

No. 647,380.

Patented Apr. 10, 1900.

A. T. DAWSON.
BREECH SCREW FOR ORDNANCE.

(Application filed July 31, 1899.)

(No Model.)

2 Sheets—Sheet 1.

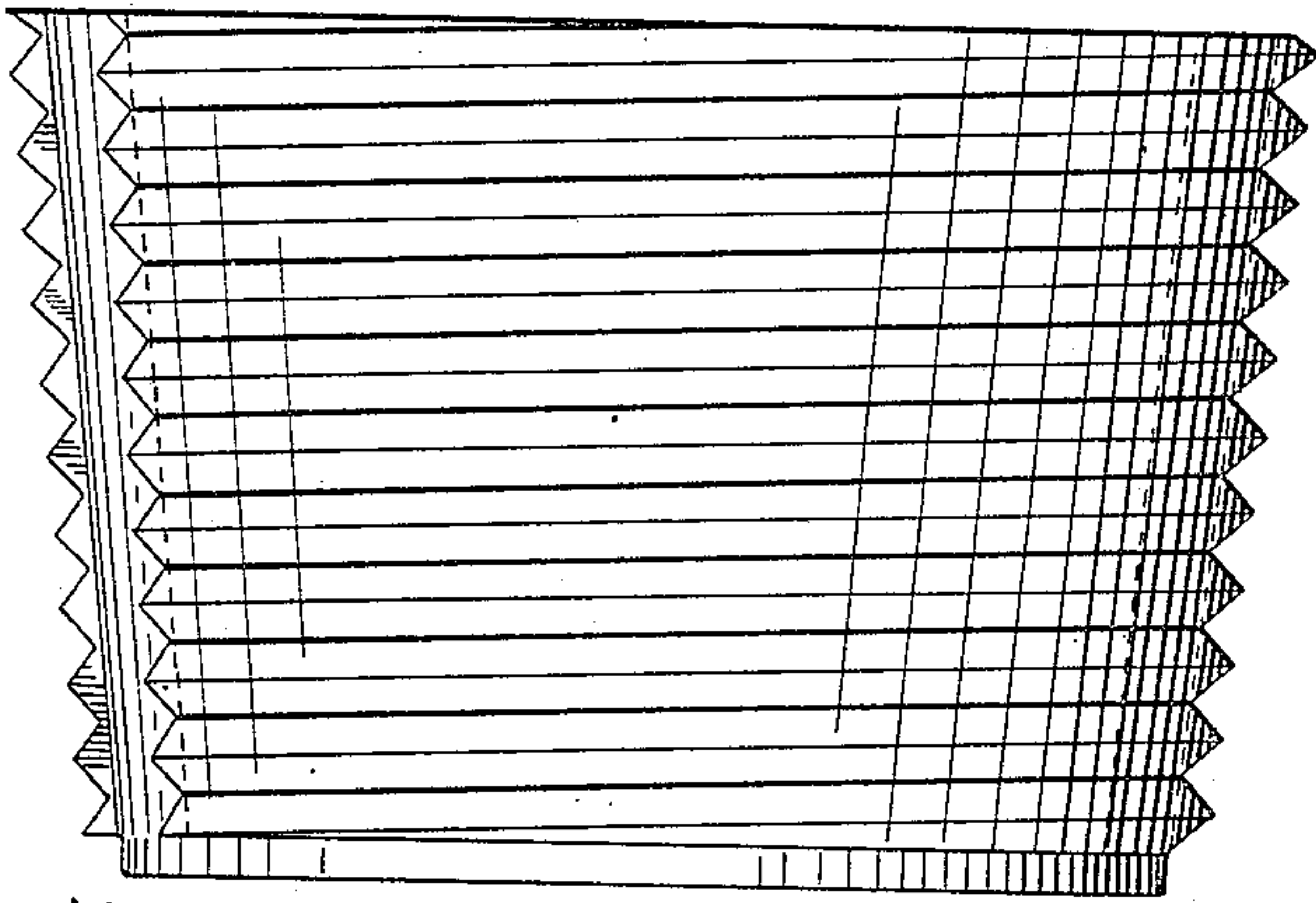


Fig. 3

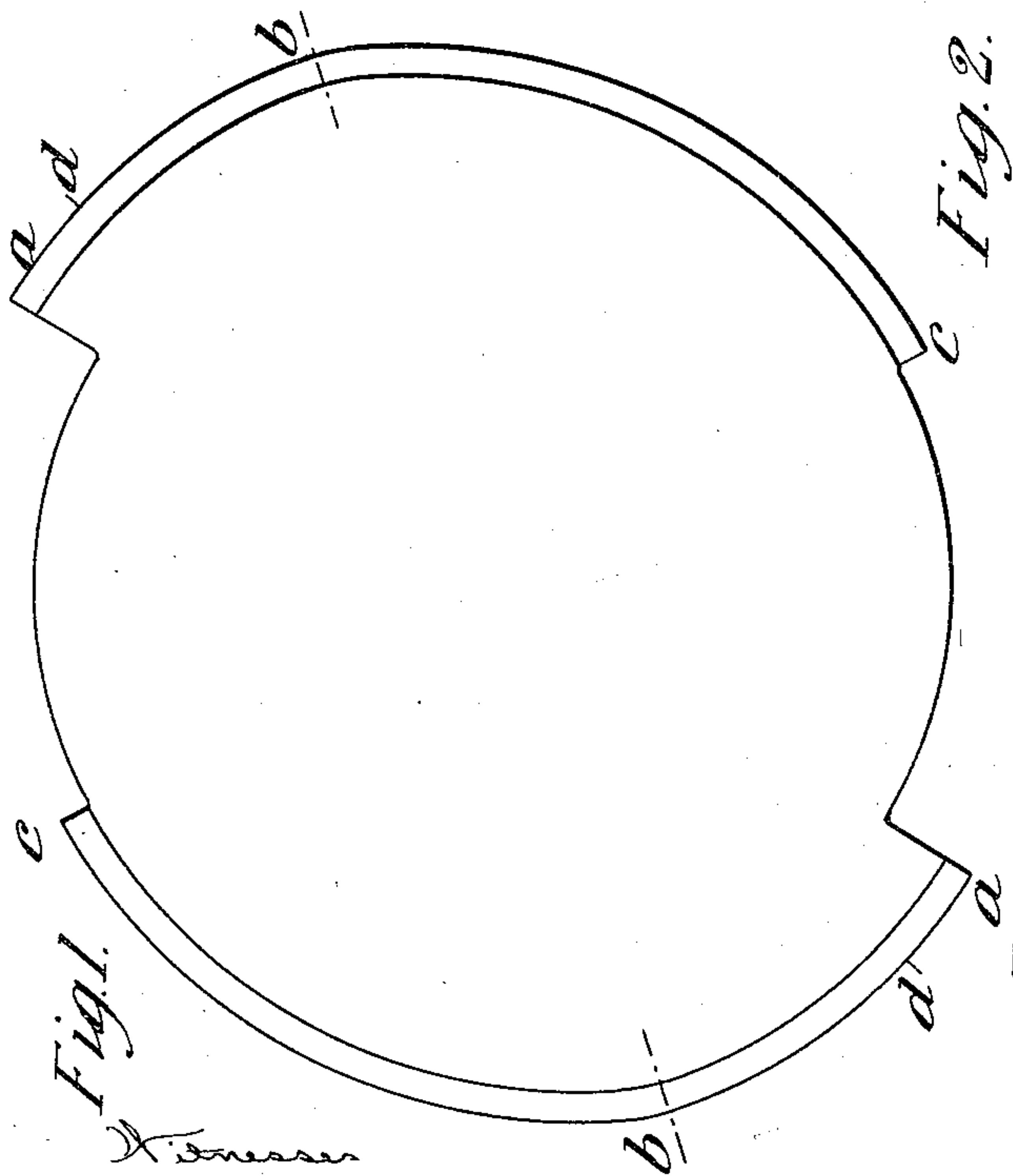


Fig. 1.

