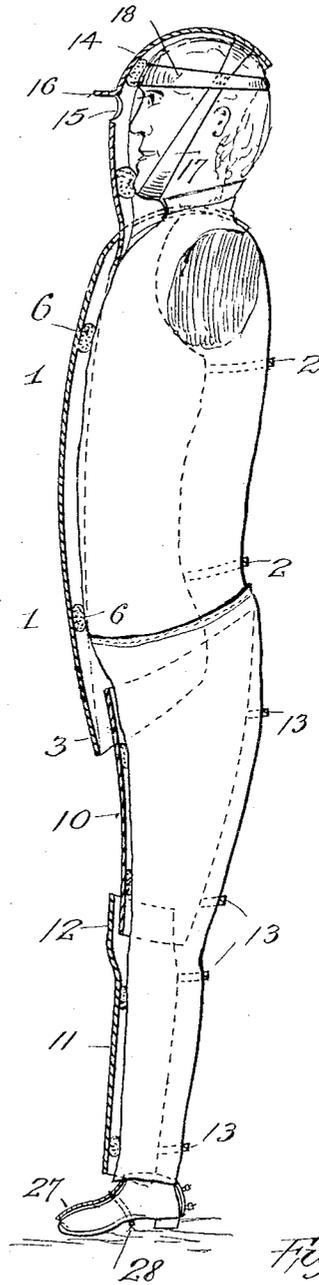
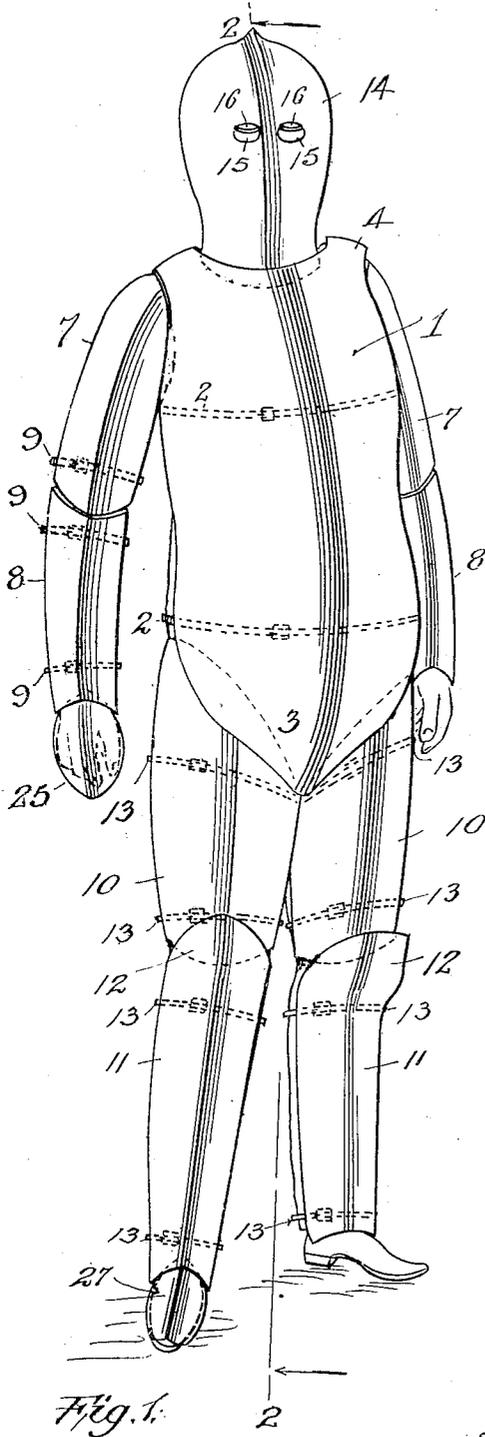


1,350,062.

G. O. BREWSTER.  
BULLET PROOF ARMOR.  
APPLICATION FILED DEC. 28, 1915.

Patented Aug. 17, 1920.

