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A. WRATZKE.

SHRAPNEL.

APPLICATION FILED MAY 2, 1904.

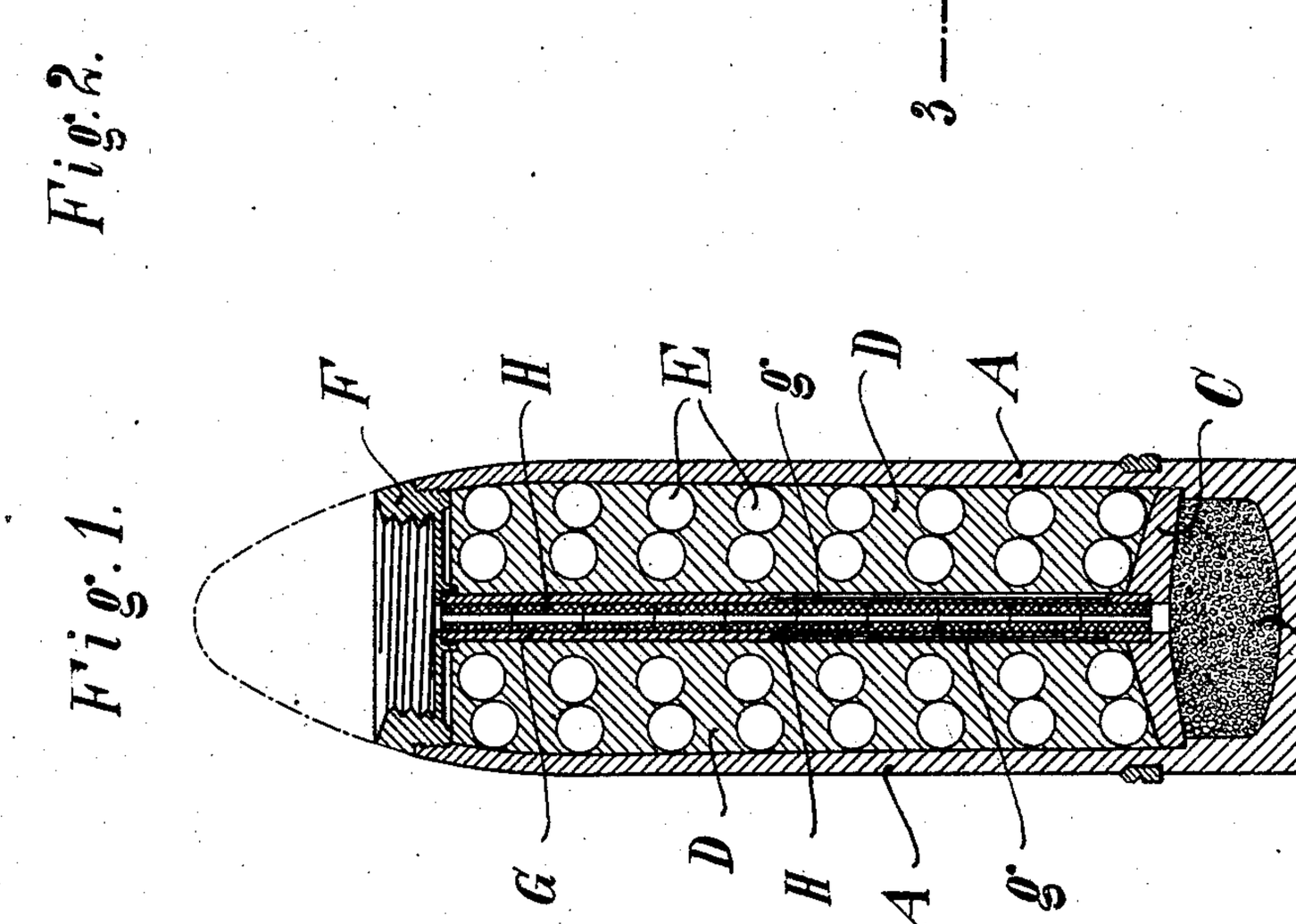

Fig. 1.

