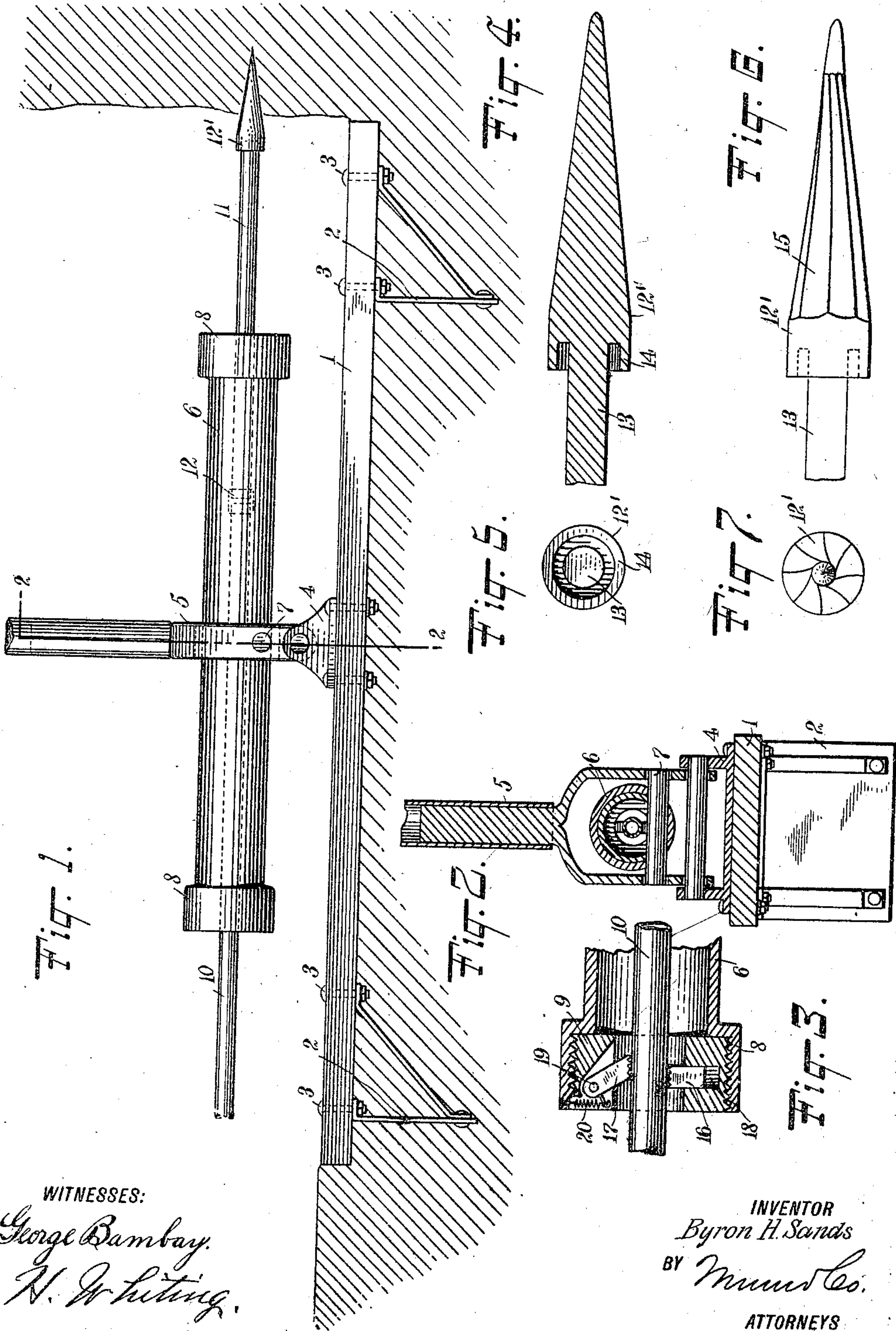


B. H. SANDS.
PIPE LAYING MECHANISM.
APPLICATION FILED MAY 2, 1910.

982,023.

