March 26, 1940. R. A. MILLERMASTER 2,194,667

FUSE CLAMP

Filed Feb. 23, 1938

Fig. 1

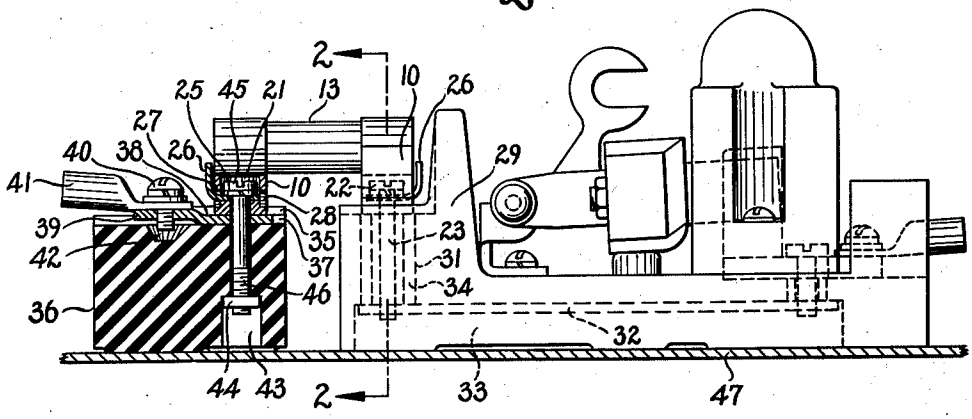


Fig. 2

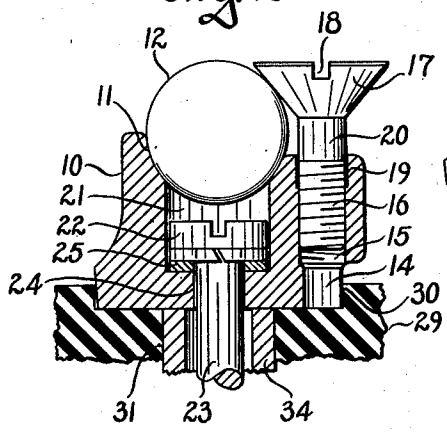


Fig. 3

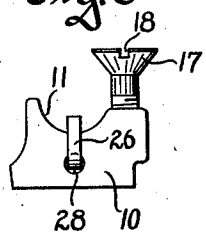


Fig. 4

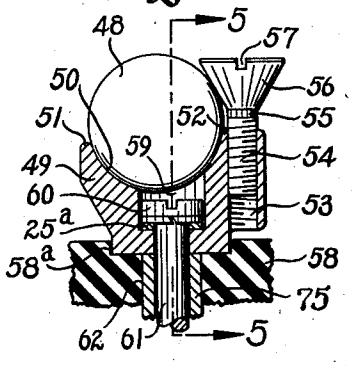


Fig. 5

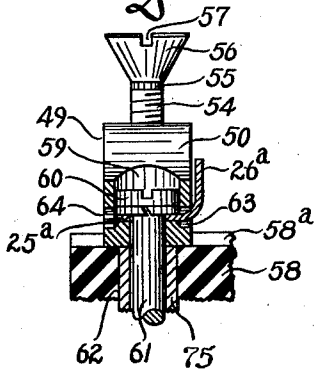


Fig. 6

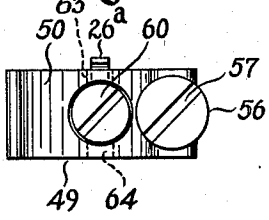
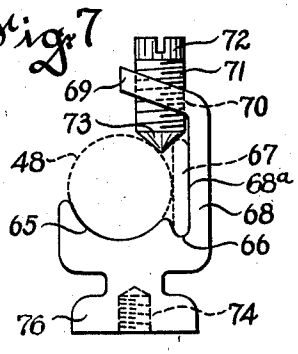


Fig. 7



Inventor

Ralph A. Millermaster

By Frank H. Hubbard

Attorney

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UNITED STATES PATENT OFFICE

2,194,667

FUSE CLAMP

Ralph A. Millermaster, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis., a corporation of Delaware

Application February 23, 1938, Serial No. 192,010

22 Claims. (Cl. 200—134)

This invention relates to improvements in fuse clamps.