Witness
J. B. Keegan
J. H. Parker

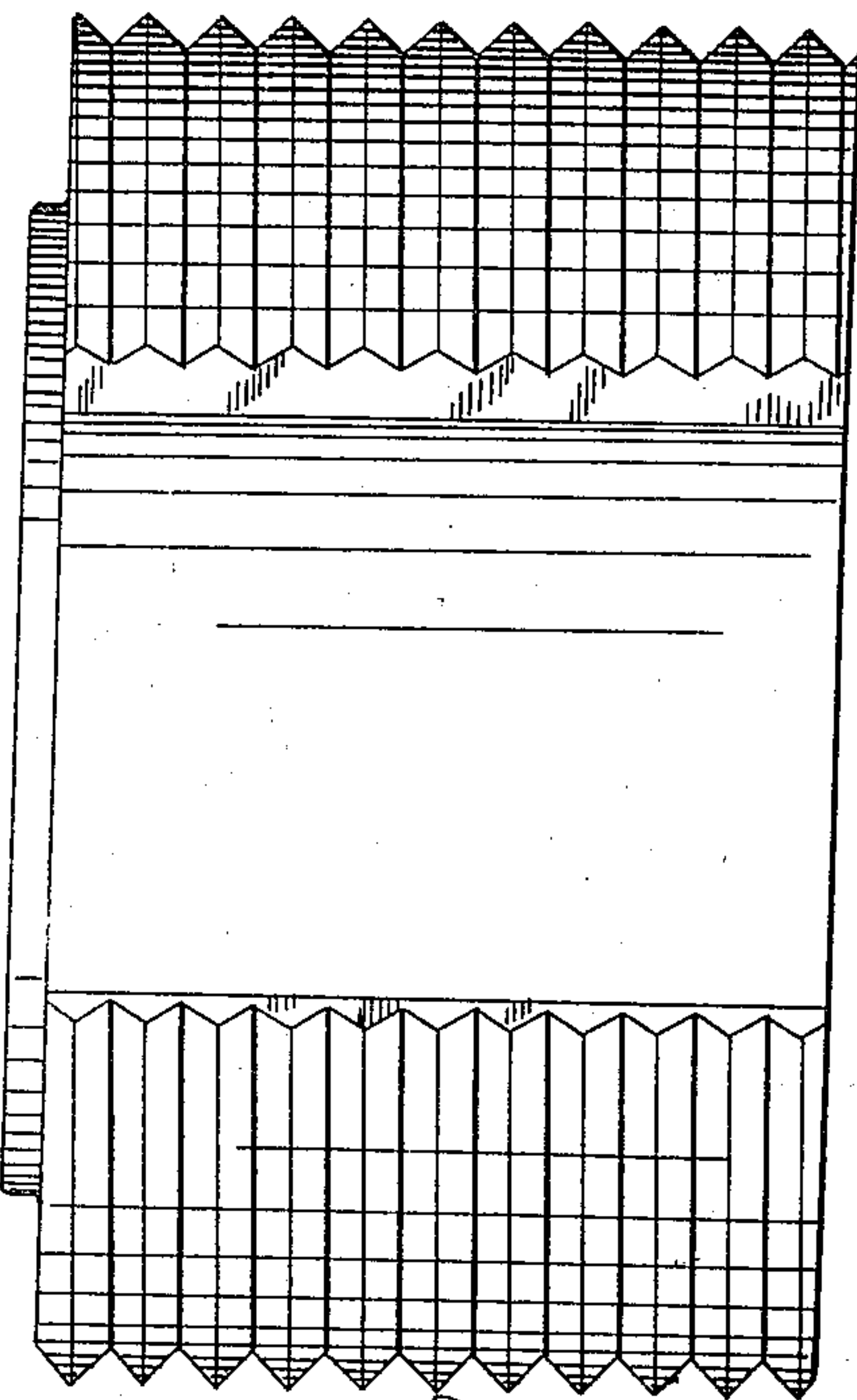


Fig. 2.

