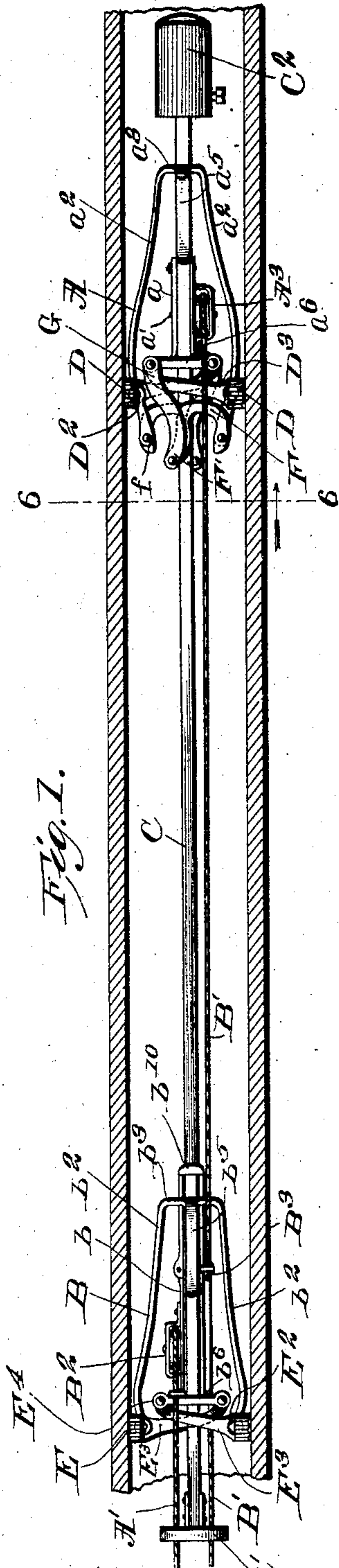


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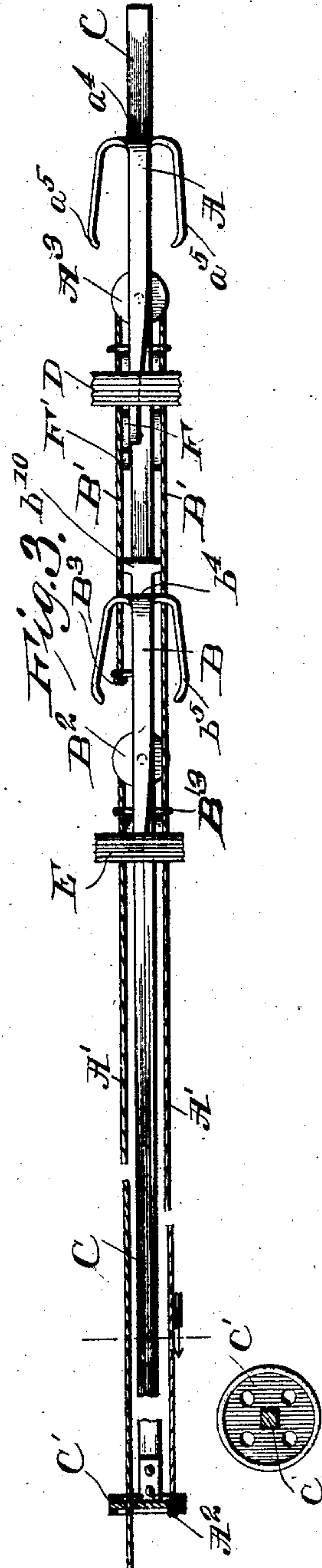
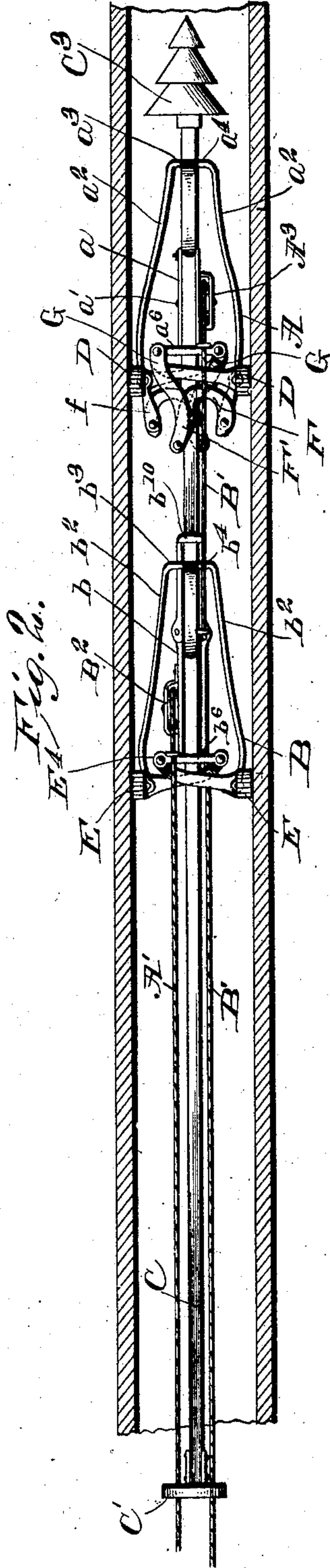
PATENTED APR. 16, 1907.

