No. 892,585. PATENTED JULY 7, 1908.

C. FEAGLER.

REAMER.

APPLICATION FILED MAR. 28, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

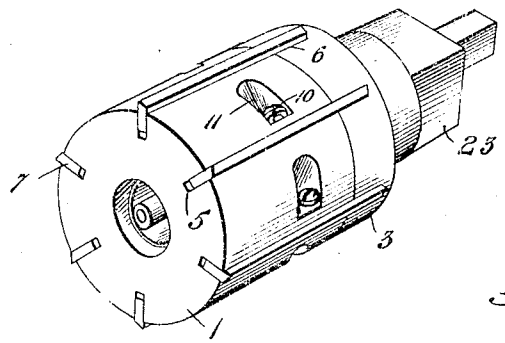


FIG. 3.

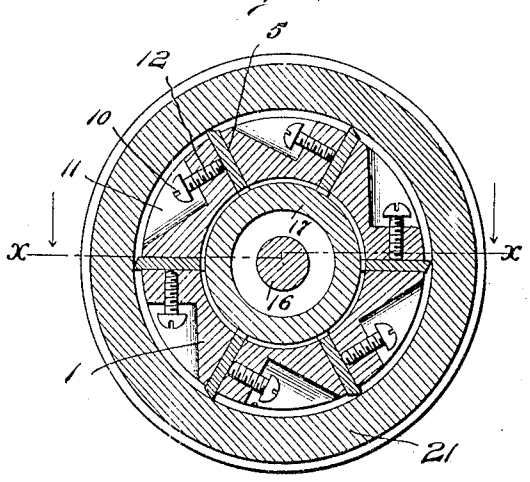


FIG. 2.

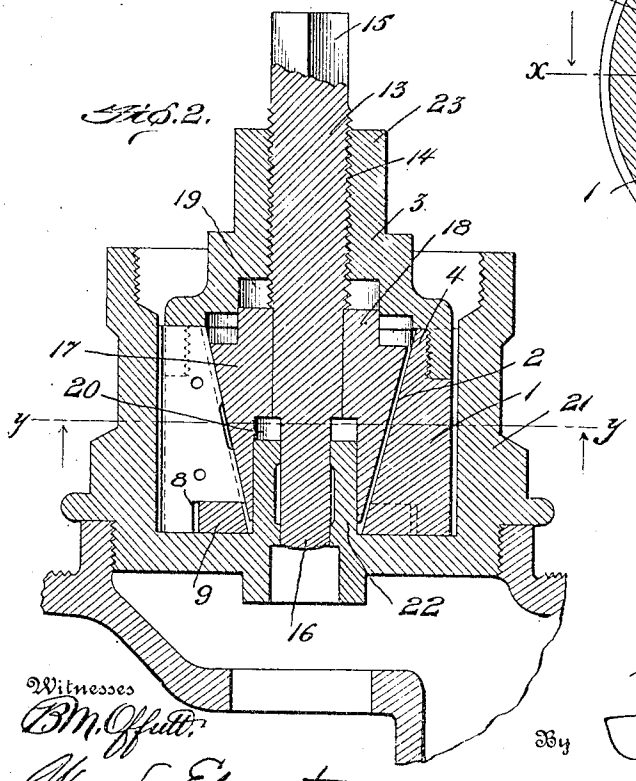
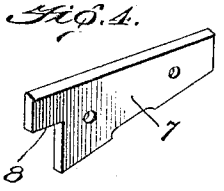


FIG. 4.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 5.

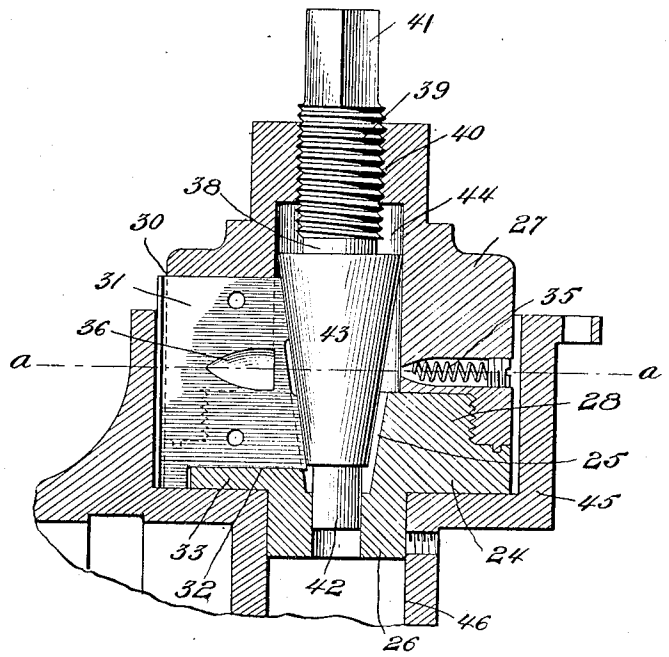


Fig. 6.

