L. GEARHART.

GAS MANTLE SEWING MACHINE.

APPLICATION FILED FEB. 21, 1907. RENEWED OCT. 17, 1908.

919,846.

Patented Apr. 27, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

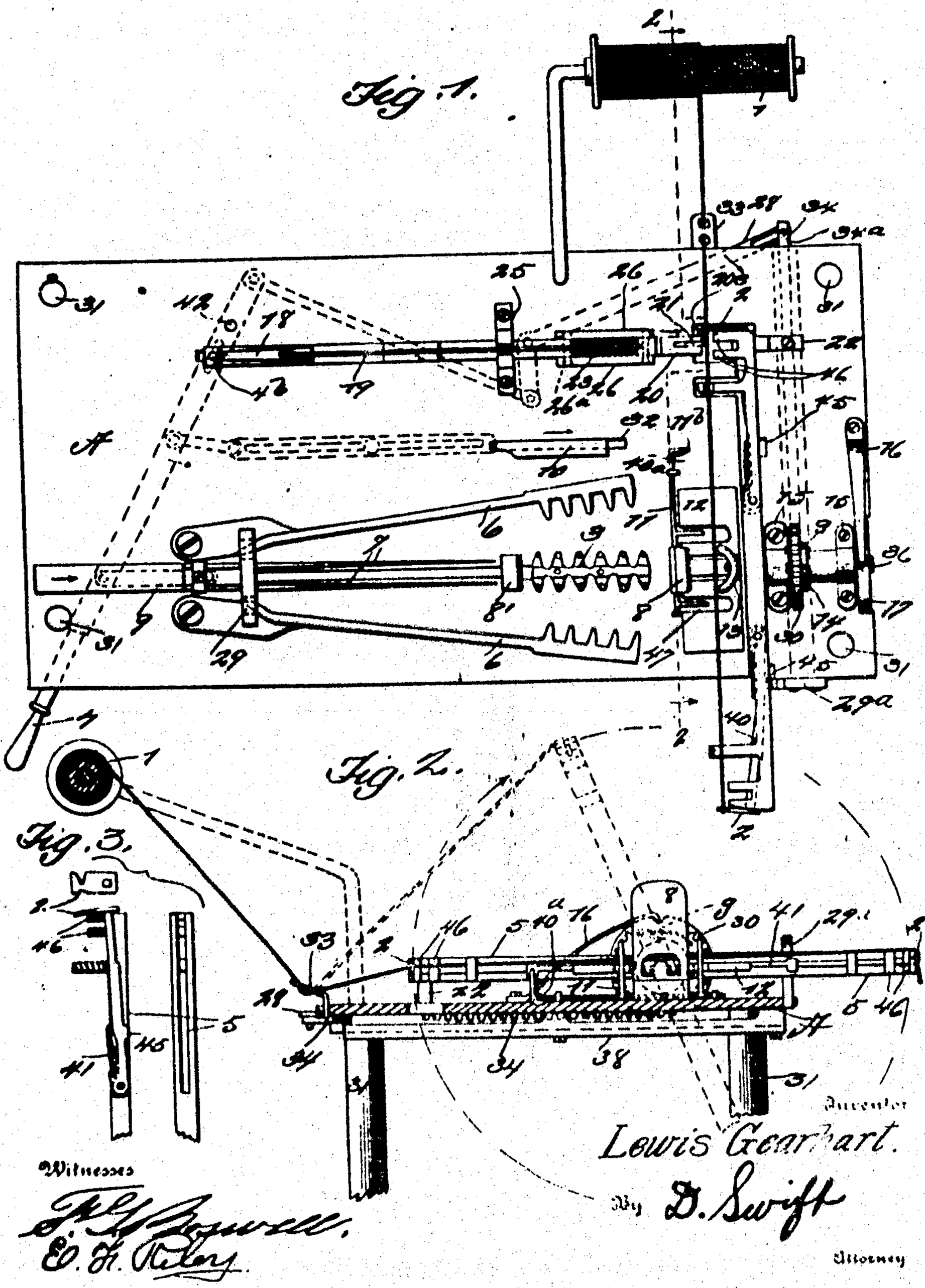

Fig. 2.

