

No. 719,347.

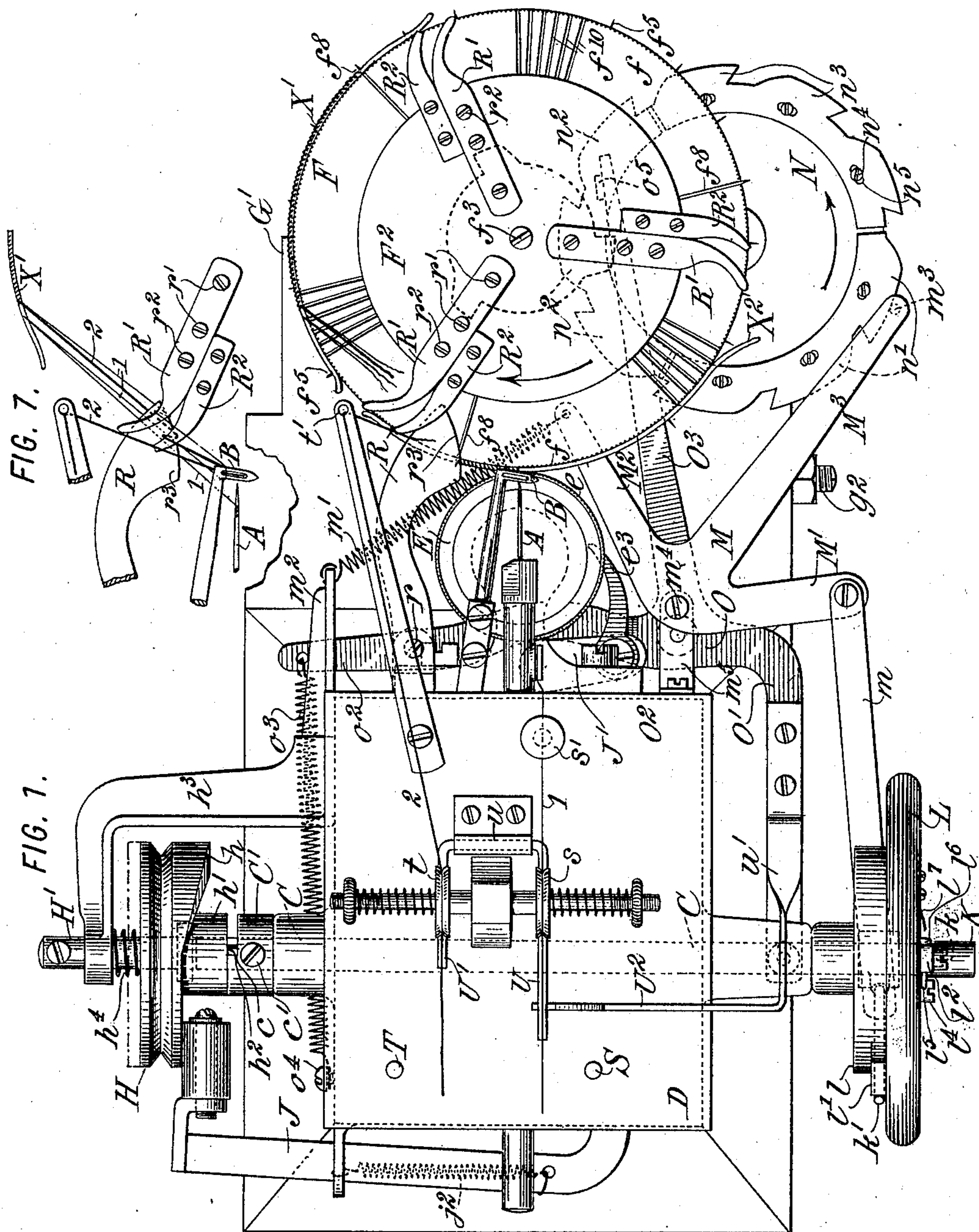
PATENTED JAN. 27, 1903.

A. E. LINDNER.
SEWING MACHINE.

APPLICATION FILED JUNE 30, 1900.

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES:

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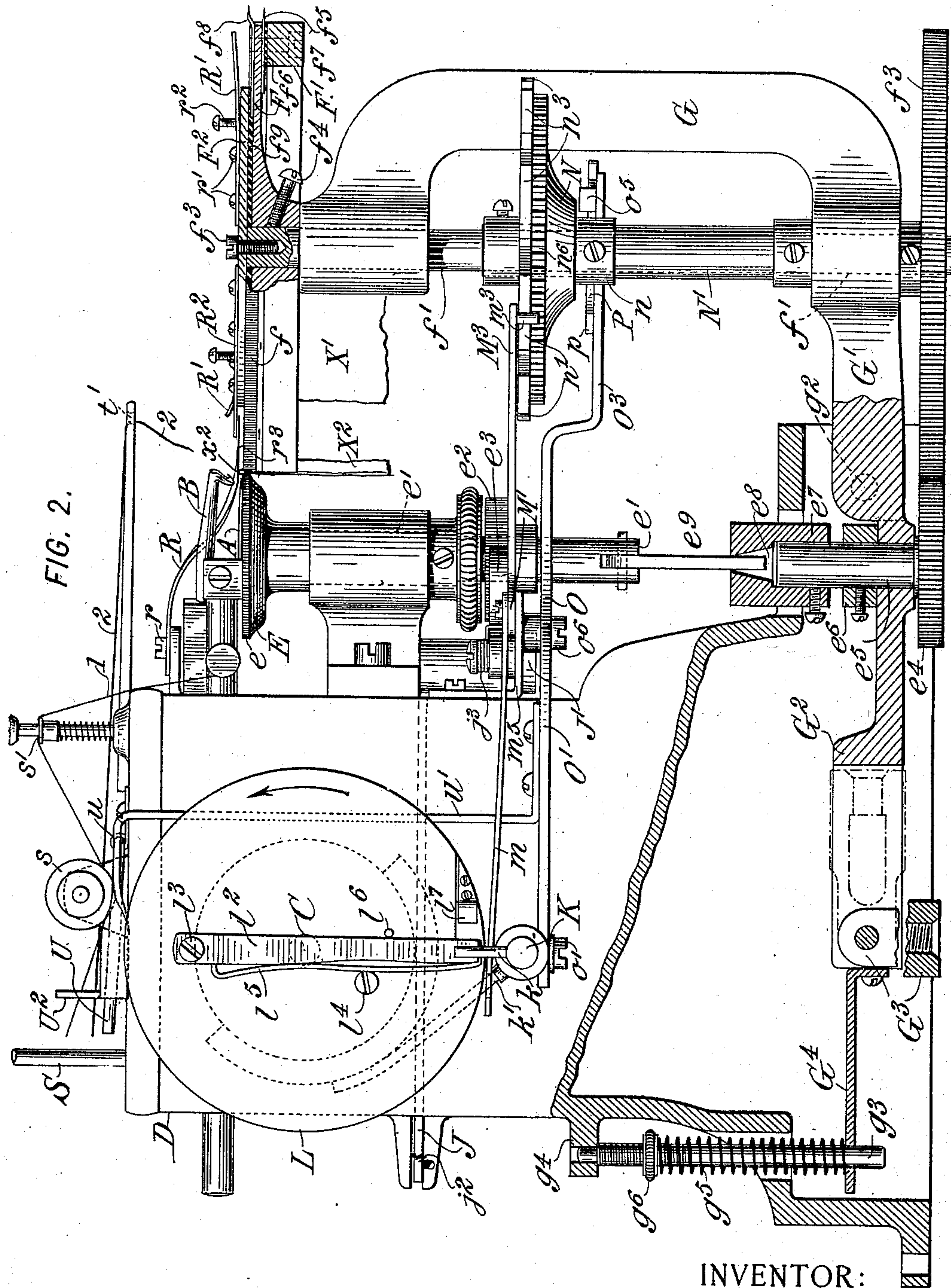
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

