

No. 746,432.

PATENTED DEC. 8, 1903.

E. H. ACKERMAN.
PRESSURE DEVICE FOR DRILLS.
APPLICATION FILED FEB. 19, 1903.

NO MODEL.

Fig. 1.

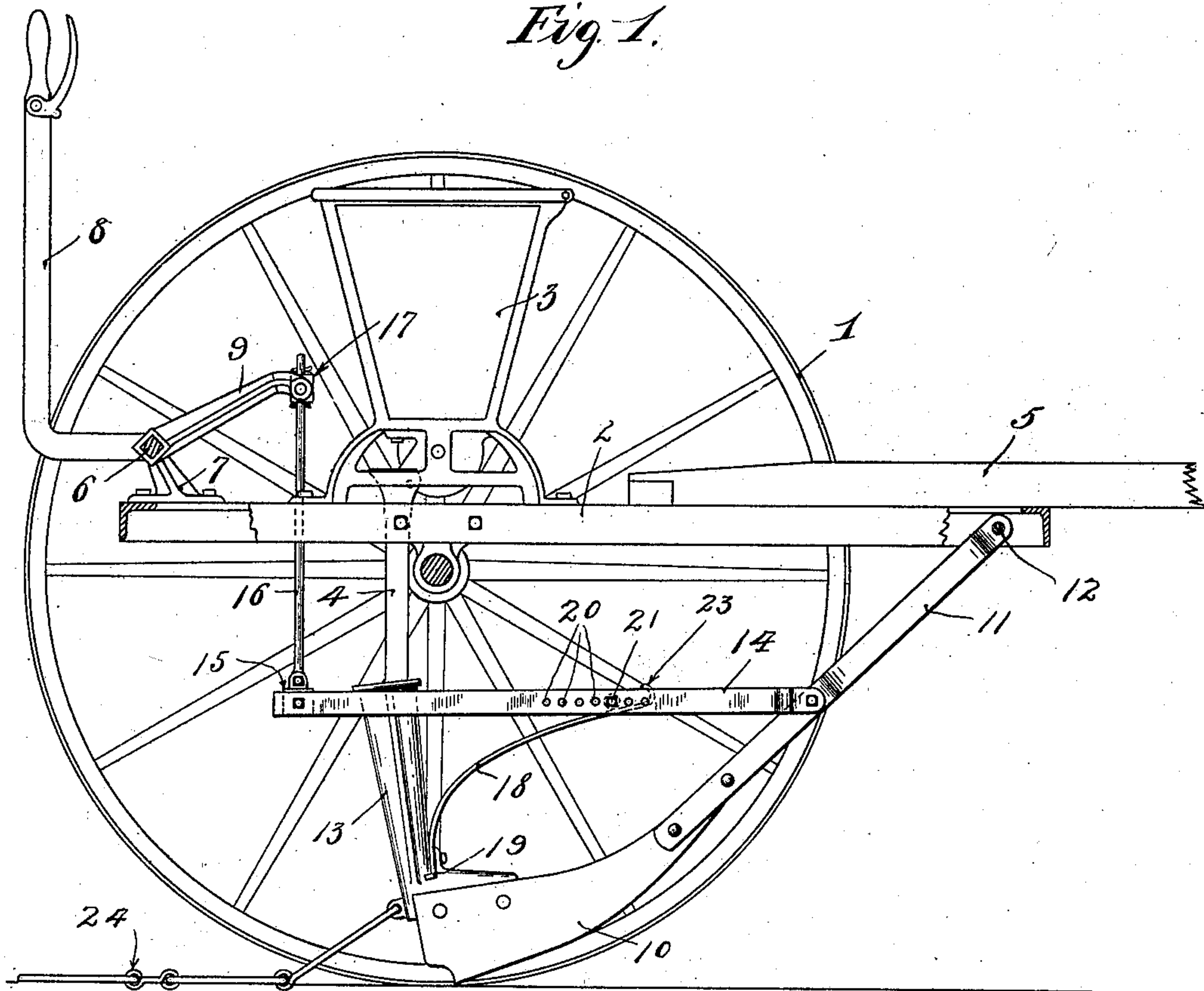


Fig. 2.