Fig. 3.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

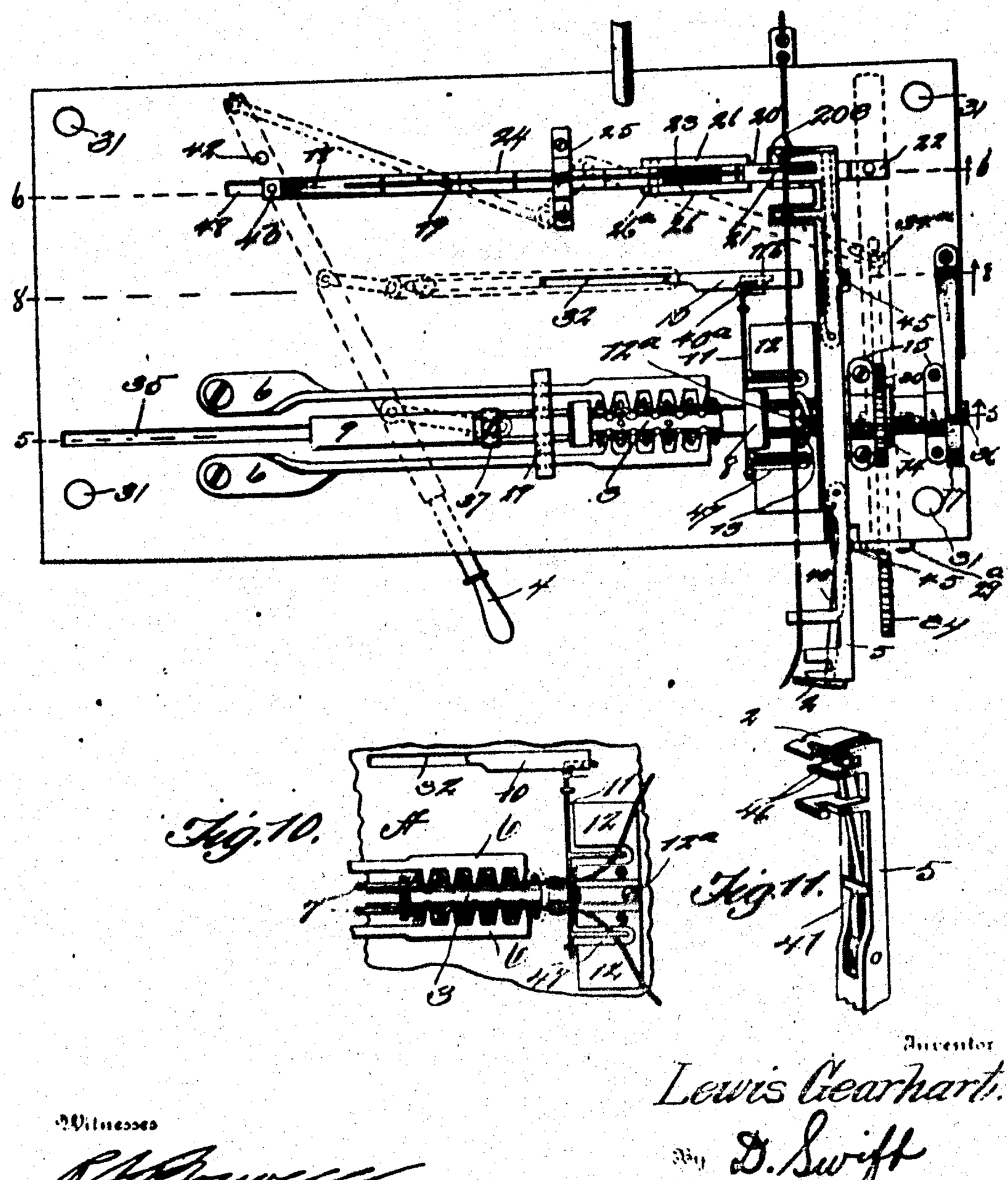

Fig. 10.

Fig. 11.

