

Sept. 5, 1939.

W. G. MYLIUS
METER DISCONNECT

2,172,218

Filed Oct. 27, 1937

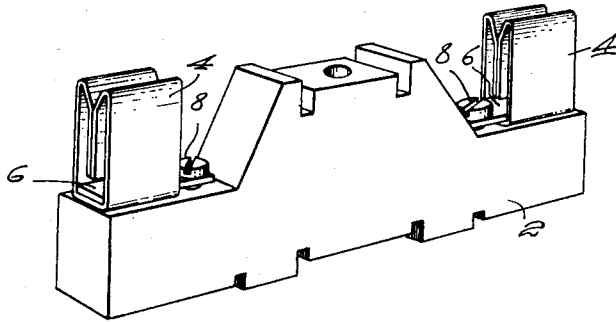


Fig. 1.

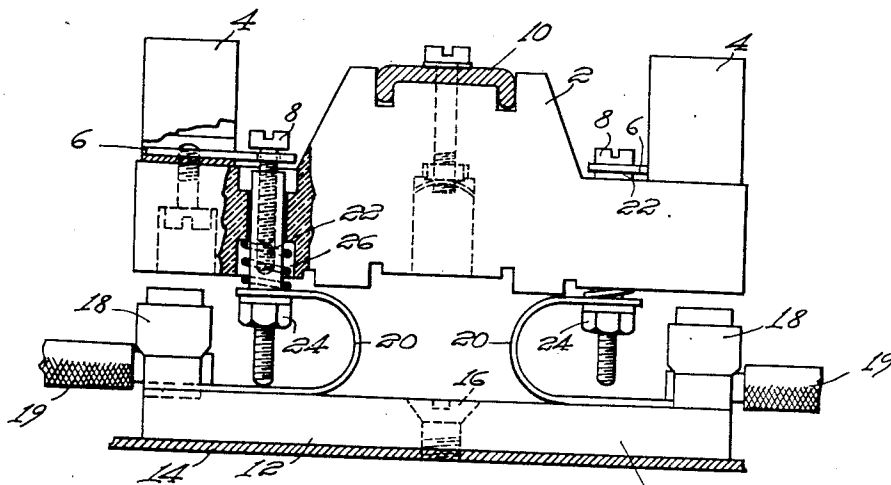


Fig. 2.

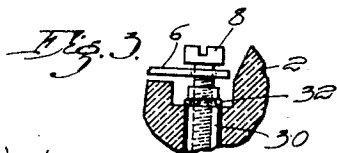


Fig. 3.



Fig. 4.

WITNESSES:

E. C. Leiding
M. C. Groome

INVENTOR

Walter G. Mylius.

BY

W. H. Watson
ATTORNEY

Patented Sept. 5, 1939

2,172,218

UNITED STATES PATENT OFFICE

2,172,218

METER DISCONNECT

Walter G. Mylius, Summit, N. J., assignor to
Westinghouse Electric & Manufacturing Com-
pany, East Pittsburgh, Pa., a corporation of
Pennsylvania

Application October 27, 1937, Serial No. 171,368

10 Claims. (Cl. 200-158)

The present invention relates in general to an improved mounting for a watthour meter, and more particularly to an improved meter support particularly adapted to mounting meters of the detachable type in conjunction with a trough, box or other receptacle. For purposes of illustration, the invention will be described with specific reference to a watthour meter, although it will be apparent that the construction may be used in the mounting of electrical measuring instruments, relays or other types of apparatus.

The detachable type of watthour meter is now well known. It comprises, briefly, an encased meter element having contact blades projecting from the base thereof which may be detachably received in contact jaws or sockets mounted upon a support, the jaws or sockets being connected to the circuit to be metered.

In many cases when it is desired to mount a plurality of such meters at one location, as in an office building, apartment house or the like, a trough may be provided having meter sockets including contact jaws mounted across the open front of the trough for receiving the individual meters. Sockets of this general character are shown for example in my United States Patent 2,071,936 issued February 23, 1937, and many modifications of such socket have been used. The jaws of the socket are electrically connected to the circuit to be measured by means of conducting straps extending from the jaw to terminal clamps mounted upon a block of insulating material secured to the base of the trough. Frequently, of course, in single meter installations a box instead of the trough is used.

