

No. 751,386.

PATENTED FEB. 2, 1904.

C. DAVIS.
POWDER GRAIN.

APPLICATION FILED AUG. 6, 1901.

NO MODEL.

Fig. 1.

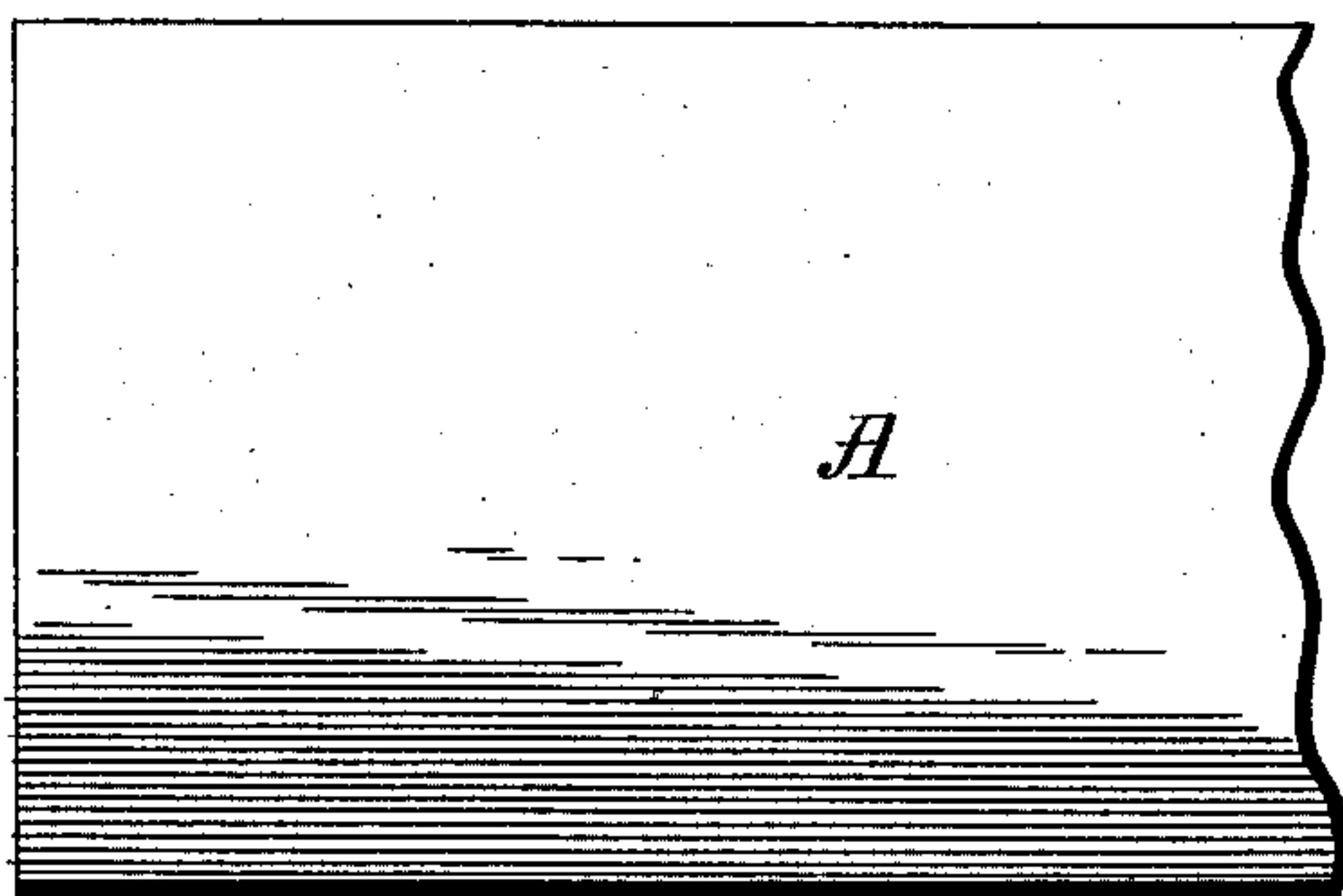


Fig. 2.