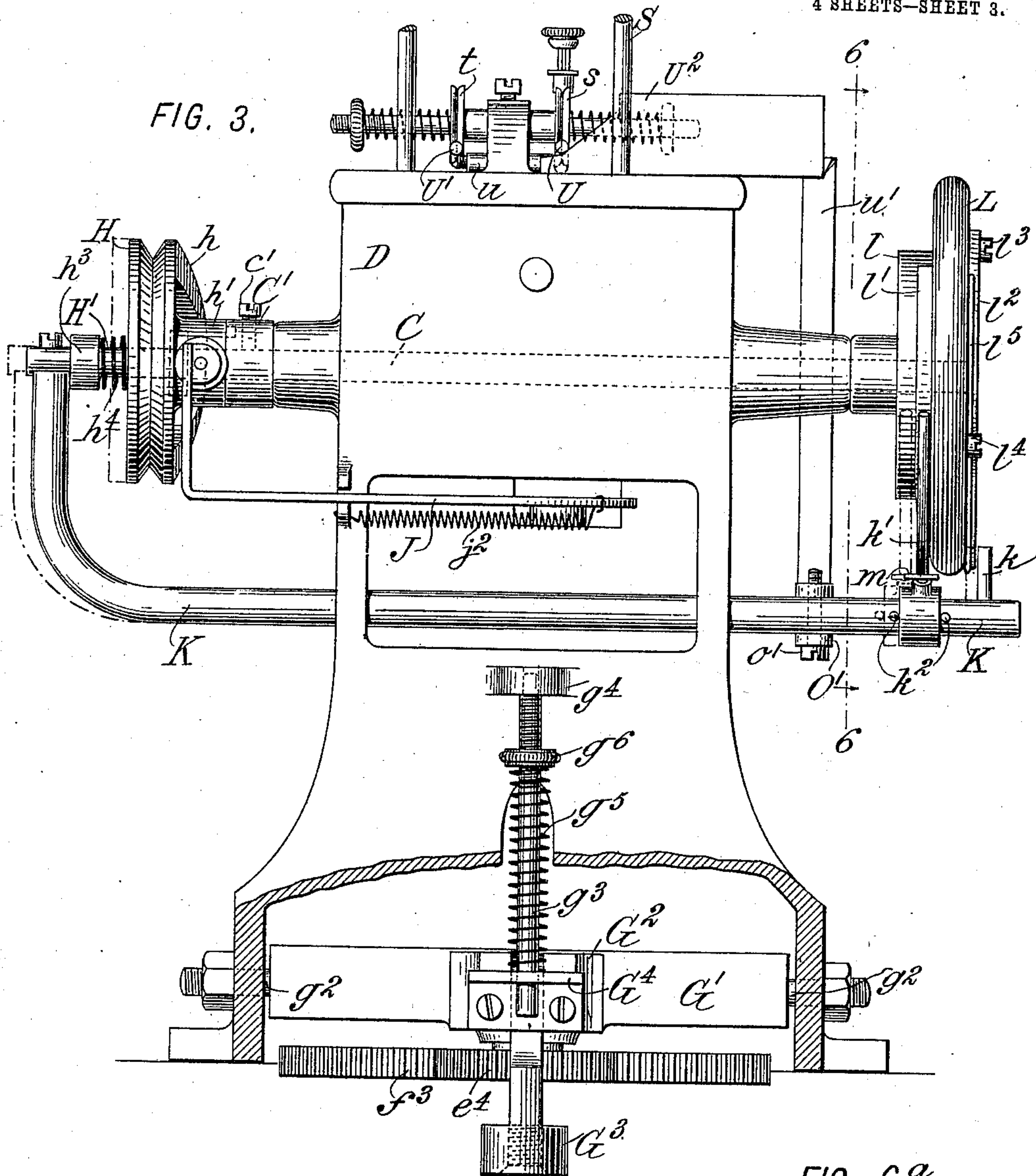
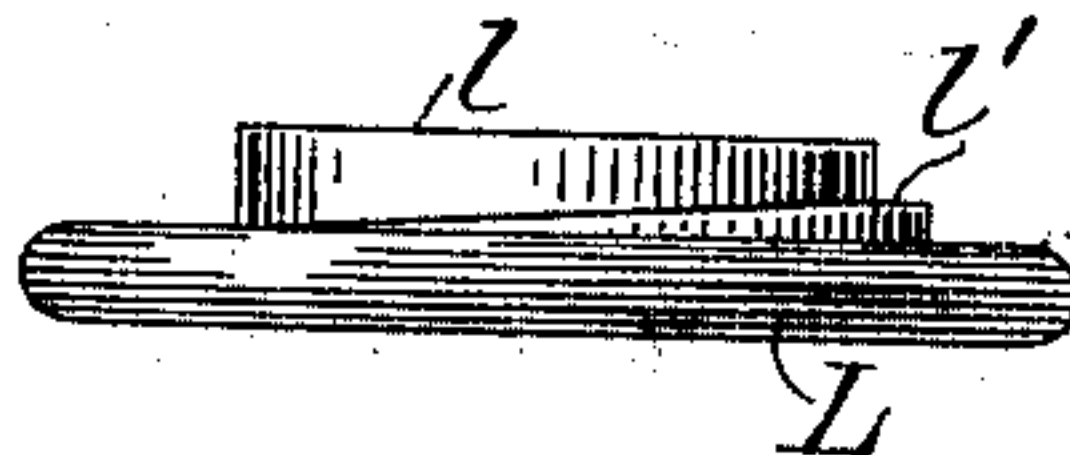