In a great many such installations, however, it is desired to have a disconnecting device of some character between the contact jaw and the terminal clamp in the box, so that a customer's service may be discontinued when desired, and with the meter resealed in position access thereto is prevented. This has been accomplished in some instances by making the strap connection between the jaw and terminal clamp in two parts which may be drawn together by a screw extending loosely through an enlarged hole in one of them into threaded engagement with the other. With this arrangement, when the screw is backed off, the resiliency of the straps will separate them and hence break the circuit. Dependence upon the resiliency of the conducting straps to separate them limits the size of the straps to an extent that sufficient current carrying capacity may not be obtained for some applications. Further, if the straps are not resilient but are spaced permanently and the electrical connection made through the screw itself, the current carrying capacity is also undesirably low. In most instances in the past, the disconnect device has been placed to one side of the insulating block

upon which the contact jaws are mounted, and in view of the limited available space defined by the opening in the socket, quite frequently it is difficult to properly manipulate the disconnect.

It is an object of the present invention to provide a disconnect device which is of suitable current carrying capacity and is operable from a point within the area of the block carrying the contact jaw so that access thereto is facilitated.

Other objects of the invention will be apparent from the following description and the accompanying drawing, in which:

Figure 1 is a view in perspective of an insulating block of the type used in conjunction with a detachable type of meter mounting in accordance with the present invention;

Fig. 2 is a view in elevation with parts in section of an insulating block as shown in Fig. 1 mounted in conjunction with other apparatus constituting the present invention;

Fig. 3 is a fragmentary view, in section, of a modification of the invention; and

Fig. 4 is a plan view of a spring clip utilized in the Fig. 3 modification.

For the purpose of simplifying the disclosure, the box, trough or other type of receptacle with which the invention is to be associated is not shown, but it is considered that the construction disclosed will be sufficient to teach those skilled in the art the purpose for which the structure is intended and how it may be used.

Referring to Figure 1, a more or less conventional type of meter mounting block is disclosed. It comprises a block 2 of insulating material, such as porcelain, having disposed at each end thereof a contact jaw 4, for receiving the blade contacts of a detachable type of meter. Each jaw 4 is secured to the block by means of a screw extending upwardly through the block through the base of the jaw into threaded engagement with a conducting strap 6. The free end of each strap is provided with an aperture for receiving a screw 8. The specific means of securing the jaw in position is disclosed in the above-mentioned Patent 2,071,936 and is indicated in dotted lines in Fig. 2 of the accompanying drawing.

The central portion of the block 2 is raised and provided with an aperture for receiving a screw to clamp the block in suspended relation on a supporting bar. This construction is illustrated more in some detail in the aforesaid Patent 2,071,936. However, the block illustrated herein is provided with slots, in addition to what is shown in said patent, to receive the depending flanges of a supporting bar 10 as illustrated in Fig. 2, corresponding to the bar or strap 8 of said patent.

Referring to Fig. 2, a terminal block 12 is secured to the base 14 of a receptacle (only a portion of which is illustrated) by means of a screw

16 or in any other desired manner, and is provided with terminal clamps 18 for receiving the ends of conductors 19 of the circuit with which the meter is to be associated. The clamps 18 may be of any conventional type, that illustrated being the type disclosed in my Patent 2,088,481, issued July 27, 1937.

Conducting strips 20 are each secured at one end to one of the clamps 18 and extend toward the base of the block 2 adjacent to the lower end of an opening through the block, the upper end of which registers with the aperture in the free end of the strap 6.

In order to effect the electrical connection between the free ends of strap 6 and strip 20, a bolt or rod 22 is provided. The rod 22 is reduced in diameter at one end for extension through an opening in the free end of strip 20, to which it is clamped as by a nut 24, and the reduced portion, extends downwardly to a point adjacent to the horizontal portion of strip 20 or the face of terminal block 12. The opposite end of the rod 22 is tapped to receive the lower end of the screw 8 which extends loosely through the free end of the strap 6. By this means, when screw 8 is turned down the upper end of the rod is drawn firmly against the end of the strap 6 in good electrical conducting relation, and when the screw 8 is backed off, such relation will be broken if the rod 22 drops away from the strap 6. This would normally occur if dependence can be placed upon the resiliency of the strap 20 to draw the rod downwardly, but in many cases such dependence is dangerous and the end of the rod 22 is apt to remain in contact with the strap 6 even though the screw 8 is backed off.

