C. S. WELLS.

Improvement in Cartridges.

No. 115,548. Patented May 30, 1871.

FIG. 1

FIG. 3

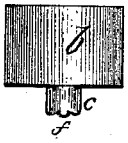

FIG. 2

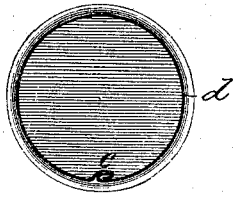

FIG. 4

FIG. 5.B.

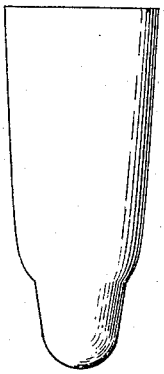

FIG. 5

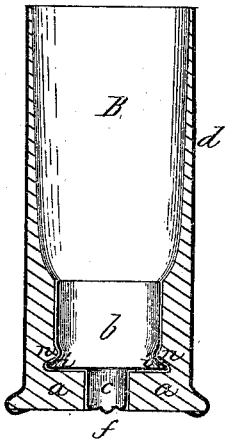

FIG. 4.A.

Witnesses,

Clarence Buckland

Clarence E. Howard

Charles S. Wells, Inventor,

By F. A. Curtis,

his Atty.

UNITED STATES PATENT OFFICE.

CHARLES S. WELLS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND WILLIAM A. BRINIE.

IMPROVEMENT IN CARTRIDGES.

Specification forming part of Letters Patent No. 115,548, dated May 30, 1871.

To all whom it may concern:

Be it known that I, CHARLES S. WELLS, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Cartridges; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a side view of the shell; Fig. 2 is an end view of the same, showing the method of locking the edges of the outside metallic covering; Fig. 3 is a longitudinal section through the middle of the re-enforcing cup; Fig. 4 is a longitudinal section of another modification of a cup; and Fig. 5 is a longitudinal section through the middle of the shell, showing the re-enforcing cup in place.

My invention relates to the construction of a cartridge-shell, of which the body of the shell is made of pulp and strengthened by an outside covering of thin metal; and it consists of a re-enforcing cup of thin metal having a nipple at the base, and introduced into the base of the shell while the pulp is in a wet or plastic state, so that by forcing in the pulp by means of a punch after the cup has been put in place, or at the same time that the cup is introduced—the end of the punch being tapered a little at the end—the pulp is forced in around the tapered end, crowding in the metal near the base of the cup all around, thus forming a head or flange upon the cup which secures it in place within the shell and prevents the cup from being started by the explosion. The nipple extends through the cup at the base of the shell, and the end of the nipple, which is perforated, has a small protuberance thereon, which serves as an anvil against which to explode the cap when placed on the nipple for that purpose; and my invention also consists of a fold made along each edge of the thin metal which surrounds the pulp, whereby the edges are securely locked together, and the metallic covering thus prevented from becoming loose and disconnected.

That others skilled in the art may be able to make and use my invention, I will proceed to describe the same.

In the drawing, *d* represents the thin metal which surrounds the pulp, Fig. 1 being a side view and Fig. 5 a longitudinal section of the same enlarged. The pulp, being the body of the shell, is shown in section at *a;* and when the thin metal *d* is placed within the die, which is of the same form inside as the outside of the shell, represented in Fig. 5, the pulp is then placed within the metal *d*, and the cup *b*, which has been previously struck up by a die, is then placed upon the end of the punch, which is a little tapered near the end. The punch is of the form shown in Fig. 5, B′, and, the cup *b* being placed upon the end, said punch and cup are then introduced into the metal covering *d*, within the die, and, if pressed in with sufficient force, the pulp *a*, being in a plastic state, is pressed in at *n*, driving the metal with it around the end of the punch, where it is tapered. The metal at the extreme end of the cup, however, will not be driven in, as the base is flat, and will retain its original size, or nearly so, so that a flange or head is made upon the cup in this manner, as shown at *i*. After the pulp becomes hard this flange *i*, with the hard pulp directly in front of it, secures the cup firmly in its place at the base of the cartridge. The nipple *c* is made upon the cup *b*, and when said cup is forced into place the nipple is pressed through to the outside of the base of the shell, as shown in Fig. 5, the thick base *a* thus forming a curb for the nipple *c*. At the extreme end of the nipple *c* a small protuberance, *f*, is made, which serves as an anvil, against which the fulminate is exploded; and the end of the nipple is perforated a little to one side of said protuberance in order that the firing-pin may not tend to protrude through and fill up the hole.

Before the thin outside metal is introduced within the die its two edges are folded in opposite directions, so that when brought together and lapped or locked into each other they form a connection or lock, as shown at *e* in Fig. 2. When the whole is firmly pressed into the die by the punch the lock is flattened and firmly pressed together its entire length. I prefer, however, to press the fold or lock together before the pulp is put in by means of a straight cylindrical punch, as it is then made much smoother and more regular.

The cup shown in Fig. 4 may also be used

as the outside head of a cartridge-shell, having a flange formed thereon, and secured to a hard paper body in a similar manner to what is known in market as the "Ely" shell. By making the head in this way the shell could be manufactured much cheaper, as the recess c' would serve as a receptacle for the anvil and primer instead of fastening in a separate piece known as the "battery-cup." By forming the flange at the base of the cup and forcing in a re-enforcing disk the head would be finished and ready to be secured to the paper body of the shell, and much expense would be saved in the whole manufacture of the shell.

Fig. 4, A, represents a shell having a paper body, with the cup b' having a recess, c', and flange x secured to the paper body.

When the thin metallic covering d is used, its edges locked as described, the shell becomes expansive, as the form of the fold permits the two edges to spring apart slightly, sufficiently to fill the barrel of the gun, and yet the cartridge is rendered more secure from bursting by accident when being handled in packing or shipping.

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

1. The re-enforcing cup b, secured within the shell a by means of the flange i at the base of the cup, and the annular flange of pulp n, substantially as described.

2. In an improved cartridge-shell, the thin metallic covering d, having its edges secured by means of the fold or lock e, substantially as described.

3. The combination herein described of the re-enforce cup b and nipple c with the paper cartridge-body having a thick base, a, said base forming a curb for the nipple, all as set forth.

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Witnesses:
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