

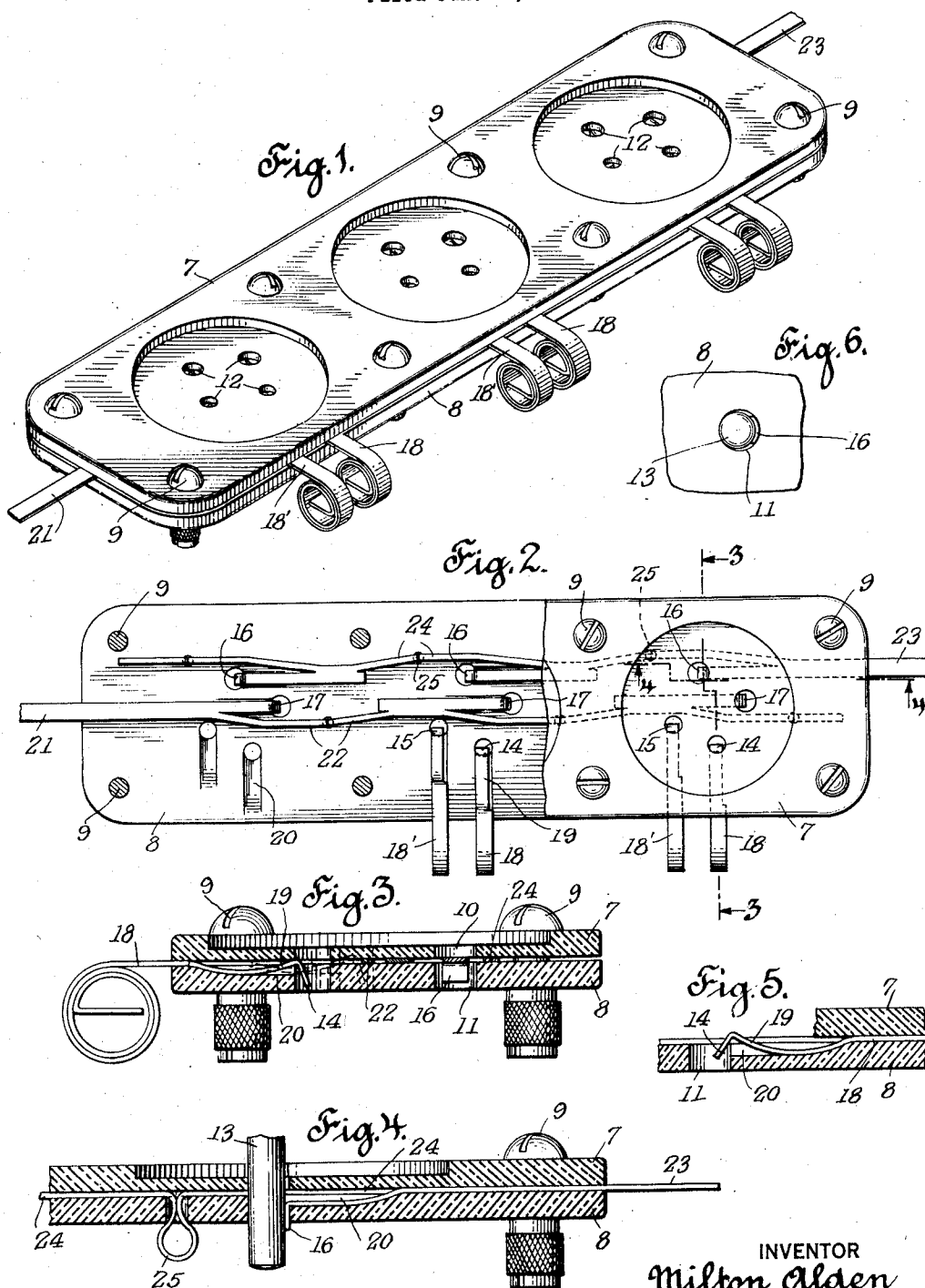
Nov. 13, 1928.

1,691,877

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VACUUM TUBE SOCKET

Filed June 11, 1926



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VACUUM-TUBE SOCKET.