L. D. SHAFFER.
CONDUIT TRAVELER.
APPLICATION FILED NOV. 25, 1905.

3 SHEETS—SHEET 1.



WITNESSES:
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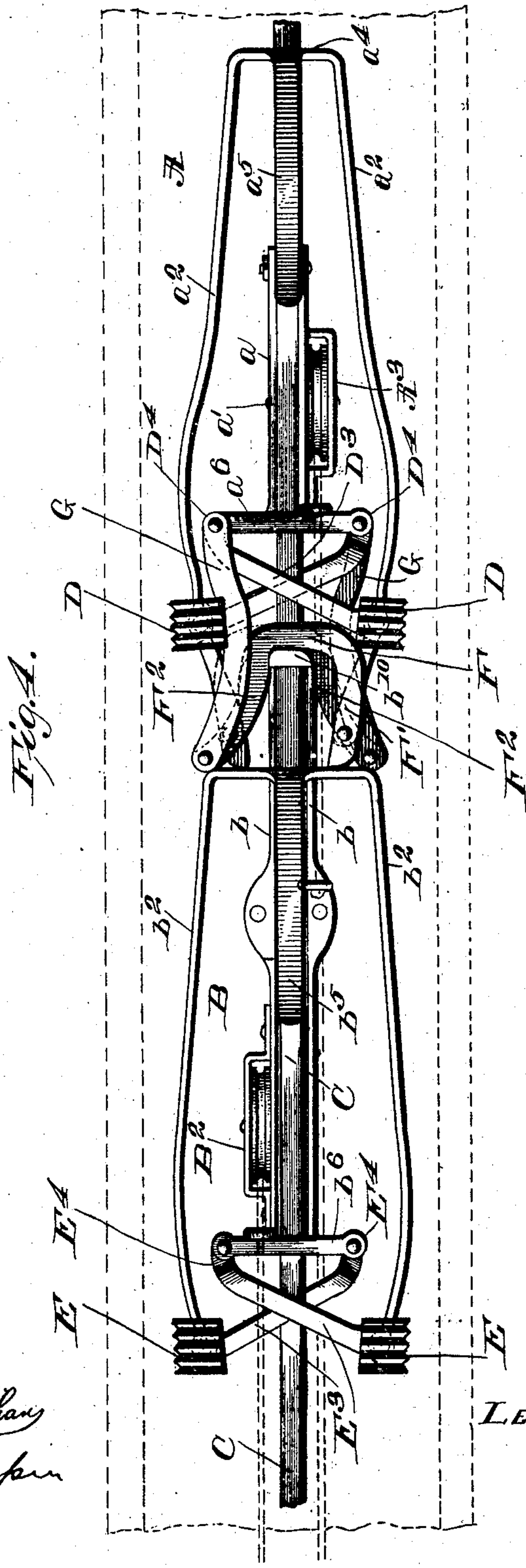
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3 SHEETS—SHEET 2.



