No. 727,699. PATENTED MAY 12, 1903.

C. P. E. SCHNEIDER.

ARMOR FOR SHIPS, TURRETS, &c.

APPLICATION FILED MAY 13, 1902.

NO MODEL.

Fig. 1.

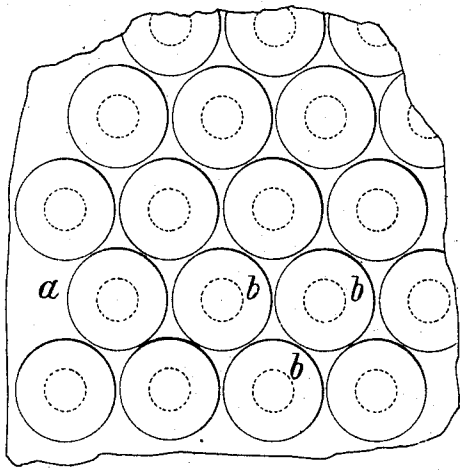


Fig. 3.

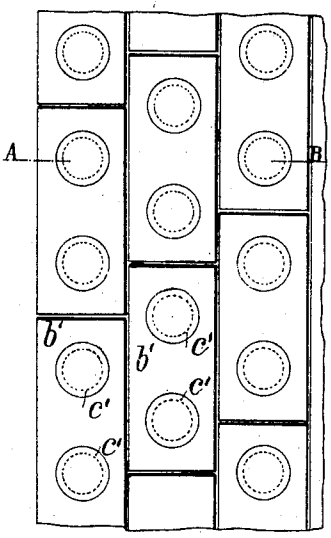


Fig. 2.

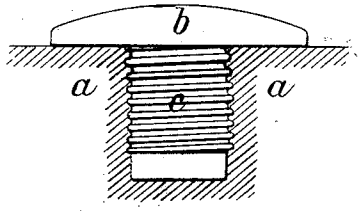


Fig. 4.

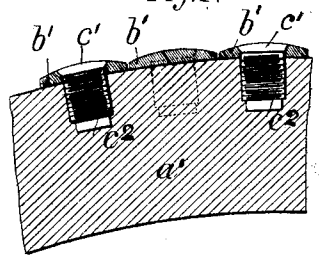
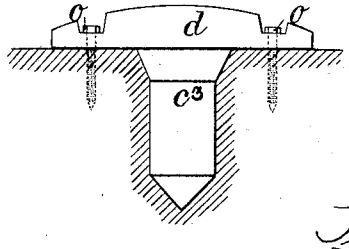


Fig. 5.



Witnesses:—

Inventor:—

Charles P. E. Schneider

by Thos. P. Howe atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 727,699. Patented May 12, 1903.

UNITED STATES PATENT OFFICE.

CHARLES PROSPER EUGÉNE SCHNEIDER, OF LE CREUSOT, FRANCE.

ARMOR FOR SHIPS, TURRETS, &c.

SPECIFICATION forming part of Letters Patent No. 727,699, dated May 12, 1903.

Application filed May 13, 1902. Serial No. 107,138. (No model.)

To all whom it may concern:

Be it known that I, CHARLES PROSPER EUGÉNE SCHNEIDER, a resident of Le Creusot, Saône-et-Loire, France, have invented a new and useful Improvement in Armor for Ships, Turrets, &c., which invention is fully set forth in the following specification.

Hitherto armor for ships, turrets, and similar structures has been composed of metal plates of great thickness with the surface made as hard as possible. Whether these plates have been manufactured from unalloyed metal or from an alloy, hardened superficially by tempering, cementation, and tempering or other process, or whether they have been composed of several superposed plates of metals or alloys of various degrees of hardness assembled or welded together they behave in the same manner when struck by a projectile—that is to say, the superficial stratum of the impact-surface when it is sufficiently hard breaks the point and even the ogival part of the projectile being itself reduced to fragments. If not stopped, the projectile continuing its progress through the softer and more ductile metal forming the body of the plate causes this metal to bulge beneath the hard skin and to break up into fragments which become detached around the point struck, leaving a considerable surface bare and without a hard layer as a protection against fresh attacks. Finally, the projectile, more or less injured by its contact with the hard surface, enters the more malleable portion of the armor, being supported on all sides by the metal which it displaces almost symmetrically around it, thereby maintaining its integrity and consequent effectiveness. I have also found in practice that it is exceedingly difficult to manufacture sharply curved or bent armor-plates properly hardened on the impact-surface. My invention obviates all these defects. It not only permits of producing armor-plates of greater strength or resistance than those hitherto manufactured, but at the same time removes all difficulties of manufacture and of fixing.

According to my said invention I construct armor with a continuous backing formed of metal plates of medium hardness, and to this backing I screw or otherwise attach a series of small impact-pieces of great hardness, which I arrange in as close proximity to each other as possible, at the same time leaving them independent of each other. Each of these pieces therefore represents a small independent impact-surface of great hardness which can only communicate with the adjacent impact-surfaces by means of the underlying backing. The first shock is received by only a very few of these impact-pieces, and each fragment of the broken projectile is only able in turn to strike one or at least a very few of them. I also obtain other advantages, which are hereinafter referred to.