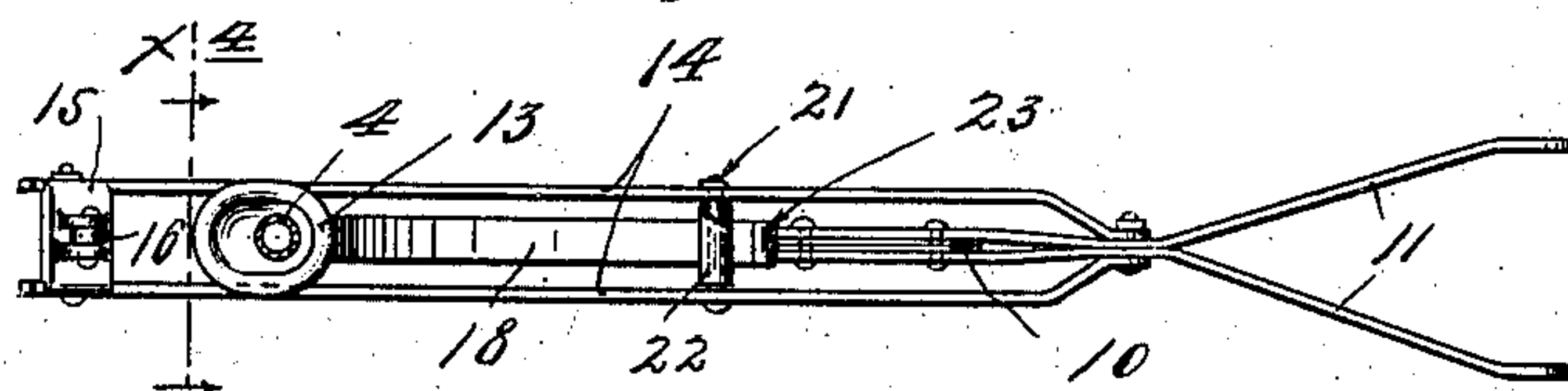


Fig. 4.

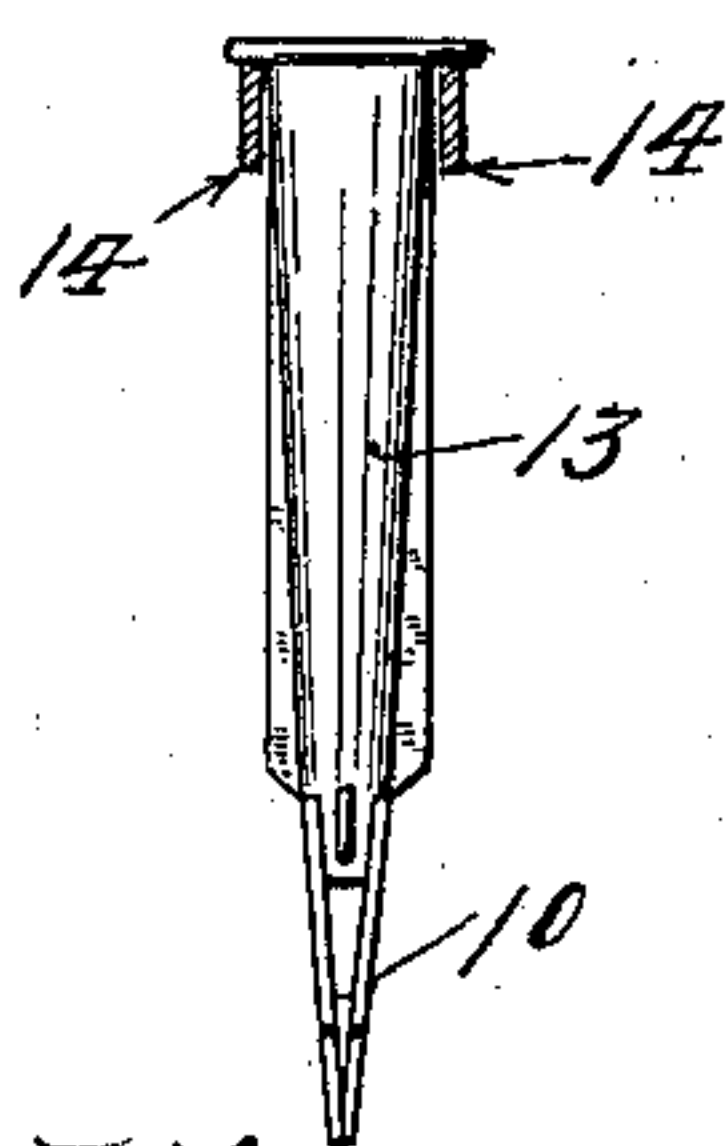
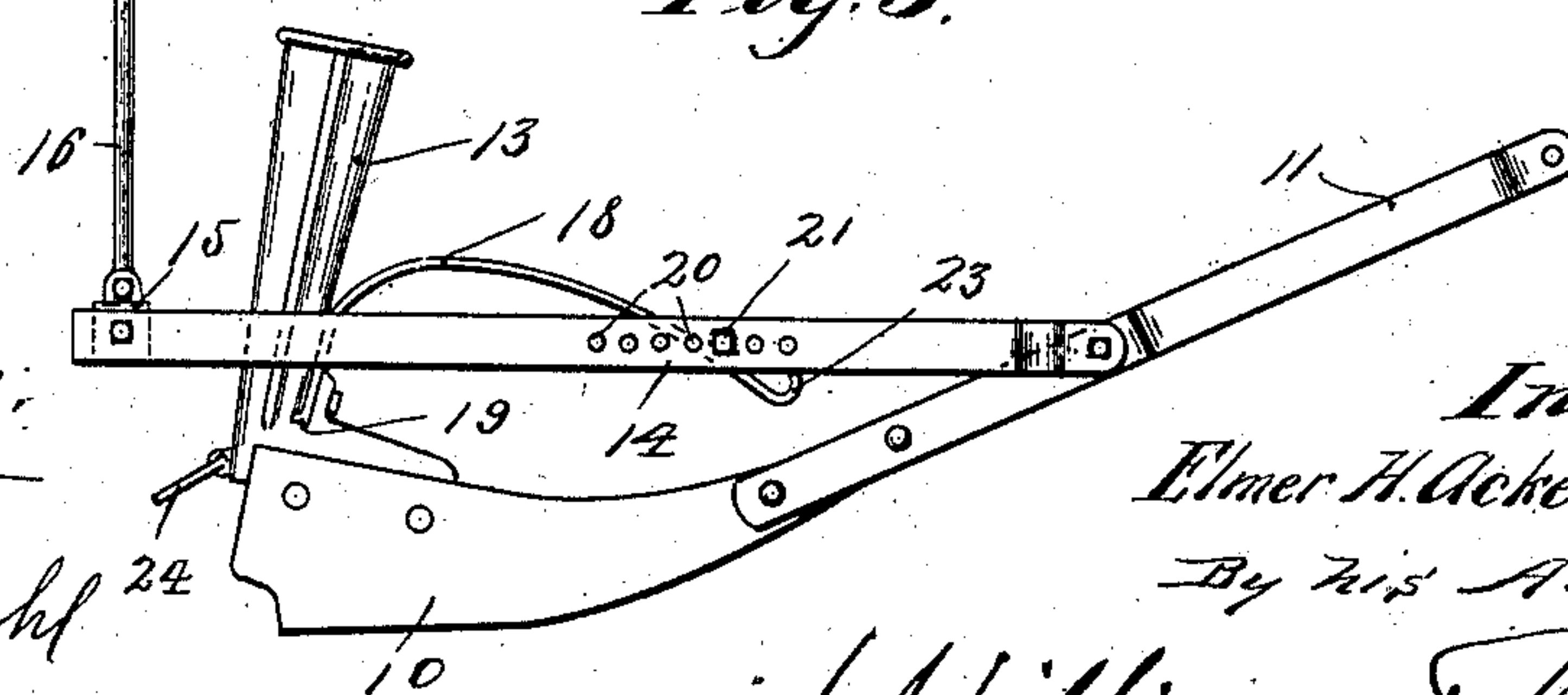


