

No. 880,829.

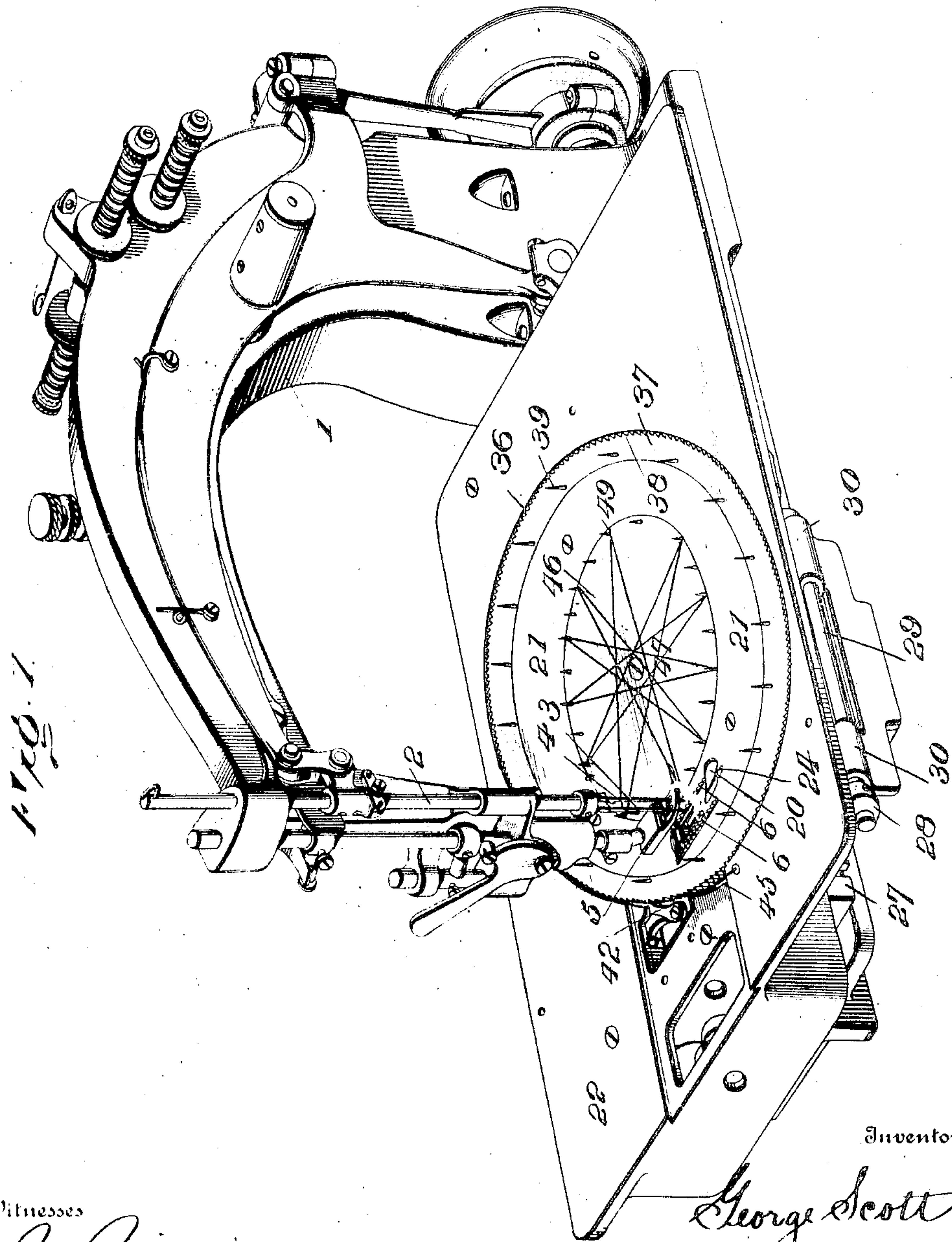
PATENTED MAR. 3, 1908.

G. SCOTT.

TRIMMING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED MAY 31, 1902. RENEWED JUNE 1, 1906.

5 SHEETS—SHEET 1.



Witnesses

For Invents
Stewart & Rice.

Inventor

George Scott

By *Thos. E. Robertson*

Attorney

No. 880,829.-

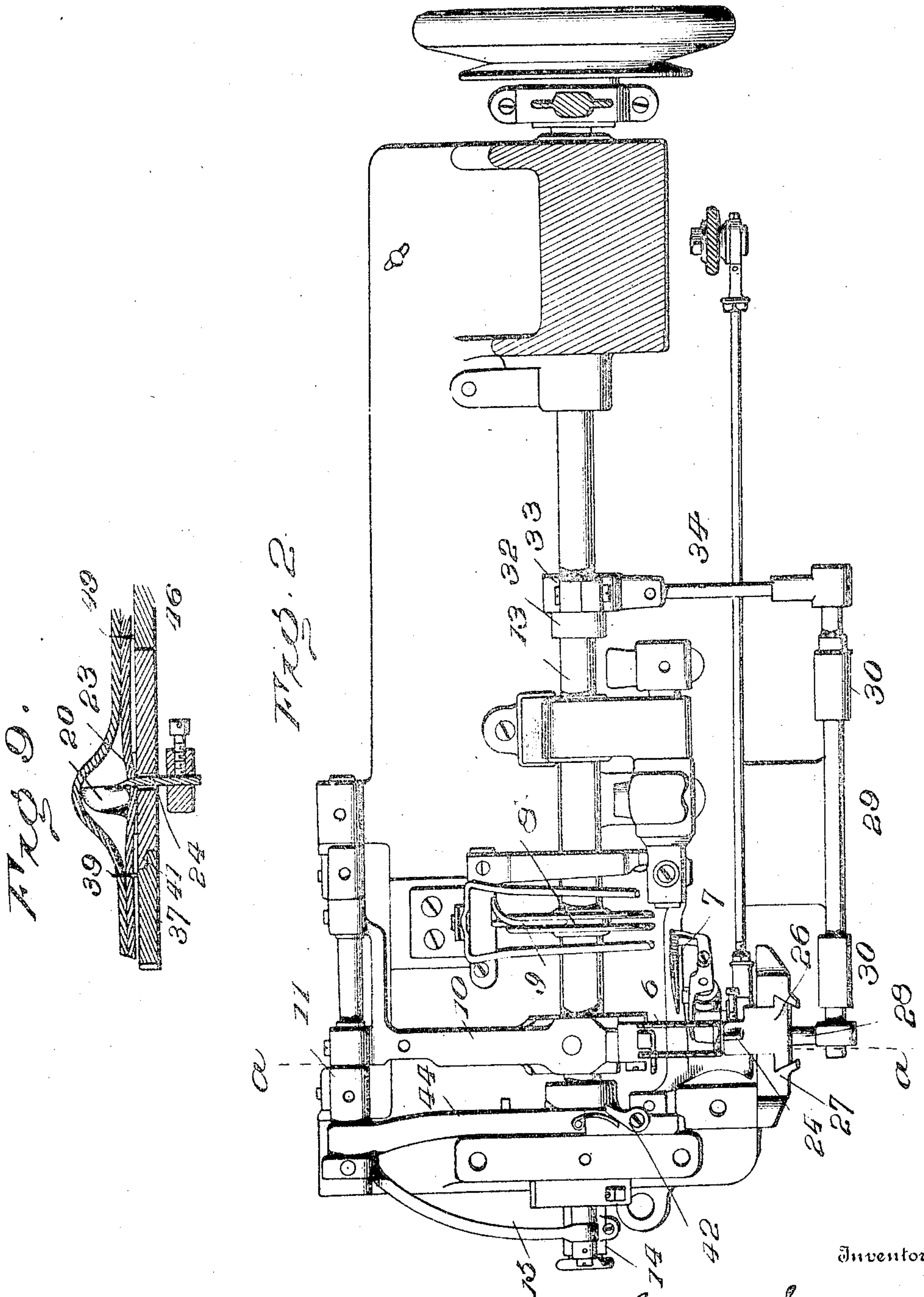
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5 SHEETS—SHEET 2.



