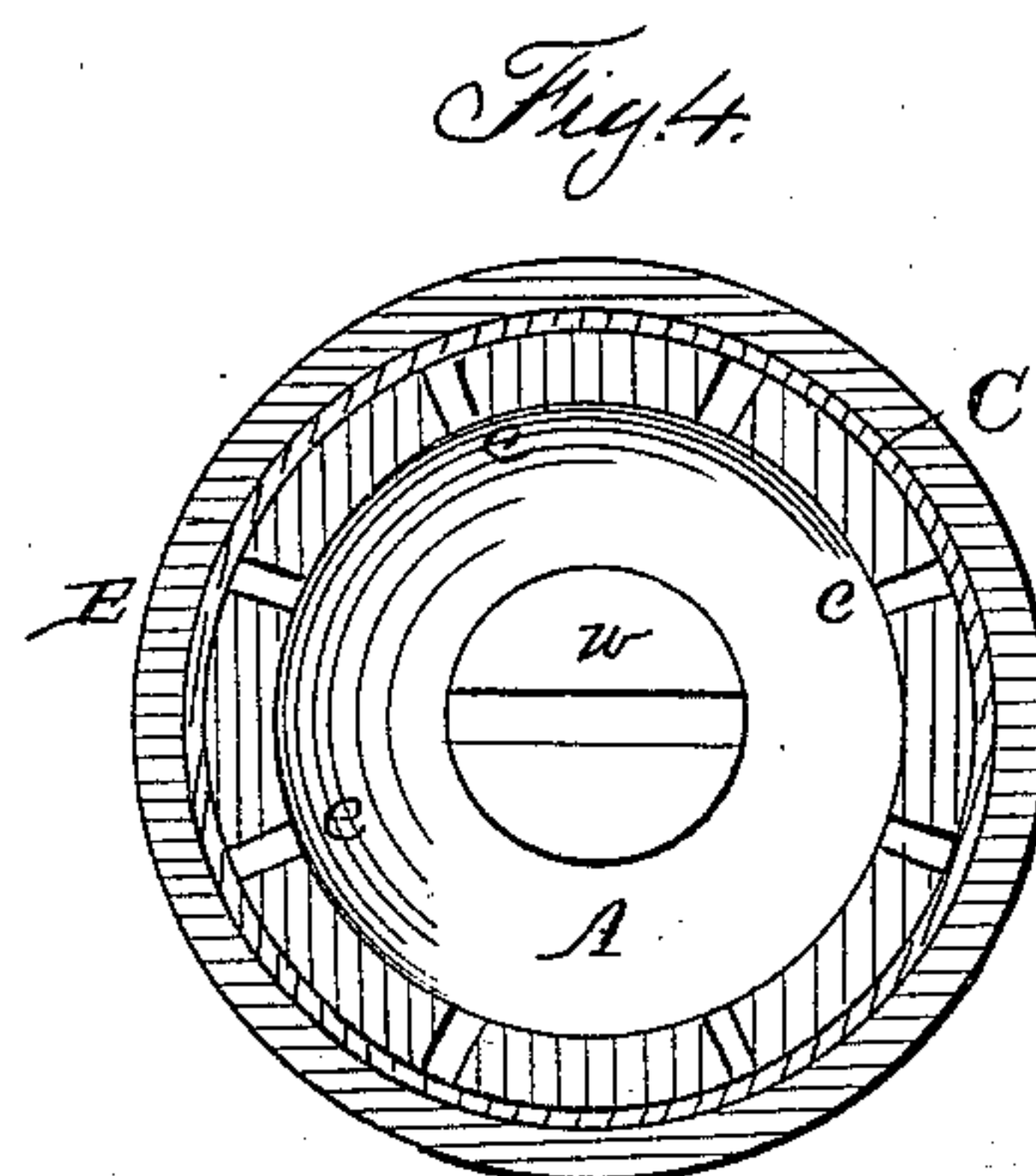
