

No. 751,952.

PATENTED FEB. 9, 1904.

E. S. SHIMER.  
ROTARY CUTTER HEAD.  
APPLICATION FILED JULY 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

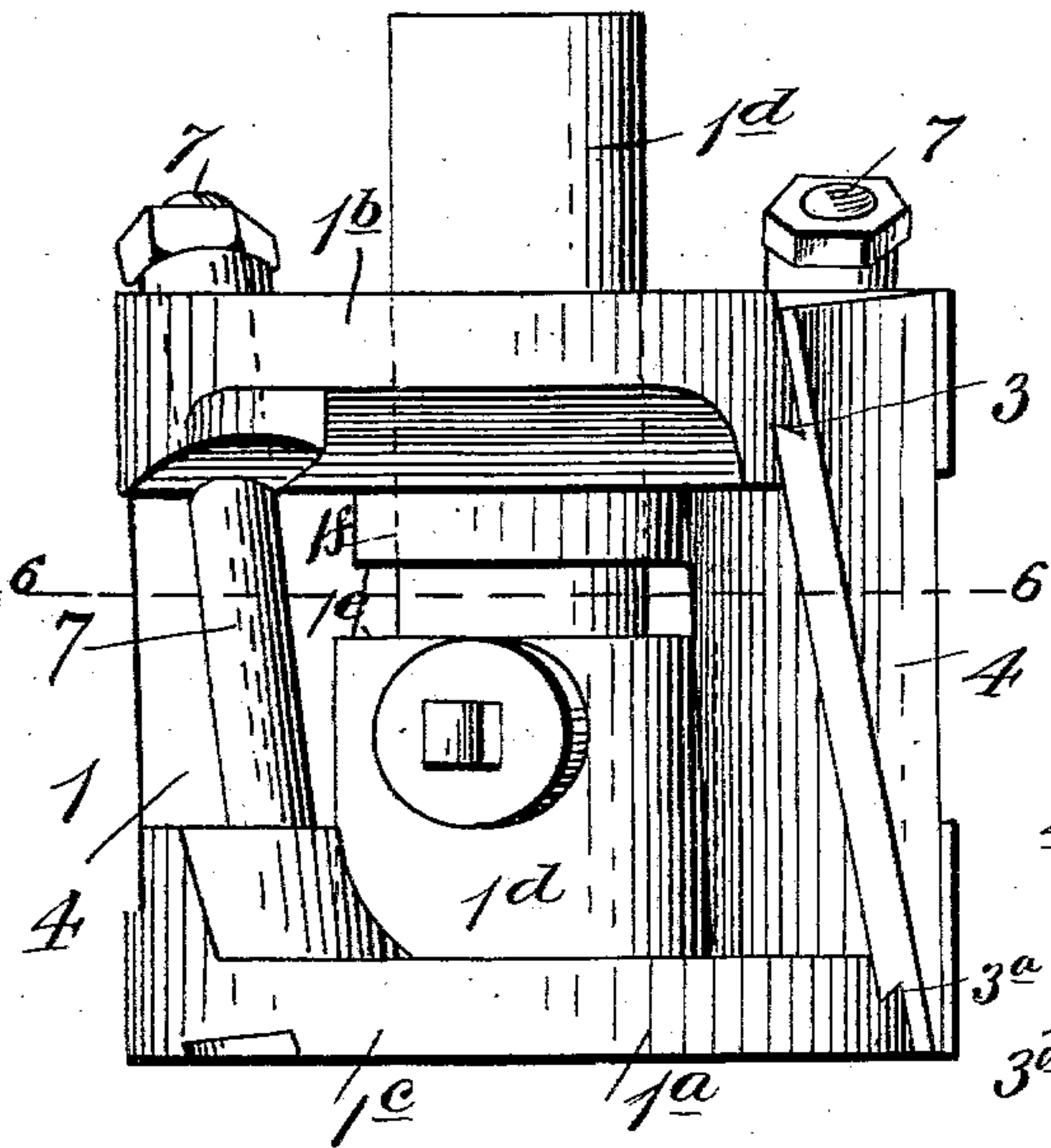


Fig. 1.

