

No. 843,450.

PATENTED FEB. 5, 1907.

B. GRAY.
TOGGLE ARM.

APPLICATION FILED AUG. 3, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

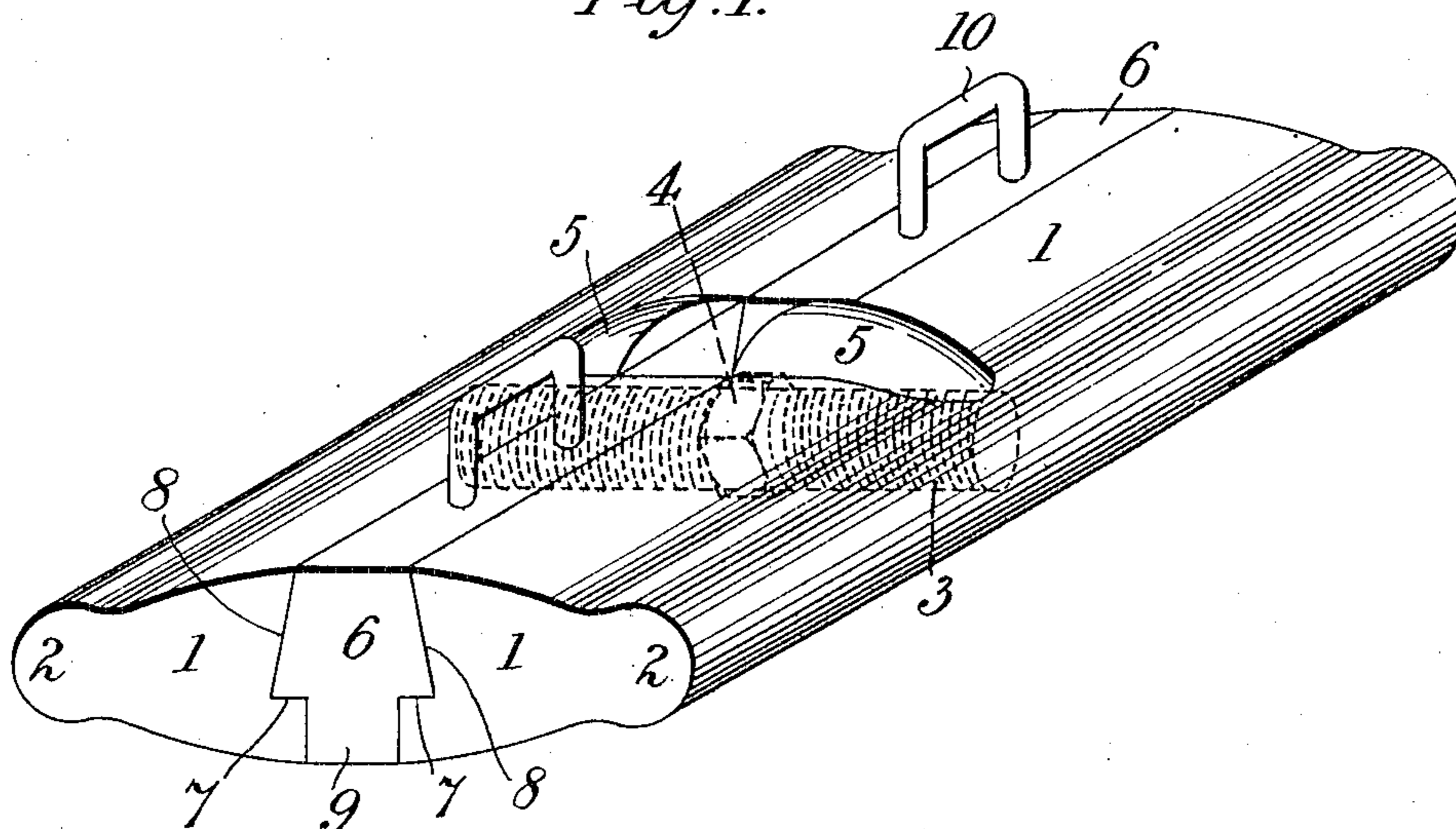
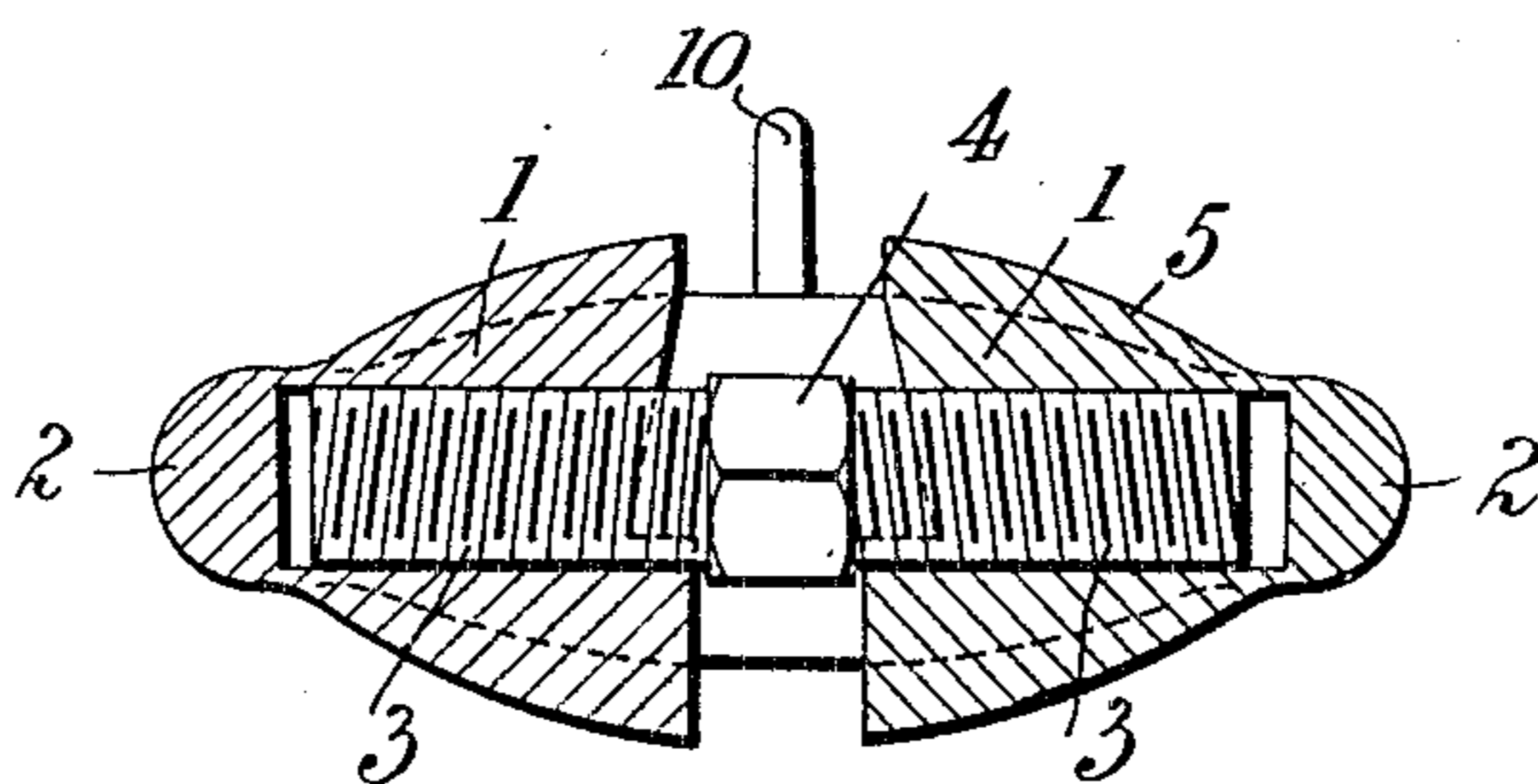


Fig. 2.