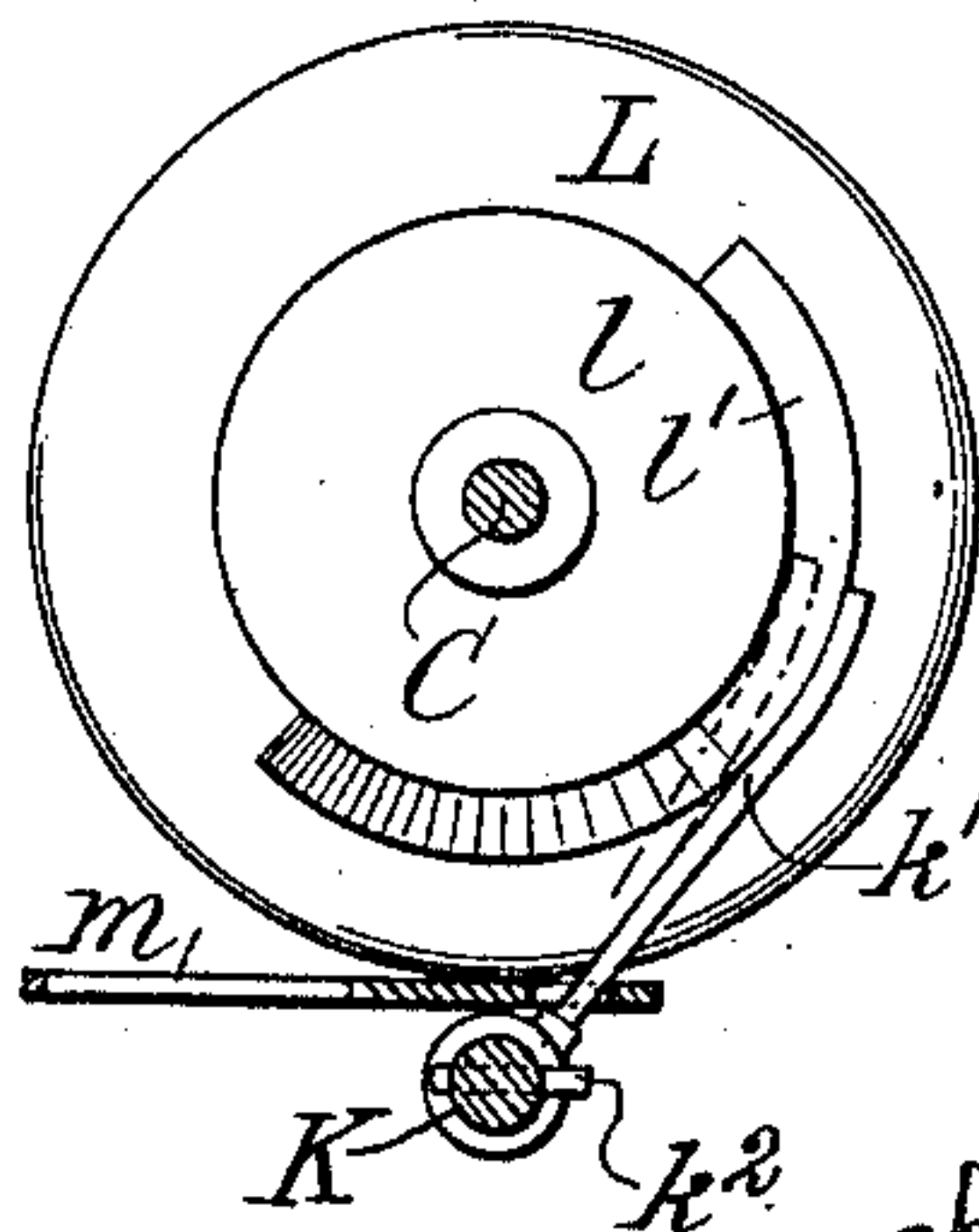


