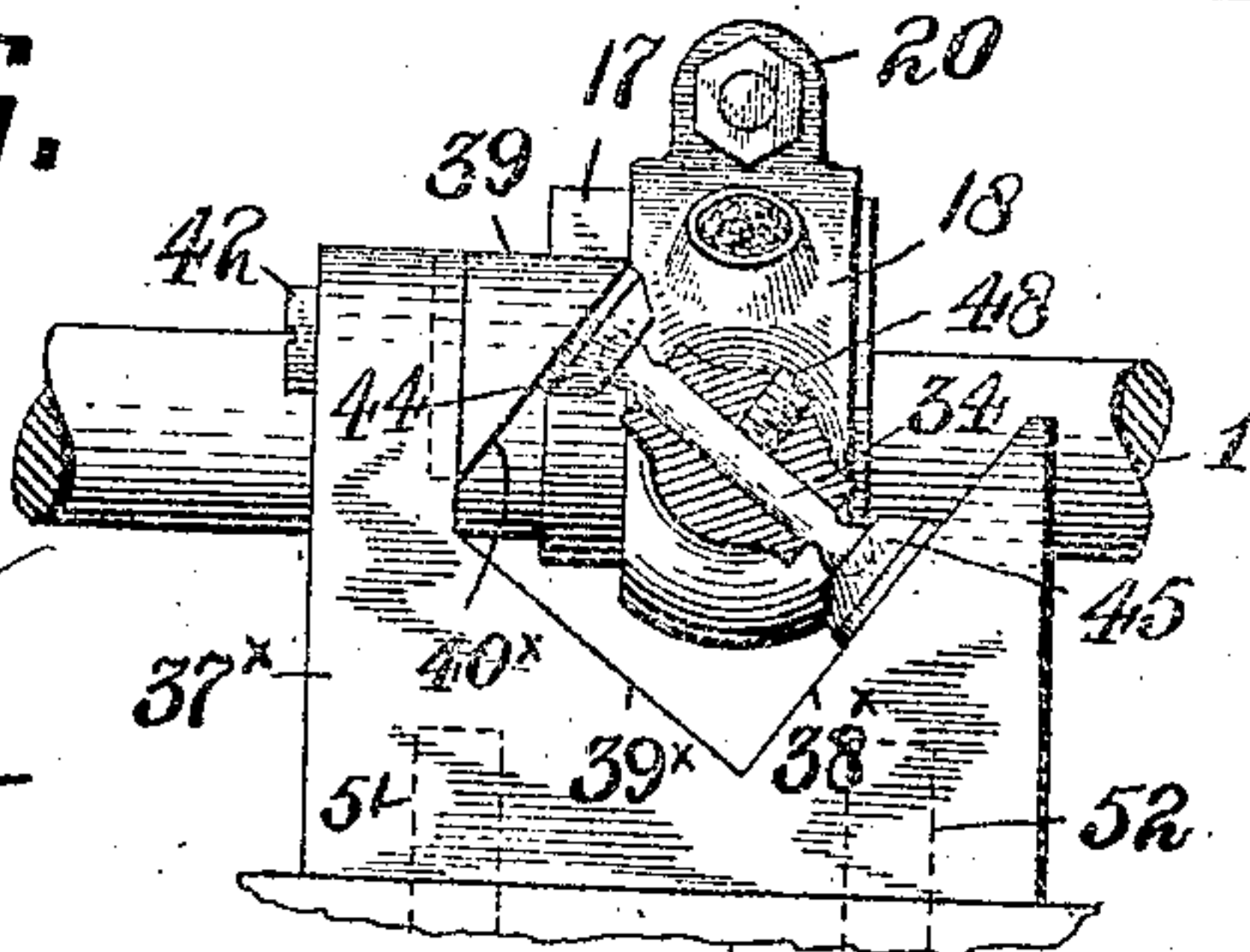


Fig. 6.



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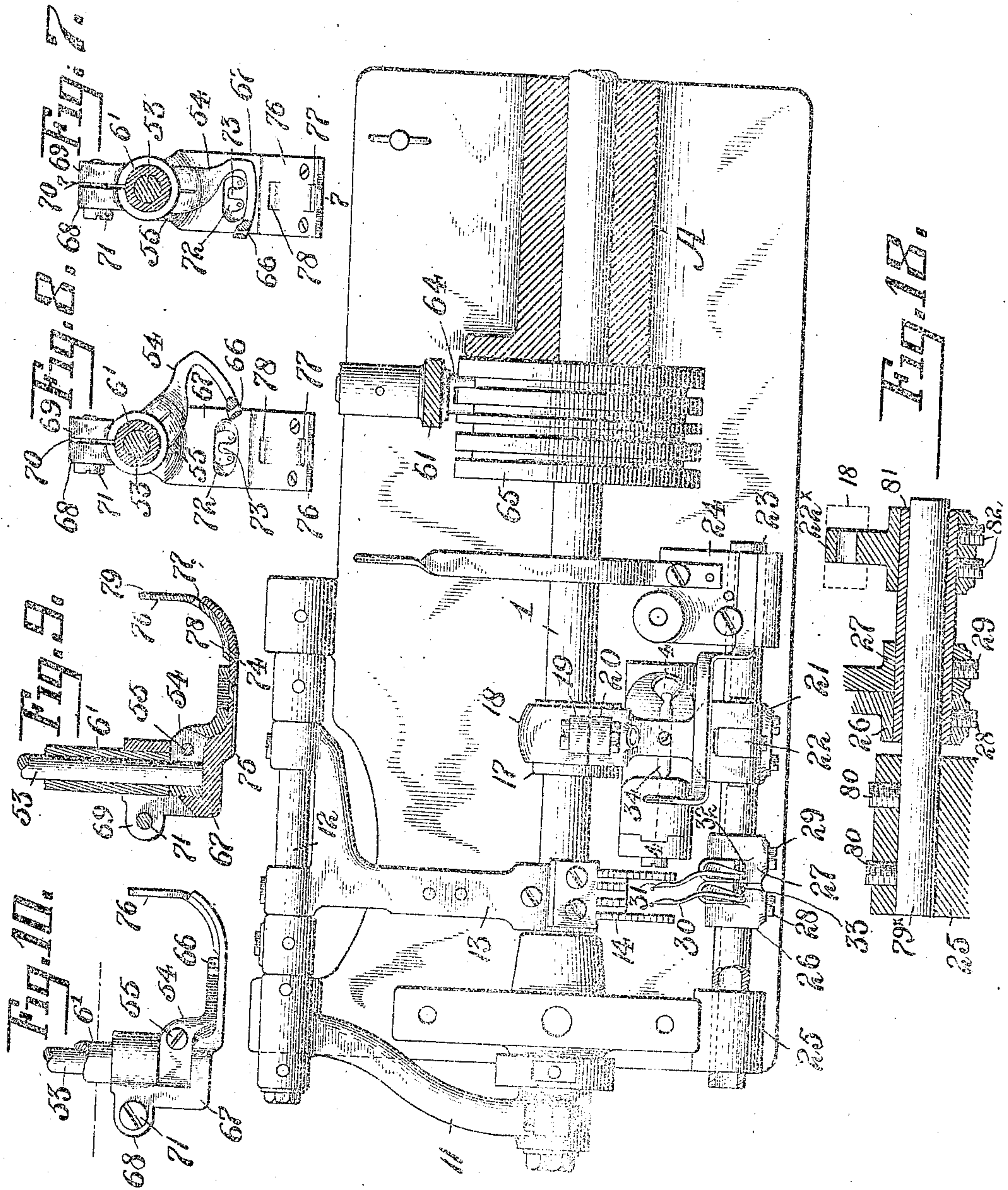
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4 SHEETS—SHEET 3.