Inventor
Arthur T. Dawson
by James L. Norris

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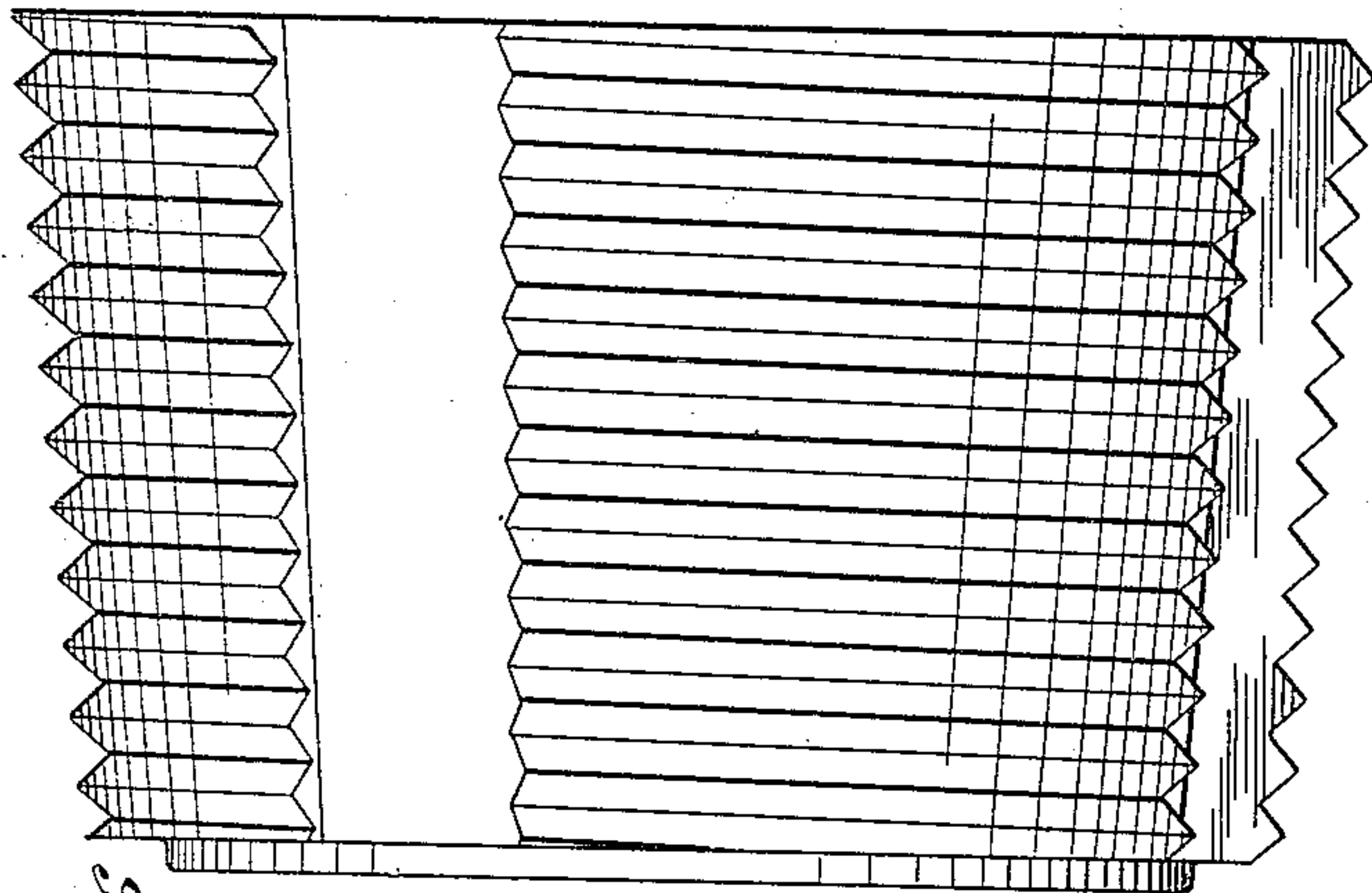