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3 SHEETS—SHEET 3.

Fig. 5.

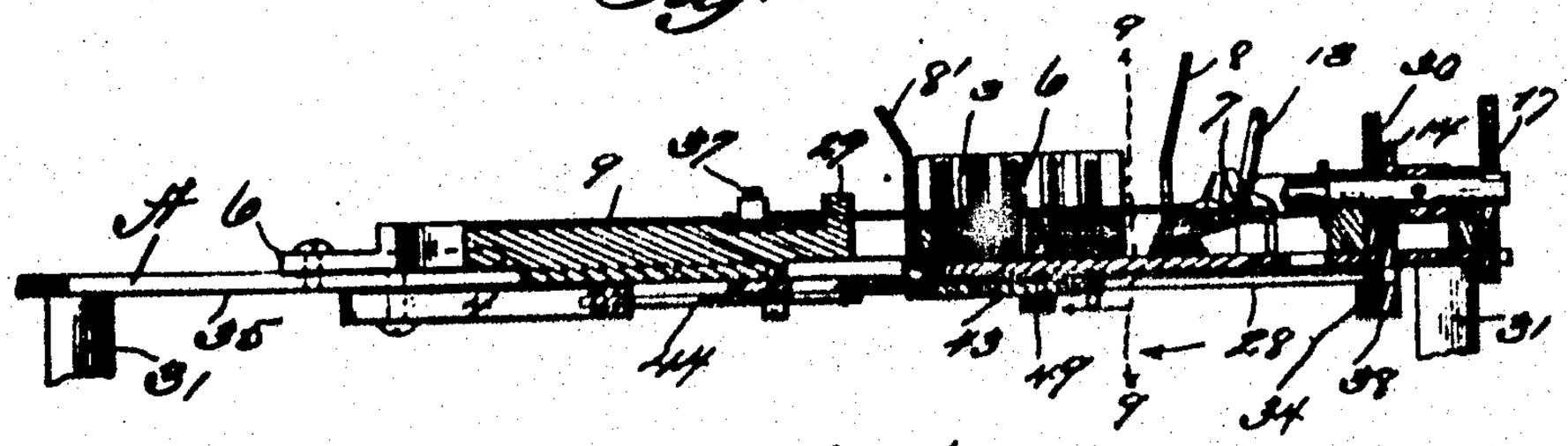


Fig. 6.

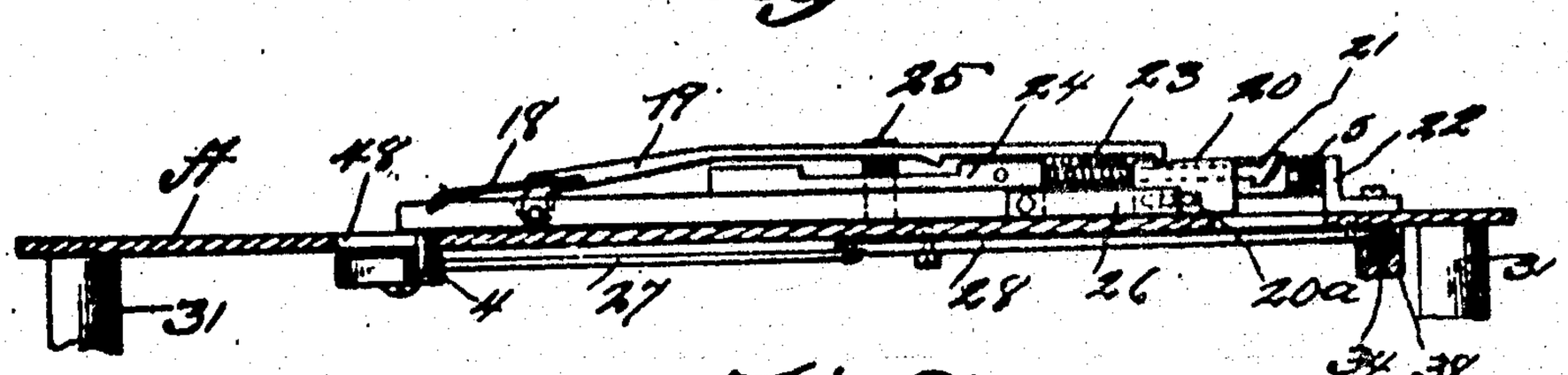


Fig. 7.

