

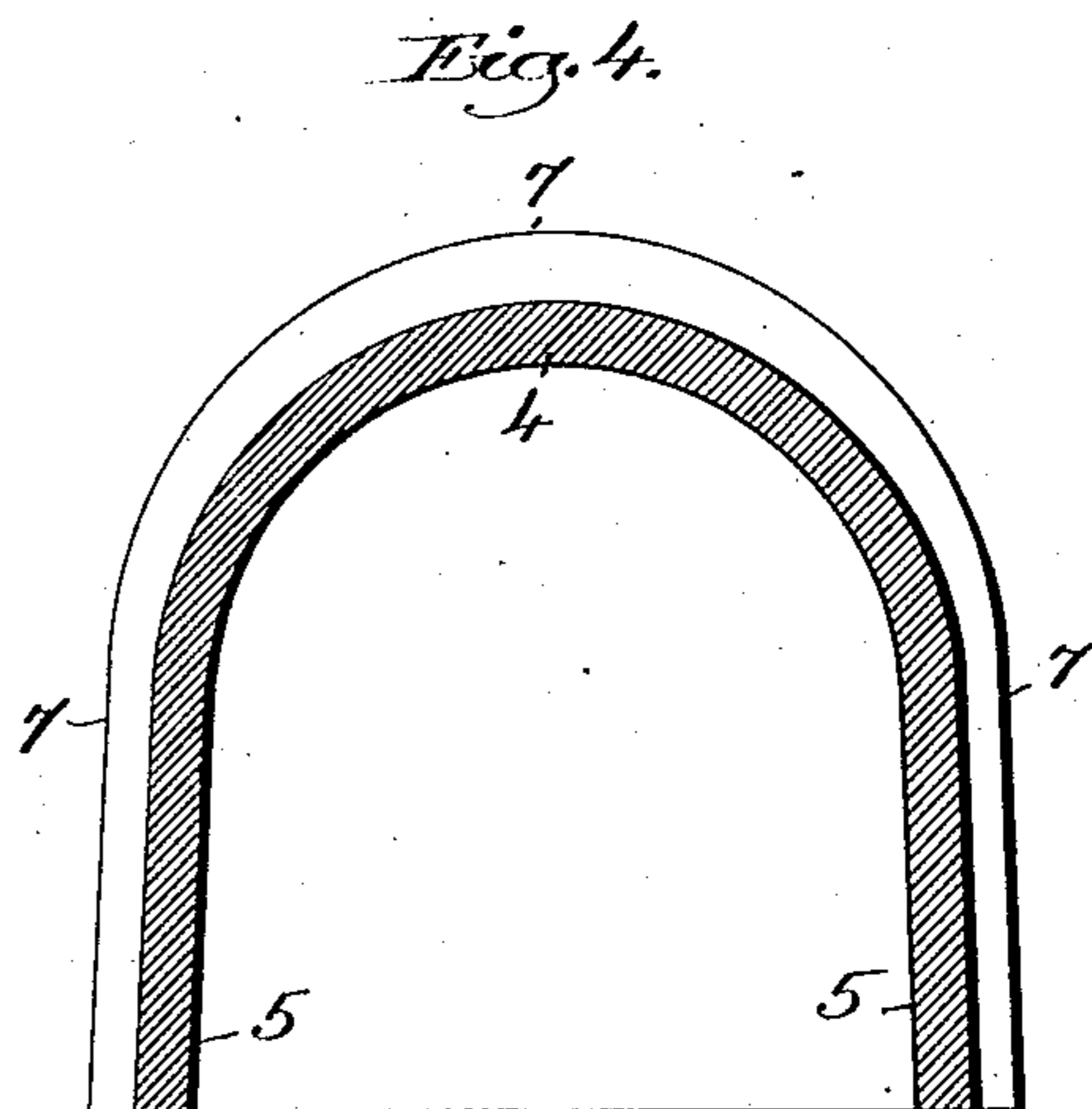
