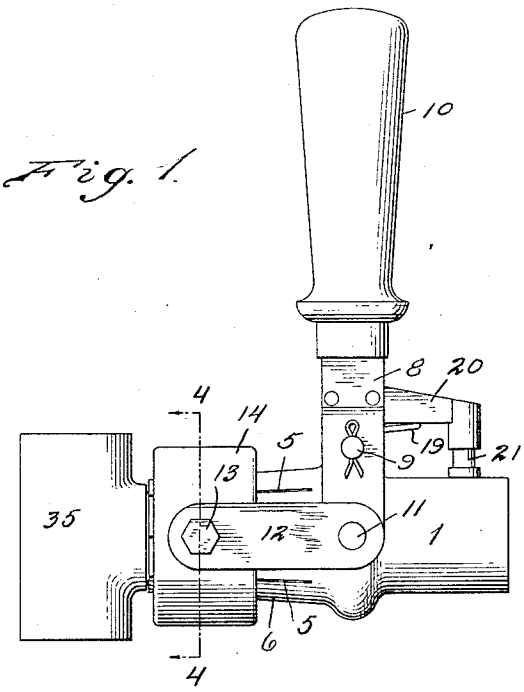
Oct. 25, 1932. M. WRIGHT 1,884,482

TERMINAL CLAMP

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Fig. 1.



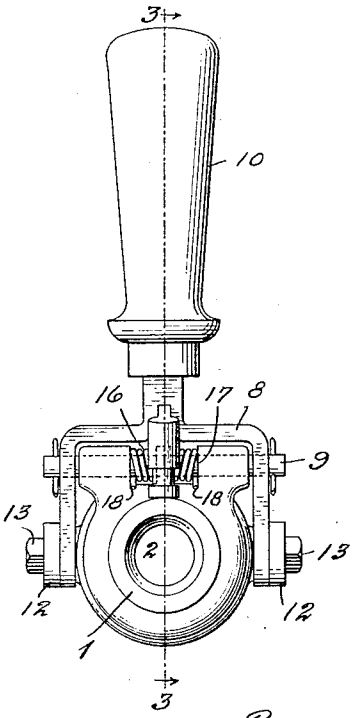
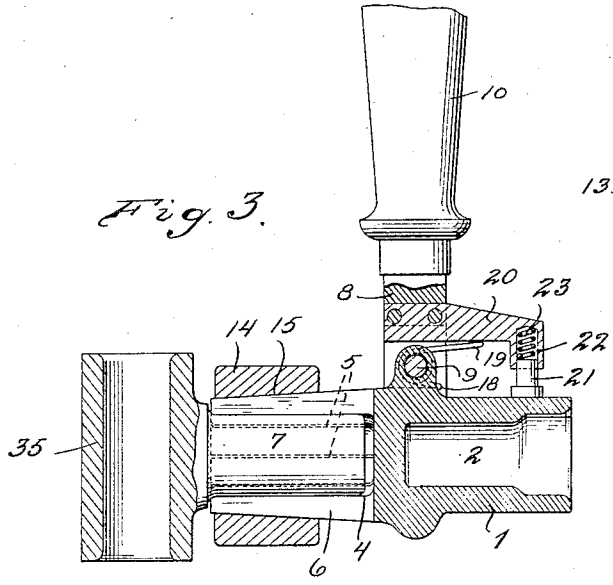


Fig. 2.

Fig. 3.



