

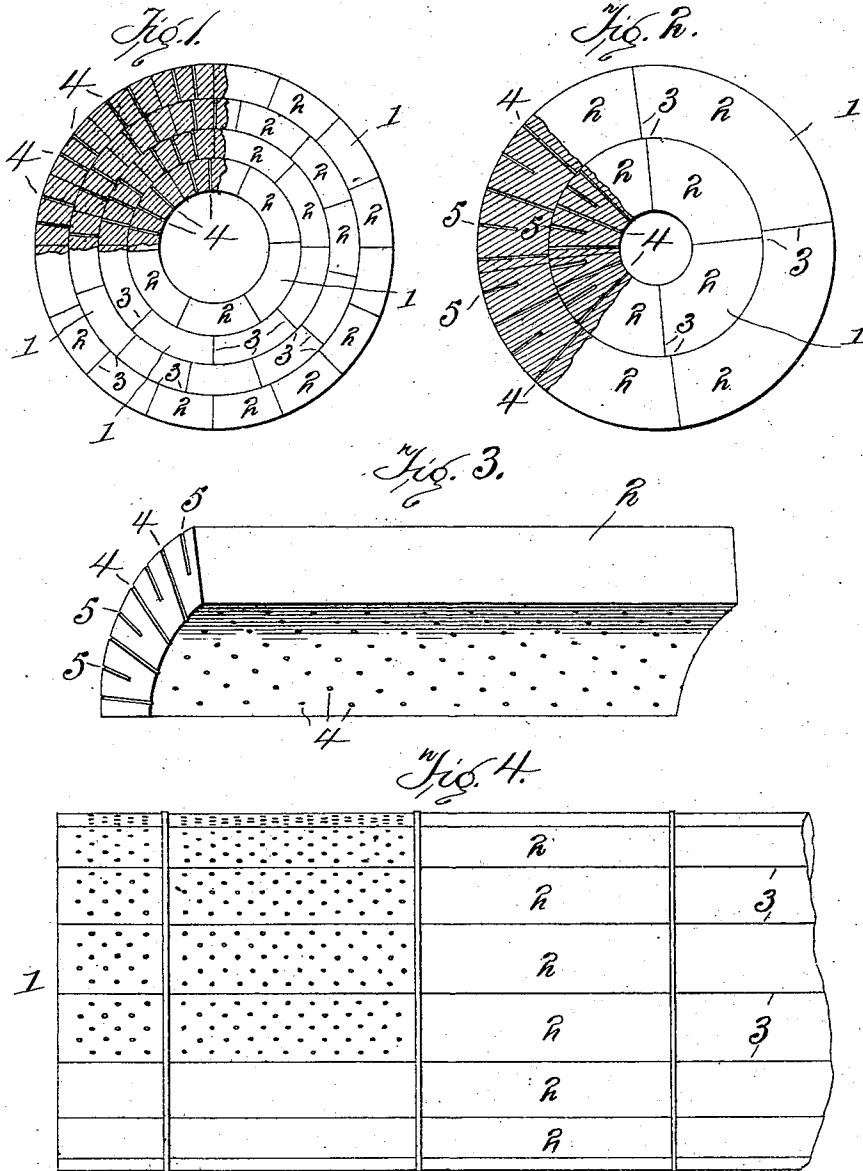
No. 677,527.

Patented July 2, 1901.

H. MAXIM.
CARTRIDGE.

(Application filed Apr. 19, 1901.)

(No Model.)



WITNESSES:

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CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 677,527, dated July 2, 1901.

Original application filed August 24, 1899, Serial No. 728,304. Divided and this application filed April 19, 1901. Serial No. 56,651. (No model.)

To all whom it may concern:

Be it known that I, HUDSON MAXIM, a resident of Brooklyn, New York, have invented a new and useful Improvement in Cartridges, which invention is fully set forth in the following specification.