A primary object of the invention is to provide an improved and simplified form of clamp for so-called cartridge type fuses.

Another object is to provide a device adapted for alternative use as a clamp for fuses having either cylindrical or blade type contact ends or terminals.

Another object is to facilitate production and reduce the cost of parts of fuse clamps of the aforementioned character.

Another object is to provide improved means for rigidly and non-rotatably mounting such fuse clamps upon a suitable support.

Another object is to provide a device of the aforementioned character employing a single fuse clamping steel screw which is case hardened to increase the strength and resiliency thereof.

Another object is to provide a fuse clamp the base or block of which consists of a suitable length of an extruded bar or rod, of brass or similar metal, of the desired form in transverse cross section.

Another object is to provide fuse clamps having novel means to prevent endwise displacement of a fuse with respect thereto.

Other objects and advantages of the invention will hereinafter appear.

The accompanying drawing illustrates certain embodiments of the invention which will now be described, it being understood that the embodiments illustrated are susceptible of modification in respect of certain details of construction thereof without departing from the spirit of my invention or the scope of the appended claims.

In the drawing,

Figure 1 is a side elevation, partly in vertical section, showing a known form of safety switch having my improved fuse clamps applied thereto or associated therewith.

Fig. 2 is a fragmentary sectional view (double scale), on the line 2—2 of Fig. 1.

Fig. 3 is an end elevation (normal size) of a fuse clamp like that shown in Figs. 1 and 2.

Fig. 4 is a vertical sectional view (normal size) of a clamp for a fuse having a higher rating than that for which the clamp of Figs. 1 to 3 is adapted.

Fig. 5 is a vertical section on the line 5—5 of Fig. 4, with the fuse omitted.

Fig. 6 is a top plan view of the fuse clamp shown in Figs. 4 and 5, and

Fig. 7 is a side elevational view (on a reduced scale) of a modified form of clamp having a single screw adapted for clamping engagement with either a cylindrical or a blade type fuse end or terminal.

Referring first to Figs. 1 to 3, the numeral 10 designates a block of metal (such as brass or copper) which is cut to the desired length from an extruded rod or bar of the desired form in transverse cross section, as best illustrated in Figs. 1 and 2. Block 10 is provided with an upwardly opening groove 11 which is curved to conform to the contour of the cylindrical contact end 12 of a cartridge fuse 13, which in this instance, is of the 30 ampere size or rating. Block 10 is provided at one side of groove 11 with a drilled opening 14 (Fig. 2), which is tapped to a predetermined depth, as shown at 15, to accommodate the shank 16 of a steel screw, the inverted conical clamping head 17 of which is positioned above block 10 in a relation to partially overlie groove 11. Diametrically opposed sides of head 17 are preferably arranged at an angle of approximately 80 degrees with respect to each other.

Head 17 is provided with means, such as kerf 18, to provide for manual adjustment of the screw from a point above the block and in a vertical direction with respect thereto, as by means of an ordinary screw driver. As shown in Fig. 2, the upper end portion of the drilled opening 14 is of relatively larger diameter, as shown at 19, than the diameter of screw shank 16, to increase the free length of the screw shank between the head 17 and the point of engagement of the shank with the aforementioned tapped portion 15. Also by this means a substantial portion 20 at the upper end of the shank may be left unthreaded to correspondingly increase the strength thereof.

As will be apparent the shank 16, 20 of the clamping screw is of sufficient size in transverse cross section to afford proper strength and resistance to bending thereof as an incident to engagement of the head 17 with the cylindrical contact end 12 of the fuse. In practice, however, I prefer to employ a cyanide case hardened screw of the form shown, the case hardening serving to increase the strength and durability thereof, while it likewise increases the resiliency of the shank, whereby permanent deformation of the shank, as an incident to the force applied by the screw head to the fuse end, is prevented.

