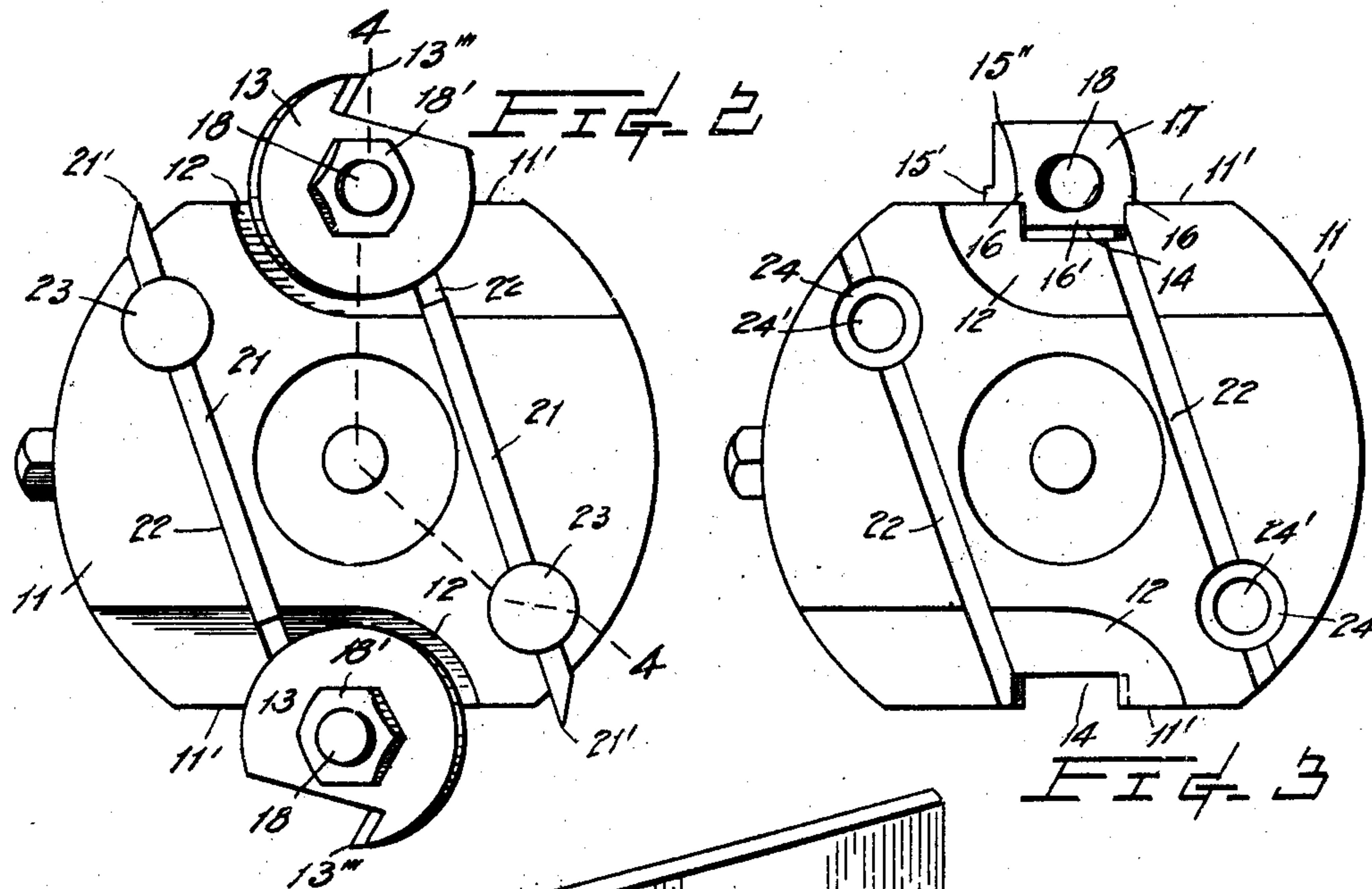
