

No. 607,999.

Patented July 26, 1898.

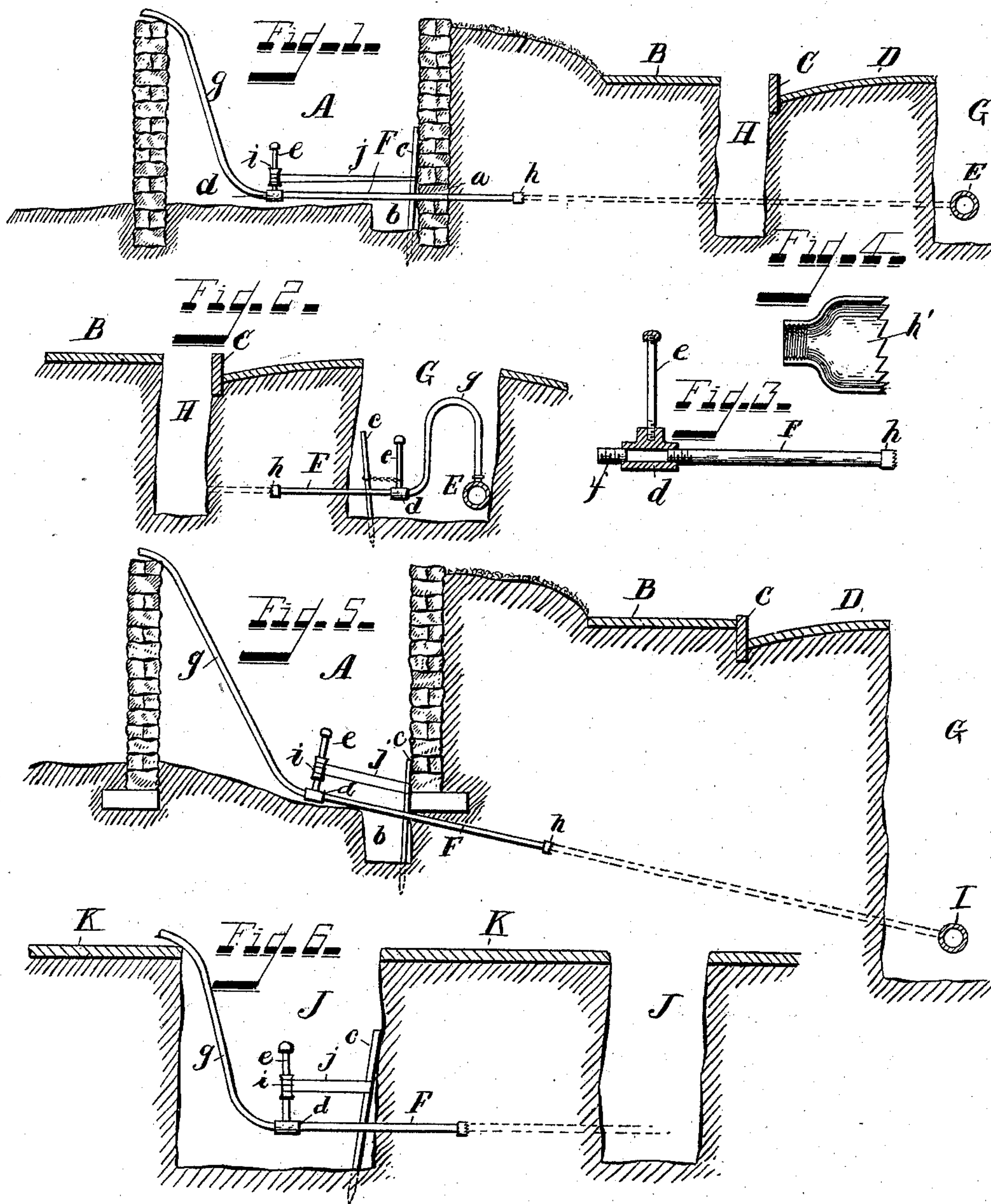
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EARTH BORING AND PIPE LAYING APPARATUS.

(Application filed Aug. 17, 1896.)

(No Model.)