In my application, Serial No. 728,304, filed August 24, 1899, of which the present application is a division, I have described a charge for a cartridge which consists of a plurality of concentrically-arranged integral cylinders of explosive material with sufficient space between the cylinders to provide a passage for the flame of ignition and for the products of combustion, thus forming a cylindrical mass of powder having longitudinal demarcations, the several cylinders being provided with lateral vent-channels, which not only permit the escape in a lateral direction of the gases of combustion to prevent the disruption of the cylinders by the gases, but also furnish additional burning-surfaces, the arrangement of said lateral vents being such as to secure the simultaneous completion of combustion throughout the charge. In the present invention I form a cartridge charge of a plurality of concentric cylinders, each of which may be provided with lateral vent-channels, affording an escape for the gases in a lateral direction, and the additional burning-surfaces, as in the application referred to, and I also divide the cylinder longitudinally, the lines of division being so arranged as to break joints. With cylinders thus composed of longitudinal sections the internal pressure of the gases of combustion will cause the sections to spread or expand radially, thereby opening the joints between the several sections of any given cylinder and affording lateral vents for the gases within the cylinder and exposing the surface of the joints to the flame of ignition. It will be apparent that with this construction the necessary lateral venting to avoid disruption of the charge is secured even in the absence of lateral perforations, as well as the simultaneous completion of combustion of the entire mass of explosive. It is desirable, however, to provide such lateral perforations in many instances, as well as cells or holes in the walls of the

cylinders, which cells extend but part way through the same.

The inventive idea involved may receive various mechanical expressions, one of which I have shown in the accompanying drawings, in which—

Figure 1 is an end elevation, partly in broken section, of a charge of explosive material formed according to the present invention. Fig. 2 is a view similar to Fig. 1, showing a charge composed of but two concentric cylinders having thicker walls. Fig. 3 shows one of the longitudinal sections into which each cylinder is divided, and Fig. 4 is a side elevation of Fig. 1.

Referring to the drawings, 1 indicates a plurality of concentric cylinders, each of which is divided into longitudinal sections 2, with the joints 3 between the sections so arranged that joints of adjacent cylinders shall not lie in the same radial plane. By this arrangement I break the joints between the sections of the adjacent cylinders.

As shown in Figs. 2 and 3, each of the longitudinal sections 2 is provided with a plurality of lateral perforations 4, preferably extending radially through the section, and a plurality of cells 5, also extending, by preference, in a radial direction into but not through the body of the sections 2. In Fig. 1 I have shown the radial perforations 4 without the cells, the walls of the several cylinders in this case being so thin that the adjacent radial perforations 4 are substantially the same distance apart as their inner and outer ends, and hence the cells are not needed. The perforations 4 act not only as lateral vents, but also afford additional burning-surfaces, while the cells 5 act only to increase the burning-surface. Since both the perforations 4 and the cells 5 afford burning-surfaces, it is desirable that they should be so arranged with relation to each other as not to interfere with the simultaneous completion of combustion throughout the mass of the charge, and for this reason the cells 5 and perforations 4 are uniformly distributed, so as to provide substantially equal thicknesses of material between each cell or perforation and adjacent cells or perforations. For the purpose of securing

the several sectional cylinders assembled as shown in Figs. 1 and 2 they may be bound by cords 6 or secured in any suitable manner.

It will be obvious that a charge formed as herein described will be one of great compactness, thereby securing greater density of loading, and that the charge will possess sufficient rigidity to carry the projectile, if desired.

10 What I claim is—

1. An explosive charge having a plurality of concentric tubes of smokeless powder each of which tubes is built up of a plurality of longitudinal sections provided with uniformly-disposed transverse perforations.

2. An explosive charge having a plurality of concentric tubes of explosive material each of which tubes is built up of a plurality of transversely-perforated longitudinal sections.

3. In an explosive charge a cylindrical mass of explosive material divided by radial planes into longitudinal sections, which sections are provided with transverse or lateral perforations.

4. In an explosive charge a cylindrical mass of explosive material divided by radial planes into longitudinal sections, which sections are provided with uniformly-disposed transverse or lateral perforations.

5. An explosive charge having a plurality of concentric tubes or cylinders of explosive material with lines of demarcation between the tubes for the flame of ignition, said tubes or cylinders being divided into a plurality of transversely-perforated longitudinal sections.

6. An explosive charge having a plurality of concentric, laterally-vented tubes or cylinders of explosive material which tubes or cylinders are divided into a plurality of longitudinal sections.

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

HUDSON MAXIM.

Witnesses:

EDWARD LYONS,
LILIAN MAXIM.