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Fig. 3.

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4 SHEETS—SHEET 4.

Fig. 11.

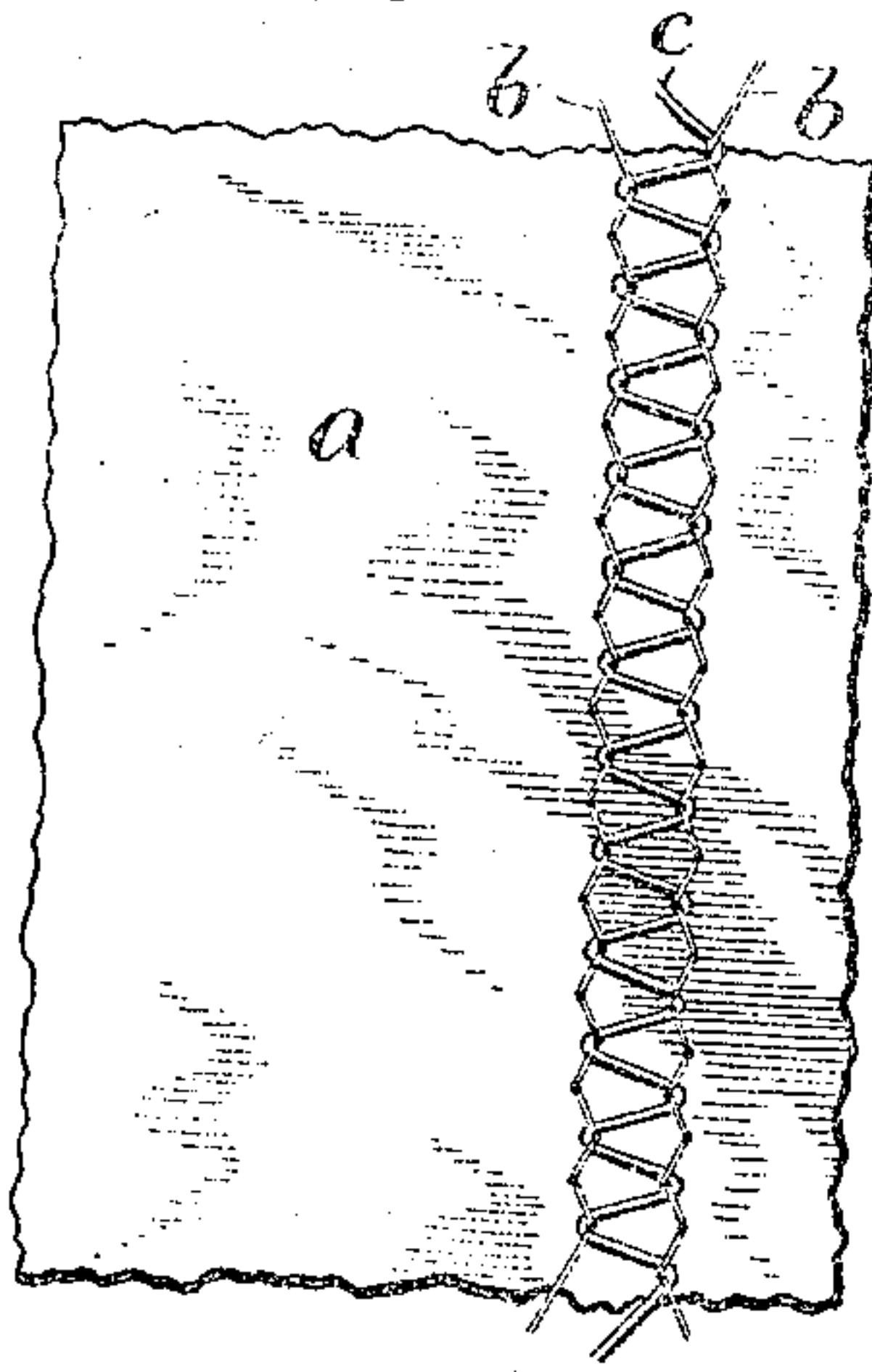


Fig. 12.