Witnesses

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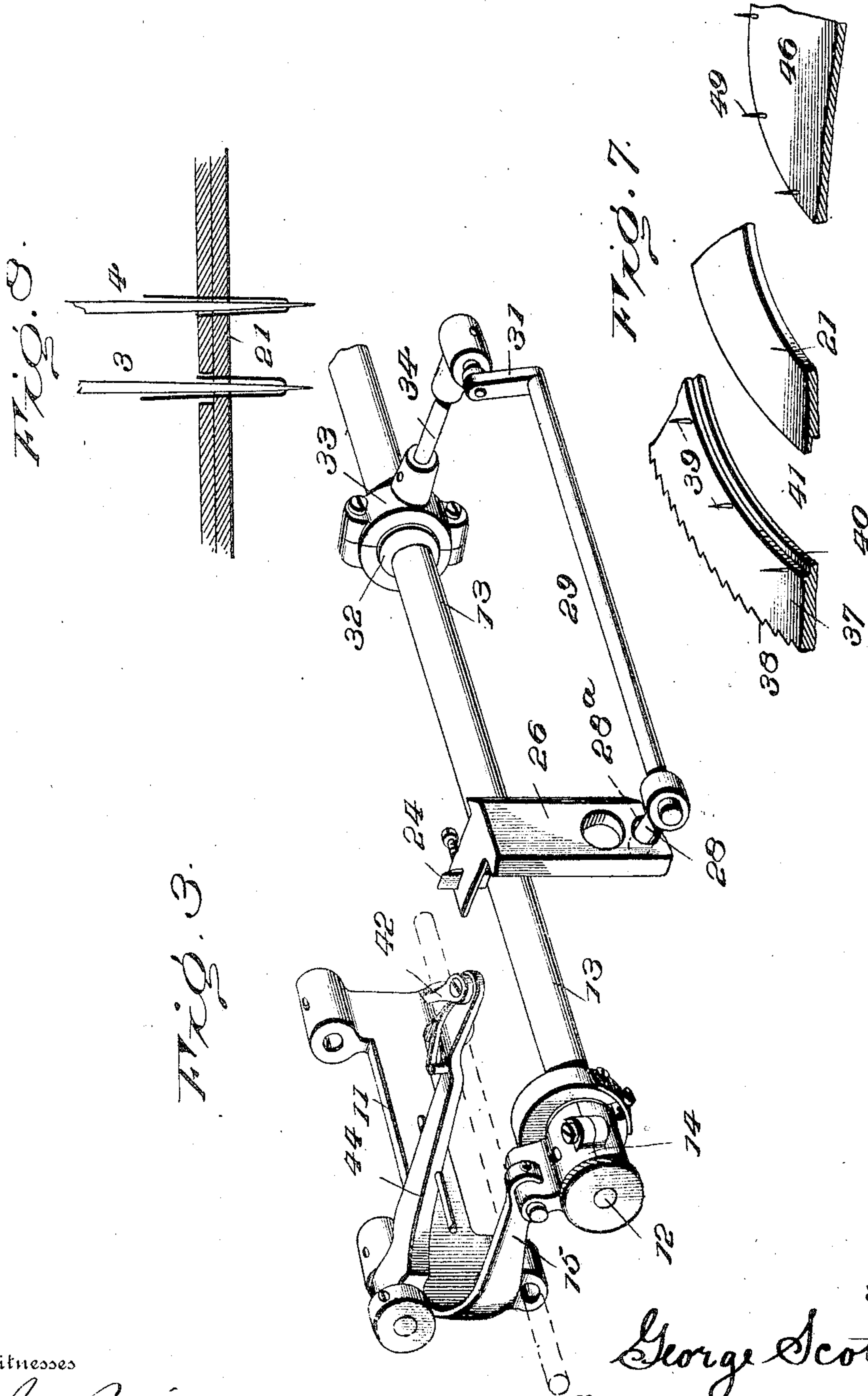
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5 SHEETS—SHEET 3.