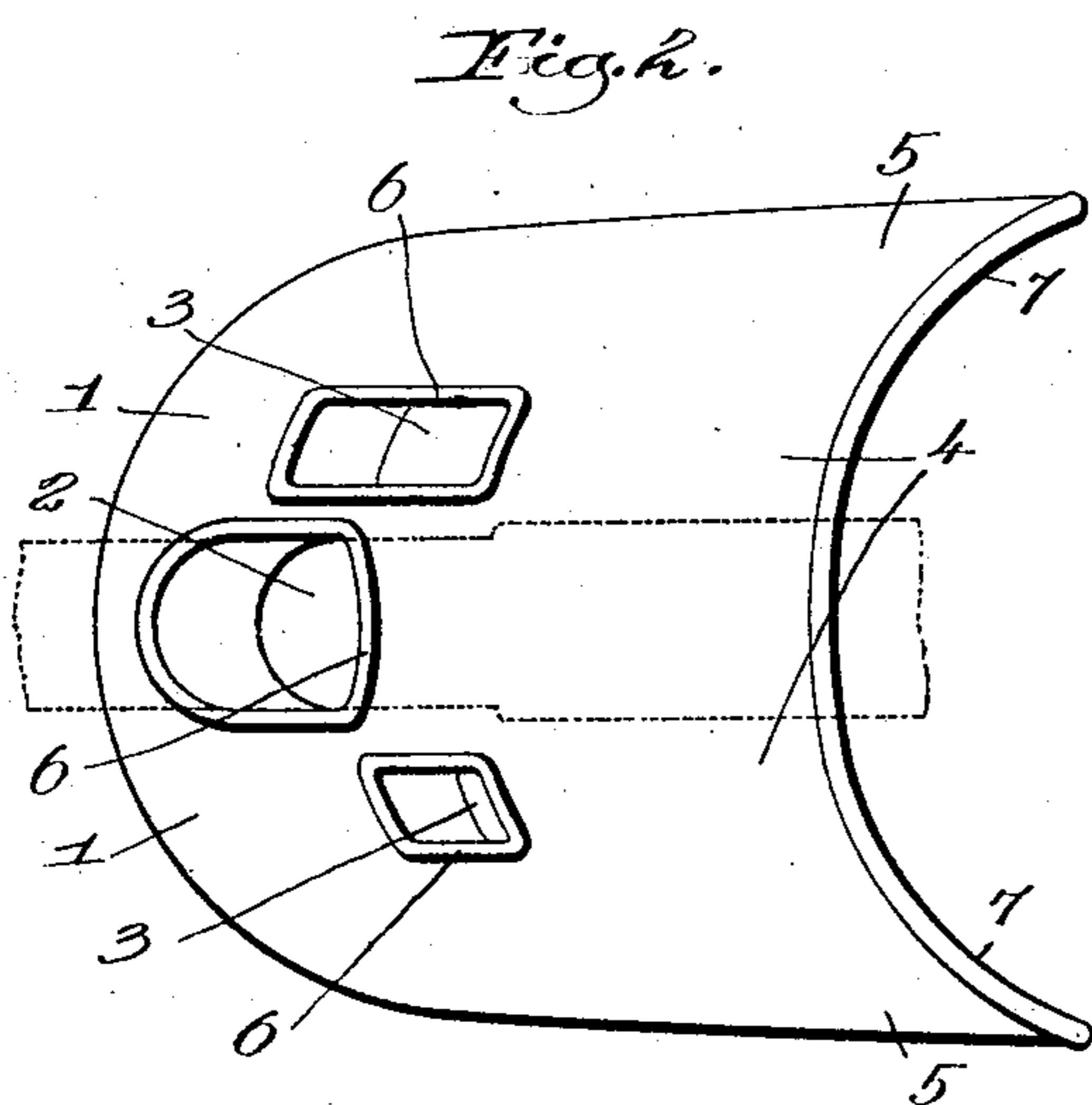
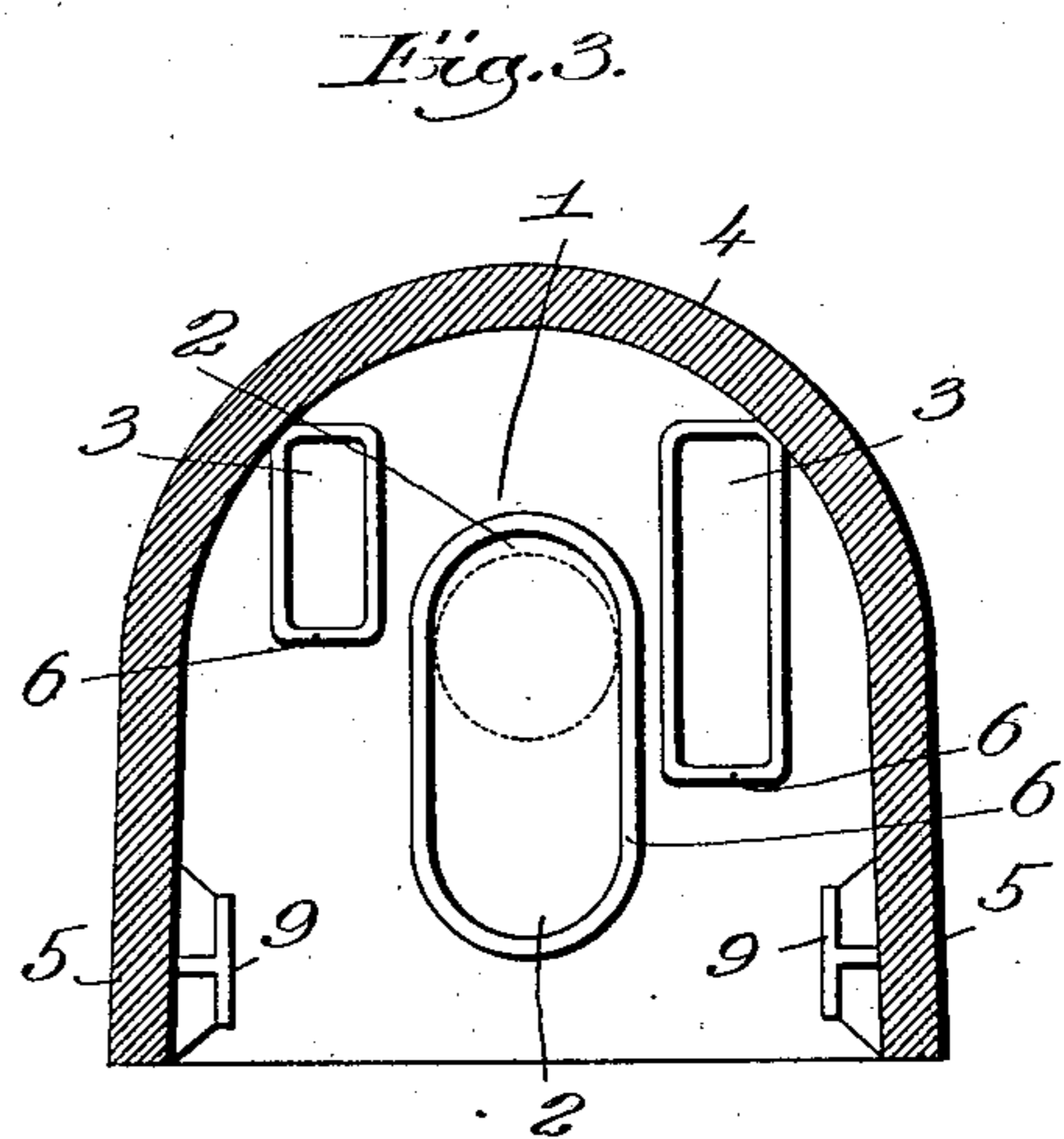
