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BINDING-POST AND JACK-PLUG UNIT FOR ELECTRICAL INSTALLATIONS

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Fig. 1.

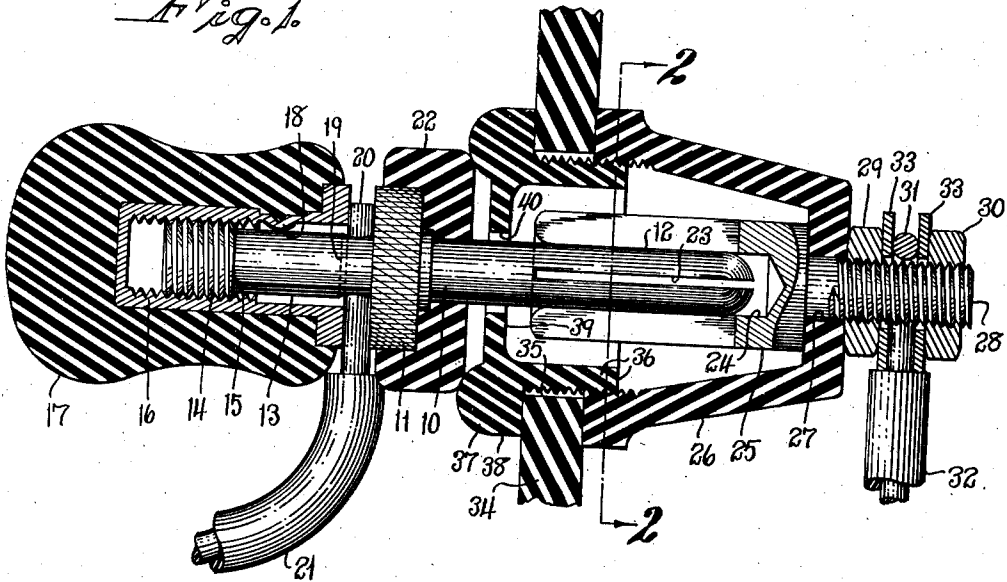


Fig. 2.

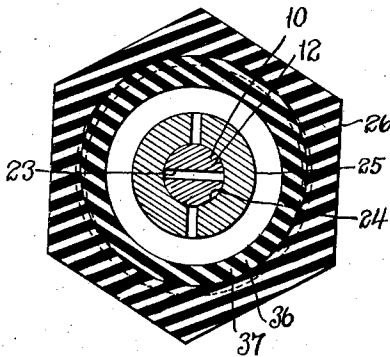


Fig. 5.

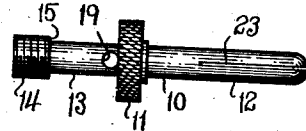


Fig. 4.

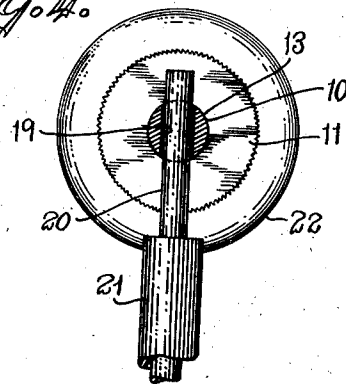
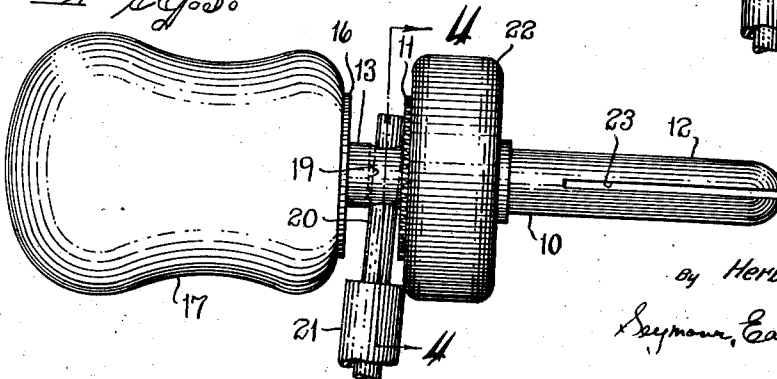


Fig. 3.



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UNITED STATES PATENT OFFICE

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BINDING-POST AND JACK-PLUG UNIT FOR ELECTRICAL INSTALLATIONS

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2 Claims. (Cl. 173-363)

The present invention relates to improvements in binding-posts for electrical installation, and relates more particularly to binding-posts which are also capable of use as jack-plugs for tapping off electrical energy from service-panels, etc.

