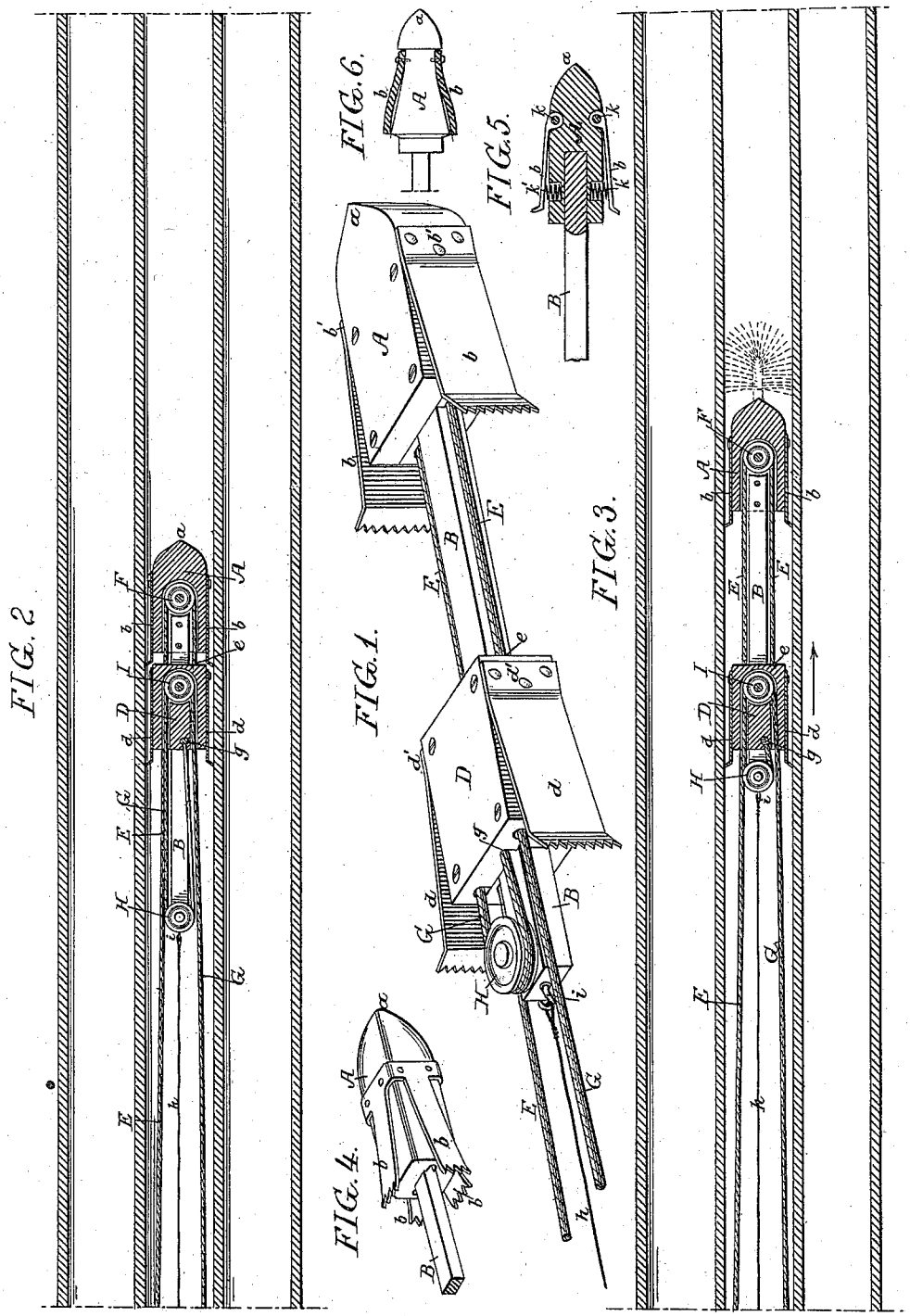
(No Model.)

H. G. MORRIS.

CRAWLER FOR ELECTRIC OR OTHER CONDUITS.

No. 383,756. Patented May 29, 1888.



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UNITED STATES PATENT OFFICE.

HENRY G. MORRIS, OF PHILADELPHIA, PENNSYLVANIA.

CRAWLER FOR ELECTRIC OR OTHER CONDUITS.

SPECIFICATION forming part of Letters Patent No. 383,756, dated May 29, 1888.

Application filed December 17, 1887. Serial No. 258,179. (No model.)

To all whom it may concern:

Be it known that I, HENRY G. MORRIS, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented an Improved Crawler for Electric or other Conduits, of which the following is a specification.