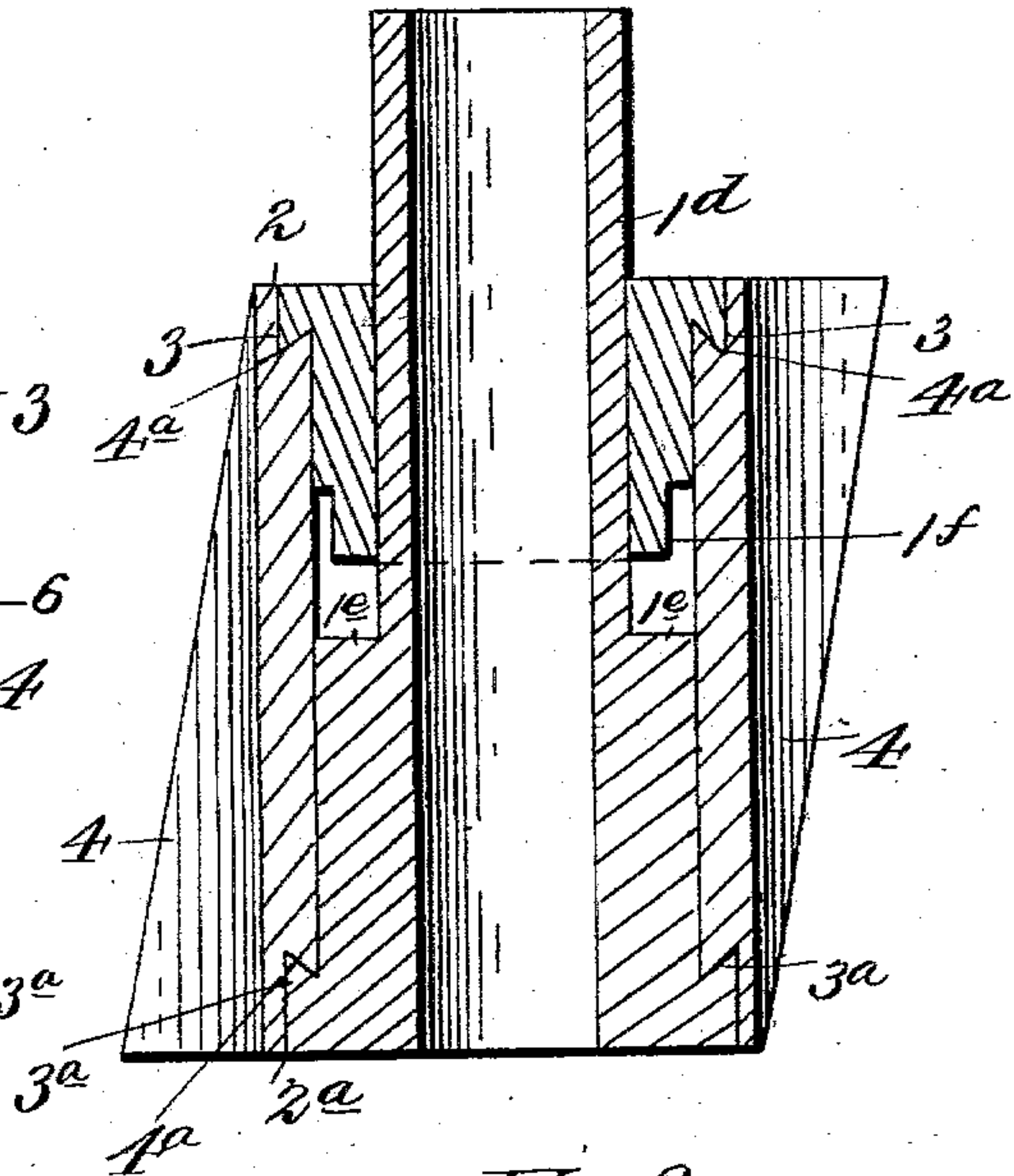


Fig. 2.

