J. JOBSON.

EXPLOSIVE PROJECTILE.

No. 96,595. Patented Nov. 9, 1869.

Fig. 1.

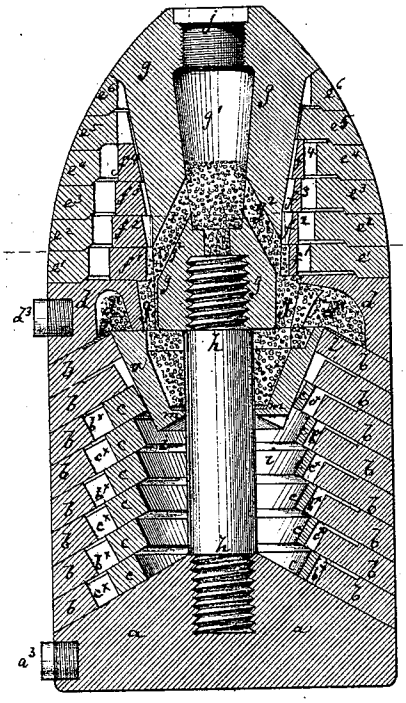


Fig. 2.

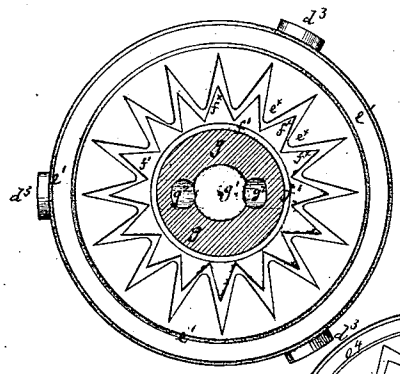


Fig. 3.

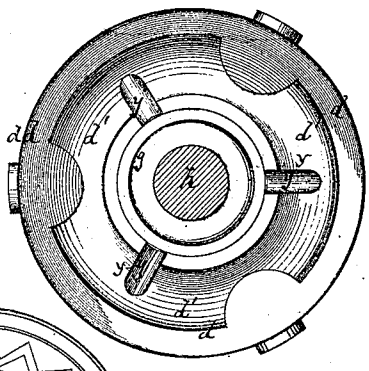
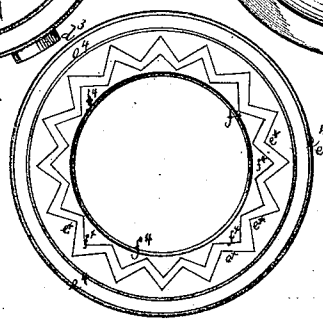


Fig. 4.



Witnesses.

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Letters Patent No. 96,595, *dated November* 9, 1869.

IMPROVEMENT IN EXPLOSIVE PROJECTILES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN JOBSON, of Derby, England, have invented a new and useful Improvement in Explosive Projectiles; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object to be attained in the use of explosive projectiles, is the fracture of the parts of them into a number of fragments, each of which may, on the explosion of the explosive matter contained in the projectile, produce some destructive effect.

Various attempts have been made to increase these effects by giving definite forms to the parts constituting the case of the shell, adapted to facilitate their action on each other for separation of them into many separate parts. But the forms hitherto proposed have mostly been limited to the cylindrical or parallel portion of the projectile, and the head or outer end of the projectile has been formed solid, except for the passage into it, or of some part thereof, of the charge of explosive matter.

The object of my improvement is to admit of the head, or forward end or part of the projectile being split or broken up into a number of definite forms or parts; also, by the form of a portion of this head or end, to facilitate the separation and distribution of parts composing the cylindrical or parallel portion or body of the projectile.

Another object of the improvement is to insure the fracture or division of the parts of the projectile into definite portions or sections, by forming such parts with surfaces inclining in opposite and other directions, or partly inclined and partly in a plane, at right angles to the axis, to the projectile, or parallel to such right angle, so that parts of every ring, by being of varying thickness, may be better adapted for the portions of one ring in their action upon those of another on the explosion of the contained explosive matter.

But that the invention may be fully understood, I will, by the aid of the accompanying drawings, proceed to describe means pursued by me in carrying the same into effect.

Figure 1 represents a central section of a projectile constructed according to my invention.

Figures 2, 3, and 4, are horizontal views, showing parts of the projectile separately.

Similar letters of reference indicate corresponding parts.

a is what may be called the base of the projectile, being of cylindrical form, with conical upper part.

Upon it is placed a series of concentric rings, *b* and *c*, which are inclined at an angle on their upper and under surfaces, corresponding to the conical top of the base, or in place of being wholly inclined, they may be only partially so.

The outer rings *b* have upright outer edges, to form, together with the base, a cylindrical body.

