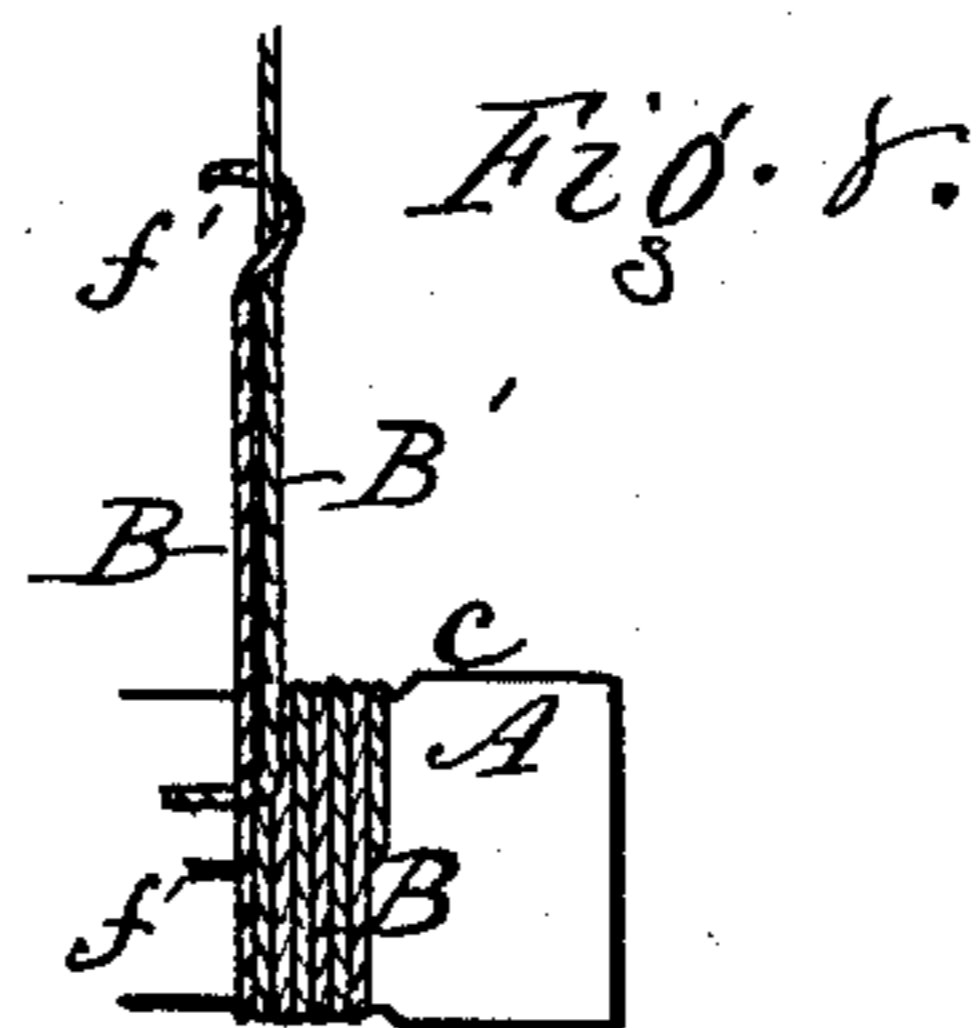
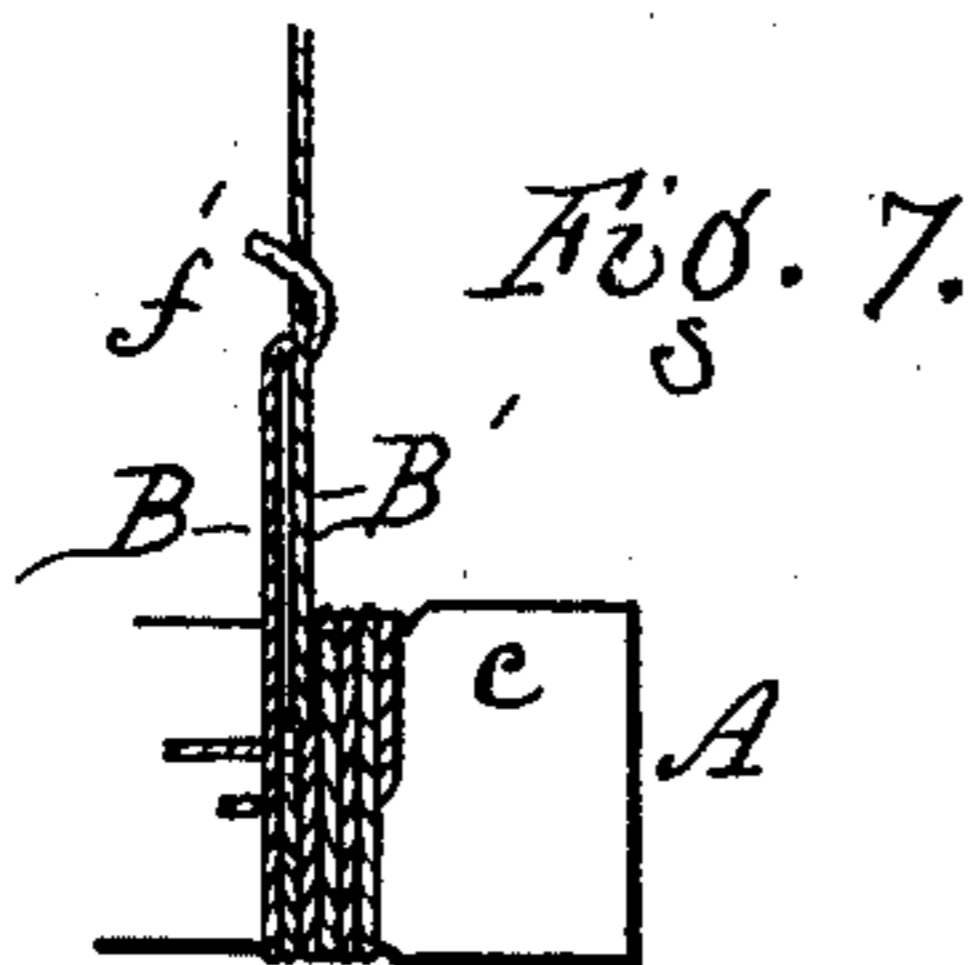
