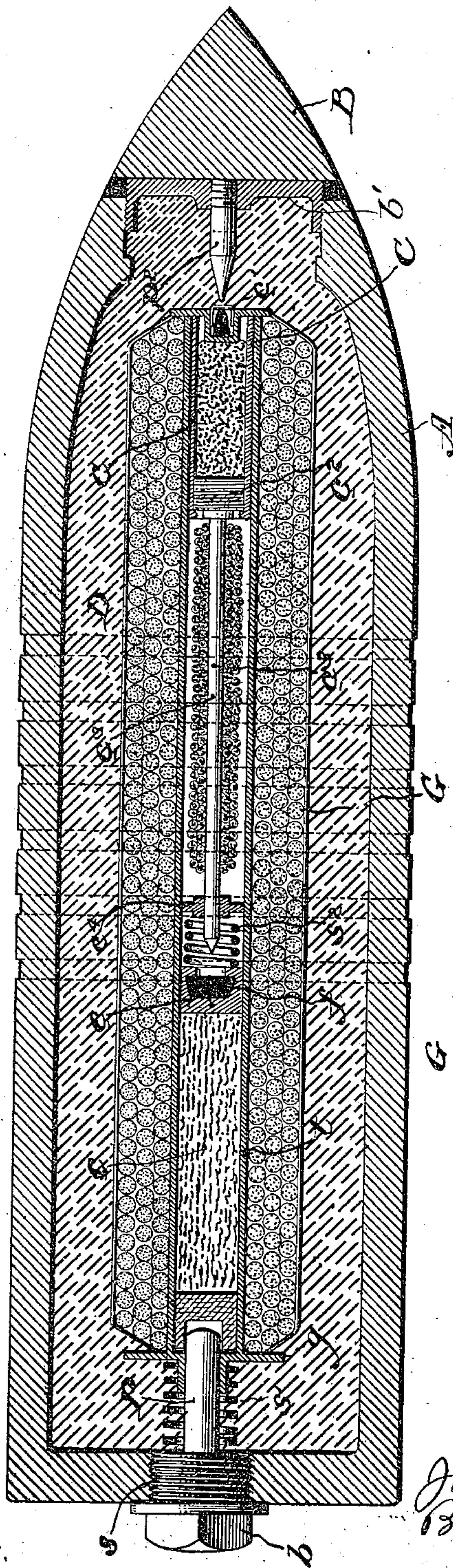


(No Model.)

J. E. BOTT.  
SHELL FOR HIGH EXPLOSIVES.

No. 541,588.

Patented June 25, 1895.



WITNESSES:  
*David Williams,*  
*J. Henderson.*

INVENTOR:  
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By his Attorney,  
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# UNITED STATES PATENT OFFICE.

JOSEPH ELTON BOTT, OF STOCKPORT, ENGLAND, ASSIGNOR OF ONE-HALF TO  
T. BENNETT PHILLIPS, OF PHILADELPHIA, PENNSYLVANIA, EXECUTOR  
OF HOWARD CRAMP, DECEASED.

## SHELL FOR HIGH EXPLOSIVES.

SPECIFICATION forming part of Letters Patent No. 541,588, dated June 25, 1895.

Application filed July 30, 1892. Renewed July 21, 1894. Serial No. 518,283. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH ELTON BOTT, of Stockport, England, have invented a certain new and useful Improvement in Explosive  
5 Shells and Projectiles; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification.

10 My invention has relation to explosive shells or projectiles, and consists in the structures hereinafter particularly described and claimed.

The object of my invention is to provide a  
15 shell or projectile safe for storage and transportation purposes but of highly explosive properties, efficient in service and constructed to explode after the projectile has penetrated or partially penetrated the target or object at  
20 which it is directed.

The accompanying drawing is a longitudinal sectional view of my improved shell.

A represents the casing or main body of the hollow shell. In the base of the shell is preferably provided a screw-threaded plug, *b*, secured to the base by the screw-threads, *s*.  
25 Upon the plug, *b*, is rigidly provided the pin or shaft, *p*, protruding within the shell upon which is circumferentially mounted the spiral spring, *s'*. Supported upon the pin, *p*, and spring, *s'*, is the long, longitudinally disposed central tube, *t*, preferably constructed of vulcanite and provided with the collared base, *g*, which fits around the pin, *p*. This longitudinal central tube, *t*, is retained in its central position within the walls, *A*, by any suitable means. In the lower end of the tube, *t*,  
35 is provided a charge of bellite, *c*, or other high explosive, tightly compressed. Above the bellite, *c*, is provided a cup, *e*, containing a strong fulminate of mercury or silver, *f*. In the upper part of the tube, *t*, is provided the cartridge, *C*, protruded within the said tube, *t*, from above having a percussion cap, *c'*, in  
45 the upper end. This cartridge, *C*, is charged with gun-powder. In the lower part of the cartridge, *C*, a piston or plug, *c''*, is snugly fitted having the elongated rod or shaft, *c'''*, pointed at the lower end, and depending in  
50 the tube, *t*, to a point slightly above the cup,