Block 10 is provided in its upper surface, within the area of groove 11, with a vertically extending substantially cylindrical recess 21 which

is adapted to accommodate the kerfed head 22 of a bolt or screw whose shank 23 extends downwardly through an opening 24 provided in the bottom wall of recess 21. Underlying bolt head 22 and surrounding shank 23 is the annular portion 25 of a punched and stamped sheet metal member having an integral lug 26, which extends outwardly through one or the other of the alined pair of drilled openings 27 and 28 communicating with recess 21, and lug 26 then extends upwardly into an overlapping relation to one end of groove 11. As illustrated in Fig. 1 the two blocks 10 are preferably arranged in a manner to provide for positioning of the respective clamping screws at one side of fuse 13, the endwise spacing of said blocks corresponding to the length of the fuse. With the arrangement illustrated, it will be apparent that lugs 26 act jointly to prevent endwise displacement of fuse 13 in one direction or the other. The arrangement is such that each sheet metal member 25, 26 may be initially shaped to its final form and assembled with its respective block 10 by tilting the same during insertion thereof into recess 21 to provide for threading or passage of lug 26 outwardly through one of said openings 27 or 28.

The flat lower end of blocks 10 are of rectangular contour as shown, and the insulating base 29 (Figs. 1 and 2) which supports one of said blocks is provided with a recess 30 to non-rotatably receive the lower end thereof. The shank of bolt 23 extends downwardly through a passage 31 provided in base 29 and the threaded lower end takes into a tapped opening provided in a conducting bar or bus member 32 positioned within a recess 33 provided in the lower surface of base 29. Bolt 23 thus acts to rigidly secure one of the blocks 10 in assembled relation to base 29, and the same likewise provides an electrical connection between said block and said bus member. In practice I prefer to provide a hollow cylindrical member or ferrule 34 of brass or copper which surrounds the shank of bolt 23 to minimize the strain upon the insulating material of base 29 and to provide a better electrical connection between block 10 and bus member 32.

As shown at the left hand end of Fig. 1 the lower end of the other block 10 is non-rotatably positioned within a recess 35 in the upper surface of an auxiliary insulating base 36. Positioned within a relatively narrower sub-recess 37, and underlying block 10 is a punched and stamped sheet metal member 38, a portion 39 of said member being offset upwardly, and having a tapped opening to accommodate the shank of a screw 40 used to attach to said member a known form of solder lug or terminal 41. Base 36 is preferably provided with a recess 42 to afford clearance for the shank of screw 40. Base 36 is provided in its lower surface with a recess 43 to non-rotatably accommodate a nut 44, and a bolt having its kerfed head 45 located within recess 21 in clamping engagement with annular portion 25 of the aforementioned metal member is provided with a shank 46 which penetrates the bottom wall of recess 21, member 38 and base 36 and takes into nut 44 to clamp the parts in assembled relation. Lock washers are preferably associated with bolt heads 22 and 45 to prevent accidental turning or loosening thereof. The switch mechanism illustrated in Fig. 1 is preferably like that shown and described in detail in Patent No. 1,795,641, granted March 10, 1931, to J. J. Dante, it being understood that part 47 in Fig. 1 represents the bottom wall of a sheet metal enclosing case of suitable form. As illustrated in Patent No. 1,795,641 the switch is preferably provided with one set of insulating bases 29 and 36 for each pole thereof.

In Figs. 4, 5 and 6 I have illustrated a slightly modified form of clamp, which differs primarily in respect of size from that aforedescribed (compare the full size showings in Figs. 3 and 4) to accommodate the cylindrical contact end 48 of a relatively larger (60 ampere rating) cartridge type fuse. In the clamp of Figs. 4 to 6, the metal block 49 likewise consists of a section sawed or otherwise divided from an extruded brass bar of the desired form. The curved surface 50 receives with a fairly close fit a portion of the cylindrical surface of the contact end 48, and extends through substantially less than 180 degrees of said cylindrical surface, as indicated at points 51 and 52. The point 52 is preferably slightly higher than point 51.