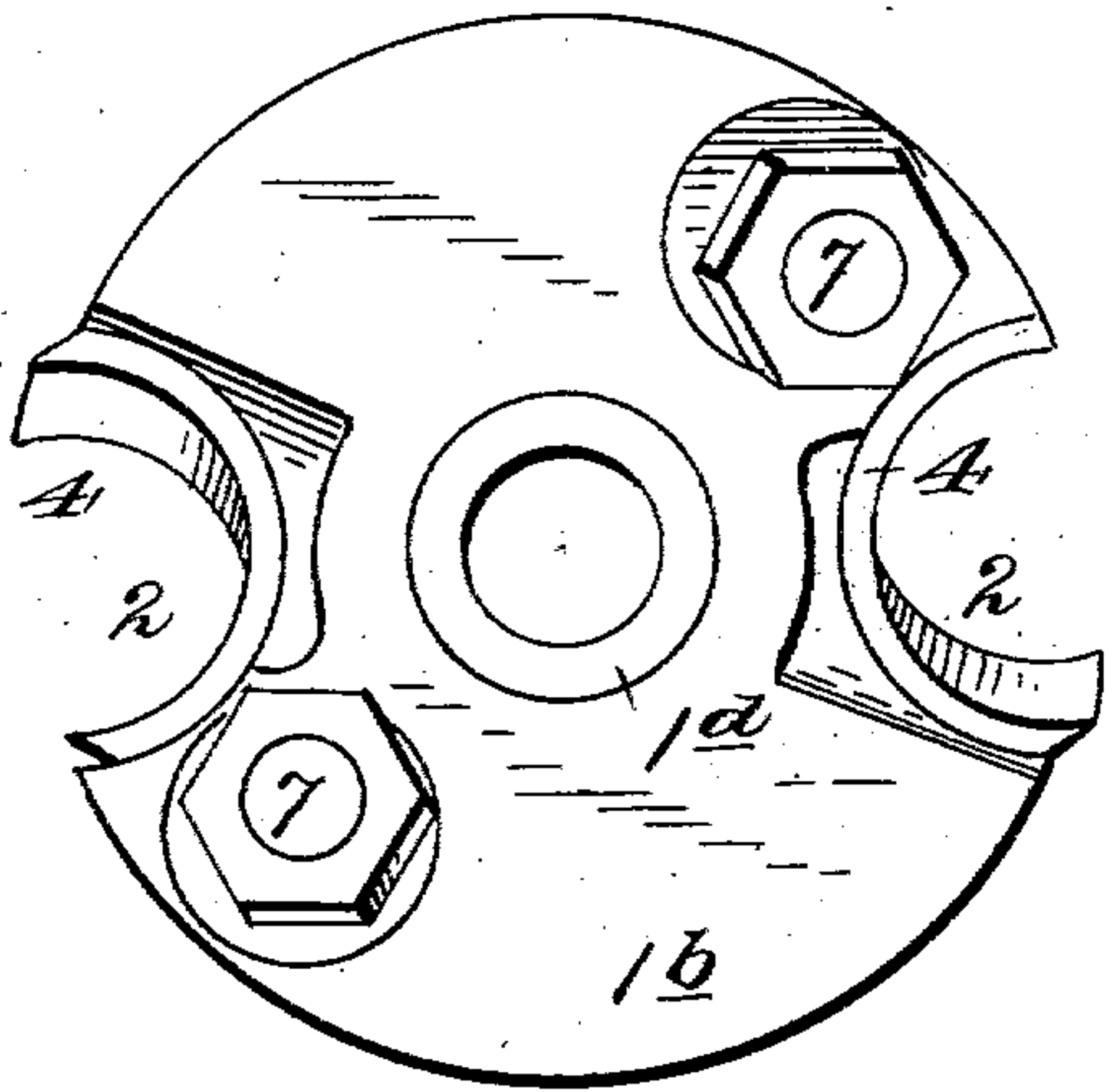


Fig. 3.

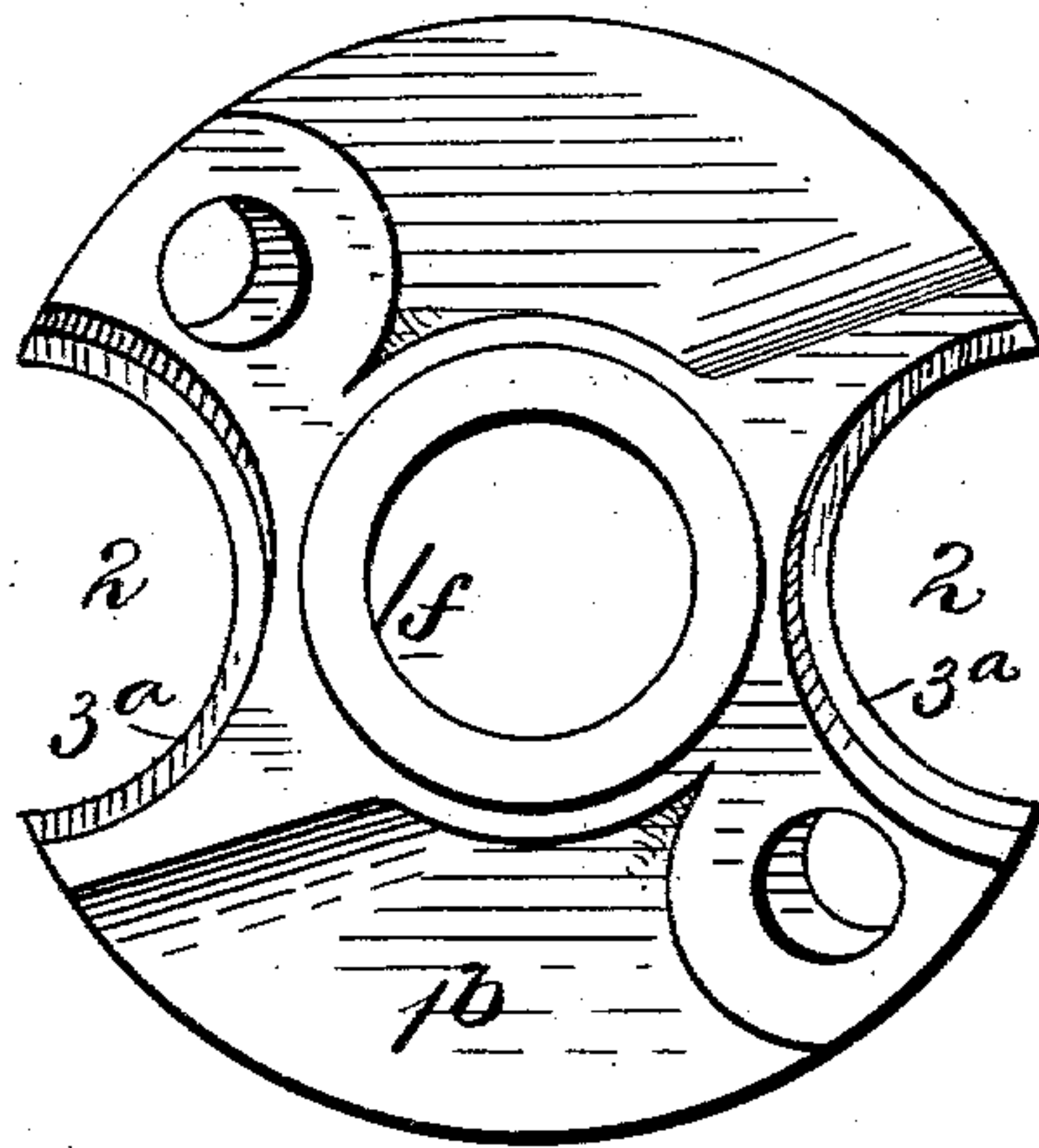


Fig. 4.

Witnesses:

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2 SHEETS—SHEET 2.

Fig. 5.