*e*, containing the fulminate *f*. The collar or shoulder, *c''*, is provided upon the rod, *c'''*, at or near its lower end and interposed between the said collar, *c''*, and the cup, *e*, is a spiral spring, *s''*, which has a tendency to keep the  
55 point of the rod, *c'''*, from penetrating the fulminate, *f*, of the cup, *e*, under the influence of slight concussion such as may be experienced by the projectile in leaving the gun or possibly in the course toward the target. 60

In the apex of the casing, *A*, a solid steel cone, *B*, is provided secured upon the shell, *A*, by means of a screw-threaded copper washer provided on the base of the cone, *B*. A pointed shaft or pin, *p'*, protrudes from the  
65 base of cone, *B*, into the shell, *A*, to a point at a slight distance above the percussion cap, *c'*, provided in the cartridge, *C*.

The tube, *t*, is wrapped with gun-cotton, *G*, or with cords or pellets of other high explosives, and upon the outer circumference of  
70 this explosive a thick coating of paraffine is preferably provided to prevent premature destruction by dampness, while the space, *D*, between the gun-cotton and the inner walls  
75 of the casing, *A*, is filled with paraffine also, or other suitable material, thus securing the parts firmly in the casing.

In operation as after the projectile has been thrown from the gun and strikes the object  
80 desired the cone, *B*, is driven in (a space or recess being provided for the purpose) stripping the screw-threads of the copper washer, *b'*, and penetrating the point of the pin, *p'*, into the percussion cap, *c'*, which thus  
85 explodes the gun-powder or light explosive material contained in the cartridge, *C*, and drives the piston head, *c''*, downward penetrating the point of the rod, *c'''*, into the fulminate contained in the cup, *e*, thereby exploding  
90 the same, which in turn explodes the bellite, *c*, or other high explosive, contained in the base of the tube, *t*. The explosion of the bellite then in turn breaking the tube, *t*, communicates with the gun-cotton, or other high  
95 explosive, *G*, provided upon the circumference of the tube, *t*, which explodes, as is well known, with tremendous force driving particles of the shell, *A*, with great penetrating effect in all directions.



In the construction described it will be clearly seen that the explosion of the shell will not occur immediately upon impact with the target or object which it strikes, but, as  
 5 an intermediate mild explosion of the cartridge, C, must occur before the fulminate in the cap, e, is exploded, the shell, A, will have had time to have penetrated, or partially penetrated, the target or object before the main  
 10 explosion takes place. It will also be seen that in the construction described the shell being exploded by the bellite it will explode from its base upward rather than from its apex downward, which experiment has proved  
 15 to be an advantage.

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

1. A shell or projectile provided with a partially telescoping apex adapted to be partially  
 20 driven in the shell upon impact with a solid body, a longitudinal tubing centrally provided in the main body of the shell having gun cotton or other highly explosive material  
 25 provided on the outer circumference of the said tube, a charge of bellite or other highly explosive material provided in the lower end of the said tube having a fulminating cap fitted upon said charge, a primary cartridge  
 30 charged with gun-powder of mild explosive properties provided in the upper or outer end of said centrally disposed tube, fulminating cap provided therein, a rod or piston secured in the lower or outer end of said primary cartridge the lower end of which rod or  
 35 piston is retained just out of contact with the fulminating cap of the cartridge of highly explosive properties, but in such position that it will explode said fulminating cap when the  
 40 primary cartridge is exploded, a pin provided

upon the base of the apex of the shell in such relative position with the cap of the primary cartridge that when the apex is driven in upon the main body of the shell by impact  
 45 said pin will explode the cap of said primary cartridge and thereby explode the highly explosive cartridge and the entire shell, substantially as described.

2. A shell or projectile having a casing, A, and apex, B, said apex secured upon said casing, A, so as to partially telescope it into the  
 50 same upon impact, a centrally disposed metallic or vulcanized tube, t, provided in the casing, A, supported upon the base plug, b, pin, p, and spiral spring, s', gun cotton, or  
 55 other highly explosive material, wrapped or otherwise provided upon the outer circumference of the tube, t, bellite or other highly explosive material provided in the lower end of the tube, t, capped with a fulminating cap, e,  
 60 primary cartridge, C, provided in the upper end of the tube, t, capped with a fulminating cap, c', and charged with gun powder or other low explosive, a plunger, c<sup>2</sup>, provided in the lower or outer end of the cartridge, C, and a  
 65 depending pointed rod or shaft, c<sup>3</sup>, provided upon said plunger, c<sup>2</sup>, terminating a short distance from the fulminating cap, e, and means for normally retaining the end of the rod, c<sup>2</sup>, from contact with the fulminating cap, e, and  
 70 pin, p<sup>2</sup>, provided upon the base of the apex, B, in proximity with cap, c', substantially as described.

In witness whereof I have hereunto set my hand this 26th day of July, A. D. 1892.

JOSEPH ELTON BOTT.

Witnesses:

H. GORDON MCCOUCH,  
 HORACE PETTIT.