

(No Model.)

2 Sheets—Sheet 1.

O. L. NOBLE & E. CHILDS.

HEEL TRIMMING MACHINE.

No. 389,759.

Patented Sept. 18, 1888.

FIG. 1.

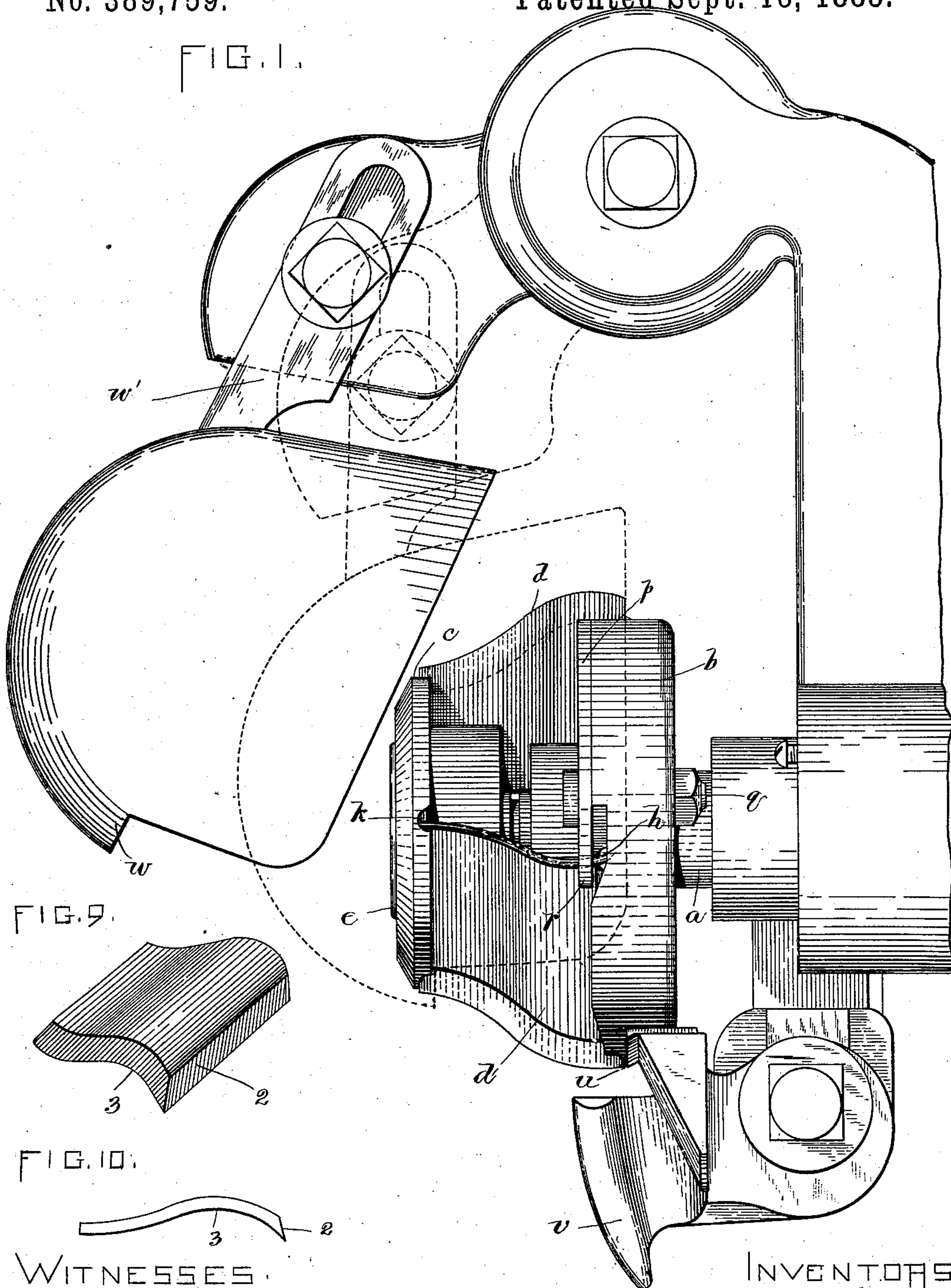


FIG. 9.

FIG. 10.

WITNESSES.

H. Brown  
A. J. Harrison

INVENTORS.

O. L. Noble  
Eugene Childs  
By M. B. Brown, Attorney.



(No Model.)

2 Sheets—Sheet 2.

O. L. NOBLE & E. CHILDS.

HEEL TRIMMING MACHINE.