Patented Jan. 17, 1911



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PIPE-LAYING MECHANISM.

982,023.

Specification of Letters Patent. Patented Jan. 17, 1911.

Application filed May 2, 1910. Serial No. 558,862.

To all whom it may concern:

Be it known that I, BYRON H. SANDS, a citizen of the United States, and a resident of Tulsa, in the county of Tulsa and State of Oklahoma, have invented a new and Improved Pipe-Laying Mechanism, of which the following is a full, clear, and exact description.

This invention relates to a new and improved pipe laying mechanism, in the nature of a jack, adapted to force a pipe through the soil without digging a trench and disfiguring the surface.

An object of this invention is to provide a device which will be simple in construction, inexpensive to manufacture, strong, durable, readily adjusted, and accurate, reliable and positive in its operation.

A further object of this invention is to provide a pipe laying mechanism of the jack type with a point formed to cause a rotation of the pipe, thereby driving the pipe in a rectilinear manner.

These and further objects, together with the construction and combination of parts, will be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a side view in elevation, showing my device adjusted in a trench, in the act of starting the forcing of a pipe; Fig. 2 is a vertical section on the line 2—2 of Fig. 1; Fig. 3 is an enlarged fragmentary vertical section of one end of the casing, showing the means of gripping the pipe; Fig. 4 is a longitudinal section through the point; Fig. 5 is a rear end view of the point; Fig. 6 is a side view in elevation of the point; and Fig. 7 is a front view of the point.

Referring more particularly to the separate parts of the device, 1 indicates a base of any suitable material, which is provided with a plurality of bracing feet 2, in the nature of brackets, secured to the base 1 in any suitable manner, as by means of bolts 3. These feet 2 are preferably provided with a vertical leg and an inclined brace member, so as to form a strong and rigid gripping member capable of standing a considerable strain.

Secured to the base 1 in any well known

manner, there is provided a bracket 4, to which is pivotally secured a lever 5, preferably bifurcated so as to extend on either side of a tubular casing 6. The casing 6 is pivotally secured to the lever 5 in any well known manner, as by means of a pin 7, so as to allow a limited play of the casing relative to the lever.

The casing 6 is preferably provided at each end with an enlargement 8, which is screw-threaded internally, to engage a corresponding screw-thread on a tubular nut 9. There is one of these nuts at each end of the casing, forming a guide for a pipe 10 to be driven into the ground.

For the purpose of forming an opening or bore in the ground through which the pipe 10 is to be inserted, there is provided a section of pipe 11, which is removably secured to the pipe 10 in any well known manner, as by a collar 12, indicated in dotted lines in Fig. 1. This pipe section 11 is provided at its forward end with a removable point 12', of considerably larger diameter than the pipe 11 at its rear end, and tapering conically to a sharp point at its front end. As will be seen by reference to Fig. 4, this point 12' is provided with a shank 13, which is adapted to be inserted in the pipe 11, and is further secured thereto by means of a flange 14, which is spaced apart from the shank by a sufficient distance to allow the material of the pipe section 11 to be inserted between the shank and the flange. While the point 12' may be of any suitable form, it is preferable to provide it with concave or convex fluting 15, which, as will be noted by reference to Figs. 6 and 7, has a slight spiral turn. This spiral fluting gives a certain amount of rotation to the point 12', the section 11 and the pipe 10, thereby tending to direct the pipe in an absolutely straight line.

For the purpose of gripping the section 11 and the pipe 10 and transmitting the motion of the lever 5 to these parts, each of the nuts 9 are provided with pawls 16 and 17. One of these pawls, 16, engages in a slot 18 in the nut, so as to be capable of being adjusted in and out to engage pipes of different diameters, and which, however, is stationary during the operation of the device. The other pawl, 17, is preferably pivoted on the nut 9 in any well known manner, as by means of a pin 19. These pawls 17 are held

in engagement with the pipe 10 and the section 11 by means of springs 20, and the engagement is such as to permit a forward movement of the pipes 10 and 11 relative to the casing 6, but to absolutely prevent any rearward movement of the pipe and section relative to the casing 6. Both of the pawls 16 and 17 are preferably provided with serrations, so as to more positively engage the pipe and sections, and thus, in a way, may be termed grippers.