FIG. 6.a

FIG. 6.



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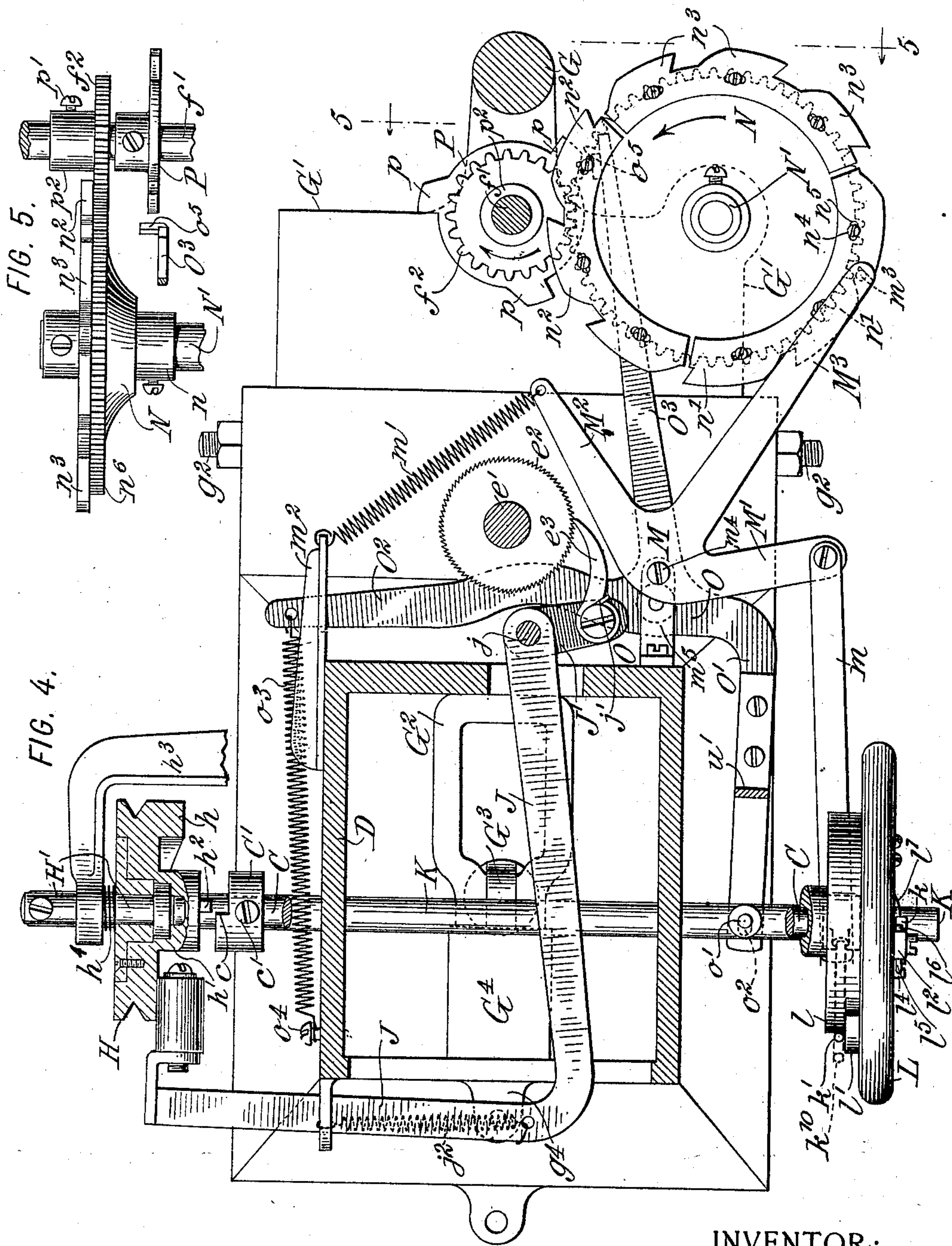
WITNESSES:
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SEWING MACHINE.

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NO MODEL.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

ARTHUR E. LINDNER, OF BROOKLYN, NEW YORK, ASSIGNOR TO OTTO J. AHLSTROM, OF NEW YORK, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 719,347, dated January 27, 1903.

Application filed June 30, 1900. Serial No. 22,167. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR E. LINDNER, a subject of the German Emperor, residing in Brooklyn, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention aims to provide an improved sewing or embroidering machine which is especially adapted to the making of a series of discontinuous seams and which finds its most obvious application in sewing or embroidering a series of small articles, such as gloves, stockings, or the like.

Prior to my invention in sewing such articles the article has been held by the machine only at a point adjacent to the needle. The operator has been compelled to guide the article to the needle, to hold the portions of the article which are remote from the needle while the seam is being made, and to take it out of the machine and cut the threads before taking up the next article. Much time has thus been employed in mere manipulation of the articles between the actual seam-making operations. By means of the apparatus of my invention the sewing, guiding, and holding of one article and the thread-cutting operations on the previous article may be carried on at different points of the machine and the following article be brought into engagement with the guiding means at a third point, all at the same time. I am thus enabled to sew and finish a number of seams on separate articles in very nearly as short a time as would be consumed in the making of one continuous seam of the same total length.

In the accompanying drawings, showing a machine constructed according to my invention and designed to make the usual rows of stitching or seams on the backs of gloves, Figure 1 is a plan of the complete machine with two gloves therein, the parts being in the position assumed just after cutting the threads between two successive seams and commencing the second seam, portions of the threads adjacent to the point of the needle being omitted for the sake of clearness. Fig. 2 is a side elevation with certain parts in section, the position being the same as in Fig. 1. Fig.

3 is a rear end elevation, partly in section, the position being the same as in Fig. 1. Fig. 4 is a horizontal section below the feeding-plates with certain parts in plan, the parts being in the position assumed at the instant of ending a seam. Fig. 5 is a fragmentary view on the line 5 5, Fig. 4. Fig. 6 is a similar view on the line 6 6, Fig. 3, on a smaller scale. Fig. 6^a is an under side view of the cam shown in Fig. 6. Fig. 7 is a plan view showing the position of the threads just before they are cut.

Referring to the drawings, A is the needle, and B the hook, as in any ordinary over-stitch-machine. These parts are driven from a shaft C, Figs. 1 and 4, by means of compound cams and levers inclosed within the casing D. E is a feeding plate or disk having a knurled edge *e*. Fixed on the spindle *e'* of said plate is a ratchet-wheel *e''*, rotated by a pawl *e'''*. The construction and operation of these parts are so well known as not to require further description. It will be understood also that my improvements are applicable to other types of machine than that shown.

In machines hitherto in use the goods are fed between the edge of the disk E and a second plate or disk of about the same size and free to rotate, whose sole function is to press the goods against the edge of the disk E to permit it to feed them forward. In such machines the operator is required to give his attention to each piece of goods during the entire period that it is in the machine and to cut the threads thereof before he can take up a new piece. My machine introduces means for engaging the goods at points remote from the needle and in the case of small pieces for engaging an entire piece of goods at once, so as to free the operator of the necessity of further attention to it.

By the term "remote" I mean to indicate an engagement at such a distance from the needle as to permit the simultaneous engagement of an additional piece of goods besides that which is being sewed as distinguished from the engagement of extra-long feed-plates or pressure-feet of the usual type. The engagement of the latter, though in a certain sense remote from as well as adjacent to the

needle, is not remote in the sense which I contemplate. Thus a plurality of pieces of goods are in simultaneous engagement with the machine and are being fed through the machine simultaneously.

For perfect work on such soft articles as those for which my machine is designed the feeder should hold the work firmly at the point which is being stitched. Accordingly I prefer that my feeder should engage the goods at points adjacent to the line of the stitches—that is to say, the line on the goods along which the stitches are to be formed.