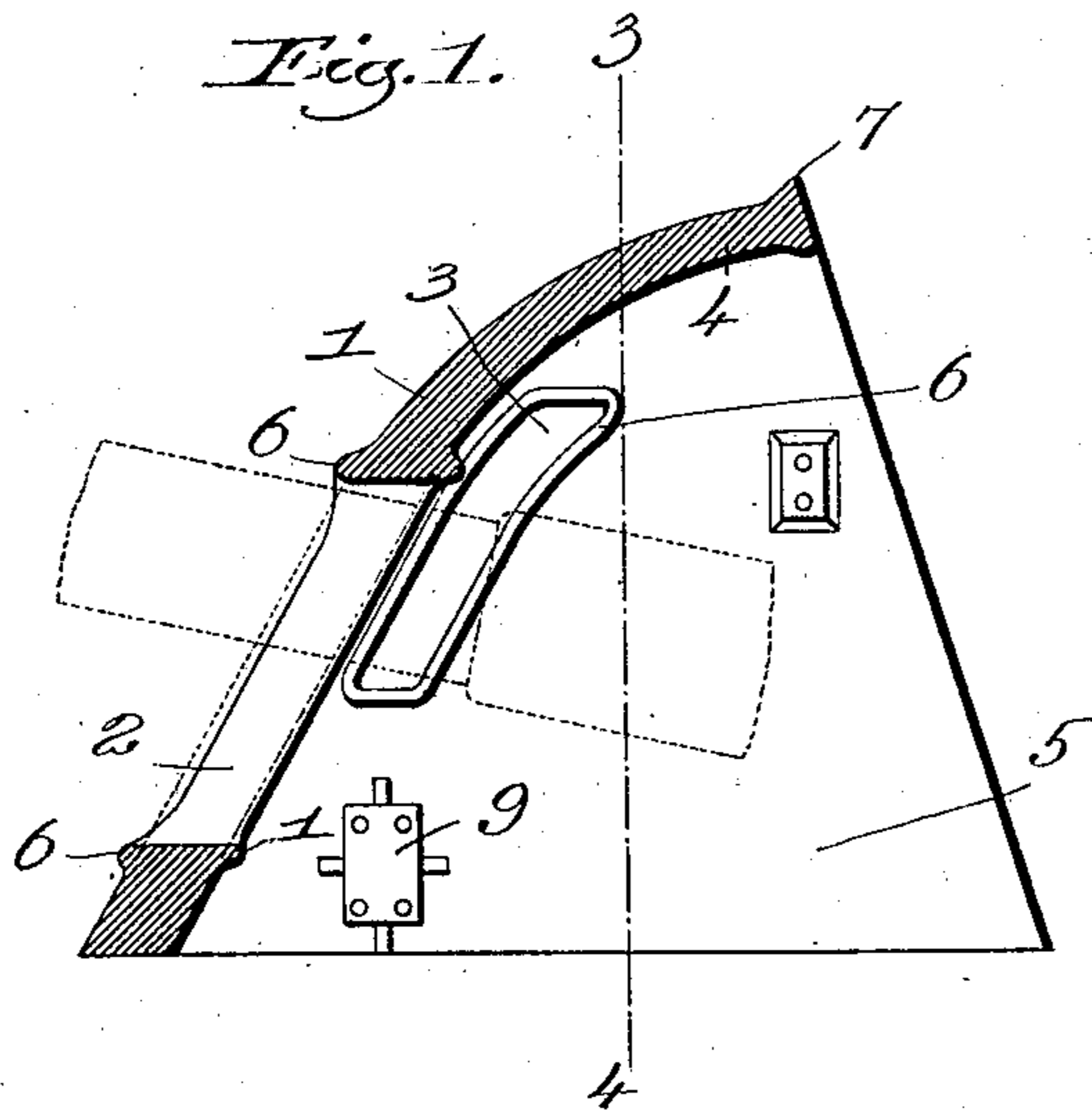
No. 811,715.