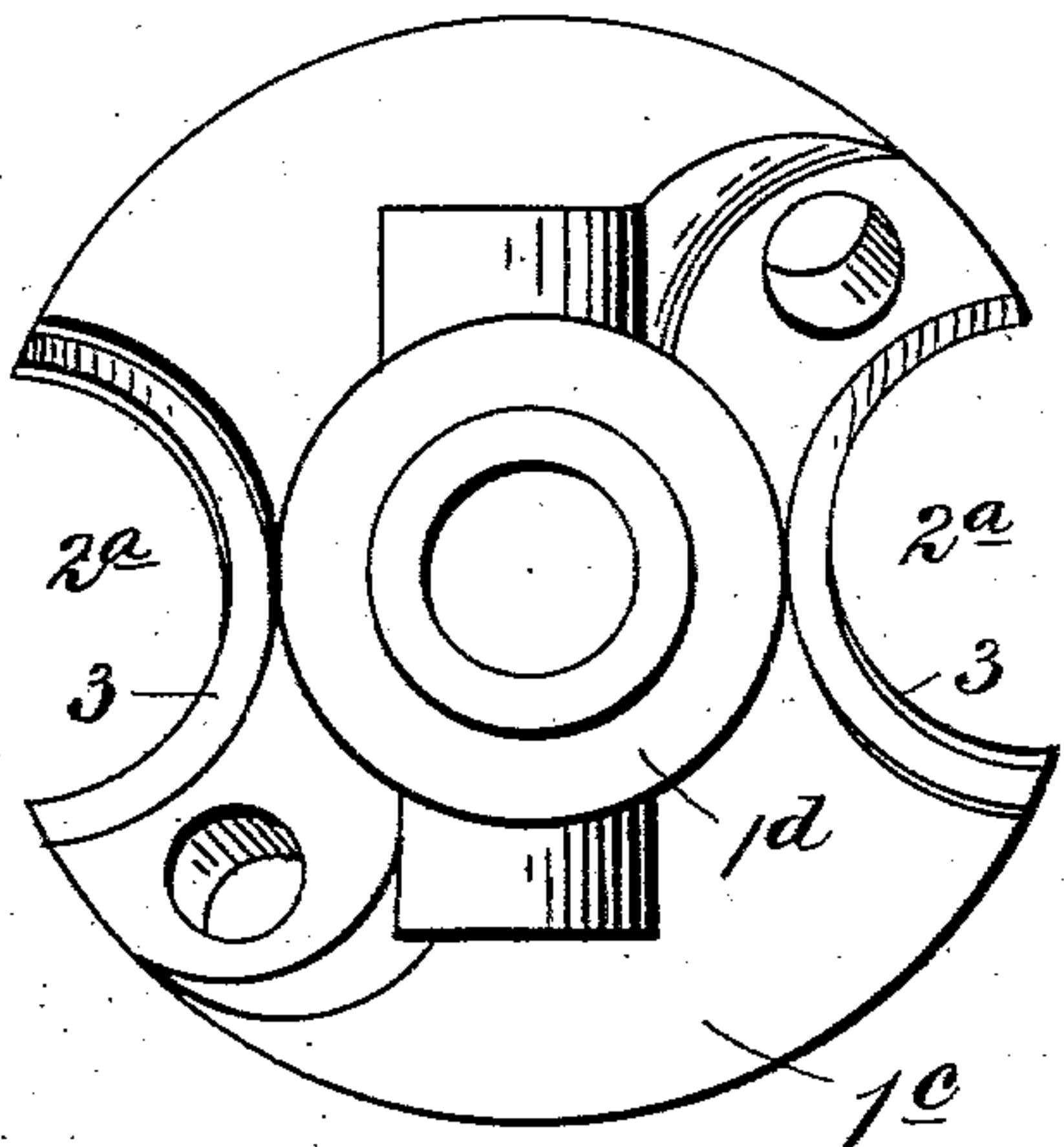


Fig. 6.