Fig. 3.



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UNITED STATES PATENT OFFICE.

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JOHN MAHER, OF MINNEAPOLIS, MINNESOTA.

PRESSURE DEVICE FOR DRILLS.

SPECIFICATION forming part of Letters Patent No. 746,432, dated December 8, 1903.

Application filed February 19, 1903. Serial No. 144,051. (No model.)

To all whom it may concern:

Be it known that I, ELMER H. ACKERMAN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Pressure Devices for Drills; and I do hereby 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.

My invention has for its object to provide an improved pressure device for drills and similar machines; and to this end it consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a view in longitudinal vertical section, taken centrally through a machine having applied thereto one of my improved pressure devices. Fig. 2 is a plan view of one of the shoes and coöperating pressure device, but in a different position. Fig. 3 is a side elevation of the parts shown in Fig. 2, and Fig. 4 is a transverse vertical section on the line $x^4 x^4$ of Fig. 2.

The numeral 1 indicates the wheels, the numeral 2 the frame, the numeral 3 the seed-box, the numeral 4 the feed-spout, and the numeral 5 the pole, of the machine, which parts may be of the standard or any suitable construction.

The numeral 6 indicates a rock-shaft mounted in suitable bearings 7 on the rear portion of the frame 2 and provided with an operating-lever 8 and with a plurality of forwardly-projecting arms 9, but one of which arms are shown.

The numeral 10 indicates one of the drill-shoes, the forward end of which is secured to a drag-bar 11, the forward end of which bar in turn is pivotally connected at 12 to the forward portion of the frame 2. The feed boot or leg 13 is rigidly secured at its lower end in the usual way to the rear end of the shoe 10.

The numeral 14 indicates a pressure-bar formed by two parallel straps, the forward ends of which are pivotally connected to the drag-bar 11, preferably to the intermediate portion thereof. The straps of the pressure-bar 14 straddle or embrace the boot or leg 13, and the rear ends thereof are spaced apart, but connected by a small bracket 15.