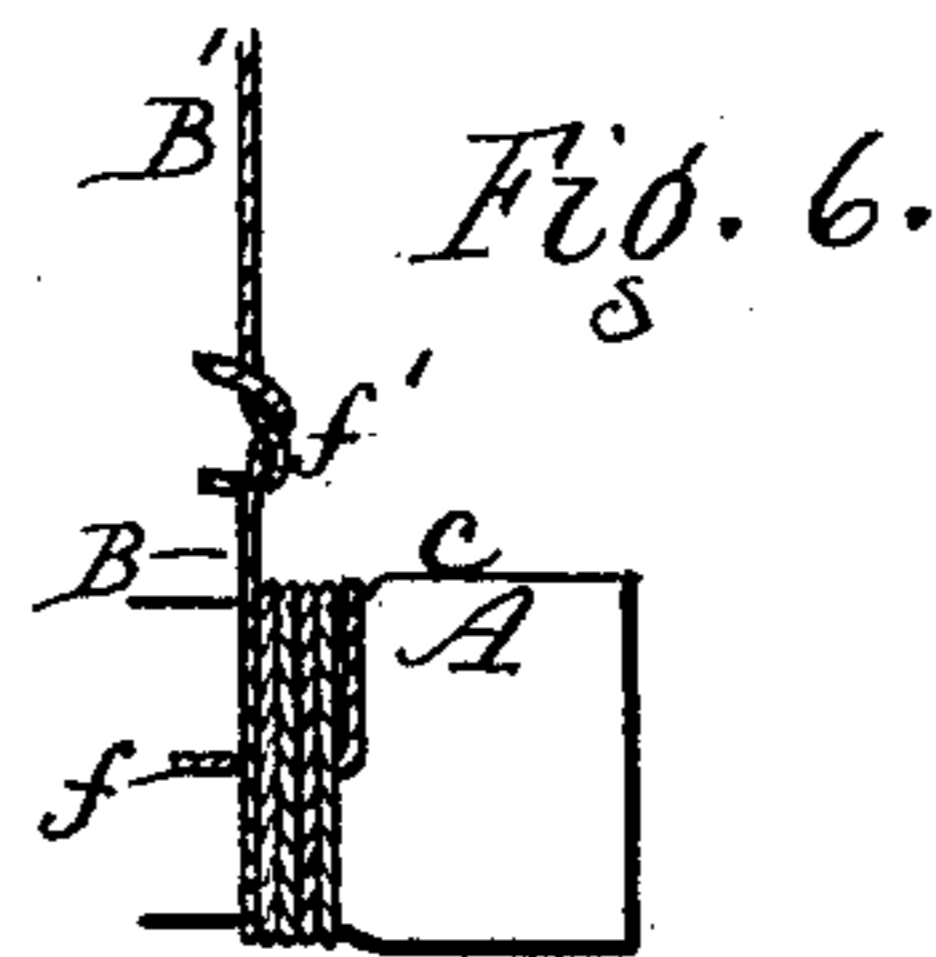