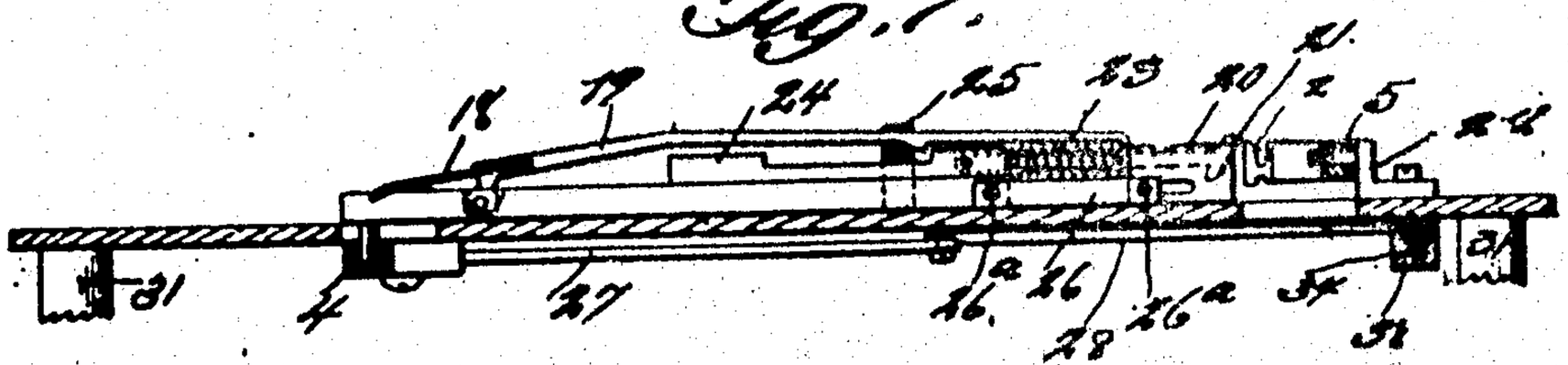


Fig. 8.

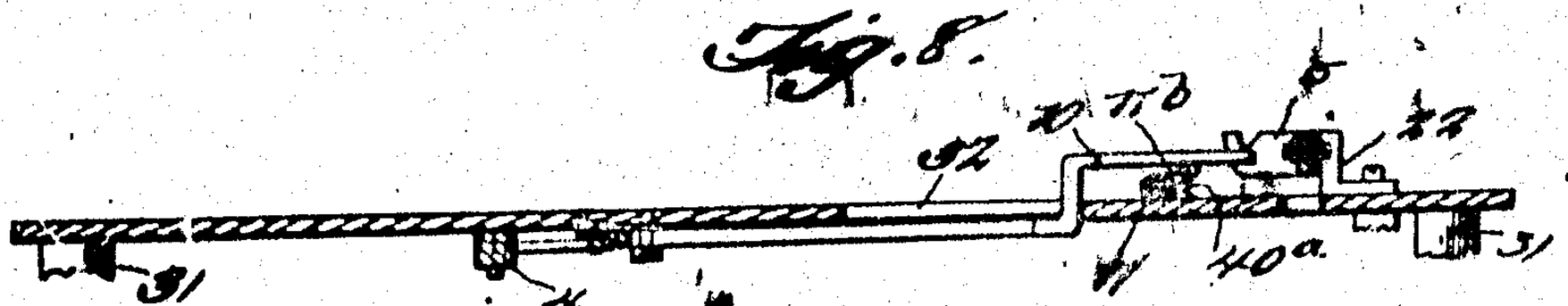
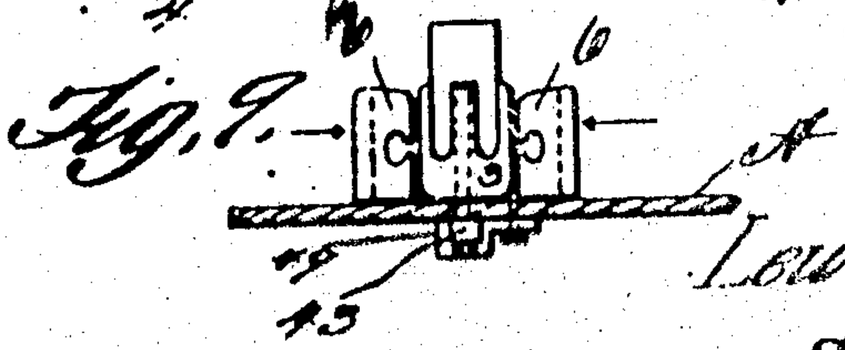


