

C. A. MURPHY.
LEVER.

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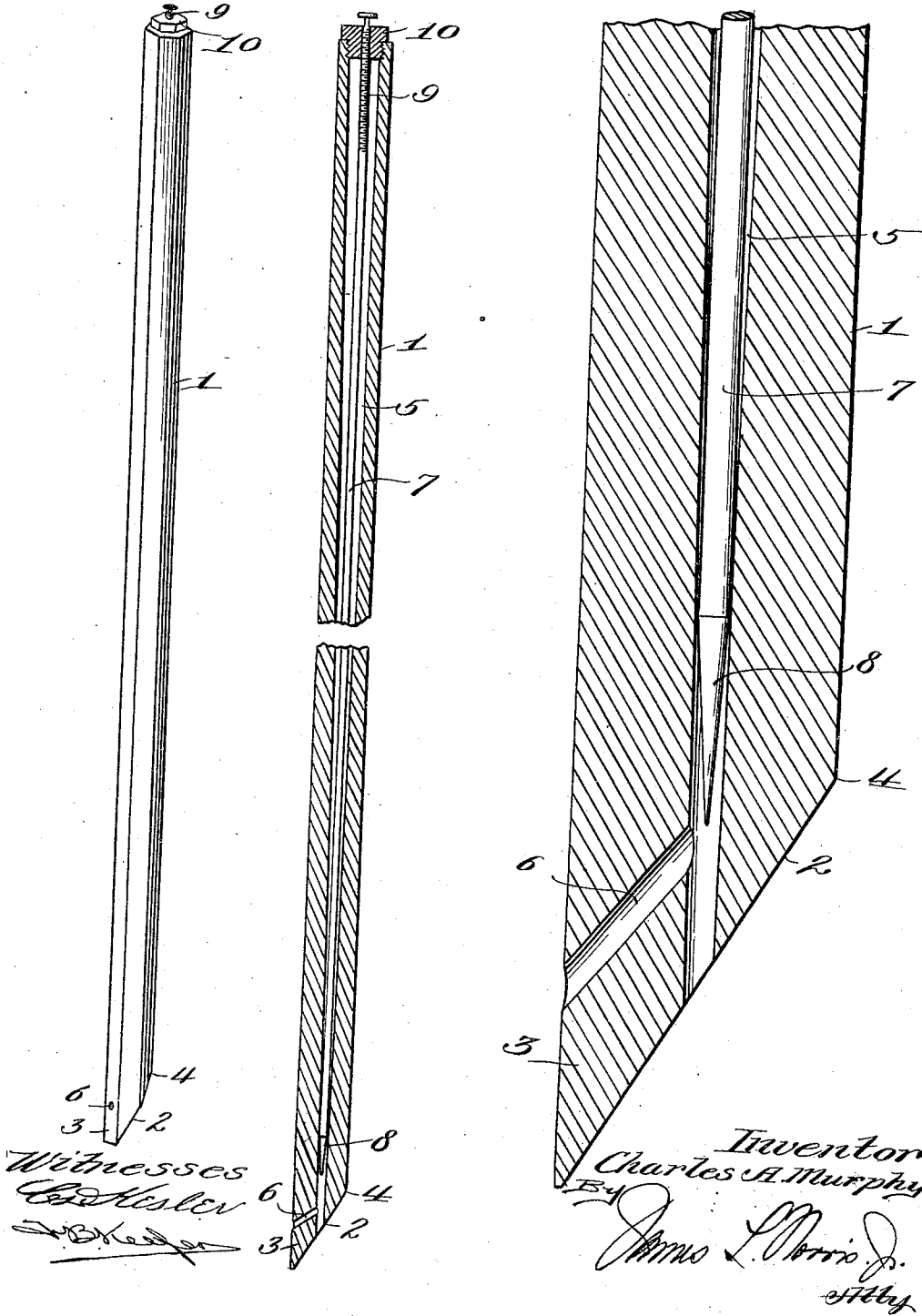
976.901.

Patented Nov. 29, 1910.

Fig. 1

Fig. 2.

Fig. 3.



UNITED STATES PATENT OFFICE.

CHARLES A. MURPHY, OF BALTIMORE, MARYLAND.

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To all whom it may concern:

Be it known that I, CHARLES A. MURPHY, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented new and useful Improvements in Levers, of which the following is a specification.

This invention relates to an improvement in that class of levers which are variously known as pinch bars, crowbars or simply crows, and which are employed to effect the movement of heavy objects or structures, *e. g.* tram cars, and in such use are given a series of slight oscillatory movements as a consequence of which the movement of the object is effected in short shifts in a step by step manner.

