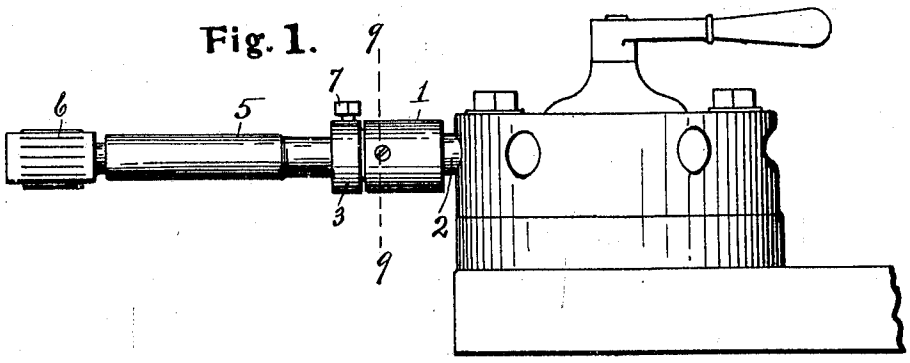
H. BUTLER.

HOLDER FOR REAMING TOOLS.

APPLICATION FILED NOV. 6, 1911.

1,041,015. Patented Oct. 15, 1912.

Fig. 1.



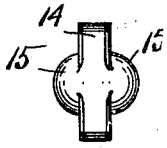




Fig. 3.

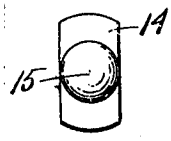



Fig. 4.

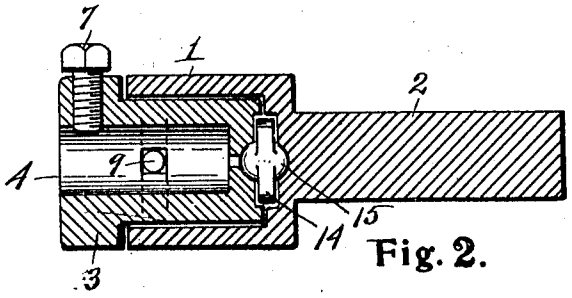



Fig. 2.

Fig. 5.

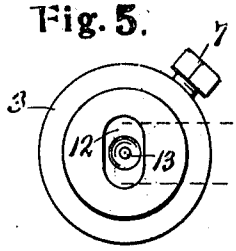
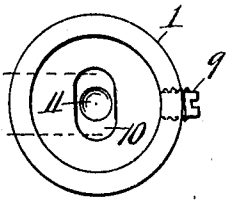



Fig. 6.



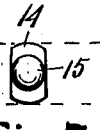




Fig. 7

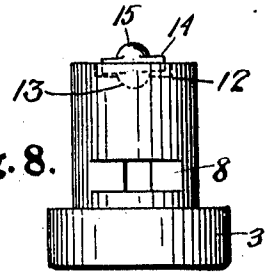



Fig. 8.

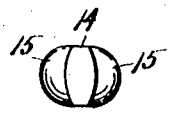



Fig. 10.

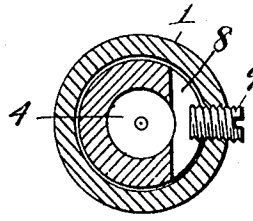



Fig. 9.

Witnesses

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# UNITED STATES PATENT OFFICE.

HERBERT BUTLER, OF DETROIT, MICHIGAN.

## HOLDER FOR REAMING-TOOLS.

1,041,015. Specification of Letters Patent. Patented Oct. 15, 1912.

Application filed November 6, 1911. Serial No. 658,707.

*To all whom it may concern:*

Be it known that I, HERBERT BUTLER, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Holders for Reaming-Tools; 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 characters of reference marked thereon, which form a part of this specification.

This invention relates to a holder for reaming tools, and consists in the construction and arrangement of parts hereinafter more fully set forth and pointed out particularly in the claims.

The object of the invention is to provide simple and efficient means for holding a reamer or similar tool which is to be fed into the bore of revolving work for the purpose of reaming said bore to the desired diameter, the arrangement being such as to allow of a lateral movement of the stem or shank of the reamer in the holding member to compensate for any variation between the centers of the tool and the bore in the work to be operated upon.

The invention contemplates such an association and coöperation of parts as to afford lateral movement in all directions so that the tool and its shank will at all times be parallel with the axis of the center around which the work revolves, and at the same time will be securely held against rotation in the holding member, whereby the bore in the work may be reamed parallel with the axis thereof and to a perfectly cylindrical form.

