LEAD PIPE EXPANDING TOOL ON ROD CARRYING IMPACT SLEEVE FOR FOUNDING TOOL INTO PIPE END AND FOR REMOVING TOOL

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

INVENTOR.
MONROE W. PHILLIPS, SR.
MONROE W. PHILLIPS, JR.

By

ATTOREE
LEAD PIPE EXPANDING TOOL ON ROD CARRYING IMPACT SLEEVE FOR POUNDING TOOL INTO PIPE END AND FOR REMOVING TOOL


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1 Claim. (Cl. 153—79)

This invention relates to improvements in swedging tools and has particular reference to such a tool whereby to swedge a lead pipe into firm engagement with the inner wall of a relatively larger non-ferrous ferrule. Difficulty has heretofore been experienced in such a swedging operation due to the necessity of the mechanic employing a weighted cylindrical rod or other tool and then projecting the tool through the ferrule to engage the inserted end of the lead pipe to be connected and then proceeds to period or beat the lead pipe to progressively expand it outwardly to a point where it has a firm engagement with the inner surface of the ferrule throughout its circumference, after which the exposed outer portion of the lead pipe and the lower end of the ferrule are leded in a conventional manner. Such a procedure has been time consuming and expensive from the standpoint of labor costs.

The present invention contemplates an impact swedging tool embodying a rigid elongated rod that is provided at its lower end with a tapered swedging head and an impact sleeve slidable upon the rod and whereby to pound the tapered head into swedging engagement with the end of a lead pipe that is disposed to a predetermined point into the ferrule and whereby the lead pipe is quickly and easily expanded to firm engagement with the ferrule in an accurate manner.

The invention contemplates a swedging tool of the character noted that is provided with a detachable and replaceable tapered head preferably formed of non-metallic material and with a weighted impact sleeve that is manually shifted to impact engagement with the head and with means engageable by the sleeve to quickly and easily release the head from the swedged pipe.

Novel features of construction and operation of the device will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated a preferred form thereof.

In the drawings:

Figure 1 is a side elevation of a tool constructed in accordance with the invention.

Figure 2 is an enlarged side elevation of a swedging tool illustrating the manner of operation and with parts broken away and parts shown in section.

Figure 3 is a horizontal sectional view taken substantially on line 3—3 of Figure 1 and

Figure 4 is a vertical section taken substantially on line 4—4 of Figure 1.

Designating specifically to the drawings, the numeral 5 designates an elongated cylindrical metallic rod having an upper and preferably integral he 6. The rod at its lower end is threaded as at 7 for the reception of clamping nuts 8 and 9. Disposed upon the lower end of the rod 5 for engagement with a washer 10, is a cylindrical tapered head 11. The head 11 is preferably formed of hard wood, although not restricted to any particular material. The head 11 is provided with a central bore 12 adapted to freely receive the lower threaded end 7. The lower nut 9 and a washer 12a serve as the clamping means for the head 11 to be clamped against the washer 10 and the stop nut 8. The head 11 may therefore be removed and replaced in the event of wear or damage.

Shiftably disposed upon the rod 5 is an impact sleeve 13 having welded to its lower end an enlarged weighted member 14, whereby to absorb the pounding action of the device in use. The sleeve 13 and its head 14 are movable up and down upon the rod 5 by manual control and whereby to impart a pounding action upon the nut 8 to be transmitted through the head 11 during the sweding operation. The head 6 for the rod 5 provides a means whereby the sleeve may be forced upwardly to release the head 11 from the swedged work. The inside diameter of the sleeve 13 is such as to permit of a freely sliding movement on the rod 5 without tendency toward a lateral motion.

In the use of the device, a ferrule 15, usually of brass or bronze is engaged over the free end of a conventional lead pipe 16. The lead pipe 16 is usually of smaller diameter than the inside diameter of the ferrule 15 and necessitates that the end of the lead pipe 16 be swedged outwardly throughout its circumference to bind against the inner wall of the ferrule.

With the pipe 16 engaged within the lower end of the ferrule 15 a predetermined distance, the operator proceeds to insert the tool through the ferrule to engage the tapered head 11 into the open end of the pipe 16. When fully seated, the operator manually shifts the sleeve 13 up and down in a hammering action, progressively forcing the head 11 downwardly into the pipe 16, causing the upper end of the pipe 16 to be flared outwardly to a point where it is in full binding engagement through its circumference upon the inner wall of the ferrule. After the sweding has taken place, an upward movement of the sleeve 13 contacts the head 6 and releases the head 11 from its frictional binding engagement in the pipe 16. The tool is then removed and the operator proceeds to lead the connection around the outside of the ferrule and the outside of the pipe 16 in a conventional manner. As before pointed out, it has been extremely difficult and time consuming to otherwise swedge the pipe 16 against the ferrule by tools or other devices now in use, since it necessitated the hammering action through the ferrule in order to reach the end of the pipe 16. In other instances, it has been customary to extend the pipe 16 all the way to the top of the ferrule 16 and then to swedge the upper end. However, with this novel form of tool, a considerable saving is effected in the cost of lead pipe since the sweding action can be performed relatively close to the lower end of the ferrule. It is contemplated that the tool shall be formed in various sizes in accordance with the recognized use of various sizes of lead pipe requiring a sweding to a coupling, a ferrule, flange plates or the like. The action is quick and positive and most effectively swedges the pipe with an equal pressure throughout its circumference. As before stated the head 11 may be replaced from time to time by merely removing the nut 9 and its associated washer 12a.

It will be apparent from the foregoing that a very novel form of swedging tool has been provided. The device is simple in construction, is strong, durable and highly effective for the purpose indicated.

It is to be understood that the invention is not limited to the precise arrangement shown, but that changes are contemplated as readily fall within the spirit of the invention as shall be determined by the scope of the subjoined claim.
Having thus described our invention, what we claim as new and desire to secure by Letters Patent are:

A swedging tool for swedging the open end of a lead pipe into binding engagement with the inner wall of an elongated ferrule or coupling and whereby the lead pipe is swedged outwardly at a point adjacent the lower end of the ferrule, comprising an elongated rod having a length whereby to extend entirely through the ferrule to the point of entry of the lead pipe and to project above the ferrule for a substantial distance, the rod at its upper end being provided with a fixed enlarged head, the rod at its lower end being threaded and provided with a cylindrically tapered swedging head concentric thereto, means for detachably connecting the swedging head to the lower end of the rod, said connecting means comprising an upper clamping nut and a lower clamping nut, said swedging head being formed of hard wood and axially bored to slidably engage over said threaded end to be rigidly clamped between the nuts, and washers disposed between the nuts and the opposite end of the swedging head, an impact sleeve slidably positioned concentrically on said rod between said upper fixed head and lower swedging head, said impact sleeve at its lower end having a weighted enlarged wear resisting collar and being shiftable toward and from said swedging head to impart a pounding action upon said connecting means coaxially of the ferrule and the lead pipe to progressively insert the swedging head into said open end and expand the end of the lead pipe into binding engagement with the ferrule throughout its circumference, and said sleeve being shiftable to pound said upper fixed head to remove said swedging head from the expanded pipe end.

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