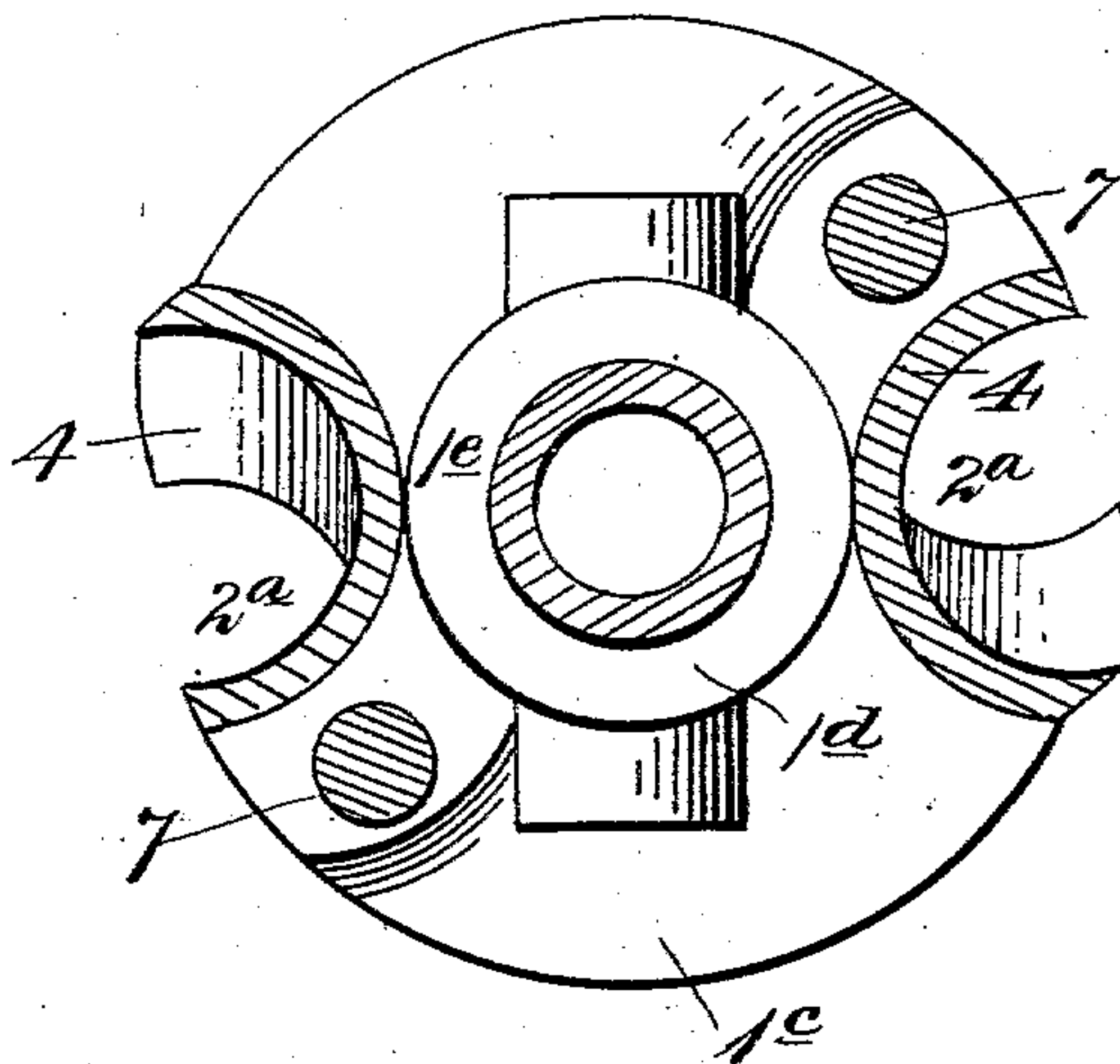


Fig. 7.