Application filed June 11, 1926. Serial No. 115,381.

My invention relates to what are commonly termed sockets for detachably holding devices, such as plug connectors, amplifiers and rectifier tubes or devices, and effecting electrical connections to the various parts of the electrical circuits to be associated therewith.

One object is to provide a socket of the push-and-pull type which will accommodate a tube regardless of the length of the pins and hold it securely in place.

Another object is to provide a socket having no exposed electrical conducting parts on the outer surface.

Another object is to provide a socket in which the conducting parts are clamped and housed between two insulating plates without requiring the direct connection of screws or eyelets to the current-carrying parts.

Another object is to provide a multiple socket construction in which the similar terminals of a number of sockets are connected by a single bus bar without joints of any kind.

Another object is to provide a construction in which an integral one-piece conducting strip has one end serving as a pin contact and the other end adapted to be led off and connected to any other device without requiring intermediate connectors or joints of any kind.

Another object is to provide a construction which can be readily embodied in a panel board with all the conducting parts located in the rear.

Another object is to provide a construction which will simplify the circuit connections at the rear of an ordinary panel board.

According to my present invention, the socket construction comprises top and bottom plates having registering apertures and with the conducting strips clamped between these plates with their ends in the apertures serving as contacts for the pins of the tubes. These plates may be provided with holes arranged in any desired way to correspond with the arrangement of the pins on the tubes to be used. The plates may be provided with any number of groups of these apertures dependent upon the number of tubes to be accommodated. Some of the contact strips may run continuously from one group to another with contact tips in the appropriate apertures. The ends of the conducting strips are led from between the plates in any suitable manner.

Fig. 1 is a perspective view of a multiple

socket embodying one form of the improvements of my invention.

Fig. 2 is a front view of the same, part of the front plate being broken away to show the rear plate and conducting strips.

Fig. 3 is a transverse section on the plane of the line 3—3 of Fig. 2, but on a large scale.

Fig. 4 is a longitudinal sectional view of the plane of the line 4—4 of Fig. 2, and showing a tube terminal or pin in place.

Fig. 5 is a fragmentary sectional view showing a part of the top plate broken away adjacent one of the apertures.

Fig. 6 is a fragmentary detail view showing a tube pin in relation to a contact.

The front or top plate 7 is secured to the back or base plate 8 in any suitable manner, for instance, by a series of rivets or screws, such as 9. These plates are preferably formed of insulating material and provided with apertures 10 and 11, respectively, which register with each other. These apertures are arranged in groups designated by the number 12. Certain features of the invention are applicable to a socket having a single group of apertures for a single tube having pins or prongs, such as 13, and certain other features of the invention are applicable to a construction embodying a plurality of groups so that the construction will accommodate two or more tubes. This construction is adapted to be manufactured and sold as a socket by itself and is also adapted to be embodied in a set or apparatus in which either the top or bottom plate may be a part of the panel or shelf. The size and arrangement of the apertures 10 and 11 will, of course, be such as to accommodate some pre-determined type of tube, although the construction is such as to permit a considerable range of variation in size and spacing of pins.

The contacts such as 14, 15, 16, and 17 are formed preferably as bent-up ends of strips such as 18 and project into the apertures 11 where they are engaged by the pins of the tube as the pins are inserted. The strips 18 may be of any length and are adapted to lead off to various parts of associated apparatus so that direct connection may be effected between such apparatus and the contact tips, such as 14. The ends of the strips adjacent the tips 14 are bowed or bent as at 19 so as to provide a resiliency tending to press the contact tips toward the tube pins. A space

or recess 20 is left between the front and back plates 7 and 8 so as to permit the freedom of movement of the strip 18 throughout the portion 19 which thus serves as a spring arm which is free at the contact end and gripped tightly between the front and back plates at a point remote from the contact tip. This space or recess 20 may be formed in various ways, for instance, by cutting, stamping and moulding, or grooving the back plate 8 as shown. Each contact tip is resilient and may be somewhat concave as shown in Fig. 6, so that it will accommodate itself to the tube pins.