Witnesses

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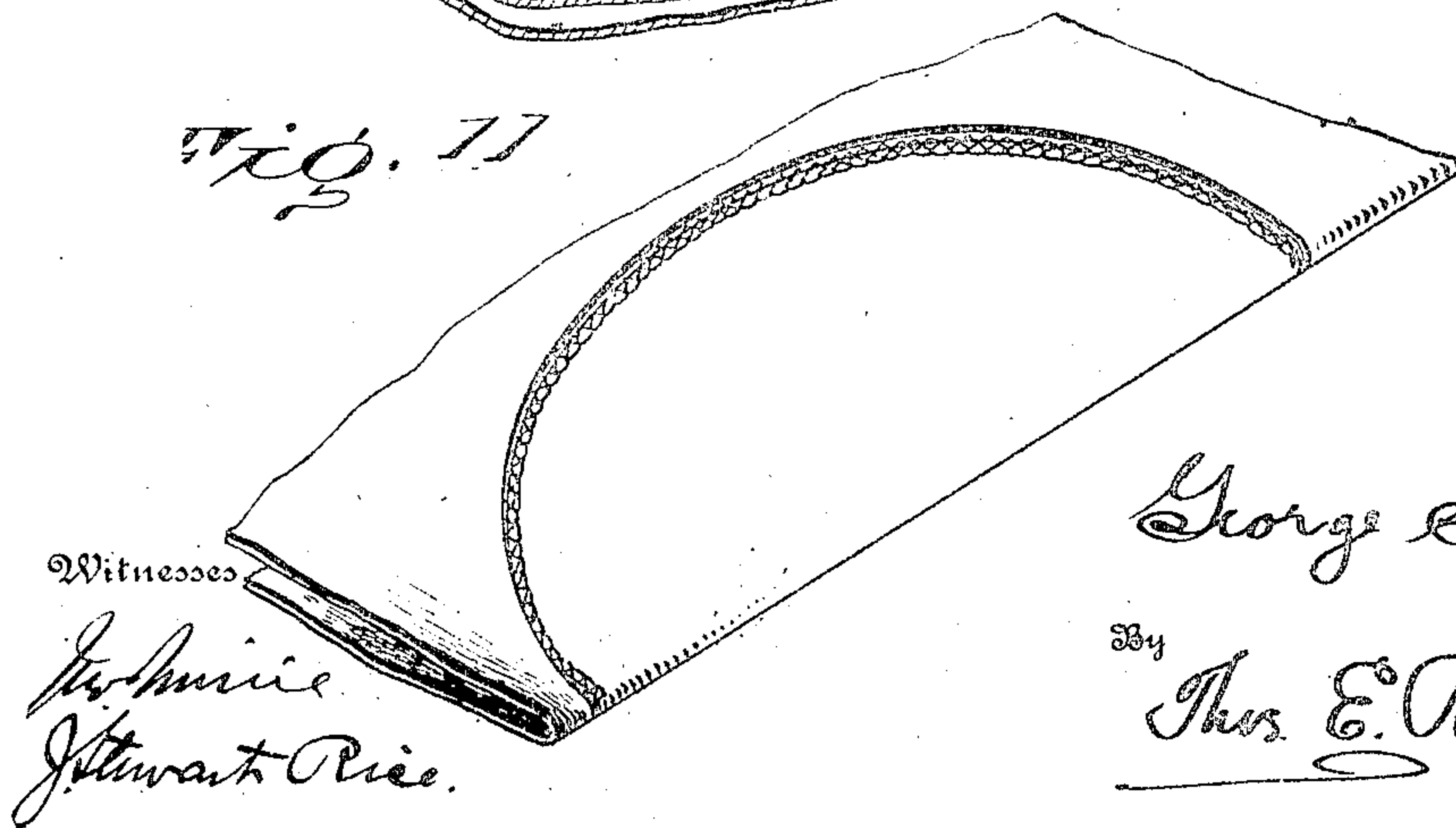
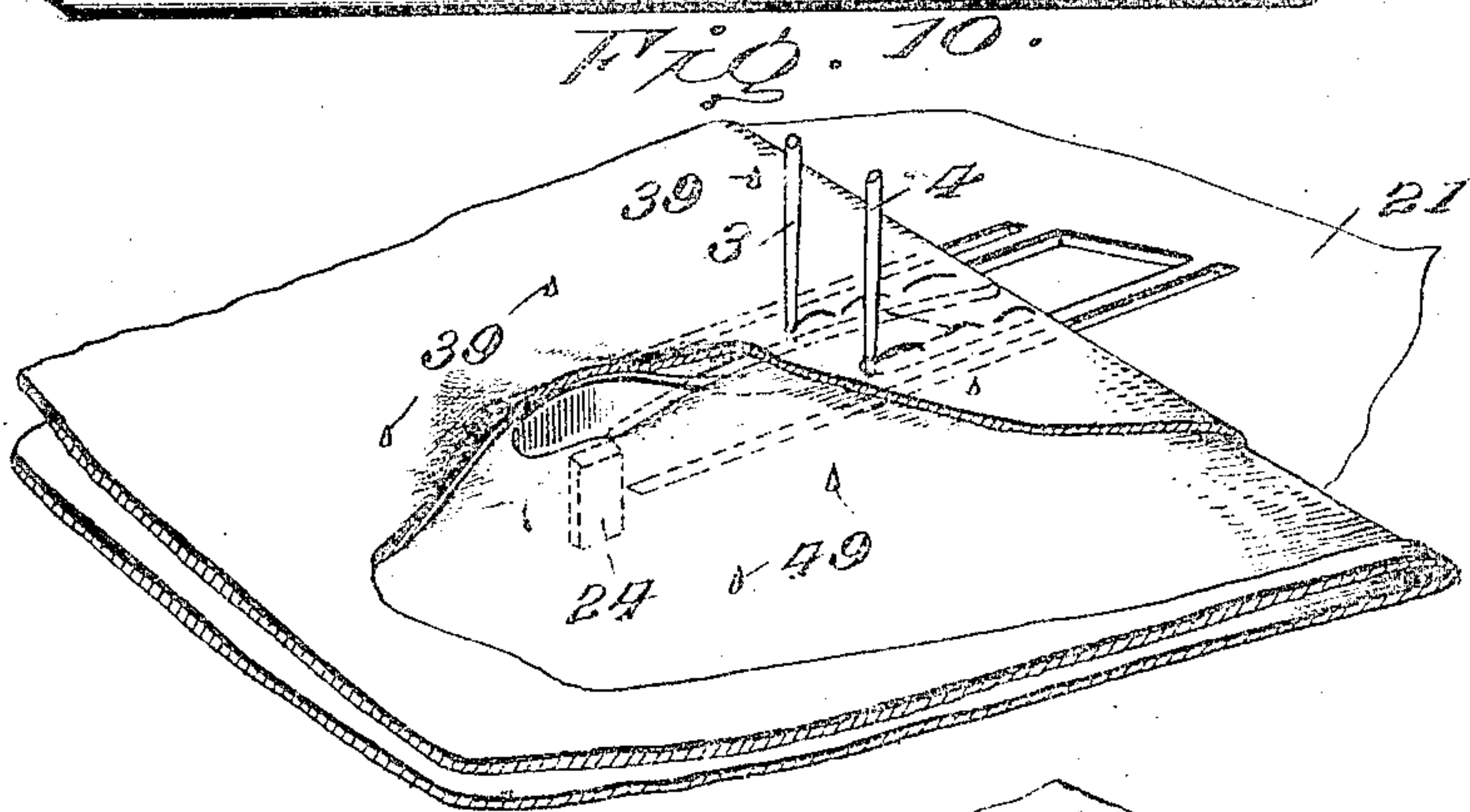