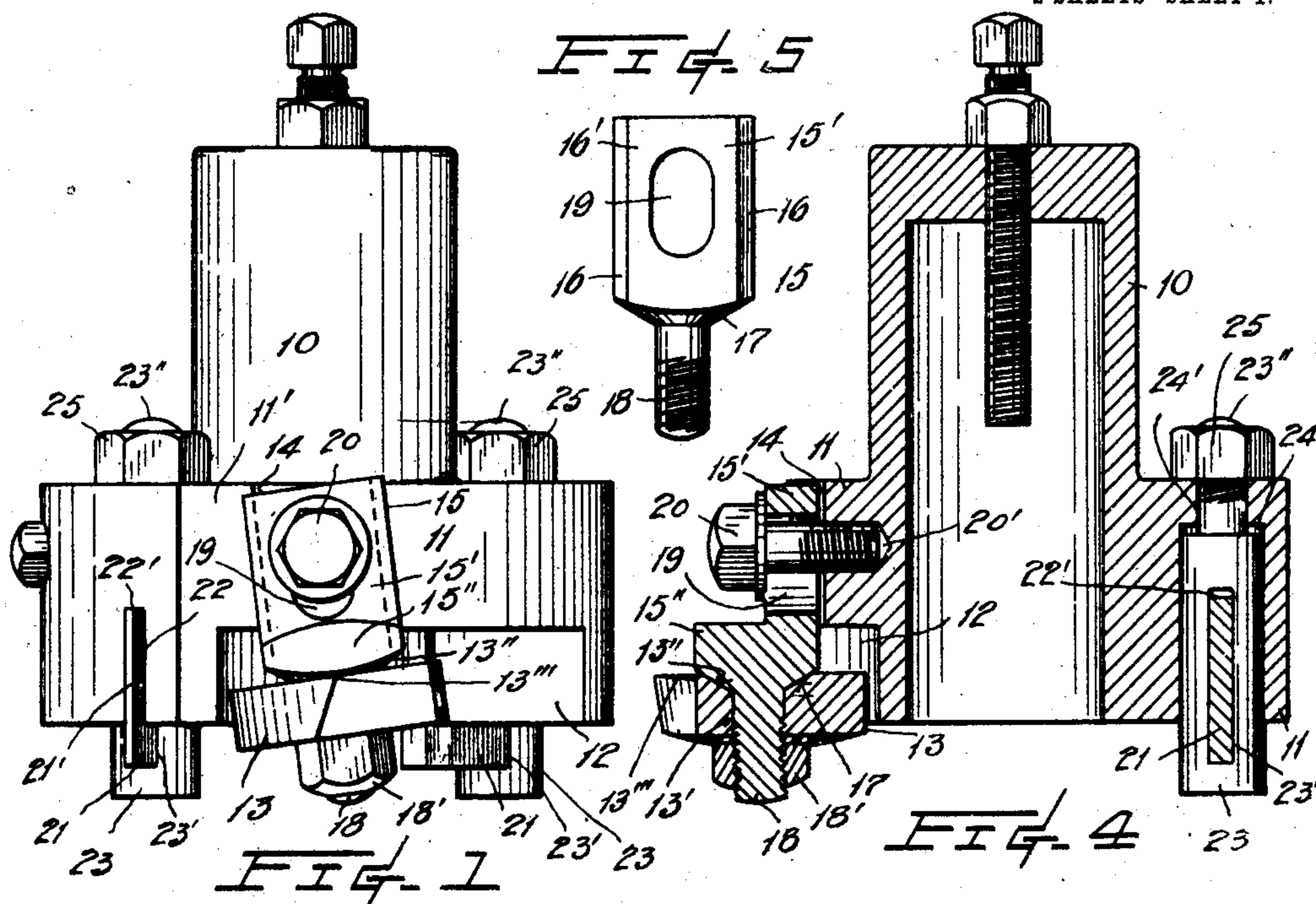


