

May 30, 1961

M. L. PETERSON ET AL

2,985,933

WIRE GRIP

Filed June 4, 1959

2 Sheets-Sheet 1

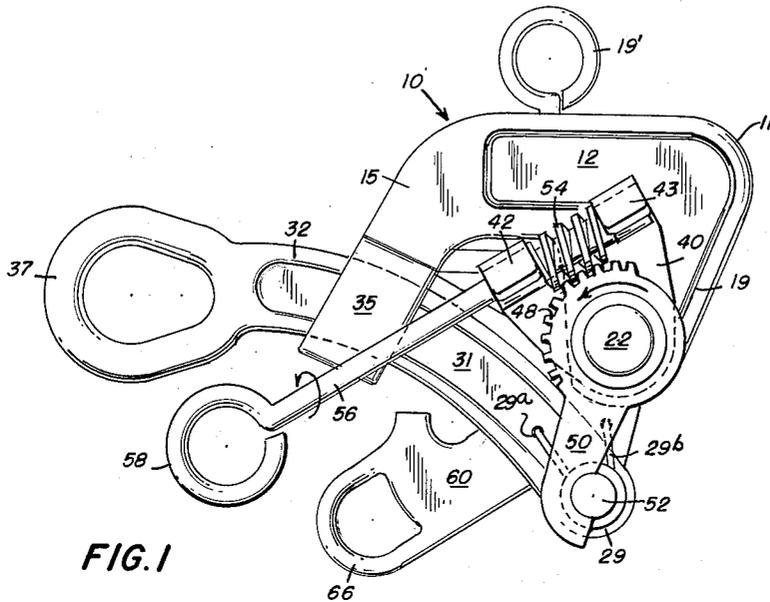


FIG. 1

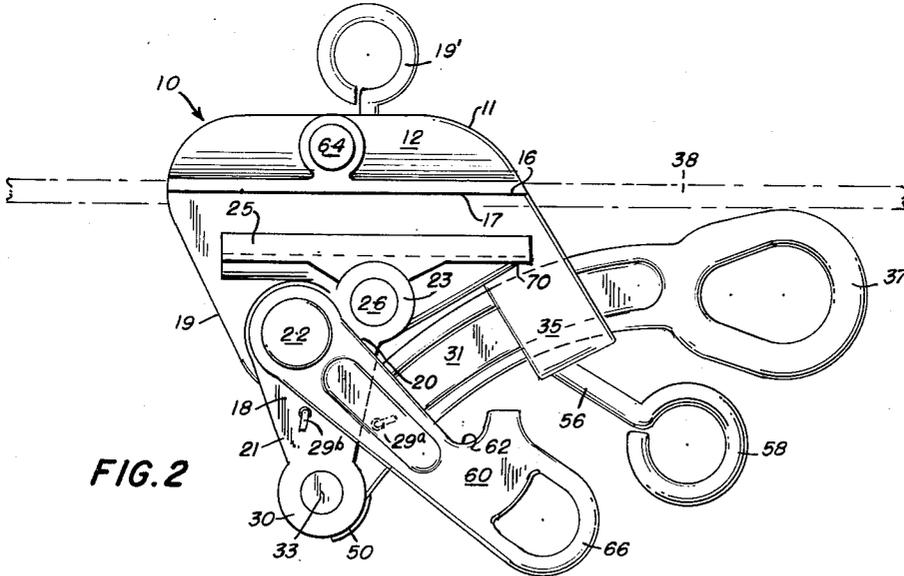


FIG. 2

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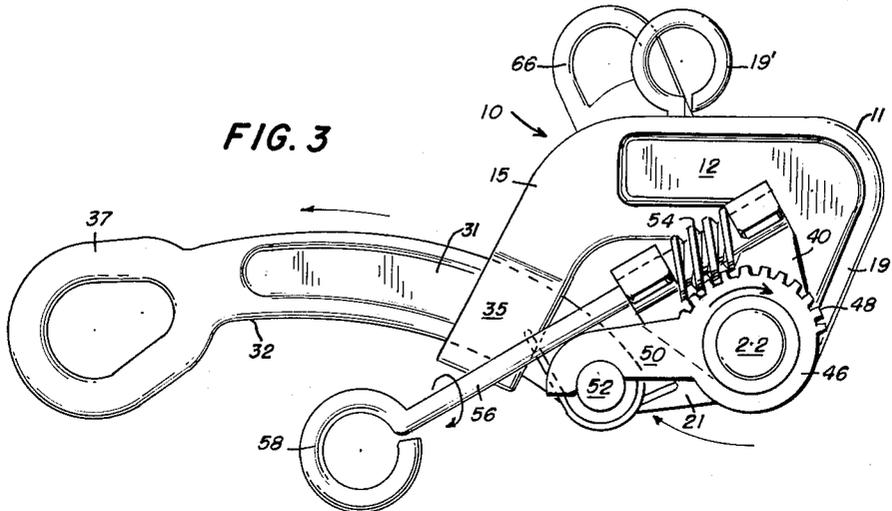


FIG. 3

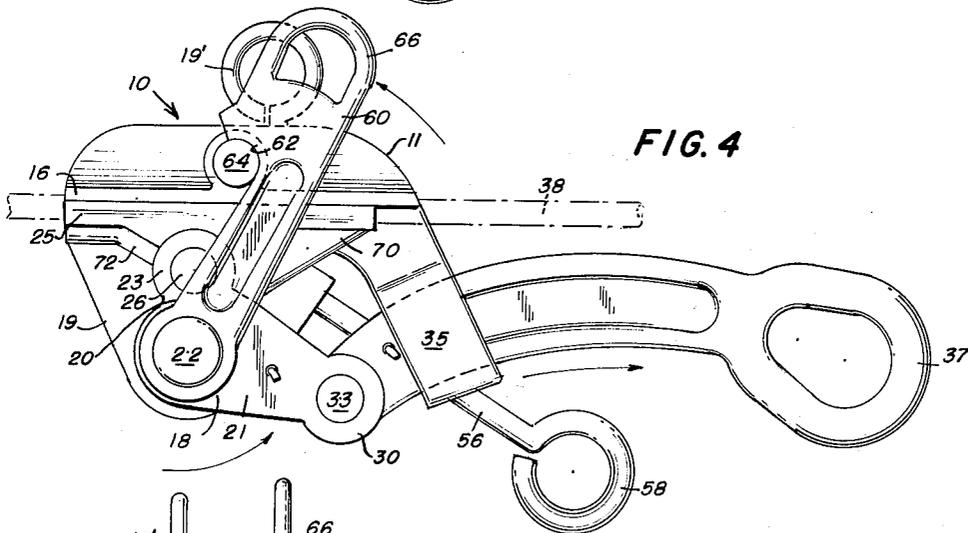


FIG. 4

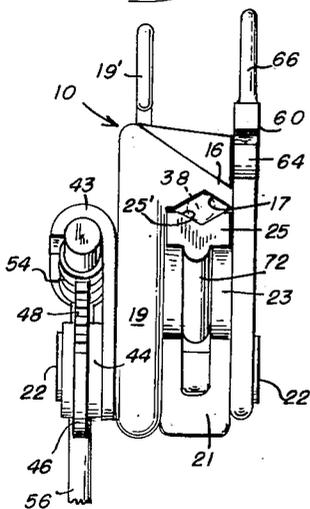


FIG. 5

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2,985,933

WIRE GRIP

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5 Claims. (Cl. 24-132)

This invention relates to wire grips and particularly to wire grips of the type which may be conveniently operated at a place remote from the grips' point of application. This invention is an improvement in the type grip described in United States Patent No. 1,942,625.