Block 49 is provided with a drilled opening which is tapped throughout its length, as indicated at 53 (Fig. 4) to accommodate the screw shank 54, only a relatively small portion 55 of which is left unthreaded. The inverted conical head 56 of said screw is provided with a kerf 57, to permit adjustment thereof from above by means of an ordinary screw driver. The diametrically opposed sides of screw head 56 are preferably arranged at an angle of approximately 60 degrees. As illustrated in Fig. 4, head 56 is adapted to clampingly engage the fuse end 48 at a point spaced slightly more than 180 degrees from point 51 (when considered in a counter-clockwise direction).

The rectangular lower end of block 49 is non-rotatably seated within a slot or recess 58a in the upper surface of an insulating base 58. Block 49 is provided with a cylindrical recess 59 to accommodate the kerfed head 60 of a bolt the shank 61 of which penetrates an opening in the bottom wall of recess 59 and a passage 62 in base 59, and said bolt has a threaded lower end (not shown) which takes into a tapped opening in a nut or bus member, as aforedescribed, to secure the parts in assembled relation. Block 49 is provided with alined passages 63 and 64 at opposite ends thereof communicating with recess 59, either of which is adapted to accommodate the lug 26a of a metal member whose annular portion 25a (similar to but larger than the annular portion 25 aforedescribed) underlies bolt head 60. A lock washer is preferably associated with bolt head 60, to prevent accidental turning or loosening thereof. I prefer to position within passage 62 a tubular metal member 75 which surrounds shank 61, to form a reinforcing strut for the insulating base 59 and to improve the electrical connection between block 49 and a suitable bus member (like that shown at 32 in Fig. 1).

In Fig. 7 I have shown, at less than full scale, a fuse clamp comprising a block 76 consisting of a section of an extruded bar of the desired form. Said block, as shown, is provided with a groove 65 to receive with a fairly close fit a portion of the cylindrical end 48 of a fuse of 60 ampere size. Block 76 is also provided with a groove 66 adapted to accommodate, in a vertical position the blade type terminal or contact end, shown in dotted lines at 67, of a fuse of 100 ampere size or rating. Block 76 is provided with an integral portion 68 extending vertically upwardly and then laterally at a predetermined angle, as shown at 69, in a relation to overlie at least a portion of each of the

grooves 65 and 66. Portion 69 is provided with a vertically extending tapped opening, shown in dotted lines at 70, to accommodate the threaded shank 71 of a screw, the kerfed head 72 of which is preferably of the same size or diameter as said shank. Shank 71 is preferably of relatively large diameter, as illustrated, and the integral lower end thereof is preferably of inverted cone shape, as shown at 73, to act as a fuse clamping element.

The arrangement is such that upon insertion of a cylindrical fuse end 48 into groove 65, end 73 may be moved into clamping engagement therewith upon downward driving of the screw. Release of the fuse end 48 by reversing the direction of adjustment of the screw may be effected in an obvious manner. Alternatively, upon insertion of a blade contact or terminal 67 within groove 66, the inverted conical end 73 of the screw may be moved downwardly to the clamping position thereof illustrated, it being noted that such clamping action tends to force one flat side of the blade against the flat surface 68a afforded by the vertical portion 68 of the aforementioned projection. Upward adjustment of the screw shank 71 permits lateral swinging of blade contact 67 toward groove 65, within groove 66 as a pivot, whereby withdrawal of the contact blade is facilitated.

Block 76 is preferably provided with a flat lower end of rectangular contour, which may be non-rotatably positioned within a recess of similar shape in the surface of a suitable support. Said block is provided in its lower end with a tapped recess, shown in dotted lines at 74, to accommodate the threaded shank of a securing bolt of suitable form.

As will be apparent, the combination device of Fig. 7 provides for use of a single base block for accommodation of either a cylindrical end or a blade end of a fuse, and enables use of a single screw as the clamping medium. This has the advantage of enabling production of a single article of manufacture which may be sold for alternative use with either of these two usual forms of fuse ends or terminals. The aforementioned desirable result is, moreover, accomplished without the necessity for any substantial amount of additional material in the complete article. While I have shown block 64 as formed to accommodate a circular end fuse of 60 ampere rating, it is to be understood that the same may be initially formed with a groove of relatively smaller size or radius than groove 65, as, for instance, a groove like that shown at 11 in Figs. 1 to 3, to receive the cylindrical end of a fuse of 30 ampere rating. The clamping screw 71, 73 of Fig. 7 is preferably formed of steel, and in practice the same is cyanide case hardened, for the purpose hereinbefore set forth. The diametrically opposed sides of clamping portion 73 of the screw are preferably arranged at an angle of approximately 100 degrees with respect to each other.