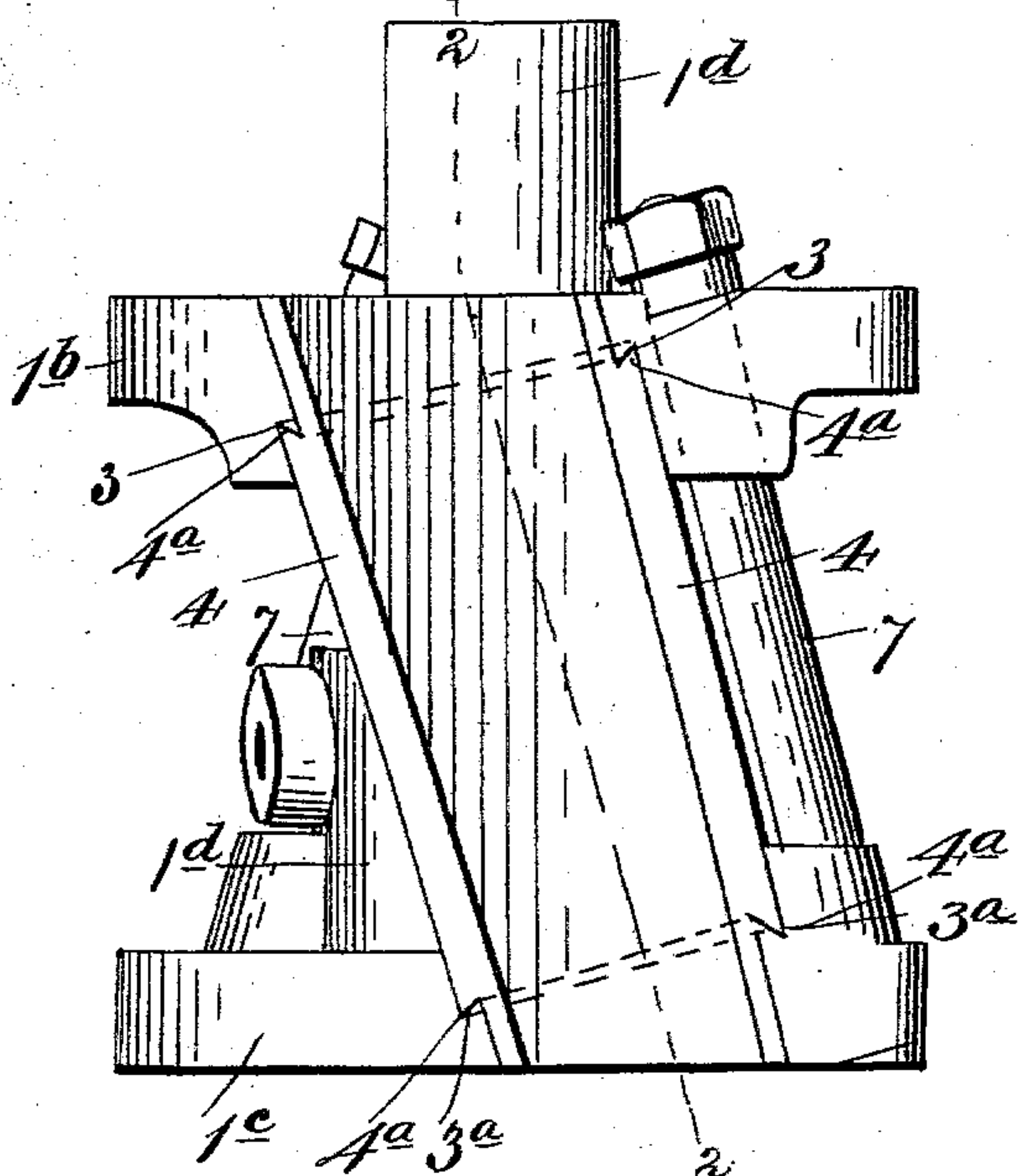


Fig. 8.

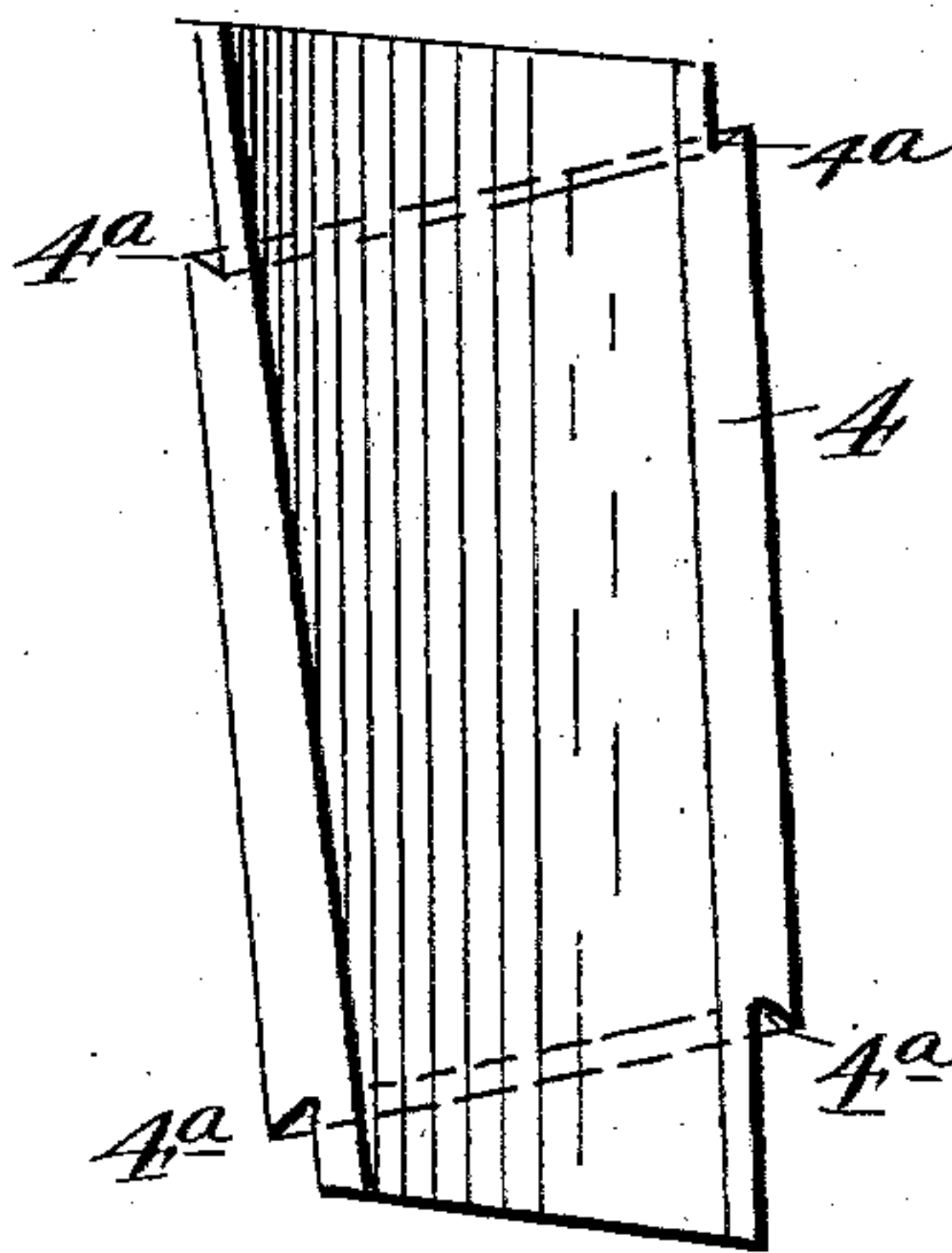
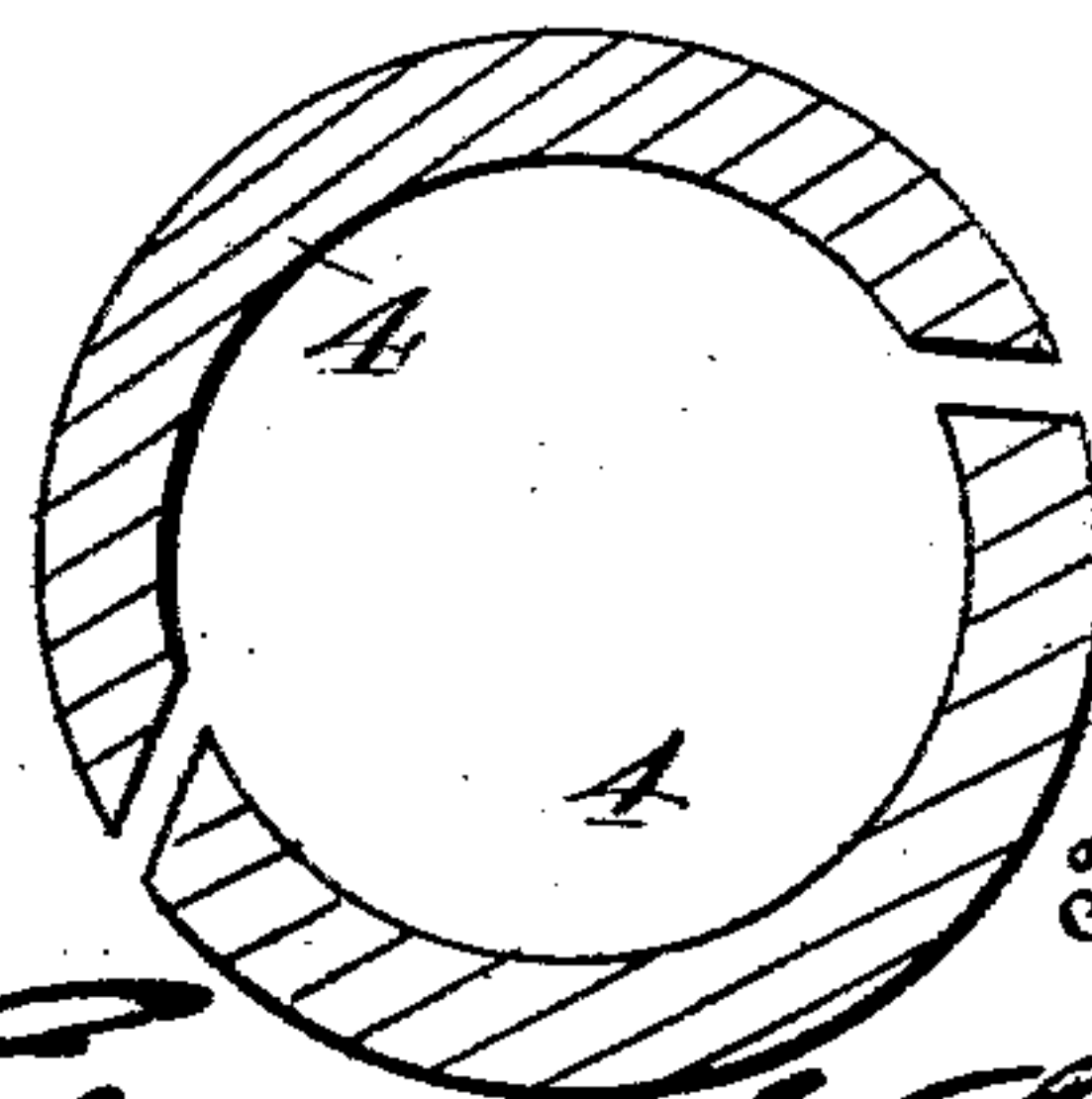