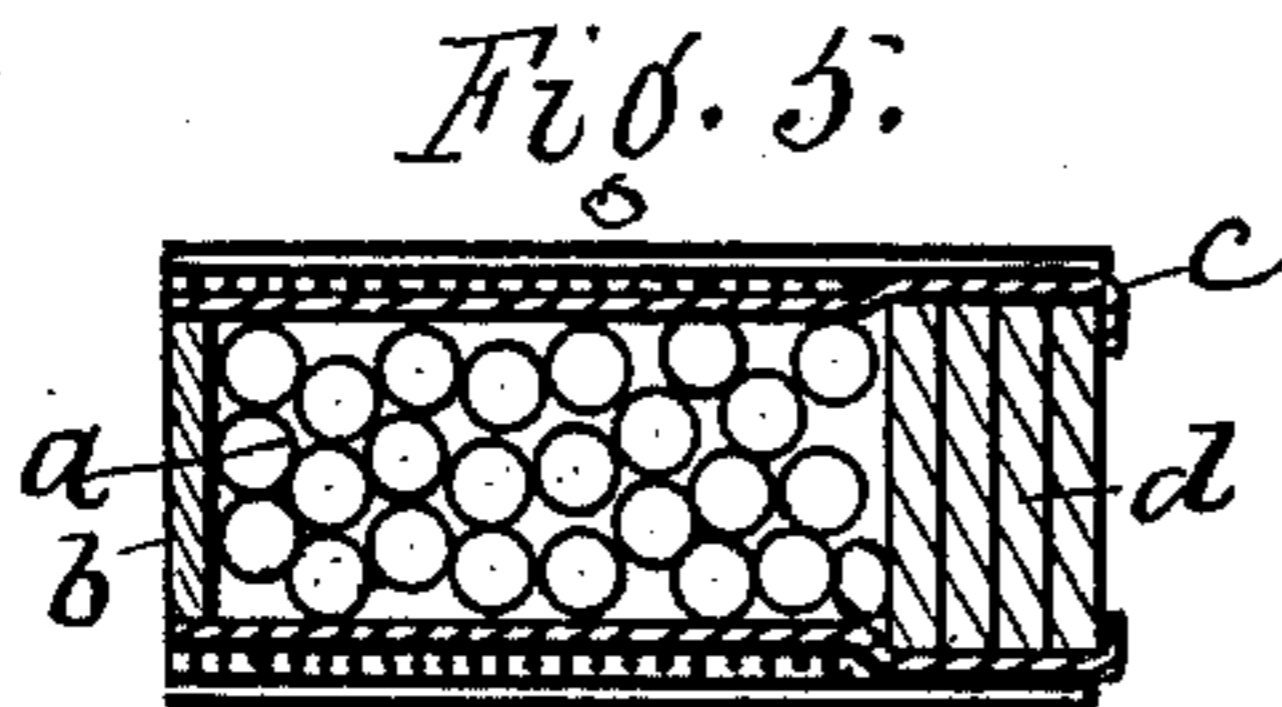
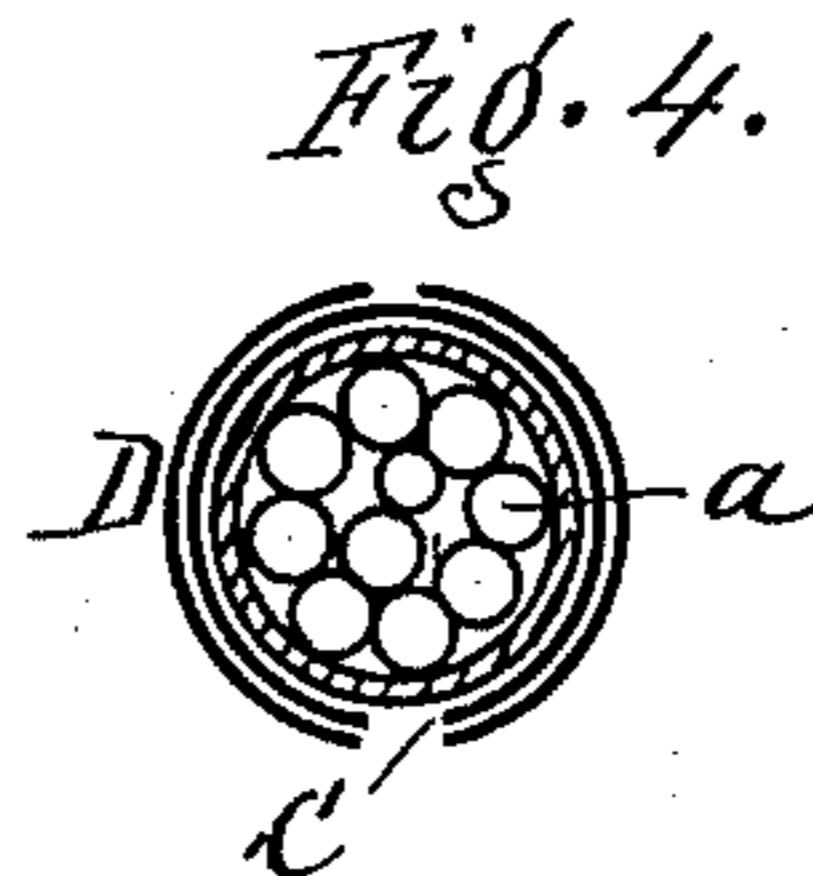