The device of the present invention is designed primarily for use in laboratories wherein various instruments and other pieces of electrical apparatus are tested and wherein a service-panel is provided from which electric current of various characteristics may be tapped off for use in the test. The characteristics of the current supply made available by the service-panel usually vary with regard to voltages, frequency, etc., etc.

One of the objects of the present invention is to provide a superior and low cost electrical laboratory accessory which will facilitate the connection of various pieces of electrical apparatus to sources of current supply of various characteristics.

A further object of the present invention is to provide a superior unitary device which is adapted to act both as a binding-post and as a jack-plug to thus permit the ready and convenient connection of various pieces of electrical apparatus directly to a service-panel without requiring the intervention of intermediate wiring.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art and which are not claimed in any separate application.

In the accompanying drawing, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a view mainly in central-longitudinal section and partly in side elevation and showing the improved binding-post and jack-plug unit of the present invention, together with a portion of a service-panel and a female jack-member, which latter is shown in central-longitudinal section;

Fig. 2 is a transverse sectional view taken on the line 2-2 of Fig. 1;

Fig. 3 is a view in central-longitudinal section of the improved binding-post and jack-plug unit detached from the female jack-member and shown in readiness to clamp an inserted wire;

Fig. 4 is a transverse sectional view taken on the line 4-4 of Fig. 3; and

Fig. 5 is a view in side elevation of the body of the jack-plug, detached.

The particular binding-post and jack-plug herein chosen for the illustration of the present

invention comprises a rod-like body 10 preferably formed of spring brass or other suitable electro-conductive material. About midway of its length the body 10 is provided with a rigid annular collar 11 which may be formed integral with the said body 10, if desired, and which serves, in effect, to divide the said body into an inner jack-plug portion 12 and an outer binding-post portion 13.

The binding-post portion 13 of the body 10 is formed at its outer end, in the particular construction shown, with an externally-threaded head 14 larger in diameter than the adjacent part of the said portion 13 so as to provide a stop-shoulder 15 facing toward the collar 11, as is clearly shown in the drawing. The said externally-threaded head 14 is threaded into the internally-threaded interior of a cup-shaped binding-nut 16 formed of brass or other suitable electro-conductive material and adapted to be threaded toward and away from the outer face of the collar 11 of the body 10.

Substantially all of the surface of the binding-nut 16 above referred to save its inner face, is covered by an insulating-cap 17 formed of rubber or other suitable insulating material and preferably molded directly onto the said binding-nut so as to be rigidly coupled to the surface thereof. Adjacent its inner end, a peripheral portion of the binding-nut 16 is forced inwardly to provide a stop-lug 18 which is engageable with the stop-shoulder 15 to limit the outward movement of the said binding-nut relative to the body 10. The indenting of the binding-nut 16 to provide the stop-lug 18 is effected after the said binding-nut has been threaded onto the head 14 and preferably prior to the application of the insulating-cap 17.

Immediately forwardly of the rigid collar 11, the binding-post portion 13 of the rod-like body 10 is provided with a diametrically-extending wire-receiving passage 19 for the reception of the bared terminal-end 20 of an electric wire 21 leading from a piece of apparatus to be tested or operated.

Preferably, the periphery of the collar 11 of the body 10 is knurled or milled and the major portion thereof, as well as the inner face of the said collar and a portion of the jack-plug portion 12, is enveloped by a cup-shaped insulating-pad 22 formed of rubber or other suitable insulating material and which is preferably molded in place so as to form a rigid part of the rod-like body 10.

The jack-plug portion 12 of the rod-like body

10 is formed with a slot 23 extending longitudinally and diametrically thereof to enable opposed complementary portions to yield laterally. The jack-plug portion 12 is adapted to fit snugly within a forwardly-opening socket 24 formed in the bifurcated forward portion of a female jack-member 25 composed of spring brass or other suitable electro-conductive material. The said female jack-member 25 is housed mainly within a cup-shaped casing 26 formed of insulating material and having in its bottom wall a central passage 27 through which rearwardly extends an externally-threaded stem 28 formed integral with the jack-member 25. Immediately to the rear of the bottom wall of the casing 26 and bearing thereagainst is a retaining-nut 29 threaded onto the stem 28. Also threaded onto the stem 28 is a clamping-nut 30 serving to clamp the bared terminal-end 31 of a power-supply wire 32 between two complementary metallic washers 33—33. The open forward end of the cup-shaped casing 26 rests against the rear face of a service-panel 34 which may be formed of Bakelite or the like or, if desired, of metal.