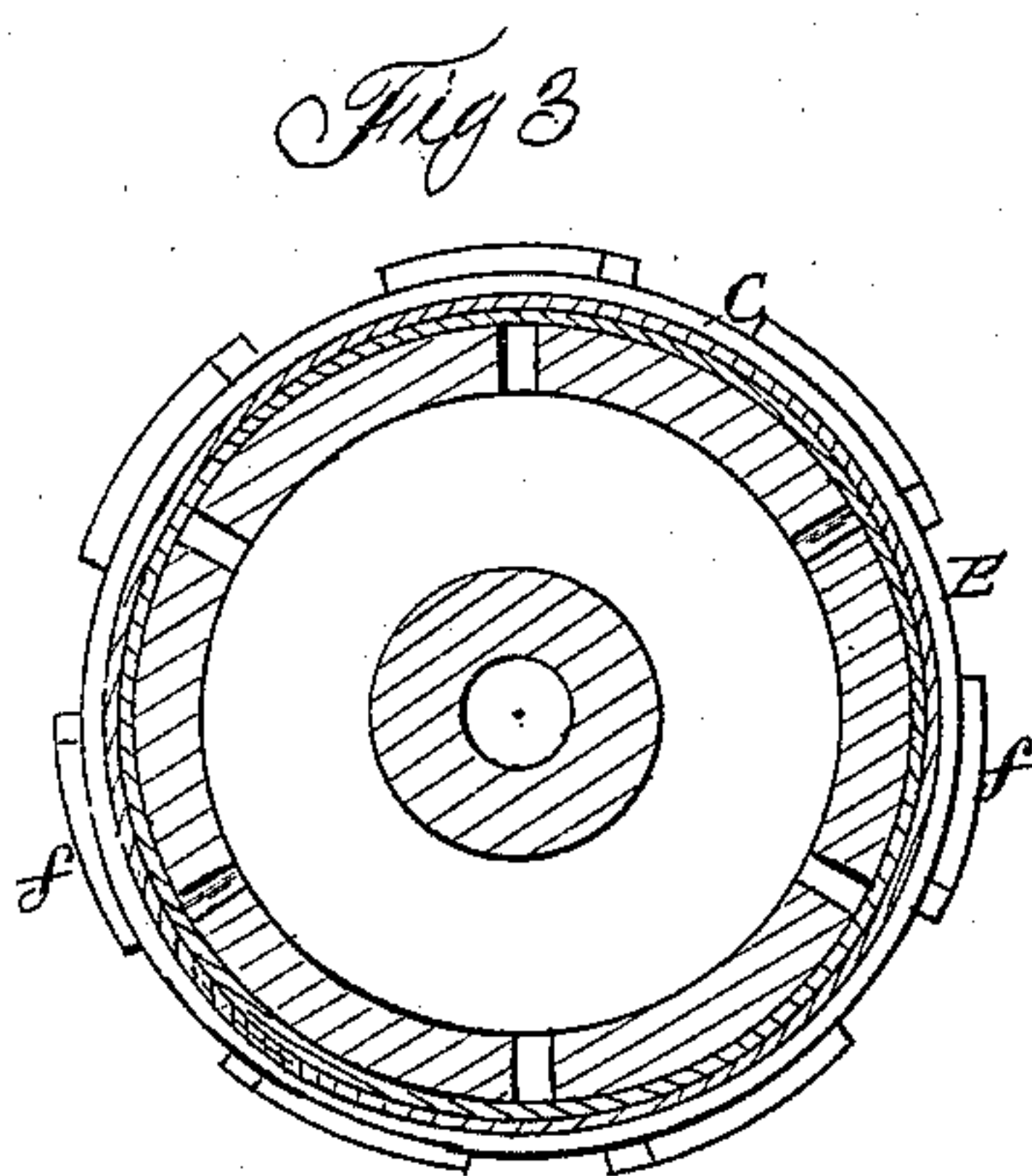
