W. E. KEPLINGER.

PAPER SHELL CARTRIDGE.

APPLICATION FILED OCT 26, 1914.

1,184,753. Patented May 3

Fig. 1.

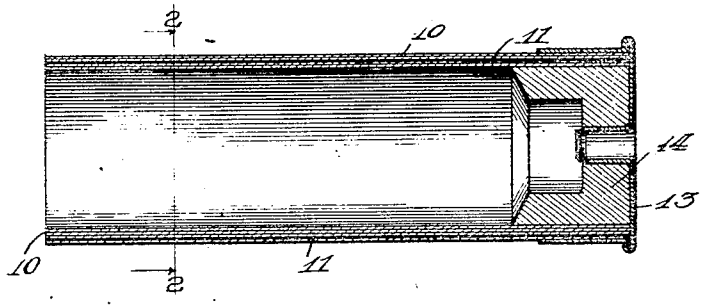


Fig. 3.

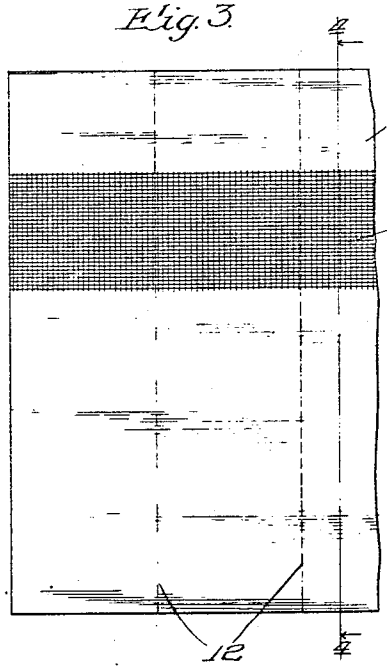


Fig. 4.



Fig.

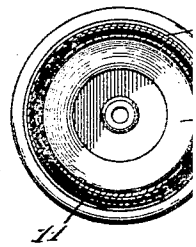


Fig. 5.

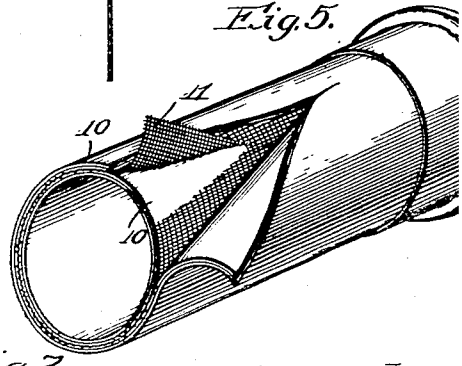


Fig. 6.

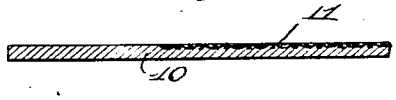
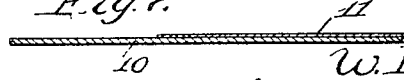


Fig. 7.



Witnesses:
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UNITED STATES PATENT OFFICE.

WARREN E. KEPLINGER, OF CINCINNATI, OHIO.

PAPER-SHELL CARTRIDGE.

1,184,753. Specification of Letters Patent. Patented May 30, 1916.

Application filed October 26, 1914. Serial No. 868,575.

To all whom it may concern:

Be it known that I, WARREN E. KEPLINGER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Paper-Shell Cartridges, of which the following is a specification.

My invention relates to cartridges and more particularly to paper shell cartridges, such as are used in shotguns and the like.

The object of my improvement is the provision of a cartridge of the kind mentioned which is provided with means for reinforcing the paper tube portion of the cartridge, and especially the point of the latter at and near the top edge of the metallic cap portion.

Other objects will appear hereinafter.

The invention consists in substantially the combination and arrangement of parts hereinafter described and claimed, and will be best understood by reference to the accompanying drawing, forming a part of this specification, and in which—

Figure 1 is a longitudinal section of a cartridge embodying my invention; Fig. 2 is a section taken on line 2—2 of Fig. 1; Fig. 3 is a plan view of a sheet of paper provided with reinforcement used in the manufacture of my improved shell, Fig. 3 being on a smaller scale than Figs. 1 and 2; Fig. 4 is a section taken on the line 4—4 of Fig. 3, but having its thickness exaggerated; Fig. 5 is a perspective view of a cartridge, having portions of it torn up to show its construction; Fig. 6 is an enlarged fragmental section of a sheet of material from which a cartridge embodying my invention is produced, and in which the reinforcing member is embedded in the sheet; and Fig. 7 is a similar view showing a different form of reinforcing member.