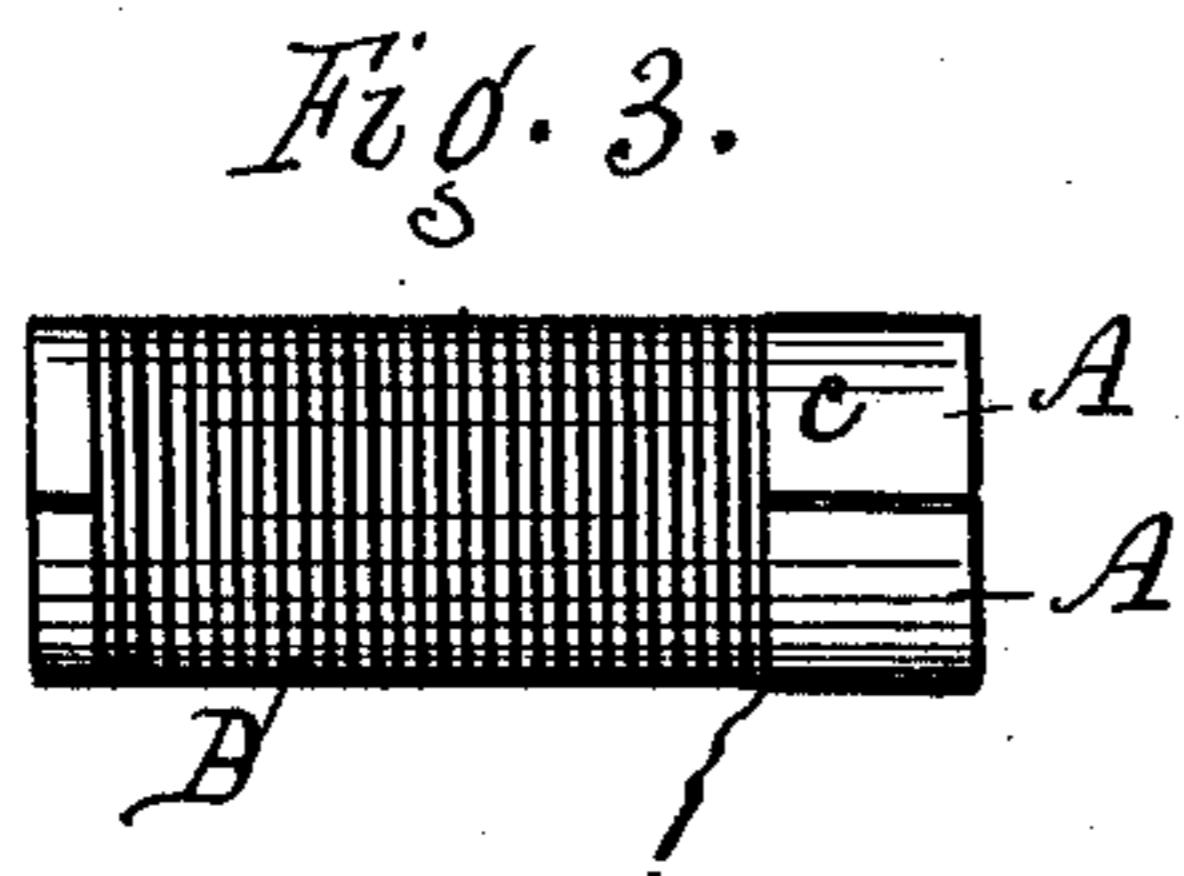
