

J. R. FISCHER.

EARTH AUGER.

(Application filed Mar. 1, 1899. Renewed May 28, 1900.)

(No Model.)

Fig. 1.

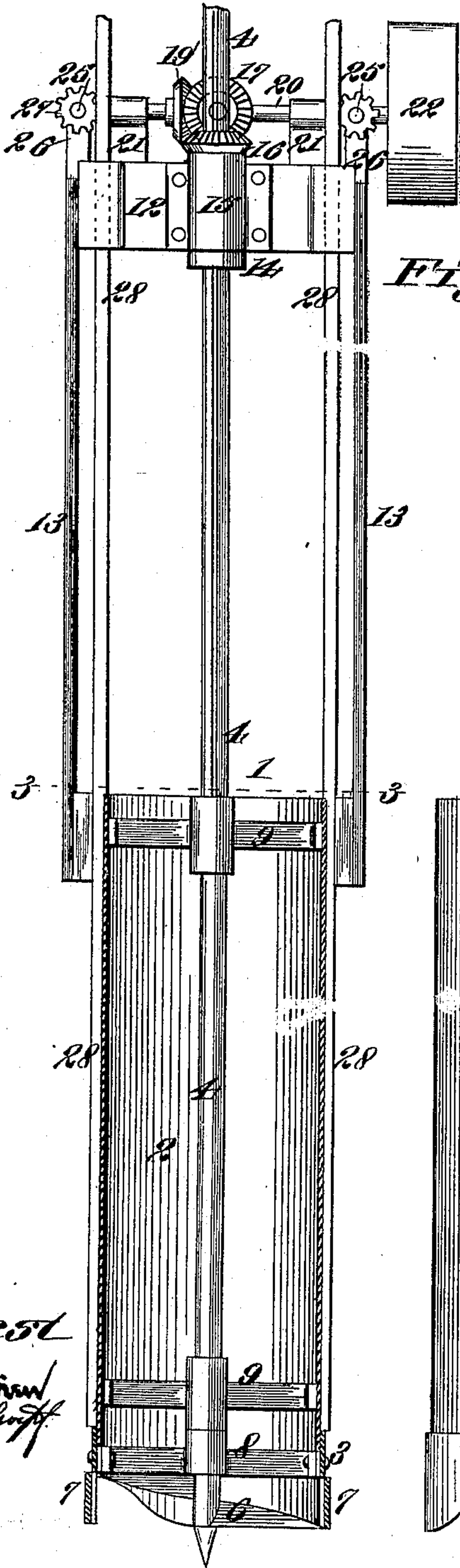


Fig. 2.

