

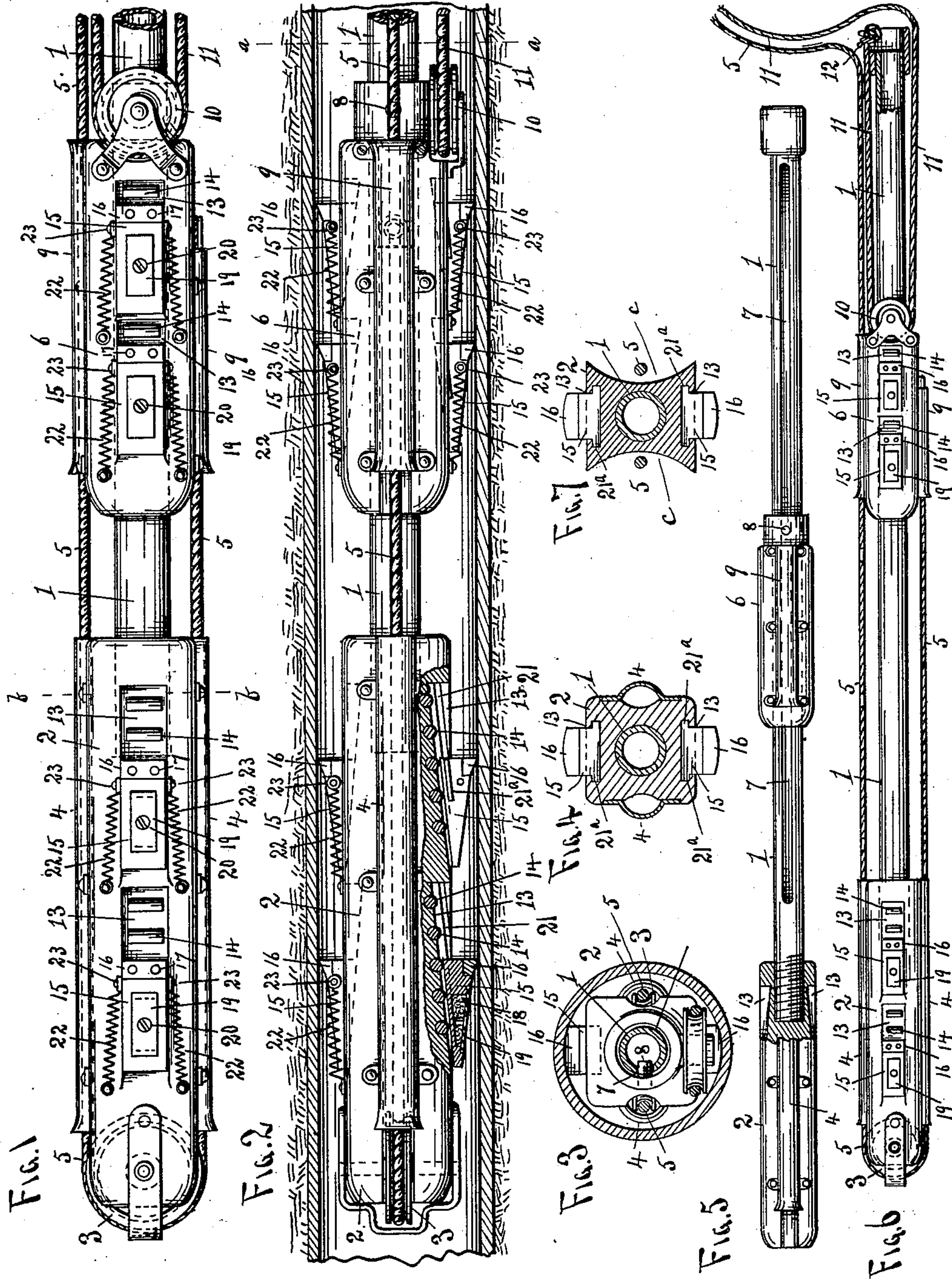
No. 673,478.

Patented May 7, 1901.

C. B. RODGERS.
CONDUIT THREADER.

(Application filed Mar. 15, 1901.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES B. RODGERS, OF BORDENTOWN, NEW JERSEY.

CONDUIT-THREADER.

SPECIFICATION forming part of Letters Patent No. 673,478, dated May 7, 1901.

Application filed March 15, 1901. Serial No. 51,374. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. RODGERS, a citizen of the United States, residing at Bordentown, in the county of Burlington and State of New Jersey, have invented a new and useful Conduit-Threader, of which the following is a specification.

My invention is an improved conduit-threader for drawing wire rods, cables, or electrical conductors through conduits or ducts; and it consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is an elevation of a conduit-threader constructed in accordance with my invention. Fig. 2 is a similar view of the same, at right angles to Fig. 1 and partly in section, showing the same in operative relation to an underground conduit. Fig. 3 is a transverse sectional view taken on a plane indicated by the line *a a* of Fig. 2. Fig. 4 is a similar view taken on a plane indicated by the line *b b* of Fig. 1. Fig. 5 is an elevation, partly in section, of my improved conduit-threader on a reduced scale. Fig. 6 is a similar view of the same at right angles to Fig. 5. Fig. 7 is a transverse section of a modified form of my invention.

To the front end of a rod or tube 1 of suitable length and diameter is rigidly secured a head 2 of suitable length and diameter, the sides of which, in the form of my invention here shown, are flat and at right angles to each other. At the front end of the head 2 is mounted a pulley 3, and on opposite sides of the said head in alinement with the said pulley are tubular guideways 4 for an operating-cord 5, the said cord passing around the said pulley.