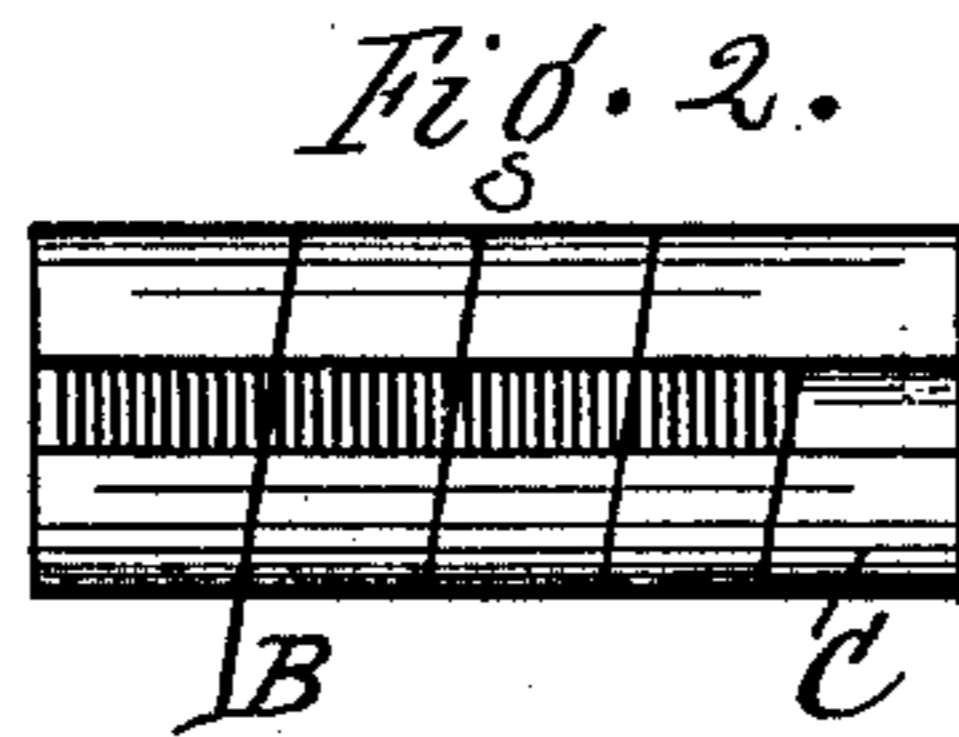
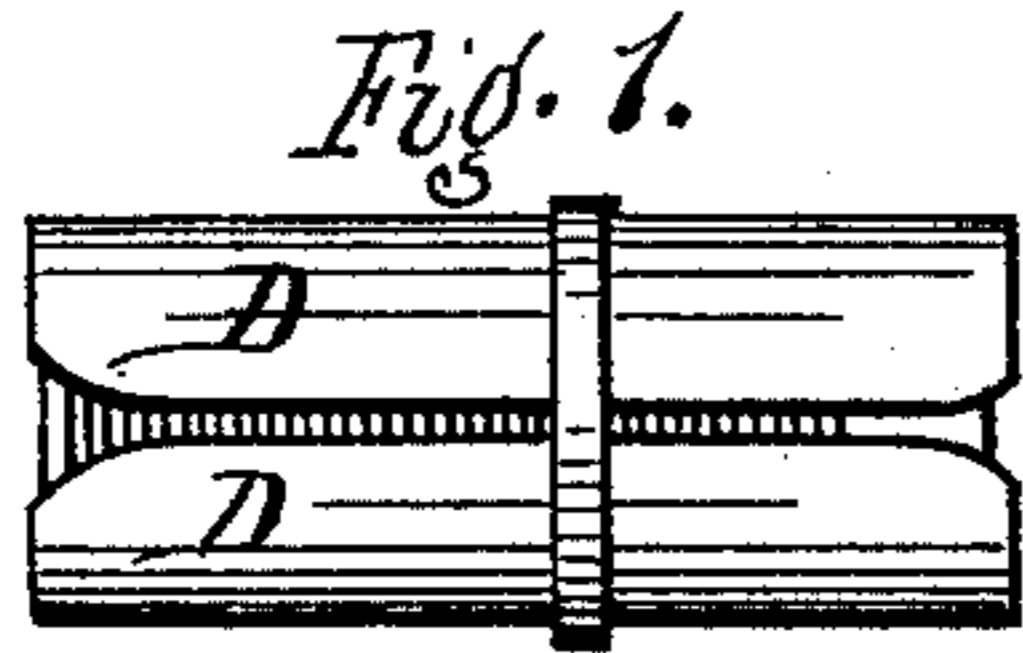