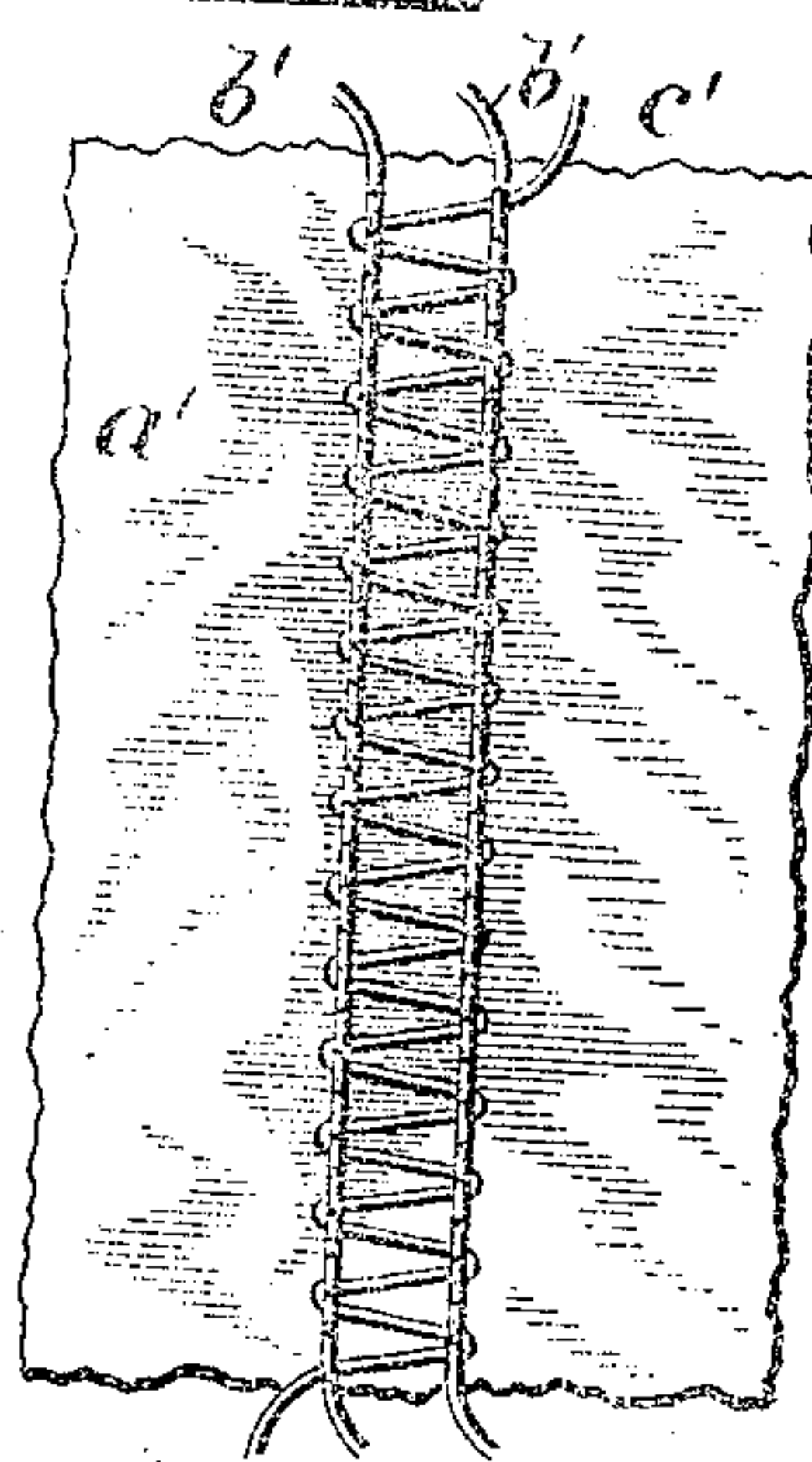


Fig. 13.

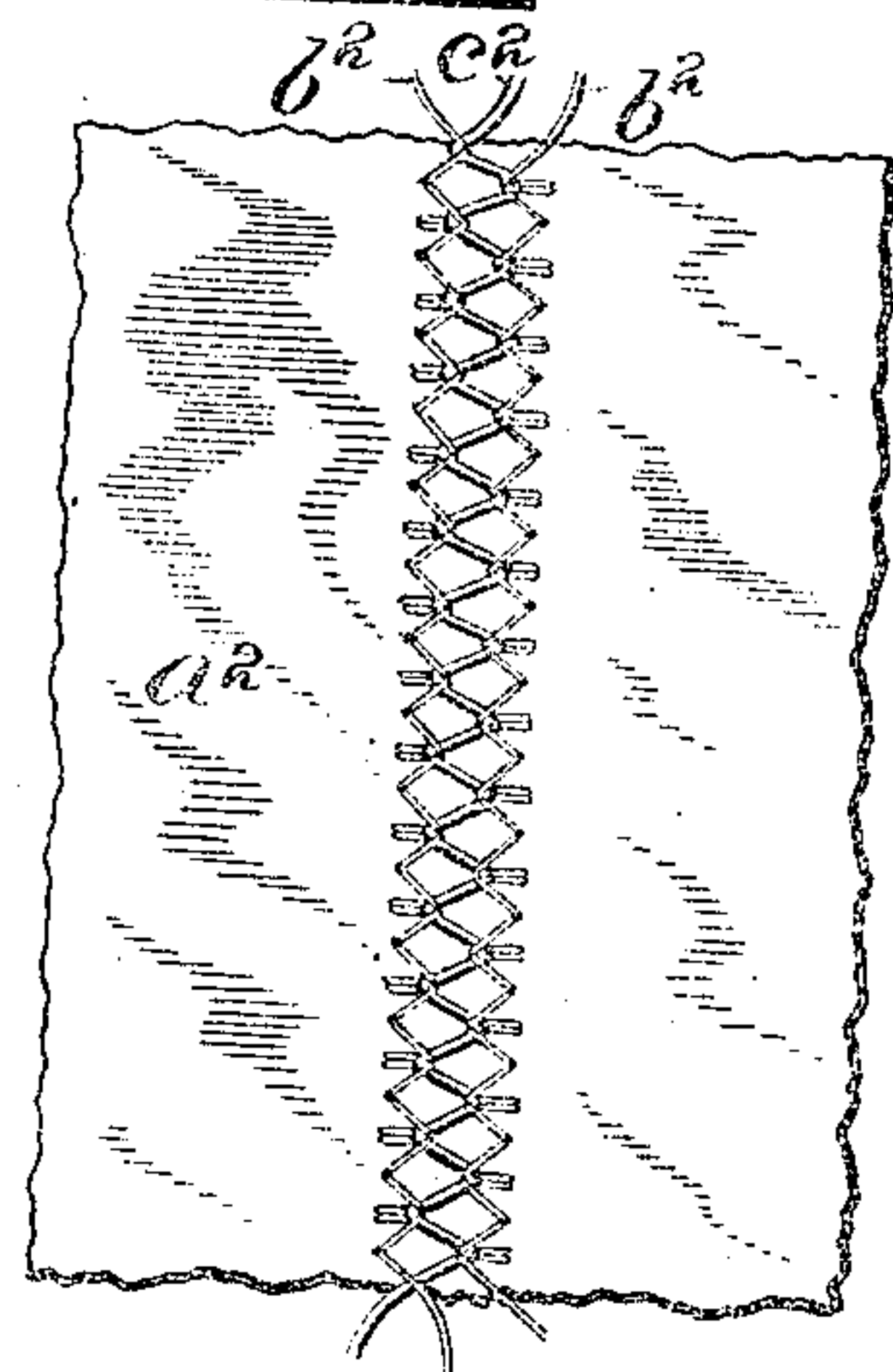


Fig. 14.