The object of my invention is to construct a crawler which can be inserted at one end of the conduit and caused to gradually work its way through the conduit from one end to the other. This object I attain in the manner and by the means hereinafter fully set forth and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved crawler. Figs. 2 and 3 are sectional views of a conduit with my improved crawler, illustrating the operation of the latter. Fig. 4 is a view of a portion of the crawler adapted to a cylindrical conduit, and Figs. 5 and 6 are views illustrating modifications of my invention.

My improvement has been designed especially for drawing electric wires through underground conduits. This has generally been done by introducing into the conduit a rod made up of a number of sections joined together at one end of the conduit and pushed into the same until it projects at the opposite end, being then introduced into a successive section, or the sections of the rod are removed from each other and packed for future use.

The great objection to all contrivances of this class is the weight of the rod, and when it is introduced into a long conduit it is almost impossible to push it forward to the end. Stout wires have been used in very short sections of conduit; but these are objectionable, as the wire has a tendency to buckle. I overcome all these objections by my improved device, which can be caused to travel through a conduit of any desired length with very little, if any, more exertion at the end than at the beginning of the operation.

A is a block having a tapered point, *a*, and a rearwardly-projecting bar, B, which passes through a block, D. At the sides of the block A are spring-grippers *b b*, having serrated edges and fastened to the block A at *b'* in any suitable manner, and on the rear block, D, are similar grippers, *d d*, secured to the block at *d'*.

Attached to the front portion of the block D at *e* is a rope, E, which passes into the block A and around a pulley, F, therein, and thence through an orifice in the block D, this rope being of a length sufficient to pass through the longest section of conduit.

Secured at *g* to the rear end of the block D is a rope, G, which passes first backward over a pulley, H, on the rear end of the bar B of the block A, thence into the block D and around a pulley, I, therein, and thence out at the rear of the block, being carried with the rope E to the mouth of the conduit. The serrated edges of the spring-grippers project at an angle, as shown, so that they will prevent any backward movement of either block, but will not interfere with the free forward movement of the same. It will therefore be seen that when the parts are in the position shown in Fig. 2 a pull upon the cord G will cause the block D to bind in the conduit, but will push forward the bar B and block A, as shown in Fig. 3, and by then pulling upon the cord E the block A will be caused to bind and the block D will be drawn up to the same, as shown in Fig. 2. It will thus be seen that by first pulling on one cord and then on the other the crawler will be caused to pass by successive slight advances through the conduit until it emerges from the far end of the same.

A wire or rope can be attached to one of the cords E or G, and when these cords are drawn through the conduit at the opposite end the wire or cord will follow, after which any number of wires can be introduced into the conduit; or a hook, *i*, (shown in Fig. 1,) may be attached to the bar B or block D, and a wire or additional cord, *h*, may be attached to this hook, if preferred.

I have shown in Figs. 1, 2, and 3 the crawler constructed for application to a square conduit; but it will be understood that it can be formed to fit conduits of any shape. For instance, in Fig. 4 I have shown the block A with four grippers, *b*, adapted to engage with the sides of a cylindrical conduit.

In the modification shown in Fig. 5 the grippers are hinged at *k* near the front ends, and small springs *k'* are inserted back of the grippers, and in the modification shown in Fig. 6 in the place of metallic grippers I have shown a cylindrical gripper made of rubber or other suitable material, and from these it will be

understood that any gripper can be used which will prevent either of the blocks A or D from moving backward, but will allow them to move forward. It will also be understood that plows and brushes can be secured to the front of the crawler, as shown by dotted lines in Fig. 3, when it is found necessary to clean or scour the conduit, and the crawler, it will be evident, can be introduced into conduits other than electric conduits—as, for instance, in water and gas mains.

I have described pulleys over which the ropes pass; but it will be understood that any suitable rope-bearings may be used, and chains, wires, or cords may be substituted for ropes, if desired.

I claim as my invention—

1. The within-described crawler for conduits, said crawler consisting of two blocks, each provided with grippers for preventing back movement, and two ropes or cords, one imparting a positive forward movement to one block and the other imparting a positive forward movement to the other block, substantially as and for the purpose described.

2. The combination of the two blocks, each provided with grippers for preventing back movement, and two ropes or cords, each connected to one block and passing around a bearing on the other block, all substantially as specified.

3. The combination of the blocks A and D, each provided with grippers to prevent back movement, an arm, B, passing from the block A through the block D, a rope, E, secured to the front of the block D, passing around a rope-bearing in the block A, and thence back past the block D, and a rope, G, secured to the rear of the block D and passing around a rope-bearing on the arm B, thence around a rope-bearing on the block D, and thence back through said block, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY G. MORRIS.

Witnesses:

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