PATENTED FEB. 6, 1906.

R. A. HADFIELD & A. G. M. JACK.

GUN SHIELD.

APPLICATION FILED APR. 19, 1905.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ROBERT A. HADFIELD AND ALEXANDER G. M. JACK, OF SHEFFIELD,  
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## GUN-SHIELD.

No. 811,715.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed April 19, 1905. Serial No. 256,382.

*To all whom it may concern:*

Be it known that we, ROBERT A. HADFIELD and ALEXANDER G. M. JACK, subjects of the King of Great Britain, and residents of Sheffield, county of York, England, have invented an Improvement in Gun-Shields, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention has for its object the production of an improved gun-shield whereby we are enabled to dispense with the bending to form, cutting out port-holes, general bringing into shape, and securing attachments in place, as involved in the present manufacture of gun-shields.

By means of our invention we are enabled to produce at comparatively moderate cost gun-shields better adapted to withstand the attack of projectiles than are shields of equal thickness as heretofore constructed.

In accordance with our invention we construct a mold having internally the formation and contour of the finished shield to be produced with its slot-like gun-aperture and attachments, such as brackets and other parts, for securing into position the shield. We then pour into the mold molten steel—such, for example, as nickel-chromium steel of the character specified in British Patent No. 16,132 of 1901.

The shield is preferably made of a partly-spherical or dished shape with its sides extended as may be required to suit the design of gun-mount with which it is to be used. The upper part or roof and the sides of the shield are entirely closed in, the bottom and rear end being open and substantially U-shaped to accommodate the gun. The aperture in the central front portion of the shield through which the gun is to project is made in the form of an elongated upright slot of sufficient length to permit the necessary elevation and depression of the gun, and one or more additional and similar apertures may be made for sighting purposes. The metal around such an aperture may be strengthened or reinforced by thickening the same around the edges of the aperture to form a beading, both internally and externally, if necessary.