WITNESSES.

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2 SHEETS—SHEET 2.

Fig. 3.

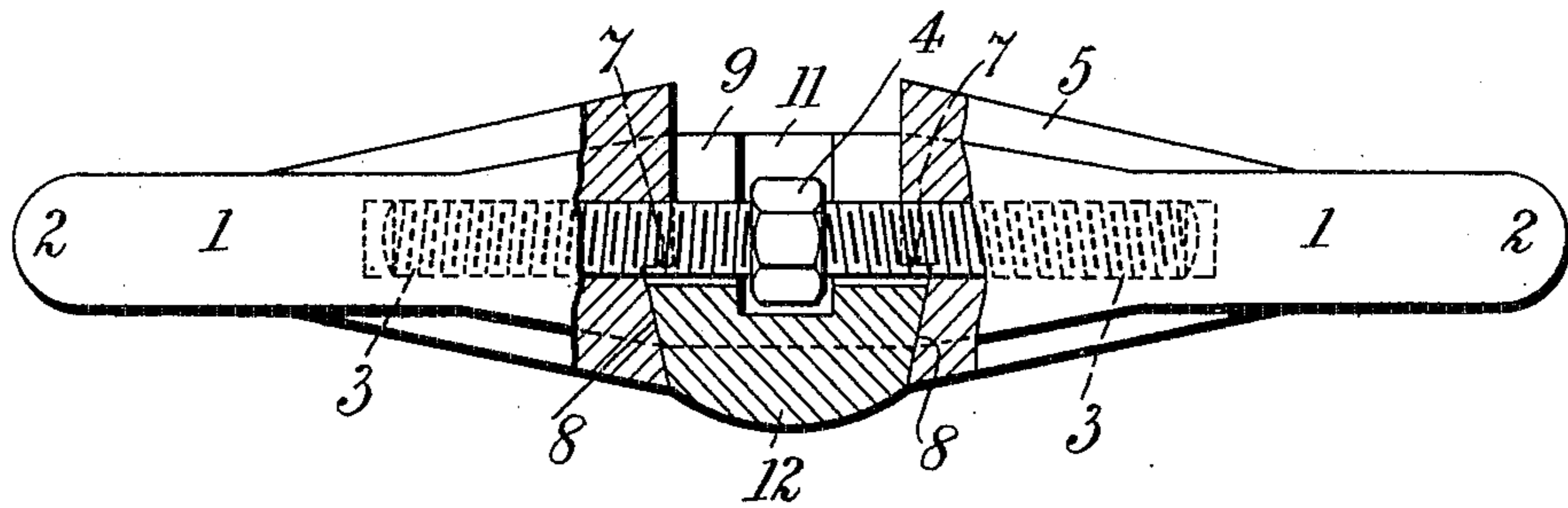
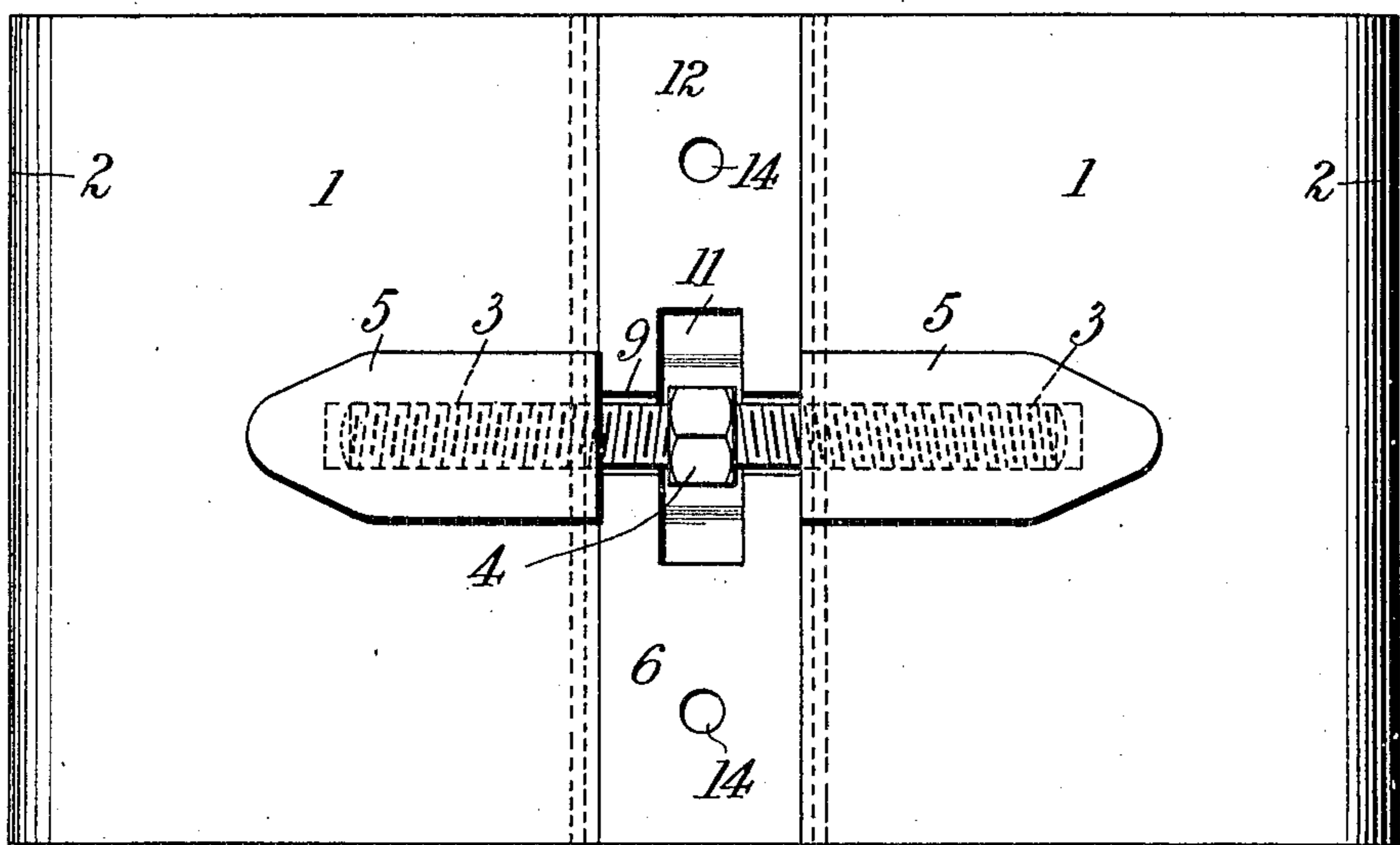


