My invention has for its object to provide a simple connector for readily and securely connecting a plurality of wires together. The invention eliminates all soldering and taping of joints and yet it affords a means for efficiently insulating the union between the wires. The invention is particularly of value for connecting a number of branch circuits to a main line wiring, such as may be used in connection with lighting fixtures having a plurality of lamps that are connected in branch circuits leading from the main wires of the fixtures. It thus provides a means for connecting a plurality of parallel circuits to a common lead wire. It may be used for a great variety of purposes where a plurality of wires are to be securely connected together at a single point and the joints are to be thoroughly insulated.

The invention may be contained in structures that vary in their details. To illustrate a practical application of the invention I have selected two forms of structure that contain the invention as examples of such structures and shall describe them hereinafter. The structures selected for purposes of illustration are shown in the accompanying drawings.

Figure 1 of the drawings illustrates one form of connector containing my invention. Fig. 2 illustrates a view of a section taken on the plane of the line 2—2 indicated in Fig. 1. Fig. 3 is a top view of a clamping member for receiving the bared ends of the wires. Fig. 4 is a top view of another clamping member that is used for securing the wires in position. Fig. 5 is a side view of a modified form of connector. Fig. 6 is a view of a section taken on the plane of the line 6—6 indicated in Fig. 5. Fig. 7 is a side view of a clamping member used to spread and at the same time secure the wires. Fig. 8 is a view of a clamping member having an opening for receiving the bared ends of the wires.

The connector consists of an enclosing shell and means located within the shell for readily clamping the wires together. The shell is so constructed as to completely enclose the bared portions of the wires and the clamping parts and also end portions of the insulating covering commonly used on wires, so as to insure insulation of the wires from objects exterior to the shell. In the form of construction shown in Figs. 1 to 4 the shell 1 is formed of suitable hard insulating material. It is preferably threaded at its upper end as at 2 and a threaded cap 3 formed of similar material is threaded on to the end of the shell 1 to close the end of the shell. The shell 1 is preferably formed with a skirt 4 that surrounds an opening 5. The skirt 4 extends to a point remote from the opening 5 in order that the end portions of the insulating material on the wires may be well enclosed within the shell. The skirt 4 is of sufficient length to completely cover the insulated end portions of the wire for a considerable length in order that the bared connected portions of the wire may be safely covered by the shell.

The clamping means for securing the wires together in the form of construction shown in Figs. 1 and 2 consists of a pair of saucer shaped discs 6 and 7. The disc 6 is provided with an opening through which the bared ends 8 of the wires may be inserted. In the form of construction shown in Figs. 2 and 3 the disc 6 is provided with a central spider or cross portion 9 having the openings 10 within the central portion of the disc. The bared wires are inserted through the openings 10 and pushed upwards through the disc until the ends of the insulated coverings or coatings 11 come in contact with the disc or are located within the openings 10. The bared ends of the wires are then bent over the edge 12 of the disc which is preferably sharp so as to produce an engagement with the wires. The discs 6 and 7 being saucer shaped and flaring upwards and outwards, they conform substantially to the shape that the wire will be readily bent when inserted through the openings 10 and bent over the edge 12 of the disc 6. The discs 6 and 7 are clamped together by means of the screws 13. The discs thus form clamping members for tightly connecting the wires together.

In making the connection the end portion of the insulating coating 11 is removed to leave the ends bared. The wires are then inserted through the skirt 4 and through the shell 1. The bared ends are then inserted through the disc 6 and between the peripheral portion of the disc 6 and the disc 7. By reason of the saucer shape of the discs the wires will readily be guided outward from between the discs. The screw 13 is then turned to clamp the discs 6 and 7 together, and the wires are bent down over the edge of the disc 6. The wires are then drawn
back through the shell 1 so as to place the discs within the shell. The cap 3 is then threaded on to the shell 1 and the point of connection between the wires is thoroughly insulated and completely covered by the shell.

In the form of construction shown in Figs. 5 to 8 the shell 14 is provided with the skirt 15 for enclosing or covering the end portions of the insulating coatings 11 of the wires. The form of construction shown in Figs. 5 and 6 is particularly adapted to wires that are each formed of a plurality of twisted fine wires commonly used where flexibility is desired in electric connecting wires. An annulus 16 is located in the shell 14. The annulus extends across the opening 17 of the shell through which wires are passed. The shell 14 is provided with a shoulder 18 for supporting the annulus 16. The ends of the wires are inserted through the central opening 19 of the annulus. The annulus is preferably conical in form, its upper edge 20 being slightly rounded as shown in Fig. 8 whereby good contact may be made with the wires. The shell 14 is closed by means of a plug or cap 21, the shell and the plug being both provided with thread whereby the plug 21 may be screwed into the shell. The plug 21 is provided with a cone shaped central part 22 that enters the annulus 16 to clamp the wires between the cone part 22 and the annulus 16. The cone 22 tends to spread the fine wires of each of the connecting wires 11 and make good contact with the curved surface 20 on the annulus.

In making the connection the wires are bared of their insulating coating for a short distance from their ends and they are inserted through the shell 14 and then through the annulus 16 until the insulated coverings or coatings make contact with the lower side of the annulus and then they are bent over the rounded edge 12 of the annulus. They are then drawn back into the shell together with the annulus until the annulus rests upon the shoulder 18. The plug 21 is then threaded into the shell until the cone 22 enters between the wires and forces them tightly against the annulus where they are clamped and held in position. The skirt 15 completely covers and substantially encloses the insulating coatings of the end portions of the wires. The bared portions lie wholly within the annulus or between the annulus and the plug 21.

I claim:

In an electric wire connector, an insulating shell, a pair of metal disks, one of the disks having an opening for receiving the ends of the wires, a bolt extending through one of the disks and threaded into the other of the disks for clamping the ends of the wires between the disks, an insulating shell for containing the disks in one of its ends and having a restricted portion smaller in its inner diameter than the disks and an insulating cap for closing the end of the shell having the disks whereby wires may be electrically connected together and secured in the shell by the disks.

In testimony whereof I have hereunto signed my name to this specification.

ALFRED W. REISER.