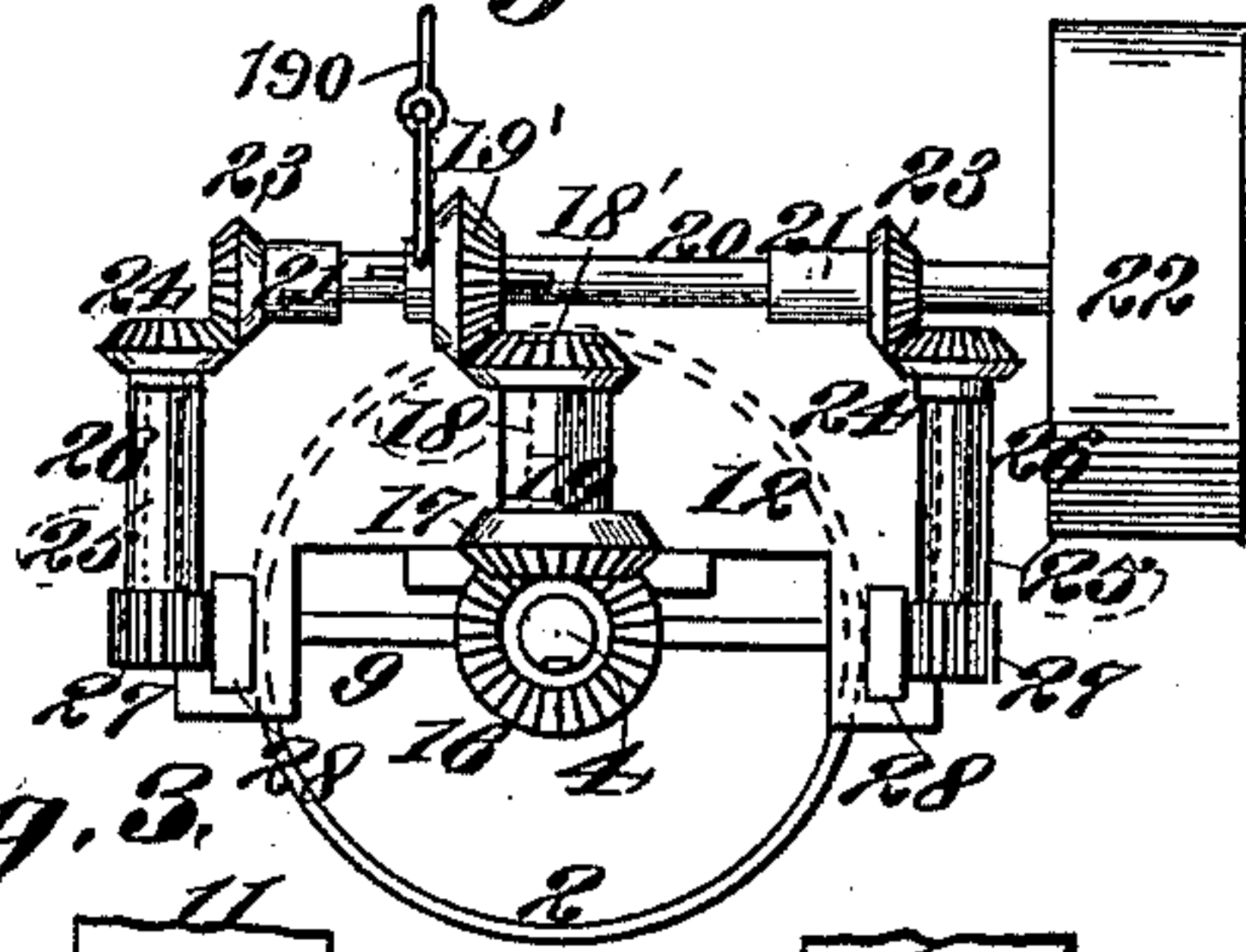


Fig. 3.