No. 389,759.

Patented Sept. 18, 1888.

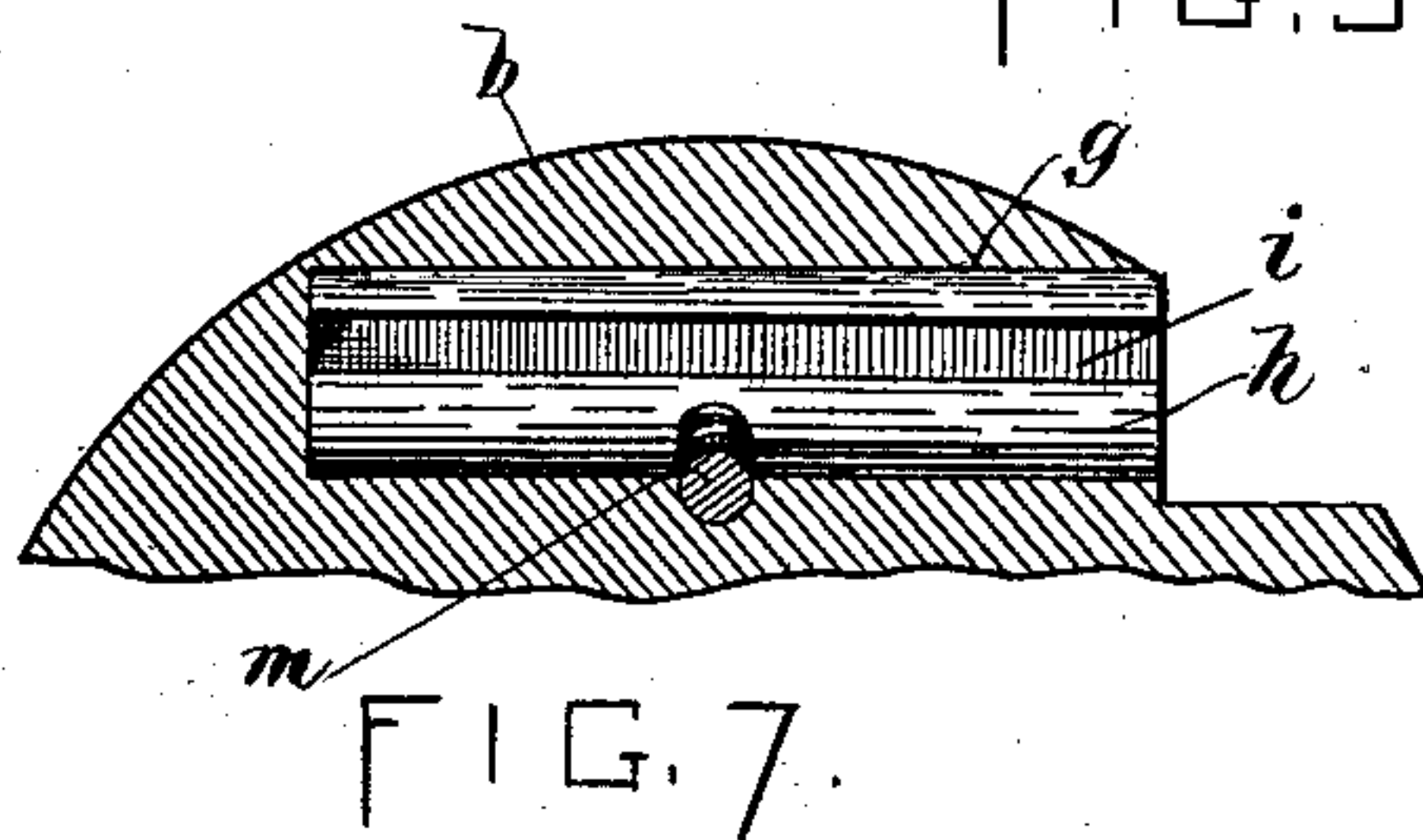
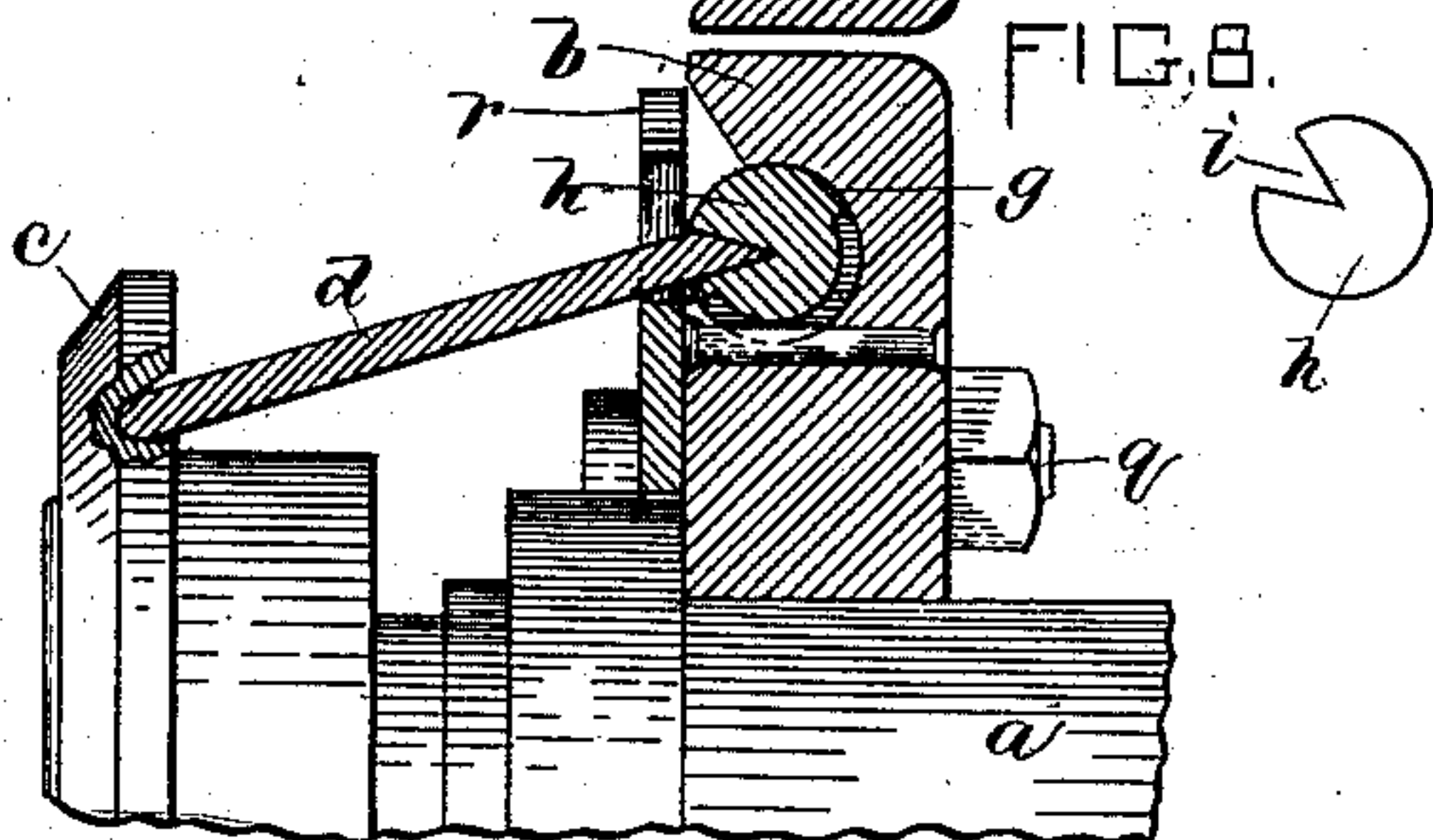