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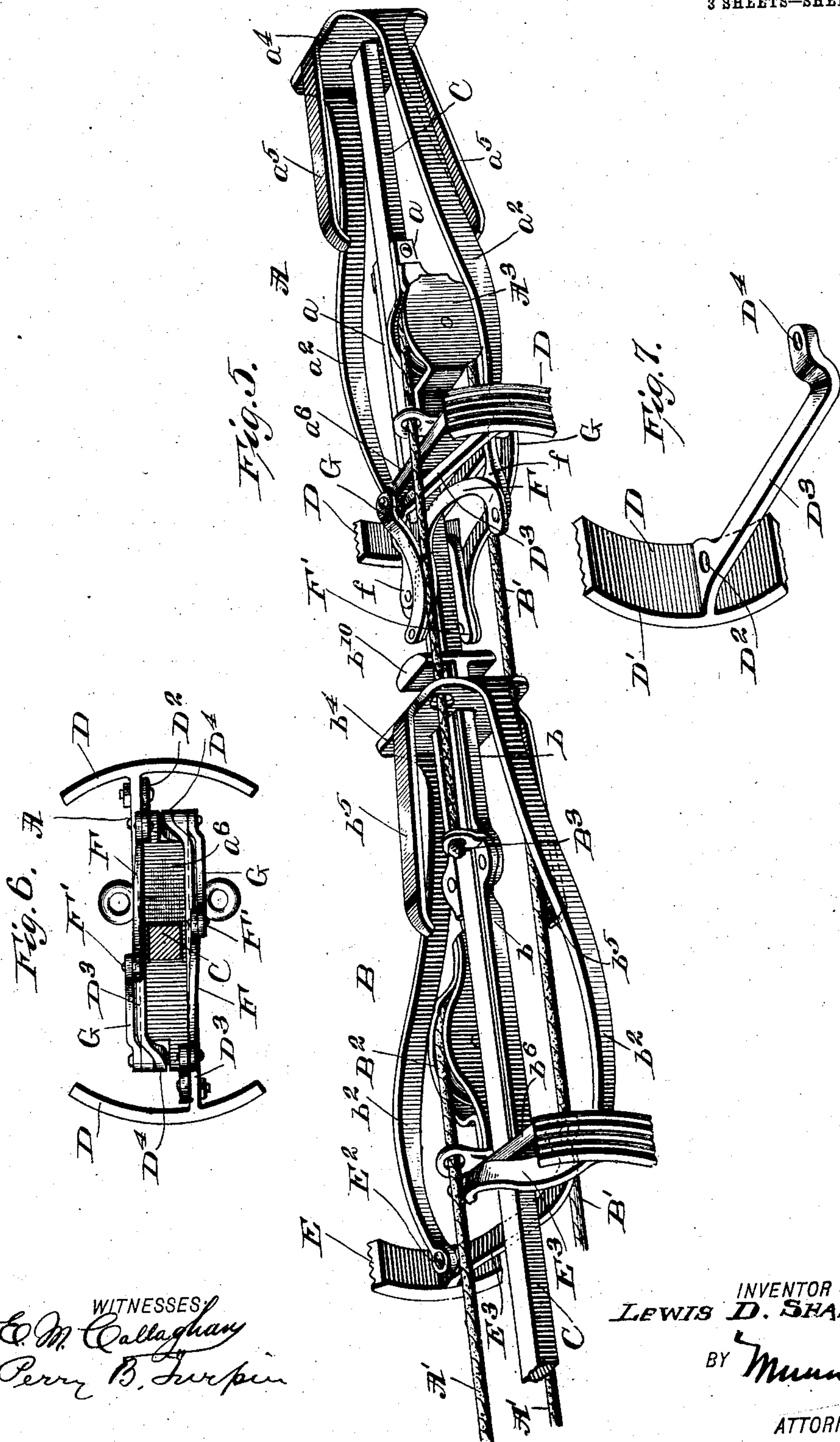
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

LEWIS D. SHAFFER, OF PAINT BOROUGH, PENNSYLVANIA.