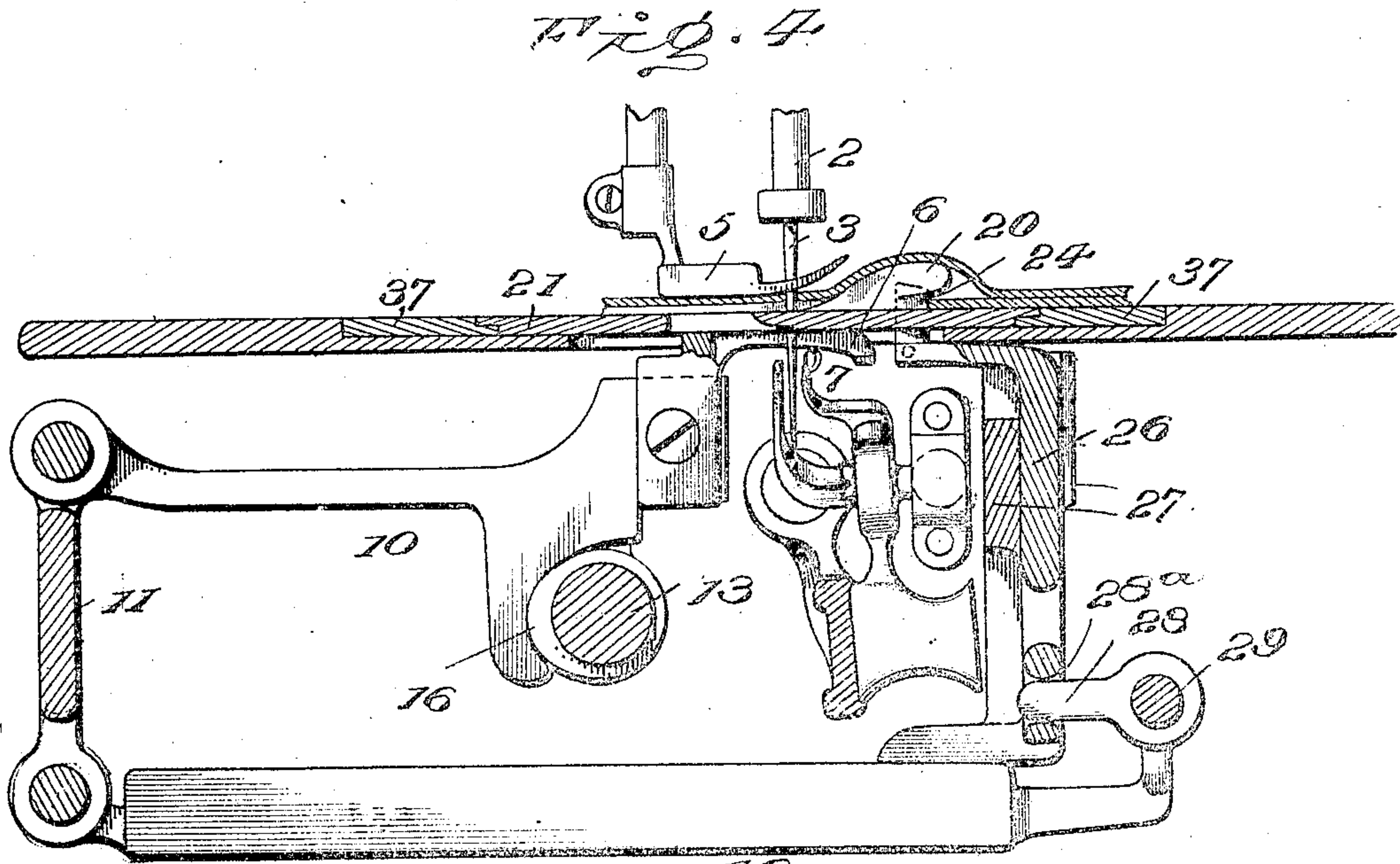
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TRIMMING MECHANISM FOR SEWING MACHINES.