The metal block and screw members of each of the devices herein disclosed are preferably coated or plated with cadmium, to improve the appearance thereof, to resist corrosion or oxidation of the surfaces thereof, and to improve the electrical characteristics of certain or all of said members.

What I claim as new and desire to secure by Letters Patent is:

1. An adjustable fuse clamp comprising an extruded metal block having an upwardly opening groove of arcuate form, and of substantially less than semicircular area, in total transverse cross section to freely receive the cylindrical end of a cartridge type fuse, a substantially vertically adjustable screw the shank of which has threaded engagement with said block, said screw having an inverted conical clamping portion formed at one end of said shank, said clamping portion only partially overlying said arcuate groove in all positions of the former and being movable into engagement with the cylindrical end of a fuse as an incident to inward driving of said screw, said clamping portion being normally spaced a substantial distance from the body of said block, and said screw shank forming the sole means to restrain lateral displacement of said clamping portion as an incident to engagement of the latter with said fuse end.

2. An adjustable fuse clamp comprising an extruded metal block having an upwardly opening groove of arcuate form, and of substantially less than semicircular area, in total transverse cross section to freely receive the cylindrical end of a cartridge type fuse, a substantially vertically adjustable screw the shank of which has threaded engagement with said block, said screw having an inverted conical clamping portion formed at one end of said shank, said clamping portion only partially overlying said arcuate groove in all positions of the former and being movable into engagement with the cylindrical end of a fuse as an incident to inward driving of said screw, said clamping portion being normally spaced a substantial distance from the body of said block, said screw shank forming the sole means to restrain lateral displacement of said clamping portion as an incident to engagement of the latter with said fuse end, said screw being formed of steel, and the same being case hardened to increase its resiliency and to resist permanent deformation thereof as an incident to the force applied by the clamping portion thereof.

3. A fuse clamp comprising an extruded metal block having a groove of substantially less than semicircular area formed in the upper surface thereof to freely receive the cylindrical end of a cartridge type fuse, a vertically arranged screw the shank of which has threaded engagement with said block, said screw having an inverted conical head located above said block and only partially overlying said groove, said head being movable into clamping position with respect to a fuse end as an incident to inward driving of said screw, and said screw shank forming the sole means to restrain lateral displacement of the screw head as an incident to the clamping action.

4. A fuse clamp comprising an extruded metal block having a groove of substantially less than semicircular area formed in the upper surface thereof to freely receive the cylindrical end of a cartridge type fuse, a vertically adjustable screw the shank of which has threaded engagement with said block, said screw having an inverted conical head located above said block and only partially overlying said groove, said head being movable into clamping position with respect to a fuse end as an incident to inward driving of said screw, said screw shank forming the sole means to restrain lateral displacement of the screw head as an incident to the clamping action, said screw being formed of steel, and the same being case hardened to provide a proper spring action of the shank thereof, for the purpose set forth.

5. A fuse clamp comprising a metal block hav-

ing a groove of substantially less than semicircular area formed in the upper surface thereof to freely receive the cylindrical end of a cartridge type fuse, a vertically adjustable screw the shank of which has threaded engagement with said block, said screw having an inverted conical head located above said block and partially overlying said groove, said head being movable into clamping position with respect to a fuse end as an incident to inward driving of said screw, said screw shank forming the sole means to restrain lateral displacement of the screw head as an incident to the clamping action, said block comprising a section of a transversely divided extruded brass rod, said screw being formed of steel, and said screw being cyanide case hardened, for the purpose set forth.