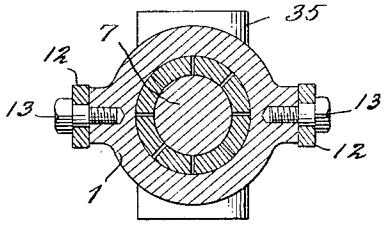


Fig. 4

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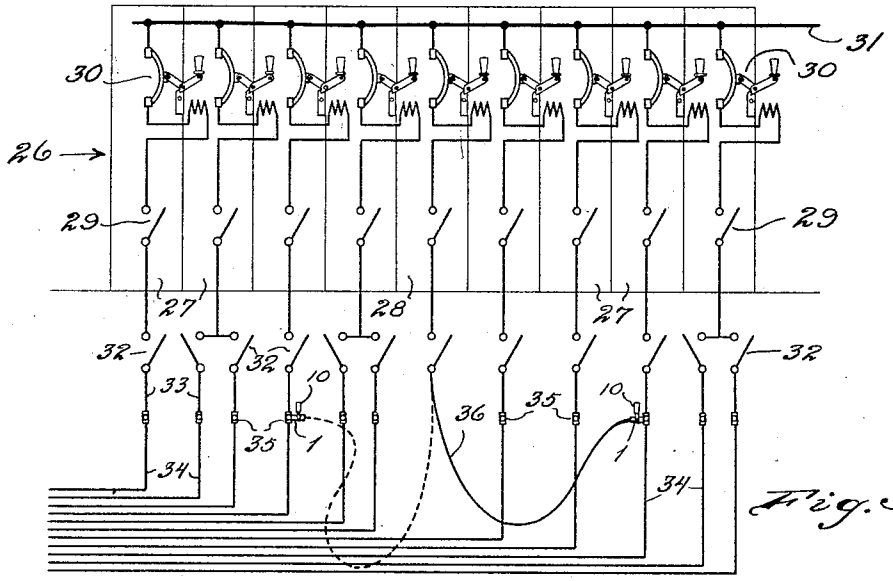


Fig. 5.

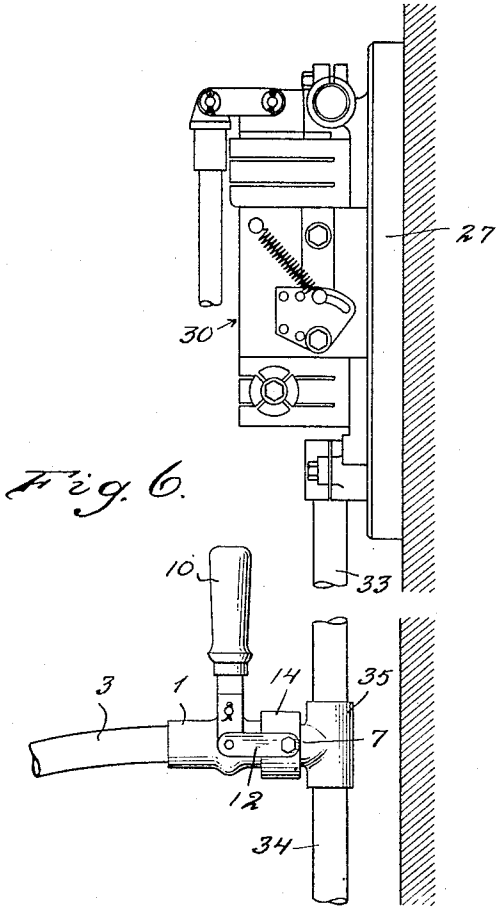
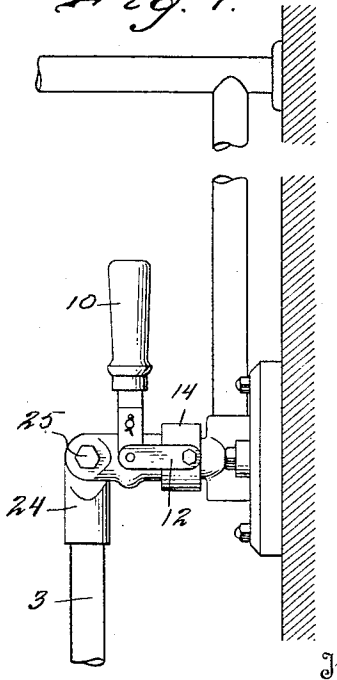


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE

MALCOLM WRIGHT, OF BALTIMORE, MARYLAND

TERMINAL CLAMP

Application filed January 17, 1928. Serial No. 247,351.

The invention relates to electrical connectors and has special reference to a clamp which may be used in connection with electrical devices or apparatus of many kinds and which is specially designed for use on a jumper cable such as is employed in the switchboard systems of power plants and the like, the manner and place of use, however, not materially affecting the invention and which will undoubtedly have a wide field of utility.