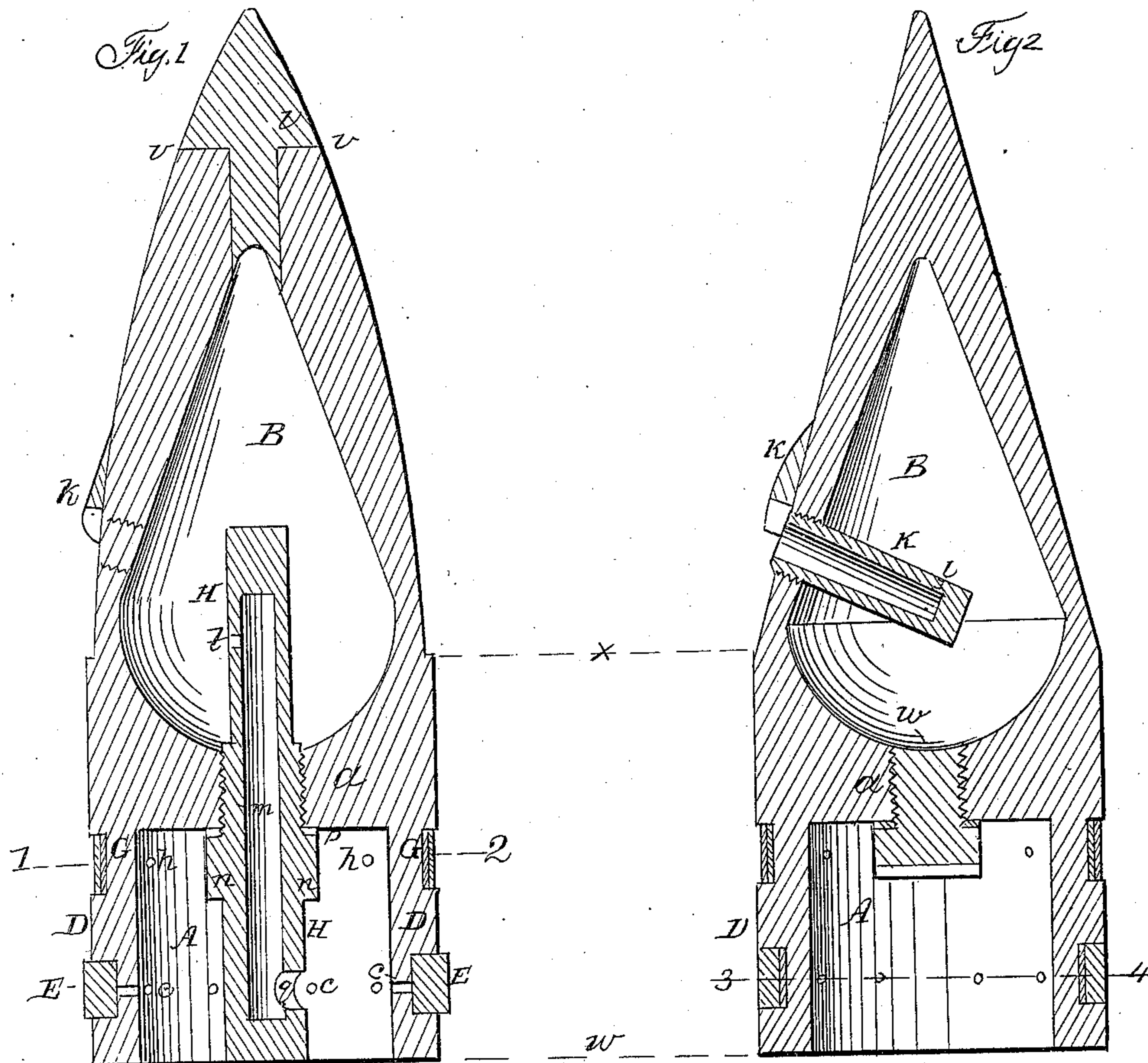