W. W. PHILBRICK.
CUTTER HEAD.
APPLICATION FILED APR. 18, 1907.

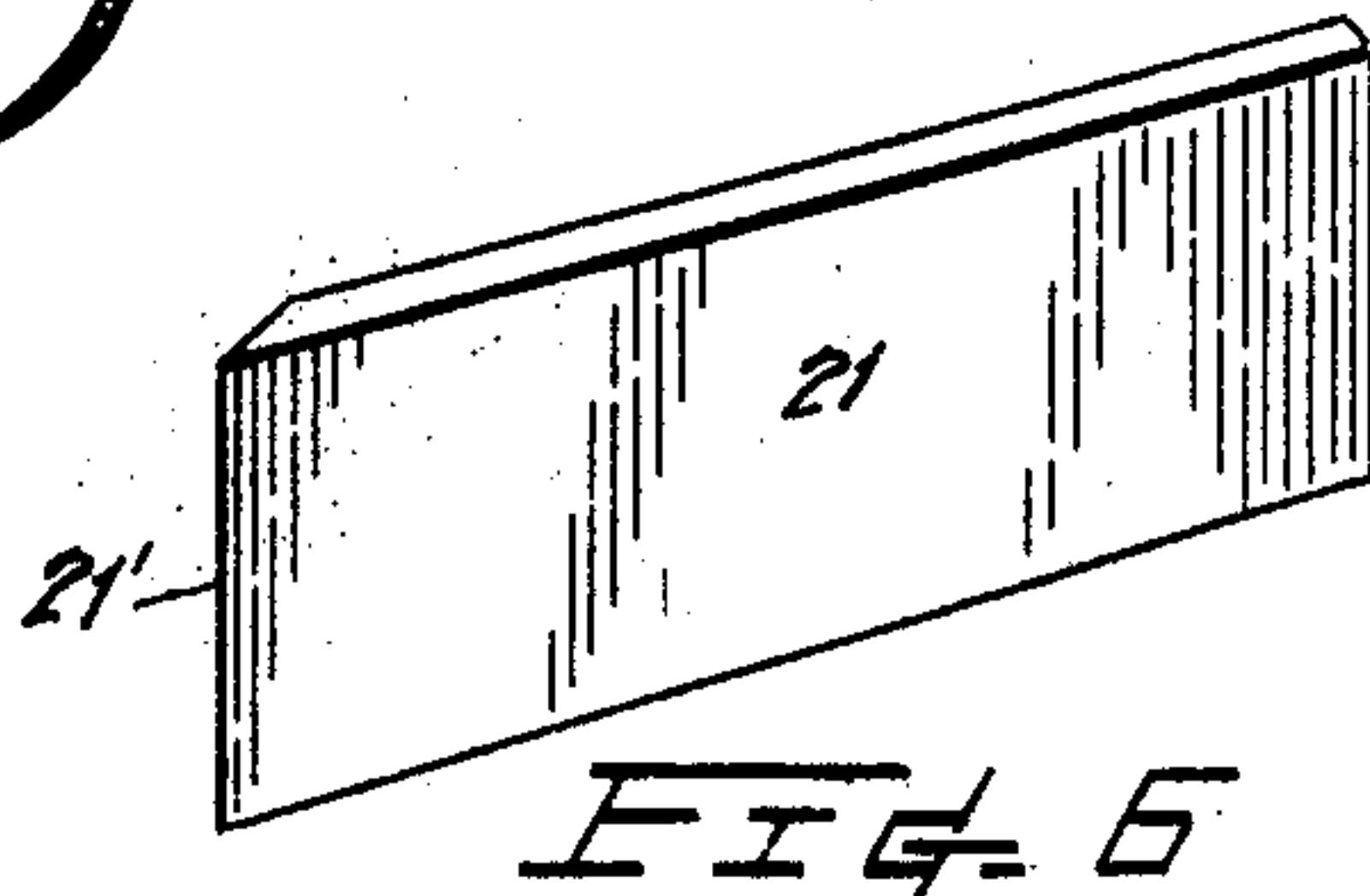
906,921.

Patented Dec. 15, 1908.

2 SHEETS—SHEET 1.



WITNESSES:
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INVENTOR
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2 SHEETS—SHEET 2.