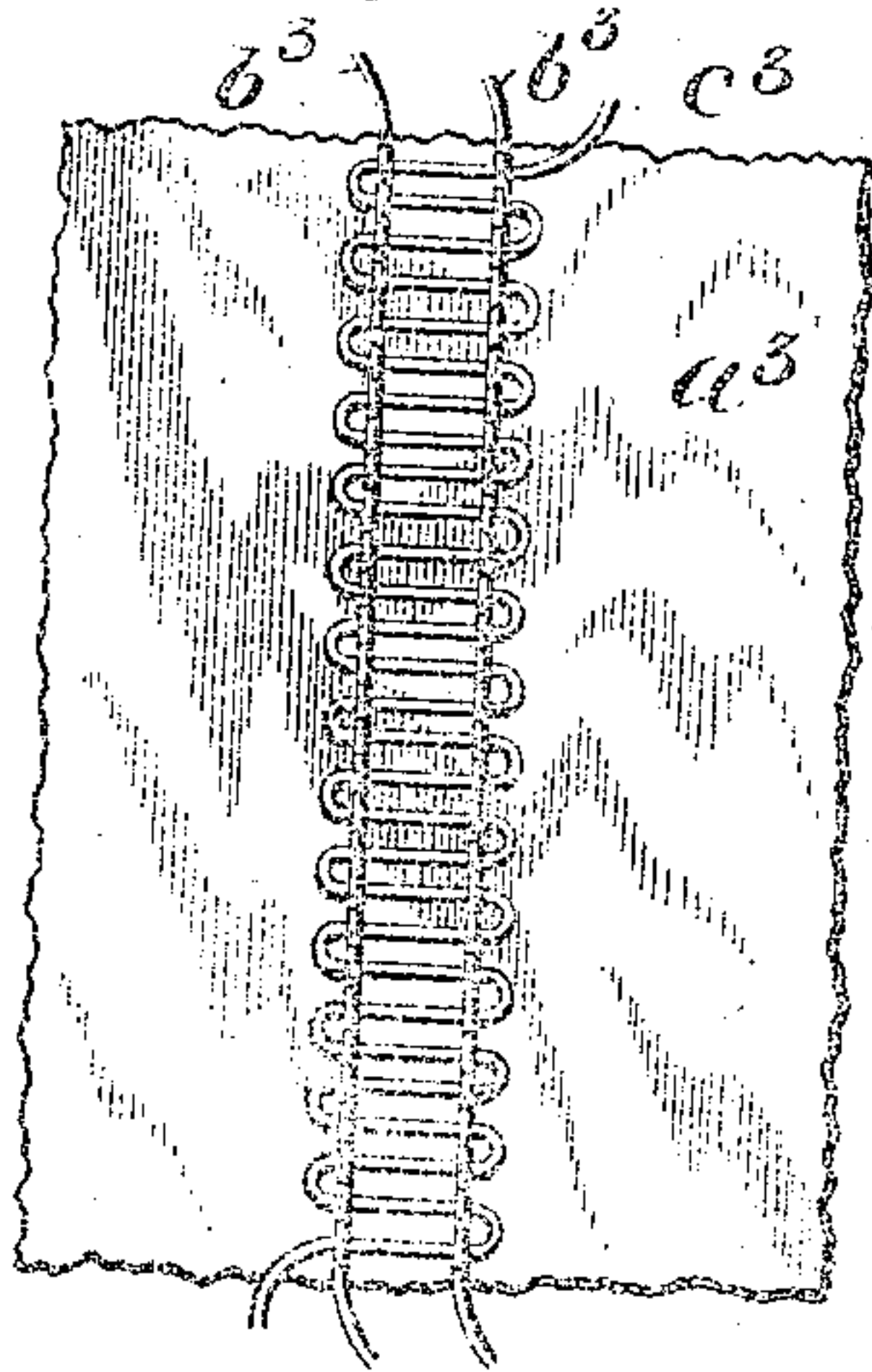


Fig. 15.