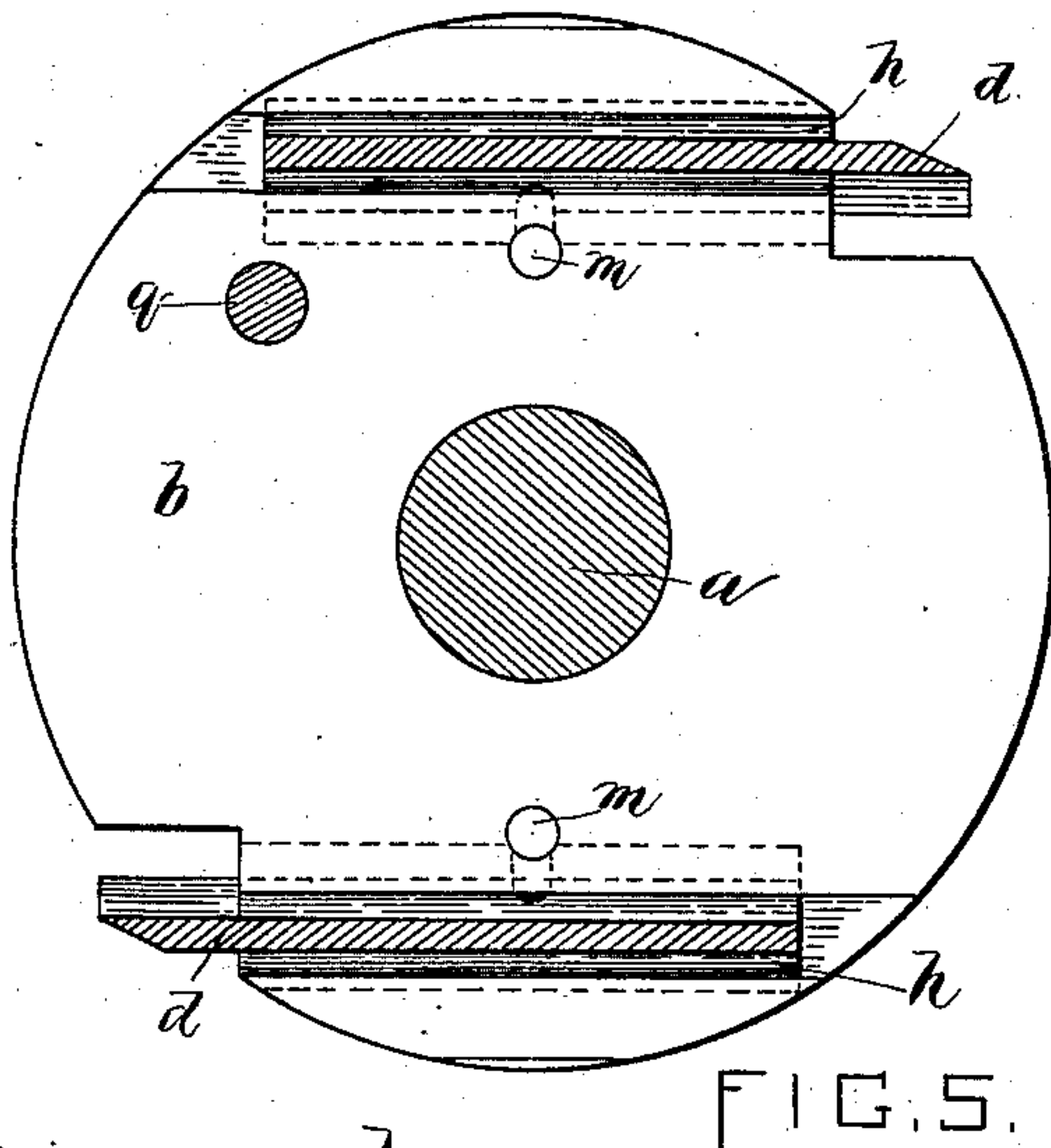