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5 SHEETS—SHEET 4.



Witnesses

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TRIMMING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED MAY 31, 1902. RENEWED JUNE 1, 1906.

5 SHEETS—SHEET 5.

FIG. 5.

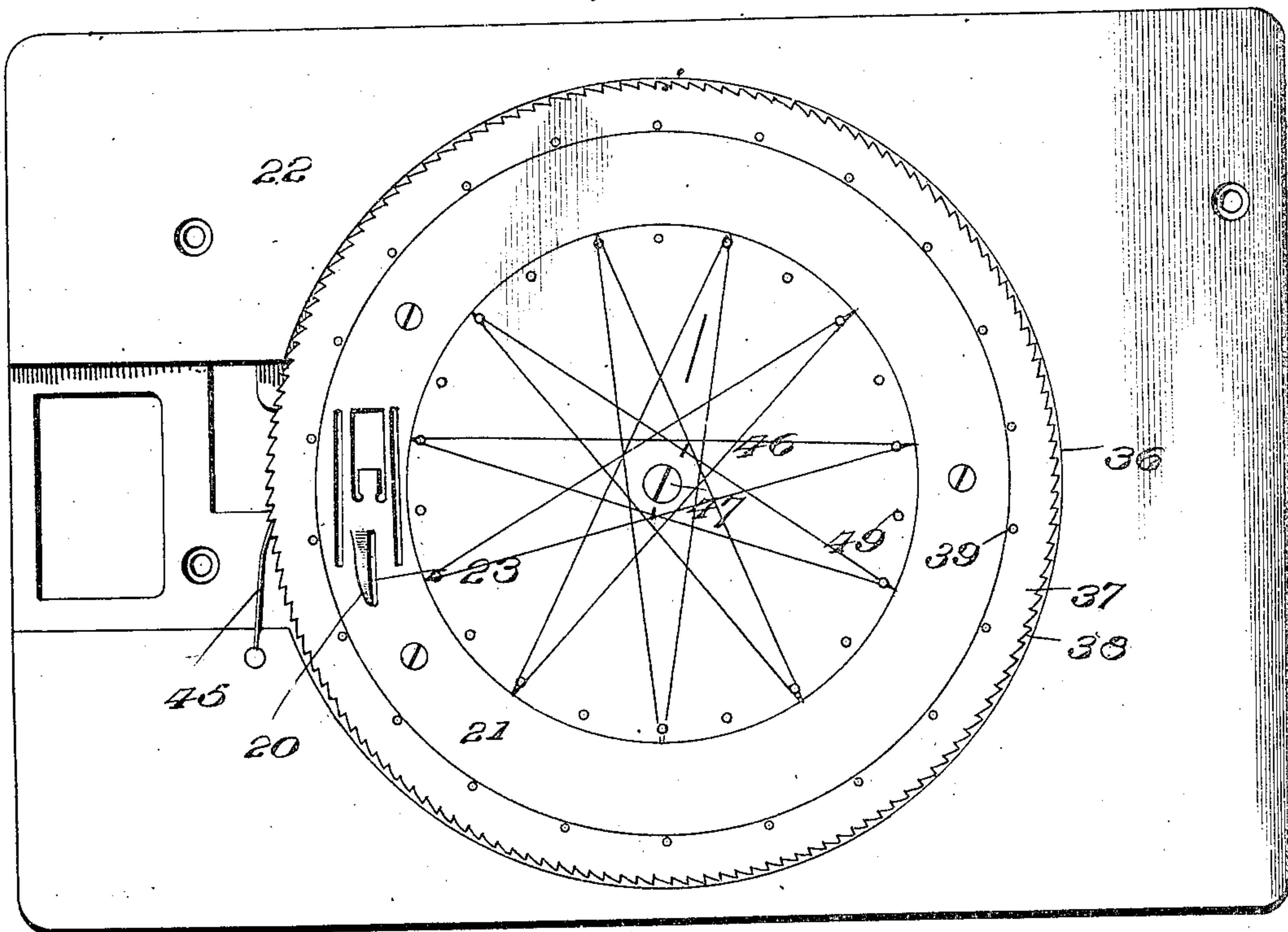
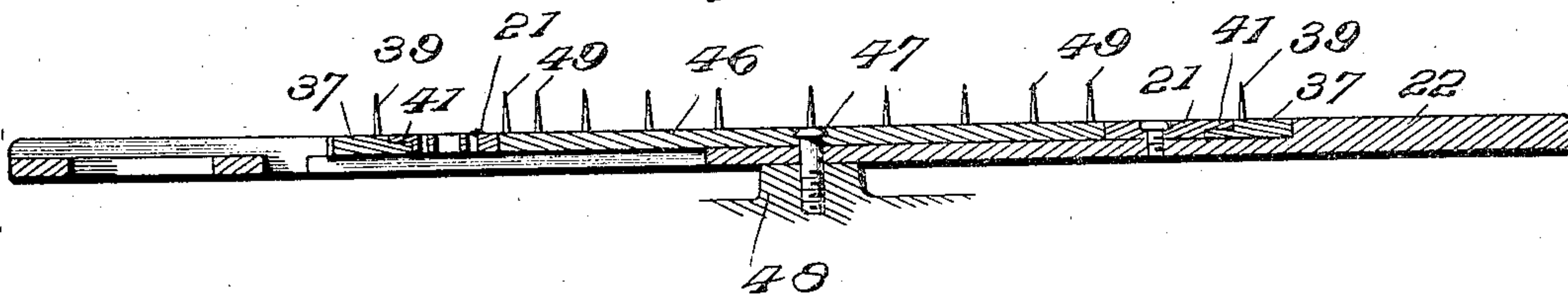


FIG. 6.



Witnesses

John M. Rice
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UNITED STATES PATENT OFFICE.

GEORGE SCOTT, OF AMSTERDAM, NEW YORK, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TRIMMING MECHANISM FOR SEWING-MACHINES.

No. 880,822.

Specification of Letters Patent.

Patented March 8, 1908.

Application filed May 31, 1902, Serial No. 109,756. Renewed June 1, 1906. Serial No. 319,769.

To all whom it may concern:

Be it known that I, GEORGE SCOTT, a citizen of the United States of America, and resident of Amsterdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to improvements in sewing machines of that character in which a knife or cutting mechanism is combined with the stitching mechanism in order that the fabric may be both cut and stitched at one operation.

The object of my invention is to provide a machine of this character whereby two fabrics may be fed into the machine and one of them suitably cut or trimmed prior to the sewing operation, and to so construct and operate the various parts that the cut edge will be sewed to the fabric which is not cut.

In the preferable embodiment of my invention, I feed in two thicknesses of fabric, cut or sever one thickness and spread the cut portions so that the stitching may cover and practically hide one of the cut edges.

Although my invention may be used for a variety of purposes, it is my special object to use it for what is termed "necking" in the manufacture of underwear. Heretofore in the manufacture of underwear, it has been necessary to perform four separate operations for this "necking," and by my invention I am able to do it with one, by combining with the cutting and sewing mechanism, a guiding mechanism that automatically guides the fabrics so that the cutting and stitching may be performed almost automatically and with absolutely true curvature thus obviating the necessity of marking, basting or cutting by hand, and at the same time making it possible to perform the work without the aid of any skilled operators.

With the aforesaid objects in view, my invention consists in the combinations and arrangements of parts as will be hereinafter more fully described and then definitely pointed out in the claims at the end hereof.

In the accompanying drawings which represent what I now consider the preferable, though not necessary, embodiment of my invention: Figure 1 is a perspective view of a well-known form of sewing machine with my improvement applied thereto. Fig. 2 is a

top plan with the bed plate entirely removed and with the overhanging arm and its needle bar and presser foot also removed. Fig. 3 is a perspective view of the principal parts of those portions of the device shown in Fig. 2 which are new with me. Fig. 4 is a cross section through the line *a-a* of Fig. 2. Fig. 5 is a plan view of the bed-plate. Fig. 6 is a sectional view of the same. Fig. 7 is a detail perspective of parts of the feeding mechanism. Fig. 8 is a detail showing the method of sewing. Fig. 9 is a detail sectional view showing the thicknesses of fabric separated, and the movable knife projecting through the lower thickness. Fig. 10 is a detail perspective, showing the method of cutting and sewing. Fig. 11 is a perspective showing a fabric after having been cut and sewed with a machine constructed in accordance with my improvement.

Referring now to the details of the drawings by numerals 1 represents the framing of what is known as the Union Special sewing machine, which I have selected as being well adapted for the purposes of my invention, but it will be understood that various other makes of sewing machines may be employed in connection with my improvements.