The embodiment of my invention shown is a machine specially adapted to make the three rows of stitching which are common on the backs of gloves and which are usually of unequal lengths. For this purpose it is provided with means for automatically making the seams in three series, the seams of each series being of a uniform determined length. In the use of my machine I find it most convenient to make three seams in each series and to handle the gloves, therefore, in groups of three. First, the longest seam is made on each of the gloves, then the seam of intermediate length on each of the gloves, and finally the shortest seam on each. As soon as each seam is finished and the thread cut the glove is removed and replaced in position to receive the next seam. When the last seam on any glove is finished and the threads cut, the first glove of the next set takes its place arranged to receive its first seam, the machine having completed one cycle of operations since the first engagement of the glove now finished. Preferably each glove is brought into engagement with the edge of a rotating feed plate or disk F, which guides it to and feeds it past the needle continuously. The glove is so placed on the plate that the point at which the seam is to commence is at a determined point indicated by a mark on the plate. As this mark comes opposite the needle the needle-operating or seam-forming mechanism automatically comes into action. At a second determined point at which the seam is to end the seam-forming mechanism is automatically stopped. The operation of the stitching mechanism is thus independent of the insertion of the goods, but takes place at determined regular intervals in the operation of the feed-plate. The goods continue to be fed forward, and when the next seam has commenced the thread between the two seams is automatically cut. The glove is then by hand removed and replaced in position to receive the next seam or when it has received its last seam is replaced by a new glove arranged in position to receive its first seam. The operator is therefore freed from any work except that of changing the position of one glove or substituting a new glove as often as the machine makes a new seam.

The plate F has a knurled edge f and is carried on a spindle f' . The spindle f' is carried in bearings in an arm G, having broad

lateral extensions G' , pivoted at g^2 , Figs. 2 and 3, to the frame of the machine.

G^2 is a longitudinal extension of the arm G, bifurcated at its end and carrying a short pivoted member G^3 , which may be turned up into the bifurcation when not in use, as shown in dotted lines in Fig. 2. The member G^3 is screw-threaded at its end or otherwise adapted to have attached to it a strong spring, the other end of which is to be attached to the floor or similar fixed point of support. Where such an arrangement is not convenient, I propose to employ an additional bar G^4 , attached to or integral with the end of G^2 and passing at its outer end over a pin g^3 . The upper end of the pin is held against upward or lateral movement by being reduced and entering a hole in a lug g^4 on the casing. A spring g^5 surrounds the pin and bears down on G^4 with a force which is regulated by the nut g^6 . The plate F is thus pressed by the spring g^5 toward the plate E to hold the goods and permit the feeding thereof by the movement of the plate E. Ordinarily the engagement of the knurled edges of E and F with or without the goods between them is sufficient to rotate plate F. Where there is an appreciable resistance by the mechanism hereinafter described, I propose to assist the rotation of the plate F by a positive connection with the driving mechanism. For example, I show the spindle f' , carrying at its lower end a gear f^3 , driven by a pinion e^4 , connected to the shaft e' , the diameters of f^3 and e^4 being the same as those of F and E, respectively. To permit the very slight movement of the arm G which may occasionally be necessary, the pinion e^4 is carried by a short shaft e^5 , passing through the arm G^2 and supported thereon by a collar e^6 . A second collar e^7 is set on the top of the shaft e^5 and has beyond the end of the shaft a downwardly-flaring slot e^8 . A flat bar e^9 has its lower end in said slot and its upper end pivoted in a parallel slot in the bottom of the spindle e' . This arrangement makes a sufficiently flexible connection between the shafts e' and e^5 so that in whatever position of the pinion e^4 the machine may stop the arm G may be drawn slightly outward. In making the connection between e' and e^5 the bar e^9 is swung sidewise and the collar e^7 slid on it, after which e^9 is returned to the vertical and the collar e^7 slid down onto the shaft e^5 and fastened there.

In order to interrupt the seam, I preferably make the feeding action continuous and the sewing action intermittent by the following mechanism: H is a driving-pulley, grooved to carry the driving-belt and normally connected with the shaft C by a clutch, hereinafter described. Its inner face is provided with a cam h , acting against a roller on the end of a lever having a bent arm J, pivoted on a shaft j , Fig. 4, and having a short arm J' , at the end of which is pivoted the pawl e^3 . A spiral spring j' , Fig. 2, holds the pawl e^3 against its ratchet e^2 . The spring j^2 holds

the roller on the arm J against the cam h , thus causing a continuous feed as long as the pulley H is in motion.

For connecting the shaft C, which operates the needle and hook, to the pulley H, I provide a clutch of any convenient type. For example, I show a collar C' , shouldered at c and set on the shaft C by a set-screw c' . The pulley H has a hub h' , carrying a pin h^2 , adapted to engage the shoulder c , and so rotate the shaft C.

For giving the pulley H a clutching and unclutching movement I use a non-rotating shaft H' , supported in a bracket h^3 , attached to the casing. (See Fig. 4.) The pulley H rotates on the shaft H' , and a spiral spring h^4 assists the clutching movement. Attached to the outer end of H' is a rod or bar K, extending downward and then below and parallel with the needle-operating shaft C. (See Fig. 3.) By mechanism hereinafter described this clutch-rod K is given a movement in the direction to engage the shaft C with the pulley H, and thus commence the seam, and later in the direction to disengage the shaft and finish the seam.

The rod K carries near its end a swiveled arm k' , Figs. 3 and 6, held against longitudinal movement on the rod K by stops k^2 . On the inner face of the fly-wheel L is a hub l and a cam l' . The action of this cam when the arm k' is drawn inward against the hub l is to force the arm toward the casing and throw the rod K to the dotted position in Fig. 3 to unclutch the shaft C. I provide also a stop-motion for the shaft C, which operates to stop the shaft always at a moment when both the needle and hook are withdrawn, so as not to be caught by the goods or struck by any part of the rotating plate F. The fly-wheel L is fixed on the end of the shaft C and has sufficient momentum to produce at least one revolution after the shaft has been unclutched. At the same time that the cam l' acts on the arm k' the pin k , fixed on the end of the rod K, is drawn against the outer face of the fly-wheel L, and the latter rotating in the direction of the arrow, Fig. 2, is stopped by the bar l^2 coming against the pin k . The bar l^2 is pivoted, as at l^3 . A stop l^4 and an intermediate spring l^5 prevent the passage of the bar over the arm k when the latter is drawn inward. (See Fig. 4.) A pin l^6 holds the bar l^2 from swinging during movement of the fly-wheel, and a spring-catch l^7 prevents the wheel rebounding after it has been stopped by the arm k .