S. W. PAINE.
Shot Cartridge.

No. 233,946.

Patented Nov. 2, 1880.



Attest.
R. F. Osgood
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Inventor.
Seth White Paine

UNITED STATES PATENT OFFICE.

SETH WHITE PAINE, OF ROCHESTER, NEW YORK.

SHOT-CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 233,946, dated November 2, 1880.

Application filed April 24, 1877.

To all whom it may concern:

Be it known that I, SETH W. PAINE, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Shot-Cartridges; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of the cartridge in the completed state with the outer paper covering thereon. Fig. 2 is a similar view with the outer covering removed, but having the inner cloth or paper envelope thereon. Fig. 3 is a similar view with the envelope removed from place. Fig. 4 is a cross-section. Fig. 5 is a longitudinal section. Figs. 6, 7, 8, and 9 are detail views, showing the method of splicing the cords which are wound upon the cartridge.

My improvement relates to shot-cartridges composed of half-cases wound with cords so arranged that when the cartridge is discharged the cords or threads will unwind and the shot will scatter when the proper range is attained.

It is an improvement upon my patent of February 25, 1873; and the invention consists in winding the cartridge with short threads arranged to unwind successively; in so splicing or connecting the threads that the rear end of each will, as it leaves the case, raise the front end of the next; in a peculiar elongated form of this splice; in winding the thread in such manner that it unwinds constantly from the front toward the rear of the case, whereby the thread is subjected to a more violent action of the air and caused to unwind with greater certainty and uniformity; in combining with the end of the first thread a wrapper, wad, or equivalent device detachable from the cartridge to start the unwinding of the thread; and in rendering the rear end of a shot-cartridge lighter than the front in order to insure its accuracy of flight.

The shell of the cartridge is composed of two half-cylinders, A A, which fit accurately together and form the case. The front end is loaded with shot, *a*, retained by a wad or disk, *b*, while the rear end is made of a larger diameter, as shown at *c*, and is filled with several wads, *d d d*, resting against the shoulder in front and retained at the rear by flanges turned down from the end of the case. The diameter

of the end *c* is such as to stand even with or a trifle above the threads when wound upon the cartridge. This enlargement of the end of the cartridge serves a special purpose. It serves as a rudder to guide the cartridge and keep it straight forward by reason of taking the force of the wind. The wads placed therein render the rear end of the cartridge the lightest. They also serve to stiffen and retain the halves of the case in true position and prevent their displacement. They also take the concussion and prevent the shot from being driven out of the cartridge at the initial movement.

