

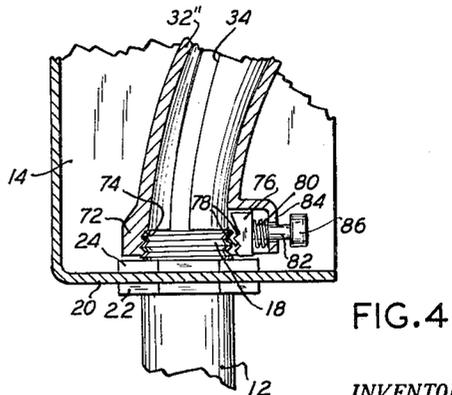
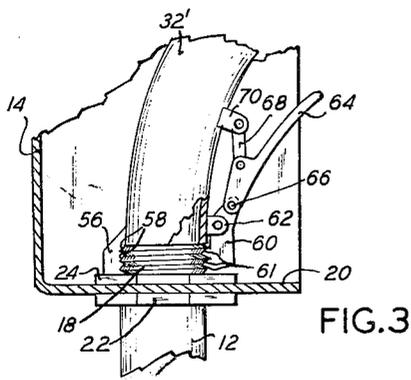
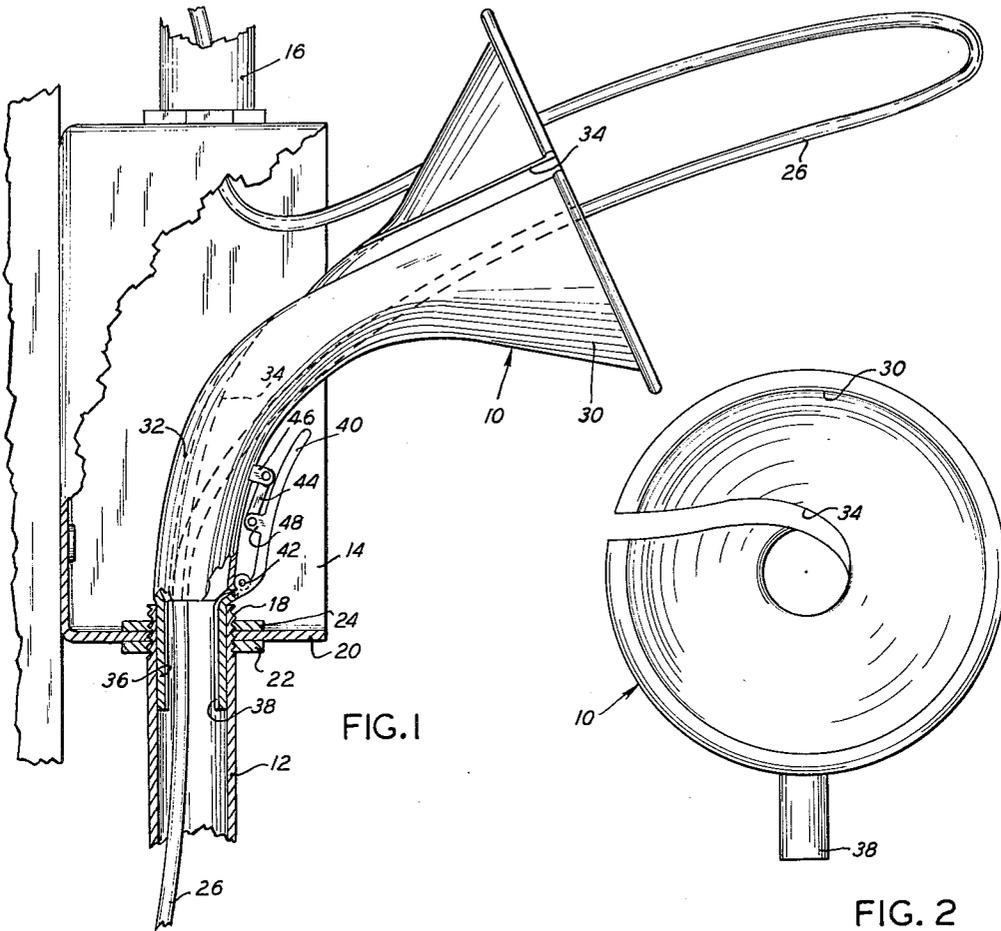
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SPIRAL SLOT WIRE GUIDE