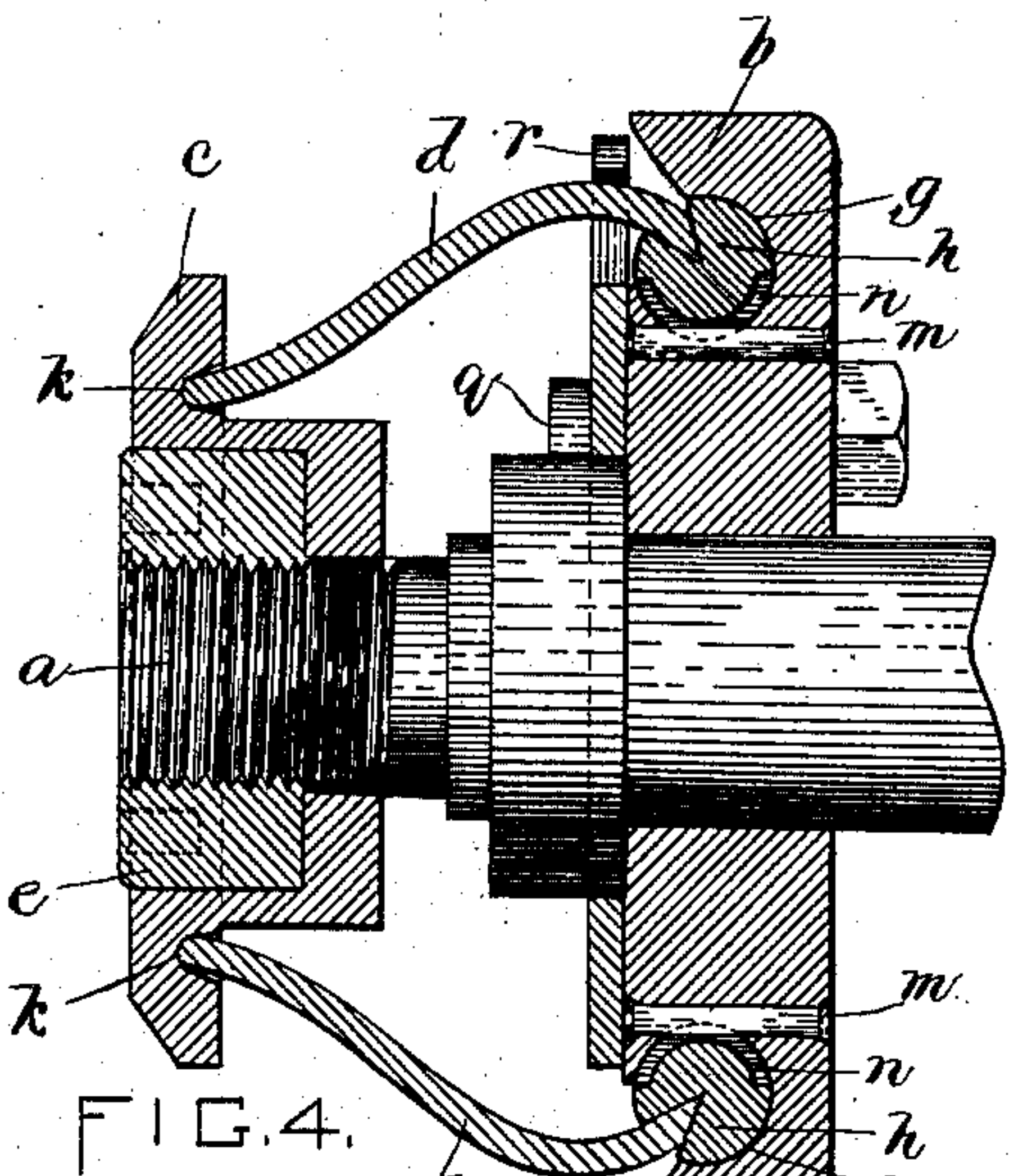
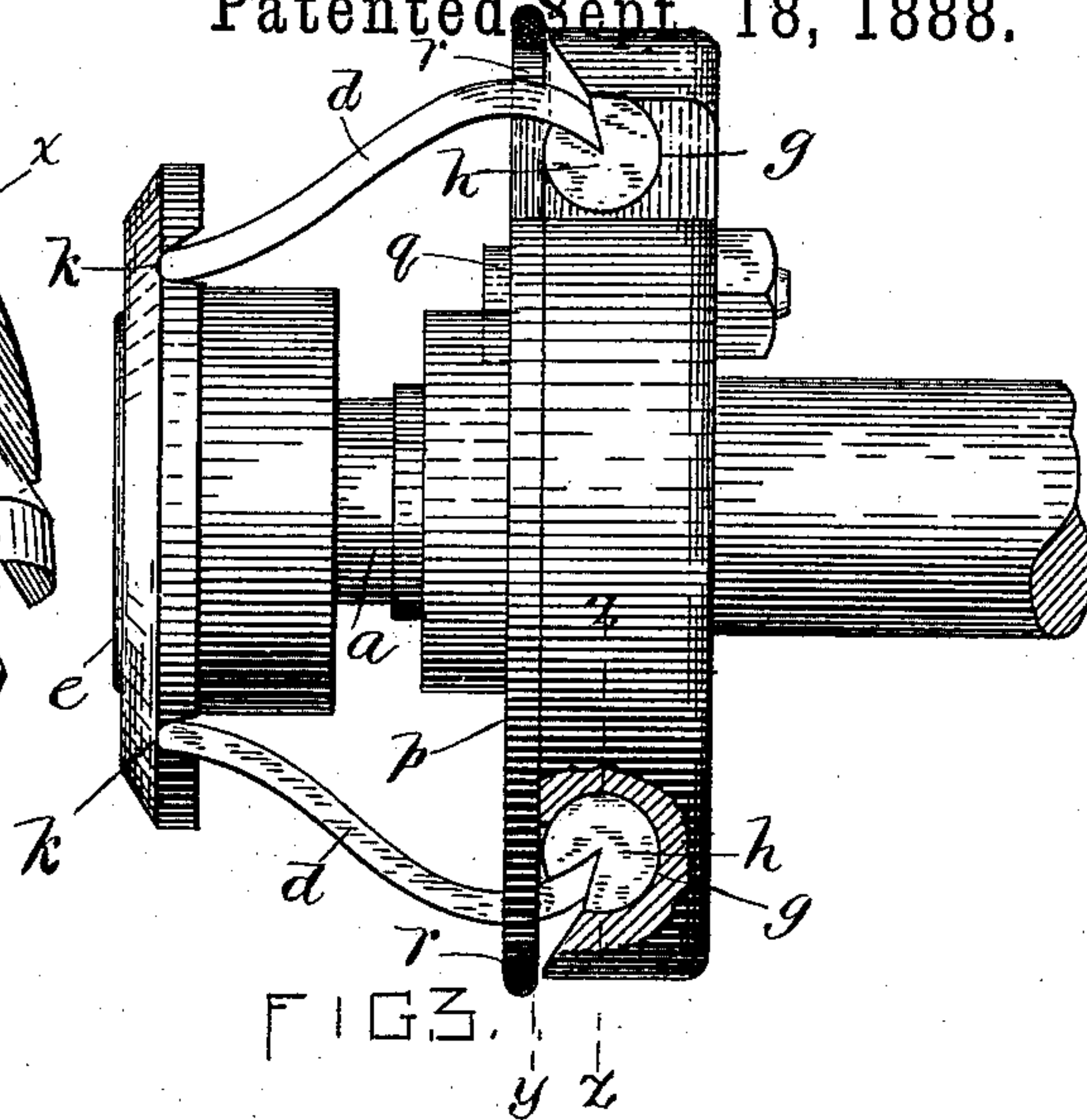