6. A fuse clamp comprising a block of metal, said block having a groove adapted to accommodate a segmental portion of the cylindrical contact end of a fuse, said block also having a second groove to alternatively accommodate the knife blade contact end of a fuse, and a single screw carried by said block and adjustable into or out of clamping engagement with a fuse contact end positioned within either of said grooves.

7. A fuse clamp comprising an extruded block of metal of the desired form in transverse cross section, said block having a groove adapted to accommodate a segmental portion of the cylindrical contact end of a fuse, said block also having a second groove to alternatively accommodate the knife blade contact end of a fuse, a single screw carried by said block and adjustable into or out of clamping engagement with a fuse contact end positioned within either of said grooves, the head of said screw being located above said block, and the same being adjustable in a substantially vertical direction relatively to said block.

8. A fuse clamp comprising a block cut transversely from an extruded metal rod of the desired form in cross section, said block having a groove of arcuate form to accommodate a corresponding arcuate portion of the cylindrical contact end of a fuse, said block also having a second groove to accommodate, in a substantially vertical position, the knife blade contact end of a fuse, said block having an integral portion extending upwardly and then laterally over at least a portion of each of said grooves, a screw having its head located above said block and its shank extending downwardly through and having threaded engagement with the lateral extension of said integral portion, and the lower end of said screw shank being of substantially inverted cone shape, whereby the same may be adjusted at will into or out of clamping engagement with a fuse contact end of either form.

9. In combination, an adjustable fuse clamp comprising a rigid metal block consisting of a cut length of an extruded metal bar of a desired form in transverse cross section, said block having a substantially flat lower end of polygonal contour, an insulating base having a recess formed in the upper surface thereof to non-rotatably receive with a close fit said lower end of the block, a securing element penetrating said insulating base and cooperatively engaging said block to releasably restrain the latter against upward displacement from said recess, and an adjustable fuse clamping member comprising a screw having threaded engagement with said block and movable vertically with respect thereto in a plane offset laterally from the plane of said securing element into and out of clamping engagement with the cylindrical contact end of a fuse.

10. In combination, an adjustable fuse clamp comprising a rigid metal block consisting of a cut length of an extruded metal bar of the desired form in transverse cross section, said block having a substantially flat lower end of polygonal contour, an insulating base having a recess formed in the upper surface thereof to non-rotatably receive with a close fit said lower end of the block, a securing element penetrating said insulating base and cooperatively engaging said block to releasably restrain the latter against upward displacement from said recess, said block having an upwardly open arcuate groove of substantially less than semicircular area formed therein, and a vertically adjustable screw the shank only of which is engageable with said block, said screw having an integral portion of inverted conical shape only partially overlying said groove in all adjusted positions of the former and movable toward and away from the latter into and out of clamping engagement with the cylindrical contact end of a fuse, for the purpose set forth.

11. A fuse clamp comprising a block consisting of a cut length of an extruded metal bar of the desired form in transverse cross section, said block having an upwardly opening groove of arcuate form to freely receive the cylindrical end of a cartridge type fuse, said block having a substantially cylindrical recess formed therein and opening to said groove, said block having a passage extending from one end thereof and communicating with said recess, a punched and stamped sheet metal member having an annular portion thereof seated upon the bottom wall of said recess, said member also having an integral lug extending outwardly through said passage and then upwardly into alinement with said groove at one end of the latter, said lug serving to limit endwise displacement in one direction of a cylindrical fuse end positioned within said groove, and a fastening member having a head portion located within said recess and a shank portion penetrating said annular portion and the bottom wall of said recess to provide for attachment of said member to said block and for attachment of the latter to a suitable support.

12. A fuse clamp comprising a block consisting of a cut length of an extruded metal bar of the desired form in transverse cross section, said block having an upwardly opening groove of arcuate form to freely receive the cylindrical end of a cartridge type fuse, said block having a substantially cylindrical recess formed therein and opening to said groove, said block having a passage extending from one end thereof and communicating with said recess, a punched and stamped sheet metal member having an annular portion thereof seated upon the bottom wall of said recess, said member also having an integral lug extending outwardly through said passage and then upwardly into alinement with said groove at one end of the latter, said lug serving to limit endwise displacement in one direction of a cylindrical fuse end positioned within said groove, a fastening member having a head portion located within said recess and a shank portion penetrating said annular portion and the bottom wall of said recess to provide for attachment of said block to a suitable support, and said fastening member providing an electrical connection for said block.