The machine as shown in the accompanying drawings comprises a needle bar 2 having a pair of needles 3 and 4 and the usual presser foot 5 and with these parts is combined the ordinary feed dogs 6, all of which are too well known to need any further description. In Fig. 2 of the accompanying drawings is also shown the usual looper 7 and its co-acting rotary take-up 8 and throw-off 9; but as my invention does not reside in any of these parts no further description thereof is needed, except that it may be well to state that in the operation of sewing, the two needles 3 and 4 co-act with the looper 7, and the result is two rows of plain stitching on the upper side of the fabric, and a fancy or cross stitch on the under side similar to what is shown in Fig. 11. It may also be well to state that the arm 10 which carries the feed-dogs 6 is given a reciprocating movement, owing to its connection with a rocking frame 11 (see Figs. 2, 3 and 4) which is rocked by means of a wrist pin 12 rotating with the main shaft 13 (see Fig. 3) within a collar or sleeve 14 pivotally connected with an arm 15 projecting from the rocking frame

11. The usual vertical movement is given to the feed-dog-arm 10, by means of a cam 16 on the main shaft 13 (see Fig. 4).

I wish it clearly understood that my invention does not reside in this machine or in any of the parts so far described and that while I have selected this particular machine as being well-adapted for the purpose of illustrating my invention, I do not limit my claims to this or any other style of machine, as I intend to cover the new features in the broadest possible terms.

By referring to Figs. 1 and 5, it will be seen that I have formed what I shall term a "separating knife" 20 which is fixed to or forms part of a ring 21 screwed to the bed plate 22 of the machine, although it will be obvious that this separator 20 may be formed on the bed plate itself if desired. This separating knife 20 is in advance of the two needles 3 and 4 and immediately to its right is a slot 23 (see Figs. 5 and 9). Through this slot works a vertically moving knife 24 which co-acts with the stationary knife 20, and it will be obvious that if a piece of fabric is fed under the separating knife 20 and this knife 24 caused to move up and down as the fabric is fed, the fabric will be severed or cut so that the two parts of the fabric will be divided, one part going on one side of the separating knife and the other part on the opposite side. It will therefore follow that if one of the severed parts is caused to move to one side of the two needles and the edge of the other part to enter between the said needles, the stitching performed by the needles covers one of the cut edges and leaves the other free. The desired spreading action is the result of forming the separating knife 20 of the peculiar shape shown in Fig. 5 where it will be observed that the right hand edge is slightly to the left of the right hand needle opening, while the left hand edge of the separating knife slants off so far to the left as to just cause the severed part of the fabric to be fed to the left side of the left needle. The result is very clearly shown in Figs. 10 and 11, in the first of which figures the separating knife 20 is seen as having spread the fabric so that the left side is clear of the sewing, and the other figure (11) shows one of the cut edges as free and the other one as completely covered and hidden from sight, and protected from wear, by the row of stitching. In some of my claims I have defined this separating knife 20 as being fixed to the throat plate, but said term "throat plate" is to be understood as being used in its broad sense and therefore as covering the knife if fixed to the bed plate or to the plate through which the needle or needles pass.

Before describing my mechanism for further increasing this spreading effect, I will describe the mechanism for giving the

knife 24 its reciprocating up and down motion. By referring to Figs. 2, 3 and 4, it will be seen that the knife 24 is carried in a knife-bar 26 which has beveled edges and is movable up and down in a guide 27. This reciprocating movement is imparted to the bar and its knife by means of a crank arm 28 working in an opening 28^a in the lower end of the bar 26, and secured to a rock-shaft 29 suitably journaled in the support 30 (see Fig. 2). At the other end of the rock shaft 29 is connected a crank arm 31 and motion is given to this crank arm by means of an eccentric 32 rotating with the main shaft 13 and the eccentric collar 33 and connecting rod 34. It follows from this that as the main shaft is rotated in the operation of the machine, motion is transmitted by the eccentric and its collar so as to rock the shaft 29, and the rocking of this shaft gives a reciprocating up and down movement to the crank-arm 27 and thence to the knife bar 26 and knife 24, thus causing the latter to move up so as to co-act with the separating knife and sever whatever may be between them.

I will now again refer to Figs. 1 and 5 to describe my mechanism for guiding the fabric and increasing the tendency to separate the fabric as hereinbefore referred to. Around the aforesaid ring 21, which has been referred to as being secured to the bed-plate 22, is left or formed an annular recess 36 in which is fitted a second ring which may be termed a feeding or guiding ring 37 which is formed with ratchet teeth 38 entirely around its periphery and with pins 39 projecting from its upper surface all as very clearly shown in Figs. 1 and 5. This ring may be merely embedded in the recess but I prefer the construction shown in Figs. 6 and 7, where it will be seen that the ring is formed with a rabbet 40 into which fits the projecting rim 41 of the ring 21, and the ring 37 is thus held in position and yet given freedom of movement in a rotary direction only. To cause this ring 37 with its impaling pins 39 to revolve and thus feed any fabric impaled thereon, I employ a spring-actuated reciprocating pawl 42 which is adapted to engage the ratchet teeth 38 on the periphery of the ring 37 and this pawl is given its proper movement by being connected to and supported by an arm 44 (see Figs. 2 and 3) which moves in unison with the feed-dogs 6 as it is connected with the same rocking frame 11 which imparts movement to said feed-dogs. It may be here mentioned that in order to prevent any reverse or backward movement of the feeding ring 37 I employ a spring dog 45 which engages the teeth 38 on said ring.

From the above construction it will be manifest that as the machine is operated, the pawl 42 will give an intermittent movement to the feeding or guiding ring 37, and any fabric that may be impaled on its pins 39

will be automatically fed under the presser-foot 5, in a circular direction. It will be further observed that the space between the knife 24 or that part of the knife slot 23 through which the knife 24 passes (see Fig. 5) and the path of the pins 39 is a little less than the space between the left hand needle opening and the path of the pins, and the obvious result of this is that as the fabric is guided in its circular movement by the ring 37, that part of the fabric which is severed or cut by the knives 20, 24 will be guided or separated until it is just outside of the part sewed by the two needles, and will therefore not be touched by the stitching (see Fig. 8). Similarly, the other severed edge will also be moved in the same direction and thus be brought between the two needles and thus the stitching will pass over and hide the severed edge.