Wire grips of the type described in the above-mentioned patent have not reached their full potential because, among other reasons, of the difficulties encountered in applying such grips from points a safe distance from the point where the grip must be fastened. It has become increasingly important to repair and service electrical installations without disconnecting the current. In certain installations where great damage would be caused by current interruptions, such as electric furnaces in steel mills, commercial brooders, deep freeze installations, etc., the power companies must furnish uninterrupted service. In many cases there is a penalty clause attached for failure to provide such uninterrupted service.

It is therefore an object of this invention to provide means whereby wire grips may be applied and released safely by an operator from points remote from the area of attachment, while retaining all the advantages inherent in the structure defined in United States Patent No. 1,942,625.

Further objectives and advantages of this invention will be apparent from the following description and claims wherein the construction, arrangement and cooperation of the several parts of the wire grip are set forth.

In the drawings:

Fig. 1 is a side elevation view of a wire grip in the open position;

Fig. 2 is an elevation view of the other side of the wire grip in the open position;

Fig. 3 is an elevation view of the side shown in Fig. 1 of the wire grip in the closed position;

Fig. 4 is an elevation view of the other side of the wire grip in the closed position; and

Fig. 5 is a view of the left end of Fig. 4.

Referring now to the drawings, where like numerals indicate like parts, the numeral 10 designates one form of the wire grip of this invention. The wire grip comprises a frame 11 having a body portion 12 and arms 15 and 19 forming with the body a substantially U-shaped configuration. Along a side surface of the body 12 is a laterally extending jaw member 16 integrally formed and provided with a grooved face 17. A lifting hook 19' is attached to the upper surface of body 12.

A bell-crank lever 18 formed with a shorter arm 20 and a longer arm 21 is pivoted upon a fulcrum pin 22 which is rigidly carried by arm 19. The shorter arm 20 has a bifurcated portion 23 pivotally supporting a jaw 25 upon a pin 26 secured in the bifurcated portion. The jaw 25 is provided with a grooved face 25' which opposes face 17 of stationary jaw 16.

The outer end of the longer arm 21 has a bifurcated portion 30. One end of a curved handle 32 is mounted on pin 33 carried in the bifurcated portion 30. The other end of the handle 32 is provided with an eye 37 which is

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adapted to receive a tool or other mechanical element, or it can be grasped directly by an operator to manipulate the grip. A guide loop 35 formed integrally upon the end of arm 15 provides a guide for slidably receiving the shank 31 of the handle 32.

By sliding the handle 32 inwardly (to the left in Fig. 2) to pivot the bell crank 18, the pivoted lower jaw 25 moves away from fixed jaw 16. By moving handle 32 outwardly (as shown by Figs. 3 and 4), the gripping jaws will come in contact with each other or with a cable placed therebetween. The handle and bell crank are spring-urged outwardly (to the Fig. 4 position) by the coil spring biasing element 29 which is coiled about pin 33 and attached to the bell crank at 29a and to the handle at 29b. The arrangement described above permits the insertion of a wire 38 between the jaws when the handle is moved inwardly against the spring. When the handle is released, the spring will force the handle outwardly and cause the jaws to grasp the cable automatically. However, it is only with a great deal of difficulty and skill, that the handle 32 can be forced inwardly from points remote from the wire grip's point of application. In other words, it is very difficult through the use of non-conducting poles or other implements to hold the wire grip securely enough while the handle is pushed inwardly. This invention provides structure which allows this operation to be accomplished easily.

The pin 22 extends through and beyond the body 12 and has elements mounted on the other side of the body. A bracket member 40, a spacing washer 44, and a gear element 46 each are mounted on pin 22. The bracket 40 has bearing hooks 42 and 43 extending outwardly therefrom. The gear element 46 has teeth 48 along portions of its periphery and has a radially extending leg 50 adapted to exert pressure against a boss 52 which is an extension of pin 33. Retained between the gear teeth 48 and the hooks 42 and 43 is the worm 54 which has a handle 56 extending therefrom. The handle 56, at the end opposite the worm gear terminates in an eyelet 58.

