Jan. 6, 1953 J. SAKIRSKY 2,624,101

LIGHTING OUTFIT SUBASSEMBLY MACHINE

Filed Nov. 30, 1948 3 Sheets-Sheet 1

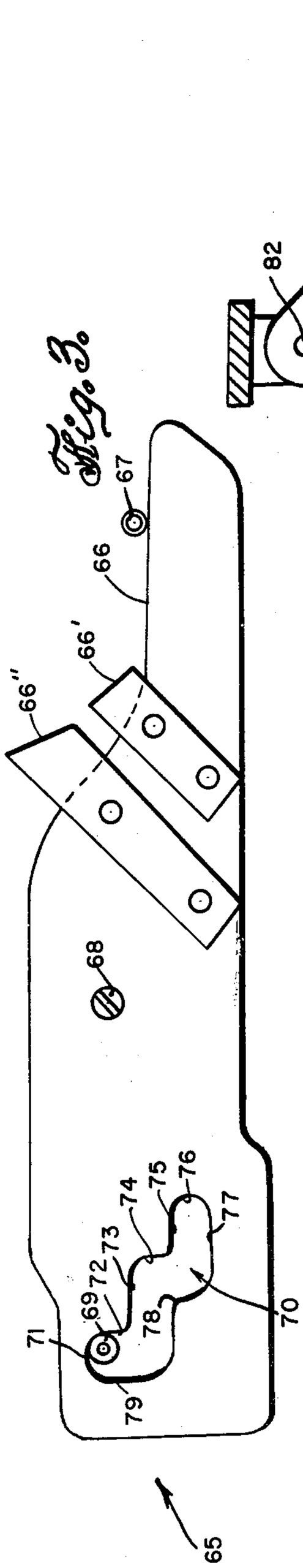

Fig. 3.