The object of the invention is to provide for a more efficient operation of these bars by the employment of an arrangement whereby sand or other gritty material may be discharged at the working end of the bar to prevent the same from slipping with relation to the bearing surface and the surface of the object against which it is moved, and to thus insure the full effect of each shifting movement of the bar. The arrangement is at the same time of such character that the requisite tensile strength of a bar is not interfered with.

An embodiment of the invention is illustrated by way of example in the accompanying drawings, wherein—

Figure 1 is a perspective view of an improved bar; Fig. 2 is a central vertical section of the same; Fig. 3 is an enlarged detail section of the lower end portion of the bar showing the relation of a regulating valve or stem which is preferably employed to determine the amount of sand that is fed to the aforesaid surfaces.

Similar characters of reference designate corresponding parts throughout the several views.

The bar designated by the numeral 1, may be of any desired conventional form. Several of such forms are in common use. In the example shown, the underface of the bar, as 2, is arranged on a forward and downward incline to afford a "working" point or nose, as 3, and a fulcrum point, as 4. If, for example, it is desired to move a tram car, the bar is inserted under one of the wheels somewhat in the manner of a chock-block, and its point 4 bears upon the rail or other surface upon which the wheel rests while its

working point or nose 3 engages the wheel. The bar is then given a series of oscillations and each oscillation produces a corresponding movement of the car, the bar being continuously held under the wheel until the car has been moved the desired distance.

According to the present invention the bar 1 is provided with a central axial bore, as 5, which extends from the upper face of said bar and opens to the underface of said bar. The bore 5 is preferably of tapering outline and in practice may have a diameter of about $1\frac{1}{2}$ inches at its upper end and a diameter of about $\frac{1}{4}$ inch at its lower end. Such an outline is preferred in order to prevent a too-rapid flow of the sand or other material which is poured into the upper end of the opening. It is also preferred to employ a branch bore, as 6, which extends angularly from the bore 5 near the lower end thereof and opens to the upper or outer face of the working point or nose 3 in such manner as to deliver the sand to the surface against which said working point or nose works. From the foregoing it will be observed that provision is made for delivering sand or like material both to the bearing surface, *e. g.*, the surface upon which the fulcrum point 4 rests, and to the surface of the object to be moved, against which the nose 3 works. It is also preferred to employ some means for accurately regulating the amount of sand which is fed to the aforesaid surface and such means advantageously consists of a stem, as 7, which constitutes, in effect, a valve and is disposed axially in the bore 5. The stem 7 has a pointed lower end portion, as 8, and is of sufficient diameter to completely close the constricted lower portion of the bore 5. When in such a position the flow of sand will be completely stopped, as is obvious. By raising the stem 7, the efficient size of the throatway surrounding said stem, is correspondingly increased on account of the tapering outline of the bore 5 and by lowering said stem, the efficient size of said throatway is, in like manner, decreased. In order to raise and lower the stem 7, the latter is provided at its upper end with a threaded portion, as 9, which is engaged through a nut or cap, as 10, that is removably fitted into the upper end of the bore 5. Beyond the nut or cap 10, the stem 7 is provided with a knurled head by which it may be turned when it is desired to raise or lower the same. The association of the

stem and the cap 10 is of such nature that they are removable and replaceable as a unit.

Having fully described my invention, I claim:

- 5 1. A lever of the type set forth, having an opening extending to a face of the working end thereof and through which sand or like material may be fed.
2. A lever of the type set forth, having means associated therewith for discharging 10 sand or like material at a face of the working portion thereof.
3. A lever of the type set forth, having an opening which extends to a face of its 15 working portion and through which sand may be passed, and means for varying the efficient size of said opening.
4. A lever of the type set forth, having a downwardly tapered opening extending 20 to a face of the working portion thereof and through which sand or like material may be passed.
5. A lever of the type set forth, having an opening which extends to one of the faces 25 of its working portion and through which sand or like material may be passed and

having also a second opening which extends at an angle from the first-named opening to another face of the said working portion and through which a portion of the sand 30 or material passing through the first-named opening will flow.

6. A lever of the type set forth, having an axial downwardly tapering bore extending to a face of the working portion thereof, 35 and a stem disposed in said bore and movable axially thereof to vary the efficient size of the bore.

7. A lever of the type set forth, having an axial bore which extends to a face of the 40 working portion thereof, a cap removably fitted in the upper end of said bore and a stem disposed axially in said bore and having an upper portion which is threaded through the cap.

45 In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES A. MURPHY.

Witnesses:

CLINTON GARDNER HARRIS,
R. L. WEAVER.