The movement of the arm k' toward and from the hub l is effected by the movement of a lever M, Figs. 1 and 4. To an arm M' of the lever M is connected a link m , which is also connected to the arm k' . As shown, Figs. 2 and 6, the end of the link m is perforated and passes over the arm k' and is supported on the rod K. The lever M has two other arms— M^2 , which is connected by a tension-spring m' to a fixed member m^2 of the frame,

and M^3 , which carries a depending pin m^3 at its end. The lever is pivoted at m^4 to any convenient fixed support, as m^5 . The spring m' operates to draw the arm k' inward, and thus unclutch the needle-operating shaft C. To throw the arm k' out and permit the re-clutching of the shaft C by the seam-commencing mechanism, hereinafter described, I provide a disk N, carrying three sets of teeth n' , n^2 , and n^3 , as shown. The arrow, Figs. 1 and 4, shows the direction of rotation of the disk. The forward ends of the teeth n' , n^2 , and n^3 are inclined and serve, through the arm M^3 of the lever M and link m , to push the arm k' away from the hub l and beyond the outer edge of the cam l' against the tendency of the spring m' . The outer edge of the tooth then holds the arm k' in this position until the seam-commencing mechanism clutches the shaft C to the driving-pulley H. This clutching action occurs nine times in one rotation of the disk N, the points of starting being at equal intervals—that is to say, at moments when the pin m^3 is at equidistant points on the disk N. The abrupt rear ends of the teeth, however, which permit the spring m' to act, and thereby effect the unclutching of the shaft, are not necessarily equidistant. Where it is desired to make the seams of varying lengths, the lengths of the teeth on the disk N are varied accordingly. In the present case I make the first three teeth n' a maximum, the second three n^2 an intermediate length, and the third three n^3 a minimum length. I furthermore provide for the simultaneous adjustment of each of the teeth of any set by making the teeth separate from the plate and each group of three teeth separate from the others and adjustable on the plate N, as by screws n^4 and slots n^5 .

For supporting the disk N, I provide an upright N' , Figs. 2 and 5, carried by the lateral extension G' of the arm G. A collar n is set on said upright below the disk N, and the latter has gear-teeth n^6 below and within the teeth n' , n^2 , n^3 . These gear-teeth n^6 engage with the teeth of a pinion f^2 on the shaft f' , whereby the disk N is rotated by the feeding mechanism.

After the sewing mechanism has been stopped by unclutching the shaft C the feeding continues for a desired interval, and the arm k' is then pushed out to the dotted position k^{10} in Fig. 4. The rod K is then free to move, and I provide the following mechanism for moving the same at a determined point of the feed, so as to commence the next seam: A lever O has three arms— O' , connected by a pin o' and slot o^3 to the clutch-rod K; O^2 , connected by a tension-spring o^3 to a fixed part of the machine, as o^4 , and tending to throw the rod K to the clutching position, and O^3 , carrying at its end a pin o^5 . To prevent the clutching action of the spring o^3 until the proper moment for commencing the seam, I provide the disk P, fixed on the shaft f' of the feeding-disk F. The outer edge of

the teeth p on the disk P bears against the pin o^5 and holds the arm O^3 of the lever O out after the arm k' on the shaft K has been moved away from the cam L' . At the proper point the end of the tooth p passes the pin o^5 , the lever O is pulled by the spring o^3 , and the arm O' throws the clutch-rod to clutch the shaft C , thus commencing the seam. The lever O is preferably pivoted at o^6 on the same support m^5 which carries the lever M . (See Fig. 2.)

The gear n^6 has three times the number of teeth on the pinion f^2 . The seam-starting disk P therefore makes one revolution for each group of teeth n' , n^2 , or n^3 on the seam-finishing disk. The pawls p determine the starting-point for each of the nine seams which are finished by the action of the disk N . When it is desired to alter simultaneously the lengths of all the seams, the pinion f^2 is loosened by withdrawing the set-screw p' , which passes through the collar p^2 on the pinion. The relative positions of disks N and P and the relative positions of the starting and ending points of the seams may then be adjusted as desired by turning the disk N .

In order to receive the goods at a point remote from the needle and carry them to the feed-plate E , the plate F is constructed as follows: A screw f^3 holds it on the end of the shaft f' , and a set-screw f^4 fixes its position thereon. A series of needle-points or pin-points f^5 project slightly from its edge, being held by a washer of rubber or the like f^6 and a ring F' , secured to the plate F by screws f^7 . Three similar pin-points f^8 , which may indicate the starting-points of the seams, lie in radial grooves in the top of the plate and are held by a sheet of rubber f^9 and a second plate F^2 , smaller than the main plate F and serving also for the attachment of the thread-cutting knives. Grooves f^{10} in the face of the plate F are for use as measuring-points in adjusting the position of the end of the seam.

For cutting the threads after finishing a seam I employ a fixed knife R , attached to a lug on the frame of the machine and located as near the plate F as possible, and a pair of movable knives on the plate F . The knife R is attached by a screw r , so as to permit adjustment to the best distance beyond the needle. The moving knives R' and R^2 are attached to the plate F^2 and move above the knife R . Fig. 7 shows the position of the threads immediately before the time of cutting them. The needle-thread 1 comes from the next to the last stitch of the goods, under the knife R and across its edge r^3 , back to the edge of the knife R' , across the edge of R' , and thence to the hook B , is looped over the hook, goes back under R to the last stitch of the goods, and thence to the needle. The hook-thread 2 passes from the hook below the upper and outer portion of the needle-thread and in a single strand over the edges of the knives R^2 and R to the next to the last

stitch of the goods. The first knife R' cuts the outer strand of the needle-thread at just about the time the following seam commences and before the completion of the first stitch thereof and the consequent doubling of the loop over the hook; but though the loop between the last two stitches is cut, yet the needle-thread still runs through the goods at the last stitch of the finished seam, and so is held tightly enough to make a neat beginning of the new seam. After the new seam is well begun and it is no longer necessary to pull the threads the hook-thread 2 is cut by the second knife R^2 . The threads are carried under the fixed knife R by the goods and over it by the movable knives, and are thus pulled against the edges of the movable knives. The edge r^3 of the knife R is at such an angle that the threads are also drawn along the blades, so as to make the cutting easier. To accurately set the height of the knife R' , I attach it to the plate by two screws r' and adjust it by a third screw r^2 , as shown at the right of Fig. 2, which is screwed through the spring-metal body of R' and bears on the plate F^2 .