Fig. 9.



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UNITED STATES PATENT OFFICE.

LEWIS GEARHART, OF BRADDOCK, PENNSYLVANIA.

GAS-MANTLE SEWING-MACHINE.

No. 919,546. Specification of Letters Patent. Patented April 27, 1909.

Application filed February 21, 1907, Serial No. 358,780. Renewed October 17, 1908. Serial No. 458,301.

To all whom it may concern:

Be it known that I, LEWIS GEARHART, a citizen of the United States, residing at No. 304 Lobinger avenue, Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Gas-Mantle Sewing-Machine, of which the following is a specification.

This invention pertains to a new and useful machine for sewing or inserting the asbestos thread or cord in the tops of incandescent mantles.

The invention provides a revolving thread carrier and spacer, adapted for transferring and spacing the thread automatically, from the spool to the needles of the machine.

The invention aims, as a further object, to provide a thread cutting device to cooperate in connection with but independent of the revolving thread carrier and spacer, together with mechanism for connecting the thread to the needles of the machine.

A further object of the invention is to provide mantle crimping jaws and cams, to cooperate in combination with the above-mentioned element.

The invention comprises further objects, features and combinations of parts which will be hereinafter more fully described, pointed out in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view, of a device of the above-mentioned character embodying the features of the invention. Fig. 2 is a sectional view, on line 2—2 of Fig. 1, illustrating the revolving thread carrier and spacer. Fig. 3 is a detail view of a portion of the revolving thread carrier and spacer. Fig. 4 is a top plan view of the device illustrating the operating lever moved forward, to draw the thread through mantle, and also illustrating crimping jaws closed. Fig. 5, is a sectional view through the machine on line 5—5 of Fig. 4. Fig. 6 is a sectional view through the machine on line 6—6 illustrating the thread cutting device. Fig. 7 is a view illustrating the thread cutting device showing the lever in its backward position. Fig. 8 is a sectional view on line 8—8 of Fig. 4, illustrating the thread connecting device, with the lever in the forward position. Fig. 9 is an end view, of the crimping jaws. Fig. 10 is a view of the machine illustrating the thread as it is being drawn through the mantle, and also through the thread connecting device. Fig. 11, is a detail perspective view of a portion of the revolving thread carrier, showing member 2 in an outward position.

Referring to the accompanying drawings, the letter A designates the table of the device which is suitably supported by means of legs 31, as clearly illustrated in Fig. 2 of the drawings. This table is constructed so as to accommodate all parts of the device for accomplishing the above set forth objects as will be clearly manifest. Supported off to one side of the table by means of an angled rod is a revolving spool 1, around which, suitable thread for gas mantles is wound, the free end of which is connected to the revolving thread carrier and spacer, leaving a portion of the body of the thread positioned laterally of the apparatus, as disclosed in Fig. 1; this thread which is manufactured of asbestos is drawn through the tension device 33, and through a notch 2 in the thread holder 40 as illustrated in Fig. 3.