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FIG. 7

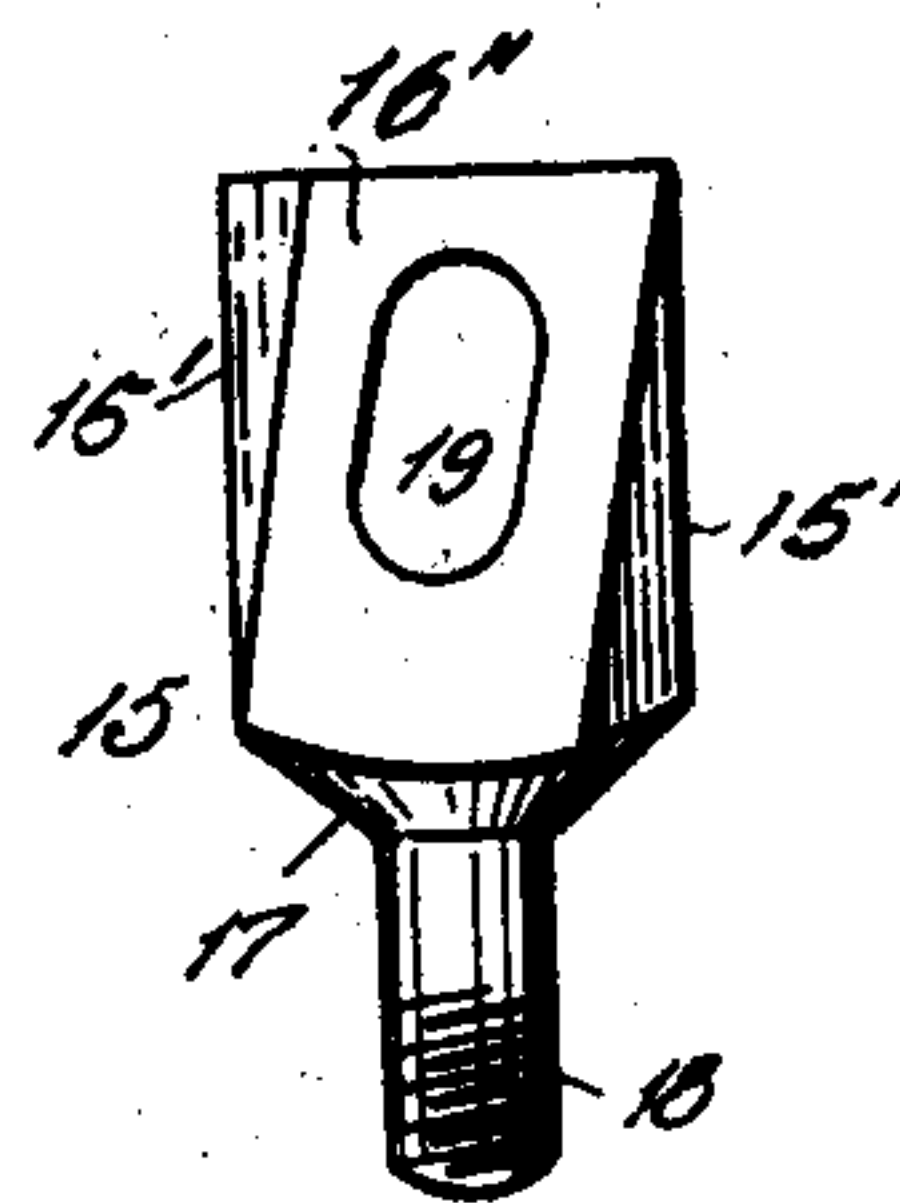