2 SHEETS—SHEET 1.



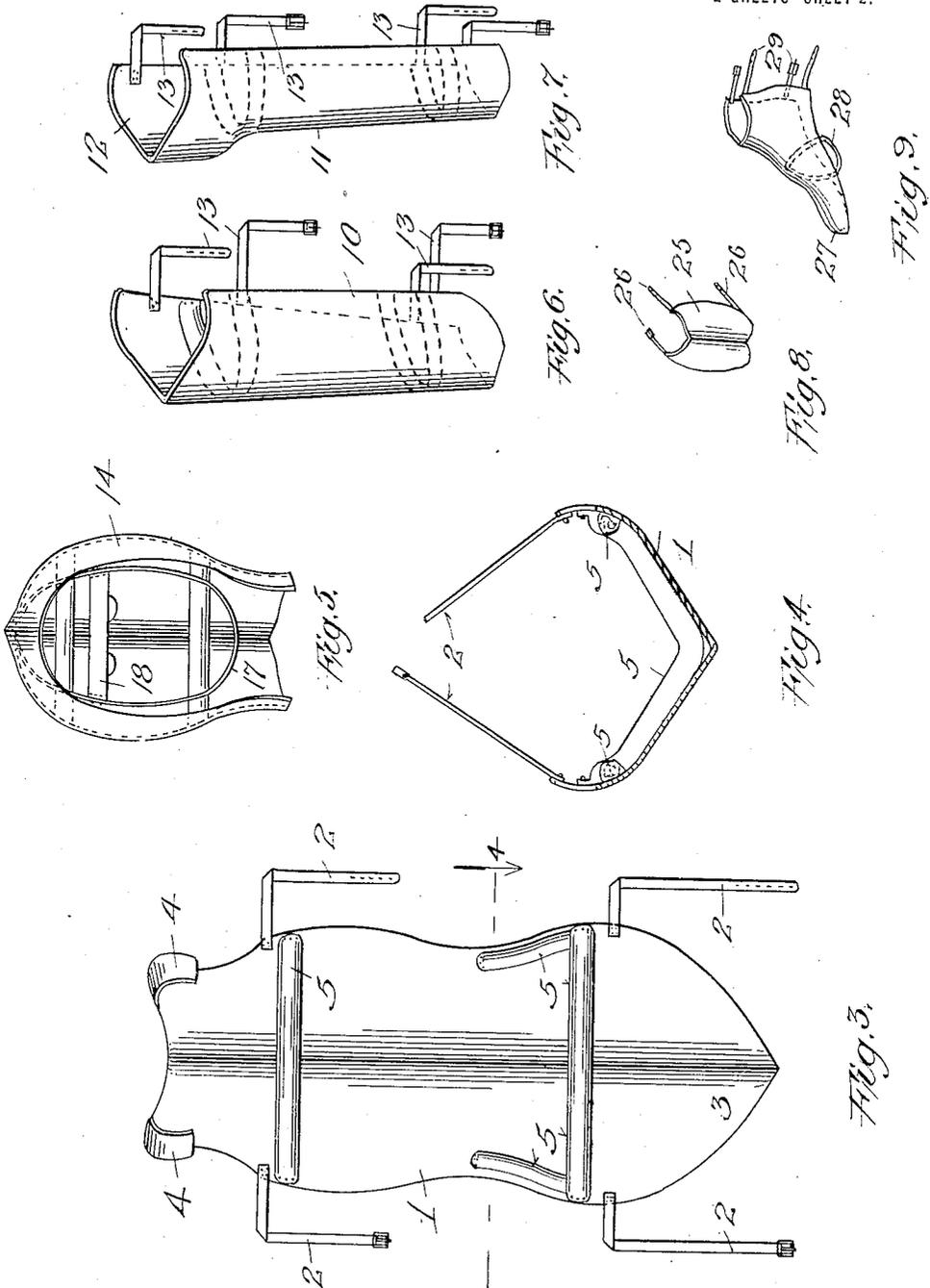
Guy Otis Brewster Inventor  
By his Attorney  
Samuel E. Parby

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Inventor  
 Guy Otis Brewster  
 By his Attorney  
 Samuel E. Darby

# UNITED STATES PATENT OFFICE.

GUY OTIS BREWSTER, OF DOVER, NEW JERSEY, ASSIGNOR TO GUY OTIS BREWSTER AND EMIL HELLER, TRADING AS BREWSTER AND HELLER.