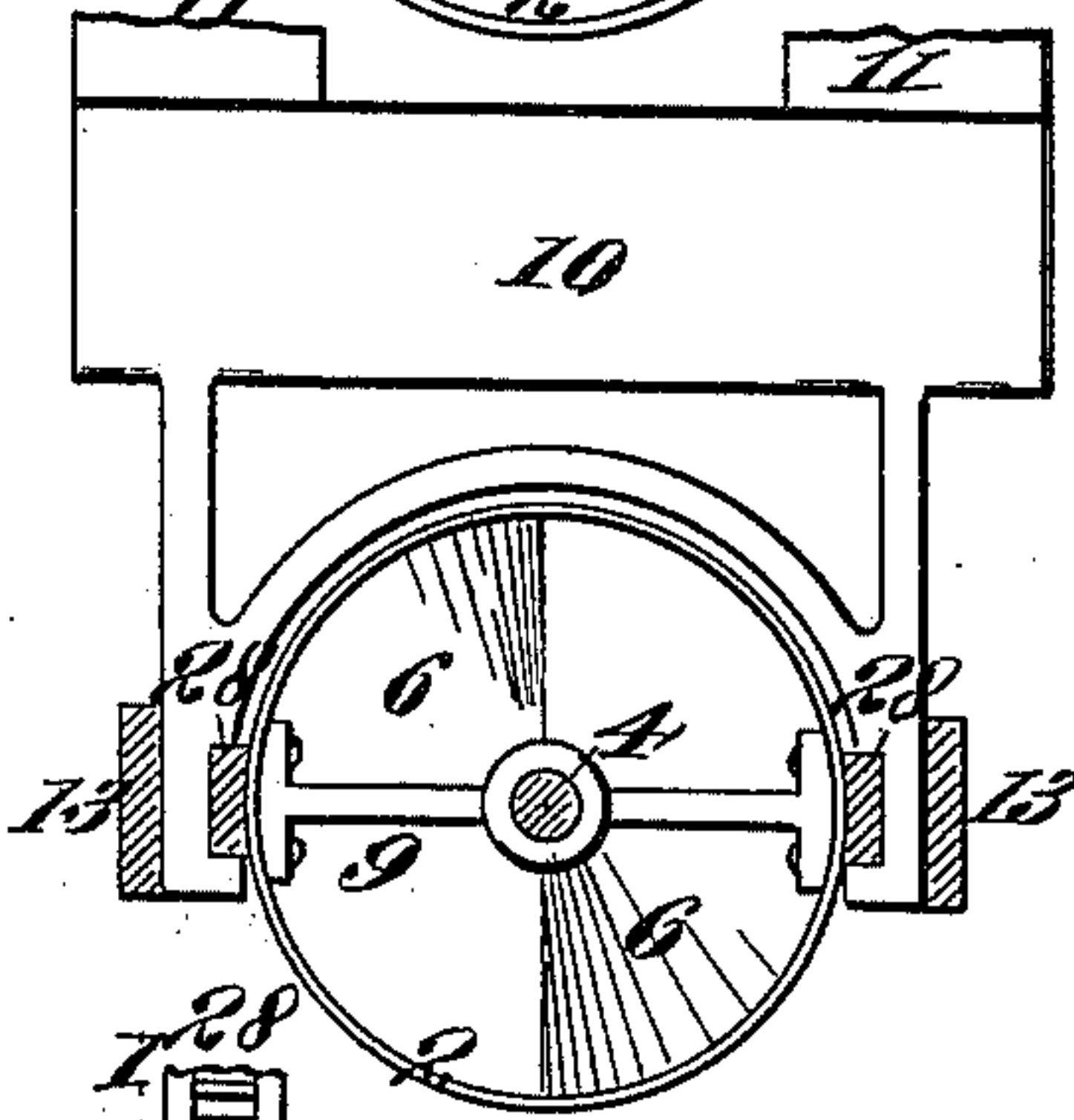
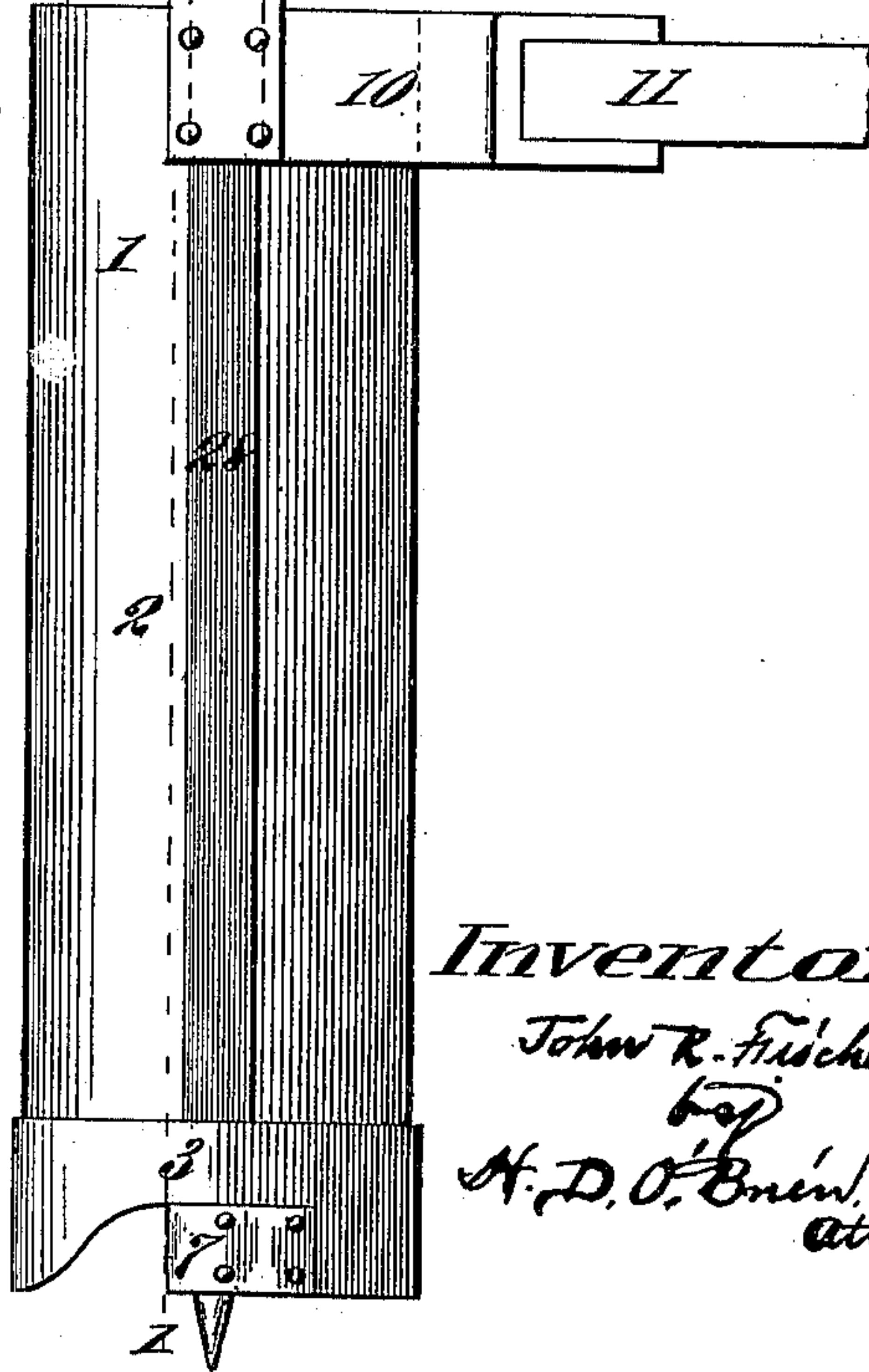


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN R. FISCHER, OF ST. LOUIS, MISSOURI.