L. WELLS.

Shell.

No. 49,326.

Patented Aug. 8, 1865.



WITNESSES { *Wm. Albert Hall*
Charles Howson

Henry Howson
Att'y for L. Wells

UNITED STATES PATENT OFFICE.

LEMUEL WELLS, OF NEW YORK, N. Y.

IMPROVEMENT IN EXPLOSIVE SHELLS FOR ORDNANCE.

Specification forming part of Letters Patent No. **49,326**, dated August 8, 1865; antedated July 28, 1865.

To all whom it may concern:

Be it known that I, LEMUEL WELLS, of the city and State of New York, have invented certain Improvements in Shells for Ordnance; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in a fuse-hole formed on the tapering portion of the shell, in combination with a projection so arranged on the outside of the shell in respect to the said fuse-hole as to protect the outer end of the fuse-tube when the shell penetrates a wall or other object.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figures 1 and 2 are longitudinal sections of my improved shell; Fig. 3, a transverse section on the line 1 2, Fig. 1; and Fig. 4, a transverse section on the line 3 4, Fig. 2.

One portion of the shell—from *w* to *x*—is made cylindrical and the other portion—from *x* to *y*—tapering, either in the form seen in Fig. 1 or that shown in Fig. 2, or in a form approximating to either. A recess, *A*, which I term the "air-chamber," is formed at the rear of the shell, and this chamber is separated by the partition *a* from the chamber *B*, which contains the bursting-charge. The rear of the latter chamber is made of the concave form represented in the drawings, and gradually tapers toward the front end of the shell.

An annular flange, *D*, is formed at the rear of the shell by the chamber *A*, and in this flange is an annular recess for the reception of the soft-metal ring *E*, holes *e* communicating between this recess and the chamber *A*. In Fig. 4 this ring *E* is shown as being perfectly plain on the outside, and in Fig. 3 it is illustrated as being provided with projection *f* for fitting into the grooves of the gun. Another circular recess is formed in the outside of the annular flange *D*, for the reception of the ring *G*, of wood, thin metal, or other suitable material, which is so much thinner than the recess is deep that a space remains in the latter on the outside of the ring for the reception

of a supply of tallow or other like lubricating material. Small openings *h* form communication between the air-chamber *A* and the recess last alluded to.

In the partition *a*, which separates the air-chamber *A* from the charge-chamber *B*, is a central opening, in which are cut screw-threads for the reception of the screwed portion *m* of the metal fuse-tube *H*, the latter having an enlargement, *n*, forming a shoulder, between which and the partition *a* intervenes a washer, *p*, of gum-elastic, leather, or other like material. This fuse-tube extends in one direction to the rear, or nearly to the rear, end of the shell, the other end projecting into and about half-way through the chamber *B*. The tube is closed at both ends; but near the rear end it has an opening, *q*, and near the front end an opening, *t*. An opening having internal screw-threads is also made through the tapering portion of the shell, for the reception of the screwed portion of the fuse-tube *K*, the latter being open at the outer end and closed at the inner end. Near the latter, however, is a hole, *i*, which communicates with the charge.

On the tapering portion of the shell is cast a projection, *k*, which is situated adjacent to and in front of the hole for the reception of the fuse-tube *K*.

When the shells have to be used against and to penetrate very hard objects, I secure a steel tip, *l*, to the front end of the shell, as shown in red lines, Fig. 1, the shank of the tip being driven tight into an opening in the end of the shell, against which the shoulder *v* of the tip bears.

In order to prevent the ring *E* from turning on the shell as the latter passes through the bore, I make one or more recesses in the shell adjacent to that which contains the ring, and permit the molten metal, in casting the ring, to flow into these recesses.

When the fuse-tube *K* has to be used the hole for the reception of the fuse-tube *H* is filled with the screw-plug *w*, as seen in Fig. 2, and when the latter fuse-tube has to be used the hole in the side of the shell for the reception of the fuse-tube *K* is filled with a plain screw-plug. I prefer the use of the fuse-tube *K* when the shell has to be used against the stone or brick walls of a fort, or against vessels, or during engagements on land; but when

the shell has to be used against earth-works the fuse-tube H is preferable, for the reason that the air-chamber will rarely be so far choked with earth or sand when the shell is buried in the same as to prevent the free burning of the fuse, whereas the side fuse, K, being covered with the sand, the latter might extinguish or impede the free burning of the contents of the fuse.

It will be observed that when the shell penetrates a wall or other object the outer end of the fuse-tube K is protected by the projection *k*, previously alluded to.

The usual fuse-powder is employed in both the tubes.

I claim as my invention and desire to secure by Letters Patent—

The fuse-hole formed in the tapering portion of the shell, in combination with the projection *k* on the latter.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEMUEL WELLS.

Witnesses:

CHARLES E. FOSTER,
JOHN WHITE.