2 Sheets—Sheet 1.



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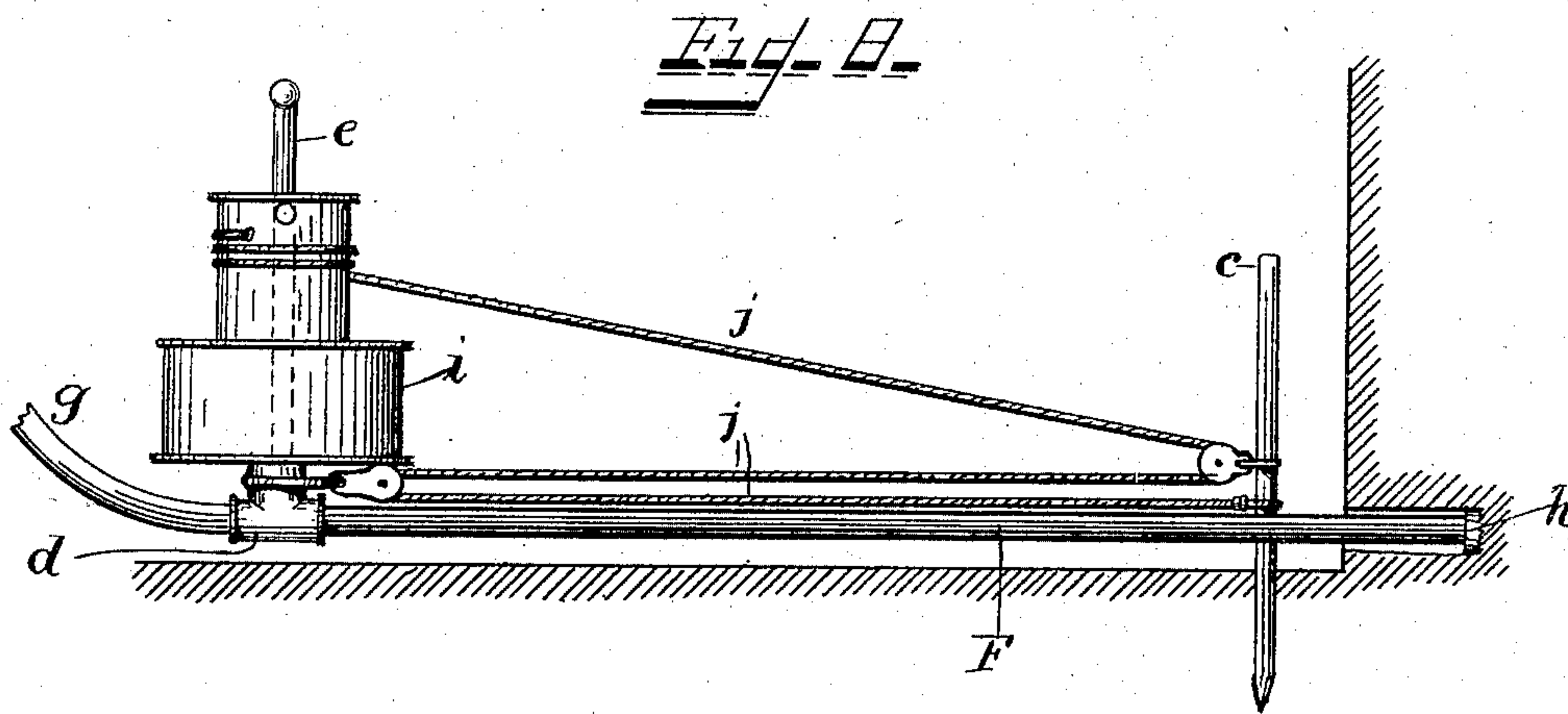
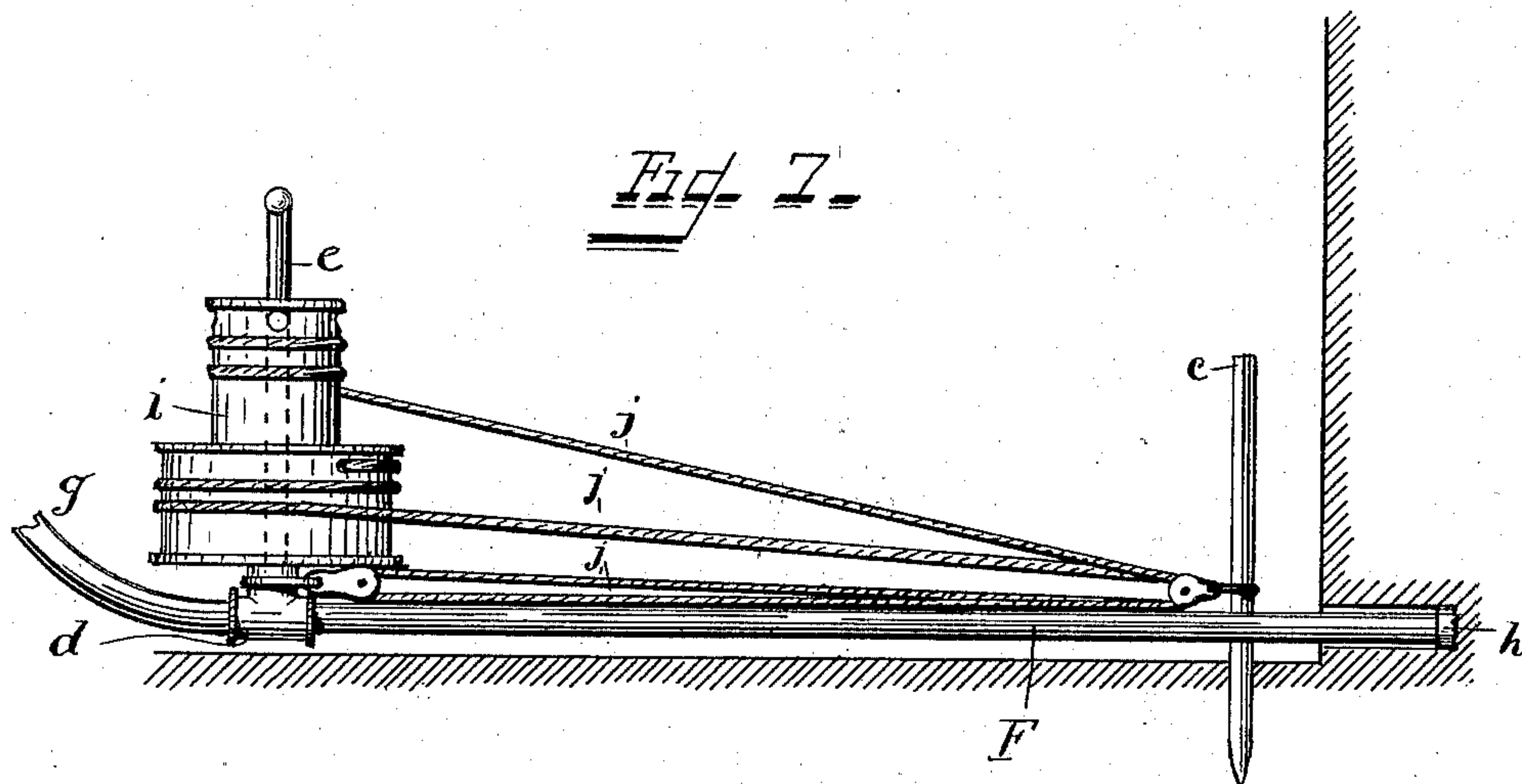
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2 Sheets—Sheet 2.



