W. C. MEYER.

EXPANSION REAMER.

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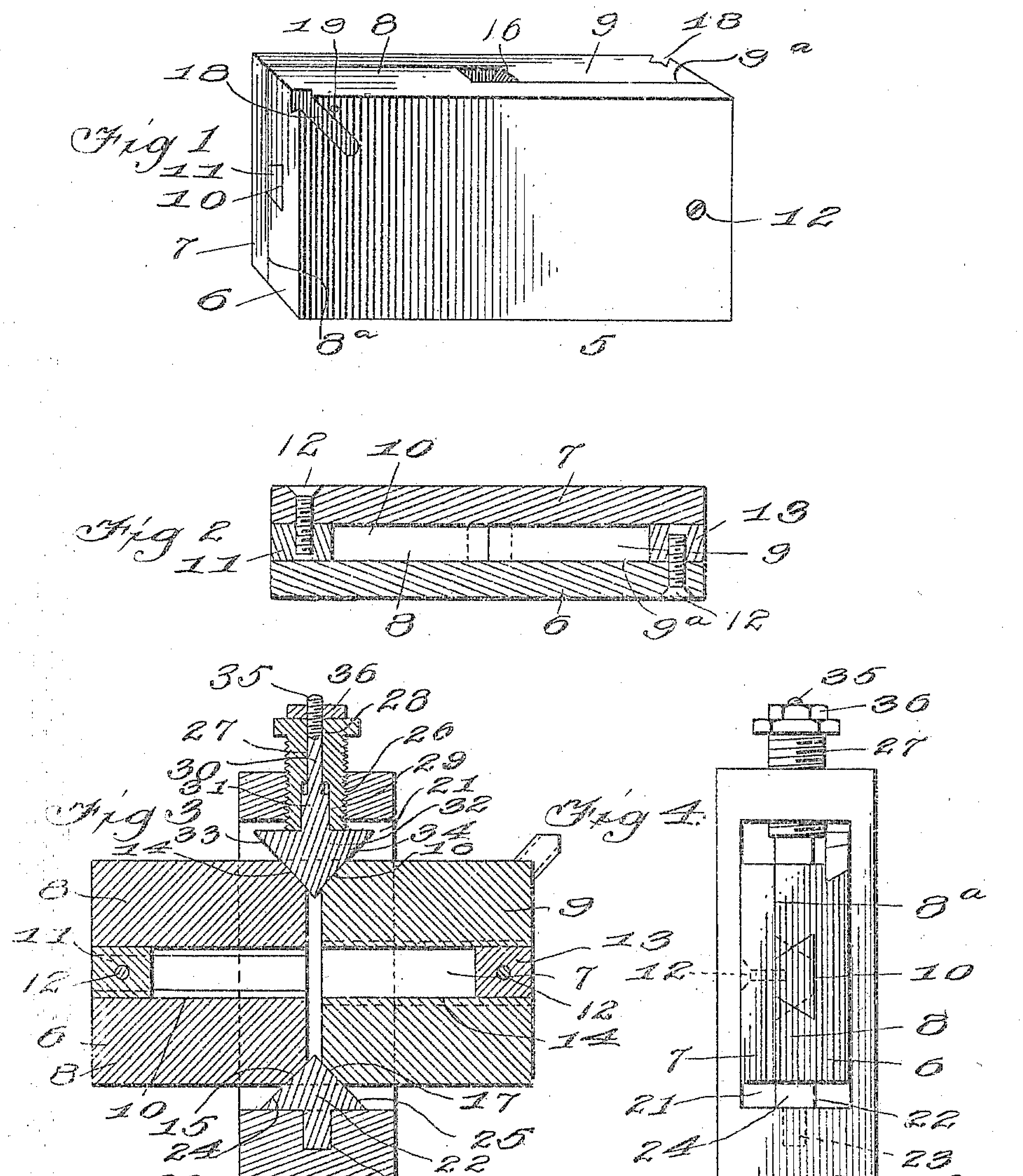
947,926. Patented Feb. 1, 1910.



Witnesses

Geo. T. Thom

Inventor

William C. Meyer.

By [signature]

Attorney

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS. WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM C. MEYER, OF CLEVELAND, OHIO.

EXPANSION-REAMER.

947,926. Specification of Letters Patent. Patented Feb. 1, 1910.

Application filed September 15, 1908. Serial No. 453,068.

To all whom it may concern:

Be it known that I, WILLIAM C. MEYER, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Expansion-Reamers, of which the following is a specification.

This invention relates to reamers for use in reaming holes in metal castings etc., which may be revolved in any suitable manner, and the principal object of this invention is to provide a simple form of reamer that can be easily expanded, contracted, and held stationary without the use of numerous operative parts and to provide novel means for retaining tools to elements of the device and to permit of their ready removal.