Our improved shield may be of substantially uniform thickness throughout; but

preferably the central front portion thereof is of maximum thickness where the shield is liable to be subjected to the direct impact of projectiles and to compensate for the reduction in strength due to the gun and sight-apertures, either or both. The roof and side portions of the shield, respectively above and at the rear of the central front portion and integral therewith and curving or sloping therefrom, may be of gradually-decreasing thickness, inasmuch as such portions being subject mainly to glancing blows of projectiles impinging thereon are not so liable to be penetrated as the central front portion.

The gun-shield constructed in accordance with our invention may be annealed or toughened and hardened in any suitable or known way—as, for example, in the manner described in one or the other of British Patents Nos. 16,131 and 16,133, both of 1901, for the purpose of increasing the resistance of the shield to penetration by projectiles. So, too, the outer surface of the shield may be cemented in any of the well-known ways adapted for hardening armor-plates.

In the accompanying drawings, Figure 1 is a central vertical section of a gun-shield embodying our invention on the line 1 1, Fig. 2. Fig. 2 is a top plan view of the shield. Fig. 3 is a transverse section thereof on the line 3 4, Fig. 1, looking toward the left; and Fig. 4 is a section on the same line 3 4, but looking toward the right.

As will be seen by reference to the drawings, the shield is of a partly-spherical or dished shape in general, open at the bottom and at the rear, the said openings being substantially U-shaped. The shield comprises an inclined and transversely-convex central front portion 1, in which is formed a gun-aperture 2 and one or more sight-openings 3, with a convex, overhanging, or closed-in portion 4 and inclined or sloping sides 5, the roof and sides forming integral extensions of the central portion 1 and being cast integral therewith, preferably of nickel-chromium steel, as hereinbefore referred to. The whole external surface of the shield is inclined with relation to both the vertical and the horizontal to thereby form a very effective protection to the gun with which the shield is used and to the gun crew.

We prefer to make the shield of maximum thickness at the central front portion, as

shown, and to gradually decrease the thickness of the shield in an upward and lateral direction to the rear edge of the roof and sides, this reduction in thickness being rendered possible by the formation adopted and by the fact that the shield is produced by casting.

The gun and sight apertures 2 and 3 are made, preferably, in the form of elongated slots, and in order to strengthen or reinforce the metal adjacent thereto we have shown the metal around the edges of the aperture thickened to form a beading, as 6. This beading is shown on the internal and external surfaces of the shield, (see Fig. 1,) and the rear edge of the shield is similarly strengthened or reinforced by a beading, as 7. The dotted lines 8 in Figs. 1 and 2 indicate a portion of a gun within the shield.

Suitable attachments, such as brackets or other parts 9, for securing the shield to the gun-carriage and for other purposes may be formed integral with the shield at the desired points thereof to suit varying requirements.

It will be understood by those skilled in the art that the sides will be rearwardly extended, as desired, to accord with the particular structure of the gun or gun-mount with which the shield is to be used.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A cast-steel gun-shield comprising an inclined and transversely-convex central front portion and curved or sloping extensions at the sides and top thereof and integral therewith forming the sides and roof, respectively, of the shield and presenting a smooth external surface, the front portion having an upright, elongated gun-aperture formed therein.

2. A cast-steel gun-shield having its front portion, roof and sides integral and externally convexed, the front portion having a gun-aperture formed therein and reinforced around its edges.

3. A cast-steel gun-shield comprising a rearwardly-inclined and transversely-convex central front portion of maximum thickness and provided with a gun-aperture, and curved sides and a roof integral with said front portion and gradually decreasing in thickness therefrom.

4. A partly-spherical cast-steel gun-shield comprising an apertured central front portion and integral extensions thereof forming the roof and sides of the shield, and an integral reinforce along the rear edge of the shield.

5. A one-piece cast-steel gun-shield of partly-spherical or dished shape, with roof and sides integral with and curved or sloping from the central front portion, and presenting a smooth external surface, a slot or window-like aperture for a gun being formed in said front portion.

6. A one-piece cast-steel gun-shield of partly-spherical or dished shape, having an apertured, inclined central front portion of maximum thickness from the base upward and curved or sloping extensions integral therewith constituting the roof and sides and gradually decreasing in thickness toward the open rear end of the shield.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ROBERT A. HADFIELD.  
ALEXANDER G. M. JACK.

Witnesses:

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ERNEST RODGERS.