In order to assist the feeding or guiding ring 27 in giving a rotary or circular movement to the fabric being sewed, I employ a circular guide or turn-table 46 which is embedded in the ring 21 and rests on the bed-plate 32, a screw 47 passing through the circular guide 46 and the bed plate 22 into a support 48 below both. This screw or trunnion, however, is not absolutely necessary, as the circular guide will work just as well without it. On the upper surface of this circular guide or turn-table 46 are projecting impaling pins 49 which are quite near the periphery so as to pass as near as possible to the stitching. This plate or turn-table 46 revolves freely or loosely and depends upon the movement of the ring 37 or the feed dogs 6 for its movement. Thus if a fabric is being sewed and is fed by the feed dogs 6 in the usual way or by the guiding ring 37, and is impaled also on this plate or turn-table 46, it will be obvious that the fabric and the plate or turn-table will both move on the axis of the plate or turn-table. I prefer to use the guiding ring 37 and the plate or turn-table 46 together for in this case there is a row of impaling pins on each side of the stitching mechanism which insures uniformity of movement and prevents any improper feeding, but it will be within the scope of my invention to use either of these devices without the other. I am not, however, claiming this revolving guide or turn-table 46 broadly in this application as it forms the subject matter of a separate application filed on April 12, 1901, and serial number 55,509. In the present case, however, I prefer to mark guiding lines on the plate or turn-table 46 as shown in Fig. 5 so that in placing a shirt or other garment on the machine, the operator can place it on any one of certain lines and have a predetermined depth of sewing. For example if a shallow "necking" is to be sewed on the shirt, the latter will be placed over, say about one-third of the plate 46; while if

a deep necking is to be sewed as seen in Fig. 11, the shirt is placed almost over two-thirds of the plate or turn-table. I therefore have marked guiding lines 50 on the plate or turn-table, so that if the operator is to sew, say one thousand shirts alike, each shirt, in its turn, may be placed with its edge on the guiding line, and thus there will be absolute uniformity without any guess-work.

Although I have indicated in the description of the structure the operation of my machine, it may be well to say that the operation of my machine is as follows: The operator takes the fabric to be cut and sewed and after doubling it places it in the desired position over both the guiding ring 37 and the plate or turn table 46 and after impaling it on the projecting pins, feeds the fabric until the separating knife is caused to enter a small aperture made in the fold of the fabric. The presser-foot is then dropped and the machine started in the usual way. In the process of sewing, the feed-dogs and the ring 37 are given a positive intermittent feed and thus move the fabric under the presser foot, and as the fabric is so fed the under fabric is severed, step by step, by the knife 24 which passes through it, as very clearly shown in Fig. 9. As the two parts of the under fabric continue to be fed forward, they are separated as hereinbefore described and pass forward to the stitching mechanism in the separated condition. Therefore one severed edge passes free of the needle and the other edge passes between the needles and the sewing is therefore made to overlap the last-named edge so that it is completely covered as shown in Fig. 11.

While some of my claims cover the combination of the sewing mechanism, cutter and guiding mechanism, it will be manifest that others are not limited to the use of all of these features, as the cutting mechanism may be used with other forms of guides or the fabric may be guided by the operator. Likewise, in some of my claims, I have included two needles, but it is obvious that my invention may be used on a machine with a single needle. These and other changes may be made without departing from the spirit of my invention, and I intend the following claims to cover all such variations and modifications as naturally fall within the lines of my invention.

I am fully aware that it is old to combine a cutting or trimming mechanism with a sewing machine, and do not attempt to claim this broadly.

What I claim as new is:

1. In a sewing machine including mechanism for simultaneously stitching and covering a cut edge, means for feeding a plurality of layers of fabric, a cutting mechanism including a device for separating the layers of fabric, whereby only certain of said layers

are severed, and means for deflecting one of said severed edges away from the stitching and covering mechanism, leaving the other severed edge to be sewed to the uncut layer of fabric by the stitching and covering mechanism, said cutting mechanism being in advance of the stitching mechanism; substantially as described.

2. In a sewing machine and in combination, over-stitching mechanism, means for feeding a plurality of layers of fabric to the stitching mechanism, a cutting mechanism in advance of the stitching mechanism and in the line of feed, said cutting mechanism including a device for separating the layers of fabric, whereby only certain of said layers are severed, and means for deflecting one of said severed edges away from the stitching mechanism, leaving the other severed edge to be covered and sewed to the uncut layer of fabric by the stitching mechanism; substantially as described.

3. In a sewing machine, the combination of over-stitching mechanism, cutting mechanism in advance of the stitching mechanism, and comprising two knives cooperating to cut one of a plurality of thicknesses of material, means for feeding said material, one of said knives passing between and separating the thicknesses of material, and one of said knives spreading the cut edges of the fabric and guiding and deflecting one edge away from the stitching mechanism, whereby one of the cut edges is sewed to the uncut material by covering the cut edge; substantially as described.

4. In a sewing machine, the combination of over-stitching mechanism, means for feeding a plurality of thicknesses of material, cutting mechanism in advance of the over-stitching mechanism, comprising a device for separating the thicknesses as the cutting is performed, whereby only one of said thicknesses is cut, the said stitching mechanism being located behind the cutting mechanism and arranged to sew one of the cut edges to the uncut fabric by covering the cut edge, and a rotary guide arranged to guide the fabric as it is being cut and stitched and means for deflecting one of the severed edges away from the stitching mechanism; substantially as described.

5. In a sewing machine, the combination of over-stitching mechanism, means for feeding a plurality of thicknesses of material, cutting mechanism in advance of the over-stitching mechanism, comprising a device for separating the thicknesses as the cutting is performed, whereby only one of said thicknesses is cut, the said stitching mechanism being located behind the cutting mechanism and arranged to sew one of the cut edges to the uncut fabric by covering the cut edge, and a rotary guide arranged to guide the fabric as it is being cut and stitched, and oper-

able in unison with said feeding means and means for deflecting one of the severed edges away from the stitching mechanism; substantially as described.

6. In a sewing machine, the combination of over-stitching mechanism, means for feeding a plurality of thicknesses of material, cutting mechanism in advance of the over-stitching mechanism, and comprising a device for separating the thicknesses as the cutting is performed, whereby only one of said thicknesses is cut, the said stitching mechanism being located behind the cutting mechanism, and arranged to sew one of the cut edges to the uncut fabric by covering the cut edge, and a rotary guide eccentric to the cutting and stitching mechanism for guiding the fabric as it is being cut, and stitched, and means for deflecting one of the cut edges away from the stitching mechanism after the cutting has been performed; substantially as described.