In the switchboard system of power plants the switchboard is usually composed of a plurality of sections for controlling the feeding of current to the output cables, each section carrying its own control devices, and one section being normally idle and adapted to be connected with any other section in case of an overload. In such installations it is customary to provide a jumper cable for connecting this idle section with any selected one of the others as circumstances may require. It is of course essential to provide terminal means on such a jumper cable which will be very quickly and easily operable so that the connection may be made without loss of time and with certainty.

It is with the above facts and conditions in view that I have designed the present invention which has for its object the provision of a terminal device adapted to be used in conjunction with and upon such a jumper cable and of such construction as to be very quickly and easily engaged upon a terminal lug for establishing the desired electrical connection.

An important object of the invention is to provide a terminal clamp device having spring means for maintaining a clamping relation to a terminal element and having lever operated releasing means, the operating lever furthermore serving as the handle by which the terminal clamp is not only manipulated but lifted about from one location to another.

A further object of the invention is to provide a clamp of this character which, when applied to a terminal lug or the like, will grip the same tightly and make perfect electrical contact therewith so that any sparking or arcing with consequent deterioration of the parts will be prevented or avoided.

An additional object is to provide a device and arrangement of this character which will be simple and inexpensive to manufacture, easy to use, positive in action, efficient and durable in service, and a general improvement in the art.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings in which:

Figure 1 is a side elevation of the terminal clamp device,

Figure 2 is an elevation at right angles to Figure 1, or end view,

Figure 3 is a longitudinal section taken on substantially the line 3—3 of Figure 2,

Figure 4 is a detail cross sectional view taken on substantially the line 4—4 of Figure 1,

Figure 5 is a diagrammatic view of a switchboard system illustrating the utility of the device,

Figure 6 is a side elevation of one of the switchboard sections showing the invention in applied position with respect thereto, and

Figure 7 is a fragmentary view somewhat similar to Figure 6 but illustrating a slightly modified terminal device.

Referring more particularly to the drawings I have shown the clamp device as comprising an elongated metallic body 1 which, in one form of the invention, is formed with a socket 2 for the reception of one end of a cable or other conductor 3 which may be brazed, welded or otherwise suitably secured in place with the socket. At its other end the body 1 is formed with a socket 4 the walls of which are slit or split longitudinally as indicated at 5 for the purpose of defining resilient jaws 6 adapted to engage frictionally upon a terminal lug such as that for instance illustrated at 7. The metal from which the body 1 is formed is necessarily of such nature that the jaw members will possess a certain degree of resilience. Normally the jaws are

in what may be called expanded position and means, to be described, is provided for contracting them into clamping relation to the terminal 7 or other equivalent element.

In carrying out the above mentioned feature, I provide a lever mechanism here disclosed as comprising a yoke or forked arm 8 arranged in straddling relation to the body and pivoted thereto in some suitable manner as for example by means of the pin 9. This yoke or forked arm carries a handle 10 of insulating material so that the device may be readily operated without danger to the workman. The pivot 9 passes through the yoke or forked arm intermediate the ends thereof, and pivotally connected with the ends, as shown at 11, are links 12 located at opposite sides of the body and extending longitudinally thereof, these links being in turn connected at 13 with a sleeve or ring 14 slidable upon the jaw portion of the device and this ring or sleeve has its inner surface 15 tapered to cooperate with the somewhat tapered outer surface of the jaw portion so as to contract this jaw portion when the sleeve is moved toward the center of the body. This inward position of the contracting sleeve is normally maintained by spring means which in the present instance is illustrated as including a coil spring 16 engaged about the pivot pin 9 and located within a recess 17 in the body. While this spring might have pratically any desired specific form it is shown as having its end portions oppositely coiled with the ends 18 engaging against the body and its center extended laterally at 19 and engaging against the underside of an arm 20 suitably secured to the forked lever and projecting laterally therefrom. To increase the spring action and to guide and brace the operating lever at all times I may provide a guide pin element 21 carried by the body and slidably received within a socket 22 in the arm 20, a coil spring 23 being located within the socket.