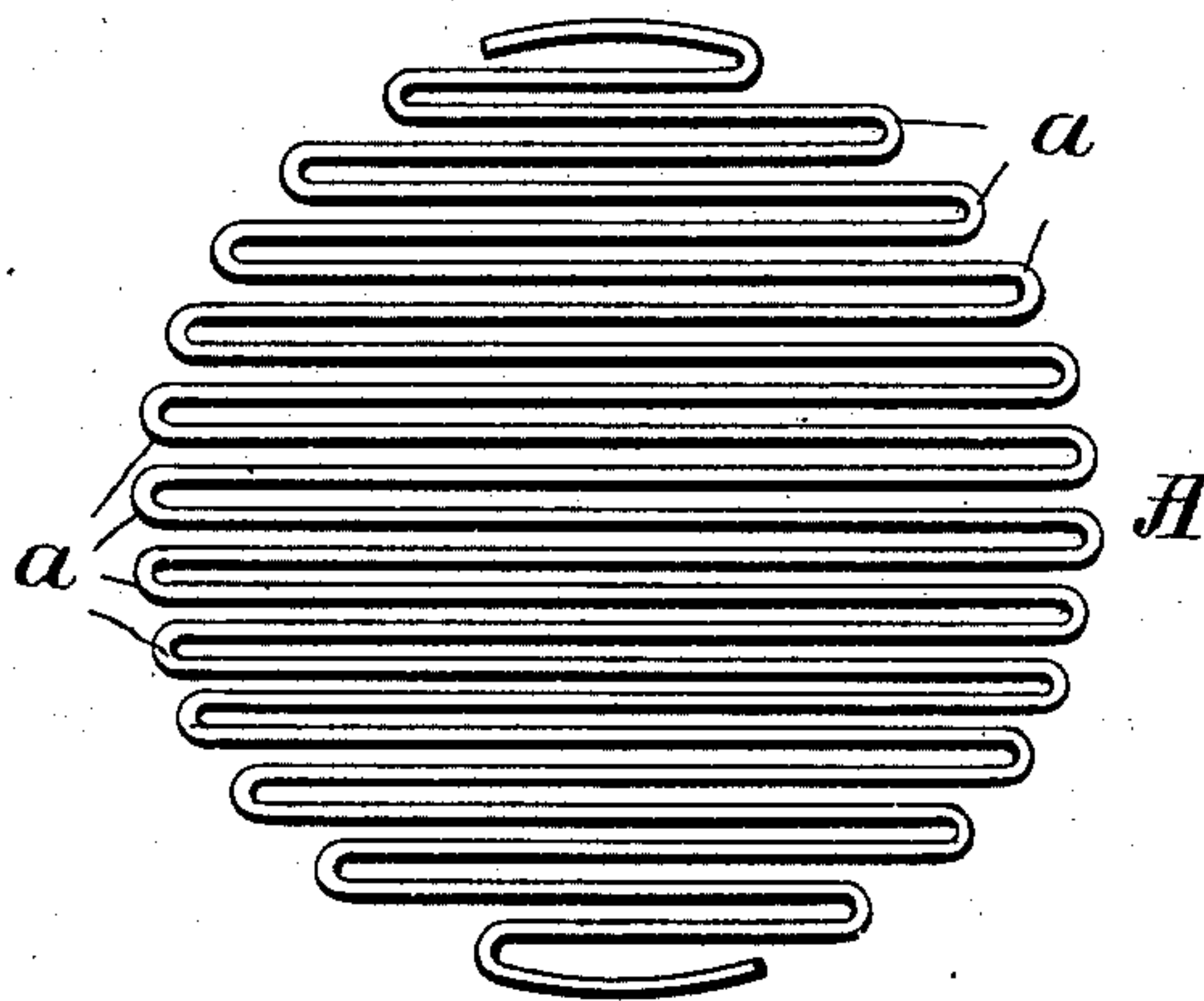


Fig. 3.