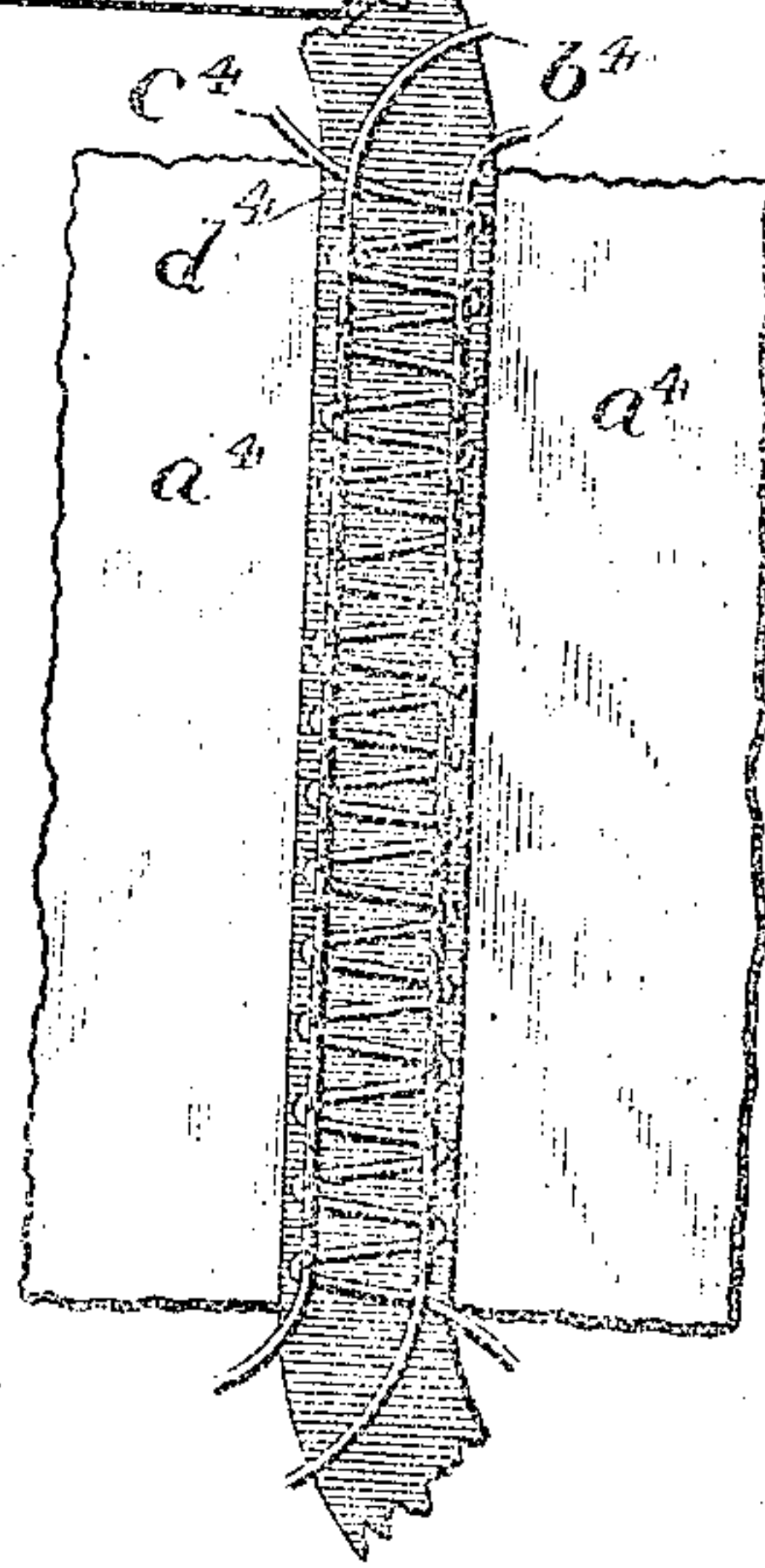
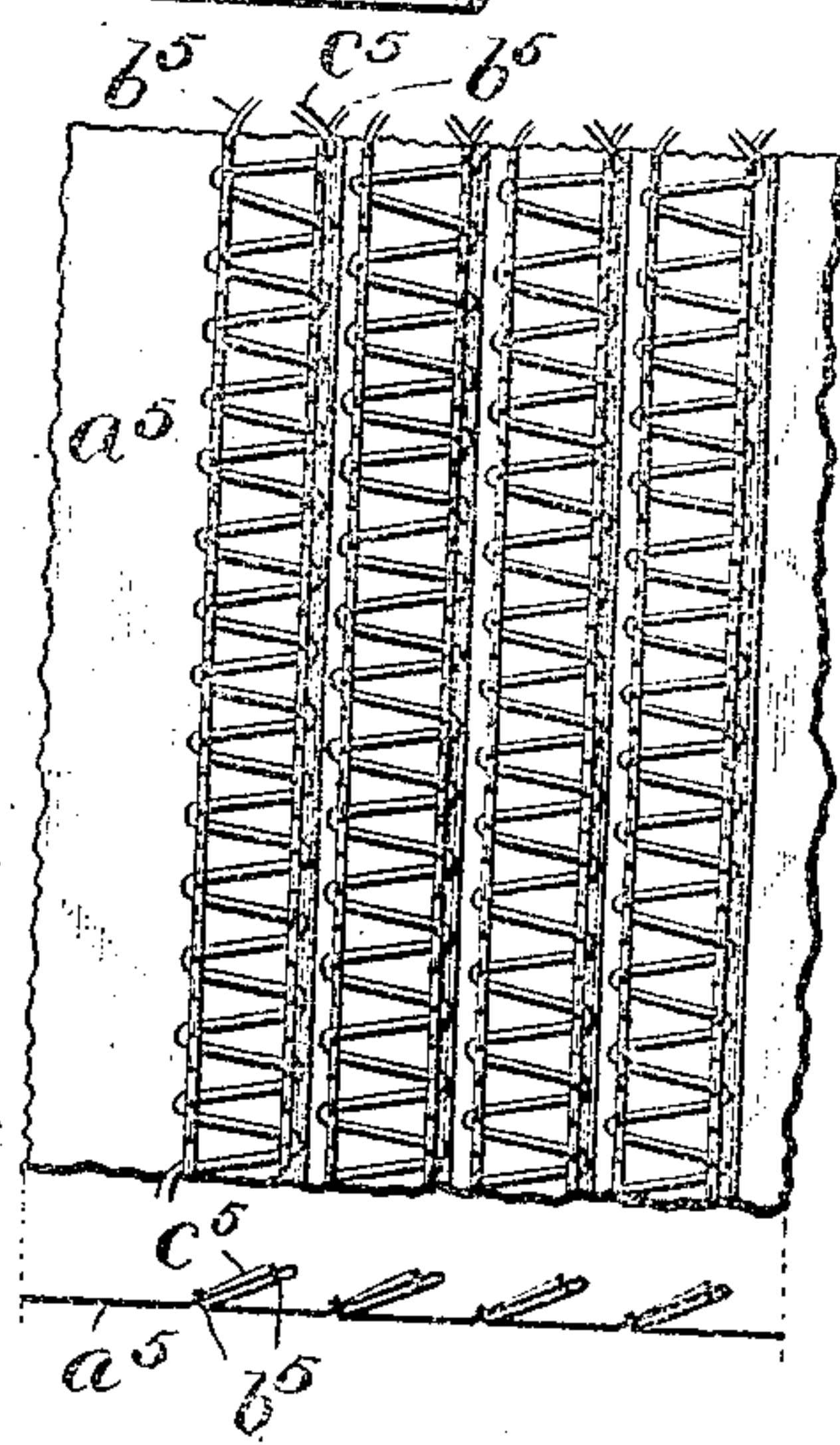


Fig. 16.



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UNITED STATES PATENT OFFICE.

WILLIAM N. PARKES, OF BROOKLYN, NEW YORK.

SEWING-MACHINE.

No. 875,615.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed October 3, 1903. Serial No. 175,595.

To all whom it may concern:

Be it known that I, WILLIAM N. PARKES, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Sewing-Machines, of which the following is a description.

This invention relates to the class of sewing machines in which a double-chain-stitch is made, but is not intended to be confined exclusively to said class, as it is evident, as will appear from the drawings and specifications, that it may be used for various other purposes.

The main object is to provide means whereby the looper of the under-stitch forming mechanism may be given longitudinal and lateral reciprocating movements from a single source.

In sewing machines of this class the looper is usually given a longitudinal reciprocating movement from an eccentric or cam and intermediate mechanism and a lateral movement from a second eccentric or cam and intermediate mechanism. In other words, the several different movements are usually derived from several different sources.

In the preferred form of my invention, as herein disclosed, all the movements of the looper are derived from a single eccentric or source of power.