It is not necessary that the body be provided at one end with the socket 2 formed directly therein as I may resort to the modification shown in Figure 7 wherein the conductor or cable 3 is shown as anchored within a socketed member 24 pivoted at 25 upon the body, the advantage in this instance being that the cable may curve downwardly on account of slack without binding where connected with the body. Furthermore the arm 20 and guide pin 21 are not necessary and may be omitted as shown in Figure 6 if desired.

While it is of course true that the device is capable of use for a wide variety of purposes and in connection with many different apparatuses or parts thereof, I have illustrated it as employed in connection with the switchboard of a power plant. Referring to Figure 5 I have shown a switchboard 26 including a plurality of sections 27 which are normally active, and an intermediate section 28 intended for emergency use. Each section bears a cut-off switch 29 and a circuit breaker 30. The numeral 31 designates the bus bar which is common to all of the sections and which may be supplied with current from a rotary converter. The switches 29 are panel switches and associated with the sections of the panel or switchboard are disconnecting switches 32. The mechanical details of the switch board system do not enter into the present case though I have illustrated certain of the features in Figure 6, and it will be observed that each panel or section has mounted thereon a conductor 33 leading from the disconnecting switch and having connected therewith a current take-off cable 34. The above described lug member 7 may be formed upon a T 35 and one of such tees is provided on each of the conductors 33 for the purpose of permitting the making of connections. There is no cable 34 connected with the disconnecting switch of the intermediate or emergency panel 28, there being instead a jumper cable 36 upon the free end of which is mounted my clamp device which is adapted to be engaged upon any selected one of the terminal lugs carried by the teeth 35 whenever it is necessary to connect the auxiliary or emergency panel or section in parallel with one of the other sections as for example in case of an overload which would blow the circuit breaker on a particular section or panel.

Regardless of whether my device be used in connection with such a switchboard system or with some other terminal element forming part of a different apparatus, it will be readily apparent that when the operator grasps the handle 10 and pulls it in a direction away from the ring or sleeve 14, that is to say away from whatever terminal element is engaged within the jaw portion, the forked lever or yoke 8 will swing on the pivot 9 against the resistance of the springs 16 and 23, the links 12 and sleeve connected therewith being consequently moved toward the free end of the jaw portion. Inasmuch as the inner and outer surfaces of the sleeve and jaw portion are, respectively, tapered it is apparent that when this movement of the sleeve occurs it will cease to have a contracting action on the jaw portion thereby permitting the natural resilience of the jaw portion to effect opening or expansion thereof to release the device from engagement upon the terminal lug 7. This opening action is of course necessary whenever it is desired to change connections but it will be noted that the necessary work involved is slight and that no particular skill is needed.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a terminal clamp for use in connection with a jumper cable or in fact any other conductor whereby connection with

a terminal element may be effected in a very simple and efficient manner. There is bound to be a tight fit of the device upon a terminal element engaged thereby and a proper contact free from sparking or arcing will be assured. Only one hand is needed for manipulating the device either in placing it in or taking it out of operative position. As a consequence necessary connections may be made very rapidly this being of advantage inasmuch as delays under emergency conditions are most undesirable. It is believed that the construction, operation and advantages will be readily apparent to one skilled in the art without further explanation.

While I have shown and described preferred embodiments of the invention, it should be understood that the disclosure is merely an exemplification of the principles involved as the right is reserved to make all such changes in the details of construction as will widen the field of utility and increase the adaptability of the device provided such changes constitute no departure from the spirit of the invention or the scope of the claim hereunto appended.

Having thus described the invention, I claim:

In a device of the character described, a body having a socket for the reception of a conductor and having a resilient expansible jaw portion adapted for engagement upon a terminal element, a sleeve slidably mounted longitudinally upon the jaw portion and formed to effect contraction thereof when moved in one direction, a lever pivoted on the body and connected with the sleeve for moving the same, combined guide and brace means for the lever, comprising an arm on the lever having a socket therein containing a spring, and a guide element on the body slidably engaged within the second named socket in compressing relation to said spring therein.

In testimony whereof I affix my signature.

MALCOLM WRIGHT.