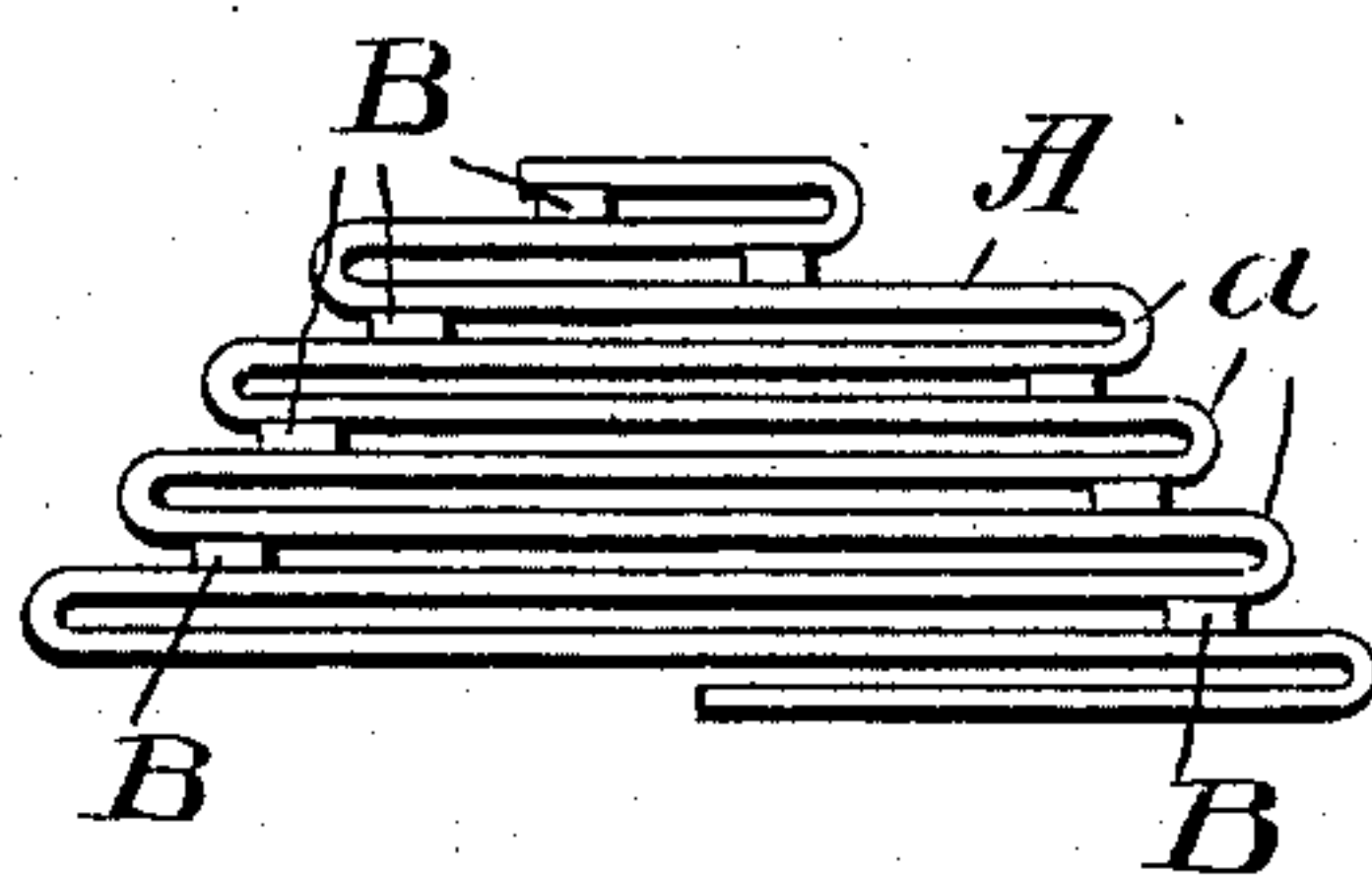


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

CLELAND DAVIS, OF THE UNITED STATES NAVY.

POWDER-GRAIN.

SPECIFICATION forming part of Letters Patent No. 751,386, dated February 2, 1904.

Application filed August 6, 1901. Serial No. 71,096. (No model.)