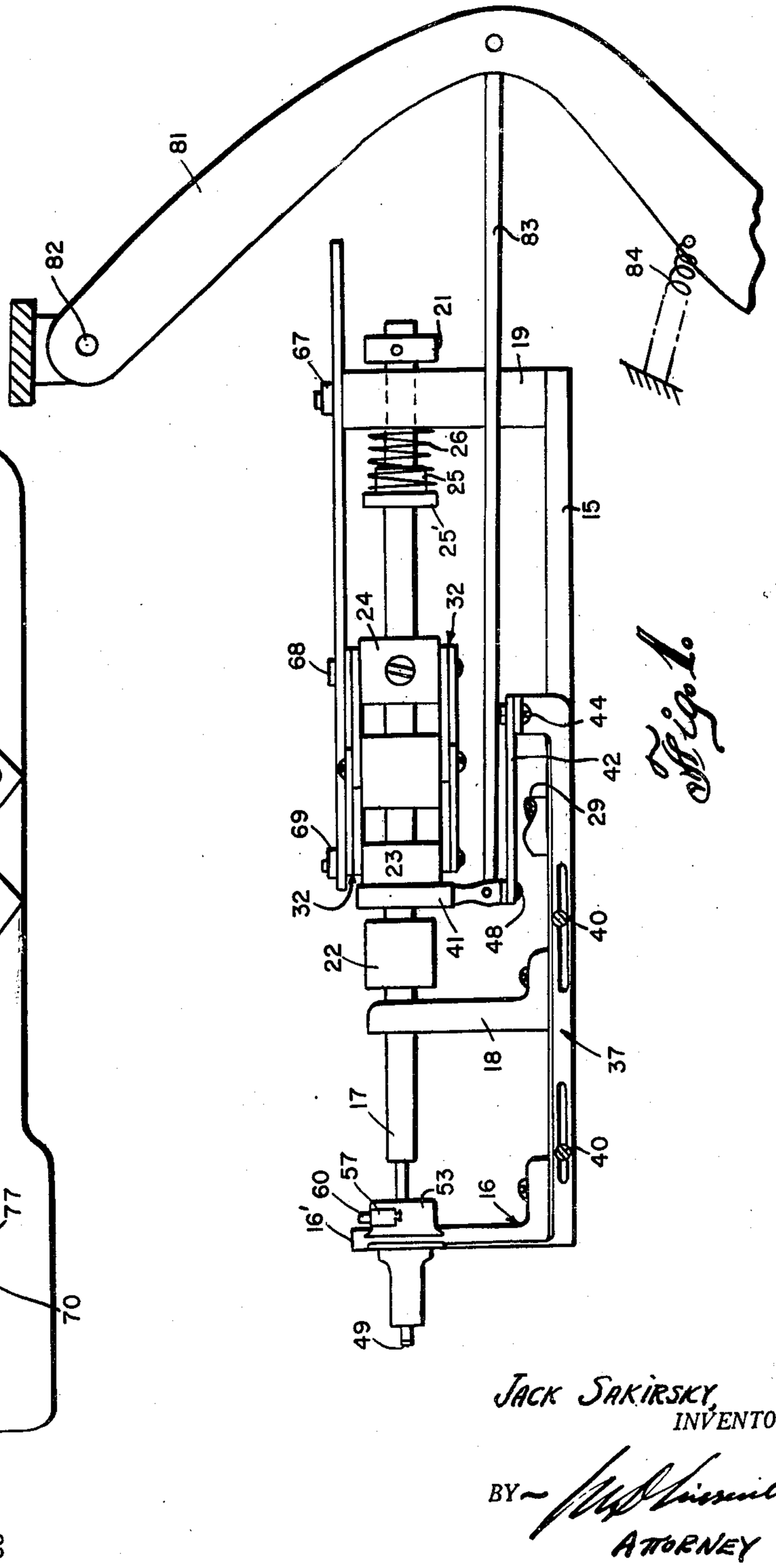

Fig. 1.

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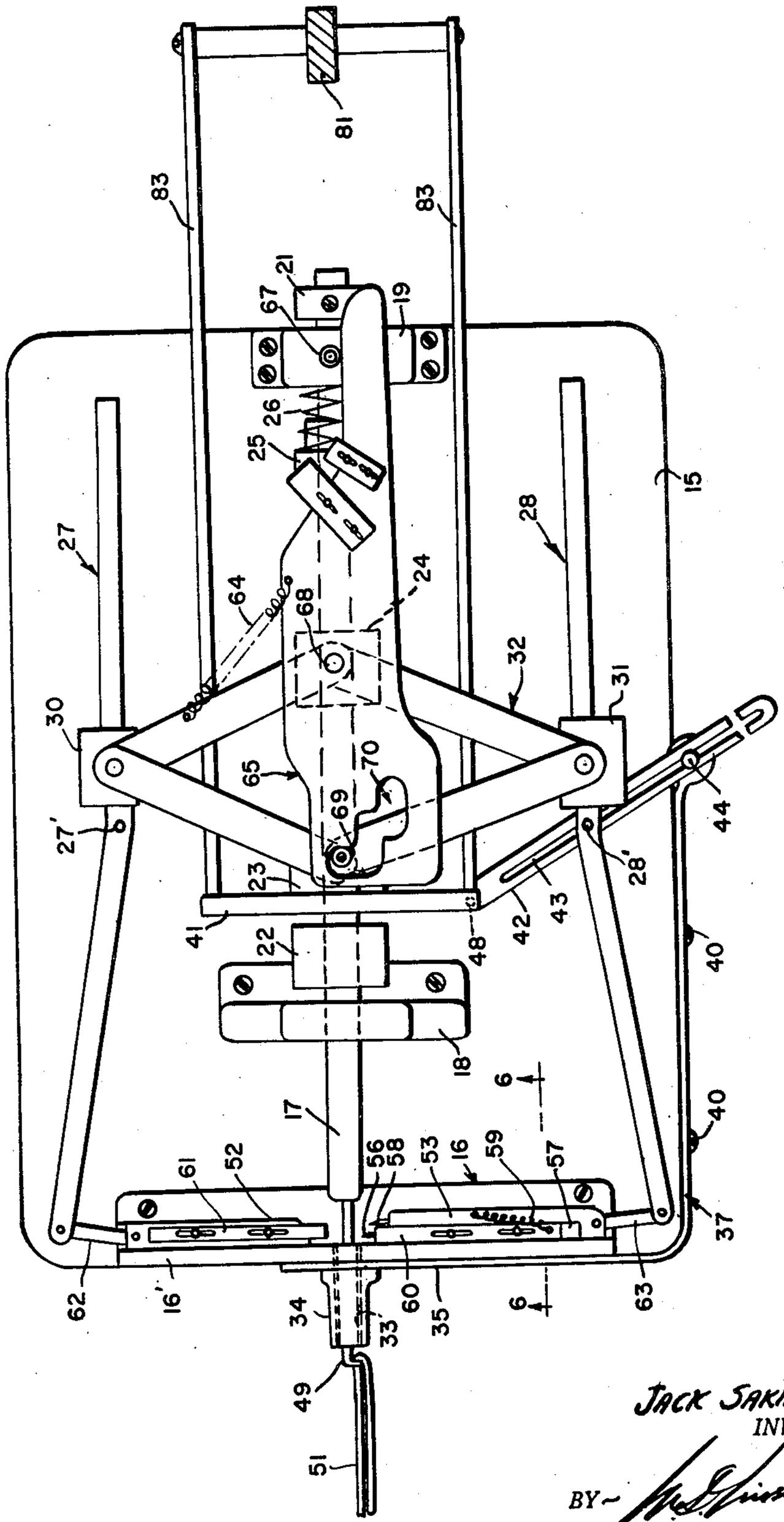

