

Dec. 28, 1948.

G. B. BENANDER

2,457,520

PLUG CONNECTOR

Original Filed March 24, 1943

Fig. 1.

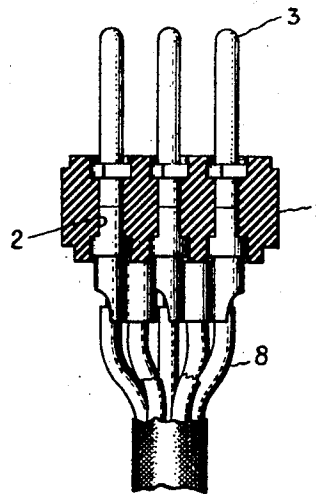


Fig. 2.

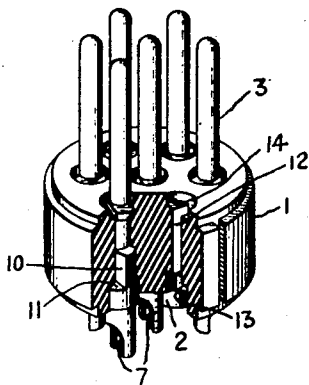


Fig. 3.

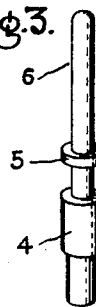
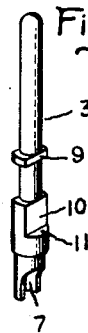


Fig. 4.



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UNITED STATES PATENT OFFICE

2,457,520

PLUG CONNECTOR

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Original application March 24, 1943, Serial No.
480,348. Divided and this application Sep-
tember 8, 1945, Serial No. 615,136

1 Claim. (Cl. 173—361)

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This application is a division of my application
Serial No. 480,348, filed March 24, 1943—Electri-
cal connector.

The invention relates to plug connectors and
is especially applicable to plug connectors com-
prising a number of contact prongs or contact
pins arranged in relatively close proximity to
each other, although the invention is not limited
to such use.

An object of the invention is to provide an
improved plug connector which is simple in struc-
ture, reliable in operation, and capable of being
manufactured at low cost.

A further object of the invention is to provide
a plug connector wherein the contacts may be
quickly and firmly positioned and fastened in
the base and held against turning movement
therein.

For a consideration of what I believe to be
novel and my invention, attention is directed to
the following specification and to the claim ap-
pended thereto.

In the drawing, Fig. 1 is a sectional view of a
plug connector embodying my invention; Fig. 2
is a perspective view of the improved plug con-
nector with a portion broken away to better illus-
trate the construction, Fig. 3 is a perspective view
showing a partially completed contact pin, and
Fig. 4 is a perspective view of a completed con-
tact pin.

Referring to the drawing, the connector com-
prises a molded base or block 1 formed from
suitable insulating material and provided with a
plurality of uniformly spaced, axially extending
openings 2 extending therethrough for receiv-
ing and holding in position the prongs or con-
tact pins 3. Each prong or contact pin 3 is a
screw machine part. During the process of man-
ufacture, two axially spaced collars 4 and 5 are
formed on a rod 6. The upper end of the rod is
rounded in known manner and the lower end
portion is cut away and provided with a bore
7 to form a semicylindrical recess for receiving
a conductor 8, the bared end of which is con-
nected thereto. On diametrically opposite sides
portions of the collars 4 and 5 are cut away to
form flat parallel surfaces 9 and 10 aligned with
each other. The surfaces 9 extend along the en-
tire length of the collar 5 whereas the surfaces
10 are formed only along a portion of the collar
4 adjacent to the collar 5, thus providing shoul-
ders 11 and leaving a portion of collar 4 cylind-
rical.

The upper and lower ends of the openings 2 in
base 1 are round and are of a diameter equal to

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that of the collars 4 and 5. The intermediate
portions of openings 2 are in the form of slots
12 of a contour corresponding to that of collars
4 and 5 after being cut away to form the sur-
faces 9 and 10. When inserted into an opening
2 on the block 1, the cylindrical collar portion
of the pin fits into the lower end of the opening
2 with the shoulders 11 engaging a shoulder 13
at the lower end of opening 2. The other portion
of the collar 4 with the flat surfaces 10 fits into
the intermediate slot 12. The collar 5 with the
parallel surfaces 9, when the pin is inserted into
the opening 2, is located above the slotted por-
tion 12 with its lower surface in alignment with
the end surface 14 at the upper end of slot 10.
Viewed from another aspect, the collar 5 when
cut away leaves projecting wings or lugs on the
pin 3 above collar 4.

During assembly, each prong 3 is inserted into
an opening 2 from the lower end thereof to bring
the shoulders 11 into engagement with the shoul-
ders 13 and thereafter the prong portion between
the collars 4 and 5 is given a quarter twist by
turning one end of the prong relatively to the
other so that the two pairs of parallel surfaces
9 are rotated through an angle of the order of
90° relative to the surfaces 10 to lock the prong
firmly in position, forming a permanent bayonet
connection with the base. It will be seen that
if the base is held stationary with a prong in one
of the openings, the lower end of the prong is
held stationary by reason of the flat surfaces
10 being positioned in the slot 12. Now, if the
upper end of the projecting pin portion of the
contact is turned, the wings or lugs formed by
the cut-away portions of collar 5 are rotated un-
til they stand over the shoulders 14. Preferably,
the two ends of the contact are twisted relatively
to each other by about 90°. Each prong is po-
sitioned circumferentially by the flat surfaces 10
positioned in the slot 12. From another view-
point, each prong is provided with axially spaced
projections and upon insertion into opening 2 in
the block 1, an end portion of the prong with
one of the projections is given a twist to engage
a shoulder in the opening so as to fix the prong
against axial movement in the base 1. In the
present instance, seven prongs are indicated.
Six of the prongs are located on a circle and po-
sitioned on the block with their lower cut-away
lug portions 7 facing radially outward to facili-
tate soldering of the bare ends of the wires to
the lug portions.

By the above-described arrangement, I pro-
vide a plug which is simple in structure and one

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wherein the contacts can be quickly and easily assembled and fastened in position without the use of additional parts. Accordingly, the construction is capable of being manufactured at low cost. At the same time, however, a strong, reliable construction is obtained.

What I claim as new and desire to secure by Letters Patent of the United States is:

A plug comprising a base of insulating material having an axially extending opening there-
through an intermediate portion of which is non-
circular in cross section and end portions of
which are round and of a diameter such that
they define shoulders at the ends of the inter-
mediate portion, and a prong having an inter-
mediate portion shaped to fit the non-circular
portion of said opening and flanges spaced apart
axially a distance equal to the distance between
said shoulders for engagement with said should-
ers, one of said flanges being spaced from the
non-circular portion of said prong to provide
a prong portion between said non-circular por-
tion and said flange of a size in cross section less

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than said non-circular portion and capable of being distorted by twisting, and said one flange having a contour such that it will pass through said opening whereby a prong may be inserted from one end of the opening and then twisted to bring such flange into tight engagement with the adjacent shoulder to secure the prong in the opening.

GEORGE B. BENANDER.

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The following references are of record in the file of this patent:

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