In the use of paper shell cartridges, the paper tube portion is frequently broken at the point where it meets the top edge of the metallic cup portion by the explosion of the charge in the cartridge. This breaking of the paper shell, which is ordinarily called "cut-off", causes considerable inconvenience in the use of this class of cartridges, and of course prevents their being re-used and so makes them unduly expensive. Various methods have been adopted to prevent "cut-offs" in paper shell cartridges, which have been more or less successful, but not entirely so. To overcome this fault, I reinforce the paper shell at the point where the "cut-off" is likely to occur.

I find that a material such as a fabric o cotton, linen, silk, wire mesh or the like makes a desirable reinforcing member. A thin sheet of metal, fiber, or the like, eithe imperforate or foraminate, may also be em ployed with equally good results. Wire or threads (not shown) may also be em bedded in the paper of the tubes to form the reinforcement therefor. I prefer t embed the reinforcing element in the pape of the tube, but when so desired it may b placed on the inner side or outer side of th latter, without departing from my inven tion. The reinforcement is not shown a disposed on the inner or outer side of th cartridge in the drawing, but it will b readily understood how this may be applie from perusing the method of embedding i in the paper of the tube.

In the improved tube of my cartridge, preferably use a sheet of paper 10, or othe suitable substance, Fig. 3, and secure a rein forcing element 11 of fabric, or the like, t the sheet. The reinforcing element is pre erably of a width and disposed on the shee in a manner so that when the sheet and rein forcing element are rolled and formed int a tube in the usual manner, the reinforcin element will cover at least one of the conv lutions of the sheet and be embedded in th tube between the convolutions of such tub For a convenient and economical manufa ture of the cartridges, I find that the rein forcing element may be disposed longitud nally of the sheet, and, when rolled and c on lines substantially indicated by the dotte lines 12 in Fig. 3, will form tubes of prope lengths for the cartridges. However, whe so desired, the reinforcing element 11 ma be made co-extensive with the sheet 10, it may be made in such sizes that when ap plied to the sheet it will only extend over sufficient part of the tube to protect the po tion thereof where the "cut-offs" occur.

The tubes after having been prepared described above, are secured between th metallic cup member 13 and the base wa 14 of the cartridge, in the usual manne The metallic cup 13 and base wad 14 may h of conventional or any desired constructio When so constructed, the reinforcing el ment 11 provides a means whereby the pap tube or shell of the cartridge is strengthene in a manner to prevent the explosions of th

charges in the cartridges from breaking or cutting off the paper tube at a point near the top edge of the metallic cup 13.

The reinforcing element 11 may be secured to the sheet 10 in any desired manner. In Fig. 3, I have indicated a construction in which the reinforcing element is secured to the sheet 10 by means of an adhesive. In Fig. 6, I have shown the reinforcing element as having been pressed into the sheet of paper, such as by running the reinforcing material through the rolls of the paper-making machine during the manufacture of the paper. In Fig. 7, I have indicated the reinforcing material formed of a solid sheet and applied to the sheet 10.

While I have illustrated and described the preferred form of construction of my invention, I do not desire to be limited to the precise details described and shown, but desire to avail myself of such variations and changes as come within the scope of the appended claims.

I claim:

1. A cartridge comprising a paper tube made up of a sheet disposed in a plurality of convolutions secured together; a cloth reinforcing member positioned between two convolutions of the paper sheet; and a cup secured to and inclosing one end of the paper tube.

2. A cartridge comprising a tube made up of a sheet of paper disposed in a plurality of convolutions and a narrow sheet of cloth extending around and pressed into one of the intermediate convolutions of the paper sheet; and a cup secured to and inclosing one end of the tube.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 22nd day of October A. D. 1914.

WARREN E. KEPLINGER.

Witnesses:

F. C. TUTTLE,

S. E. D. KEPLINGER.