Fig. 2.

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LIGHTING OUTFIT SUBASSEMBLY MACHINE

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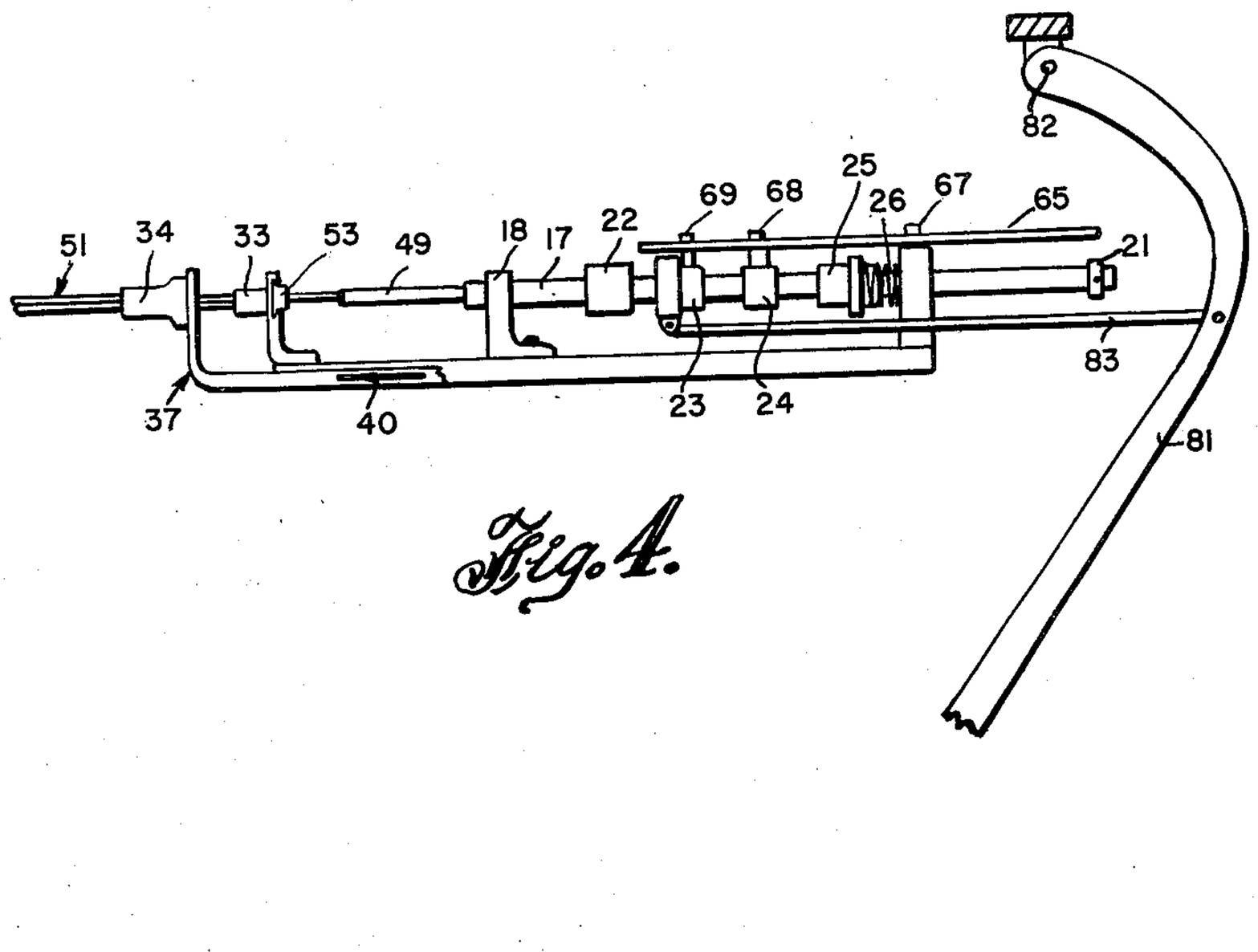

Fig. 4.