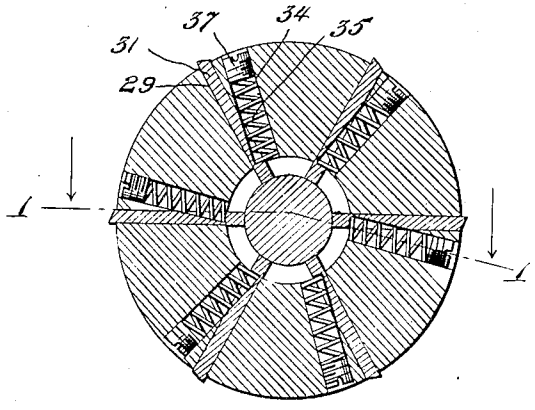
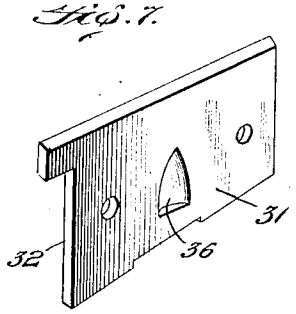


Fig. 7.



Witnesses

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No. 892,585. Specification of Letters Patent. Patented July 7, 1908.

Application filed March 28, 1906. Serial No. 308,599.

To all whom it may concern:

Be it known that I, CLAUDE FEAGLER, a citizen of the United States, residing at Garrett, in the county of Dekalb and State of Indiana, have invented new and useful Improvements in Reamers, of which the following is a specification.

This invention relates to reamers, and has for its object to provide a conveniently operable hand tool as distinguished from machine tools.

While the device is capable of being used in many relations, it is particularly designed for reaming out the cylinders of engineers' valves and the like.

A further object of the invention is to enable the convenient assemblage of the parts of the device whereby the bits may be readily replaced when damaged.

A still further object of the invention is to avoid endwise movement of the bits when adjusting the same radially outward in order that the tool may be set accurately into place prior to the adjustment of the bits to the internal diameter of the work.

With these and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter fully described, shown in the accompanying drawings and particularly pointed out in the appended claims.

In the drawings,—Figure 1 is a perspective view of one embodiment of the present invention. Fig. 2 is an enlarged longitudinal sectional view of the device shown in Fig. 1 fitted within the cylinder of a pump governor and taken on the line *x*—*x* of Fig. 2. Fig. 3 is a cross sectional view on the line *y*—*y* of Fig. 2. Fig. 4 is a detail perspective view of one of the bits. Fig. 5 is a view similar to Fig. 2, showing a modified form of the device adapted for use in connection with another type of cylinder and taken on the line 1—1 of Fig. 6. Fig. 6 is a cross sectional view on the line *a*—*a* of Fig. 5. Fig. 7 is a detail perspective view of one of the bits employed in the embodiment of the invention shown in Figs. 5 and 6.

Similar characters of reference indicate corresponding parts in each of the figures of the drawings.

Referring first more particularly to Figs. 1 to 4 inclusive, of the drawings, it will be seen that the present device includes a cylindrical body 1 which is pierced longitudinally by a tapered bore 2, the larger end of which is closed by a removable cap 3 threaded upon a reduced externally-threaded neck portion 4 of the body.

The body and the cap are provided with corresponding longitudinally-disposed radial slots 5 and 6 for the reception of a series of radially-disposed bits 7, one of which has been shown in detail in Fig. 4 of the drawings. The outer edge of this bit is beveled to form a chisel edge, and its inner edge is tapered or inclined to correspond to the taper of the bore 2 of the body. The larger end of the bit is at the front end of the body and is provided with an angular notch or seat 8 to receive a shoulder or abutment 9 formed in the outer end of the slot in the body.

For the purpose of rigidly holding each bit in the body, there is a set screw 10 which is received within a recess 11 formed circumferentially in the exterior of the body, the shank of the screw being received within a threaded perforation 12 piercing the wall portion of the body between the adjacent slot 5 and the recess 11.

In order that the bits may be adjusted radially, there is provided an adjusting stem 13 having a threaded portion to fit the threaded opening 14 in the outer end of the cap 3. The outer end of the stem is non-circular, as at 15, to form a wrench head, and its inner and forward end portion 16 is cylindrical and somewhat reduced in diameter. Upon that portion of the stem which is received within the tapered bore 2, there is a tapered wedge 17 which has a working fit within the bore so as to move endwise thereon across the inner inclined edges of the bits to force the latter radially outward. It will here be noted that the ends of each bit bear respectively against the shoulder or abutment 9 and the inner end of the slot in the cap, whereby the bit is held against endwise movement. By preference, the large end of the wedge is provided with a reduced boss 18 working in a cylindrical socket or seat 19 in the inner end of the cap, whereby the wedge is guided in its endwise movement. In the forward or smaller end of the core-shaped wedge 17 there is a cylindrical socket 20 opening through the forward end of the cone.

