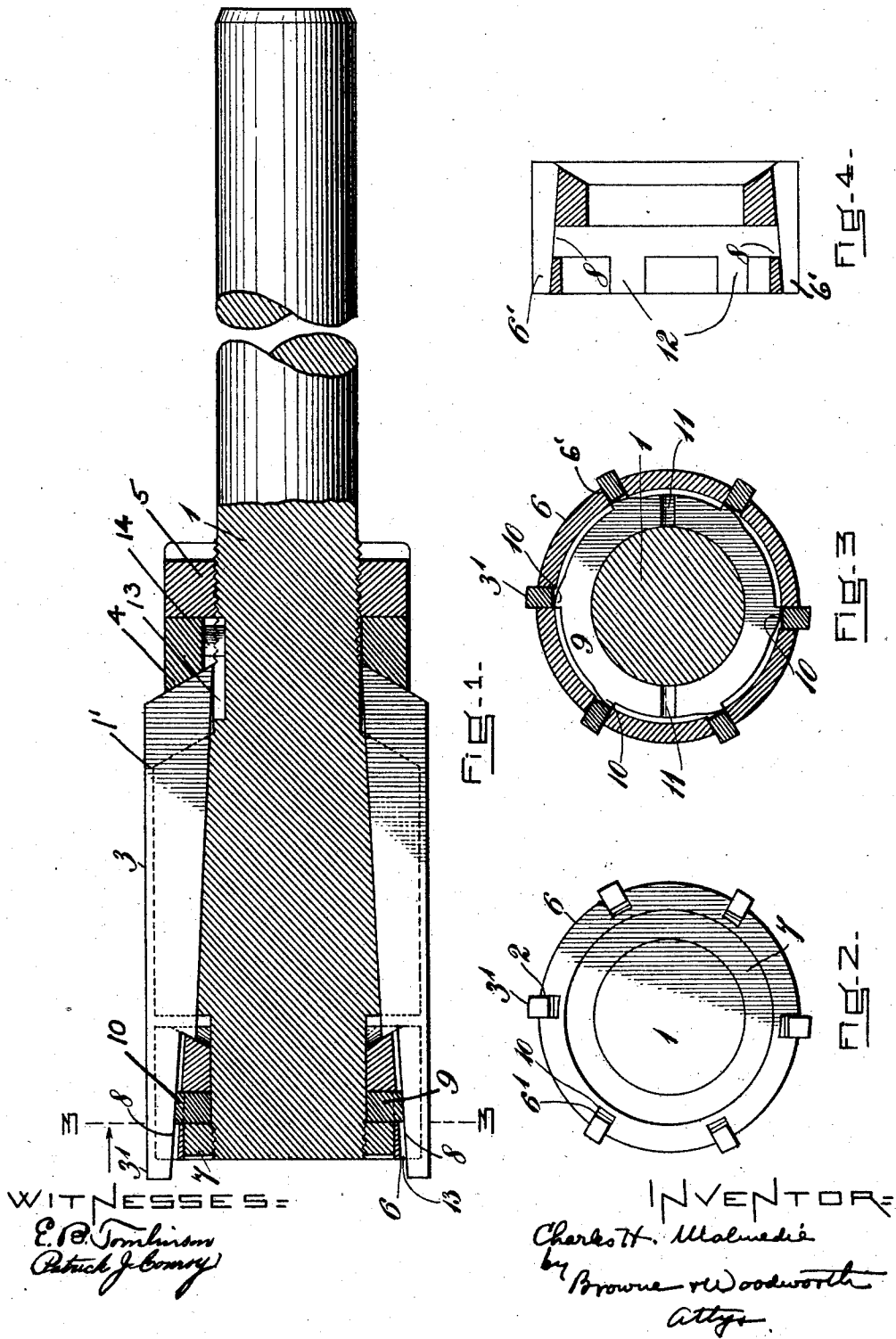


C. H. MALMEDIE.  
ADJUSTABLE REAMER.  
APPLICATION FILED MAY 17, 1909.

972,117.

Patented Oct. 4, 1910.



# UNITED STATES PATENT OFFICE.

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## ADJUSTABLE REAMER.

972,117.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed May 17, 1909. Serial No. 496,397.

### To all whom it may concern:

Be it known that I, CHARLES H. MALMEDIE, a citizen of the United States, and a resident of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Adjustable Reamers, of which the following is a specification.

