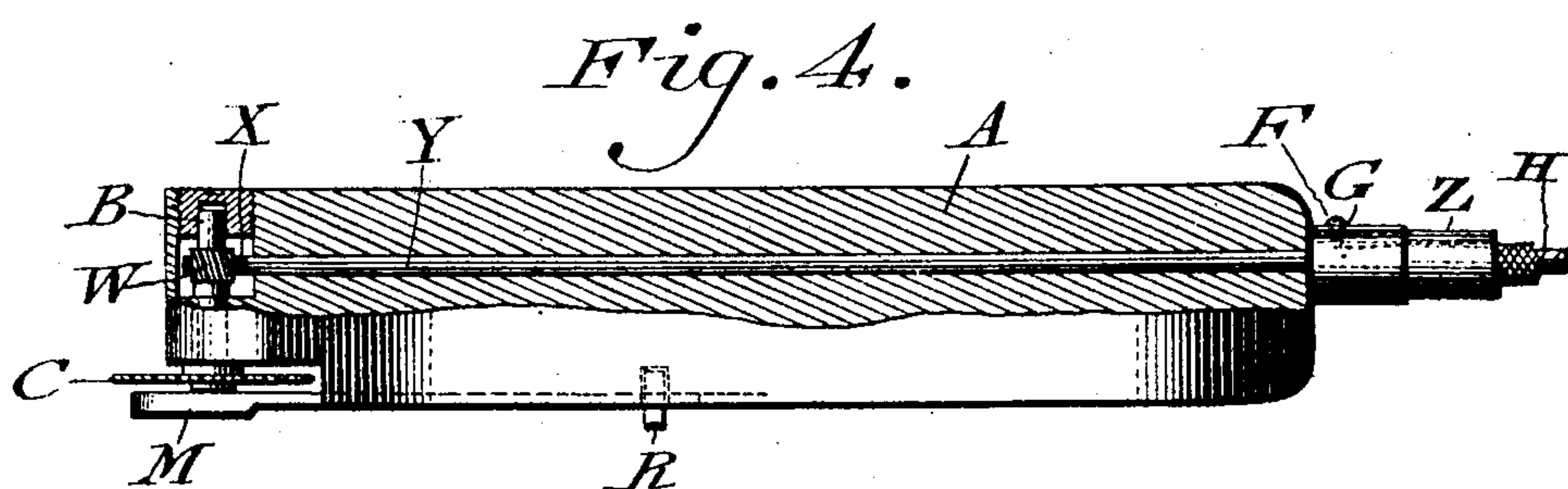