The apparatus is provided with an operating lever 4, which is secured to the under side of the table A, by means of a screw 42 as clearly shown in Fig. 1. This lever 4 when oscillated, causes the jaws 6 to open or close and when open the core jaw 3 receives the mantle, as will be clearly manifest. When the lever 4 is oscillated in a forward direction, the jaws 6 are moved as indicated by the arrows, the completion of which movement, causes the said jaws to close upon the mantle, thereby causing the same to be held in a crimped position, so as to allow the said asbestos thread to be drawn therethrough, by means of the needles 7, as will be clearly understood from Fig. 10. Said needles are designed to move backward and forward through openings of the crimping jaws 6 and the core jaw 3, and when the needles are moving backward, the thread is received from the connecting device 11, as will be clearly understood from the drawings. The connecting bar 10, as shown in Fig. 8, and the thread cutter 24 as also shown in Fig. 4 are moved forward simultaneously with the needles; the thread cutter 24 is provided with a member 20 designed to hold the thread between the parts 46 of the revolving thread carrier as shown clearly in Figs. 2 and 3. The thread is held firmly between said parts 46 until cut by the knife 21. The thread is then held between one of the parts 46 and the spring-actuated member 2, of the revolving thread carrier, as shown in Fig. 3.

The thread connecting device 11 secures the thread to the needle 7, as will be hereinafter described. Upon each forward movement of the operating lever, the jaws 6 are closed and the needles 7 pass through the mantle and said jaws and at the same time the thread is cut and connected to the said needles; upon each backward movement of the lever the revolving thread carrier and spacer is rotated one-half revolution in the direction as indicated in Fig. 2, and the thread is drawn through the mantle as will be clearly manifest. The needles 7, are secured to a holder 9, by means of a grooved-bar 37, which is secured in a proper position by means of a screw as shown clearly in Figs. 1 and 4. The member 20, is also secured to the holder 9 and forms a cam to coöperate with the jaws 6 for closing the same as the lever 4 is moved in a forward direction. When the member 20 has cleared the bent portions, of the jaws 6, said jaws 6 are moved to their furthest outward position so as to allow the core jaw 3 to receive the mantle as will be clearly manifest.

The under side of the holder 9, is constructed so as to fit and travel within a slot 35 of the table A, and is connected to the operating lever 4 by means of a link 44 as shown clearly in Fig. 5. The guide 8' extends vertically through the slot 35 and is provided with openings through which the needles 7 are designed to pass, that is, upon the forward stroke of said lever; the said guide 8' is made integral with the part 43 which slides backward and forward in the member 49 as clearly shown in Fig. 9.

When the lever 4 is moved in the direction to close the jaws 6, the guide 8' is slightly moved in the same direction, by pressure of the needles 7, when in the act of making an insertion in the mantle; this guide 8' is limited in this movement by the core jaw 3. The guide 8' is slightly moved in the opposite direction, when the needles are in the act of drawing the asbestos thread through the mantle, especially when approaching the completion of drawing the thread through the mantle.

The connecting device 11, is imparted a slight oscillatory movement when the lever 4 is moved in a direction to close the jaws 6 by means of a bar 10, pressing down upon the arm 11^b of the said connecting device, against the tension of the spring 40^a, as shown in Figs. 4 and 8, and when pressure is relieved upon the arm 11^b, the connecting device will return to its normal position.

13 designates a portion of the thread guiding device which guides the thread from the revolving thread carrier and spacer. To revolve the thread carrier, a spur gear 30 is designed to engage a rack 34, as clearly illustrated in Figs. 4 and 5; the rack 34 is connected as at 34^a to a slotted angle lever 28, which is pivoted to the under side of the table A, and having one arm thereof, connected to the lever 4 by means of a link 27 as clearly shown in dotted lines in Figs. 1 and 4. 14 is a ratchet arranged in such wise as to revolve the member 5 a semi-revolution, at each backward movement of the lever 4.

A shaft 36 is provided, which is journaled in bearings 15 upon which the gear 30 and ratchet 14 are mounted. When the lever 4 is moved to open the jaws 6, the rack is moved in the direction of the spool of thread, which rack rotates the gear 30, carrying the pawl g, which engages the ratchet 14, which, being fixed to the shaft 36, causes the thread-carrier to be revolved, as will be clearly observed. Also journaled upon the shaft, is a ratchet wheel 17, designed to be engaged by a spring 16 so as to prevent retrogression of said shaft, which, carries the said thread carrier and spacer; this thread carrier is stopped at a point where the thread is designed to be cut as shown in Fig. 4.