To all whom it may concern:

Be it known that I, CLELAND DAVIS, lieutenant, United States Navy, stationed at Washington, in the District of Columbia, have invented certain new and useful Improvements in Powder-Grains; and I do hereby declare the following to be a full, clear, and exact description of the invention such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved powder in which the powder-grain is made up of a single strip or plate of colloid material which is bent into approximately parallel layers. In practice I preferably constitute the entire charge of a single grain; but, if desired, a plurality of these grains may be used to form the charge, which may be secured together or assembled in any convenient way.

My invention will be understood by reference to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a flat plate of the powder-colloid in the form in which it is manufactured before bending. Fig. 2 represents a portion of the plate shown in Fig. 1 bent into parallel layers to constitute a single grain or forced through a die of similar shape. Fig. 3 represents a part of the grain similar to that shown in Fig. 2, except that spacers are put in; and Fig. 4 represents one of the spacers which may be used in the device shown in Fig. 3.

When the plate is bent upon itself, as indicated in Fig. 3, it may be desirable to put in spacers B, which may be either in the form of small blocks or long strips, and there may be any desired number of these. These spacers should preferably be made of the same material as the powder itself, so that the entire mass may be consumed. If preferred, cord or other inflammable material may be inserted, or, if desired, these spacers may be put in when the plate is first bent in shape and afterward removed. It will be obvious that it is desirable to keep the flat surface of the plate from coming in contact, and thus secure the instantaneous ignition of all these surfaces.

By having the powder-grain in the form of a single bent plate the ignition-surface will be very large, and by varying the distance apart of the layers the density of loading may be increased or decreased, as desired. Furthermore, the rate of combustion of the charge will be practically uniform, and the thickness of the plate may be arranged relative to the length and the diameter of the bore, so that the charge may be entirely consumed at practically the instant that the projectile leaves the gun. When the diameter of the grain is equal to that of the powder-chamber, which will be the preferred form, each particle of the powder will maintain its relative position until the entire charge is consumed. By either arrangement shown in Fig. 2 or Fig. 3 the pressure will be uniform throughout the whole space of the powder-chamber, there being an open passage externally from the interior of the grain, and consequently any tendency to rupture the parts of the powder-grain due to irregularities of internal combustion and incident irregularities in pressure would be obviated. Furthermore, it will be obvious that a powder-grain so manufactured may be readily and uniformly dried and that any tendency to distortion in drying will have no effect, since the combustion takes place on plane surfaces. It will also be obvious that the powder-grain so constructed may be very cheaply and economically manufactured and may be readily and conveniently handled. It will be seen that the entire surface of the powder grain or charge will be instantaneously reached by the ignition charge. In ordinary practice at the present time the forward portion of the powder charge is ignited by flame from the rear portion of said charge, which in turn is ignited by the ignition charge, and so the ignition is progressive from rear to front, whereas with a powder charge constructed as herein described the ignition is instantaneous throughout the entire charge. Furthermore, by having the charge made up of a single bent plate fitting snugly in the powder-chamber, which is ordinarily larger than the bore of the gun, the powder charge is held against being pushed bodily forward in the bore of the gun.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A powder-grain composed of a single
5 plate of colloid material bent into approximately parallel layers, having the spaces between adjacent layers open laterally and longitudinally, substantially as described.
2. A powder-grain composed of a single
10 plate of colloid material bent into approximately parallel layers having the spaces between adjacent layers open laterally and longitudinally, with spacers interposed between said layers, substantially as described.
- 15 3. A powder charge consisting of a single grain composed of a single plate of colloid material bent into approximately parallel layers, having the spaces between adjacent layers
20 open laterally and longitudinally, substantially as described.

4. A powder charge consisting of a single grain composed of a single plate of colloid material bent into approximately parallel layers, having the spaces between adjacent layers open laterally and longitudinally, with spacers
25 between said layers, substantially as described.

5. A powder charge consisting of a single grain composed of a single plate of colloid material bent into approximately parallel layers, having the spaces between adjacent layers
30 open laterally and longitudinally, the said layers being separated by blocks of the same material, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CLELAND DAVIS.

Witnesses:

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FRED W. ENGLERT.