Fig. 6

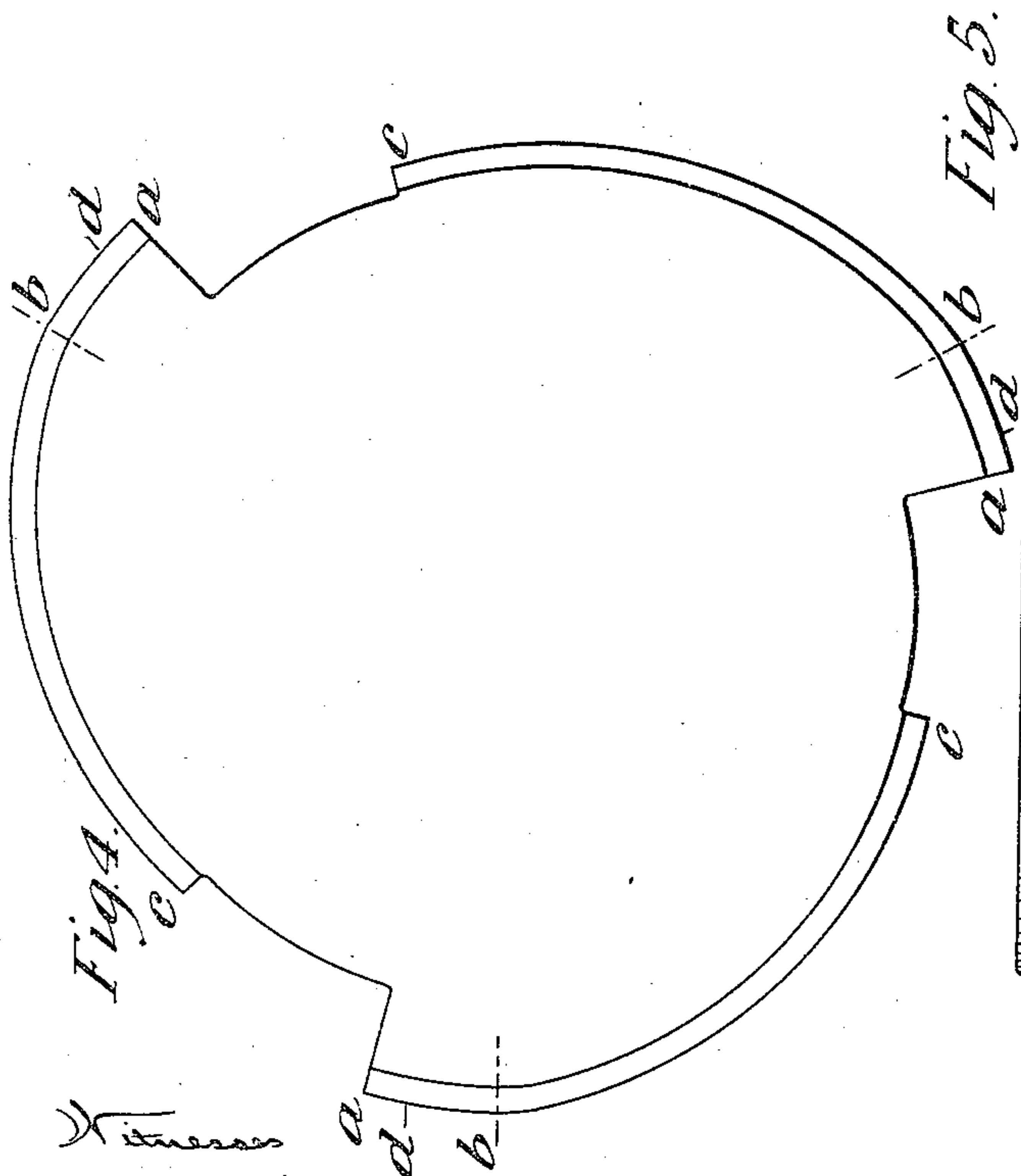


Fig. 4.