The rack 34, as it travels laterally of the table A, is guided in said travel by means of a guide 38, as shown clearly in Fig. 5. The lever 4 is provided with a slot in which a pin 4^b is mounted, as clearly shown in Fig. 4; this pin 4^b extends vertically through the slot 48 of the table A, and is then connected to a portion of the thread cutter 24, as also shown in Fig. 4. 25 is a bracket which holds the thread cutter 24 in place and through which, it moves, and the top of which serves to release the member 19 from the notch of the member 20 as the said lever 4 is drawn backward.

26 designates guiding elements which are connected together by means of a pin 26^a which passes through a slot 20^a of the member 20; this construction serves as a stopping device for the member 20, when released, as the spring 23 expands. To hold the member 19 in the notch of the member 20, a spring 18 is provided as clearly shown in Fig. 4. The knife 21 which severs the thread, is secured at one end of the bar 24, adjacent the spring 23; the member 20, coöperates with the stem of the knife 21, and the spring 23 is designed for the purpose of holding it firmly forward as will be clearly manifest. As the members 20 and 46 hold the thread while the knife 21 cuts the same, the revolving thread carrier and spacer rests against a member 22, as clearly shown in Figs. 1 and 4. As shown in Fig. 8, the thread connecting bar 10, is connected to the lever 4, said bar 10, is designed to move in a slot 32 in the table A, that is, when the operating lever 4 is moved forward, and as said operating lever is moved forward the bar 10 contacts with the element 11, which is held in a vertical position by means of a spring 40^a, as shown in Figs. 2 and 8. The element 11 is designed for the purpose of

forcing the thread down through the slot 47, of the plate 12, by pushing it forward in a horizontal position as shown in Fig. 4; when the thread is forced through the slot 47, it is in a position to be received by the needles 7.

The plate 12 is grooved as shown, to allow the needles to pass beneath the thread which lies across the surface thereof as seen clearly in Figs. 2 and 10. Plate 12 is secured to the table A, by means of a screw 12ª. The spring 41, as shown in Fig. 3, securely holds the thread retainer 40 in a forward position, so that the slot in the spring-actuated member 2, will receive the thread as the revolving thread carrier and spacer is rotated as will be clearly manifest.

To attach the thread to the revolving thread-carrier, a member 2, is forced in the direction of the arrow, as indicated in Fig. 3, by the member 20, which is provided with a lug 20ª which contacts with the member 2; when the member 2 is forced in this direction, as above stated, the thread is held frictionally between one of the members 46, and the under face of the said member 2, sufficiently secure to prevent detaching of the said thread as the revolving thread carrier is operated, as will be clearly seen in Fig. 4.

The thread is released from the members 2 and 46 by the element 45 of the member 40, contacting with the member 20ª, so as to allow the thread to be drawn through the mantle as clearly shown in Fig. 1.

From the foregoing, it will be clearly manifest that a very efficient, durable and practical device of this character is provided, comprising suitable mechanism for shirring the upper portion of a mantle, for the purpose of receiving an asbestos thread, by which, the mantle may be supported as in the usual manner; the construction of such mechanism, including remaining parts and elements of the device may be varied within the scope of the appended claims.

Having thus described the invention, what is claimed as new and useful is.

1. In a device as set forth, a revolving thread carrier and spacer for automatically transferring the thread from the spool to the apparatus in position to be received by the needles, a pair of coöperating crimping jaws, an operating lever to operate said jaws and said revolving thread carrier, a central core jaw and needles to coöperate with said core jaw and crimping jaws for drawing a thread through a mantle, and means for connecting the thread to the needles.

2. In a device as set forth, a revolving thread carrier and spacer, cutting mechanism for severing the thread, mechanism for imparting an intermittent movement to the thread carrier, a lever to operate said last-named mechanism, a central core jaw for supporting a mantle, a pair of pivotally mounted crimping jaws to coöperate therewith for shirring the mantle, a pair of needles to coöperate with said jaws for drawing the thread from the thread carrier through the jaws and mantle, means for connecting the thread to the needles, mechanism for guiding and supporting the needles and operated by said lever.