WITNESS

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# UNITED STATES PATENT OFFICE.

GRIFFIN T. LATTA, OF LUDLOW, KENTUCKY.

## EARTH-BORING AND PIPE-LAYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 607,999, dated July 26, 1898.

Application filed August 17, 1896. Serial No. 603,064. (No model.)

*To all whom it may concern:*

Be it known that I, GRIFFIN T. LATTA, a citizen of the United States, residing at Ludlow, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Earth-Boring and Pipe-Laying Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a highly-simplified and cheapened method of laying underground pipes whether for effecting a connection between a house and a street-main for water, electricity, gas, or sewage or for laying continuous lengths of pipes in streets, whereby the digging of trenches for the conduit, which tends to destroy the symmetry of a lawn or pavement and is both tedious and expensive, is entirely prevented.

It consists in the apparatus hereinafter more fully described whereby the work is done cheaply, rapidly, and efficiently.

The novelty of my invention will be herein after set forth, and specifically pointed out in the claim.

In the accompanying drawings, Figure 1 is a sectional elevation showing the application of my improved method in working from a cellar toward the street-main. Fig. 2 is a corresponding view showing the method of working from the street-main toward the curb. Fig. 3 is an enlarged elevation, partly in section, of the working parts. Fig. 4 is an enlarged sectional elevation of a cutter-head. Fig. 5 is a sectional elevation showing the application of my improved method in working from a cellar toward a sewer-pipe. Fig. 6 is a corresponding view showing the method of working under broad paved streets. Figs. 7 and 8 are enlarged side elevations of so much of my apparatus as is necessary to clearly illustrate the differential windlass mechanism.

The same letters of reference are used to indicate identical parts in all the figures.