Witness
J. B. Keefe
J. Parker

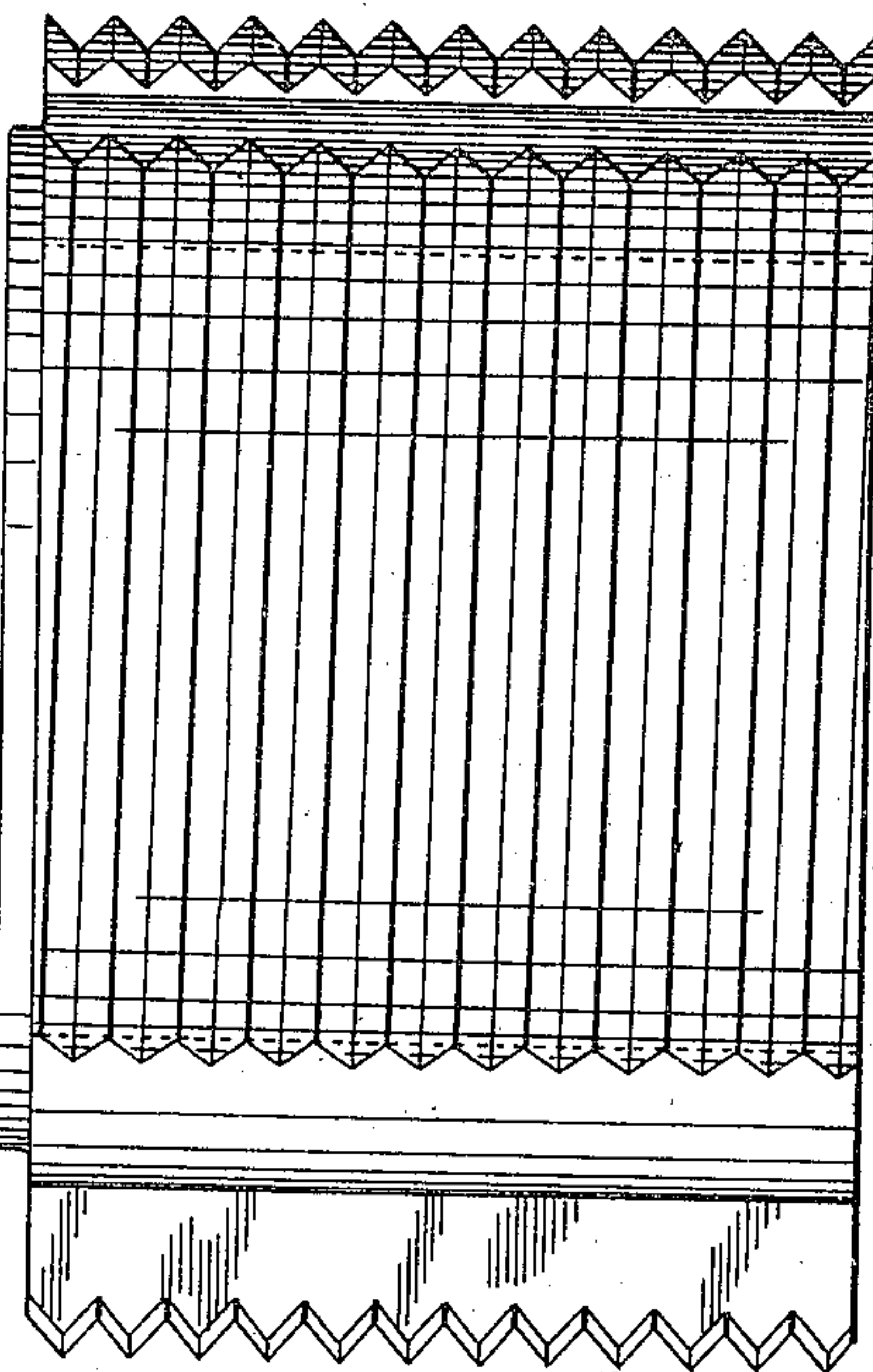


Fig. 5.

Inventor

Arthur T. Dawson
by James L. Norris
att

UNITED STATES PATENT OFFICE.

ARTHUR TREVOR DAWSON, OF LONDON, ENGLAND, ASSIGNOR TO THE
VICKERS, SONS & MAXIM, LIMITED, OF SHEFFIELD, ENGLAND.

BREECH-SCREW FOR ORDNANCE.

SPECIFICATION forming part of Letters Patent No. 647,380, dated April 10, 1900.

Application filed July 31, 1899. Serial No. 725,637. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR TREVOR DAWSON, a citizen of England, residing at No. 28 Victoria street, Westminster, London, England, have invented a certain new and useful Improvement in Breech-Screws for Ordnance, (for which I have applied for a patent in Great Britain, dated January 3, 1899, No. 131,) of which the following is a specification.