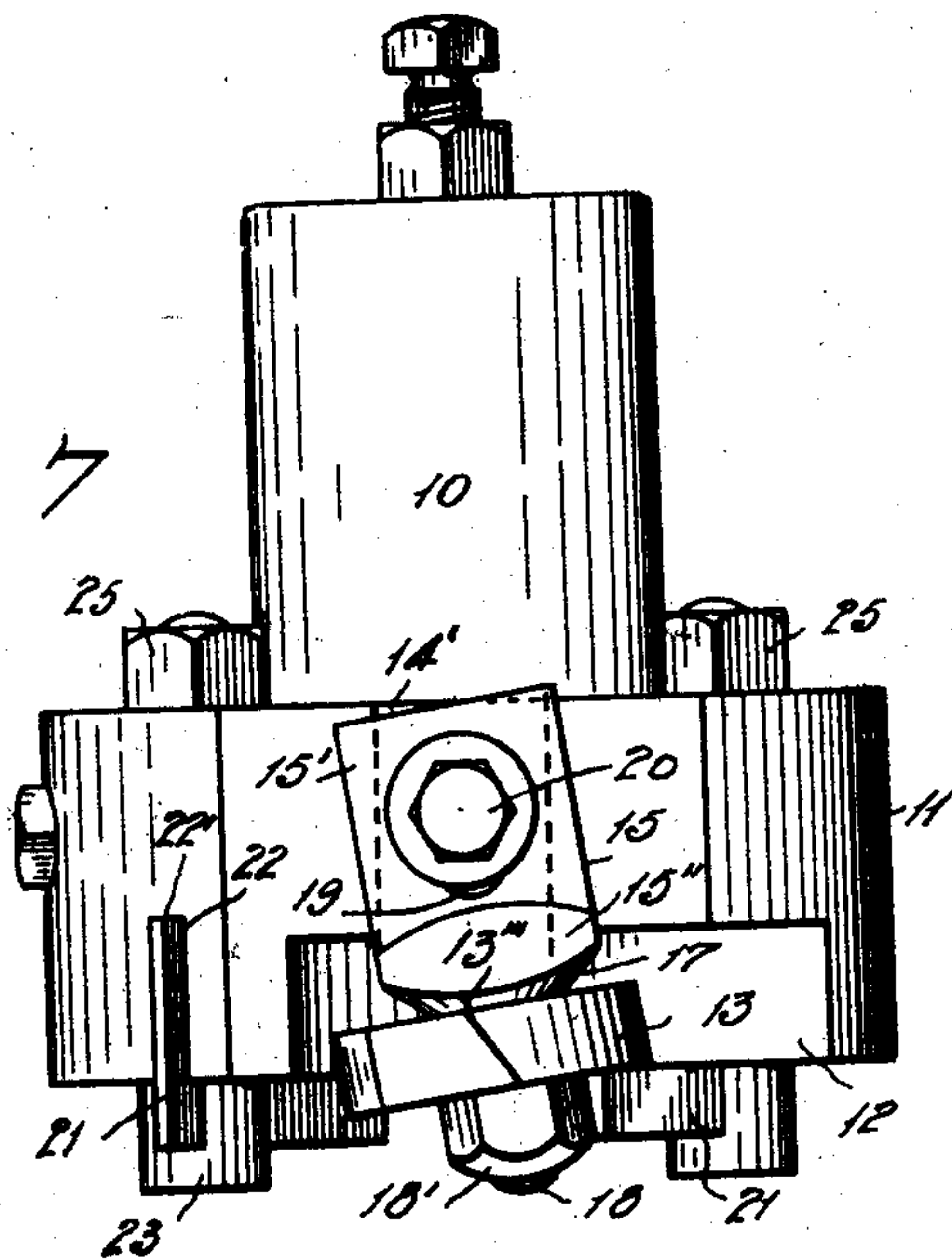
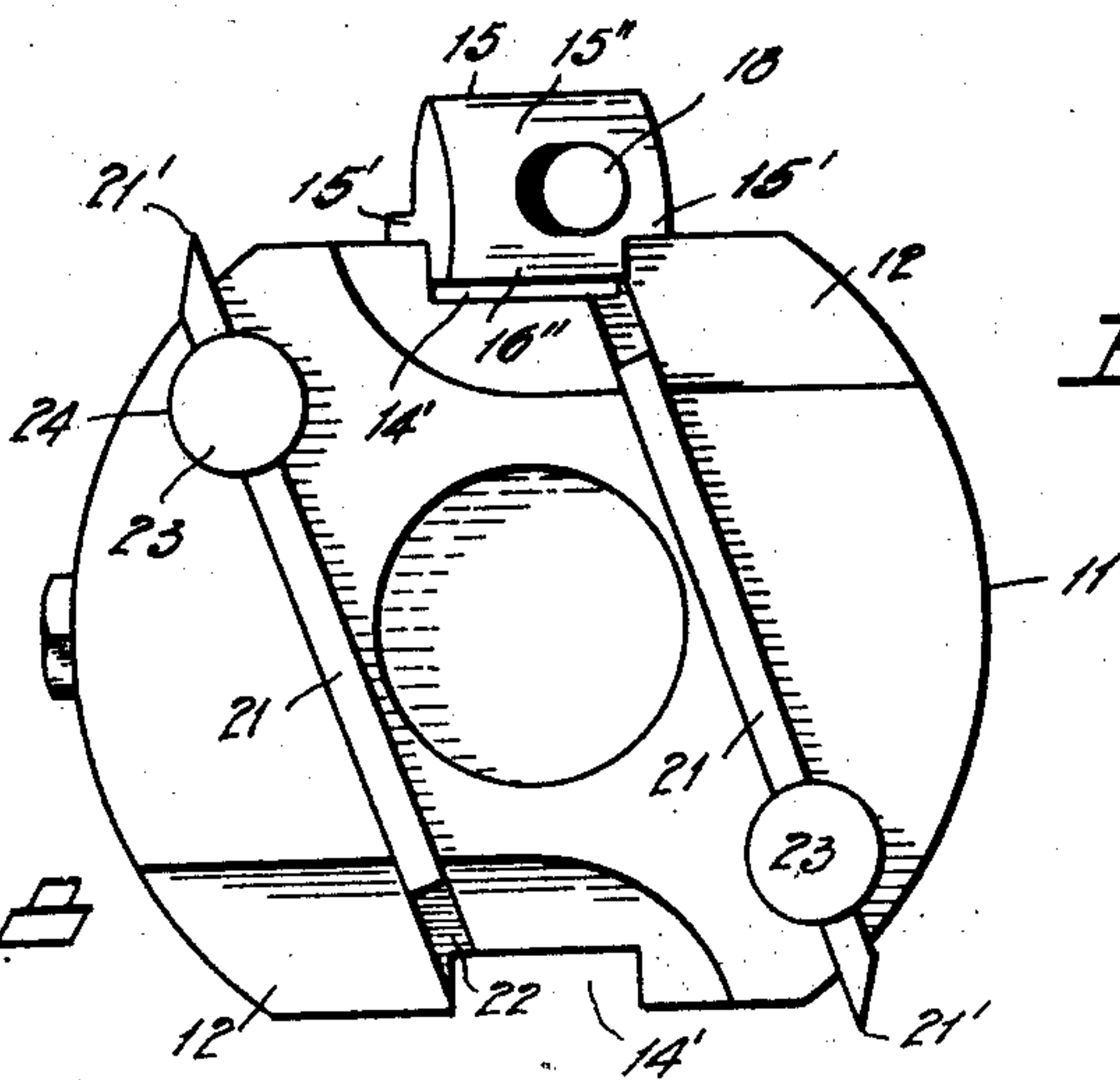