S and T show the spool-holding pins, the spools being omitted for the sake of clearness. The needle-thread 1 runs through the ordinary tension-regulator and take-ups s and s' , respectively, and thence to the needle. The hook-thread 2 runs through the similar tension-regulator t , eye t' , and thence to the hook. The tension-regulators s and t consist of the well-known pairs of disks pressed together by an adjustable spring and between which the threads run.

For the purpose of relieving the excessive tension on the threads between the finishing of one seam and the beginning of the next I employ a lever having a pair of arms U and U' and pivoted at u in front of the tension-regulators. The arms U and U' are under the centers of pairs of beveled plates s and t , and the arm U is extended to the rear thereof. Under the arm U is a sliding cam U^2 , (see Fig. 3,) which is connected by a downward extension u' to the arm O' of the lever O . Whenever the shaft C is uncoupled, the cam U^2 will have its highest portion under the arm U of the lever U , whereby the plates s and also the plates t will be separated and the threads between them will be released from the extra tension.

Having made clear the functions of the various details of my machine, I will now describe the operation of the machine as a whole.

The driving-pulley H is operated continuously from any source of power. In the position of Fig. 1 the clutch $h^2 c$ is engaged with the driving-shaft C of the sewing mechanism, the sewing mechanism being operated in the usual way from the shaft. The rotation of the feeding-plate E rotates also the plate F , the gears $f^2 n^6$, and the notched plates P and N . The sewing continues until one of the notches between the teeth n' arrives at the

pin m^3 on the end of the lever-arm M^3 . (See Fig. 4.) The pin and lever-arm then move inward under the action of the spring m' , which draws the arm k' inward, and by means of the cam l' pushes the clutch-rod K and the pulley H outward and carries the pin h^2 out of engagement with the sewing-mechanism shaft. The same movement of the rod brings the pin k against the outer face of the fly-wheel L. As the latter completes its revolution to bring the needle and hook to the position of Fig. 1 the pin meets the stop-bar l^2 and prevents further operation of the sewing mechanism. The continued movement of the feeding mechanism forces the pin m^3 and lever-arm M^3 outward, which throws the arm k' outside of the circumference of the cam l' . The rod K, however, is held in the unclutching position by one of the teeth p on the starting-plate P, which presses the adjacent end of the lever-arm O^3 outward. As the tooth passes the end of the lever, freeing the same, the spring o^3 pulls it inward, throws the clutch-rod over to carry the pin k outside of the stop-bar l^2 , and brings the clutch-pin h^2 into engagement with the driving-shaft of the sewing mechanism. The previous operations then repeat themselves with any desired variation in the length of the successive seams.

In the form shown the successive seams will be made in three groups of three seams each, the seams of the first group being of the greatest length, those of the second group being of an intermediate length, and those of the third group being of the least length. This arrangement specially adapts the machine to the making of three rows of stitching of unequal length, as previously explained, such as is common on the back of gloves.

The manipulation is as follows: The articles to be sewed are placed successively on the needle-points f^5 , surrounding the edge of the plate F. The machine shown provides spaces for three gloves X^1 , X^2 and another, (not shown,) which are to be folded along the desired line of stitching, the fold projecting above the plate, as at a^2 in Fig. 2. The plate F is set (by the screw f^4) in such a position on the shaft that the seams will start at the upper needle-points f^8 . The glove is accordingly placed with the desired point of beginning the seam at one of these needle-points. The part of the glove in advance of the seam is caught on the edge needle-point forward of the point at which the seam begins, so as to prevent it from being accidentally bent backward in being fed past the needle. The movement of the plate continues, and while the seam is being formed on the first glove, X^1 , the second, X^2 , is placed in position in the same manner as the first, with the point of beginning of its seam at the succeeding upper needle-point. The machine automatically finishes the seam of the first glove at the desired point, feeds it past the needle, and commences the seam on the second glove. It then cuts the loop of the needle-thread at one point, so

that such thread continues to draw through the goods of the previous glove. After the second seam is well advanced the hook-thread is cut. The threads are thus pulled tight at the beginning and end of each seam. In the meantime the operator engages the third glove with the plate in the same manner as the first two. He then takes off the first glove, folds it along the line of the next desired seam, and replaces it, following the same course with the second and third gloves as their first seams are completed and the threads cut. He repeats this removal, refolding and replacing for each of the three seams of the last series.

In sewing other articles than gloves the operation is similar and will be easily understood. Though I have described with great particularity of detail a machine embodying my invention and showing the application thereof to a specific purpose, I am not to be understood as limiting myself to the particular embodiment of purpose shown and described.

Many modifications in the details and arrangements of the parts and many adaptations thereof will suggest themselves to persons skilled in the art without departing from the spirit of my invention.

What I claim, therefore, and desire to secure by Letters Patent, are the following-defined novel features and combinations, each substantially as described:

1. The combination in mechanism for automatically making rows of stitches, of stitching mechanism, means for operating the same intermittently, a combined holder and feeder provided with means adapted to engage and carry a plurality of pieces of goods at points adjacent to the line of said stitches, and means for operating said combined holder and feeder to feed the pieces a plurality of times past said stitching mechanism whereby a plurality of rows of stitches are formed on each piece.

2. The combination in mechanism for automatically making rows of stitches, of stitching mechanism, a combined holder and feeder provided with means adapted to engage and carry a plurality of pieces of goods at points adjacent to the line of said stitches, means for operating said combined holder and feeder to feed the pieces a plurality of times to said stitching mechanism so as to form a plurality of rows of stitches on each of said pieces of goods, means for operating such stitching mechanism intermittently and means for withdrawing the stitching mechanism from the path of said goods at the end of each row and maintaining it out of said path while it is idle.

3. The combination in mechanism for automatically making rows of stitches, of stitching mechanism, a combined holder and feeder provided with means adapted to engage and carry a plurality of pieces of goods at points adjacent to the line of said stitches, means for operating said combined holder and feeder to feed the pieces a plurality of times to said

stitching mechanism so as to form a plurality of rows of stitches on each of said pieces of goods, means for operating such stitching mechanism intermittently, and means for automatically lessening the tension of the thread when said stitching mechanism is idle.

4. The combination with a relatively stationary stitching mechanism, and means for operating the same intermittently, of a relatively moving combined holder and feeder provided with means adapted to engage and carry a plurality of pieces of goods at points adjacent to the line of said stitches, and means for operating said combined holder and feeder to feed the pieces a plurality of times to said stitching mechanism whereby a plurality of rows of stitches are formed on each piece.