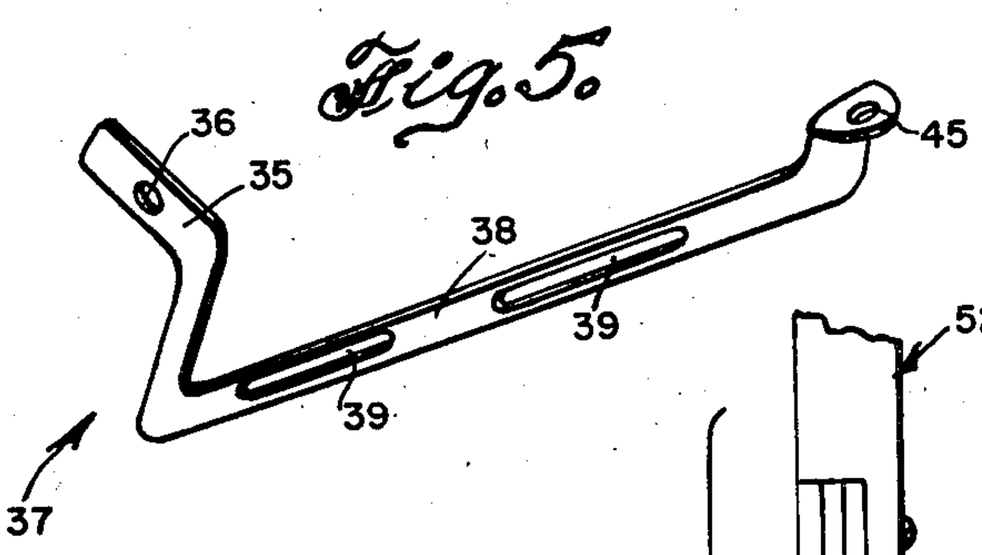

Fig. 5.

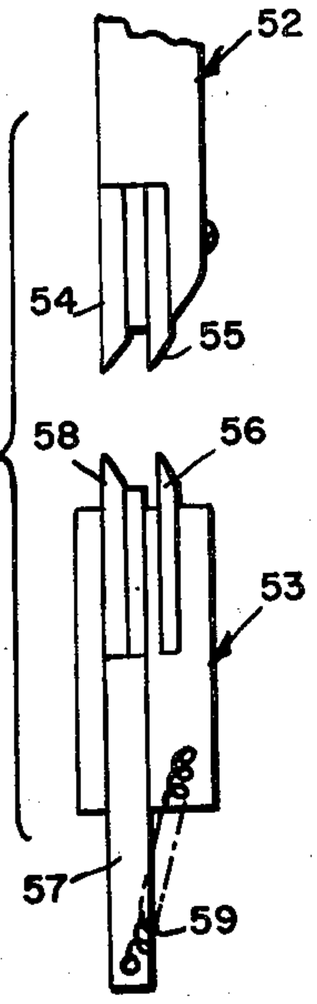

Fig. 7.

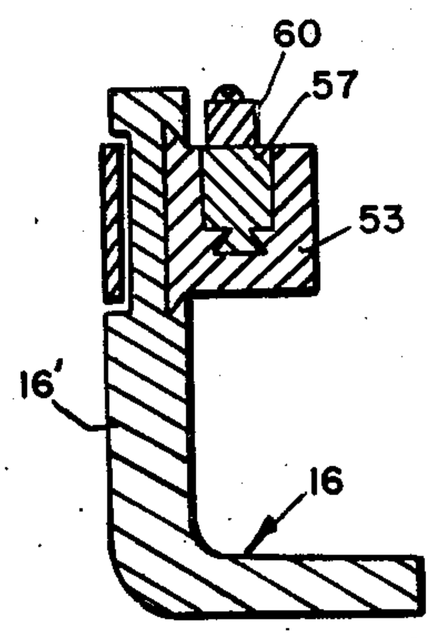

Fig. 6.