In order to provide a positive disconnection between the strap 6 and the rod 22, a spiral compression spring 26 is disposed around the shank of the rod 22 in a recess in the bore of the aperture through the block. The spring 26 is so disposed that it will exert a force between the shoulder of the bore in the block and the free end of the strip 20 tending to move such free end downwardly, carrying with it the rod 22, so that, as indicated in the left-hand side of Fig. 2, complete disconnection, both mechanical and electrical, may be obtained.

It is desirable to limit the downward movement of the rod 22 under the influence of the spring 26 so that it cannot drop far enough to permit the head of screw 8 to remain in engagement with the strap 6 when it is backed off. This is accomplished by having the reduced threaded portion of rod 22 terminate adjacent to the face of the terminal block 12 or the horizontal portion of strip 20.

When it is desired to reconnect the jaw 4 with the circuit, the screw 8 may be tightened to raise the rod 22 against the bias of the spring 26 until the rod is in engagement with the strap 6. At the right of Fig. 2 the parts are shown in such clamped relation.

In assembling the structure described, the terminal block 12 is secured in the base of the trough or box and connections are made with the circuit conductors 19. The rods 22 are usually already in the position illustrated so that the meter socket with the insulating blocks 2 mounted thereon, may then be placed in position across the front of the trough or receptacle and the socket secured thereto. In this operation the rods 22 will appear through the apertures in the block so that by inserting the screws 8 and turning them down, the rod or rods will be raised to

operative position. The lower extensions on the rods 22 engaging the face of the terminal block insure that the rods will project sufficiently into the apertures in the blocks 2 to receive the screws 8.

In the modification of Figs. 3 and 4, the rods 30, corresponding to the rods 22 of Fig. 2, are prevented from falling too far into the block 2 by means of a spring clip 32 engaged in a groove or recess cut into the upper end of the rod. Here a slot is formed transversely of the block 2 across the aperture for receiving the rod, so that when the rod is raised to a desired height from below block 2, the clip may be readily slipped into position manually. It is intended that the structure omitted from Fig. 3 be similar to that shown in Fig. 2.

In accordance with the construction disclosed, a meter mounting has been devised in which a positive disconnect device of desired current carrying capacity controls the circuit between a meter terminal jaw and the circuit conductors, and which is so disposed that access thereto is facilitated from the front of the receptacle avoiding the necessity of attempting to manipulate the disconnect from points to one side or at the end of the block upon which the jaw is mounted. Quite obviously modifications can be devised embodying the principles of the present invention, and it is intended that no limitation shall be placed upon the invention except as imposed by the appended claims.

I claim as my invention:

1. In a mounting for a meter of the detachable type which has contact blades projecting from the base thereof, a connection block having a contact jaw on the upper face thereof for receiving one of said blades and means for securing the jaw in position including a conducting strap secured to the jaw having an opening therethrough adjacent to the jaw, an aperture through said block registering with said opening, and means for connecting said strap to a circuit to be metered including an independently mounted terminal block having a clamp thereon for connection with a circuit conductor, a conducting member having one end secured to said clamp and the free end extending toward the lower face of said connection block adjacent to said aperture, a bolt secured at one end to the free end of said member and proportioned to extend through said aperture into engagement with said conducting strap adjacent to the opening therein, a screw extending loosely through said opening into threaded engagement with said bolt for drawing the bolt against the strap, and a spring for biasing said bolt out of engagement with said strap.

2. In a mounting for a meter of the detachable type which has contact blades projecting from the base thereof, a connection block having a contact jaw on the upper face thereof for receiving one of said blades and means for securing the jaw in position including a conducting strap secured to the jaw having an opening therethrough adjacent to the jaw, an aperture through said block registering with said opening, and means for connecting said strap to a circuit to be metered including an independently mounted terminal block having a clamp thereon for connection with a circuit conductor, a conducting member having one end secured to said clamp and the free end extending toward the lower face of said connection block adjacent to said aperture, a bolt secured at one end to the free end of said member and proportioned to extend through

said aperture into engagement with said conducting strap adjacent to the opening therein, a screw extending loosely through said opening into threaded engagement with said bolt for drawing the bolt against the strap, and a spring for biasing said bolt out of engagement with said strap, said spring surrounding said bolt and so disposed in a recess in the bore of said aperture as to exert an expansive force between the connection block and the free end of said conducting member.