Fig. 9.



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# UNITED STATES PATENT OFFICE.

ELMER S. SHIMER, OF MILTON, PENNSYLVANIA.

## ROTARY CUTTER-HEAD.

SPECIFICATION forming part of Letters Patent No. 751,952, dated February 9, 1904.

Application filed July 20, 1903. Serial No. 166,342. (No model.)

*To all whom it may concern:*

Be it known that I, ELMER S. SHIMER, a citizen of the United States, residing at Milton, in the county of Northumberland and State of Pennsylvania, have invented new and useful Improvements in Rotary Cutter-Heads, of which the following is a specification.

My invention relates to improvements in rotary cutter-heads, more especially for jointing the edges of lumber for glue-produced joints and like work, as where flat or straight surfaces are desirable.

It contemplates the improving of that type or class of cutter-head knives or cutters arranged diagonally or in an inclined position to the axial plane of the cutter-head, while it is equally applicable to such knives or cutters otherwise arranged—as, for instance, parallel with said axial plane, wherein the edge of the knife from one end upward or downward engages or begins to cut the material in advance of the other portion of such edge as the carrying-head revolves, said knife thus gradually producing the cut, shearing upwardly or downwardly, according to the pitch or inclination of the knife. Among other advantages of the aforesaid cutting action it may be noted that a smoother finish than is otherwise obtainable is thus produced, consequently the turning out of a better class of work. In cutter-heads of this description it is desirable to have the knives to project to the extreme upper and lower limits of the head and in some instances even beyond those points, the space for which in many machines of this character, however, is limited or prescribed within certain measurements or bounds.

The object of such contemplated improvement is to firmly or solidly hold the knives in working position and to effect this purpose, together with the holding of the component parts of the knife-carrying head, in a substantial way.

The nature of my invention consists of means for carrying out said ends, substantially as hereinafter more fully described, and specifically pointed out by the claims concluding the following description.

