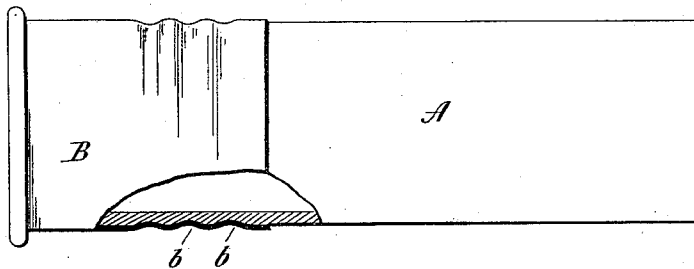


(No Model.)

J. GARDNER.
PAPER SHELL CARTRIDGE.

No. 563,157.

Patented June 30, 1896.



Witnesses.

J. H. Shumway
James S. Alling

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UNITED STATES PATENT OFFICE

JOHN GARDNER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
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PAPER-SHELL CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 563,157, dated June 30, 1896.

Application filed March 16, 1896. Serial No. 583,356. (No model.)

To all whom it may concern:

Be it known that I, JOHN GARDNER, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Paper-Shell Cartridge; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents a view, partly in elevation and partly in section, of one form which a paper-shell cartridge containing my invention may assume.

My invention relates to an improvement in that class of cartridges known as "paper-shell cartridges," and consisting, in part, of a paper tube and a drawn sheet-metal cap applied to one end thereof.

The object of my present invention is to prevent the tube from breaking, when the cartridge is in the gun, at or near the inner edge of the metallic cap, and thus avoid the necessity of manually extracting the main portion of the tube from the gun-barrel in which it is left when the operation of extracting the spent cartridge in the usual manner takes place.

A further object of my invention is to prolong the life of the paper-shell cartridges in case it is desired to reload them and use them over and over again.

With these ends in view my invention consists in a paper-shell cartridge composed, in part, of a paper tube and a drawn sheet-metal cap, which is continuously upset around its circumference, so as to be yielding at or near the point where the tube enters it, so that the said portion of the cap may yield sufficiently to and take the strain from the tube.

My invention further consists in certain details of construction, as will be hereinafter described, and pointed out in the claims.

It is obvious that in carrying out my invention the inner or open end of the cap may be adapted in a great variety of ways to yield sufficiently to prevent the paper from being torn at the point where the tube enters it. Thus the cap may have annular circumferential grooves rolled in it or longitudinally or

diagonally arranged crimps formed in it, or it may be upset to form a band of letters or characters, whether significant or arbitrarily chosen, the only requirement being that the metal shall be upset in some form that will permit it to yield a little at or near the point where the tube enters it.

For illustration of my invention I have chosen to illustrate a paper-shell cartridge having a paper tube A and a drawn sheet-metal cap B, the inner end of which is formed with several annular circumferential grooves *b*, which, as it were, take into the paper, and which are located in planes at a right angle to the longitudinal axis of the cartridge. These grooves permit the cap to yield longitudinally and diametrically at or near the point where the tube enters it, sufficiently to prevent the paper from being abruptly broken or torn at that point. The grooves *b*, it will be noted, extend continuously around the cap, which would not yield, as described, if they were interrupted. I may here remark that if, as above suggested, I employ crimps or letters or characters in the place of such grooves they must all be connected or joined together, so as to have the effect of a continuous upsetting of the metal. My observation is that the chief yielding of the caps is longitudinal, for the firing of the cartridges straightens out the grooves enough to permanently increase the length of the caps.

In view of the various modes suggested of making the cap yielding and of other modes which may be obviously resorted to, I would have it understood that I do not limit myself to the exact form set forth, but hold myself at liberty to make such changes as fairly fall within the spirit and scope of my invention.

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

1. A paper-shell cartridge having a paper tube, and a drawn sheet-metal cap which is continuously upset around its circumference, whereby the said cap is permitted to yield, when the cartridge is exploded, so as to prevent the paper tube from breaking at or near the point where it enters the cap, substantially as described.

2. A paper-shell cartridge having a paper
tube, and a drawn sheet-metal cap which is
constructed with one or more annular cir-
cumferential gooves located in a plane or in
5 planes at a right angle to the longitudinal
axis of the cartridge, substantially as de-
scribed, and whereby the said cap is permit-
ted to yield, when the cartridge is exploded,
so as to prevent the paper tube from break-

ing at or near the point where it enters the 10
cap.

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

JOHN GARDNER.

Witnesses:

DANIEL H. VEADER,
THOS. C. JOHNSON.