The operation of the device will be readily understood when taken in connection with the above description.

The device is inserted in a trench dug at a suitable interval from another trench. The trenches are dug at the starting and finishing points of the line along which the pipe is desired to be inserted. A pipe of the desired size is coupled to a pipe section 11, which has secured thereto a point 12' of such a size that it will be somewhat larger than the pipe to be forced through, so that it will form a larger opening than the pipe, and thus create little or no friction in forcing the pipe through the opening. The lever 5 is then reciprocated so that the gripping pawls 16 and 17 force the point 12' into the ground at each forward stroke of the lever, and permit the casing and lever to travel backward relative to the pipe and point, on the rearward stroke. This operation is continued until the pipe has been forced to the other trench, where the point and section can be removed, and the pipe coupled up in the manner desired.

While I have shown one embodiment of my invention, I do not wish to be limited to the specific details thereof, but desire to be protected in various changes, modifications and alterations which I may make within the scope of the appended claims.

I am aware that it is not broadly new to force a pipe through the ground by means of a jack, and I am acquainted with the patent to C. De Lay, 809,910, granted January 9, 1906. However, I believe that the structure of my device, as set forth herein-after in the claims, embodies features which are new and which afford a device of a more efficient character than any of such devices with which I am at the present time acquainted. Some of these features are the tubular casing for guiding the pipe section, the gripping members in the form of pawls for biting on, and automatically advancing, the pipe section, and the fluted tapering head for imparting a rotary motion to the pipe section, whereby it is directed in an almost absolutely rectilinear line.

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

1. The combination with a base, of a lever pivotally connected to said base, a casing

connected to said lever, and gripping pawls connected to said casing and adapted to grip a pipe inserted in said casing.

2. The combination with a base, of bracing feet on said base, a lever pivoted to said base, a casing connected to said lever, a section adapted to be inserted through said casing, pawls on said casing adapted to engage said section, and a point connected to said section.

3. The combination with a base, of bracing feet on said base, a lever pivoted to said base, a casing connected to said lever, a section adapted to be inserted through said casing, pawls on said casing adapted to engage said section, and a point connected to said section, said point tapering conically from the rear to the front and having a slightly spiral fluting thereon.

4. The combination with a base, of a lever pivotally connected to said base, a tubular casing pivotally connected to said lever, pawls adjustably connected to said casing, a section adapted to be inserted through said casing and engaged by said pawls, and a point for said section having a greater diameter at a portion thereof than said section.

5. The combination with a base, of a lever pivotally connected to said base, a casing pivotally connected to said lever, said casing having a screw-threaded interior, a tubular nut engaging said screw-threaded interior, and a pawl pivotally connected to said nut and extending within the interior thereof.

6. The combination with a base, of a lever pivotally connected to said base, a casing pivotally connected to said lever, said casing having a screw-threaded interior, a tubular nut engaging said screw-threaded interior, a stationary gripping pawl on said nut, a gripping pawl pivoted to said nut, said pawls extending into the opening of said nut, and a spring adapted to force said pivoted pawl into engagement with a pipe inserted through said casing.

7. The combination with a base, of a tubular casing, a bifurcated lever pivoted to said base and extending on each side of said casing and being pivoted to said casing, a tubular nut removably secured to each end of said casing, gripping pawls extending into the interior of said nuts, and a section adapted to be engaged by said pawls and adapted to be inserted through said casing, the point of said section having a slightly spiral fluting.

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

BYRON HERRELL SANDS.

Witnesses:

C. L. McRAY,
W. F. STAHL