13. A fuse clamp comprising a block consisting of a cut length of an extruded brass bar of the desired form in transverse cross section, said block having an upwardly opening groove of arcuate form to accommodate the cylindrical end of a cartridge type fuse, said block having a vertically extending tapped recess at a point spaced laterally from one longitudinal side of said groove, a case hardened steel screw the shank of which has threaded engagement with said tapped recess, said screw having a head portion of inverted conical shape positioned above said block and partially overlying said groove, said screw being adjustable to move said head into and out of clamping engagement with a fuse end positioned within said groove, said block having an upwardly opening recess formed therein within the area of said groove, a fastening element having its head located within said last mentioned recess and its shank penetrating the bottom wall of the latter to provide for rigid attachment of said block to a suitable support, and a punched and stamped sheet metal member having an annular portion underlying said last mentioned head and an integral lug portion extending laterally outwardly through a wall of said last mentioned recess and then upwardly into alinement with one end of said groove, said lug portion cooperating with the end of a fuse located within said groove to limit endwise displacement of the fuse in one direction.

14. A fuse clamp comprising a block consisting of a cut length of an extruded brass bar of the desired form in transverse cross section, said block having an upwardly opening groove of arcuate form to accommodate the cylindrical end of a cartridge type fuse, said block having a vertically extending tapped recess at a point spaced laterally from one longitudinal side of said groove, a case hardened steel screw the shank of which has threaded engagement with said tapped recess, said screw having a head portion of inverted conical shape positioned above said block and partially overlying said groove, said screw being adjustable to move said head into and out of clamping engagement with a fuse end positioned within said groove, said block having an upwardly opening recess formed therein within the area of said groove, a fastening element having its head located within said last mentioned recess and its shank penetrating the bottom wall of the latter to provide for rigid attachment of said block to a suitable support, a punched and stamped sheet metal member having an annular portion underlying said last mentioned head and an integral lug portion extending laterally outwardly through a wall of said last mentioned recess and then upwardly into alinement with one end of said groove, said lug portion cooperating with the end of a fuse located within said groove to limit endwise displacement of the fuse in one direction, said block having a flat lower end portion of substantially rectangular contour, and said support having a recess of substantially corresponding contour to accommodate said lower end portion and to restrain the same from rotary or lateral displacement relatively to said support.

15. A fuse clamp comprising a block consisting of a cut length of an extruded metal bar of the desired form in transverse cross section, said block having an upwardly opening groove of arcuate form to freely receive the cylindrical end of a cartridge type fuse, said block having a substantially cylindrical recess formed therein and opening to said groove, said block having a passage extending from one end thereof and communicating with said recess, a punched and stamped sheet metal member having an annular portion thereof seated upon the bottom wall of said recess, said member also having an integral lug extending outwardly through said passage and then upwardly into alinement with said groove at one end of the latter, said lug serving to limit endwise displacement in one direction of a cylindrical fuse end positioned within said groove, a fastening member having a head portion located within said recess and a shank portion penetrating said annular portion and the bottom wall of said recess to provide for attachment of said block to an insulating supporting base of suitable form, a metal bus member at the lower end of said base with which said shank portion of said fastening member has threaded engagement, and a bushing of highly conductive metal surrounding said shank portion and interposed between said block and said bus member to provide a proper electrical connection therebetween.

16. A fuse clamp comprising a block consisting of a cut length of an extruded bar of highly conductive metal of the desired form in transverse cross section, said block having an upwardly opening groove of arcuate form but of substantially less than semicircular area in transverse cross section, to accommodate the cylindrical end of a cartridge type fuse, said block having a vertically extending tapped recess formed therein at a point spaced laterally from one longitudinal side of said groove, a case hardened steel screw the shank of which extends downwardly into threaded engagement with said tapped recess, said screw having a head portion of inverted conical shape located above said block in all positions thereof and partially overlying said groove, said screw being adjustable to move said head into and out of clamping engagement with a cylindrical fuse end positioned within said groove, and said screw shank forming the sole support for said head portion during the clamping operation.