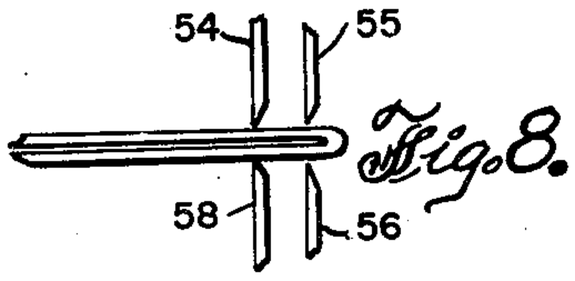

Fig. 8.

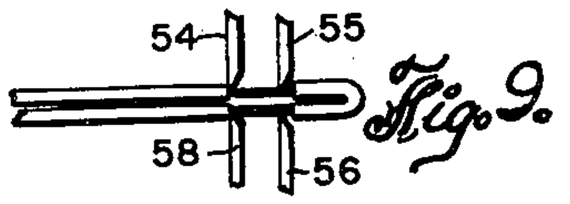

Fig. 9.

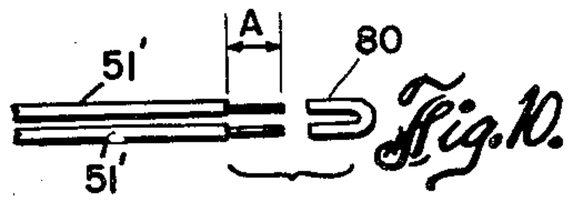

Fig. 10.

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Patented Jan. 6, 1953 2,624,101

UNITED STATES PATENT OFFICE

2,624,101

LIGHTING OUTFIT SUBASSEMBLY MACHINE

Jack Sakirsky, Bridgeport, Conn., assignor to Jacob B. Lew, Brooklyn, N. Y.

Application November 30, 1948, Serial No. 62,641

3 Claims. (Cl. 29—33)

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The present invention relates to a machine or device for use in the manufacture of what commonly are known as electric lighting outfits for Christmas trees.

These outfits usually comprise a plurality of spaced lamp sockets electrically associated by lengths of insulated wire with a suitable plug in circuit for connection to a current supply outlet. Each socket includes an outer tubular shell or casing of an insulative material as a plastic or the like, in which contacts for the terminals of a lamp are mounted. A pair of wires respectively connected to such contacts, extend out of the shell away from its mouth end.

In the process of manufacture, one of the subassemblies preferred is to have the wires with insulation stripped off their ends, positioned threaded through and extending with such ends out of the mouth of the socket casing; that is, one end of each wire being so positioned.

The principal object of this invention is to provide a machine of novel and improved construction having a new mode of operation, which by means of a single stroke of an operating member, the aforementioned sub-assembly is automatically accomplished.

Another object hereof is to provide a novel and improved device of the character described, which is simple in construction, easy to operate, and efficient in carrying out the purposes for which it is designed.

Other objects and advantages will become apparent as this disclosure proceeds.

To attain the objects of this invention, the device operates essentially by taking a wire bent in two or formed in a bight and positioning it through a socket casing whereby the bend in the wire is out of the mouth of the casing. Then portions of each half of the wire near the bend are cleared of insulation and the insulated bend in the wire is cut off.

In the accompanying drawings forming part of this specification, similar characters of reference indicate corresponding parts in all the views.

Fig. 1 is a side elevational view of a machine embodying the teachings of this invention. Several parts are omitted to attain clarity of illustration, but are elsewhere herein either shown or in the written description set forth.

Fig. 2 is a top plan view thereof.

Fig. 3 is a top plan view of the cam included in this machine.

Fig. 4 is similar to Fig. 1, and shows the relative position of the various parts at an intermediate step in the operation of the machine.

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Fig. 5 is a perspective view of the member which pushes the socket shell along the wire as the wire is threaded through the shell.

Fig. 6 is a fragmentary section taken along lines 6—6 in Fig. 2, and includes in its showing, one of the slides for holding a cut-off blade and another slide which holds an insulation-slitting blade; the second mentioned slide being slidably mounted on the first mentioned slide.

Fig. 7 shows a top view of the cutting and stripping mechanism, illustrated diagrammatically. This view is the top plan view of parts shown in Fig. 6, and of associated blade means.

Fig. 8 is a diagrammatic view showing the relative positions of the wire and blades at the commencement of the slitting of the insulation.

Fig. 9 is a similar view showing portions of the wire cleared of insulation.