Fig. 4.



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UNITED STATES PATENT OFFICE.

BERTRAM GRAY, OF JOHANNESBURG, TRANSVAAL.

TOGGLE-ARM.

No. 843,450.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed August 3, 1906. Serial No. 329,083.

To all whom it may concern:

Be it known that I, BERTRAM GRAY, a subject of His Majesty the King of Great Britain, residing at Johannesburg, in the Transvaal Colony, have invented a certain new and useful Improvement in Toggle-Arms, of which the following is a specification.

This invention relates to toggle-arms which, while being applicable to a variety of purposes, are designed more particularly for use in rock-breakers of that type in which a swinging jaw is oscillated to and from a fixed jaw by means of a reciprocating pitman operating upon the knuckle of a toggle, the extremities of which bear against the machine-frame and the oscillating jaw, respectively. In such machines it is found necessary, owing to the rapid wear of the jaws, to frequently replace the toggle-arms by longer ones, for which shorter ones must again be substituted when new jaws are fitted, and this, besides involving the provision of a number of costly spare parts, is, especially in the case of large machines, a laborious operation occupying much time.

The purpose of the present invention is to provide a strong and rigid toggle-arm of variable length which enables the required adjustments to be made without displacing it and without jacking over the pitman and swinging jaw in the manner which has been necessary heretofore.