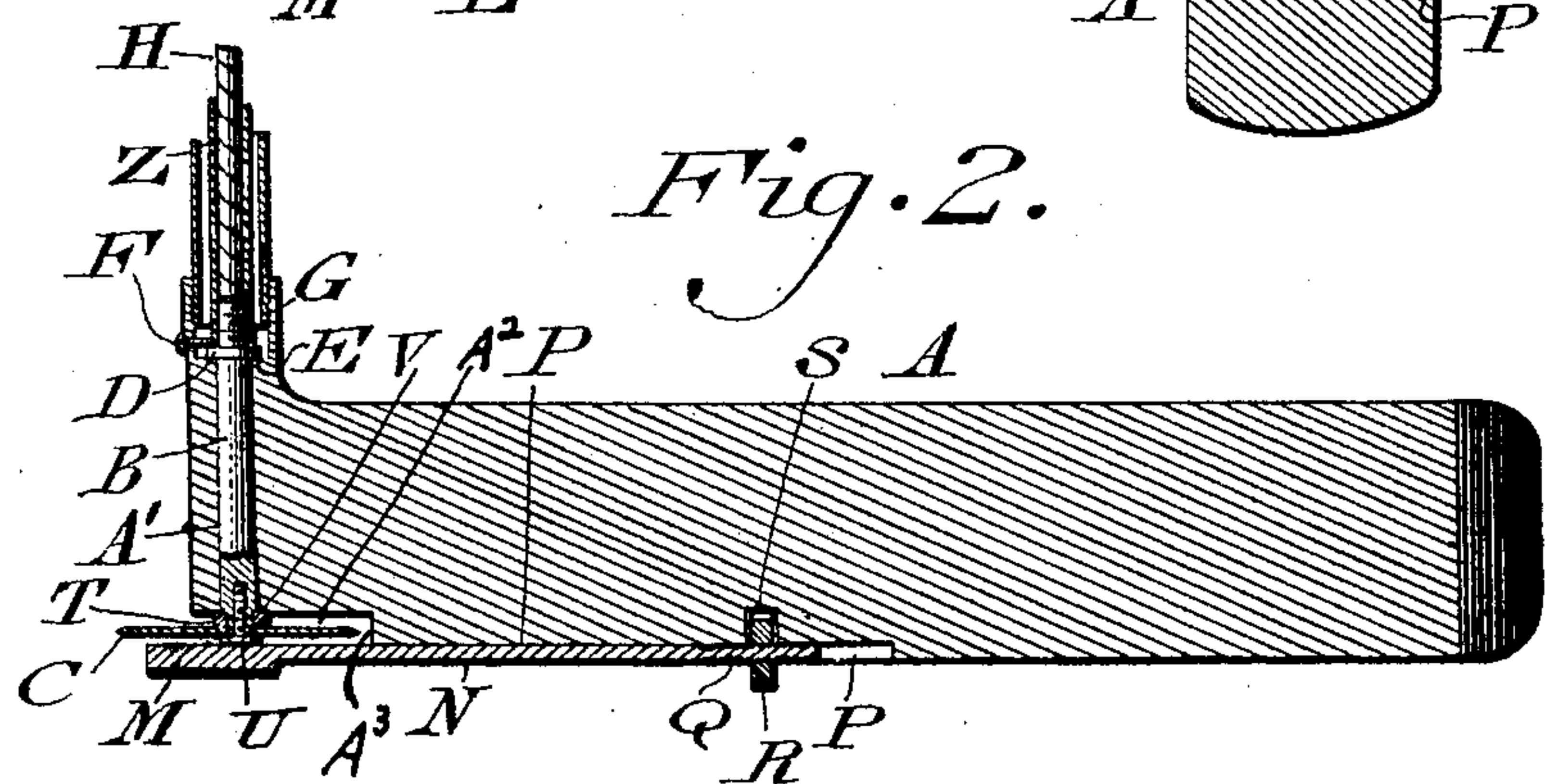
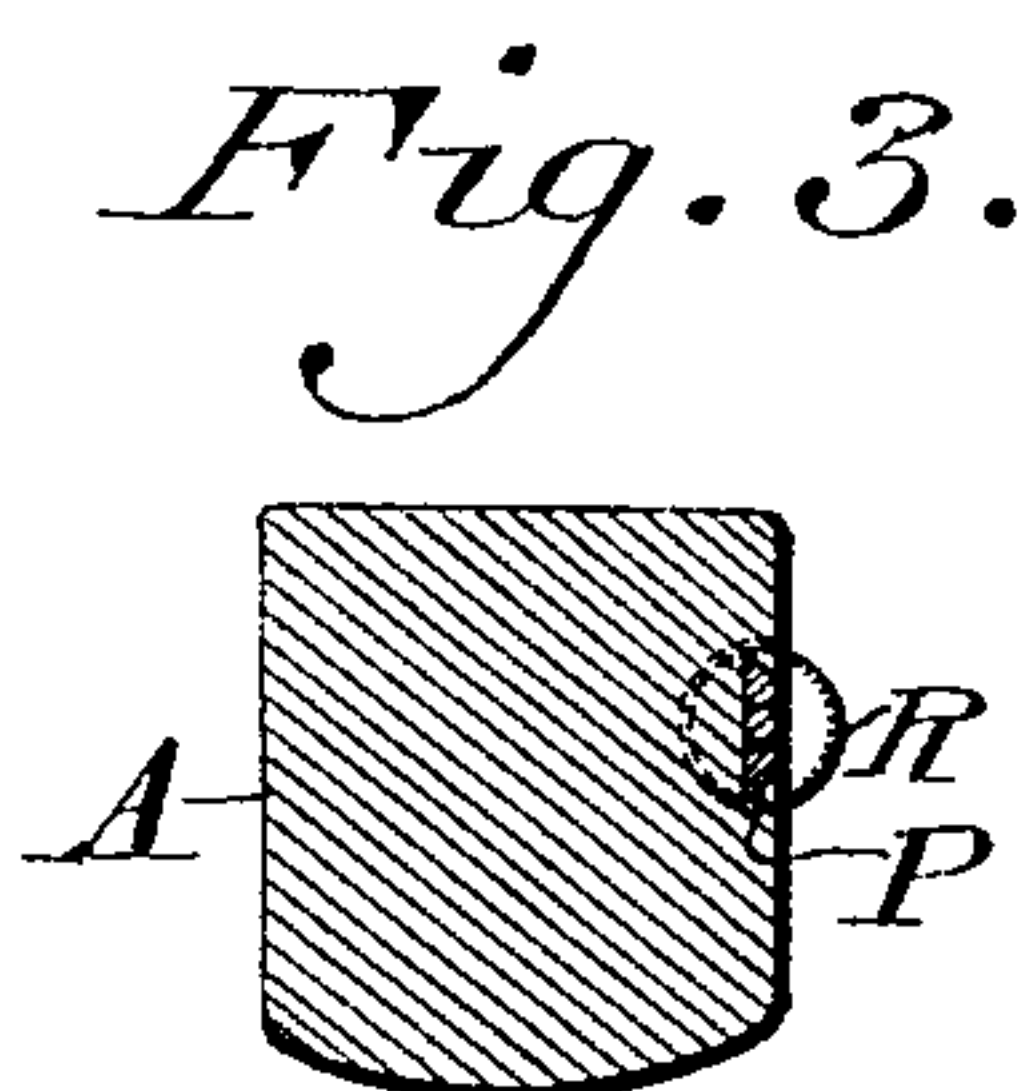