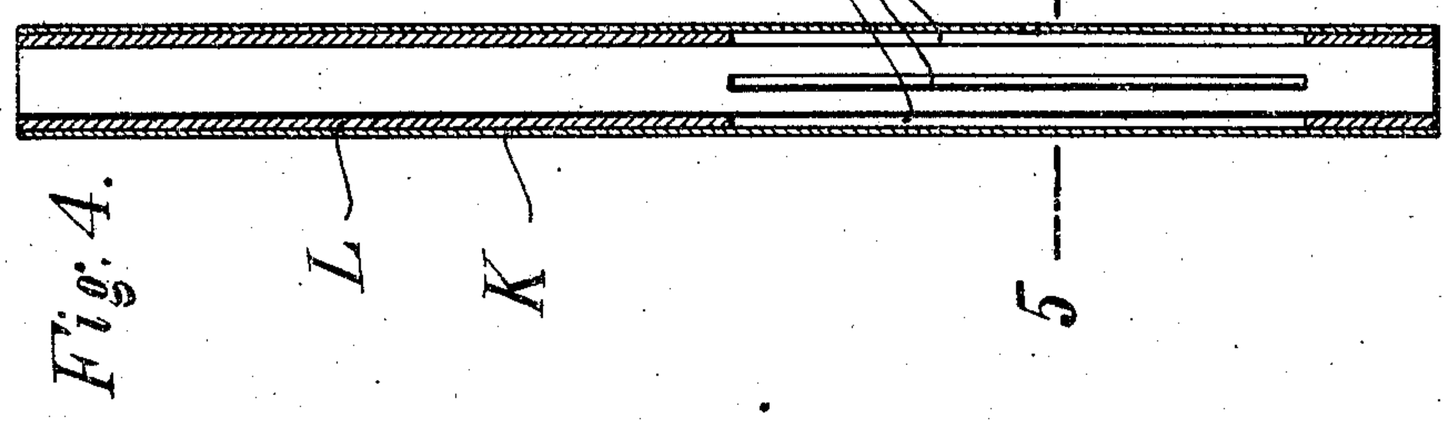

Fig. 4.

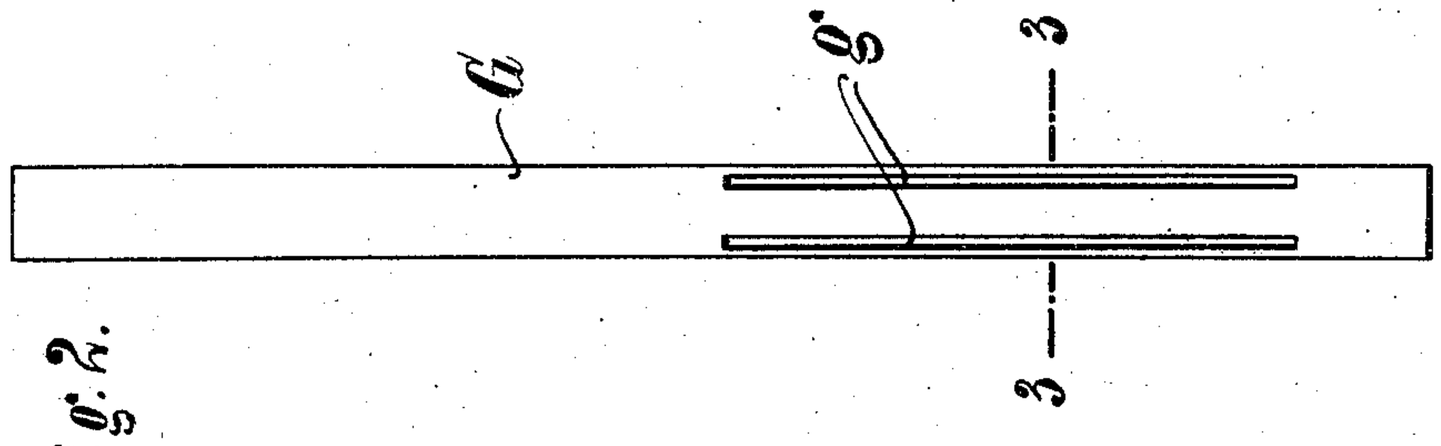

Fig. 2.

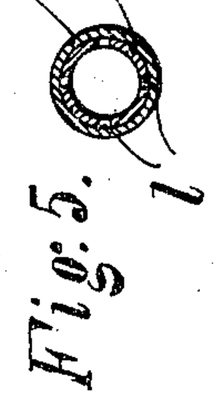

Fig. 5.

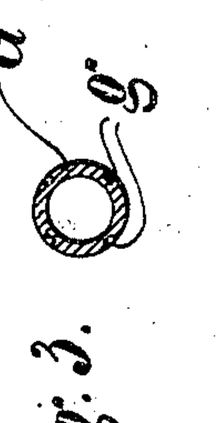

Fig. 3.

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No. 785,285. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

ALFRED WRATZKE, OF RÜTTENSCHEID, NEAR ESSEN-ON-THE-RUHR, GERMANY, ASSIGNOR TO FRIED. KRUPP AKTIENGESELLSCHAFT, OF ESSEN-ON-THE-RUHR, GERMANY.

SHRAPNEL.

SPECIFICATION forming part of Letters Patent No. 785,285, dated March 21, 1905.

Application filed May 2, 1904. Serial No. 206,046.

To all whom it may concern:

Be it known that I, ALFRED WRATZKE, a subject of the Emperor of Germany, and a resident of Rüttenscheid, near Essen-on-the-Ruhr, Germany, have invented certain new and useful Improvements in Shrapnel, of which the following is a specification.