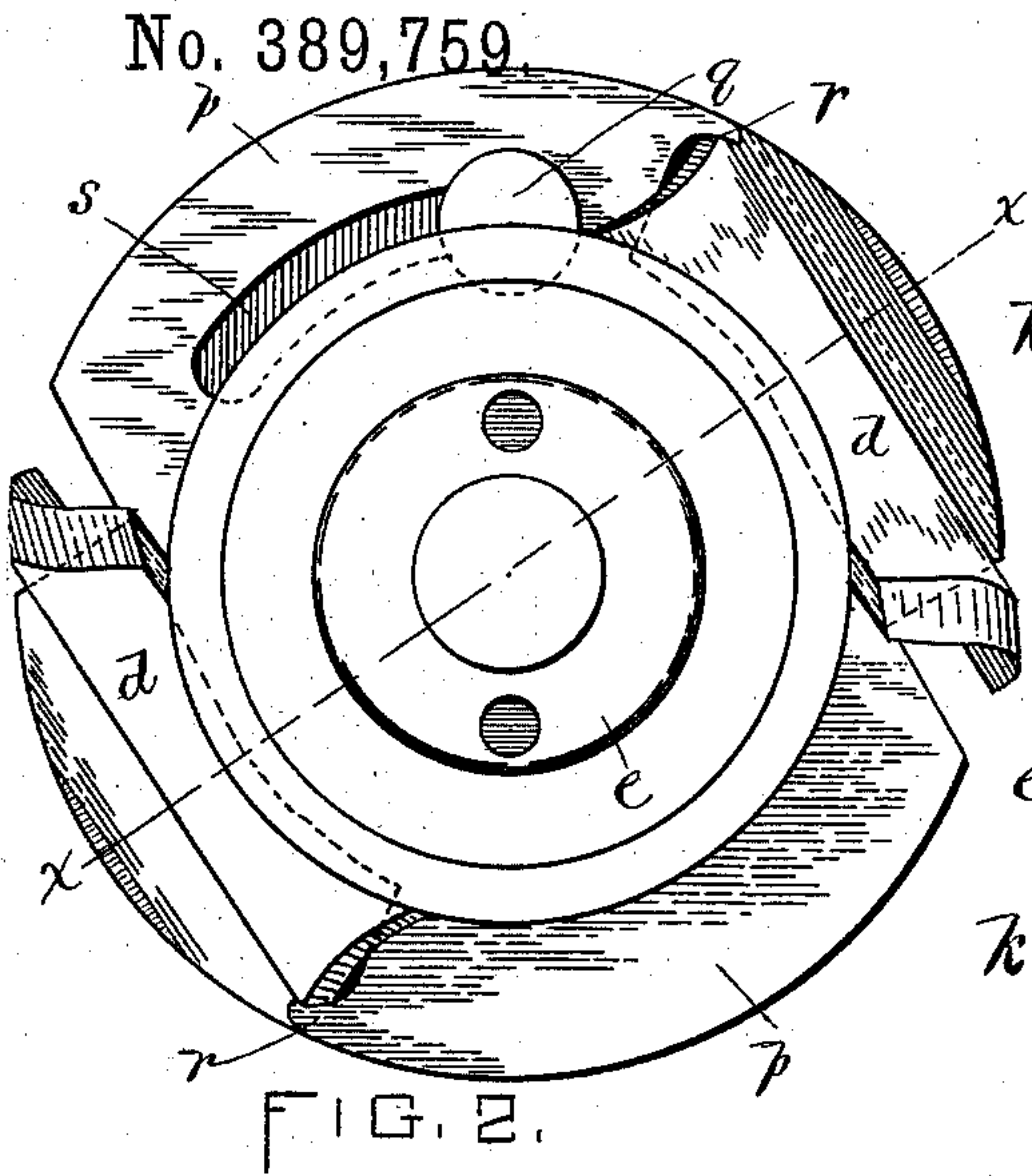