CONDUIT-TRAVELER.

No. 850,797.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed November 25, 1905. Serial No. 289,024.

To all whom it may concern:

Be it known that I, LEWIS D. SHAFFER, a citizen of the United States, and a resident of Paint Borough, in the county of Somerset and State of Pennsylvania, have invented certain new and useful Improvements in Conduit-Travelers, of which the following is a specification.

This invention is an improvement in devices for use in wiring conduits; and the invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a vertical longitudinal section of a portion of a conduit with the improved device in place, the front traveler being extended to nearly its full extent in advance of the rear traveler. Fig. 2 is a similar view with the rear traveler advanced nearly to the front traveler. Fig. 3 is an elevation of the device in the position shown in Fig. 2, taken at a right angle to the plane of Fig. 2. Fig. 4 is a detail plan view of the wiring-machine with the front and rear travelers engaged and interlocked to hold their grippers in contracted position so the machine may be retracted or drawn back through the conduit. Fig. 5 is a perspective view of the machine, parts being broken away and the several parts being shown substantially in the position they occupy in Fig. 2. Fig. 6 is a cross-section on about line 6-6 of Fig. 1, and Fig. 7 is a detail perspective view of one of the grippers.

The machine includes, as shown, a front traveler A, a rear traveler B, a connecting-bar C, secured to the front traveler and extending thence rearwardly through and to the rear of the rear traveler, a line A' for advancing the traveler A, and a line B' for advancing the traveler B. At its rear end the connecting-bar C is provided with a button C', having openings (see Fig. 3) through which the lines A' and B' pass, the line A' being knotted at A² so the said line A' when drawn upon will operate to force the connecting-bar C forwardly and carry with it the front traveler A in the operation of the invention, as presently described.

The bar C may be provided at its front end with a hammer-head, brush, shovel, or other suitable device, if so desired, and in this connection I show in Fig. 1 a hammer-head C², while in Fig. 2 I show a shovel C³.

The line A' is connected at C' with the bar C, extends thence forwardly and around a

guide-pulley B² on the traveler B, and thence back through a guide-opening in the button C' to the operator. The line B' is secured at B³ to the rear traveler B, extends thence forwardly over a guide-pulley A³ in the front carrier A, and thence back through a suitable guide at B¹³ in the carrier B, and thence back through the guides in the button C' to the operator. By pulling on the lines A' and B' alternately the travelers may be caused to advance alternately within the conduit.

The travelers A and B are in general respects alike and are constructed with body portions *a* and *b*, fitting alongside the connecting-bar B, the body *b* sliding along the said bar and the body *a* being secured to the bar C at *a'* by a rivet, bolt, or other suitable construction. The travelers are provided with spring-arms *a*² and *b*², which extend generally to the rear from their juncture at *a*³ and *b*³ and incline outwardly toward their rear ends, so that they may normally guide the grippers, presently described, outwardly into engagement with the interior of the conduit. At their front ends the spring-arms are united by cross-plates *a*⁴ and *b*⁴, perforated for the passage of the guide-bar C, and from these cross-plates, intermediate the spring-arms, extend rearwardly the guide-arms *a*⁵ and *b*⁵. The travelers are thus provided with the opposite spring-arms flaring outwardly toward their rear ends and between the front ends of said spring-arms with the guide-arms, the said guide-arms, spring-arms, and the front plate connecting the same being integral, as best shown in Fig. 5 of the drawings.

At their rear ends the spring-arms are provided with the grippers D and E, the grippers being alike, and one of the grippers D being shown in detail in Fig. 7. These grippers include the serrated heads D', which may preferably be curved, as shown, so they will operate properly in conduits of round, square, or other cross-sectional shape, the said heads being pivoted at D² and E² to the outer ends of their respective spring-arms and being provided with inwardly-projecting arms D³ and E³, which extend past the connecting-bar C, and are pivoted at their inner ends at D⁴ and E⁴ to the opposite ends of the cross-heads *a*⁶ and *b*⁶ on respectively the body portions *a* and *b* of the front and rear travelers. By thus pivoting the grippers and connecting the arms thereof with the cross-heads the grippers are forced

to move equally in and out, so that there is no danger of the grippers becoming twisted and binding unequally within the conduit, the grippers with their inwardly-projecting arms forming toggles by which their uniform movement is effected.