Fig. 10 shows the desired sub-assembly completed and the discardable piece.

In the drawings, the numeral 15 designates a base provided at the front end with an upright plate member 16' which may be of the angle 16. Behind this front plate member, is a rearwardly extending horizontally positioned rod 17, supported for sliding longitudinal movement through the spaced bearing members 18 and 19 which are secured on the base. From the forward end of said rod 17, and in longitudinal alignment therewith, extends a hook 49, while on the rear end of said rod is carried a releasably secured collar 21. The rod 17, between its supporting members 18 and 19, carries the following components in succession in rearwardly direction, namely, a loose collar 22, a block or collar 23 slidable therealong, another block or collar 24 releasably fixed thereon, a loose collar 25 with flange 25', and a compression coil spring 26 carried at one end about said collar 25 and resting against the collar's flange 25', while the other end of the spring extends a little distance off said collar 25 and extending adjacent the bearing support 19.

The slidable rod 17 lies between a pair of elongated members as for instance, the rods 27 and 28, which extend respectively spaced from the side ends of the front plate 16' and rearwardly over the base 15. Rod 27 is pivoted on the vertical axis at 27' and the rod 28 likewise at 28', on posts as 29 mounted on the base 15. Rearward of such pivotal connections, the rod 27 has slidably mounted thereon the collar or block 30, and rod 28 likewise has the block 31. The blocks 23, 30, 24 and 31 are connected by a parallelogram linkage as 32, at top and bottom, as shown in Figs. 1 and 2.

Mounted in a bore through the front wall 16', and extending longitudinally forward thereof, is a tubular member 33, adapted to receive thereon a tubular socket casing shell 34, whereby the mouth of said shell is against a pusher arm 35. Hole 36 in said pusher arm is just for clearance of the socket shell supporting member 33. The pusher arm 35 is a portion of the member indicated generally by the numeral 37, whose arm 38 has slots 39 therealong. Screws 40 positioned through said slots and secured in the vertical wall of the base 15, along a side thereof, serve to mount member 37 for slidable movement along said side of the base.

The sliding block 23, is integral with a bar or plate member 41, which extends to the right and left of the bar 17. A slotted bar 42 is linked at one end to said member 41, at 48. Axis pin at 28' passes through the slot 43, for pivotal and slidable association of said bar 42, and a headed pin 44 through said slot and engaged in hole 45 in pusher bar structure member 37, provides a like association. The axis at 48, 28' and at 44, are all vertical. It is evident that upon travel of block 23 to the rear, the pusher arm 35 will be moved forward of the frame plate 16', and thus push the socket shell 34, forward and off its supporting tube 33.

The slidable bar 17, carries a forwardly longitudinally extending wire-pulling hook 49. When said bar 17 is at forward position as shown in Figs. 1 and 2, said hook is positioned through the tubular member 33, with its hook end forwardly out of the socket shell 34, so that a bend in a wire indicated generally by the numeral 51, may be placed on said hook. Upon rearward movement of said slide bar 17, such engaged wire will be pulled rearwardly through the tubular member 33, and socket shell 34, will be pushed by pusher arm 35, forwardly off said supporting member 33, and onto the wire 51.

On the rear surface of the front frame member 16', along a horizontal dove-tail slot, is slidably mounted a pair of blade holders 52 and 53. Fixed in holder 52, is an insulation-slitting blade 54 and a wire-cutting blade 55. Fixed in holder 53, is a wire-cutting blade 56. Slidably mounted on blade holder 53, is another blade holder 57, on the latter of which is mounted an insulation slitting blade 58. All blade holders move in parallel directions. All of said blades are parallel. The sharpened edges of the wire-cutting blades are opposite each other, one at each side of the hole through the supporting member 33. The sharpened edges of the insulation-slitting blades are opposite each other, one at each side of the hole through the supporting member 33. A tension coil spring 59, at its respective ends is connected to the blade holders 53 and 57. Adjustably mounted stop bars 60 and 61, are respectively, one on the blade holder 57, and the other on the blade holder 52, whereby upon movement of the blade holders 52 and 53 towards each other, the blade holder 57 will be held from further movement along with its carrier, the blade holder 53, and spring 59 will be stressed. The wire-cutting blades 55 and 56, are a distance "A" behind the plane of the insulation-slitting blades 54 and 58.