A retaining arm 60 is pivoted on pin 22 on the jaw side of the wire grip. The arm has a notched portion 62 adapted to mate with a boss 64 protruding from body 12 slightly above upper jaw 16. The retaining arm has an eyelet 66 at its end opposite pivot pin 22. It should be noted here that boss 64 and pin 22 are always stationary with respect to each other, so that retaining arm 60 may be retained against boss 64, and yet the handle 32 may be moved inwardly or outwardly.

With the worm gear 54 and the gear 46 in the position shown in Fig. 3, the wire grip will operate approximately the same as the wire grip described in United States Patent No. 1,942,625. However, with the gear 46 in the position shown by Fig. 1, the handle 32 is retained in its inward position. This position is accomplished through the action of leg 50 transmitting its rotary motion to linear motion in the handle. This allows the lower jaw 25 to fall to the position shown in Fig. 2. The jaw falls to an approximately horizontal position due to the cradle effect of the bottom of the jaw striking the protrusion 70 formed by the loop 35 on one end, and on the other end, striking a groove 72 formed in the apex portion of bell crank 18.

In operating the wire grip from a remote position, the worm gear is threaded to the position shown by Fig. 1 which allows the jaws to remain open. An operator with a non-conducting rod having a hook at one end thereof, lifts the wire grip onto the hook by placing his hook into lifting hook 19'. After the operator has maneuvered the wire grip onto the cable 38, the retaining arm 60 is rotated counter-clockwise (Fig. 2) to its locking position as shown in Fig. 4. This can be easily accomplished by taking the same or another rod and

urging the arm into the locked position. The wire grip will then be hanging relatively securely on the wire, but will not be gripping it. The hook of the rod may then be inserted into the eyelet 58, and the worm 54 rotated in the clockwise direction until it completely releases any pressure on pin 52 which is exerted through leg 50, as shown in Fig. 3. The jaws will then be spring-urged to their gripping position and the grip may then be utilized in the same manner as that taught by United States Patent No. 1,942,625.

In a general manner, while we have, in the above description, disclosed what we deem to be practical and efficient embodiments of our invention, it should be well understood that we do not wish to be limited thereto, as there might be changes made in the arrangement, disposition and form of the parts without departing from the principle of the present invention as comprehended within the scope of the accompanying claims.

We claim:

1. In a wire grip having a body, a stationary jaw on said body, a lever having a pair of arms pivoted to the body at a point spaced from said jaw, a movable jaw carried by one of said arms, a handle connected to the other of said arms, guide means on said body to slidably guide the handle so that said handle controls said movable jaw, that improvement comprising a member pivotally supported on said body, an extension of said member connected with one end of said handle, and means to pivot said member, said means comprising a worm gear, means to rotate said worm gear, and teeth on said member mating with said worm gear whereby a longitudinal motion is transmitted to said handle when said worm gear is rotated.

2. The wire grip set forth in claim 1, further comprised

of a bracket secured to said body and rotatably supporting the worm gear adjacent said gear teeth.

3. In a wire grip having a generally U-shaped frame comprised of a base, a first leg and a second leg, a stationary jaw on said base, a lever having a pair of arms pivoted to said first leg at a point spaced from said stationary jaw, a movable jaw carried by one of said arms, a handle connected to the other of said arms, and a loop formed in said second leg to slidably guide the handle so that said handle controls said movable jaw, that improvement comprising a biasing element to urge said handle to a position where said jaws will mate, a member pivoted to said first leg, an extension of said member connected with one end of said handle, and rotatable means to pivot said member whereby a longitudinal motion is transmitted to said handle in opposition to said biasing means.

4. The improvement set forth in claim 3 wherein said means to pivot said member comprises a worm gear, teeth on said member mating with said worm gear, and means to rotate said worm gear.

5. The improvement set forth in claim 4 wherein said means to rotate said worm gear is comprised of a rod having one end connected to said worm gear and the other end of said rod terminating in a loop.

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