My invention relates to adjustable reamers and its object is to improve the construction of such reamers in the manner hereinafter set forth, whereby the forward ends of the blades of a reamer adapted to work through to the bottom of a hole may be more rigidly secured to the reamer stock when the reamer is adjusted to its largest diameter.

My invention will be described in connection with the drawings which accompany and form a part of this specification, in which—

Figure 1 is a side view of my improved adjustable reamer partly in section, Fig. 2 is an end view thereof, Fig. 3 is a section taken on the line 3—3 of Fig. 1, and Fig. 4 is a central section of the forward beveled washer hereinafter more fully described.

In the drawings selected for illustrating my invention, 1 represents a stock having an enlarged forward portion constituting a head 1' provided with a plurality of longitudinal and radial slots 2, herein shown as six in number, the bottom of each slot being inclined with respect to the central axis of the stock. A cutting blade 3 is located in each of the slots and the forward portion thereof projects beyond the stock as shown at 3' so as to permit the reaming of a bore to the bottom thereof. The under side of each blade is inclined with respect to the axis of the stock, so that when the blades are in position in the slots, their cutting edges will be parallel to the axis of the stock. The rear end of each blade is beveled and a correspondingly beveled washer 4 engages with the beveled portions of all the blades. A lock-nut 5 is threaded to the stock and engages said beveled washer. A key-way 13 provided with a key 14 may be employed to prevent the washer turning about the stock.

In order that the ends of the blades may project beyond the forward end of the stock, it is necessary to secure the blades at the for-

ward end of the stock by means cooperating with the under sides of the blades and this I accomplish as shown by providing the under side of each blade with a beveled portion with which the correspondingly beveled supporting washer 6 cooperates. This washer is provided with as many longitudinally extending slots 6' as there are blades and the forward portion of each blade rests in one of said slots. A lock-nut 7 is threaded to the forward end of the stock and a cam-collar 9 having as many cams 10 as there are cutting blades is located in the groove 8 of the washer 6 and arranged as shown between the outer vertical wall of the latter and the lock-nut 7.

When it is desired to alter the gage of the reamer, one of the lock-nuts 5 or 7 is loosened and the other turned in such direction as to force the blades toward that nut which has been loosened, whereupon the latter is tightened and the blades locked in position.

It will be obvious that when the blades are moved forward to increase the gage of the reamer, the forward portions of said blades which rest in the groove 6' of the washer 6 will recede from the bottoms of said grooves because the blades move outwardly along the bottoms of the slots 2 which are inclined to the axis of the stock, while the washer moves outwardly in a direction parallel to said axis. Therefore in order to more securely hold the forward ends of the blades, which do not rest upon the bottoms of the slots 6 under the conditions above mentioned, I provide a cam-collar 9 which may be turned about the axis of the stock by a wrench fitting the slots 11, 11, in order to force a cam up against the bottom of the forward portion of each blade. When the reamer has been expanded and the cam-collar has the position shown in Fig. 3, it will be obvious that the forward portions of the blades are as securely held as when the reamer is adjusted to a smaller diameter. The grooves 12 in the interior circumferential walls of the washer 6 extending outwardly from the groove 8 permit the ready insertion of the cam-collar in said groove 8, each groove 12 accommodating one of the cams.

It will be understood that various modi-

fications may be made in the particular apparatus herein described without departing from the spirit of my invention.

I claim:

- 5 1. In an adjustable reamer, a stock, a cutting blade supported in said stock, said blade having its rear end beveled and provided with a beveled portion on its under side near the front end thereof, a portion of the cutting surface of said blade projecting beyond the forward end of said stock, beveled washers coöperating respectively with the beveled portions of the blade, means adjustably securing said washers on the stock, and a cam-collar located in the forward beveled washer and arranged to coöperate with the forward portion of said blade.
- 10 2. In an adjustable reamer, a stock, cutting blades supported in said stock, each
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blade being provided with a beveled portion on its under side near the front end thereof; a washer coöperating with the beveled portion of each blade and provided with slots each supporting the forward end of one of the blades, a collar located on the forward portion of the stock and provided with a plurality of cams, each constructed to be forced against the under side of the forward end of a blade, and a lock-nut threaded on said stock and arranged to secure said washer and collar thereon.

In testimony whereof, I have hereunto subscribed my name this 10th day of May 1909.

CHARLES H. MALMEDIE.

Witnesses:

HENRY A. L. WOODCOCK,  
SETH J. BESSE.