Another object of this invention is to provide an auxiliary looper which is operated above the work-plate and which passes an auxiliary cord or thread back and forth so that it catenates and is stitched down by the needle-threads, two or more needles being used for this purpose and two or more loopers to cooperate with the said needles to form the lock on the under side.

I have so formed and located the parts in this machine that it is adapted for a very high rate of speed such as is desired in the present advanced state of manufacturing.

Another object of this invention is to provide mechanism whereby this high-speed double-chain-stitch machine may be made or converted into an ornamental stitch machine which will do, or is adapted for, various kinds of ornamental work.

It is also an object of this invention to provide, in this class of sewing machines more particularly, but for various other classes as well, a very compact mechanism, simple in form, which operates an auxiliary looper down through the hollow presser-bar and

which permits the presser-bar to be lifted without in any way interfering with the looper mechanism or displacing it in any manner.

It is a further object of this invention to provide a presser-foot especially adapted for the production of the ornamental stitch of this machine, and also adapted to carry or feed to the work and under the needles ribbon or other suitable material for adding to the ornamental effects which may be produced by the machine, or for stitching said ribbon or tape to such material as may be advantageous or necessary to prevent the stretching of the seam, or otherwise improving or ornamenting the latter.

It is also an object of this invention to provide a presser-foot with an auxiliary piece or means, for guiding the ribbon, which may be readily removed and a piece of a different character substituted so as to guide broader or narrower ribbon under the needles or between the stitching of the needles.

Referring to the drawings, Figure 1 is a rear elevation of my machine, the cloth-plate and parts of the feed being omitted for clearness. Fig. 2 is an end elevation of the same. Fig. 3 is a top plan view, the goose neck or over-hanging arm being removed for clearness. Fig. 4 is a sectional view on line 4-4 of Fig. 3 showing the position of parts when the loopers are approximately at the commencement of the loop engaging movement. Fig. 5 is a sectional view on the same line (4-4 Fig. 3) showing the position of parts when the loopers are approximately at the point of casting off the needle-loop. Fig. 6 is an elevation of a modification of the looper-driving mechanism. Fig. 7 is a top plan view of the presser-foot and looper carried thereby, in one position. Fig. 8 is a top plan view of the same, in another position. Fig. 9 is a sectional view on line 7-7 of Fig. 7. Fig. 10 is a side view of the presser-foot. Figs. 11 to 16 inclusive illustrate some of the stitches and ornamental effects which can be produced on the machine. Fig. 17 is a sectional view of one of the bearing blocks, showing the detail of the construction permitting the same to be lubricated. Fig. 18, is a sectional view disclosing a modification in my invention.

In the drawings, A, represents the frame of the machine; 1, indicates the driving-shaft; 2, the needle-bar driving-lever only partly shown; 3, the connection between the

lower shaft and the needle-bar driving-lever, the lower end of which is formed into a strap which embraces an eccentric 4, mounted on the rear end of the driving-shaft, a driving-wheel 15, suitably formed to be engaged by an ordinary belt being mounted on the same end of the shaft; 6, is a needle-bar; 7, the needle holder; 8, thread-guides attached to the upper end of the needle-bar through which the threads are led down to and through tension guide 9, and guide 10, to the needles. The holder 7, is adapted to carry two needles.

In a way formed in the disk carried by the forward end of the driving shaft is suitably and adjustably seated a crank-pin which is embraced by one end of connection 11, the other end of said connection being connected to a feed-operating shaft 12, to which is attached the rear end of a feed-bar 13, which carries a feed-dog 14. All of this construction, so far as described, is of a usual and well-known type and forms no part of my invention. It, in connection with other mechanism partly shown but not described, constitutes a usual means for reciprocating the needle holder and bar and operating a feed mechanism. While I have selected this form of feed-mechanism and needle-bar actuating mechanism for use in combination with my invention in order to illustrate the same, it is to be understood that various other forms of feed mechanism and needle-bar actuating mechanism may be used; also it is noted suitable tension devices may be used in combination with the threads for controlling the same and setting the stitch. It is also to be noted that any suitable form of presser-bar and means for lifting same may be used. In the present instance I have shown a lever 15, suitably mounted and arranged to lift the presser-bar.

Before proceeding to a description of my invention, I desire it understood that the form herein disclosed is the preferred form at the present time, but that it may be changed in various ways without departing from the spirit of my invention.

I will now describe my invention.

On the driving-shaft 1, is an eccentric 17, embraced by a strap 18, having adjustable lugs 19 and 20, by means of which the lost motion between the strap and the eccentric may be taken up. The other end of the strap is suitably connected at 21, to the upper end of the arm 22, which is attached at its lower end to a tube or shaft 23, suitably mounted to turn and to reciprocate longitudinally in bearings 24 and 25, projecting upwardly from frame A of the machine. To the said shaft 23, are attached looper carriers 26 and 27, by means of screws 28 and 29, respectively. In the said carriers are mounted loopers 30 and 31, respectively, which may be provided with means for carrying a thread as shown in Fig. 2, secured by means of the

screws 32 and 33. The strap 18, is adapted to slide or vibrate laterally on the eccentric 17, and the shaft 23, is adapted to turn and to slide laterally in its bearings. Intermediate the ends of the strap 18, I insert a pin 34, which has balls 35 and 36, formed on its ends. Suitably attached to the frame A, of the machine and projecting upwardly therefrom is a bearing 37, on which is formed incline surface 38, and to which is attached an adjustable piece 39, on which is formed an inclined surface 40, the piece or block 39, being keyed in a way 41, so as to be adjustable vertically in the bearing 37, and screw 42, serving as a means for securing the piece 39, to the bearing 37, and the slot 43, serving as a means for permitting the said piece 39, to be adjusted vertically. Between the ends of the pin or bar 34, and the inclined surfaces 38, 40, I insert shoes 44 and 45, in which are formed sockets 46 and 47, suitable to embrace a part of the ball ends 35 and 36, of the pin 34. The screw 48, serves as a means for holding the pin 34, in the connection 18. The shoes 44 and 45, may have flat surfaces 49 and 50, which engage the inclined surfaces 38 and 40, as in Figs. 4, 5, 6; but, the preferred form of my invention is to have the shoes 44, 45, made hollow on their bearing faces, as at 44', Fig. 17, and with a central bore or aperture 44". This construction permits proper lubrication and it is found that the cup formation prevents the escape of oil or other lubricant.

In the present form of my invention, I have shown the bearing 37, attached to the frame A of the machine by means of screws 51 and 52.