7. In a sewing machine, the combination of stitching mechanism, including a pair of needles, and cutting mechanism comprising two knives in advance of the stitching mechanism, and cooperating to cut one of a plurality of thicknesses of material, means for feeding said material, one of said knives passing between and separating the thicknesses of material, and one of said knives spreading the cut edges of the fabric and guiding and deflecting one edge away from the stitching mechanism, one of the cut edges being sewed to the uncut material by covering the cut edge, and a rotary guide arranged to guide the fabric as it is being cut and stitched; substantially as described.

8. In a sewing machine, and in combination with the over-stitching mechanism thereof, a trimming device comprising an upper stationary member extending above the cloth plate and adapted to enter between two superposed layers of fabric, and a lower member cooperating therewith to sever the lower layer of fabric, said trimming device being arranged in advance of the stitch-forming mechanism, and the stationary member thereof being in the line of the seam, and means for deflecting one of the cut edges away from the stitching mechanism, whereby the other cut edge may be covered and sewed to the uncut fabric; substantially as described.

9. In a sewing machine, the combination with stitch-forming mechanism including a plurality of needles arranged to pass parallel rows of loops through the fabric to be sewed, and a thread-carrying device cooperating with the needles to make a cross stitch, of a trimming mechanism comprising an upper stationary member extending above the cloth plate and adapted to enter between two superposed layers of fabric, and a lower member cooperating therewith to sever the lower layer of fabric, said trimming device

being arranged in advance of the stitch-forming mechanism, and the stationary member thereof being in the line of the seam, and means for deflecting one of the cut edges away from the stitching mechanism, whereby the other cut edge may be covered and sewed to the uncut fabric; substantially as described.

10. In a sewing machine, the combination of over-stitching mechanism, cutting mechanism in advance of the stitching mechanism, means for feeding a plurality of layers of fabric, said cutting mechanism including a device for separating the layers of fabric, whereby only certain of said layers are severed, and means for deflecting one of said severed edges into the line of stitching and guiding the other severed edge outside the line of stitching, whereby the former severed edge may be covered and sewed to the uncut layer by the stitching mechanism.

11. In a sewing machine and in combination with the overhanging arm thereof; stitching and cutting mechanisms; and a rotary guide located under said overhanging arm, eccentric to said stitching and cutting mechanisms; said guide being arranged to guide the fabric as it is being cut and stitched; substantially as described.

12. In a sewing machine; the combination of over-stitching mechanism; means for feeding a plurality of thicknesses of material; cutting mechanism comprising a device for separating the thicknesses as the cutting is performed whereby only one of said thicknesses is cut; and means for guiding the free severed edge away from the stitching mechanism before it reaches the same; the said stitching mechanism being located behind the cutting mechanism and arranged to sew one of the cut edges to the uncut fabric by covering the cut edge, substantially as described.

13. In a sewing machine; the combination of stitching and cutting mechanisms; rotary guide located to one side of said mechanisms; and a ring guide surrounding said first-named guide; said cutting and stitching mechanisms being located between said guides, substantially as described.

14. In a sewing machine, the combination of stitching and cutting mechanisms; a rotary guide located to one side of said mechanisms; a ring guide surrounding said first-named guide; and means for positively feeding one of said guides; said cutting and stitching mechanisms being located between said guides, substantially as described.

15. In a sewing machine and in combination with the overhanging arm thereof; stitching and cutting mechanisms; a rotary guide located under said overhanging arm, eccentric to said stitching and cutting mechanisms, and arranged to guide the fabric as it is being cut and stitched; and a

guiding ring surrounding said first-named guide; the said stitching and cutting mechanisms being located between said guides, substantially as described.

16. In a sewing machine, the combination of stitching mechanism, cutting mechanism, and a rotatable guide on each side of the stitching and cutting mechanisms, having means for securing a fabric thereto, substantially as described.

17. In a sewing machine; the combination of stitching mechanism comprising a pair of needles; and cutting mechanism comprising a separating knife fixed to and located above the bed or cloth plate; a movable knife co-acting with said fixed separating knife to cut a fabric; said separating knife also spreading the cut edges of the fabric and guiding and deflecting one edge between the needles and the other cut edge outside the said needles; substantially as described.

18. In a sewing machine; the combination of stitching mechanism; cutting mechanism located in advance of said stitching mechanism, comprising a fixed knife located above the bed or cloth plate and a movable knife co-acting with said fixed knife to cut a fabric; and a rotary guide located eccentric to said mechanisms; said fixed knife and said guide co-acting to spread and guide the cut edges so that one edge passes away from the mechanism and the other cut edge is guided or deflected to the said stitching mechanism; substantially as described.

19. In a sewing machine; a knife fixed to and located above the throat plate of the machine in advance of the needle and comprising an overhanging guiding or deflecting member projecting from said fixed knife substantially in the line of feed; and a movable knife co-acting therewith; substantially as described.

20. In a sewing machine; the combination of stitching and cutting mechanisms operating simultaneously; and a revolving guide comprising a ring having means for securing a fabric thereto; said guide being located under the overhanging arm and eccentric to the cutting and stitching mechanisms; substantially as described.

21. In a sewing machine; the combination of stitching and cutting mechanisms operating simultaneously; a revolving guide comprising a ring having means for holding a fabric thereon; said revolving guide being located under the overhanging arm and eccentric to the cutting and stitching mechanisms; and means for positively rotating said revolving guide; substantially as described.

22. In a sewing machine; the combination of cutting mechanism comprising a cutter located above the throat plate and fixed thereto; means for feeding two thicknesses

of material; said fixed cutter also comprising an overhanging element serving as a guide and separating said thicknesses of material whereby only one is cut; a movable cutter co-acting with said fixed cutter; and stitching mechanism located behind the cutting mechanism and arranged to sew the cut to the uncut fabric; substantially as described.

10 23. In a sewing machine; the combination of over-stitching mechanism; mechanism comprising a cutter located above the throat plate and fixed thereto; means for feeding two thicknesses of material; said
15 fixed cutter comprising an overhanging ele-

ment serving as a guide and separating said thicknesses of material whereby only one is cut; and a movable cutter co-acting with said fixed cutter; the aforesaid over stitching mechanism being located behind the cutting mechanism and arranged to sew the cut to the uncut fabric; substantially as described.

Signed by me at Amsterdam New York
this 19th day of May, 1902.

GEORGE SCOTT.

Witnesses:

ELBERT D. WEYBURN,
GEO. S. GATCHELL.