In practice, when applied to ream out a cylinder of the type shown at 21 in Fig. 2, which has a tubular boss 22 projecting inwardly from its inner closed end, this boss is received within the socket 20 of the cone,

and the reduced forward extremity 16 of the stem 13 is received within the tubular boss until the forward end of the body 1 strikes the back or closed end of the cylinder, whereupon the stem is turned by means of a wrench applied to its head 15, whereby the bits will be adjusted radially outward into engagement with the inner walls of the cylinder. As the bits have no endwise movement, it is assured that it will be properly adjusted against the walls and will cut the latter at a true right angle with the closed end of the cylinder. After the bits have been adjusted the device is turned by means of a wrench applied to the squared or non-circular wrench head 23 at the outer end of the cap.

To adapt the invention to cylinders of other types I have embodied the same in the form shown in Figs. 5, 6 and 7, wherein the body is designated 24 and is cylindrical in shape having a conical or tapered bore 25 and a tubular boss 26 projecting beyond the forward end of the body from the small end of the bore. A cap 27, similar to the cap shown in Fig. 2, is removably threaded to a reduced threaded boss 28 upon the rear end of the body. As in the first designated embodiment, the body and the cap are, respectively, provided with corresponding radial slots 29 and 30 for the reception of the bits 31, each of which is provided with a terminal angular notch 32 to receive a shoulder or abutment 33 at the forward end of the adjacent slot 29. A perforation 34 extends through the body and intersects each slot 29. In the opening there is a helical spring 35, the inner end of which is received within a recess 36 formed in the contiguous side of the adjacent bit, the inner end of the recess constituting a shoulder against which the spring bears to yieldably hold the bit at its inner limit. The bits are thus yieldably held in position while at the same time outwardly adjustable without operating each adjusting screw separately. A threaded plug 37 closes the outer end of the opening and holds the spring in place.

For the purpose of adjusting the bits radially, there is provided an endwise adjustable stem 38 having a threaded portion 39 engaging a threaded opening 40 in the rear end of the cap. The outer or rear end of this stem is provided with a non-circular terminal 41 constituting a wrench head, and the other end of the stem is cylindrical, as at 42, so as to have a working fit in the tubular face 26. The intermediate portion of the stem is provided with an enlarged conical wedge portion 43, the larger end of which has a working fit in a cylindrical socket 44 in the inner end of the cap, while the tapered sides of the cone work endwise over the inner inclined edges of the bits so as to force the latter radially outward when the stem is moved forwardly.

The form of reamer last described is designed to be received within a type of cylinder shown at 45, said cylinder being provided in its closed end with a port or opening 46 in which the tubular boss 26 is received as a guide so as to permit of the cutting edges of the bits reaching to the extreme inner ends of the cylindrical walls of the cylinder.

Having thus described the invention, what is claimed is:—

1. In a device of the character described a body having a tapered bore and with a threaded shoulder at one end and with a plurality of radial longitudinal slots communicating with the bore and extending through said threaded shoulder and with connecting stop shoulders closing the slots at the smaller end of the bore, a cap having an internally threaded rim adapted to engage the threaded shoulder of the body and provided with radial slots corresponding to and adapted to register with the radial slots of the body, a plurality of bits engaging the slots of said body and projecting at one end into the slots of the cap and with recesses in the other ends fitting over the connecting stop shoulders of the body, and means operating from within the bore for adjusting the bits.

2. In a device of the character described a body having a tapered bore and with a threaded shoulder at one end and with a plurality of radial longitudinal slots communicating with the bore and extending through said threaded shoulder and with connecting stop shoulders closing the slots at the smaller end of the bore, a cap having an internal guide cavity and an internally threaded rim adapted to engage the threaded shoulder of the body and provided with radial slots corresponding to and adapted to register with the radial slots of the body, a plurality of bits engaging the slots of said body and projecting at one end into the slots of the cap and with recesses in the other ends fitting over the connecting stop shoulder of the body, a hollow externally tapered plug disposed within the tapered bore of the body and with a reduced upper portion engaging the guide cavity of the plug, said tapered plug bearing against the inner edges of the bits, and a stem adapted to be rotated and having one portion threaded to engage the threaded bore of the cap and with the other portion fitting into the bore of the plug.

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

CLAUDE FEAGLER.

Witnesses:
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J. D. BRINKERHOFF.