In the accompanying drawings, illustrating the preferred embodiment of my invention,

Figure 1 is a side elevation thereof. Fig. 2 is a vertical section taken in the oblique plane of a cutter or knife. Fig. 3 is a plan view. Fig. 4 is an inverted view of the upper cutter-head member. Fig. 5 is a plan view of the lower member of said head. Fig. 6 is a horizontal section taken centrally about of the cutter-head, including the cutter or knife. Fig. 7 is a front elevation of my cutter-head. Fig. 8 is a view of one of my knives. Fig. 9 is a cross-section through a knife blank or cylinder.

In practicing my invention I constitute the cutter-head proper, 1, of two members  $1^a$   $1^b$ , the lower one preferably being produced in general of a circular or disk-like base  $1^c$ , with an upper tubular extension or sleeve  $1^d$ , having, preferably, trunnion-like lateral elongations, and directly above these latter said tubular extension or sleeve is formed with a shoulder  $1^e$  by reducing the same diametrically. The upper member of said cutter-head, also of general disk-like conformation, has a central tubular collar-like portion  $1^f$ , facing downwardly and fitting or slipped upon the tubular portion or sleeve  $1^d$  of the lower member. The details of construction thus far described are of no particular moment as relates to the material points of my invention. Said upper and lower members are provided with segmental cutter-receiving recesses or seats  $2$   $2^a$ , respectively, the special dip or inclination of which, as relates to the plane of rotation of the heads or cutters, constituting, however, no feature in particular thereof so far as the claims set up herein are concerned. These seats have produced around their arcuate surfaces shoulders or offsets  $3$   $3^a$ , respectively, facing upwardly and downwardly or oppositely to each other, the purpose of which will presently appear. Said offsets or shoulders conform in inclination or dip to the diagonal position the cutters or knives are designed to occupy, later described, and preferably are of an undercut or dovetailed character, as shown, the function of which will be seen hereinafter.

The cutters or knives 4, as above noted, are arranged in a pronounced diagonal position purposely to effect a shear cutting action upon the material treated, each two being prefer-



ably produced from a common cylinder of tool-steel forging bored out and reamed its full or entire length, said cylinder being then cut in two through its longitudinal center, each half thereof thus forming a knife or cutter, said cylinder being also previously formed of considerable thickness in cross-section the greater portion of its length and reduced short distances from its ends. Said knives or cutters are each thus produced in like manner, as said cylinder is split longitudinally, as above noted. By this construction each knife or cutter is thus formed with a shoulder 4<sup>a</sup> near each end, said shoulder being inclined to conform or correspond to the inclination of the shoulders or offsets 3 3<sup>a</sup> of the upper and lower member cutter-receiving seats. Said shoulders or offsets 4<sup>a</sup> are also of a dovetailed or undercut construction to interlock or interfit into the shoulders or offsets of said upper and lower members of the cutter-head. This construction has a twofold effect—first, to permit of the solid or firm locking of the knives and cutter-heads together as they are brought or bolted forcibly together and also to allow said cutters to extend the full length of the cutter-head at their ends or even beyond the limits of said head, if desired. Said knives or cutters are each formed along one edge from the inner surface with the cutting edge to bring the same prominently forward to perform the maximum cutting action and which edge projects an equal or uniform distance throughout from the axis of the cutter-head.

The bolts 7 connecting together and passing through the upper and lower members of the cutter-head are disposed close to and at the rear of and correspondingly inclined with the cutters or knives, the lower, preferably flat-headed, ends of said bolts being countersunk into said lower member and the upper ends of said bolts being held in place by nuts bearing upon said upper member. The bolts, as stated, having a corresponding inclination with said knives and bearing similarly upon said lower member as well as connected up in like manner with said upper member, effect, together with the corresponding bearing afforded by the offsets or shoulders between said knives and upper and lower members, a solid and unyielding connection between said parts. It is also obvious that the shoulders or offsets on the knives and in the knife-seats in said upper and lower members of the cutter-heads may be produced on lines which would allow said knives to be arranged par-

allel with the axis of the cutter-head in cases requiring such arrangement thereof.

It will be observed that I do not limit myself to details herein, as they may be changed as circumstances suggest without departing from the spirit of my invention and said invention still be protected.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A cutter-head knife having upon its back portion, near the ends, segmental shoulders or offsets, said shoulders or offsets being arranged in diagonal planes, and engaging corresponding shoulders upon the cutter-head, and adapted to allow said knife to extend the full length of said head, and means to hold said knife in operative position.

2. A cutter-head having segmental seats opening therethrough and having shoulders arranged in diagonal planes around said seats, and a segmental cutter having upon its back portion, near the ends, corresponding shoulders, also arranged in diagonal planes and engaging the aforesaid shoulders, said cutter being arranged in said seats, permitting it to extend the full length of said cutter-head, and means to retain said cutter in said head for effective action.

3. A cutter-head having its flanges provided with semicircular openings or seats and with shoulders around said seats or openings, and a knife or bit having its inner semicylindrical surface forming the cutting edge, and its exterior convex surface provided near the ends thereof with shoulders engaging the aforesaid openings and shoulders of said flanges, respectively.

4. A cutter-head having its flanges provided with semicircular openings or seats, and with shoulders around said seats or openings, and a semicylindrical cutter or bit having its plain inner surface adapted to serve as the cutting edge, and whose end portions are of less cross-sectional area or thinner than its central body portion thus forming shoulders, said thin end portions and shoulders interlocking with the shoulders and seats of said flanges.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ELMER S. SHIMER.

Witnesses:

W. BRUCE CLINGER,  
C. E. RAUP.