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SPIRAL SLOT WIRE GUIDE

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9 Claims. (Cl. 254-134.3)

This invention relates to a wiring guide or feeder and more particularly to a wire guiding device which is adapted to have one end thereof mounted on the open end of a conduit for electric wires and to assist in the smooth feeding of the wires into the conduit, but which device is adapted easily to be removed from or mounted upon a continuous strand or strands of wire.

Wire feeders or wire guiding devices of various types have been suggested and have been employed to a limited extent in the prior art for assisting and guiding wires being pulled into the entrance of the conduit. Certain of such previous devices have included a funnel like member having an enlarged entrance bell, the opposite end of the device being of reduced diameter adapted to fit or abut against the conduit into which wires are being pulled. Such devices have been of solid construction and, consequently, the devices could be mounted upon a wire only by inserting or removing the device from the end of the wire. Also, the prior devices have, in general, depended upon frictional engagement of the device with the end of the conduit to hold the device in place. In general, this has not proved to be satisfactory since the devices have not stayed in position during the drawing of a wire into a conduit.

In accordance with the present invention, I have provided a wire feeder formed with a narrow slot in the side wall extending the length of the device and through which slot wires may be slipped into or withdrawn from the interior of the device so that the device can be mounted upon or removed from continuous strands or loops of wire. Further, I have provided improved means for locking the device in position on the end of a conduit so as to clamp the same in fixed position thereon while wire is being drawn into the conduit.

It is, therefore, an object of the invention to provide an improved wire feeder which can be mounted upon or removed from continuous strands or loops of wire.

A further object is to provide a wire feeder constructed to facilitate its removal from or mounting upon a continuous strand or strands of wire, but which is so designed as to minimize accidental removal of a strand of wire from the feeder.

Another object of the invention is to provide new and improved devices for locking a wire feeder into operative position on the end of a conduit.

Other objects and advantages of the invention will appear in the following description of preferred embodiments thereof shown in the attached drawings in which:

FIG. 1 is a side elevation of a wire feeder made in accordance with the present invention partly broken away to show details thereof and shown mounted in position on the end of a conduit within a conduit box;

FIG. 2 is an end view of the wire feeder shown in FIG. 1 from the bell end of the feeder;

FIG. 3 is a fragmentary view partially in section showing a modified arrangement for clamping the wire feeder on the end of a conduit; and

FIG. 4 is a further fragmentary view showing another modification of means for clamping the wire feeder onto the end of a conduit.

Referring now more particularly to FIGS. 1 and 2, therein is illustrated a wire feeder 10 made in accordance with the invention, the feeder being shown mounted on the end of a conduit 12 extending into a junction box 14 to which a further conduit 16 is connected. The

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conduit 12 is illustrated as being of the ridged wall type having an externally threaded end portion 18 clamped to a wall 20 of the junction box 14 by means of lock nuts 22, 24, though it will be apparent the present embodiment may be used in conjunction with other types of conduits. As is well known, it is frequently desired to thread a wire such as shown at 26 or a group of wires from one of the conduits leading into a junction box directly into another conduit and without making a splice in the wire or wires within the box. The wire feeder 10 of the invention is particularly adapted in overcoming the problems encountered when it is desired to lead wires through a junction box in this fashion.

As is apparent from FIG. 1, the wire feeder 10 comprises a funnel shaped body member narrowing from a relatively wide mouth bell section 30 to a tubular tail section 32 preferably provided with an interior diameter substantially equal to that of the conduit 12 upon which the device is adapted to be mounted. In the illustrated embodiment, the tail section 32 is longitudinally curved so that the central axis of the bell 30 is disposed at an oblique angle with respect to the axis of the end of the tail section 32. As evident, this construction facilitates use of the feeder in situations such as that illustrated. In other instances, however, a wire feeder wherein the tail section 32 is a straight tube can be utilized.