EARTH-AUGER.

SPECIFICATION forming part of Letters Patent No. 652,428; dated June 26, 1900.

Application filed March 1, 1899. Renewed May 28, 1900. Serial No. 18,343. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. FISCHER, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Earth-Augers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention consists in the construction of earth-augers in two sections, one of which is driven and does the boring and the other section forming a receptacle for the material which may be loosened by the lower section.

A further object is to arrange the driving mechanism for the auger at a point where the same can be easy of access for driving and repairs; also, of a substantial construction and arrangement whereby the operation of rotating the auger and elevating the receptacle can be accomplished conveniently.

In the accompanying drawings, Figure 1 is an elevation of the driving mechanism and a section through the auger and receptacle on the line 1 1 of Fig. 4. Fig. 2 is a plan view of the driving mechanism. Fig. 3 is a horizontal section on the line 3 3 of Fig. 1. Fig. 4 is a detail side elevation of Fig. 1.

1 is the auger, consisting of the upper or fixed section 2 and the lower or boring section 3. To the lower end of the driving-shaft 4 is secured the boring-section, consisting of a cylinder 3, and forming the bottom thereof are two horizontal cutters 6, while to the exterior of the said section are secured two vertical cutters 7, serving to ream the opening to such diameter as will permit the upper section to enter freely.

8 is a cross-bar secured to the shaft and the inside of the boring-section. The cylinder of the boring-section overlaps the lower end of the upper section, by which means the two sections are retained in two places relative to each other.

9 represents cross-bars in which is journaled the shaft 4. The terminals of said cross-bars are secured to the inner surface of the section

2 and serve to retain all such coacting parts in proper position relative to each other.

10 is a frame which may be secured by timbers 11 to a suitable car or truck, which will permit of the auger being moved to any convenient place for operating.

12 is a frame upon which is mounted the driving mechanism, which latter is maintained at a fixed distance above the frame 10 by means of the side bars 13, secured at their terminals to the frames 10 and 12.

14 is a sleeve journaled in a bearing 15, through which sleeve the shaft 4 slides vertically and by which said shaft is driven by means of a feather in said shaft. The upper end of said sleeve is provided with a bevel-gear 16, into which meshes the wheel 17 on shaft 18 and journaled at 19. On the outer end of said shaft is the bevel-wheel 18', meshing into the wheel 19', feathered on the main shaft 20, journaled in standards 21, and to which is secured a driving-pulley 22. On said shaft are secured bevel-wheels 23, meshing into wheels 24 on one end of shafts 25, journaled in bearings 26, and on the other ends of said shafts are secured pinions 27, meshing into the rack-bars 28, guided in the frames 10 and 12. The lower ends of said rack-bars are secured to and extended down each side of the section 2 of the auger and serve as guides for the same at any elevation, whether boring or in a position for discharging.

The auger may be operated to varying depths; but preferably the same should not be operated to greater depth than twice the length of the auger. As a preliminary to boring the auger should be raised to a slight elevation above the ground, when the main shaft would be revolved, causing a rotation of the several parts connected to said shaft and resulting in a rotation of the said auger and a downfeed by means of the pinions and racks. After having attained the required depth the gear 19' may be shifted by hand or by the forked lever 190 by sliding it on its feather on the main shaft, thus disconnecting the auger and allowing the same to be stationary during the act of elevating preliminary to a discharge of the material contained in the section 2. By reversing the di-

rection of rotation of the pulley 22 the auger may then be elevated through the action of the pinions on the racks. When the section 2 has been raised above the ground, the earth within it can be removed in any suitable manner, after which the auger can be passed again down into the hole for renewed operation.

What is claimed as new is—

5 In an auger, the combination with a supporting-frame, an upper frame carrying the driving mechanism, side bars holding these frames relatively and permanently separated, and rack-bars standing just inside said guide-bars, guided through both frames, and raised
5 and lowered by said mechanism; of the auger proper comprising a non-rotating cylindrical

section secured to the lower ends of said rack-bars and having interior bearings, a cylindrical boring-section journaled around the lower end of said non-rotating section and having cutters, the driving-shaft journaled in said bearings and sliding through its operating mechanism, and a cross-bar within the boring-section fixed to said shaft, as and for the purpose set forth. 20

In testimony whereof I affix my signature
in presence of two witnesses. 25

JOHN R. FISCHER.

Witnesses:

ANNA SCHOEPP,
IGNATIA WIEGREFFE.