Upon the same is placed the stud-ring *d*, completing the cylindrical or parallel portion, or body of the projectile.

Upon this ring *d*, I apply another series of rings, which, so far as they are in pairs, are concentric.

These rings are respectively marked e^1 e^2 e^3 e^4 e^5 e^6 and f^1 f^2 f^3 f^4, forming the lower portion of the head or outer end of the projectile; that is to say, the outer rings e^1 e^2, &c., have their outer edges so shaped as to gradually contract the upper part of the shell.

The apex of the shell or projectile is formed by a hollow plug, *g*, which can be closed on the top a nut, *j*.

The variations in the size and form of the respective rings e^1 e^2 e^3 e^4 e^5 e^6 and f^1 f^2 f^3 f^4 are clearly shown in fig. 1.

The piece *g*, as it extends downward within the inner rings f^1 f^2 f^3 f^4, is gradually tapered down, and is connected to the base *a* by a screw-spindle or connecting-piece, *h*, which, for this purpose, is formed with a screw at each end, one end passing into the base *a* and the other into the piece *g*.

When the parts are closely screwed together, the stem *h* holds all in correct relative position.

Each of these inner rings, *c* and f^1 f^2 f^3 f^4, is, on the outer edge, provided with a series of wedge-like teeth, c^* f^*, which are placed between the teeth b^* and e^*, formed on the inner edges of the respective outer rings *b* and e^1 e^2 e^3 e^4, as in figs. 2 and 4.

It will be observed that the sides of the teeth of the inner circles or rings are not parallel, but are at an angle to those of the teeth of the outer rings.

The form of these teeth may, however, be varied, care being taken that the form adopted be such that a forcible action outward of the parts of each inner ring tends, in their acting between the teeth of the respective outer rings, to effect the division of those rings into separate parts.

In the drawing there are represented but six "inner" rings *c*, while there are eight outer rings *b*, and there is a hollow conical piece or cup, *n*, resting on the inner edge of the upper ring *b*.

It will be seen that the piece *g* is formed with an internal chamber, g^1, and with passages g^2 g^2 therefrom to the ring, and thence through passages *y*, in *d*, to the interior of the conical piece or cup *n*, by which the explosive composition may be supplied through the part *g* to the conical piece or cup *n*, and to a channel, d^1, formed in the ring *d*, as in fig. 3, which is an inverted plan view of the ring *d*.

If desired, the explosive matter may also be caused to flow up between the outer surface of the cone g and the interior of the rings f^1 f^2 f^3 f^4.

The chamber g^1 is closed by a screw-plug, j, which is withdrawn for the introduction of the fuse.

l is a washer, of leather or other suitable material, applied between the ring d and upper ring b, and conical piece or cup n, closing the outer part of the channel d^1, thereby forming it into a chamber, and preventing the explosive matter from passing down between the rings c and the rings b.

By these means, when the explosive matter in the projectile is fired, it will act on the conical piece or cup n, and by forcing it downward, will cause it to first act on the two upper rings b, and then on the rings c, and by them on the other of the rings b, forming the cylindrical or parallel portion, or body of the projectile, to cause the fracture of these rings into a number of definite portions, and a like effect will also simultaneously be produced on the rings e^1 e^2 e^3 e^4 e^5 e^6 and f^1 f^2 f^3 f^4 of the head of the projectile.

This latter effect will be obtained by the ring d, which will be forced up the piece g, and which will carry with it the rings f^1 f^2 f^3 f^4, e^5 and e^6, which will thereby become broken up, each into a number of distinct pieces, corresponding with the teeth thereof, and each of the teeth or portions of these inner rings f^1 f^2 f^3 f^4, by its acting on the teeth of the outer rings, will cause their fracture and separation.

The ring d also becomes broken into portions, separating at the parts y.

The explosive matter is prevented from passing below the conical piece or cup n to the chamber i, by means of leather or other suitable washer m, which is applied in the interior of the conical piece or cup n, so as to surround the spindle h, and prevent the passage of the explosive mixture between that spindle and the chamber i.

a^3 d^3 are studs, affixed on the outer surfaces of the rings a and d, to pass into the rifle-grooves of the gun.

When explosion of the contained explosive matter takes place, the parts of the rings b and c, as separated, are driven off in directions corresponding with the angle of inclination of the respective rings b and c.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

A projectile, formed of a base, a, concentric rings b c, stud-ring d, cup n, packing m l, the rings e^1 f^1, e^2 f^2, e^3 f^3, e^4 f^4, e^5 e^6, the chambered piece g, and plug g^1, all constructed, and arranged with respect to one another, in the manner described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN JOBSON.

Witnesses:

THOMAS C. RYLEY,
Notary Public, Liverpool.

WILLIAM KNOX,
His Clerk.