3. A detachable electrical connection device comprising a block of insulating material having a guide aperture therethrough, a conducting strap having an opening through one end secured to said block in such position that the opening registers with the aperture, a conducting strip disposed at the opposite side of said block and having a portion adjacent to said aperture, a conducting rod secured at one end to said strip and extending through said guide aperture to engage said strap adjacent to the opening therethrough, resilient means for biasing said rod out of such engagement, and releasable means acting against said bias for drawing the end of the rod against the strap in electrically conducting engagement.

4. A detachable electrical connection device comprising a block of insulating material having a guide aperture therethrough, a conducting strap secured to said block adjacent to said aperture, a conducting strip disposed at the opposite side of said block and having a portion adjacent to said aperture, a conducting rod secured at one end to said strip and extending through said guide aperture to engage said strap adjacent to the opening therethrough, resilient means for biasing said rod out of such engagement, releasable means acting against said bias for drawing the end of the rod against the strap in electrical conducting engagement, and means for limiting the movement of said rod under the influence of said resilient means.

5. A detachable electrical connection device comprising a block of insulating material having an aperture therethrough, a conducting strap having an opening through one end secured to said block in such position that the opening registers with the aperture, a conducting strip disposed at the opposite side of said block and having a portion adjacent to said aperture, a conducting rod secured at one end to said strip and extending through said aperture to engage said strap adjacent to the opening therethrough, resilient means for biasing said rod out of such engagement, and a threaded member extending loosely through the opening in said strap into threaded engagement with the end of said rod for drawing such end into electrically conducting engagement with said strap when the threaded member is tightened, and for breaking such engagement under the influence of the resilient means when the member is loosened.

6. A detachable electrical connection device comprising a block of insulating material having an aperture therethrough, a conducting strap having an opening through one end secured to said block in such position that the opening registers with the aperture, a conducting strip disposed at the opposite side of said block and having a portion adjacent to said aperture, a conducting rod secured at one end to said strip and

extending through said aperture to engage said strap adjacent to the opening therethrough, resilient means for biasing said rod out of such engagement comprising a compression spring surrounding said rod disposed to exert a reaction between said block and said conducting strip, and a screw member extending loosely through the opening in said strap into threaded engagement with the end of the rod for drawing such end into contact with said strap against the bias of said spring.

7. In a mounting for a meter of the detachable type which has contact blades projecting from the base thereof, a connection block having a contact jaw on the upper face thereof for receiving one of said blades and means for securing the jaw in position including a conducting strap secured to the jaw having an opening therethrough adjacent to the jaw, an aperture through said block registering with said opening, and means for connecting said strap to a circuit to be metered including an independently mounted terminal block having a clamp thereon for connection with a circuit conductor, a conducting member having one end secured to said clamp and the free end extending toward the lower face of said connection block adjacent to said aperture, a bolt secured at one end to the free end of said member and proportioned to extend through said aperture into engagement with said conducting strap adjacent to the opening therein, a screw extending loosely through said opening into threaded engagement with said bolt for drawing the bolt against the strap, a spring for biasing said bolt out of engagement with said strap, and means for limiting the extent of movement of said bolt under the influence of said bias.

8. In an electrical connection device, a block of insulating material having an aperture extending therethrough, a first electroconductive member guided for movement in said aperture, a second electroconductive member positioned in the path of movement of said first member, means for moving said first member from a first position displaced from said second member to a second position in contact therewith, said means being in threaded engagement with one of said members in said first position, and means for establishing electrical contact with said first member and for urging said members apart.

9. In an electrical connection device, a block of insulating material having an aperture extending therethrough, a first electroconductive member guided for movement in said aperture, a second electroconductive member positioned in the path of movement of said first member, means for moving said first member from a position displaced from said second member to a position in contact therewith, and a flexible electroconductive conductor attached to said first member.

10. In an electrical connection device, a terminal block, an insulating block, a first electroconductive member yieldably secured to said terminal block and movable in a guide aperture provided in said insulating block, a second electroconductive member in the path of movement of said first member, and means for moving said first member into electrically conductive relationship relative to said second member.

WALTER G. MYLIUS.