I will now proceed to describe various practical constructional forms of the said invention with reference to the accompanying drawings, in which—

Figure 1 is a front elevation of a portion of an armor-plate constructed in accordance with the said invention. Fig. 2 is a section, drawn to an enlarged scale, showing in elevation an isolated impact-piece. Fig. 3 is a front elevation similar to Fig. 1, showing a modified form of the impact-pieces. Fig. 4 is a cross-section on line A B of Fig. 3. Fig. 5 represents another embodiment of the invention.

In Figs. 1 and 2 the armor consists of a backing a of non-cemented metal, into which a series of impact-pieces b, in the form of disks or plates having a convex surface, are secured by means of a screw-threaded stem c. These disks b, of exceedingly hard metal, are arranged as near to each other as possible without actually touching. The space or interval to be left between the said disks is determined by the double condition of avoiding all connection or solidarity between the adjacent disks, while at the same time obviating any possibility of the projectile penetrating these intervals.

In Figs. 3 and 4 the armor consists of a backing a', in which the impact-pieces b', in the form of parallelograms having a convex outer surface, are secured by means of screw-threaded stems c^2 of the same metal. Heads c' on the stems engage in openings in the pieces and with said pieces constituting impact plates or disks, the stems being beneath the plates or disks thus formed. The said parallelograms are preferably arranged in the manner represented in the drawings—that is to say, "breaking joint" in order to prevent the formation of long straight lines of least

resistance by the interval separating the adjacent impact-pieces. The manner of fixing the impact-pieces may vary in many ways, as may also the form and dimensions of the same.

In Fig. 5 stems c^3 are driven tightly into countersunk openings in the backing, and impact-plates d are secured to the backing over said stems by suitable means, such as screws o.

A projectile encountering armor-plate thus constructed will strike at least one of the disks or other impact-pieces, breaking against it and reducing the same to fragments, but without destroying adjacent impact-pieces. The latter may be struck by fragments of the broken projectile and be themselves reduced to fragments after having separately resisted the passage of these fragments.

Besides the advantages already mentioned, the following may be considered as more especially relating to the manufacture and mounting of the armor:

First. Owing to the small dimensions of the impact-pieces, any desired degree of hardness may be imparted to them by manufacturing them directly from suitable metal, which may be different from that of the backing a. In this manner the difficulties of tempering and cementation are avoided, which is an important consideration in the case of a large plate.

Second. The backing a and the hard disks or other pieces fixed after shaping may readily be made to conform to the theoretical profiles of armored vessels. The said impact-pieces may also be applied to sharply-curved plates, which it is impossible to manufacture of cemented metal.

Third. It is possible to furnish armor-plates already in use, without dismounting them, with a hard and efficient protection.

Thus I provide for armor-plates a hard and subdivided artificial covering without having recourse to cementation. Furthermore, the stems of the said covering, far from weakening the backing, reinforce it—that is to say, they constitute in its mass portions which interrupt the continuity and which thus deaden the effects produced by the penetration of the projectile or of its fragments and cause them to deviate from their path if penetration occurs. They also prevent the bulging of the metal by the projectile.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. Armor for ships, turrets or other structures, consisting of a metallic backing, metallic impact plates or disks bearing against the outer surface of the backing and disposed closely together but independently of each other, said plates being of greater hardness than the backing and constituting a subdivided impact-surface for the armor, and metallic stems beneath the impact plates or disks of greater hardness than the backing and engaging in sockets or openings passing only partly through the backing.

2. Armor for ships, turrets or other structures, consisting of a metallic backing, metallic impact plates or disks bearing against the outer surface of the backing and disposed closely together but independently of each other, stems beneath the plates or disks and integral therewith engaging in sockets or openings passing only partly through the backing, said plates or disks and stems being of greater hardness than the backing.

3. Armor for ships, turrets or other structures, consisting of a metallic backing, metallic impact plates or disks disposed independently of each other at the outer surface of the backing said plates or disks being of greater hardness than the backing and constituting a subdivided impact-surface for the armor, and means securing the impact plates or disks in place consisting of screw-threaded stems beneath the impact plates or disks of greater hardness than the backing and engaging in screw-threaded sockets or openings passing only partly through the backing.

4. Armor for ships, turrets or other structures, consisting of a metallic backing, metallic impact plates or disks disposed independently of each other at the outer surface of the backing and constituting a subdivided impact-surface for the armor, screw-threaded stems formed integral with the plates or disks and engaging in screw-threaded sockets or openings passing only partly through the backing, said plates or disks and stems being of greater hardness than the backing.

5. Armor for ships, turrets or other structures, consisting of a metallic backing, metallic impact plates or disks bearing against the outer surface of the backing and disposed closely together but independently of each other, said plates or disks being of greater hardness than the backing and constituting a subdivided impact-surface for the armor, and screw-threaded metallic stems beneath the impact plates or disks of greater hardness than the backing and engaging in screw-threaded sockets or openings passing only partly through the backing.

6. Armor for ships, turrets or other structures, consisting of a metallic backing, metallic impact plates or disks bearing against the outer surface of the backing and disposed closely together but independently of each other, screw-threaded stems formed integral with the plates or disks and engaging in screw-threaded sockets or openings passing only partly through the backing, said disks or plates and stems being of greater hardness than the backing.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CHARLES PROSPER EUGÉNE SCHNEIDER.

Witnesses:
JEAN GAMET,
EDMOND BLAISE.