The body portion b of the traveler B extends through the front plate b^4 and in advance thereof and may be projected when the grippers E are contracted or compressed forwardly beyond the front plate b^4 in order to operate between devices for contracting the grippers D of the front traveler. This front end of the body portion b forms an extension b^{10} to operate the devices for contracting the grippers D, as presently described. At the same time the front end of the body portion b is projected to operate the contracting devices for the grippers D. Such devices operate upon the front plate, push the spring-arms b^2 of the rear traveler to the rear, and thus through the toggle connections with the grippers E operate to contract the said grippers, as shown in Fig. 4 of the drawings. The devices for contracting the grippers D include double-armed stirrups F, arranged on opposite sides of the connecting-bar C and having their outer arms F^1 pivoted to rearwardly-projecting extensions f of the spring-arms a^2 , and their inner arms F^2 pivoted to the rear ends of the links G, which extend thence forwardly and are pivoted at their front ends in connection with the body of the traveler A and preferably to the outer ends of the cross-heads a^6 , as best shown in Fig. 4 of the drawings. The inner arms F^2 of the stirrups F and the adjacent portion of the links G are curved or inclined, forming cam-surfaces which project laterally across and beyond the connecting-bar C when the grippers E are in place in a conduit, as shown in Figs. 1 and 2, and form cam-surfaces for engagement by the extension b^{10} of the body portion b . It will also be noticed that the rear ends of the arms F^2 and of the links G by bearing against the front plate b^4 of the rear traveler will push the spring-arms b^2 of the said traveler rearwardly and contract the grippers E of the said traveler in the use of the invention.

The construction just described is useful in withdrawing or slightly retracting the entire wiring-machine whenever desired, as it sometimes happens in using the device in a conduit that something gets out of order or an unusual obstruction is met with and it is desired to withdraw the machine. In such case the rear traveler, by means of its rope B, is drawn with considerable force forwardly until it contacts with the cam-surfaces at f^3 on the inner arms f^2 of the stirrups F and forces said stirrups to the position shown in Fig. 4, in which position the extension b^{10} is forced to the bottoms of the stirrups F, and the said stirrups are adjusted from the posi-

tion shown in Figs. 1 and 2 to that shown in Fig. 4, and the outer arms of the stirrups being connected with the spring-arms a^2 will draw said arms inwardly and free the grippers E from engagement with the conduit. At the same time the spring-arms of the rear traveler will be forced rearwardly to contract the grippers E, and the device may be readily drawn back in the conduit to the manhole or, if desired, only a short distance and the parts be held in the position shown in Fig. 4 so long as the ropes A' and B' are held taut. A slight jerk, however, on the cord A' will throw the front traveler forwardly, disengaging the extension b^{10} , and the grippers will expand and the device may be used as before.

The connecting-bar C may be of any suitable length, depending to some extent on the size of the manhole in which it is to be inserted in the conduit.

In operation a wire, cord, or the like may be connected with the wiring-machine and drawn thereby through the conduit and then utilized for pulling heavy cables into place, as may be desired.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A machine substantially as herein described, comprising a front traveler and a rear traveler, each having a body portion, a cross-head thereon, and spring-arms movable longitudinally relative to the body portion, grippers pivoted to said spring-arms and provided with inwardly-projecting crank-arms connected with the cross-head, the spring-arms of the front traveler being extended rearwardly beyond their pivotal connection with the grippers, double-armed stirrups having their outer arms pivoted to said extensions of the traveler-springs and their inner arms formed with cam-surfaces, links connecting said inner arms of the stirrups with the cross-head of the front traveler, the rear traveler being provided with a body portion having a forward extension arranged to engage the cam-surfaces of the inner arms of the stirrups of the front traveler, and also having in connection with its spring-arms portions for engagement by the inner arms of the stirrups whereby the extension of the body portion of the rear traveler may operate upon said stirrups to contract the grippers of the front traveler, and the said stirrups may operate upon the spring-arms of the rear traveler to contract the grippers thereof, the said front and rear travelers being arranged for operation by ropes, and a connecting-bar secured to the front traveler and projecting thence through the rear traveler, substantially as set forth.