## BULLET-PROOF ARMOR.

1,350,062.

Specification of Letters Patent. Patented Aug. 17, 1920.

Application filed December 28, 1915. Serial No. 69,009.

To all whom it may concern:

Be it known that I, GUY OTIS BREWSTER, a citizen of the United States, residing at Dover, county of Morris, State of New Jersey, have made a certain new and useful Invention in Bullet-Proof Armor, of which the following is a specification.

The object of the invention is to provide a light armor that can be quickly put on or taken off, and which will cover the front of the wearer in the face of fire, which will enable him to be secure against injury due therefrom.

A further object of the invention is to provide an armor of the class described, which will prevent the shock of contact of a projectile thereagainst being transmitted to the wearer.

Further objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the drawings:

Figure 1 is a view in front elevation of an armor embodying my invention.

Fig. 2 is a section of the same taken on line 2-2, Fig. 1, and looking in the direction of the arrows.

Fig. 3 is a view in rear elevation showing the interior of the body portion of the armor.

Fig. 4 is a section of the same taken on the line 4, 4, Fig. 3, and looking in the direction of the arrows.

Fig. 5 is a rear view of the head portion or head guard employed in accordance with my invention, showing the interior thereof.

Fig. 6 is a view in side elevation of the upper leg or thigh of the armor.

Fig. 7 is a similar view of the lower leg or shin portion of the armor.

Fig. 8 is a view in perspective of a hand guard as employed in accordance with my invention.

Fig. 9 is a similar view of a guard to cover the top of the foot.

The same part is designated by the same reference numeral wherever it occurs throughout the several views.

In accordance with my invention I pro-

pose to provide a bullet proof armor which will protect the entire front of the wearer advancing in the face of a hail of projectiles, such as in storming or charging a fortified position in warfare, which is light, and which does not in any way interfere with his freedom of movement. I further propose to provide suitable cushioning means for the various portions which will prevent the shock of the impact of projectiles thereagainst from being transmitted to the wearer, and also to provide suitable fastening means for the armor which are capable of being quickly fastened or unfastened, but which at the same time securely hold the armor to the wearer and prevent the displacement thereof due to his actions.

In modern warfare where modern machine guns, rifles, shrapnel, hand grenades, and aeroplane bombs are employed, it is practically impossible to storm a fortified position which may be but slightly garrisoned without great loss of life to the attacking army. For this reason many experiments have been made and a great deal of time and labor expended to find some armor that will protect the advancing soldier from the hail of bullets he is subjected to. Armor has been heretofore proposed, as applicant is aware, which is bullet proof. This armor, however, increases in thickness and weight as the distance from the gun decreases. For this reason, the armor proposed has been impractical as, for close work, the armor has been so heavy as to render the wearer helpless for active movement, or, at close range, the armor has ceased to be bullet proof. Bullet proof mail shirts or underclothes have been proposed, to be worn next to the skin of the wearer. It was found, however, that the shock of impact of the bullet thus transmitted directly to the wearer was sufficient to knock him down, and to seriously injure him. The question of absorbing the shock imparted to a protector or armor is one that has been given a great deal of attention by those skilled in the art. In my prior Patents, No. 1,004,737, issued Oct. 31, 1911, and No. 1,040,267, issued Oct. 8, 1912, I have shown protectors to be worn by people while boxing, and means for preventing the force of the blows delivered against the protectors from being transmitted to the

wearers thereof. By actual demonstration I have found that the same principle is applicable in the present case.

In accordance with my invention I provide an armor made up of several independent parts to cover the front, top and sides of the head, and the top and front of the body, and the front of the arms and legs. This armor is of steel, and what is known as "bullet proof" steel, that is capable of withstanding the penetration of a 150 gr. bullet fired at 50 yards distance, with a velocity of 2700 feet per second, reckoned in foot pounds per second, muzzle velocity extending up to 55 yards, at an angle. Such a sheet of steel, as is well known, is approximately .25 inches thick, and in consequence comparatively light in weight. The respective portions of the armor are formed at an angle, that is, the armor slants backwardly from the approximate center of the front thereof, thereby presenting the apex of the angle in front of the wearer. I have found by actual test that with this structure the wearer of the armor is enabled to advance within a few yards of the muzzle of a gun, without the force of the projectile being felt, or the projectile penetrating the armor, whereas, were the armor presented at right angles thereto, the bullet would readily penetrate the same at that distance. The bullets striking the armor are deflected at a constant angle, depending, as will readily be understood, upon the angle between the side portions of armor. Thus it will be seen that where a number of men are employed using this armor, they would be deployed over a space, and at a distance from each other, never less than a distance sufficient to take each one out of the travel of the deflected projectiles from the adjacent man. The angle armor may be formed in either a concave, convex, or a straight angle. I have found, however, that a slightly convex form is preferable.