The operation of this looper mechanism is substantially as follows: As the shaft 1, is revolved, the hollow-shaft 23, is oscillated and consequently the loopers are reciprocated. As the connection 18, slows up in its extreme forward movement from the operator, the forward movement of the loopers slows up until they reach the extreme of movement in this direction. At this point the strap end of the connection 18, is traveling at its highest speed downwardly, consequently the loopers are being passed at their highest speed laterally preparatory to the needles descending in the loop of the looper-thread. As the loopers reach their extreme backward position or toward the operator, or as the eccentric moves on to this extreme, the return motion is also slowing up until it stops. At this point, the strap end of the connection 18, is moving upwardly at its highest speed and consequently the loopers are being rapidly moved laterally in position to engage the needle-thread loops, the inclines 40 and 38, being sufficient to give the desired lateral movement for these loop engagements.

I will now describe my auxiliary looper

mechanism by means of which this machine is converted into a very high-speed special machine for ornamental seam covering, ornamental stitching, ornamental ribbon insertion and other purposes.

In suitable bearings formed in the forward end of the goose neck or the frame of the machine, is mounted, as before mentioned, a presser-bar 6'. In this presser-bar 6', I form a long bore, which extends the full length of the presser-bar; or I use a tube for this purpose. In the said bore, I locate to turn freely, a looper carrier rod 53, to the lower end of which I clamp a looper 54, by means of a screw 55. In the upper end of the looper-rod and transversely of the same, I locate adjustably a stem 56, projecting from a ball 57, and I secure the said stem 56, in its receptacle by means of a screw 58. One end of the connection 59, is suitably formed to embrace the ball 57, and the other end of the said connection 59, is suitably formed to embrace a ball, not shown, formed on the end of a pin 60, which pin is secured to the upper end of a lever 61, by means of a screw 62, the lever 61, being pivoted at 62' to a suitable bracket 63, which is attached in a suitable manner to the frame A of the machine. In the lower end of the lever 61, is suitably mounted a switch-cam shoe 64, which engages with a switch-cam 65. This switch-cam 65, is so constructed and of such size that it moves the lower end of the lever 61, or gives the lower end of the said lever 61, a complete movement back and forth to two revolutions of the shaft 1. This movement of the switch-cam is the same as used in zig-zag or buttonhole sewing machines. It will now be seen that in operating the machine, the lever 61, will be oscillated and through its connection with the upper end of the looper-rod or carrier 53, said carrier will be oscillated and with it the looper 54. It will also be seen that by adjusting the stem 56, in the upper end of the looper-carrier 53, so as to bring the end of the connection 59, toward or from the said looper-carrier, that the extent of the movement of the looper will be increased or decreased. In the free end of the looper 54, is formed a thread or cord eyelet 66, by means of which the auxiliary thread or cord is passed back and forth under the needles.

I will now describe the preferred form of presser-foot, which I provide for use in combination with my looper movement.

The presser-foot in general I number 67. The upper end of the presser-foot 67, is suitably formed to embrace the lower end of the presser-bar 6'. Lugs 68 and 69, are formed on the said presser-foot separated by a slot 70, extending between the said lugs into the presser-bar socket, a clamping screw 71, being suitably located in said lugs to clamp the presser-foot securely to the

lower end of the presser-bar. The presser-bar is suitably formed as shown in Fig. 9, to permit the shank of the looper 54, to be clamped to the lower end of the looper-rod 53. For this purpose the shank of the looper 54, is of sufficient extent to just fit in the opening in the presser-foot, and when secured in place prevents longitudinal movement of the looper-rod 53.

A suitable opening 72, is formed through the presser-foot to permit the free passage of the needles and the free drawing up of the loops, the tongue 73, being provided to assist in holding the work down and for the purpose of taking the strain off the auxiliary looper or thread. A channel or guide 74, is formed through the presser-foot for the passage of ribbon or the like, and a groove 75, in the bottom of the presser-foot is formed slightly deeper back of the needle to permit of the passage of the auxiliary cord or looper-thread and the ribbon. The front end of groove 75, is not formed quite as deep as at the rear end because only the ribbon passes in front, the auxiliary thread or cord being swung back and forth over the tongue 72, then passing on back of the needles.

On the forward end of the presser-foot is a detachable piece 76, through which ribbon guide openings 77 and 78, are formed. This detachable piece 76, has an upwardly extending part through which the hole or eye 79, is formed which serves as a guide for the auxiliary cord or thread. This location of the eye for the cord or thread makes it unnecessary to have any take-up for the said cord; and this piece 76, being detachable, makes it convenient to change it for a piece with narrower or wider ribbon guide openings.

For the purpose of regulating the tension on the auxiliary cord or thread, I provide a tension device 80, which is conveniently located so that the auxiliary thread or cord can pass directly through the same to the eye 79. This tension device is of usual construction and need not be here specified. In practice, I employ a very slight tension on the cord when running in the ribbon or when it is desired to have a cord extend from needle to needle; but when tension is applied, the cord is disposed substantially as shown in Fig. 11, wherein the fabric is indicated by *a*, the needle-threads by *b*, *b*, and the cord by *c*. By applying light tension to the cord an embroidery seam will be produced as shown in Fig. 12, wherein the needle-threads are indicated by *b'*, *b'*, the cord by *c'*, and the fabric by *a'*. This forms a desirable ornamental stitch for the surface of the work, and also a seam-covering stitch, inasmuch as the stitches may be very short and the cord made to practically cover the adjacent or joined edges. By varying the tension on the cord, different ornamental

effects can be obtained, as for example shown in Fig. 13, wherein a^2 is the work, b^2 , the needle-threads and c^2 , the cord. By allowing the cord to run practically free of tension, the effect shown in Fig. 14 will be produced, wherein a^3 is the work, b^3 , the needle-threads and c^3 , the cord. In Fig. 15, two different pieces of work are shown at a^4 , the joining seam being covered by ribbon or tape d^4 , which is secured in place by the stitching b^4 , and the cord c^4 . This makes a strong and ornamental seam-cover. Tucking can be produced and ornamented as shown in Fig. 16, the work, a^5 , being formed into tucks d^5 , which have the ornamental cord c^5 , applied thereto by stitching b^5 . Obviously, many different forms of work and ornamental effects can be produced on my machine as desired. And it should be understood that the stitching may be applied to the surface of the work, to cover a seam, or to form the junction between two pieces of work.