In accordance with the invention, the wire feeder 10 is provided with a narrow slot 34 extending from end to end thereof and which slot is preferably of a width just slightly greater than that of the wire 26 normally to be led therethrough. Preferably, the slot 34 spirals longitudinally of the device and preferably the spiral is positioned within the outer half of the wire feeder with respect to the longitudinal curve thereof. The slot 34 is preferably positioned in the outwardly curved portion of the feeder since the wire 26 will ordinarily be in contact with the inward wall portion of the feeder and it is desired, consequently, that such inward wall portion remain smooth and free of irregularities. The slot 34 is preferably spiraled so that it will extend transversely of the path of the wire 26 through the feeder thus preventing the wire accidentally slipping outwardly through the slot 34.

Preferably, means are provided to clamp the wire feeder 10 in position on the end of the conduit 12. In the embodiment illustrated in FIG. 1, the feeder 10 is provided with a rigid clamping member or tongue element 36 extending from the end of the tail section 32 and offset slightly inwardly of the tail section so that it may extend along and engage the inner wall of the conduit 12. Preferably, the tongue 36 is positioned on the side of the body which is furthest from the center of longitudinal curvature of the body member 32. Hingedly mounted on the end of the body member 32 opposite the tongue element 36 is a movable clamping member or tongue element 38 and which includes a handle portion 40. The tongue element 38, 40 is hingedly mounted at 42 so that the tongue 38 may be moved into and out of clamping engagement with the interior surface of the conduit 12 opposite the position of the tongue 36 with the conduit. Toggle means are provided to retain the tongue 38 in clamping engagement with the conduits 12, the toggle including an arm 44 pivotally mounted at one end thereof on the body member 32 by means of a bracket 46, the other end of the arm being pivotally secured to the lever 40 by means of a bracket 48. The toggle is of the conventional over-center type so that in the clamping position as shown, the tongue 38 is urged against the side of the conduit 12 so as to clamp the wire feeder into position. As will be apparent, moving the lever 40 outwardly will move the element 38 out

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of clamping position and will throw the arm 44 over center.

An alternate clamping structure is shown in FIG. 3 wherein the lower end of a wire feeder tail section is indicated at 32' and which tail section is again preferably provided with an interior diameter substantially equal to that conduit upon which the wire feeder is to be secured. Extending from the side of the tail section 32' most remote from the center curvature thereof is a tongue element or clamping member 56 which is preferably relatively narrow in the circumferential direction and which is provided with notches 58 formed to receive and engage with the threads 18 of the conduit 12. Mounted in opposed relation in the opposite side of the tail section 32' is a toggle operated tongue element or clamping member 60 provided with thread engaging notches 61 pivotally mounted on a bracket 62 secured to the tail section. The clamping member 60 is moved into and out of clamping position by an operating lever 64 pivoted at 66 to the clamping member 60 and to an arm 68 connected at one end to the lever 64 and at its other end to a bracket 70, such that the arm 68 moves between over center positions as the lever 64 is moved towards or away from the tail section 32'. In FIG. 3 the clamping member 60 is shown out of clamping engagement, but as will be apparent by moving the lever 64 towards the tail section 32', the clamping member 60 will be moved into clamping engagement with the conduit 12 and will be retained there when the arm 68 moves over center.

Another alternate structure for clamping a wire feeder onto the end of a threaded conduit is shown in FIG. 4, the tail section of the feeder being indicated at 32''. This embodiment also is provided with a rigid tongue element or clamping member 72 extending from the end of the tail section on the side thereof most remote from the center of curvature and formed with notches 74 to engage the threads 18 of the conduit. Mounted in opposed relation to the rigid clamping member 72 is a movable tongue element or clamping member 76 provided with thread engaging notches 78. The clamping member 76 is mounted on the end of an operating shaft 82 slidably supported in a mounting bracket 84 fixed for the tail section 32''. A spring 80 is provided to bias the clamping member into engagement with the conduit 12 and a head 86 is provided on the operating shaft 82 to facilitate grasping the same to hold the clamping element 76 out of clamping engagement and in which latter position, the device is shown in FIG. 4.