FIG. 6.  
WITNESSES.  
H. Brown  
A. D. Harman.

INVENTORS.  
O. L. Noble  
Eugene Childs  
Wright Brown Crossley  
Attys.



# UNITED STATES PATENT OFFICE.

OSCAR L. NOBLE AND EUGENE CHILDS, OF BOSTON, MASSACHUSETTS, ASSIGNORS TO THE UNION HEEL TRIMMER COMPANY, OF SAME PLACE.

## HEEL-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 389,759, dated September 18, 1888.

Application filed June 23, 1888. Serial No. 277,985. (No model.)

*To all whom it may concern:*

Be it known that we, OSCAR L. NOBLE and EUGENE CHILDS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Heel-Trimming Cutter-Heads, of which the following is a specification.

This invention has for its object to provide an improved heel-trimming cutter-head of the class in which the cutting knives or blades are clamped between two shoulders or collars on a shaft.

The invention consists, chiefly, in the provision of cylindrical jaws in one of the collars of the shaft, said jaws being fitted in sockets in said collar, so as to be capable of rotating or partly rotating thereon, and each provided with a groove formed to receive one of the side edges of a blade, the rotatability of the jaws enabling their grooves to conform to the inclination or curvature of different blades.

The invention also consists in certain improvements in the means for supporting the backs of the blades of the cutter at different points, as may be required by the forward movement of the blades from time to time to compensate for wear of their cutting-edges.

The invention also consists in certain details, all of which we will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top view of a cutter having our improvements, said view showing, also, a counter-guard and rests for the side and top lift of the heel. Fig. 2 represents an end view of the cutter-head. Fig. 3 represents a side view of the cutter-head, one of the collars being partly in section. Fig. 4 represents a section on line *x x*, Fig. 2. Fig. 5 represents a section on line *y y*, Fig. 3. Fig. 6 represents a partial longitudinal section of the cutter-head, showing a straight blade. Fig. 7 represents a section of the collar *b* on the line *z z*, Fig. 3, the swiveled jaw or holder being shown in side elevation in said figure. Fig. 8 shows end elevations of the jaw or holder. Fig. 9 represents a perspective view of one of the blades, and Fig. 10 an end view of the same.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the shaft of our improved cutter-head, and *b c* represent the collars, between which the cutting-blades *d d* are held, the larger collar, *b*, being rigidly affixed to the shaft in any suitable way, while the outer collar, *c*, is movable on the shaft toward and from the collar *b*, and may be adjusted on the shaft to either hold or release the blades *d* by a nut, *e*, contained in an annular cavity formed in the outer side of the collar *c*, and engaged with the screw-threaded outer end of the shaft *a*. The side edges of the blades are fitted in grooves, and are firmly clamped by a movement of the collar *c* toward the collar *b*, and released by an opposite movement of the collar *c*.

Heretofore cutters of the general construction above described have had both of the knife-receiving grooves formed in inner surfaces of the collars *b c*.

In carrying out our invention, instead of forming the groove that holds the inner end of each blade directly in the collar *b*, we provide said collar with sockets or cavities *g*, in which are fitted cylindrical jaws or knife-holders *h*—one for each blade. Each holder *h* has a longitudinal groove, *i*, in one side, formed to receive the inner end of a blade, *d*, the opposite end of said blade being held, as usual, in a groove, *k*, formed in the inner side of the collar *c*.