3. In a device as set forth, a revolving thread carrier and spacer, cutting mechanism for severing the thread, mechanism for imparting an intermittent movement to the thread carrier, a lever to operate said last named mechanism, a central core jaw for supporting a mantle, a pair of pivotally mounted crimping jaws to coöperate therewith for shirring the mantle, a pair of needles to coöperate with said jaws for drawing the thread from the thread carrier through the jaws and mantle, means for connecting the thread to the needles, mechanism for guiding and supporting the needles and operated by said lever and means carried by said supporting and guiding mechanism for pressing the crimping jaws into coöperation with the core jaw.

4. In a device as set forth, a revolving thread carrier and spacer, means to impart an intermittent movement thereto, a ratchet and spring device to prevent retrogression of the revolvong thread carrier and spacer, levers to operate said means, cutting mechanism for severing the thread, coöperative jaws and a core jaw for shirring a mantle, needles to coöperate with the jaws for drawing the thread through said mantle, mechanism for connecting the thread to the needles; said cutting mechanism, the needles and the said connecting mechanism being all operated simultaneously, substantially as specified.

5. In a device as set forth, a revolving thread carrier and spacer having means for holding the thread thereto, mechanism for imparting an intermittent movement to said carrier, cutting mechanism for severing the thread, means for shirring a mantle needles to coöperate therewith, mechanism for connecting said thread to the needles, and an operating lever for operating simultaneously the thread carrier, the cutting mechanism and the shirring mechanism and the mechanism for connecting the thread to the needles.

6. In a device as set forth, a revolving thread carrier and spacer having means for holding the thread thereto, an operative lever and operating mechanism therefor, a core jaw for holding a mantle and crimping jaws to coöperate therewith, a reciprocating member for operating said crimping jaws having means for alternately opening and closing the same and operated by said lever, needles carried by said member for drawing the thread through the said mantles and means for connecting the thread to the needles.

7. In a device as set forth, an intermittently operated revolving thread carrier and spacer, a ratchet and spring device to prevent retrogression thereof, a core jaw for supporting a mantle, crimping jaws coöperating therewith, a reciprocating member having a member for opening and closing the crimping jaws; needles carried by said reciprocating member designed to draw said thread through the core jaw the crimping jaws and mantle and means for connecting the thread to the needles and an operating lever for the apparatus.

8. In a device as set forth, a thread carrying beam having means for holding thread thereto, a table supporting the same, a rack and gear mechanism for imparting an intermittent movement to said beam, a core jaw for holding a mantle, crimping jaws to coöperate therewith, a reciprocating member having means for opening or closing said crimping jaws, needles carried by said reciprocating member for drawing the thread through the core jaw, crimping jaws, and mantle, means for connecting the thread to the needles and an operating lever having connection with said rack for operating the same, and a link connection between said operating lever and reciprocating member.

9. In a device as set forth, a revolving thread carrier and spacer, having spring-actuated members for holding the thread thereto, a rack and gear mechanism for imparting intermittent movement to said carrier, a ratchet and spring device to prevent retrogression of said carrier, a bell crank lever secured to said rack, an operating lever having a link connected to said bell crank lever, mechanism for severing the thread, a corrugated core jaw for supporting a mantle, pivotally mounted crimping jaws to coöperate therewith, a reciprocating member having means for opening or closing said crimping jaws and provided with a link connection with said operating lever, needles carried by said reciprocating member for drawing the thread through the core jaw, crimping jaws and mantle and mechanism for connecting the thread to the needles as specified.

10. In a machine for inserting threads in incandescent mantles, an intermittently revolving thread-carrier and spacer for transferring the thread from a spool to the machine, a pair of crimping jaws, a lever to simultaneously operate said jaws and thread carrier, a central core jaw, needles operated by said lever for drawing the threads through a mantle and means for connecting the thread to the needle.

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Witnesses:
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