The operation of the wire feeder made in accordance with the invention will be clearly apparent from the drawings and description heretofore. Nevertheless, with reference to FIGS. 1 and 2, it might be pointed out that to utilize the wire feeder 10 illustrated therein, the clamping elements 36, 38 may be inserted into the end of the conduit 12 either before or after the fishtape or wire is positioned in the conduit. If desired, the fishtape may be hooked to the wire 26 to be pulled through the conduit and the wire partially started into the conduit whereafter the wire 26 may be moved through the slot 34 and into the interior of the wire feeder 10 after which the same is mounted on the end of the conduit 12 and the clamping mechanism is operated to clamp the wire feeder into position. The wire is then pulled into the conduit, the wire feeder 10 serving to guide the same smoothly into the conduit without risk of cutting or otherwise damaging the insulation on the wire. When all but a small loop of the wire 26 has been pulled through the feeder 10 and into the conduit 12, for example as indicated in FIG. 1, the wire feeder 10 can be unclamped from the conduit and the wire moved through the slot 34 to disengage the same from the wire feeder. The operation will be substantially the same regardless of the clamping mechanism utilized to hold the body member in position on the end of a conduit.

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Obviously, the wire feeder illustrated can also be utilized in those instances where it is simply desired to pull a wire into the conduit and sever the wire so as to leave only a short length for connection within the junction box.

Having illustrated and described a preferred embodiment of the invention, it should be apparent to those skilled in the art that the invention permits of modification in arrangement and detail. I claim as my invention all such modifications as come within the true spirit and scope of the appended claims.

I claim:

1. A wire feeder for guiding wires into a conduit comprising a longitudinally curved, tubular body member having means at one end for attaching said body member to the end of a conduit, the opposite end of said body member flaring to define an entrance bell, said body member being formed with a slot therein extending from end to end thereof and through which slot wires may be inserted into and removed from said body member, said slot being positioned wholly within the outer half of said body member relative to the center of longitudinal curvature thereof, said means including attaching elements on diametrically opposite portions on said one end of said member and said slot terminating at said end between said attaching elements.

2. A wire feeder for guiding wires into a conduit comprising a tubular body member having clamping means at one end for securing said body member to the end of a conduit, the opposite end of said body member defining an enlarged entrance opening, said member being curved longitudinally so that the central axis of said one end extends obliquely relative to the axis of said opening, said body member being formed with a slot therein extending from end to end thereof and through which slot wires may be inserted into and removed from said body member, said clamping means comprising an integral tongue extending from said one end of said member for engaging within a conduit end and against the wall thereof, a second tongue hingedly mounted upon said member for movement toward and away from said integral tongue and extending from said one end and positioned diametrically from said integral tongue, and toggle means operatively connected to said second tongue operable to move and retain said second tongue in clamping engagement with a conduit wall opposite said integral tongue, said slot terminating at said one end between said tongue.

3. A wire feeder for guiding wires into a conduit comprising a tubular body member having an end portion formed to engage the end of the conduit into which wire is to be led and means for clamping said body member to said conduit including a rigid tongue element extending from said body member for engaging against a portion of the wall of said conduit adjacent said end and a movable tongue element extending from said body member for engaging against a further portion of the wall of said conduit and movable to urge said rigid tongue element into engagement with said conduit, and releasable means operatively connected to said movable tongue element for urging the same to locking position.