The forward end of the bar 27, is assocaited with the blade holder 52, by a link 62. The forward end of the bar 28, is associated with the blade holder 53, by a link 63. It is to be noted that whenever the parallelogram linkages 32 close, the forward ends of the members 27 and 28, will approach each other, thus bringing the aforesaid blade holders 52 and 53 closer to each other, and the reverse occurs when said linkages 32, open.

It is evident that rearward movement of the slidable bar 17, will cause the wire 51 to be laced through the tubular support 33, and its bight positioned rearwardly beyond the cutting blades 55 and 56. It is necessary that the wire 51 shall be at rest during the interval it takes the blades 54 and 58 to slit the insulation covering, then said wire shall move a little rearwardly so that the said blades 54 and 58 push the insulation and bare a short length of the bare wire on each part of the bent wire, and then come to rest again while the blades 55 and 56 cut off the insulated bent portion 80 of said wire 51. It therefore is incumbent upon rod 17 to move and stop as required. To accomplish and control such required movement, there is included a plate member designated generally by the numeral 65, which is a cam means. This plate is of elongated form, lies flat atop the upper linkage 32, has cam edges 66, 66', and 66'' on its rear half for contact with the roller 67 on a vertical axis on the slide bearing 19, is pivoted at 68 to block 24 which is secured to the slidable bar 17, and in its forward region is provided with a cut out generally designated by the numeral 70, whose endless edge acts as a cam means in contact with a roller 69, which is carried on a vertical axis on the loose block 23. Successive portions of said endless edge are respectively numbered 71, 72, 73, 74, 75, 76, 77, 78 and 79. The numeral 64 designates a tension coil spring to maintain said plate member 65 in contact with the roller 67.

A lever 81, pivoted at a fixed frame point 82, extends below the machine and terminates in a foot pedal (not shown). Bars 83 are links connecting the member 41 and the foot lever 81. When the operator by foot, pushes the pedal-end of lever 81 rearwardly, said member 41, carrying the block 23, will move rearwardly. Release of the pedal will restore initial condition, due to action of the tension coil spring 84. Other suitable means may be employed to reciprocate the member 41 through its required scope of movement.

The condition of the machine at rest is shown in Figs. 1 and 2, with roller 67 in contact with cam edge portion 66, a predetermined distance from cam edge portion 66', and with the roller 69 in contact with the cam edge portion 72. The blades and their holders are as illustrated in Fig. 7.

In operation, by hand, a socket casing shell 34 is set on the tubular member 33, and then a bend of a wire 51, is engaged on the hook end of 49. The pedal of lever 81, is shifted rearwardly by foot of the operator.

It is to be noted that while the roller 69 is along edges 72 or 74, the bar 17 will slide along with the member 41, but said bar will remain at rest, though member 41 continue to move, during such time that said roller 69 is along the edges 73 or 75 of the opening 70 in the plate member 65. The edges 72 and 74 are across the line of movement while the edges 73 and 75 are along the line of movement of the member 41.

Commencing from rest position, with roller 69 in contact with cam edge portion 72, the bar 17 is slid rearwardly, lacing the wire 51 through the tubular member 33, between the blades on holders 52 and 53 and a little beyond said holders

to a position as shown in Figs. 4 and 8, whereupon block 24 contacts the flange 25', and the roller 67, which maintained cam plate 65 motionless with respect to axis 68, comes into contact with cam edge portion 66', where said cam plate 65 is given arcual movement about pivot 68, until the roller 69 contacts cam edge portion 73 and moves therealong while bar 17 is stationary because block 24 is stopped by action of the compression spring 26. During movement of roller 69 along cam edge portion 73, the linkages 32 close a bit, pushing blocks 30 and 31 apart, thereby causing the blade holders 52 and 53 to approach each other, until the stop bars 60 and 61 come into contact. At such contact the insulation slitting blades 54 and 58 are positioned dug into the insulation of the parts 51' of the wire 51, roller 69 has come into contact with the cam edge portion 74 whereby bar 17 again moves stressing the spring 26, and causing during such movement a pushing back of the yieldable insulation as shown in Fig. 9. The roller 67 has now come into contact with cam edge portion 66'', causing further arcual movement of the cam plate 65, and roller 69 is now along cam edge portion 75, whereupon movement of bar 17 is halted and the linkages close further against spring action 26, causing blades 55 and 56 to cut off the discardable bend 80 of the wire 51. Cutting action of the blades 54 and 58 is prevented because of the yieldability of the slide 57, against suitable spring action 59. Member 41 has now reached the end of its rearward travel. Release of pedal of the foot lever 81, occasions the return of the machine to rest position as in Figs. 1 and 2.