Each holder *h* is adapted to rotate in its socket, but is prevented from moving endwise by a stud, *m*, inserted in the collar *b* and entering a peripheral groove, *n*, in the holder *h*. The holder is therefore adapted to be turned so that its groove *i* will stand at any desired angle and conform automatically to the shape or curvature of different blades. When the blade is considerably curved at its inner end, the outer end of the groove *i* will be higher than its inner end, as shown in Fig. 4, and when the knife has a lesser curvature the holder will be turned to bring the outer end of its groove toward the center of the cutter. In case the blade has no curvature, as shown in Fig. 6, the outer end of the groove



will be lower or nearer the center of the cutter than its inner end. The groove *i* extends radially from the periphery of the holder *h* to the center thereof, and is formed so that the cutting-edge of the blade will extend to the center of the holder *h*, and will therefore always have the same relation to the holder and the collar *b*—that is to say, the end of the cutting-edge will be on the axis of rotation of the holder, so that said end will always be at the same point whatever may be the shape or curvature of the blade. It will be seen, therefore, that the rotatable or swiveled holders in the collar *b* enable differently-shaped blades to be used interchangeably with the same collars.

The groove *i* is preferably made V-shaped, both of its sides extending radially from the center of the jaw or holder *h*. The end 2 of the blade that is inserted in the groove *i* is beveled to give it a V shape, fitting the groove *i*, the cutting-edge 3 of said blade being continued to the apex of the V, as shown in Figs. 9 and 10, so that said cutting edge extends, as already stated, to the center of the jaw or holder.

The V shape of the groove *i* and of the end of the blade enables the blade to be easily inserted in the groove and to fit accurately therein, the beveled surface or end 2 having the same angle with relation to the cutting-edge in all the cutters. Said beveled end co-operates with the corresponding side of the groove *i* in the jaw or holder to force the extreme end of the cutting-edge exactly to the inner end of the groove *i*, thus insuring the location of the end of the cutting edge at the axial center of the jaw or holder.

*p* represents a plate, which is secured by bolts *q q* to the inner side of the collar *b*, and is provided with lugs *r r*, which bear against the heels or rear ends of the blades *d* and support the same against the backward pressure exerted upon them when in operation. Said plate is provided with segmental slots *s*, through which the bolts *q q* pass, said slots enabling the plate *p* to be adjusted to conform to the adjustments of the blades required to compensate for wear of their cutting-edges. The edges of the plate *p* between the blades are preferably milled at 2 2, and formed to project slightly outside of the periphery of the collar *b*, so that the plate can be conveniently grasped and turned, as shown only in Fig. 3.

It is obvious that one or more holders, *h*, and blades *d* may be used in each cutter-head.

*u* represents a top-lift rest, *v* a rest for the side of the heel, and *w* a counter-guard sup-

ported by a swinging arm, *w'*, said parts *u v w* being well-known adjuncts of a heel-trimming machine. The top-lift rest *u* is arranged with its shorter wall, which supports the edge of the top lift about flush with the inner end of the cutting-edge of the blade *d*, as shown in Fig. 1.

We claim—

1. A cutter-head of the class herein described, having a journaled holder in one of its collars provided with a blade-receiving groove, as set forth.

2. In a cutter-head of the class herein described, the combination of a collar having a socket, a holder or jaw journaled in said socket and provided with a blade-receiving groove, and means for preventing longitudinal movement of said holder in the socket, as set forth.

3. The improved cutter-head composed of the adjustable collar *c*, having grooves *k*, the fixed collar *b*, having the swiveled grooved holders or jaws *h*, and the blades inserted in the grooves of the collar *c* and jaws *h*, as set forth.

4. In a cutter head, the combination of the adjustable grooved collar *c*, the fixed collar having the swiveled grooved jaws or holders *h*, the blades held by said grooved collar and swiveled jaws, and the adjustable plate having blade-supporting lugs and projecting milled edges, as set forth.

5. As an improvement in cutter-heads, the cutting-blade having the end 2, which is beveled on the back of the blade to form an acute angle with the inner surface of the blade, and the cutting edge 3, formed on the inner surface of the blade and extended to the apex of said angle, whereby the cutting-edge is extended at one end of the blade beyond the angle formed by the intersection of the end 2 with the back of the blade, and is adapted to enter the apex of a V-shaped groove in a journaled holder.

6. A cutter-blade having the beveled end 2, forming an acute angle, and the cutting-edge 3, extended to the apex of said angle, combined with the cylindrical jaw or holder *h*, having a V-shaped groove, the apex of which is at the axial center of the jaw, as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 19th day of June, A. D. 1888.

OSCAR L. NOBLE.  
EUGENE CHILDS.

Witnesses:

C. F. BROWN,  
A. D. HARRISON.