In the form shown, some of the strips 18 and 18' are led out from between the front and back plates at one side as shown in Fig. 2. Others of the contacts, for instance, the contact 17 may be formed from integral portions of a strip 21 which extends longitudinally and has a series of contact members cut from one edge leaving connecting portions 22 so that all of the correspondingly located contact members 17 are arranged as branches of a metallic circuit having no joints or artificial connections. This strip 21 constitutes a common connection for all of the corresponding tube terminals, for instance, the negative filament terminals. The other contact 16 may also be integrally connected to a common strip 23, if desired, having portions 24 connecting the successive contact members. The positive filament terminals frequently have a common connection, although a different number may be directly connected together on the positive side than are connected together on the negative side. To facilitate intervening connection to these strips, portions or loops 25 may be brought through the back plate 8 to which external circuit wires may be soldered, or the strip may be severed at this point if desired. Such an arrangement makes practical many possible combinations which may be readily effected either by the manufacturer or by the purchaser.

In order to obtain a maximum spacing of the contacts and connecting strips, I prefer to arrange the groups of apertures 12 so that lines connecting corresponding apertures in each group are parallel but spaced apart from each other. In this way space is left for the longitudinal strip 21 to extend between the contact 15 and the contact 16 and it is possible to connect the contact 16 in a single line by off-setting the connecting strands 24. The strands 22 are also preferably off-set somewhat to one side of the contacts 17.

This construction also facilitates the direct connection to other parts of the receiving apparatus or to binding posts, as the case may be. This construction eliminates the possibility of poor connections between the socket contacts and the associated apparatus.

The contacts are so constructed and ar-

ranged as to accommodate either what are called U V 201 A as well as U X 201 A tubes.

This construction is not only simple to manufacture and assemble, but ensures perfect insulation with a minimum of losses. The construction may be utilized in many different forms for any number of tube sockets, and in any part of the apparatus requiring the use of tubes. The contacts and connections are completely housed and are mounted in such a manner as to eliminate the necessity for rivets or other parts, which would serve as exposed live terminals. It is, therefore, possible to make such a construction to conform to the fire underwriters' requirements as well as to ensure protection from dust and moisture, which would effect the efficiency of a set by causing leakage of current.

I claim:

1. A socket construction comprising two plates secured together flatwise and having registering apertures for the pin of a tube, one of said plates having a recess at one edge of its aperture and a spring contact strip having a shank clamped between said plates, an arched portion located in said recess, and a contact tip portion having its free end extending into one of the apertures.

2. A socket having two insulating plates with more than two registering apertures, conducting strips clamped between said plates and having contact tips yieldable in the apertures of one plate, two of said strips extending from one edge of said plate and one of said strips extending from an edge at right angles thereto.

3. A socket construction comprising an insulating plate having apertures, a conducting strip having contact tips extending into some of said apertures and having a loop extending through another aperture.

4. A socket construction comprising an insulating face plate having a series of groups of apertures for the pins of vacuum tubes arranged in rows, conducting strips each having integral spring contact tips for the apertures of a row of apertures and individual contact strips for other apertures.

5. A socket construction comprising insulating plates with registering apertures and conducting strips entirely housed and clamped between said plates and each having a contact tip for one of said apertures, and a spring arm movable between said plates.

6. A socket construction comprising two plates secured together flatwise and having apertures for the pins of tubes, and a spring contact strip having a shank clamped between said plates, an arched spring portion located between said plates, and a contact tip portion having its free end extending into line with one of the apertures.

7. A socket construction comprising a face plate having a series of groups of four apertures for the pins of vacuum tubes arranged

in rows, with the apertures of each group arranged diagonally, conducting strips secured at the rear of said face plate, each having spring contact tips for the apertures of a row of apertures and individual strips with contact tips for other apertures. 5

ing two insulating plates having groups of prong openings, a conductor strip clamped between said plates, and having an integral contact tip extending into one opening of each group, and contact strips having tips in the other openings. 10

8. A multiple socket construction compris-

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