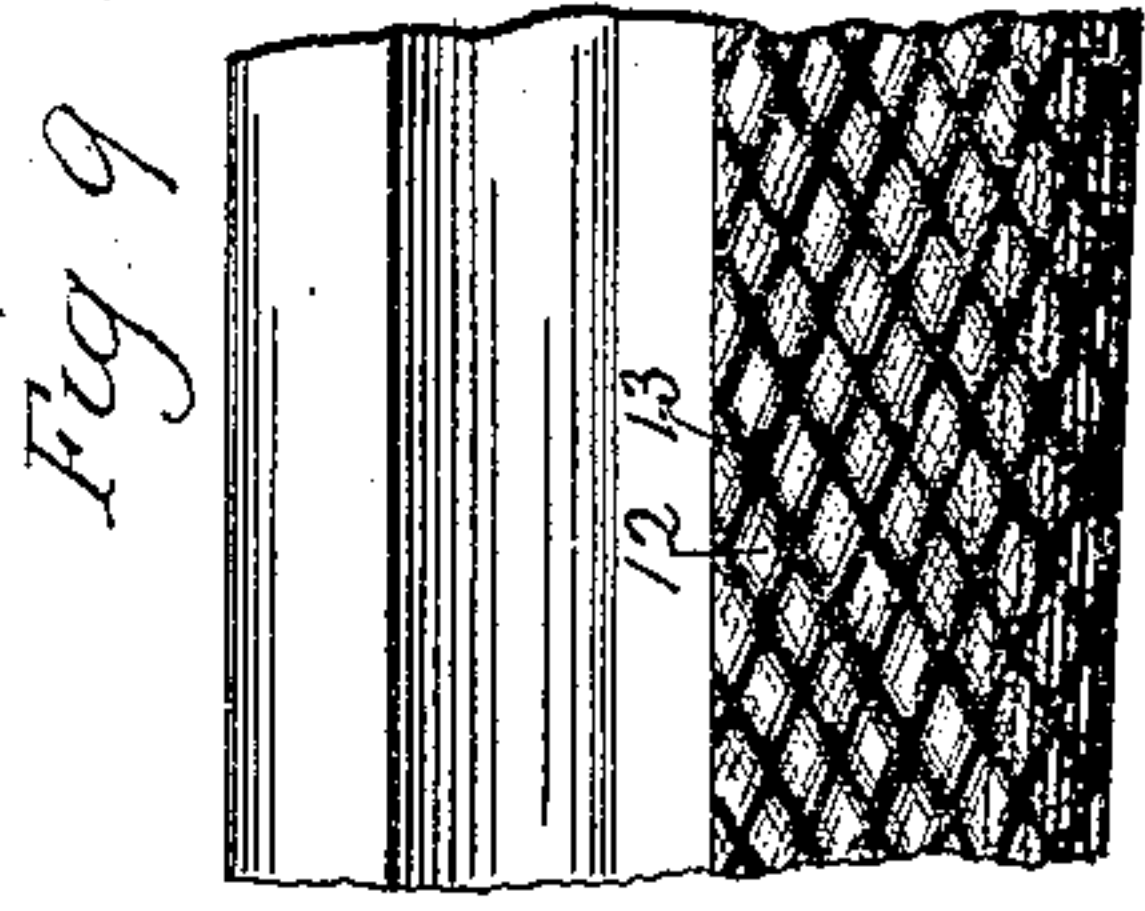
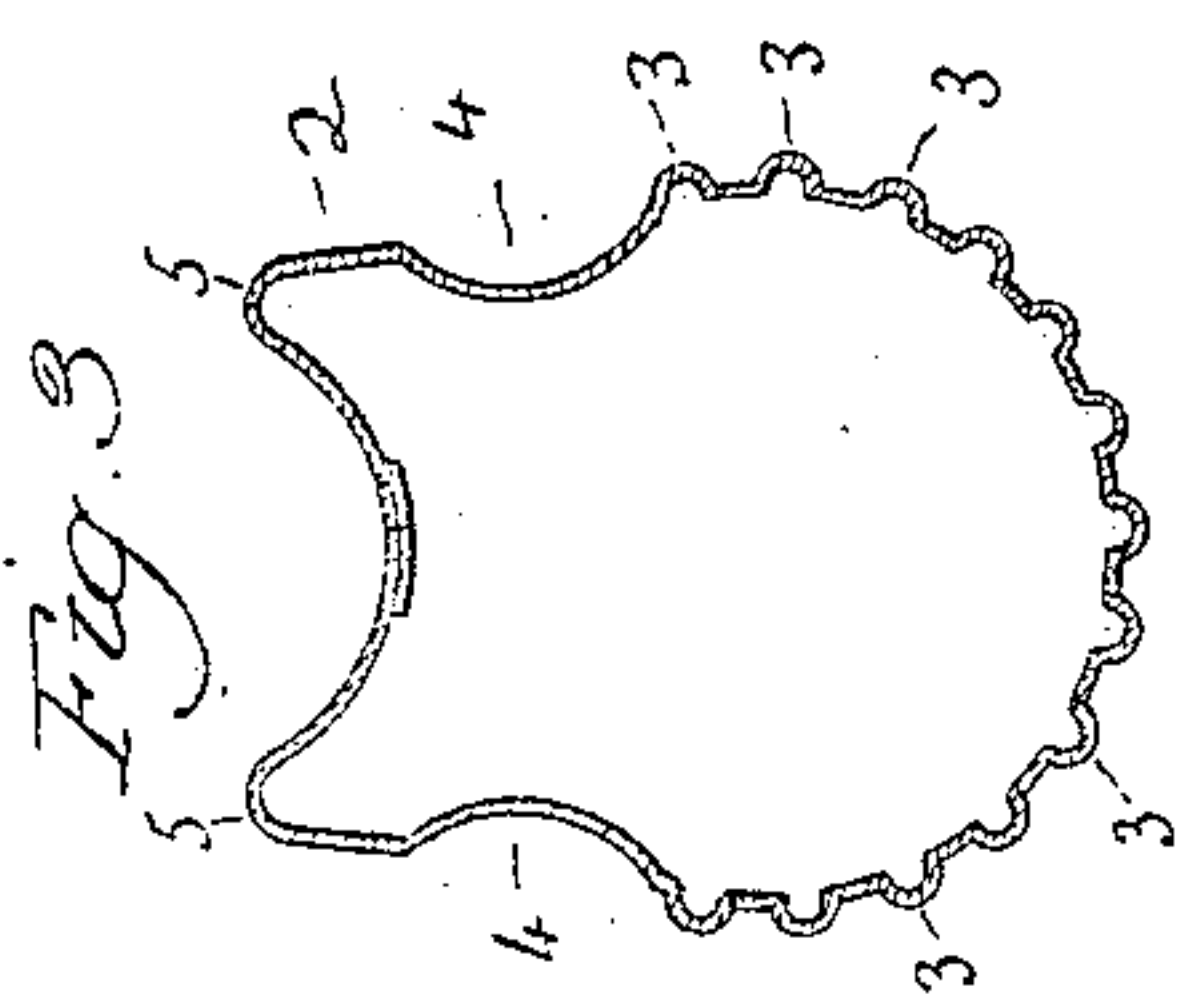
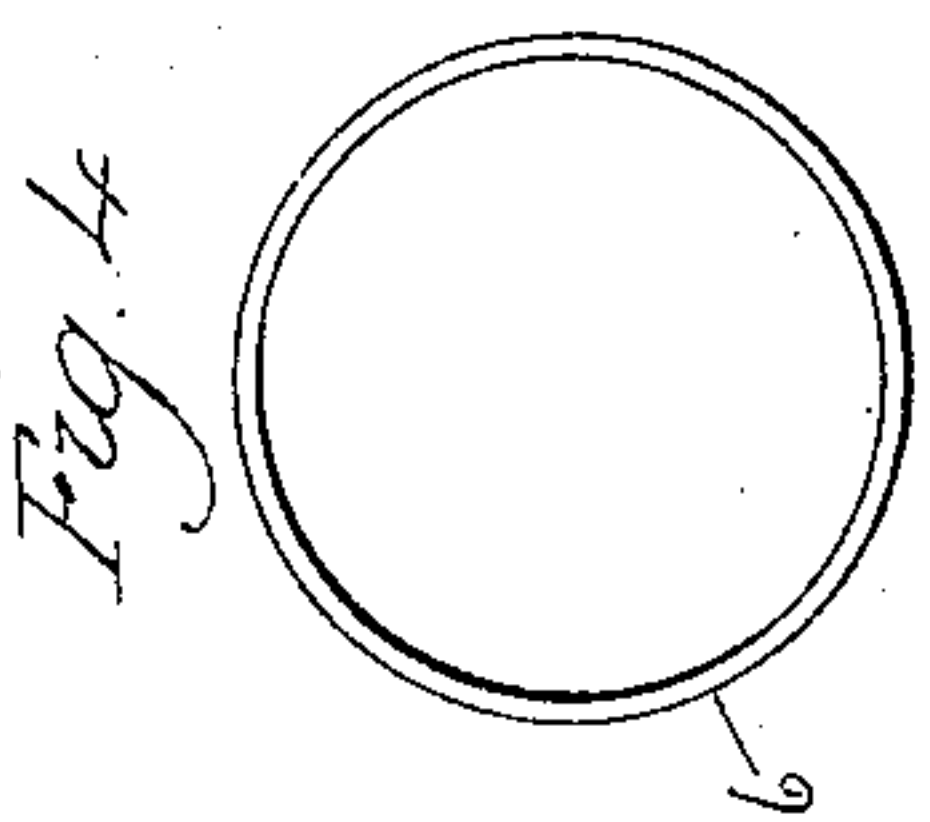
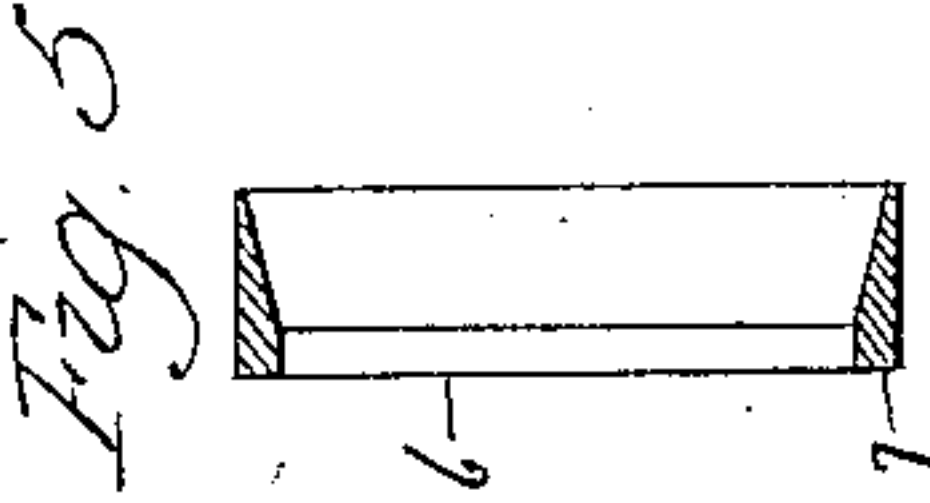
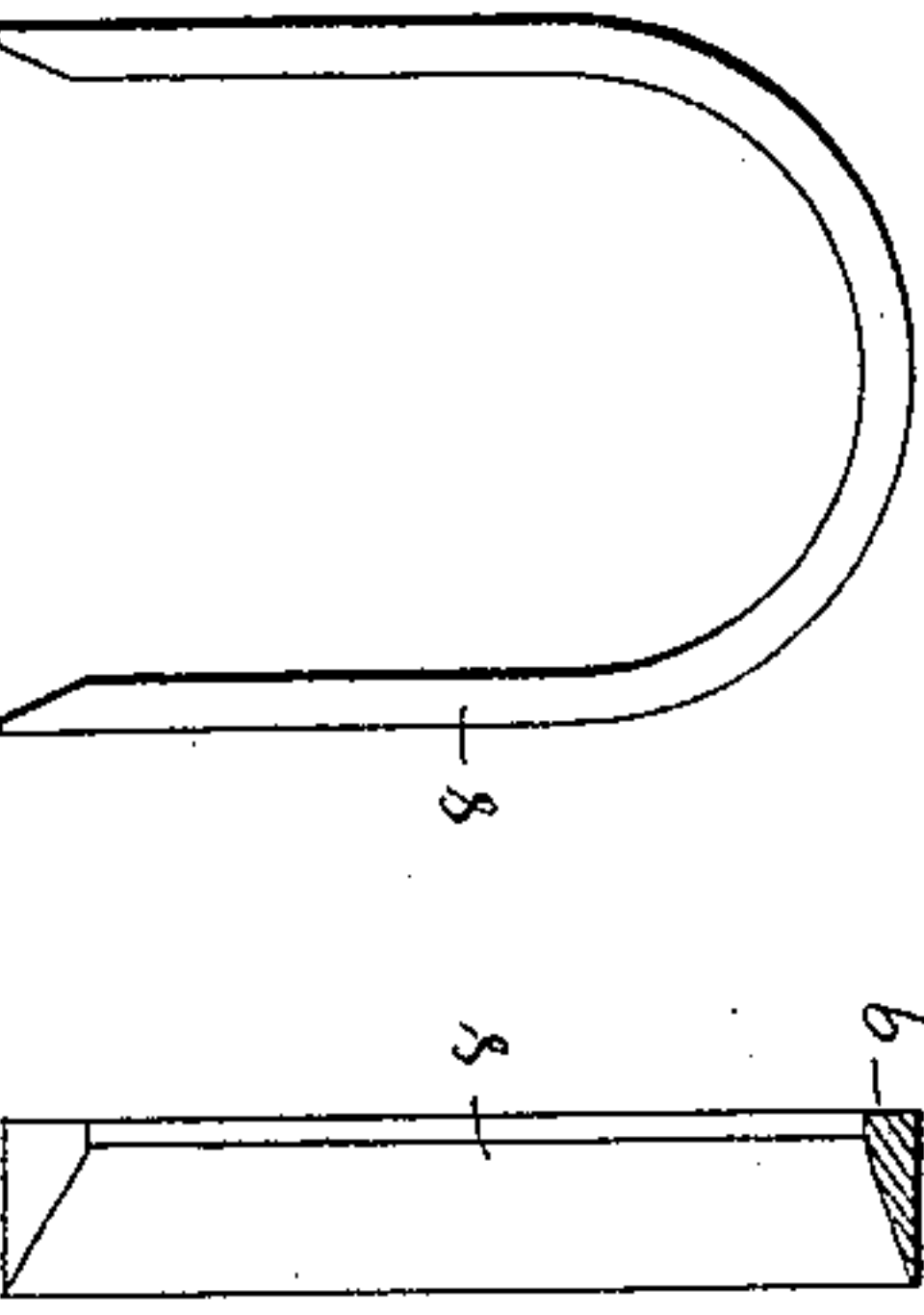