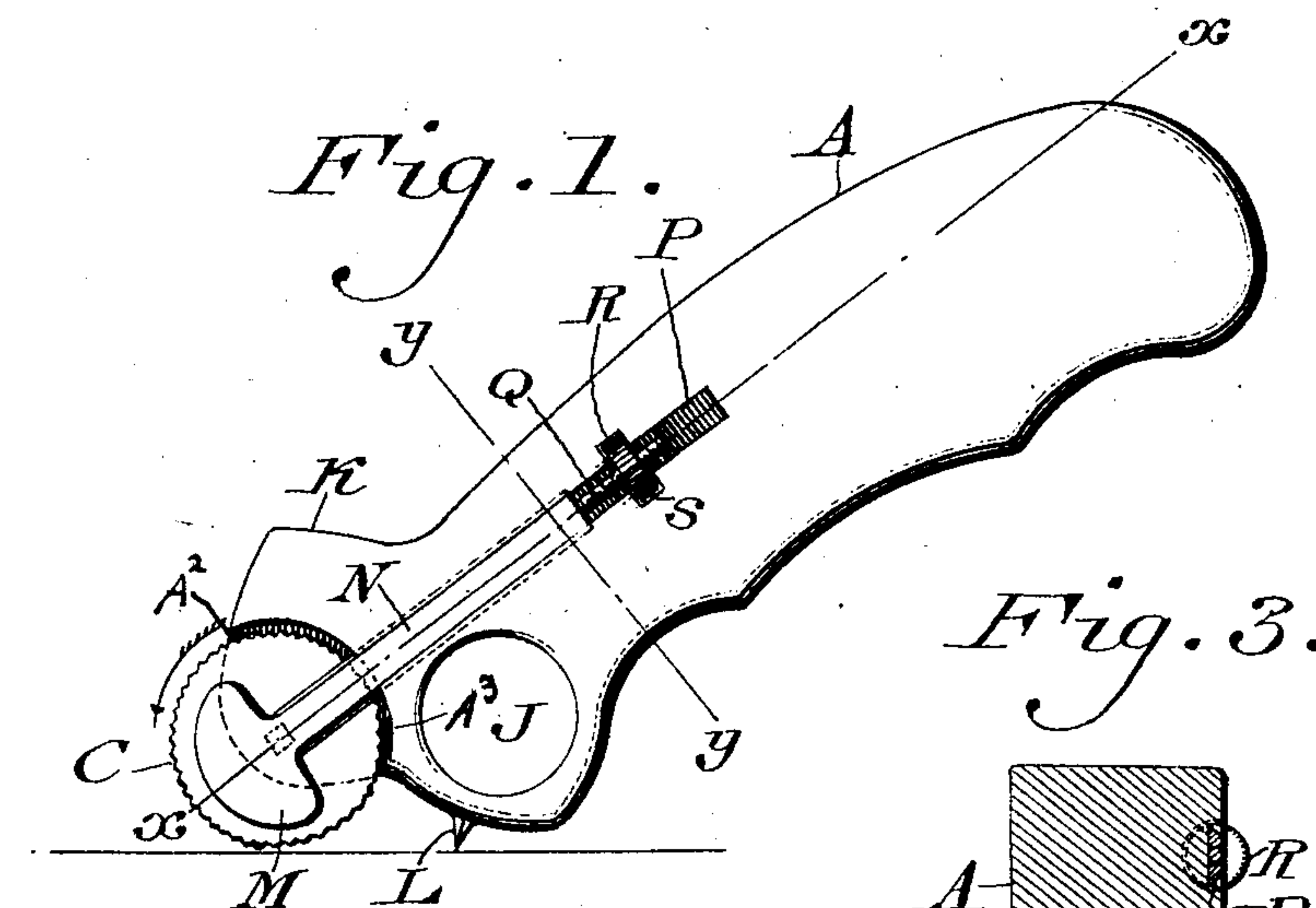