4. A wire feeder for guiding wires into a conduit comprising a tubular body member having an end portion formed to engage the end of the conduit into which wire is to be led and means for clamping said body member to said conduit including a rigid tongue element extending from said body member for engaging against the inner surface of the wall of said conduit adjacent said end and a movable tongue element hingedly mounted on and extending from said body member diametrically opposite said rigid tongue element for engaging against the inner surface of said conduit opposite said rigid tongue element, said movable tongue element being movable into clamping engagement with said conduit inner surface, and toggle means operatively connected with

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said movable tongue element and operable to move the same between clamping and non-clamping positions.

5. A wire feeder for guiding wires into a conduit comprising a tubular body member having an end portion formed to engage the end of the conduit into which wire is to be led and means for clamping said body member to said conduit including a rigid tongue element extending from said body member for engaging against a portion of the wall of said conduit adjacent said end and a movable tongue element extending from said body member for engaging against a further portion of the wall of said conduit and movable to urge said rigid tongue element into engagement with said conduit, and releasable means operatively connected to said movable tongue element for urging the same to locking position, said tongue elements being positioned to engage the inner surface of the wall of said conduit at opposite sides thereof and said movable tongue element being hingedly mounted on said body member.

6. A wire feeder for guiding wires into a conduit comprising a tubular body member having an end portion formed to engage the end of the conduit into which wire is to be led and means for clamping said body member to said conduit including a rigid tongue element extending from said body member for engaging against a portion of the wall of said conduit adjacent said end and a movable tongue element extending from said body member for engaging against a further portion of the wall of said conduit and movable to urge said rigid tongue element into engagement with said conduit, and releasable means operatively connected to said movable tongue element for urging the same to locking position, said tongue elements being positioned to engage the outer surface of the wall of said conduit at opposite sides thereof and said movable tongue element being hingedly mounted on said body member.

7. A wire feeder for guiding wires into a conduit comprising a tubular body member having an end portion formed to engage the end of the conduit into which wire is to be led and means for clamping said body member to said conduit including a rigid tongue element extending from said body member for engaging against a portion of the wall of said conduit adjacent said end and a movable tongue element extending from said body member for engaging against a further portion of the wall of said conduit and movable to urge said rigid tongue element into engagement with said conduit, and releasable means operatively connected to said movable tongue element for urging the same to locking position, said tongue elements being positioned to engage the outer surfaces of the wall of said conduit at opposite sides thereof and being notched to engage threads on said outer surface of said

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conduit, said movable tongue element being mounted for movement into and out of engagement with said threads, and said releasable means including spring means for urging said movable tongue element into engagement with said threads.

8. A wire feeder for guiding wires into a conduit comprising a tubular body member having an end portion formed to engage the end of the conduit into which wire is to be led and means for clamping said body member to said conduit including a rigid tongue element extending from said body member for engaging against a portion of the wall of said conduit adjacent said end and a movable tongue element extending from said body member for engaging against a further portion of the wall of said conduit and movable to urge said rigid tongue element into engagement with said conduit, and releasable means operatively connected to said movable tongue element for urging the same to locking position, said tongue elements being positioned to engage the wall of said conduit at opposite sides thereof, said movable tongue element being hingedly mounted on said body member and said releasable means being a toggle device connected between said movable tongue element and said body member.

9. A wire feeder for guiding wires into a conduit comprising a tubular body member having an end portion formed to engage the end of the conduit into which wire is to be led and means for clamping said body member to said conduit including a rigid tongue element extending from said body member for engaging against a portion of the wall of said conduit adjacent said end and a movable tongue element extending from said body member for engaging against a further portion of the wall of said conduit and movable to urge said rigid tongue element into engagement with said conduit, and releasable means operatively connected to said movable tongue element for urging the same to locking position, said tubular body member having a slot therein extending from end to end thereof and spiraling along said body member and through which slot wires may be inserted into and removed from said body member.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,052,450

September 4, 1962

Harold K. Trunnell

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 21, after "fit" insert -- into --;
column 4, line 46, for "tongue" read -- tongues --; column 5,
line 34, for "threereof" read -- thereof --.

Signed and sealed this 8th day of January 1963.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

DAVID L. LADD
Commissioner of Patents