FIG. 9

FIG. 8



WITNESSES:
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B. A. Young

INVENTOR
Warren W. Philbrick

UNITED STATES PATENT OFFICE.

WARREN W. PHILBRICK, OF SEATTLE, WASHINGTON.

CUTTER-HEAD.

No. 906,921.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed April 18, 1907. Serial No. 368,807.

To all whom it may concern:

Be it known that I, WARREN W. PHILBRICK, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Cutter-Heads, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to matcher-heads and specifically to improvements in the head shown and described in United States Patent No. 681,459, issued to me August 27, 1901; and the object of the present invention is to simplify and perfect the construction in various particulars and render it more efficient in operation and convenient for adjusting the positions of the cutters.

With these ends in view, the invention consists in the novel construction and combination of parts as will be hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of a cutter-head embodying my improvements and shown in their preferred forms; Fig. 2, an underside plan view of the same; Fig. 3, a like view to Fig. 2 with the bits and cutters omitted; Fig. 4, a vertical section taken through 4—4 of Fig. 2; Fig. 5, a rear elevation of a bit carrier; and Fig. 6, a perspective view of a cutter; Fig. 7 is a view similar to Fig. 1 but in a modified form to illustrate an alternative manner of constructing and securing the bit carriers to the head; Fig. 8 is an underside plan view of Fig. 7 with certain of the attachments omitted; and Fig. 9 is a rear elevation of the bit carrier adapted to be employed with the head illustrated in the Figs. 7 and 8.

The herein illustrated embodiment of the present invention, like that shown and described in the aforesaid patent, has a hub 10 with an enlarged lower portion 11 which is cut away, as at 12, upon its under side to furnish two diametrically opposite recesses for the circular bits 13 to extend within the peripheral plane of such enlarged portion. The head is likewise provided with grooves 14 to serve as guideways for the L-shaped bit carriers 15; but in this instance the grooves are inclined to be in angular relation to a plane extended through the head axis or make said grooves parallel therewith, as at 14' in Fig. 7, and adapt the carriers to be adjustably secured thereto at an inclined angle with respect to said axis. The arms

15' of the carriers are each desirably formed of a T-shape in horizontal section to provide lateral flanges 16 which respectively bear against the outer faces 11' of the head while the longitudinal tongue portions 16' are formed to make a sliding fit between the side walls of said grooves. The other arms 15'' of the carriers are provided upon their under sides with convex seats 17 for the bits and have extending therefrom screw threaded studs 18 so as to be in alinement or parallel with the aforesaid tongues, or the grooves 14, as shown in Fig. 1 or, where the grooves are disposed as represented in Fig. 7, the same ends are accomplished by inclining the tongue 16'' with respect to the carrier and arranging the stud to be obliquely to the tongue instead of with the carrier proper.

According to this invention the bits are severally formed with a central aperture 13' for the stud which terminates in a concavity 13'' for registering with the opposing said convex seat and affording a large bearing surface to reliably prevent the accidental displacement of the bits after the latter have been secured in adjusted positions by the nuts 18'.