The present invention relates to shrapnel, and especially to the kind constructed with a base-chamber and having a smoke-producing substance in the space surrounding the fire-tube.

The object of the invention is to increase the production of smoke in such a shrapnel. In this class of shrapnel it has heretofore been the custom to provide in the fire-tube or in the driving-disk a number of openings, through which the ignition of the smoke-producing substance is effected. However, when certain smoke-producing substances are used—such, for instance, as colophony—the desired effect is very poorly obtained by means of such openings. The reason for this is that when fire-tube openings are used the smoke-producing substance is partly melted by the igniting-flame effecting the ignition of the chamber charge. Consequently the smoke-producing substance does not completely burn, and when driving-disk openings are used only that portion of the smoke-producing substance is burned that is immediately in front of the driving-disk. The present invention does away with these drawbacks by preventing the flame which ignites the chamber charge from reaching the space surrounding the fire-tube and by causing the bursting of the fire-tube by the chamber charge, to accomplish which results portions of the fire-tube are weakened.

In the annexed drawings, Figure 1 is a longitudinal section of a base-chamber shrapnel in which the smoke-producing substance serves to support the shot. Fig. 2 is a side view of the fire-tube on a larger scale. Fig. 3 is a section on line 3 3, Fig. 2. Fig. 4 is a longitudinal section of another embodiment of the fire-tube; and Fig. 5 is a section on line 5 5, Fig. 4.

The shrapnel illustrated in Fig. 1 is, with the exception of the fire-tube, of known construction. A is the body; B, the chamber charge; C, the driving-disk; D, the smoke-producing substance, (for instance, colophony,) which also serves to support the shot E. F is the casing of the mouth-opening which receives the fuse. (Indicated by dotted lines.) The fire-tube G engages the driving-disk C and the casing F and is filed with hollow cylindrical powder bodies H.

In the form of construction shown in Figs. 1 to 3 the fire-tube is provided with four recesses extending approximately one-half its length at its end near the driving-disk, which recesses are formed by longitudinal grooves *g*, the depth of which is less than the thickness of the fire-tube wall. By this arrangement the igniting-flame, which is increased by the powder bodies H, ignites the chamber charge B without penetrating into the space surrounding the fire-tube, and when the chamber charge has been ignited the content of the shrapnel is driven outward through the medium of the driving-disk C. At the same time the explosive gases under high tension enter the fire-tube G and burst the tube at the places weakened by the grooves *g*, so that the fire of the exploding chamber charge can thus exert a greater effect on the smoke-producing substance, and a greater smoke production is obtained.

The fire-tube shown in Figs. 4 and 5 consists of two tubes K and L, arranged one within the other. The inner tube L is provided with longitudinal slots *l*, while the outer tube K has thin walls without weakenings. It is evident that the effect of a shrapnel provided with such a fire-tube is the same as that of the shrapnel above described.

Obviously the recesses in the wall of the fire-tube could be extended over the whole length thereof or provided on that end of the tube next the mouth-opening casing with-

out departing from the scope of the invention.

Having thus described my invention, what I claim is—

1. In a shrapnel, the combination with the charge at the base of the shell, and the chamber containing smoke-producing substance interposed between the charge and the fuse-opening, of a fire-tube in said chamber having recesses producing weakened portions therein.

2. In a shrapnel, the combination with the charge at the base of the shell, and the chamber containing smoke-producing substance interposed between the charge and the fuse-opening, of an imperforate tube extending through said chamber and having its wall reduced in thickness in places to weaken the tube.

3. In a shrapnel, the combination with the charge at the base of the shell, and the chamber containing smoke-producing substance interposed between the charge and the fuse-opening, of a fire-tube extending through said chamber, formed with a longitudinal groove providing a weakened portion therein.

4. In a shrapnel, the combination with the charge at the base of the shell, and the chamber containing smoke-producing substance interposed between the charge and the fuse-opening, of a fire-tube extending through said chamber, and having a weakened portion near one end.

5. In a shrapnel, the combination with the charge at the base of the shell, and the chamber containing smoke-producing substance interposed between the charge and the fuse-opening, of a fire-tube extending through said chamber and having weakened portions formed by longitudinal grooves near one end.

6. In a shrapnel, the combination with the charge at the base of the shell, and the chamber containing smoke-producing substance interposed between the charge and the fuse-opening, of a fire-tube extending through said chamber constructed of a plurality of conforming members and having slots in one member covered by the other member.

7. In a shrapnel, the combination with the charge at the base of the shell, and the chamber containing smoke-producing substance interposed between the charge and the fuse-opening, of a fire-tube extending through said chamber and constructed of a plurality of conforming members, one of which is slotted.

The foregoing specification signed at Düsseldorf, Germany, this 13th day of April, 1904.

ALFRED WRATZKE.

In presence of—

PETER LIEBER,

WILLIAM ESSENWEIN.