In the modified form shown in Fig. 6, all the essential parts are substantially the same and have the same reference characters applied thereto as in the other figures; but, the bearing for controlling certain of the movements of the looper is differently formed. For example, I form a bearing 37^x with all its walls inclined as at 38^x, 39^x, and 40^x, the piece 39 being adjustable as in the other form. This disposition of the wall of the bearing piece is accompanied by a disposition of the pin 34 at an angle to the driving shaft instead of parallel therewith as in the other form. In this way the pin 34 engages the shoes 44, 45, in a line parallel with their bore 44^x instead of at an angle thereto.

Another form of my invention is illustrated in Fig. 18 wherein 25 represents the standard or bearing for a short pin 79^x held in said bearing by screws 80 tapped therethrough and engaging said pin. The pin projects sufficiently from the bearing to afford support for a sliding sleeve 81 to which the looper carriers 26 and 27 are rigidly secured by means of the screws 28 and 29 tapped through said carriers and engaging said sleeve. Adjacent the looper carriers this sleeve has secured thereto the crank-arm 22^x to which the eccentric strap 18 is pivotally secured as in the other figures. The crank-arm 22^x is held to the sleeve by means of the set-screws 82 tapped through the bearing of the crank-arm and engaging said sleeve. This construction forms a simple and compact bearing for the support and actuation of the loopers, the sleeve 81 rocking and sliding on the journal pin 79^x to give the loop-taking and needle-avoiding movements in substantially the manner of operation of the hollow shaft 23.

While I have chosen to illustrate my looper mechanism in a machine having a plurality

of needles, it will be obvious that a single needle machine is within the contemplation of my invention.

I desire it understood in connection with this invention that I do not wish to be limited to the form of auxiliary looper herein disclosed, nor to the particular form of presser-foot. In fact, various changes may be made without departing from the spirit of my invention as before stated.

What I claim is:

1. A sewing machine comprising a part which carries a looper, a revolving shaft which carries an eccentric or cam, a pitman connection between said eccentric and said part, and means engaged by said pitman whereby longitudinal movement of the pitman causes bodily lateral movement of the same.

2. A sewing machine comprising a revolving shaft, an eccentric carried by said shaft, a rocking shaft the axis of which is parallel with said revolving shaft, a connection between said eccentric and said rocking shaft, means engaged by said connection whereby the longitudinal movement of the same causes rocking and longitudinal movement of said rocking shaft, and a looper carried by said rocking shaft.

3. In a sewing machine, a revolving shaft, an eccentric carried by said shaft, a rocking shaft, a looper carried by said rocking shaft, an arm carried by said rocking shaft, a pitman directly connecting said arm and said eccentric whereby said rocking shaft is oscillated, and means engaged by said pitman whereby the movement of the same causes said rocking shaft to move longitudinally.

4. A stitch-forming mechanism for sewing machines comprising a needle and cooperating looper, a carrier for said looper, an actuating cam, a single driving connection between the cam and looper carrier, and means whereby said connection is given longitudinal reciprocations and sidewise bodily movements.

5. A sewing machine comprising a revolving shaft disposed in a horizontal plane, an eccentric carried by said shaft, a second shaft parallel with said revolving shaft, a single connection between said eccentric and said second shaft whereby the second shaft is oscillated, a stationary part with which said connection engages so constructed that said second shaft is reciprocated longitudinally thereby, and a looper carried by said second shaft.

6. A sewing machine having a looper that is adapted to be moved longitudinally and laterally, a single revolving device and means for converting the movement of the same into longitudinal and lateral movement of said looper comprising a pitman connection, and a part having stationary in-

clined surfaces between which said pitman operates and by means of which said pitman is moved laterally.

7. A sewing machine having a looper, means for operating said looper comprising a part having two surfaces that are inclined to the vertical and parallel with respect to each other, a revolving shaft, an eccentric carried by said shaft, one end of a strap pitman journaled on said eccentric, said strap pitman in engagement with the inclined surfaces of said part, and a connection between said pitman and said looper by means of which the looper is operated.

8. A sewing machine comprising a looper, means for operating said looper comprising a stationary part having two inclined surfaces that are parallel with respect to each other, means for oscillating said looper longitudinally, and means intermediate said inclined surfaces and said looper whereby said surfaces cause said looper to be moved laterally.

9. A looper mechanism for sewing machines comprising a loop-carrier, and means for actuating the same including a driving-shaft carrying a rotary device and a single connection between the latter and the carrier having means cooperating therewith between its ends for imparting to it and to the carrier bodily movements relatively to the said device.

10. A sewing machine comprising a looper adapted to oscillate longitudinally and reciprocate laterally, means for oscillating longitudinally said looper, means for reciprocating laterally said looper comprising a part having surfaces inclined to the vertical, means for adjusting the face of one of said surfaces so as to decrease the distance between said surfaces, and a part operating between said surfaces by means of which said looper is reciprocated laterally.

11. A looper mechanism for sewing machines comprising a looper-carrier and means for actuating the same including a rotary device, a connection between the latter and the carrier, and means whereby the connection is given bodily movements, which are transmitted to the carrier, and also longitu-

dinal movements at an angle to the bodily movements, and said latter movement being on and relatively to said device.

12. A sewing machine comprising a revolving shaft that is provided with an eccentric, a strap pitman the strap end of which is journaled on said eccentric and adapted to move laterally thereon, a second shaft, a connection between the other end of said strap pitman and said second shaft, whereby said second shaft is oscillated from the movement of said eccentric, means in engagement with said strap pitman whereby when the same is operated it is moved laterally and said second shaft is thereby moved longitudinally, and a looper carried by said second shaft.

13. A sewing machine provided with a needle-bar that is adapted to carry a plurality of needles, a looper mechanism adapted to cooperate with said needles, a single driving shaft, means adapting said shaft to operate said looper mechanism, an oscillating lever operated from the movement of said shaft, means adapting said lever to reciprocate the needle-bar, a tubular presser-bar, a rod or shaft journaled in the tube of said presser-bar, an auxiliary thread carrying finger carried by said rod, and means whereby said rod is oscillated from the movement of said single shaft.

14. A sewing machine having a single revolving shaft, a plurality of needles, a plurality of loopers adapted to cooperate with said needles, means whereby said needles and said loopers are operated from the movement of said single revolving shaft, a tubular presser-bar, a rod or shaft journaled in the tube of said presser-bar, an auxiliary thread or cord carrier carried by said rod, a cam mounted on said single revolving shaft, and means adapting said cam to operate said auxiliary finger.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM N. PARKES.

Witnesses:

CHAS. MCC. CHAPMAN,
M. HERSKOVITZ.