The numeral 16 indicates a pressure-rod, the lower end of which is pivoted to the spacing-bracket 15 and the upper end of which is connected to a block 17, which in turn is pivotally connected to the free end of the arm 9.

The numeral 18 indicates a strong leaf-spring, the lower and rear end of which is rigidly connected at 19 to the lower portion of the boot or leg 13. The straps of the pressure-bar 14 at their intermediate portions are provided with a series of perforations 20, through any alined pair of which may be passed a small bolt 21, upon which is loosely mounted an antifriction-roller 22. The forward and upper end of the spring 18 presses against the under surface of the roller 22, and thus yieldingly forces the shoe 10 and the leg or boot 13 downward. The bolt 21 and roller 22 thus afford a reaction-bearing for the spring 18, which reaction-bearing is carried by the machine and is relatively fixed with respect to said spring. The free end of the said spring 18 is hooked or bent upward to form a stop 23, which when it engages the roller 22 limits the rearward traveling movement of the spring over the said roller.

The numeral 24 indicates a drag-chain attached to the boot or leg 13 and serving to close the furrow formed by the shoe 10. This chain, however, forms no part of my present invention.

My invention resides in the arrangement of the shoe or corresponding element, the pressure-bar, and the spring whereby the improved action now to be described is accomplished. It will of course be understood that in a complete machine a plurality of the shoes, pressure-bars, and springs will be employed and that the several pressure devices may be operated through the common rock-

shaft 6 and actuating-lever 8. In this case the shaft 6 would also be provided with a plurality of arms 9, only one of which is shown in the drawings.

5 The springs or pressure devices hitherto employed for the purpose to which this invention is directed have not afforded sufficient freedom of movement to the shoes to permit them to freely ride or pass over stones
10 or other large obstructions within their path of travel. Otherwise stated, such springs on account of their comparatively small limit of compression would become rigid under movements frequently given to the shoes in passing
15 over large stones and obstructions, thus frequently causing breakage to certain parts of the machine. By my arrangement of the spring so that at one end its force is applied to press downward against the rear portion
20 of the shoe and at the same time is free to be forced upward between the straps of the pressure-bar 14, and the shoe is so mounted that it may be given a maximum upward movement and, in fact, may be moved so far
25 upward that it passes the straps of the said pressure-bar. In Fig. 3 the shoe is shown as moved upward nearly, but not quite, to the extreme position just indicated. Furthermore, under these extreme movements of the
30 shoe the tension of the spring 18 is not varied to any objectionable extent. The said spring is not at any time forced anywhere near to the limit of its compression or elasticity. By varying the position of the roller
35 22 and bolt 21 the tension of the spring 18 may be increased or decreased, so as to give the desired normal pressure on the shoe. The said roller 22 permits the free end of the spring 18 to travel over the same under a
40 minimum of friction and increases the efficiency of the spring to a considerable extent.

In practice it will be understood that any well-known or suitable means may be provided for locking the rock-shaft 6 and arms
45 9, and consequently the pressure-bars 14, in any positions in which they may be set by the lever 8.

It will of course be understood that the device described is capable of modification with-
50 in the scope of my invention as herein set forth and claimed.

The improved pressure device may of course be used to press into the ground other forms

of furrow-openers—such, for instance, as disks and hoes.

A furrow-opening disk at the free end of the drag-bar would be the equivalent of a "ground-shoe" within the scope of this invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a machine of the character described, the combination with a pivoted drag-bar provided at its free end with a ground-shoe, of a leaf-spring anchored at its rear end to a
65 part carried at the free end of said drag-bar, and an adjustable reaction-bearing carried by the machine and against which the forwardly-projecting free end of said leaf-spring bears and under which it travels, substantially as described.

2. In a machine of the character described, the combination with the drag-bar 11 provided at its free end with a shoe, of a presser-bar 14 formed by a pair of straps pivotally
75 connected to said drag-bar and attached at its free end to said shoe, a roller-equipped bolt applied to the straps of said presser-bar, a pressure-spring 18 rigidly attached at its rear end to said shoe, and at its free end working between the straps of said bar 14 and pressing
80 against and traveling under the roller of said bolt, and means for vertically adjusting the rear end of said presser-bar, substantially as described.

3. In a machine of the character described, the combination with the drag-bar 11, provided at its rear end with a shoe 10, and a
90 boot 13, of the pressure-bar 14, formed by a pair of straps pivotally connected to said drag-bar and embracing said boot 13, a roller-equipped bolt adjustably secured to the straps of said bar 14, the pressure-spring 18, rigidly attached at its rear end to said rear
95 portion of said shoe, and at its free end working between the straps of said bar 14 and against the roller of said bolt, and means for vertically adjusting the rear end of said presser-bar, substantially as described.

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

ELMER H. ACKERMAN.

Witnesses:

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