By reason of the inclined disposition of the grooves 14, it is obvious that the carriers are correspondingly tilted to furnish clearance for the cutting edges 13''' of the bits and are thus maintained at every adjusted position within the travel of the carriers as limited by an elongated slot 19 in each of the carrier arms 15' through which the securing bolt 20 passes for engagement in the threaded holes 20' of the head.

21 are jointing knives or cutters formed of imperforate blades, see Fig. 6, with beveled advance cutting edges 21'. To secure these knives to the head, grooves 22 are provided in the under side of the head portion 11 and the knives are adjustably held against the tops 22' of the respective grooves by slotted posts 23. Engagement is had between the knives and said posts by inserting the former through post-slots 23', while the posts are socketed in cavities 24 provided intermediate the lengths of said grooves and thus secured by having screw threaded prolongations 23'' extended through reduced openings 24' of the posts and having the protruding portions engage nuts 25 which bear against the upper surface of the head part 11.

The bits 13, shown in the drawings, are of

the type employed in cutting rabbets, or the like, but it is obvious that the shape or configuration of these, as well as of the cutters, or knife blades, will be governed by the various kinds of work to be done.

The herein illustrated manner of assembling and mounting of bits and knives contribute to the efficiency of the head and notably the provision of convex bit seats upon the cutter carriers which in turn are movable in inclined directions.

What I claim as my invention, is—

1. The combination with the head consisting of a hub with an enlarged lower portion, said lower portion being provided with grooves for cutter blades and in its periphery with inclined grooves for bit carriers, said cutter blades, and means to adjustably secure the blades in their respective grooves, of bit carriers adjustably secured in said inclined grooves, bits for said carriers, and means to secure said bits in adjusted rotary positions upon the carriers.

2. The combination with the head consisting of a hub with an enlarged lower portion having diametrically opposite recesses in its under side, said lower portion being likewise provided upon its under side with grooves for cutter blades and in its periphery with inclined grooves for bit carriers, said cutter blades and means to adjustably secure the blades in their respective grooves, of bit carriers adjustably secured in said inclined grooves, bits for said carriers, and means to secure said bits in adjusted rotary positions upon the carriers.

3. The combination with the head consisting of a hub with an enlarged lower portion, said lower portion being provided upon its under side with grooves for cutter blades and in its periphery with inclined grooves for bit carriers, said cutter blades, and means to adjustably secure the blades in their respective grooves, of bit carriers adjustably secured in said inclined grooves and provided with convex bit-seats for said carriers, and means to secure said bits in adjusted rotary positions upon said seats.

4. The combination with the head consisting of a hub with an enlarged lower portion having diametrically opposite recesses in its under side, said lower portion being likewise provided upon its under side with grooves for cutter blades and in its periph-

ery with inclined grooves for bit carriers, said cutter blades, and means to adjustably secure the blades in their respective grooves, of bit carriers adjustably secured in said inclined grooves and provided with convex bit-seats, bits for said carriers, and means to secure said bits in adjusted rotary positions upon said seats.

5. The combination with the head provided with slots in its periphery, of L-shape bit carriers secured in said slots and adjustable in directions inclined with respect to the axis of the head.

6. The combination with the head having slots in the periphery, of bits, and bit carriers seated in said slots and adapted to slide therein and be adjustable in directions obliquely to the axis of the head.

7. In combination with a head, a bit carrier having a convex bit seating face and a stud projecting from said face, a bit formed with a concavity to receive said convex face and with an opening of equal diameter throughout to snugly receive said stud, and means to secure said bit to said seat.

8. The combination with the head having an enlarged lower portion provided with grooves in its periphery, of bit carriers engaging in said grooves adapted to be adjustably moved in inclined directions with respect to the axis of the head.

9. The combination with the head having an enlarged lower portion provided with grooves in its periphery, of bit carriers engaging in said grooves adapted to be adjustably moved in inclined directions with respect to the axis of the head, said bit carriers being each provided with a depending stud in alinement with the direction of the adjustable movements of the respective carriers.

10. In combination with a support, bit carriers, and means whereby said support and carriers are related so that when said carriers are moved in the direction of their length said carriers are adjusted in directions inclined with respect to the axis of the head.

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

WARREN W. PHILBRICK.

Witnesses:

E. H. ALVORD,
A. B. SMITH.