According to this invention and in one form of same the toggle-arm is composed of two permanent end pieces, between which is or are inserted one or more comparatively light and portable packing-pieces. A screw having right and left hand threads at either end, respectively, or the equivalent of such a screw engages with the end pieces and permits them to be separated for the removal of a packing-piece or to be tightened upon the same. Packing-pieces of various widths are provided for altering the length of the arm, as desired.

Two embodiments of the invention are illustrated in the accompanying drawings, in which—

Figure 1 is a quasi-perspective view of one form of a complete toggle-arm adapted for a rock-breaker. Fig. 2 is a central vertical cross-section thereof. Fig. 3 is an elevation, partly in section, of a modified form especially adapted for use with small rock-breakers. Fig. 4 is a plan of the modified form.

Referring to Figs. 1 and 2, 1 are the two permanent end pieces, having the usual rounded bearing-surfaces 2. They are connected by a screw 3, having a central portion or head 4, which may be used in conjunction with a key, spanner, or other suitable means to rotate the screw. The screw 3 has oppositely-threaded ends fitting into suitable nuts or screwed portions in the end pieces 1, which may be bossed, as shown at 5, around the screw to strengthen the parts at those points. Two packing-pieces 6 in this case are employed. They are formed so that they do not drop out when the end pieces are sufficiently separated to permit the former to be withdrawn. They comprise a rectangular under portion 9, having shoulders 7 and a tapered portion above these shoulders. The opposed faces of the two permanent pieces 1 are correspondingly shaped, and the proportions are preferably such that when the parts are separated just sufficiently for the packing-piece to be lifted out the shoulder 7 is unable to pass the restricted lower portion of the aperture, whereby such packing-piece is normally supported by the end pieces. It will be apparent that the packing-pieces may be constructed in other forms which will give the desired effect, and they may be fitted with handles to facilitate their removal. As shown, they are of such length that a space is left between them at their ends to enable the tool employed to reach the nut 4.

In the modification illustrated in Figs. 3 and 4, the majority of the parts being the same are indicated by the same letters of reference. The main variation from the toggle-arm previously described is that a single packing-piece is used, as shown at 12 in Fig. 4, which may be hollowed out, as shown at 11, to receive and permit of the rotation of the screw 3 and nut 4. Such piece 12 further has its tapered part and rectangular part oppositely arranged to that in Figs. 1 and 2, whereby it must be removed from the bottom of the toggle-arm. The holes 14 in this form may be used for the reception of a suitable single bent handle.

In utilizing either of the forms of toggle-arms, supposing that wear of the crusher-jaws necessitates the use of a longer arm, the screw 3 is turned so as to separate the end pieces 1. The swinging jaw of the crusher is thereby forced over, but without the laborious jacking heretofore required, and, moreover, the arm needs no extraneous

support, as formerly. The packing pieces or piece is or are now taken out and replaced by one of greater or lesser width, and after screwing up the arm is again ready for use, being thus lengthened or shortened as desired and with equal facility.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A toggle-arm comprising end pieces, a screw engaging said end pieces and a packing-piece between said end pieces, adapted to be supported by the end pieces when the latter are separated sufficiently to permit of the withdrawal of said packing piece or pieces in the opposite direction.

2. A toggle-arm comprising end pieces a screw having differing threads engaging said end pieces, a tapered packing-piece between said end pieces, and shoulders to said packing-piece, said end pieces having recesses cor-

responding to such shoulders and tapered faces corresponding to the tapered faces of the packing-pieces.

3. A toggle-arm comprising end pieces a screw having right and left handed threads engaging said end pieces, a packing-piece having tapered faces, and a rectangular portion, and shoulders to said packing-pieces, said end pieces having recesses corresponding to such shoulders, tapered faces corresponding to the tapered faces of the packing-piece and straight faces corresponding to the straight face of the packing-pieces.

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

BERTRAM GRAY.

Witnesses:

A. D. NEWMAN,
W. M. HAIG.