The service-panel 34 is provided with a transverse aperture 35 with which the open forward end of the casing 26 is aligned and through which extends the cuff-like flange 36 of a retaining-cap 37 formed of suitable insulating material. The said flange 36 of the retaining-cap 37 is externally threaded for engagement with the internally-threaded forward interior portion of the cup-shaped casing 26, as is shown in Fig. 1. The said retaining-cap 37 is also formed with an annular outwardly-extending flange 38 having its rear face seated against the front face of the service-panel 34 around the aperture 35 therein. The retaining-cap 37 is also formed in its forward portion with an inwardly-extending guard-flange 39 having a central aperture 40 therein through which the jack-plug portion 12 of the body 10 is insertable and removable.

In use, the binding-post and jack-plug unit shown as separate in Fig. 3 has the electric wire 21 leading from the apparatus or instrument to be tested installed, in the wire-receiving passage 19 while the said unit is entirely removed from the female jack-member in the service-panel 34. After the binding-nut 16 has been clamped against the terminal 20 of the wire 21, the jack-plug member may have its jack-plug portion 12 inserted through the aperture 40 in the retaining-cap 37 and into frictional and hence electrical engagement with the female jack-member 25, as shown especially well in Fig. 1. It will be noted that the bared terminal-end 20 of the wire 21 leading from the instrument or apparatus to be tested is well shielded against extraneous contact, by the insulating-cap 17 and the insulating-pad 22 when the binding-nut 16 is threaded down into clamping engagement with the said terminal-end 20. The collar 11 of the rod-like body 10 of the jack-plug unit serves by means of its insulating-pad 22 to limit the penetration of the jack-plug portion 12 into the interior of the female jack-member 25.

When it is desired to use the binding-post and jack-plug unit best shown in Fig. 3, to connect a lead of an instrument or apparatus to be tested or operated, the said jack-plug unit is first detached or separated from the female jack-member, after which the binding-nut 16 may be unthreaded to release the terminal-end

20 of the wire 21 preparatory to inserting the lead-wire of another instrument or piece of apparatus into the wire-receiving aperture 19 for ultimate clamping in place therein by means of the binding-nut 16.

By providing a combined binding-post and jack-plug unit of the character shown, the laboratory worker may connect the lead wire of a piece of apparatus directly to the service-panel without exposing himself or co-workers to the hazards of exposed terminals.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A jack-plug unit comprising: a body formed of electro-conductive material and including a threaded binding-post portion at one end, a jack-plug portion at its opposite end and a laterally-extending electro-conductive collar-located intermediate the two said portions and of larger diameter than both thereof, the said collar being positioned on the said body to provide an abutment to limit the penetration of the said jack-plug portion into a female jack-member; a binding-nut threaded to the threaded binding-post portion of the said body and threadedly movable thereon to clamp a wire in electrical engagement therewith; a cup-shaped insulating-cap rigid with and extending over substantially all save the inner portion of the said binding-nut which faces toward the collar of the said body; and a cup-shaped insulating-pad having its open end facing toward the open end of the cup-shaped insulating-cap and extending around the periphery of the collar of the said body and over the face thereof which is directed toward the said jack-plug portion thereof.

2. A jack-plug unit comprising: a body of electro-conductive material and provided intermediate its respective opposite ends with a transverse wire-receiving passage, the said body including a threaded binding-post portion at one end, a jack-plug portion at its opposite end and a laterally-extending collar located intermediate the two said portions adjacent the said transverse wire-receiving portion and of larger diameter than both thereof, the said collar being positioned on the said body to provide an abutment to limit the penetration of the said jack-plug portion into a female jack-member; a binding-nut threaded to the threaded binding-post portion of the said body and threadedly movable thereon toward the said collar and toward the transverse wire-receiving passage in the said body to clamp a wire in electrical engagement with the latter; a cup-shaped insulating-cap rigid with and extending over substantially all save the inner portion of the said binding-nut which faces toward the collar of the said body; and a cup-shaped insulating-pad having its open end facing toward that open end of the said cup-shaped insulating-cap and extending around the periphery of the collar of the said body and over the face thereof which is directed toward the said jack-plug portion of the said body.

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