Member 41 assumes its forward rest position as is determined by the spacer collar 22, and the bar 17 is stopped when collar 21 thereon contacts the slide bearing member 19. Upon return movement, the arcual movements of the cam plate 65 are in reverse, and the inward point at 78 and the cam edge portions 77 and 79 serve to restore said cam plate to rest position shown in Fig. 3, due to action at cam edge portions 66'', 66' and 66 successively, upon the forward return movement of the cam plate 65 which is carried along on the block 24. Spring strengths are chosen suitable to accomplish their described functions.

The machine is now in condition to repeat its cycle of operation.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the embodiment shown herein be deemed illustrative and not restrictive and that the patent shall cover all patentable novelty set forth in the claims; reference being had to the following claims rather than to the specific description herein to indicate the scope of this invention.

I claim:

1. In a machine of the character described, the the combination with a frame, of a hook adapted to engage the bight of a bent wire covered by yieldable insulation, a hook holder movably mounted on the frame, carrying said hook extendingly therefrom along its line of movement, three members carried on the hook holder, one beyond the other along said line of movement; the first member nearest the hook and the third member furthest from the hook, being slidably mounted on the hook holder along its line of movement; the intermediate member being fixed

on the hook holder and in the path of the third member so that said intermediate and third members may be in contact, a plate member having two cam contours, one at each end, pivotally mounted intermediate its ends on the hook holder, a first cam follower carried on the first member and in contact with one of the cam contours of said plate member, a second cam follower mounted on the frame and in contact with the second of said cam contours of the plate member, an insulation slitting means mounted on the frame, including a pair of blades, at least one of which is movably mounted, a wire cutting means mounted on the frame, including a pair of shearing members, at least one of which is movably mounted; said hook at normal rest position of the hook holder lying between the shearing members of the wire cutting means, between the blades of the insulation slitting means and with its hook end extending beyond said blades; the wire cutting means being positioned between the insulation slitting means and the first member on the hook holder; the three members on the hook holder, at normal rest position of said hook holder, being in predetermined spaced relation, first spring means adapted to restore the third member on the hook holder to a predetermined position with respect to the frame, a member pivotally mounted on the frame, means on said pivotally mounted member, adapted to move the movable blade of the insulation slitting means and the movable shearing member of the wire cutting means upon movement of this pivotally mounted member, a fourth member slidably mounted on this pivotally mounted member, a pair of links pivotally mounted on said fourth member and respectively pivotally connected, one to the first member on the hook holder and the other to the hook holder; the axes of all pivotal connections of said links being parallel; the first cam contour having two spaced portions, each of which when respectively in contact with the first cam follower will maintain the first member on the hook holder in a fixed position thereon, and a third portion intermediate said two portions and a fourth portion beyond the second portion, each of which, when respectively in contact with the first cam follower will permit movement of the first member along the hook holder; the first portion of the first cam contour being furthest from the pivotal connection of the cam plate member with the hook holder; the second cam contour having a first portion in line with the line of movement of the hook holder and two other portions, each of which when respectively in contact with the second cam follower will shift the cam plate member about its axis to release the first cam follower from the first and second portions of the first cam contour respectively; the first portion of the second cam contour being furthest from the pivotal connection of the cam plate, and spring means maintaining the cam plate member in contact with both cam followers; in normal rest position of the hook holder, the first cam follower being in contact with the first portion of the first cam contour, and the second cam follower being in contact with the first portion of the second cam contour; the scope of movement of the first member on the hook holder being such that the first cam follower travels along the entire first cam contour; the intermediate member on the hook holder being so positioned that it contacts the third member on said holder and stresses the first spring means while

the first cam follower is in contact with the fourth portion of the first cam contour.

2. A machine as defined in claim 1, wherein the hook holder is a rod longitudinally slidably mounted on the frame, each of the three members on said holder is a collar, the pivotally mounted member on the frame is a rod, the fourth member is a collar and the cam plate member is carried on the intermediate member mounted on the hook holder.

3. A machine as defined in claim 1, including a tubular member carried on the frame and extending therefrom, adapted to receive thereon a tubular socket casing; the hook at normal rest position, lying through said tubular member with the hook-end exterior to said tubular member.

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