A head 6, which is similar to the head 2, is adapted to slide back and forth on the tube or rod 1 with relation to the head 2. The said tube or rod is provided on one side with a longitudinal groove 7, which is engaged by a stud or pin 8, with which the head 6 is provided to prevent the latter from turning on said tube or rod 1 and to preserve the tubular guideways 9 thereof in alinement with the guideways 4 of the head 2. At the rear end of the head 6, on one side thereof, is mounted a pulley 10, on which operates a cord 11. One end of the cord 5 is attached to one side of

the head 6. The said cord passes forward from the head 6 around the pulley 3 and then rearward in the conduit and is disposed in the tubular guideways 4 9 of said heads 2 6. One end of the cord 11, which passes around the pulley 10, is attached to the rear end of the tube or rod 1, as at 12, Fig. 6. The said cords are of suitable length.

Each of the heads 2 6 is provided on opposite sides with longitudinally-disposed channels 13, the bottoms of which converge rearwardly and are provided with antifriction-rollers 14. Tapered or wedge-shaped shoes 15 operate and are guided in the said channels 13 and are adapted to alternately engage and disengage the inner side of the conduit. Owing to the oblique disposition of the channels 13 it will be understood that any tendency of one of the heads to move rearward will cause the shoes to be moved outwardly and by frictional contact with the inner side of the conduit lock the head against retrograde movement. Hence each of the heads is capable of movement in the conduit only in one direction. Each of the shoes 15 is provided at its rear end with a detachable engaging tip 16. The said tips in the form of my invention here shown are rabbeted in said shoes and secured therein by screws or pins 17. Any other suitable means may, however, be employed for detachably securing the tips to the shoes. By providing tips of various sizes my improved conduit-threader is adapted for use in conduits of various diameters. Furthermore, when a tip becomes worn and unserviceable a new one may be substituted therefor at comparatively slight expense. Hence the life of the shoes is indefinitely prolonged. Each of the shoes is provided with an internal lubricating-chamber 18, which is preferably filled with some suitable absorbent material, as felt, asbestos, or the like, and which serves to retain the lubricating-oil in the said chamber. A plate 19, which is detachably secured to each of the shoes, as by a screw 20, retains the saturated absorbent material in place. Suitable channels for the oil lead from the said chambers 18 to the side walls of the channels 13, in which the shoes operate. In the side walls of the channels 13 are grooves 21, which are engaged by tongues 21^a on the sides of the said shoes. Thereby

the said shoes are retained in the said channels. Springs 22 on opposite sides of each of the shoes have their rear ends connected thereto, as at 23, and their front ends connected to the heads. Said springs draw forward on the said shoes, and hence tend to move them outwardly into engagement with the conduit.

The operation of my invention is as follows:
 10 The wire, rod, cable, or other conductor to be threaded through a conduit is attached to the rear end of the tube or rod 1. and the threader is inserted in the conduit with the head 2 forward therein. The operator then
 15 draws alternately on the operating-cords 5 11. The cord 5 serves to draw the head 6 forward, and the cord 11 serves to move the head 2 forward, as will be understood, and hence the threader is caused to crawl through the
 20 conduit and to draw the rod, wire, cable, or conductor after it. Each of the operating-cords may be marked at suitable intervals, representing units of measure, in order to indicate the distance from the threader to the
 25 rear end of the conduit in which it is crawling, and hence in the event of an accident to the crawler or threader, which causes the same to stick in the conduit, enabling the precise location thereof in the conduit to be ascer-
 30 tained, so that the necessary excavation may be made and the conduit cut at the proper location to secure the release of the threader.

In Fig. 7 I show a modified form of the heads in which the same have opposite sides
 35 hollowed on reëntrant curves, as at c, to reduce the weight of the heads. Other modifications may be made without departing from the spirit of my invention.

Having thus described my invention, I
 40 claim—

1. In a conduit-threader the heads having longitudinal channels in the sides thereof, the bottoms of which converge rearwardly, in combination with shoes in said channels and
 45 means to alternately impel the said heads forward in a conduit, substantially as described.

2. In a conduit-threader, the heads having longitudinal channels in the sides thereof, the bottoms of which converge rearwardly, in
 50 combination with shoes adapted to slide in said channels, springs to normally urge said

shoes forward therein, and means to alternately impel the said heads forward in a conduit, substantially as described.

3. In a conduit-threader, the heads having 55 longitudinal channels in the sides thereof, the bottoms of which converge rearwardly, in combination with shoes adapted to slide in said channels, the sides of said channels, and of said shoes being provided with coacting 60 tongues and grooves to retain said shoes in said channels and means to alternately impel the said heads forward in a conduit, substantially as described.

4. In a conduit-threader, the heads having 65 longitudinal channels in the sides thereof, the bottoms of which converge rearwardly, in combination with shoes adapted to slide in said channels, said shoes having chambers to contain a lubricant and channels leading from 70 said chambers to said channels in said heads, and means to alternately impel the heads forward in a conduit, substantially as described.

5. In a conduit-threader, the heads having longitudinal channels in the sides thereof, 75 shoes adapted to slide in said channels and rollers to reduce friction between said shoes and the sides of said channels, substantially as described.

6. The shoes having the detachable tips, 80 substantially as described.

7. The combination of a head, a pulley carried thereby, a rod extending rearward from said head, and rigidly secured thereto, a sliding head on said rod, a pulley carried by said 85 sliding head, an operating-cord attached to said sliding head and engaging the pulley on the fixed head an operating-cord attached to said rod in rear of the sliding head and engaging the pulley carried thereby and shoes 90 guided and adapted to slide in channels in the sides of said heads, the bottoms of said channels converging rearwardly, substantially as described.

In testimony that I claim the foregoing as 95 my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES B. RODGERS.

Witnesses:

HENRY R. BASHER,
 WM. M. KESTER.