The body portion is provided with suitable straps 2, one under the arms, and one about the waist, for securing the same to the wearer, and they preferably are secured to each other in the rear of the wearer as shown. The body portion is preferably in the shape of a shield, covering the entire front of the wearer, as shown, and also sex organs by a downwardly projecting portion 3. Downturned hooks 4, form the upper portion of the shield 1, and are adapted to fit over the shoulders of the wearer, thereby furnishing a protection to his shoulders and also distributing a portion of the weight thereof thereon, to which, in addition straps may be added to pass over the shoulder to further secure the armor and distribute its weight. The protectors for the arms are also angular as above described, and consist

of the two portions 7 and 8 to fit over the front of the arm above and below the elbow, respectively. The bottom of the portion 7 is curved to fit against the top of the portion 8 to allow free movement at the joint but at the same time to afford full protection thereto. The respective arm portions are secured to the wearer by suitable straps 9 similar to the straps 2 hereinbefore described.

The leg protectors are also formed in two parts 10, and 11, to fit above and below the knee, respectively. To afford protection to the knee cap, when the wearer is running I propose to outwardly bend the upper portion of the shin protector 11 as shown at 12, to overlap the bottom of the thigh portion 10. The leg portions of the protector are also held in place by suitable straps 13, as hereinbefore described.

The head portion 14 of the armor I propose to form by bending backward the top portion of the sheet of metal, to effectively protect the top of the head of the wearer from projectiles falling downwardly. The eyes 15 are stamped or bent out of the metal, leaving the shades or protectors 16 so that by inclining his head, while running forward in the face of fire, he can see the ground ahead of him without exposing his eyes or his head. The head guard 14 may be placed over or beneath the body shield as shown. Suitably carried in the head guard is a chin strap 17 and a head rest or strap 18.

To secure the cushioning effect hereinbefore mentioned, and to absorb the shock of projectiles striking the armor, I provide suitable pads, such as pneumatic pads 5, as shown in Fig. 3, or felt pads 6 as shown in Fig. 2, suitably positioned inside of the various portions of the armor. In practice I find it preferable to position a pad across the forehead, across the chest and abdomen of the body portion below the hip and against the hip bones and along the sides of the body and above the knee of the thigh portion, below the knee and above the ankle of the shin portion, below the shoulder and above the elbow, and below the elbow and above the wrist of the arm portions, all as shown.

In Fig. 8 I show a shield 25 for the hand which may be worn to cover the back or the front of the hand, and which is secured thereto by means of the straps 26.

In Figs. 9 and 2 I show a similar guard 27 to protect the top of the foot. This guard is held in position by a stirrup strap 28, and the usual rear straps 29, as hereinbefore described.

While I have shown and described a specific armor embodying my invention, it will be readily understood that those skilled in the art may vary the specific details without departing from the broad scope of my in-

vention as defined in the claims. Therefore what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is,

- 5 1. An armor comprising head, body, arm and leg portions of angular bullet proof material, said head portion extending upwardly and bent backwardly to protect the face and the top of the head of the user and provided with a head rest and a chin strap therein.
- 10 2. An armor comprising head, body, arm and leg portions of angular bullet proof ma-

terial, said head portion being bent backwardly to protect the top of the head of the user and provided with eye openings there- 15 through, and shields for said openings to protect the eyes of the user when said head portion is downwardly inclined, without obscuring his sight.

In testimony whereof I have hereunto set 20 my hand on this 21st day of December, A. D. 1915.

GUY OTIS BREWSTER.