Other objects and advantages will be apparent as the nature of the invention is better disclosed and it will be understood that changes within the scope of the claims may be resorted to without departing from the spirit of the invention.

In the drawings, forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views,—Figure 1 is a perspective view of the reamer; Fig. 2 is a horizontal section through the same; Fig. 3 is a vertical section showing the application of the reamer to its holder; Fig. 4 is an end view of the reamer and holder.

Referring now more particularly to the drawing, there is shown a reamer 5 which consists of elements 6 and 7, and, as shown, the said elements are preferably of rectangular form. The element 6 has formed thereon upon its inner face an enlargement 8 having its inner edge disposed approximately at the center of the said element, and the element 7 has formed thereon a similar enlargement 9. The enlargement 8 thus has its face 8^a frictionally engaged with the reduced portion of the element 7, and the enlargement 9 has its face 9^a frictionally engaged with the reduced portion of the element 6, as will be clearly seen upon reference to Figs. 1 and 4 of the drawings. The enlargement 8 is provided with a centrally located dove-tailed groove 10 which extends in a longitudinal plane, and receives a dove-tailed rib or block 11 secured to the inner face of the reduced portion of the element 7. The element 6 carries a similar dove-tailed rib or block 13 which is mounted or disposed in a correspondingly shaped groove 14 formed in the enlargement 9 upon the element 7 and the said latter groove is disposed in line with the groove 10. The elements carry screws 12 adapted to be engaged with the dovetailed blocks 11 and 13 to hold the elements stationary and against sliding movement as will be appreciated upon reference to Fig. 2 of the drawings. The inner edge of the enlargement 8 at the upper and lower corners thereof is beveled as shown at 14 and 15, and the inner edge of the enlargement 9 has its upper and lower corners beveled as indicated at 16 and 17. It will be seen that by forming the enlargements in this manner, substantially V-shaped spaces are formed for a purpose to be hereinafter described. For convenience, the beveled corners of the enlargements will be described hereinafter as cam faces. Each of the elements has a diagonally disposed groove 18 formed upon its outer face at one corner for receiving a suitable cutting or reaming tool, and to retain the said tool in each groove, I provide a set-screw or the like 19 which may be effectively engaged with the tools, as will appear obvious.

The holder 20 has formed therein a passage 21 through which is disposed the reamer 5, and located centrally. Upon the bottom face of said slot is a cam 22 having a depending stem 23 engaged in a recess formed in the holder, and the said cam has formed thereon inclined faces, 24 and 25, which are disposed between the cam faces 15 and 17 respectively, and act as a wedge as will be set forth in the following. At the upper end, the holder is provided with a vertically disposed threaded passage 26 adapted to receive an exteriorly threaded adjusting sleeve 27 having a reduced passage 28 and an enlarged passage 29. The passage 28 receives a stem 30 having an enlarged portion 31 which is movable in the recess 29 and which carries at the lower end thereof a cam 32 having beveled faces 33 and 34 disposed between the faces 14 and 16 respectively, hereinbefore described. The outer end of the stem 30 is threaded, as shown at 35 and receives a nut 36.

In operation, the metal casting or object to be operated upon is revolved over the reamer 5, it being understood that the said reamer extends into the hole to be reamed, and the tools at the ends of the elements 6 and 7 gradually shear portions of the inner

casting away, from one end to the other. This may be described as a first operation when the elements 6 and 7 of the reamer are in a position shown in the drawings, and upon a second operation, the screws 12 are loosened, and the sleeve 27 is screwed into the passage 26 in the holder, thus pushing the elements apart or away from each other to the desired degree, and by operating the screws 12 to bind against the blocks 11 and 13 it will be seen that the elements are effectively held in their adjusted position.

I claim:

1. In a device of the class described, the combination with a holder, of tool retaining elements, slidable in the holder in contact with each other and each reduced transversely at opposite ends to form opposite shoulders, and a wedge mounted on the holder and movable between said shoulders to expand said elements.

2. A reamer comprising a pair of blade-holding elements adapted to be moved laterally upon each other, each element having a thick portion at one end and a thinner portion at the other end, forming opposite shoulders, the thick portion of one element being grooved and the thin portion of the other element having a rib slidable in said groove, and means carried by the holder and adapted to be forced between the shoulders to expand the said elements.

3. A reamer comprising a holder having a recess across the same, a pair of blade holding elements slidable laterally with respect to each other, in said recess, and reduced to form oppositely presented inclined shoulders on their meeting faces, a non-rotatable wedge between said shoulders, and a screw tapped into the end of the holder and bearing against the wedge to advance the same between the shoulders and expand said elements.

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

WILLIAM C. MEYER.

Witnesses:

MONROE E. MILLER,

JOHN A. BOMMHARDT.