2. A machine for wiring conduits comprising a front traveler, a rear traveler, and a connecting-bar projecting from the front

traveler through the rear traveler, the said travelers being provided with spring-arms arranged in pairs on opposite sides of the connecting-bar, and with grippers pivoted thereto, means in connection with the front traveler whereby the engagement of the rear traveler therewith may operate to contract the grippers of the front traveler, and means whereby the grippers of the rear traveler may be contracted by such engagement of the rear traveler with the front traveler, substantially as set forth.

3. In a machine for wiring conduits, a traveler having spring-arms, a body portion and grippers pivoted to the spring-arms and having arms connected with the body portion and the spring-arms being slidable relative to the body portion whereby the grippers will form a toggle connection between the spring-arms and the body portion, substantially as set forth.

4. The combination of the front traveler, a connecting-bar projecting rearwardly from the front traveler, a rear traveler movable on the said bar and having a body portion and spring-arms, the body portion extending in advance of the spring-arms, said front and rear travelers being provided with spring-actuated grippers, and means in connection with the grippers of the front traveler arranged in the path of the forward extension of the rear traveler for operation thereby to free the grippers of the front traveler from engagement with a conduit, substantially as set forth.

5. In a machine for wiring conduits, a traveler having a body portion, spring-arms slidable relative thereto, grippers pivoted to the spring-arms and having inwardly-extending arms pivotally connected with the body portion, stirrups having outer arms pivoted in connection with the spring-arms and inner arms connected with the body portion, and a second traveler having means operating upon the stirrups whereby to contract the grippers, substantially as set forth.

6. The combination of the front traveler having grippers, a rear traveler having grippers and a body portion provided with an extension in advance of its grippers, and devices in connection with the grippers of the front traveler and arranged for engagement by the forward extension of the rear traveler whereby the latter may operate to contract the grippers of the front traveler, substantially as set forth.

7. In a machine for wiring conduits, a traveler having spring-arms and grippers pivoted in connection therewith and having inwardly-projecting arms extending past the longitudinal center of the traveler, and a body portion slidable relative to the spring-arms and to which the gripper-arms are pivoted, substantially as set forth.

8. In a machine for wiring conduits, a traveler having opposite spring-arms and grippers in connection therewith, a main plate connecting said spring-arms, and opposite guide-arms extending rearwardly from said front plate between the spring-arms, substantially as set forth.

9. A machine for wiring conduits, comprising two travelers, each provided with grippers for engagement with a conduit and with spring-arms supporting said grippers, two ropes for imparting forward movement, respectively, to said travelers and devices in connection with the grippers of the several travelers for engagement by the other traveler whereby to contract the grippers of the said first traveler and also contract the grippers of the second traveler, substantially as set forth.

10. In a machine for wiring conduits, a traveler provided with opposite spring-arms flaring outwardly toward their rear ends, guide-arms projecting rearwardly between the spring-arms, and grippers on the free ends of the spring-arms, substantially as set forth.

11. In a machine for wiring conduits, the combination of the spring-arms, the traveler-body and grippers pivoted to the spring-arms and having inwardly-projecting arms connected with the body portion and forming toggles by which to effect uniform in-and-out movement of the grippers, substantially as set forth.

12. A machine for wiring conduits, comprising two travelers each provided with grippers to engage within the conduit, means for advancing said travelers alternately, and means on one of the travelers for engagement with parts on the other traveler to contract the grippers of said other traveler when the rear traveler is moved forcibly against the rear end of the other traveler, substantially as set forth.

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Witnesses:

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W. B. SNYDER.