No. 803,498.

PATENTED OCT. 31, 1905.

H. C. MASLAND.  
CRANIAL SAW.  
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# UNITED STATES PATENT OFFICE.

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## CRANIAL SAW.

No. 803,498.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed December 17, 1904. Serial No. 237,265.

*To all whom it may concern:*

Be it known that I, HARVEY C. MASLAND, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Cranial Saw, of which the following is a specification.

My invention consists of a cranial saw which may be conveniently manipulated and guided and is adapted to be rotated by power, the handle being of such substantial weight and construction as to effectively take up the vibration of the rotating saw, thus producing a practical and effective instrument under control of the operator.

Figure 1 represents a side elevation of a cranial saw embodying my invention. Fig. 2 represents a longitudinal section thereof on line *xx*, Fig. 1. Fig. 3 represents a transverse section on line *yy*, Fig. 1. Fig. 4 represents a partial plan view and partial longitudinal section of a modification.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates the handle of the saw, on the forward end of which in the bore A' therein is directly mounted the transversely-extending shaft B, to which is secured the saw C, which in the present case occupies a position at the side of said end of the handle, said side having a recess A<sup>2</sup>, in which the saw rotates, the rear wall of said recess forming a shoulder A<sup>3</sup>. In order to retain said shaft in position in said bore A', it is provided with a collar D, which bears freely against a shoulder E on the adjacent portion of the handle about the bore thereof and which is engaged by the screw F, which passes through a sleeve G on the adjacent side of the handle. The end of the shaft has connected with it a flexible shaft H, which receives power from any suitable source and transmits the same to said shaft B, and consequently to the saw, thus rotating the latter.

In the forward end of the handle A is a transverse opening J for the reception of the forefinger of the hand of the operator, and on the back of said handle comparatively above the arbor or axis of the saw is the shoulder K, against which the thumb is pressed, whereby when the remainder of the hand grasps the handle A the instrument may be most firmly held during operation of the saw or instrument. It will also be noticed that the shoulder A<sup>3</sup> is in front of said opening J, whereby the finger of the operator is prevented from com-

ing in contact with the said teeth. The shoulder K is forward of said opening J, whereby the thumb may exert full and powerful pressure against said shoulder without cramping the hand. Furthermore, the thumb on the shoulder K exerts both downward and forward pressure on the arbor, and consequently causes the saw to be presented close to its work directly at the forward end of the handle and powerfully forced against the bone, while the work may be seen and watched and performed with the best results.

In order to cause the instrument to take hold primarily of the bone, the under side of the same is formed or provided with a downwardly-projecting spur L, which is adapted to engage with the bone so as to prevent slipping of the instrument, after which when the saw has begun to cut or kerf the bone the handle may be raised so as to remove the spur therefrom, after which the instrument is advanced and as the saw rotates the incision of the bone may be accomplished in a convenient, effective, and practical manner.

In order to adjust the degree of penetration of the saw into the bone with precision, I employ the gage or head M, which consists of a plate of suitable material arranged parallel with the saw, on the exterior thereof, its edge forming a shoulder which is adapted to be placed nearer to or farther from the toothed periphery of the saw, so that when it is in adjusted position the edge, as aforesaid, may abut against the uncut bone, and so limit the depth of cut of the saw. The head M is connected with the shank or bar N, which occupies a longitudinally-extending groove P in the side of the handle A, said bar and groove being dovetailed, so that the former may be readily retained in the latter while being slidable or movable therein, and so remain connected with the handle. In order to impart motion to the bar, the rear end of the same is screw-threaded or has a screw Q connected with it, the same being engaged by the nut R, which occupies a position in a recess S in the handle A at a right angle to the groove P, so that said nut is swiveled on said handle, and thus when it is rotated sliding motion will be communicated to the screw Q, and consequently to the bar N and the head M, whereby the latter may be set or adjusted in the manner and for the purpose hereinbefore stated.