Referring to Figs. 1, 2, and 3, I will first describe my improved method of introducing service-pipes between street-mains and houses. In these views A represents the cellar of a house; B, the sidewalk; C, the curb; D, the street, and E a water or other main in the street. The depth of the main in the street

being known, I first make an opening in the cellar-wall nearest the main at a substantially corresponding depth, which opening is indicated at *a*, and I then dig a trench *b* directly under said opening, and I drive one or more stakes or crowbars *c* upright in said trench adjacent to the wall. I then take a section of straight pipe F, to the rear end of which is secured a T *d*, Fig. 3, provided with an upwardly-extending operating-handle *e*, and to the rear of which is secured a nipple *f* to serve as a connection for a hose *g*, leading from a source of water-supply under pressure. This may be either an adjacent hydrant or a force-pump fed from a vessel containing water. The outer end of the pipe F is preferably provided with a cutting-head *h*, whose outer edge is serrated, as shown in Figs. 3 and 4. The head is inserted through the opening *a* in the wall. A rope is connected from a pulley attached to the bar *c* to the handle *e* by means of a spool *i* upon the handle, the rope (represented at *j*, Fig. 1) being fastened at both ends to opposite ends of the spool *i*, so that as one end of the rope winds up the other end unwinds and pays out, and half the length of the spool *i* being smaller than the other half the arrangement constitutes a differential windlass, and the operator, as soon as the pressure of water passes through the hose *g* and pipe *f*, oscillates the handle *e* backward and forward, so as to oscillate the pipe F on its axis, (the oscillating motion of the pipe F need only be great enough to bring each tooth of the serrated cutter to the position previously occupied by the next adjacent tooth,) and forces the pipe F into the earth and toward the main E by revolving the spool *i*, so as to pay out the rope from the smaller diameter and wind it up on the larger diameter. In all ordinary soils the pipe F will readily penetrate the earth, and the water escaping from the end of the pipe will, with the displaced earth, be forced backward along the outer side of the pipe and will flow into the pit *b*, from which it may be removed either by baling or by pumping or by a water-jet siphon of ordinary construction. As soon as the pipe F has penetrated the earth sufficiently to bring the handle *e* close up to the wall the pipe F is uncoupled from the T *d*, and another section of pipe F is coupled



to the first and the T and handle at its rear end. Of course during the period of uncoupling and recoupling the parts just described the flow of water is cut off from the hose *g* until, the parts having been recoupled, it is again turned on, and the second section of pipe is propelled through the opening *a* into the earth, and this operation is repeated until sufficient lengths of pipe F, determined by previous measurement, have been forced through the earth to bring the head *h* or the forward end of the first section of pipe F in close proximity to the main E. A pit G, Fig. 1, is excavated directly over and so as to expose the main, whereupon if the inserted sections of pipe F are to constitute the service-pipe the main E is tapped, and the connection between the end of the pipe F and the main is made in the pit G in the usual or any suitable manner.

In cases where the service-pipe is to be of lead and requires what is known as a "curb-cock" to be inserted in it for turning on and cutting off the supply of water to the house I dig a second pit H at the curb over the pipe F and enlarge the hole from the pit H to the pit G sufficiently to permit the coupling which is on the end of the lead pipe to be passed through the hole readily by means of an enlarged cutter-head *h'*, Fig. 4, which is placed upon the advance end of the pipe F.

In cases where it is desired to insert a service-pipe from the main E to the side of the walk B only I dig the two pits G and H, Fig. 2, tap the main E in the usual manner, inserting a corporation-cock, couple the hose *g* at one end directly to the corporation-cock and at the other end to the T *d*, and with an enlarged cutter-head *h'* I work from the pit G to the pit H, making a hole large enough to permit the coupling which is on the end

of the lead pipe to be passed through the hole and then make the couplings and proper connections in the pits G and H. In Fig. 5 the same method of operation is shown in preparing an opening to receive sewer-pipes leading from the cellar to the sewer I. In these cases the opening is inclined downward toward the sewer-pipe, as shown, and the opening is gradually enlarged by repeated operations and with increasingly-enlarged cutter-heads *h'* upon the forward end of the pipe F to make the opening large enough to receive the sections of sewer-pipe, which are then inserted with their ends previously coupled, and I finally make the connection at the sewer I by means of a T or elbow in the usual or any suitable manner, a pit G having been previously dug to expose the sewer I at the point of connection. By the same method illustrated in Fig. 6, where it is desired to lay pipe under an expensive pavement K of considerable length or extent, I dig a series of pits J at proper working distances apart, and in these I work in the manner stated above from one to the other in effecting the bore for the pipe to be inserted, as will be readily understood.

Having thus fully described my invention, I claim—

In earth-boring and pipe-laying apparatus, the combination of the pipe F, a differential windlass therefor, an oscillating handle applied to the pipe, the cutting-head *h*, and hose connected to the rear end of the pipe, for forcing water therethrough, substantially as described.

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Witnesses:

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