The breech-plug and internal screw for closing the breech of a gun are made with arcs of the thread cut away, so that it requires only a partial turn of the plug to lock it in position and to unlock it. In order to lessen the extent of turn required for this purpose, and consequently the gap between the threaded arcs, these arcs have been made in steps of different radius, and thus there is a larger extent of thread engaged when the plug is locked in position than there would be if all the steps had the same radius. It is, however, difficult to make the screw-threads in steps, and between the steps notches have generally to be cut for clearance of the tool employed to cut the threads. In order to facilitate the execution of the work, the thread instead of being made in steps has been sometimes made as a spiral arc of radius, gradually diminishing from one end of each threaded arc to the other. This form, which can be easily produced by a milling operation, is, however, objectionable, because if the plug is not turned quite home the threads are not engaged to their full depth, and consequently when the threads are of V-section, which is preferred for the sake of strength, the plug when not screwed fully home is in a loose shaky condition.

My invention relates to the formation of the screw-thread of the breech and plug in such a way that while it can be made as easily as the spiral thread it provides against undue or objectionable looseness and shake of the plug when it is not screwed fully home. For this purpose instead of making the whole extent of the threaded arc a spiral curve I make part of it of the greatest radius truly circular and concentric with the axis and the rest of it spiral, the circular portion being eased into the spiral without any abrupt break of the general curvature. This particular

form of thread can be easily produced by a milling operation, and it presents the advantage that even when the plug is not screwed quite home it is not unduly or objectionably loose or shaky, as the portions of thread which are of circular curvature still remain engaged to their full depth. Screws formed in the manner described may be tapered, so that the plug requires no longitudinal motion to clear the threads of the breech when it is swung in or out on its carrier.

The accompanying drawings show breech-plugs according to this invention.

Figure 1 is an end view of a plug having its thread made in two segments. Fig. 2 is a side view of such plug with parallel sides. Fig. 3 is a side view of such plug made taper. Fig. 4 is an end view of a plug having its thread made in three segments. Figs. 5 and 6 are side views showing the parallel-sided and the taper plug, respectively.

Each segment of the thread consists of an arc of the largest radius from *a* to *b* truly circular and concentric with the axis of the plug, the rest of the segment from *b* to *c* being of spiral curvature. It will be seen that if the plug be not screwed quite home—that is to say, if *a* does not reach *d*, the extremity of the segment of the internal thread of the breech with which point *a* should coincide when the plug is screwed home—there is still in each segment an arc *d b* circular and concentric, in which the screw-threads are engaged to their full depth, so that the plug is not unduly or objectionably loose or shaky.

As hereinbefore indicated, by making a breech-screw in stepped segments of varying radius the advantage is gained of obtaining extended length of threads in engagement; but the construction is disadvantageous in that it is exceedingly difficult to execute or manufacture. The screw with spiral segments presents the same advantage of extended lengths of screw-threads in engagement and the additional advantage of being convenient and easy of execution or production, but possesses the disadvantage that when not properly used—that is to say, when it is not screwed entirely or quite home—there is an objectionable looseness or shake which very soon damages the screw-threads.

This does not constantly or always occur, but occasionally does, and it is to entirely provide against this objectionable looseness or shake that I construct the breech-screw in 5 segments, each having a curvature, a portion of which at the greatest radius is circular and concentric with the axis, while the remaining portion is spiral and eccentric with the axis. Short lengths of concentric circular screw- 10 threads will not obtain the desired result in constant use. If the entire strain or explosion always comes upon them, they would shortly give way, as they become constantly weakened by constantly-repeated strains. 15 Having thus described the nature of this

invention and the best means I know of carrying the same into practical effect, I claim—

A breech-screw for a gun divided into segments each having a curvature, a portion of which at the greatest radius is circular and 20 concentric with the axis, the rest being spiral and eccentric with the axis, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 25

ARTHUR TREVOR DAWSON.

Witnesses:

WALTER W. SHARPE,
HENRY KING.