The above object is attained by the mechanism illustrated in the accompanying drawings, in which:—

Figure 1 is a general view showing the turret of a lathe and my improved reamer holder mounted therein. Fig. 2 is a central longitudinal section through the holder. Fig. 3 is an elevation of the locking block having hemispherical bearing members on the opposite faces thereof, said block serving to effect a jointed locking connection between the holder, which is mounted in a turret or tail stock, and the socket member which is loosely seated therein, and is adapted to receive the stem or shank which carries the tool. Fig. 4 is a side elevation of said locking block. Fig. 5 is a view looking at the right end of the socket member of Fig. 2. Fig. 6 is a view looking into the holder which receives the socket member. Fig. 7 is a view of the locking block which coöperates with said parts. Fig. 8 is an elevation of the socket member showing the locking block tilted in the recess in the end thereof. Fig. 9 is a transverse section through the holder and socket member, as on line 9—9 of Fig. 1. Fig. 10 is an end elevation of the locking block.

Referring to the drawings by the characters of reference thereon, 1 designates a holding member having a shank 2 adapted to be secured in the turret or tail stock of a lathe or similar machine. The holder is tubular and the opening therein is of a diameter to freely receive the reduced inner end of the socket member 3 adapted to be seated therein, and having a socket 4 in which the stem carrying the tool or reamer 6 is secured by means of the set screw 7.

Formed in the side of the socket member 3 is a transverse slot 8 into which the inner end of the set screw 9 extends, said screw being threaded in the wall of the holder and serving to retain the socket member therein while at the same time affording the socket member facility of movement.

In the bottom of the tubular holder is an oblong recess 10 having a rounded central depression 11. Formed in the reduced end of the socket member is an oblong recess 12 corresponding with the recess 10 in the holder, and having a central rounded depression 13. Adapted to lie partly in each of the registering recesses 10 and 12 in the bottom of the holder and the reduced end of the socket member, is a locking block 14 which is oblong in shape and is slightly narrower and shorter than said recesses, but is of a thickness to extend from one recess into the other, whereby, when said parts are placed together, the socket member will be permitted to have a slight rotary movement within the holder in either direction, but will be locked against further rotary movement by an engagement of the edges of said block with the sides of said recesses at the limit of said restricted movement. Extending from the opposite faces of the block are the hemispherical lugs or projections 15 which freely lie in the rounded depressions 11 and 13 formed in the

recesses 10 and 12 respectively. The distance through said lugs axially of the holder is greater than the mere diameter thereof, whereby an oblong figure is produced whose major axis extends in a plane parallel with the axis of the holder. Because of said oblong shape the locking block is allowed to tilt, as shown in Fig. 8, which tilting movement effects a relatively lateral shifting of the centers of the socket member and holder, the looseness with which the socket member fits within the holder permitting such movement, whereby the stem 5 carried in the socket member is permitted to shift laterally with respect to the holder and at the same time maintain its axis in parallelism with the axis of the holder, and not at an angle thereto as would result were the centers with respect to the socket member and holder not allowed to shift through the tilting of the locking block. By means of this arrangement the reamer or tool is permitted to center itself in the bore of the work axially thereof and not inclined with respect thereto, whereby, as the work revolves, a perfectly cylindrical aperture is reamed parallel to the axis of the bore.

As the locking block is permitted to tilt in all directions when confined in the recesses between the bottom of the holder and the end of the socket member the shifting of the socket member within the holder may occur at any point in the circumference thereof, thereby obviating the necessity of setting the holder in the turret or other support in a particular manner. While the locking block affords such facility of movement of the socket member within the holder as to allow the socket member to readily adjust itself within the holder, it also serves as a locking connection between the holder and socket member to hold the tool rigidly in position after adjustment against the strain of the turning work upon which the tool is operating.

Having thus fully set forth my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a device for the purpose set forth, a tubular holder, a tool carrying member seated in the tubular holder and having a limited lateral movement therein, and a combined centering and locking block interposed between the holder and tool carrying member, said block coöperating with said parts to allow a lateral shifting of the tool carrying member within the holder in all directions and yet effect a locking connection between the holder and said member to prevent a rotation of the tool carrying member within the holder beyond a predetermined point.

2. A tool holder comprising a tubular holding member, a tool carrier seated therein and having a limited lateral movement, said holder and said tool carrier having registering recesses formed in the axial alined parts thereof, and a combined centering and locking block lying freely in said recesses to effect a locking connection between said parts which will allow a free lateral shifting of the carrier within the holder.

3. A tool holder comprising a tubular holding member, having a recess in the bottom thereof provided with a central depression, a tool carrier adapted to lie within the holder to have a slight lateral movement therein, said carrier having a recess in the end thereof provided with a central depression, a locking block lying in the recesses between said parts and having rounded projections which enter said depressions, and means for loosely retaining the carrier within the holding member.

4. A tool holder comprising a tubular holding member having a recess in the bottom thereof, a cylindrical tool carrier lying within said holder and adapted to have a limited lateral movement therein, said carrier having a recess in its end corresponding with the recess in the bottom of the holder, a locking block fitting loosely in said recess and extending between said parts, and means for loosely retaining the carrier within the holder.

In testimony whereof, I sign this specification in the presence of two witnesses.

HERBERT BUTLER.

Witnesses:
E. S. Wheeler,
M. E. Broesamle.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."