B B' are the several threads or cords with which the case is wound. The first one is wound next to the enlargement, as shown in Fig. 6. In commencing the winding the end *f* is laid longitudinally upon the case, and the coils are then wound over it at right angles any desired number of times. When the opposite end is reached the second thread, B', is spliced thereto by making a twist, forming a half-knot, as shown at *f'*, Fig. 6. This twist, being wound in, is held by the tension from untwisting, and the connection is thus made secure, though in unwinding under discharge the ends will readily disconnect, and the end leaving the cartridge will raise that which next follows, so that the latter, too, will commence to unwind. The threads may all be connected in this way.

In Figs. 7 and 8 are shown modifications in the plan of splicing, which I term "elongated" splices. In Fig. 7 the end of the second thread is placed under the end of the first before the latter is quite wound up. The winding of the two threads is then continued a partial turn, when the end of the first thread is turned under and then over the end of the second thread and wound in. In Fig. 8 the same plan is shown, except that the end of the first thread is turned over and then under the second thread and wound in. The advantage of these two forms over the first named is, that the splice is made a little longer, so that in leaving the end of one thread will raise that of the next farther up to catch the wind. But all of them are effective.

The method of the unwinding of the threads and the raising of the splice is shown clearly in Fig. 9.

By making the threads in several lengths,

as above described, a longer range can be obtained than where a single length is used, since with the escape of each length there is an interval of time before the next length gets in active operation. The threads are also surer in unwinding, and there is less danger of deflection of the cartridge by the catching of the threads upon bushes, twigs, &c.

The end of the last thread wound is carried around a cloth or paper covering, C, which is partially or wholly wrapped around the cartridge. I prefer to bring the end of the thread out through the slit of the covering, and then make several winds around the covering, which binds the covering close to the cartridge, and also connects the thread, so that when the covering is thrown off by the wind the unwinding of the thread will be started. This covering or envelope may be made of various forms, its design being, principally, to start the unwinding of the thread. A narrow strip of paper or cloth will answer, and in some instances I have attached the thread to a wad which fits behind the cartridge when inserted in the gun. This envelope is covered by an exterior covering of paper, D, which forms the patch when placed in the gun.

While it is preferred to splice the thread-sections to start each other, fair results may be secured when they are simply arranged to prevent each other from unwinding except in succession, provided the forward ends are placed in position to be freely acted upon and started by the air.

In using the divided case it is important that it shall travel throughout its entire flight front end first, and without tumbling or turning sidewise, in order that the case may separate properly, and consequently the construction of the rear end lighter than the front is an essential feature.

I do not claim, broadly, in this application a divided cartridge wound with thread; but I claim—

1. In a shot-cartridge, the combination, with the divided case A A, of the several threads B B', wound one after another upon the case, their connecting ends being spliced, so that the end of one thread will raise that of the next in unwinding, as shown and described, and for the purpose specified.

2. In a shot-cartridge, a separable shot-confining case or shell, in combination with a series of confining-threads wound thereon, to unwind successively one at a time, substantially in the manner described and shown.

3. In a shot-cartridge wound with short threads, the covering C, or equivalent, attached to the end of the thread last wound, for the purpose of starting the unwinding of the threads under motion, as herein described.

4. In combination with the divided shot-case and a confining-cord, a wrapper, C, wound thereon and encircled by the end of the thread, as shown.

5. In a shot-cartridge, the enlarged rear end, c, of the cartridge, filled with wads, or equivalent, behind the shot, for the purpose of lightening the rear end and guiding the cartridge, as herein described.

6. A shot-cartridge having a divided or separable shot case or shell and a rear end lighter than the front end, whereby the sectional case is caused to travel front end first and its proper opening insured.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

SETH WHITE PAINE.

Witnesses:

R. F. OSGOOD,
JACOB SPAHN.