In order to connect the saw with the shaft or arbor B, the end of the latter has a nipple



T therein, the same being squared or angular to enter a similar-shaped opening in the center of the saw, as shown dotted in Fig. 1. A screw U is passed into the nipple, and its head overlaps the wall of the opening in the saw, thus holding the saw in place.

Interposed between the saw and the adjacent portion of the handle is the washer V, which is fitted on the nipple T, it being evident that the saw is pressed against said washer by the action of the head of the screw U, and thus the screw will be firmly and steadily retained in position.

In Fig. 4 I show a modification where the arbor B carries a worm-wheel W, which meshes with the worm X on the shaft Y, the latter passing longitudinally through the handle A and having its end connected with the flexible shaft H, whereby rotary motion may be imparted to the saw, as in the previous case. In this figure the sleeve G is transferred from the side of the handle to the end thereof for the same purpose as in the other figures.

In order to cover the flexible shaft H, I employ the sheath Z, which incloses the same and is stationarily secured to the sleeve G without, however, interfering with the freedom of motion of said shaft.

It is evident that when the nut R is properly rotated the screw Q of the bar N may be released of said nut and said bar moved in the groove P, so as to be entirely withdrawn from the handle, when the saw may be detached from the arbor. The sheath Z may be disengaged from the sleeve G and the screw F removed from the collar D, when the arbor B may be readily withdrawn from the handle. By similar manipulation the shaft Y (shown in Fig. 4) may be removed.

Various changes may be made in the details of construction shown without departing from the general spirit of my invention, and I do not, therefore, desire to be limited in each case to the same nor to the use of the instrument for cranial devices, as it is serviceable for other surgical purposes.

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

1. In a saw of the character stated, a handle, a rotatable arbor having its bearing directly on the forward end of said handle and a saw connected with said arbor.

2. In a saw of the character stated, a handle, a rotatable arbor having its bearing in the forward end of said handle and a saw on said arbor directly adjacent to said end.

3. In a cranial saw, a handle, an arbor mounted thereon, a saw carried by said arbor, means for rotating said arbor, a collar on said arbor, a sleeve on said handle, and a screw on said sleeve adapted to engage said collar.

4. In a cranial saw, a handle on which the saw is mounted, and a bone-engaging spur on said handle.

5. A cranial saw of circular form, means for rotating the same, and a depth-gage on the side of the saw-blade.

6. A cranial saw of circular form, means for rotating the same, and a depth-gage for the blade of the saw adjustable relatively to the periphery thereof.

7. In a cranial saw, a handle, a rotatable saw mounted thereon, a depth-gage for the saw, a carrier for said gage, and means for operating said carrier, whereby the position of the gage may be adjusted.

8. In a cranial saw, a handle, a rotatable saw mounted thereon, a depth-gage for the saw, a carrier for said gage guided on said handle, a screw on said carrier, and a nut swiveled on said handle and engaging said screw.

9. In a saw of the character stated, a handle, a circular saw attached to a rotatable arbor, closely and compactly relating to said handle, the latter being of such substantial weight and compactness as to overcome, because of these qualities, the vibration and instability during operation of the circular saw, present in all other circular-saw instruments of this kind heretofore produced.

10. In a saw of the character stated, a handle, a rotatable arbor having its bearing closely and compactly relating to said handle and a protecting-opening for the finger from the rotating saw immediately in front of said opening and from the bone or other tissues over which the lower rim of this opening glides during operation, said rim being the most dependent part of the handle.

11. In a saw of the character stated, a non-vibrating handle, a rotatable arbor having its bearing closely and compactly relating to said handle, a rest or shoulder on the forward upper end of said handle for the tip of the thumb protecting the thumb from contact with the rotating saw immediately adjacent and through its new and original position to accommodate the tip of the thumb in an easy manner on a non-vibrating handle, giving to the tip of the thumb a delicate appreciation of the depth of section made by the rotating saw.

12. In a saw of the character stated, a non-vibrating handle, a rotatable arbor having its bearing closely and compactly relating to said handle and a finger-protecting opening on the lower forward end of said handle directly rearward of said saw and a rest or shoulder on the forward upper end of said handle directly adjacent to said saw.

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