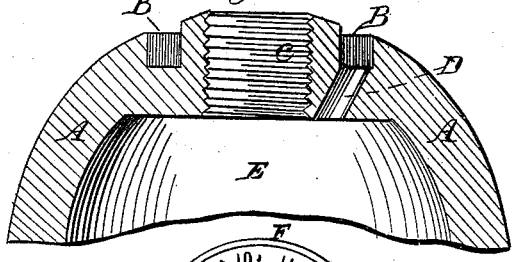
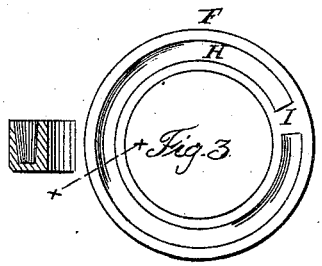
G. WRIGHT.

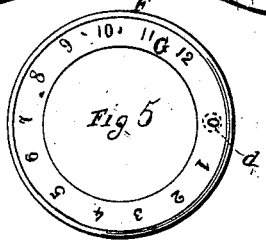
Shell-Fuse.

No. 45,381. Patented Dec. 6, 1864.

Fig. 1







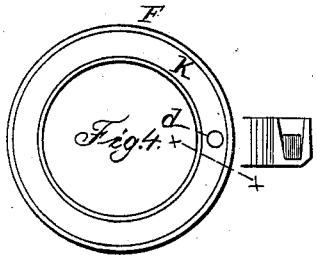
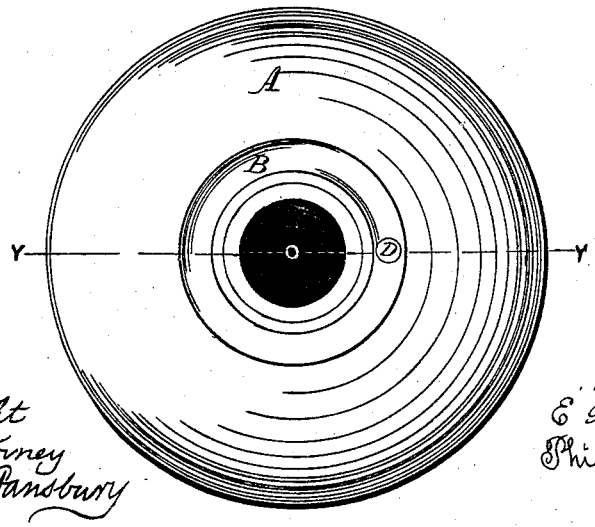


Fig 2



George Wright
by his attorney
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Witnesses
E R Fansbury
Phil le Riley

UNITED STATES PATENT OFFICE.

GEORGE WRIGHT, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN TIME-FUSES FOR EXPLOSIVE SHELLS.

Specification forming part of Letters Patent No. **45,381**, dated December 6, 1864.

To all whom it may concern:

Be it known that I, GEORGE WRIGHT, of the city of Washington, in the District of Columbia, have invented an Improved Fuse; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical section of part of a shell or hollow shot prepared for the reception of my improved fuse. Fig. 2 is a top view of the same. Fig. 3 is a bottom view of my fuse with the bottom plate removed. Fig. 4 is a bottom view of my fuse with the bottom plate inserted. Fig. 5 is a top view of the fuse, showing the graduation. Adjoining Fig. 3 on the left is a sectional view of the annular fuse, taken through line *x x* of that figure; and adjoining Fig. 4 on the right is a similar section through line *z z* of that figure. The line *v v* of Fig. 2 indicates the plane of the section represented by Fig. 1.

The same part is marked by the same letter of reference wherever it occurs.

The nature of my invention consists in making the fuse-case annular and fitting or pressing it into a channel or groove around the charge-hole (or "fuse-hole," as it is commonly called,) which channel communicates by an independent hole with the cavity of the shell, the result of the arrangement being that the bursting-charge can be inserted or withdrawn from the shell either before or after the insertion of the fuse without danger of those accidents which arise from the improper use of force in inserting the fuse after the charge is introduced, or in removing the fuse preparatory to unloading the shell.

The recent accident at the Washington Arsenal, by which several lives were lost, many persons wounded, and much valuable property injured or destroyed, arose from the attempt to remove a fuse which could not be turned by the wrench, by the violent use of a cold-chisel and hammer, it being necessary to remove the fuse before the shell could be unloaded. It was reflection upon this accident which led me to reduce to practice, by actual trial, the invention of my improved fuse, which I had previously conceived, and by which all danger of such an occurrence is removed.

The most approved form of fuse now in use is the Bormann fuse, the invention of a Belgian officer. This fuse forms a plug which is screwed into the fuse-hole of the shell after the introduction of the bursting-charge, and must be removed before that charge can be withdrawn. It is made of an alloy of tin and lead, and the mealed powder is rammed in an annular groove, one end of which communicates by a small orifice with the cavity of the shell through the fuse-hole. The fuse is graduated on the upper side, and the time of burning is determined by an incision at any desired point through the soft metal of the graduated circle into the column of mealed powder, the time depending on the length of the column of meal powder between the incision and the orifice leading to the cavity of the shell. This fuse is not only open to the objection before alluded to, arising from its insertion in the same fuse-hole through which the bursting-charge must be introduced and withdrawn, but its time of burning (five seconds) is found to be not long enough for the general service of rifle-projectiles.

My fuse is an improvement on the Bormann fuse; and to enable others to construct and use it, I will proceed to describe its construction and operation, referring to the drawings.

I make my fuse-case F of the same material as is used for the Bormann fuse—viz., an alloy of lead and tin. It is made annular in form and of a size to fit accurately when pressed into an annular groove or channel, B, cut in the shell A around the hole C, usually called the "fuse-hole," but which I shall call the "charge-hole." This channel B communicates by the hole D with the cavity E of the shell. The top G of my fuse is a graduated plate, thin enough to be readily cut through at any desired point, and owing to the greater size of the graduated circle it admits of graduation up to twelve seconds, as compared with the five-seconds' fuse of Bormann. The interior of the fuse is an annular channel, H, divided by a bulk-head or partition, I, placed at a point directly between the zero of the graduation and the highest figure on the graduated circle. The channel H receives the column of mealed powder which is rammed into it in the usual way. A segmental plate, K, closes the channel H and forms the

bottom of the fuse. It is perforated at *d* with a hole which is directly under the zero of the graduated circle.

The fuse thus prepared is so placed in the channel B of the shell that the hole *d* in the bottom of the fuse shall be directly over the hole D, leading from the channel B into the cavity E of the shell. The charge-hole C is closed by a solid disk screwed into it.

The mode of firing this fuse is the same as that used for the Bormann fuse—viz., by an incision made at any desired point on the graduated circle, varying according to the time of burning that may be deemed necessary.

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

1. Making the fuse-case annular and fitting or pressing it into a groove or channel around the charge-hole, and connecting it with the cavity of the shell by an inlet distinct from that through which the bursting-charge is introduced, substantially as and for the purpose specified.

2. Such a construction and arrangement of the fuse and shell as admits of the bursting-charge being introduced or withdrawn from the shell either before or after and independently of the insertion of the fuse, substantially in the manner and for the purpose set forth.

The above specification of said invention signed and witnessed at Washington this 5th day of March, A. D. 1863.

GEO. WRIGHT.

Witnesses:
H. E. QUEEN,
I. R. QUEEN.