17. A fuse clamp comprising a block consisting of a cut length of an extruded bar of highly conductive metal of the desired form in transverse cross section, said block having an upwardly opening groove of arcuate form to freely receive the cylindrical end of a cartridge type fuse, said block having a substantially cylindrical recess formed therein and opening to said groove, said block also having alined passages extending from each end thereof and communicating with said recess, a punched and stamped sheet metal member having an annular portion thereof seated upon the bottom wall of said recess, and said member also having an integral lug extending outwardly through one or the other of said passages and then upwardly into alinement with said groove at the corresponding end of the latter, said lug serving to limit endwise displacement in one direction or the other of a cylindrical fuse end positioned within said groove, depending upon the position of said lug relatively to said groove.

18. An adjustable fuse clamp comprising an extruded metal block having a groove of substantially less than semicircular area formed in the upper surface thereof to freely receive the cylindrical end of a cartridge type fuse, a vertically adjustable screw the shank of which has threaded engagement with said block, said screw having

formed integrally therewith an inverted conical portion located above said groove and partially overlying the latter, said inverted conical portion being movable into clamping position with respect to the cylindrical contact end of a fuse as an incident to inward driving of said screw, said screw shank forming the sole means to restrain lateral displacement of said inverted conical portion as an incident to the clamping action, said screw being formed of steel, and the same being case hardened to provide a proper spring action of the shank thereof, for the purpose set forth.

19. An adjustable fuse clamp comprising a metal block having an arm against a surface of which the terminal end of a fuse is adapted to bear, a substantially vertically adjustable screw the shank of which has threaded engagement with said block, said screw having an inverted conical clamping portion formed at the upper end of said shank, said clamping portion being opposed to said surface of said arm and being movable into clamping engagement with said terminal end of a fuse as an incident to inward driving of said screw, said clamping portion being normally spaced a substantial distance from the body of said block, and said screw shank forming the sole means to restrain lateral displacement of said clamping portion as an incident to engagement of the latter with said terminal end of the fuse.

20. An adjustable fuse clamp comprising a metal block having an arm against a surface of which the terminal end of a fuse is adapted to bear, a substantially vertically adjustable screw the shank of which has threaded engagement with said block, said screw having an inverted conical clamping portion formed at the upper end of said shank, said clamping portion being opposed to said surface of said arm and being movable into clamping engagement with said terminal end of a fuse as an incident to inward driving of said screw, said clamping portion being normally spaced a substantial distance from the body of said block, said screw shank forming the sole means to restrain lateral displacement of said clamping portion as an incident to engagement of the latter with said terminal end of the fuse, said screw being formed of steel, and the same being case hardened to increase its resiliency and to resist permanent deformation thereof as an incident to the force applied by the clamping portion thereof.

21. An adjustable clamp for cartridge type fuses, comprising a metallic base having a screw threaded opening, an integral wall formed on the base and having a bearing surface for the terminal end of a fuse, a movable and adjustable clamp member on the base adjacent said wall, said clamp member including a tapered body portion terminating at one end in a screw threaded portion for engagement with the screw threaded opening in the base, said wall and said clamp member being arranged relatively so as to cause a wedging action against the terminal end of a fuse placed therebetween when the clamp member is operated in one direction, and means formed on the other end of the tapered body portion to receive a tool for actuating said clamp member, said clamp member being free of support opposite said bearing surface.

22. An adjustable clamp for cartridge type fuses, comprising a substantially non-resilient metallic base having a wall providing a bearing surface, a clamp member comprising a screw threaded stud adjustable in the base and a tapered pressure portion on said stud and having a portion of its pressure surface adjacent said wall and opposed to the bearing surface thereof, said clamp member being movable toward the base for clamping a fuse end terminal between said wall and said tapered pressure member, said clamp member being sufficiently strong to provide the necessary lateral pressure without additional support.

RALPH A. MILLERMASTER.