This invention relates in general to electric test devices and more particularly to a test clamp for attachment to electric power conductors.

In making electrical measurements of power conductors, the use of clamp-on ammeters is well known. However, to determine the voltage in making tests of A.C. power lines, it is necessary to make physical contact with the voltmeter leads and the conductors themselves which in many cases requires the perforation of the insulation on the conductors by means of manual probes. This manual means for establishing contact is not only dangerous but often results in poor continuity and erroneous voltmeter readings.

The present invention overcomes the above disadvantages by the provision of a clamp means for encircling a power conductor and piercing the insulation thereon to establish a low resistance permanent tap to a power line for measurement or other purposes and is a principal object of the invention.

Another object of the invention is the provision of an adjustable clamp for encircling a power conductor by the simple use of a pair of pliers and the further provision of a self-contained screw means for piercing the insulation on a power conductor and establishing a low resistance contact to the conductor.

A further object of the invention is the provision of an electric test clamp adapted to encircle and be temporarily retained on a power conductor by friction means and then permanently secured thereon by a self-contained and a self-perforating screw means.

These and other objects and advantages in one embodiment of the invention are described and shown in the following specification and drawing in which:

FIG. 1 is a cross sectional view of a typical power cable with the test clamp secured thereon.

FIG. 2 is a side elevation of the clamp, shown in FIG. 1.

FIG. 3 is a fragmentary cross sectional view taken through section line 3–3, FIG. 2.

FIG. 4 is a fragmentary cross sectional view taken through section line 4–4, FIG. 2.

FIG. 5 is a fragmentary cross sectional view the same as FIG. 3 in changed position.

FIG. 6 is a perspective view of an element shown in FIG. 3.

Referring to FIG. 1, the test clamp is shown applied to a power cable consisting of current carrying conductors 1 encased by insulation 2. The clamp 3 is shown encircling the cable with the conical point 3 of screw 4 in intimate contact with the conductors 1 and retained therewith by tension in band 5.

The rectangular main body member 6 of the clamp is conveniently made from sections of rectangular tubing centrally threaded through the upper and lower portions thereof for screw 4. The band 5 is made from flexible metal, preferably stainless steel, and terminates at one end in a hook 7 engaged with the lower portion of the body member 6, as shown in FIGS. 1 and 3.

A hole 8 is perforated in band 5 adjacent hook 7 for the free passage of screw 4, as shown in FIG. 3. The opposite end of band 5 terminates in a tab portion 5a. A plate 9, having teeth 10 in one face thereof, has a central hole therethrough for the passage of screw 4. Projections 11 integral with plate 9 are provided to retain the plate within the body member 6 when the screw 4 is partially threaded in body member 6, as shown in FIG. 5.

A coil spring 12 is compressed and centrally retained in body member 6 for urging plate 9 against the lower part of body 6, as shown in FIG. 2.

It is now apparent that when the band 5 is wrapped around a cable and the tab end 5a is threaded through body member 6 under plate 9, as shown in FIG. 3, and the tab 5a pulled with a pair of pliers, the teeth in the plate 9, under tension of spring 12, hold the clamp firmly positioned around the cable 1. Then the point 3 of screw 4, when rotated, will successively pierce the band 5 and the insulation 2 and make high pressure physical contact to the conductors 1 against the restraining action of band 5.

When the screw is sufficiently tightened, a lug 13 carrying a test conductor 14, may be secured between the body member 6 and a lock nut 15, as shown in FIG. 1.

Certain modifications in the above construction, utilizing the features described, are intended to come within the scope of the appended claims.

Having described my invention, I claim:

1. A contact clamp for an electric conductor comprising:
   a terminal screw with one end terminating in a piercing point,
   a conductor threaded and adapted to adjustably retain said screw for axial movement therethrough when driven,
   a band means having one end thereof secured to said conductor and the opposite free end portion adapted to overlap said one end in said member when said band means is wrapped around the periphery of said conductor,
   a spring means in said member retained and positioned to urge said end portion into frictional engagement with said member for temporarily holding said band means when pre-tensioned around the periphery of said conductor and whereby said point will pierce said end portion of said band means and engage said conductor under the tension of said band means when said screw is driven a pre-determined distance through said end portion and said member and into said conductor.

2. An adjustable contact clamp for multi-conductor electric cable covered with insulation comprising a terminal screw means with one end terminating in a piercing point,
   a body member threaded and adapted to adjustably retain said screw means for axial movement therethrough when driven,
   a band having one end thereof secured in said member and the opposite free end portion adapted to overlap said one end in said member when said band is wrapped around the periphery of said cable,
   a spring means in said member retained and positioned to urge said end portion into frictional engagement with said member for temporarily holding said band and when pre-tensioned around the periphery of said cable and whereby said point will pierce said end portion of said band and said insulation for engagement with at least one of said conductors in said cable when said screw means is driven a predetermined distance through said end portion and said member.

3. A contact clamp for an electric conductor comprising a terminal screw with one end terminating in a piercing point,
   a body member threaded and adapted to adjustably retain said screw for axial movement therethrough when driven,
   a band means having one end thereof secured to said conductor and the opposite free end portion adapted to overlap said one end in said member when said band means is wrapped around the periphery of said conductor,
a friction plate loosely retained in said member with one side thereof positioned for frictional engagement with said end portion of said band means,
spring means in said member for urging said plate against said end portion for temporarily holding said band means when pre-tensioned around the periphery of said conductor and whereby said point will pierce said end portion of said band means and engage said conductor under the tension of said band means when said screw is driven a predetermined distance through said end portion and said member and into said conductor.
4. A clamp for contacting an electric conductor through plastic insulation thereon comprising a contacting terminal screw terminating in a piercing point,
a body member having upper and lower parallel spaced sides with a hole through each of said sides coaxial to an axis normal thereto,
the hole in the said upper side threaded for adjustable engagement with said screw for axial movement through the hole in said lower side when driven,
a band means having one end thereof secured in said member adjacent the inner surface of said lower side and the opposite free end portion of said band means adapted to overlap said one end in said member when said strap means is wrapped around the periphery of the said insulation on said conductor,
a friction plate having teeth in one side thereof loosely retained in said member with said teeth positioned for frictional engagement with said end portion,
spring means positioned in said member coaxial with said screw and between said upper side and said plate for urging the latter against said end portion for holding said band means when pre-tensioned around said insulation on said conductor and whereby said point will pierce said end portion of said strap means and said insulation and contact said conductor against the restraining action of said band means when said screw is driven a predetermined distance through said end portion and said member.

No references cited.