5. The combination with a relatively stationary stitching mechanism, of a relatively moving holder provided with means adapted to hold a plurality of pieces of goods and to feed the same successively to said stitching mechanism, and means for operating said stitching mechanism intermittently, whereby separate rows of stitching are formed in the successive pieces of goods, and means for cutting the threads of one row after the commencement of the succeeding row.

6. The combination with a relatively stationary stitching mechanism, of a relatively moving holder provided with means adapted to hold a plurality of pieces of goods and to feed the same successively to said stitching mechanism whereby rows of stitching are formed in said pieces of goods, and means for drawing taut the last stitch of each row.

7. The combination in mechanism for automatically making a row of stitches, of stitching mechanism, a holder comprising a rotary plate F adapted to hold a plurality of pieces of goods, means for operating said stitching mechanism intermittently, and means for rotating said plate F continuously to feed said pieces of goods successively past said stitching mechanism so as to form separate rows of stitching on successive pieces of goods.

8. The combination in mechanism for automatically making a row of stitches, of stitching mechanism, a combined holder and feeder comprising a rotary feed-plate F having points f^5 mounted directly on the edge of said feed-plate and adapted to hold a plurality of pieces of goods, means for operating said stitching mechanism intermittently, and means for rotating said plate F continuously to feed said pieces of goods successively past said stitching mechanism so as to form separate rows of stitching on successive pieces of goods.

9. The combination with a stitching mechanism, of means for feeding a piece of goods to said stitching mechanism so as to form in succession a plurality of rows of stitching thereon, and means for automatically varying the length of such rows of stitching.

10. The combination in mechanism for automatically making rows of stitches, of stitch-

ing mechanism, a holder provided with means adapted to hold a plurality of pieces of goods and to feed them successively to said stitching mechanism so as to form rows of stitches on each of said pieces of goods, and means for automatically varying the lengths of such rows of stitching.

11. The combination in mechanism for automatically making rows of stitches, of stitching mechanism, a holder provided with means adapted to hold a plurality of pieces of goods and to feed them successively to said stitching mechanism so as to form rows of stitches on each of said pieces of goods, and means for adjusting the lengths of such rows of stitching.

12. The combination in mechanism for automatically forming a series of seams, such series being divided into groups, each group of the series containing the same determined number of seams and the seams of each group being of equal length, of seam-forming mechanism, a holder provided with means adapted to hold the same determined number of pieces of goods as there are seams in each group and to feed said pieces successively to the seam-forming mechanism, and means for varying the length of seams in different groups.

13. The combination in mechanism for automatically forming a series of seams, such series being divided into groups, each group of the series containing the same number of seams and the seams of each group being of equal length, of seam-forming mechanism, means for adjusting the lengths of said seams, and a holder provided with means adapted to hold the same number of pieces of goods as there are seams in each group and to feed said pieces successively to the seam-forming mechanism.

14. The combination in mechanism for automatically forming a series of seams, such series being divided into groups, each group of the series containing the same number of seams and the seams of each group being of equal length, of seam-forming mechanism, means for simultaneously adjusting the length of each of the seams in any group, and a holder provided with means adapted to hold the same number of pieces of goods as there are seams in each group and to feed said pieces successively to the seam-forming mechanism.

15. The combination with means for making a series of discontinuous seams comprising a thread-carrying hook, of means for cutting the hook-thread of each seam after the beginning of the succeeding seam.

16. The combination with means for making a series of discontinuous seams comprising a needle and a thread-carrying hook, of means for cutting the loop of the needle-thread of each seam at about the moment of beginning the succeeding seam, and means for cutting the hook-thread of each seam after beginning the succeeding seam.

17. In a machine of the type described, the combination with a needle and operating

means for making a series of discontinuous seams, of means for holding open a loop between the last two stitches of the needle-thread, and means for cutting such thread at such loop only.

18. The combination with a feeding mechanism, of a knife moving therewith, and a member R in the path of the thread and adapted to loop said thread over said knife.

19. The combination with a feeding mechanism, of a knife moving therewith, and a fixed member R having an inclined edge adapted to draw the thread along the edge of the knife.

20. The combination with a sewing mechanism having an operating-shaft C, of a feeding mechanism, a main driving-pulley H adapted to continuously operate said feeding mechanism, a clutch between said pulley H and shaft C, a clutch-rod K, a lever M for unclutching said shaft, a plate N for controlling the movement of said lever M, a lever O for clutching said shaft, and a plate P for controlling the movement of said lever O.

21. The combination with a sewing mechanism having an operating-shaft C, of a feeding mechanism, a main driving-pulley H adapted to continuously operate said feeding mechanism, a clutch between said pulley H and shaft C, a clutch-rod K, an arm k' on said clutch-rod, and a cam l' operated by said shaft C, and means for moving said arm into the path of said cam, whereby said clutch-rod is operated to unclutch said shaft C.

22. The combination with a sewing mechanism having an operating-shaft C, of a feeding mechanism, a main driving-pulley H adapted to continuously operate said feeding mechanism, a clutch between said pulley H and shaft C, a clutch-rod K, a lever M for un-

clutching said shaft, a plate N for controlling the movement of said lever M, a lever O for clutching said shaft, a plate P for controlling the movement of said lever O, a tension-regulator S, a lever U for relieving the tension, and a cam U^2 moved by said lever O and operating said lever U.

23. The combination in mechanism for automatically making rows of stitches, of relatively stationary stitching mechanism, a relatively moving combined holder and feeder provided with means adapted to engage and carry a plurality of pieces of goods and to feed them successively and continuously past said stitching mechanism to form rows of stitches in the direction of said continuous feed, means for operating said stitching mechanism intermittently, and means carried by the feed mechanism for controlling the operation of said stitching mechanism.

24. The combination in mechanism for automatically making rows of stitches, of relatively stationary stitching mechanism, a relatively moving combined holder and feeder provided with means adapted to engage and carry a plurality of pieces of goods and to feed them successively and continuously past said stitching mechanism to form rows of stitches thereon in the direction of said continuous feed, and means controlled by the feed mechanism for operating said stitching mechanism at determined regular intervals in the operation of said holder and feeder.

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

ARTHUR E. LINDNER.

Witnesses:

DOMINGO A. USINA,
FRED WHITE.