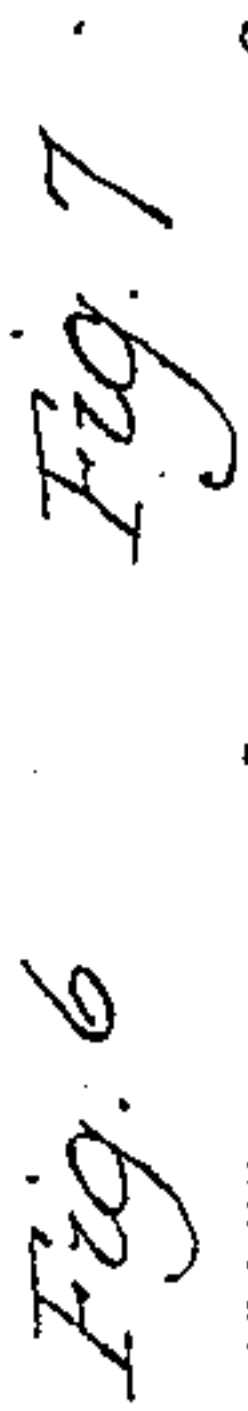
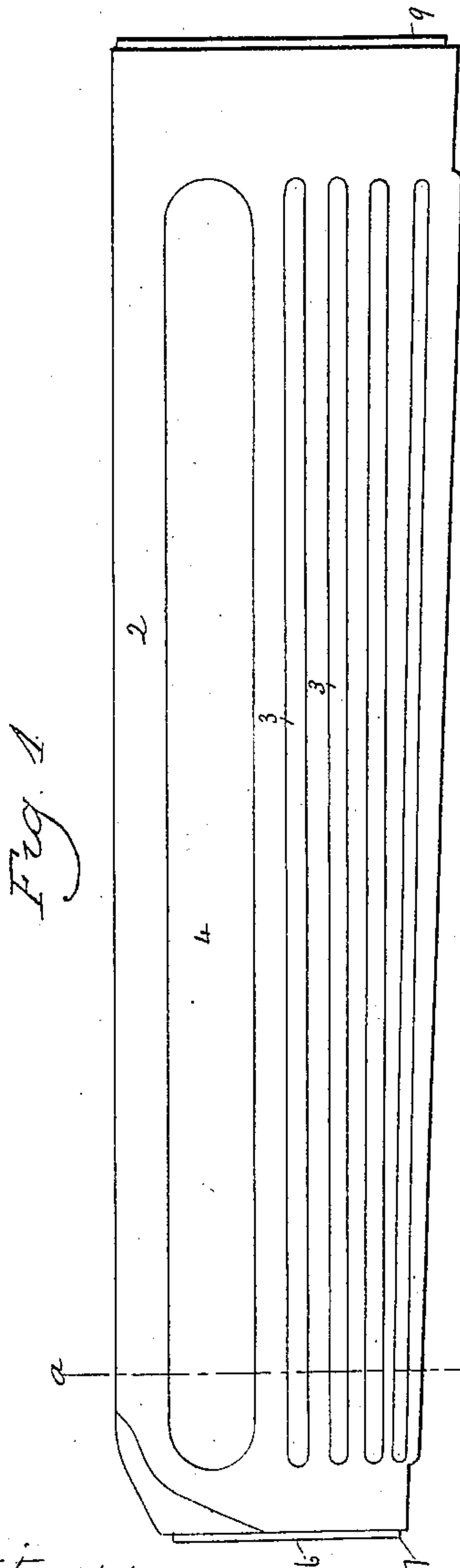
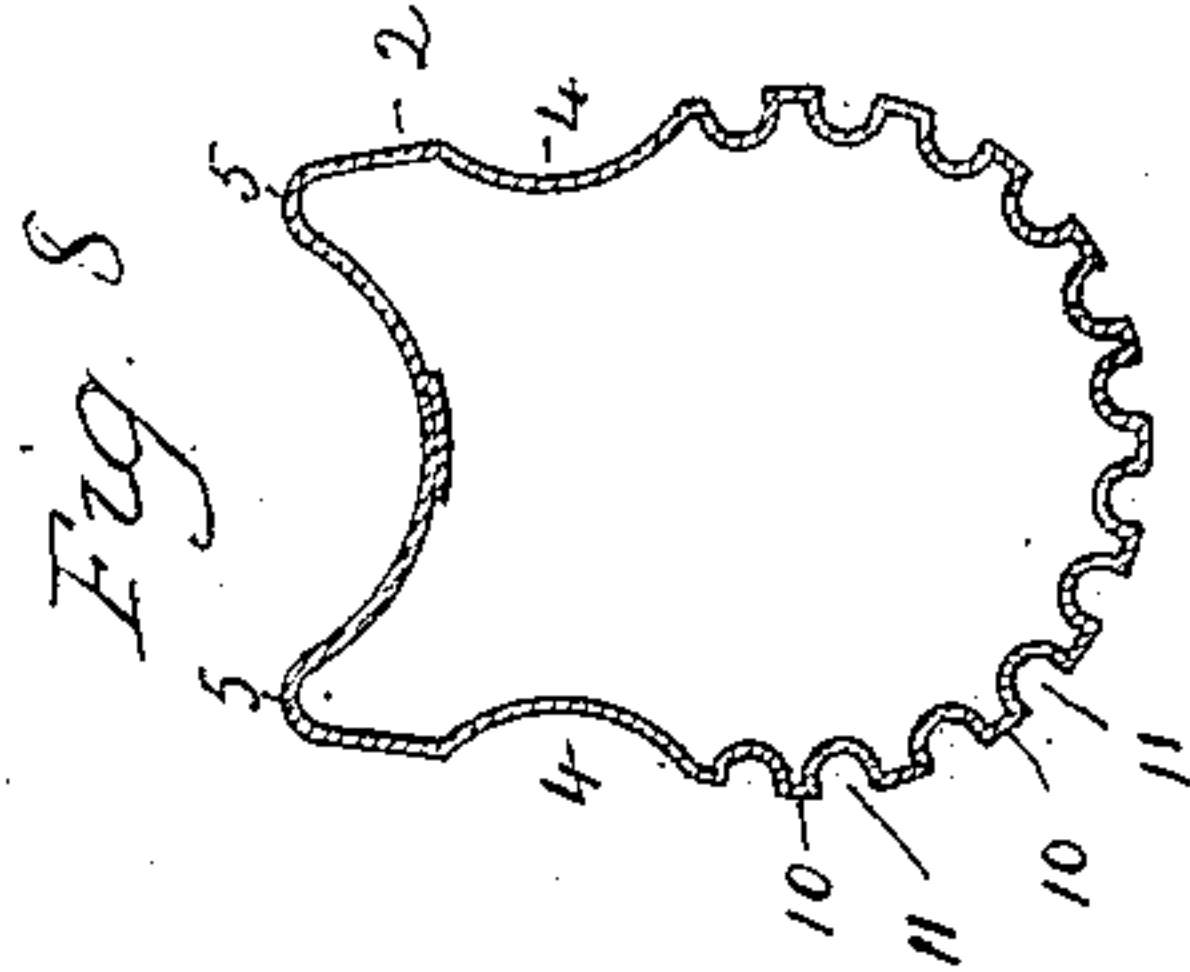
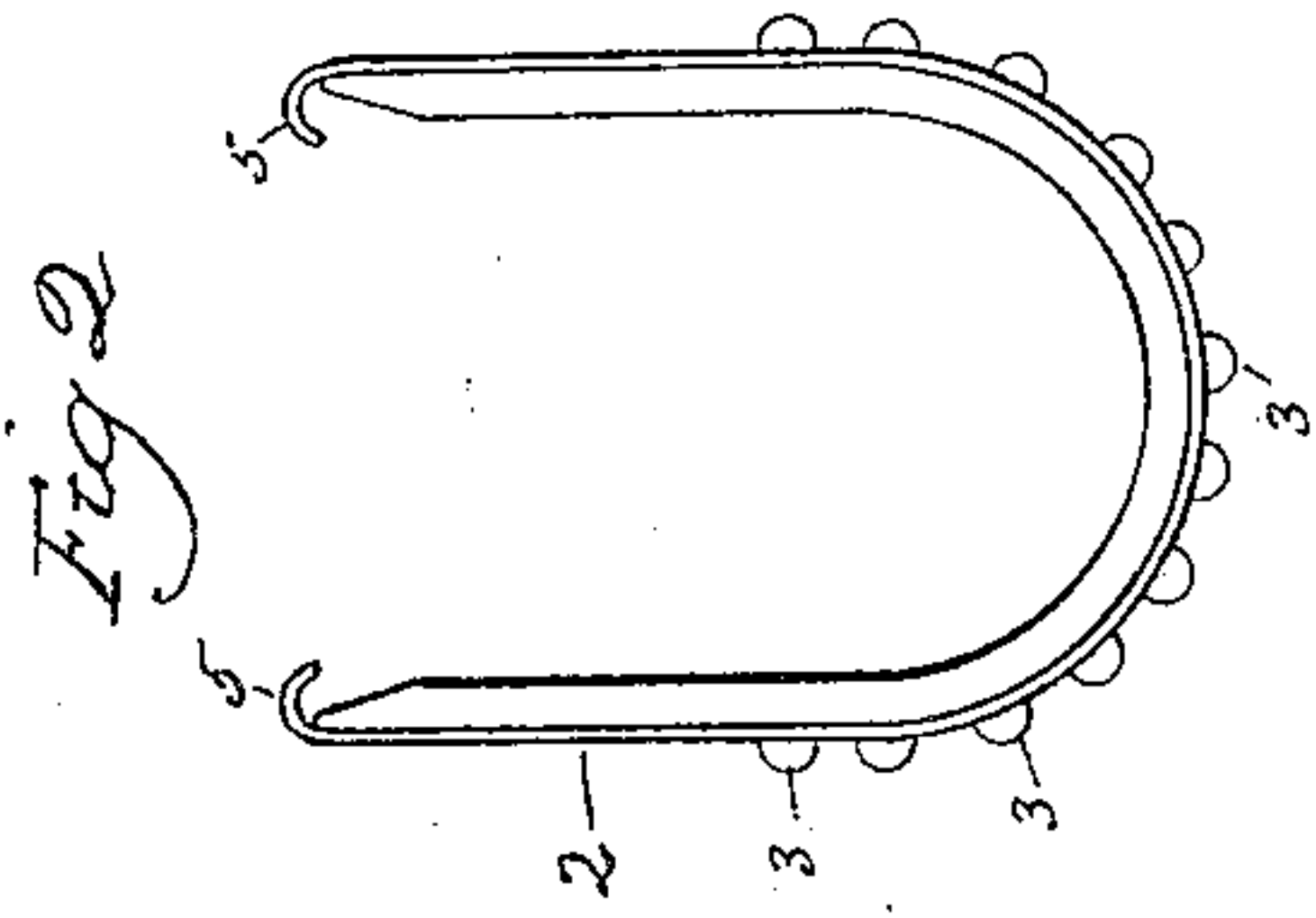


No. 819,551.

PATENTED MAY 1, 1906

T. C. JOHNSON.
WROUGHT METAL FORE ARM FOR GUNS.
APPLICATION FILED JAN. 22, 1906.



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WROUGHT-METAL FORE-ARM FOR GUNS.

No. 819,551.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed January 22, 1906. Serial No. 297,108.

To all whom it may concern:

Be it known that I, THOMAS C. JOHNSON, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Wrought-Metal Fore-Arms for Guns; and I do hereby declare the following, when taken in connection with the accompanying drawings and the numerals of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in side elevation of one form which a wrought-metal fore-arm constructed in accordance with my invention may assume; Fig. 2, a view thereof in rear elevation; Fig. 3, a view thereof in transverse section on the line *a b* of Fig. 1; Fig. 4, a detached view, in front elevation, of the ring-shaped front tenon-piece; Fig. 5, a view thereof in vertical section; Fig. 6, a detached view, in vertical section, of the U-shaped rear tenon-piece; Fig. 7, a view thereof in front elevation; Fig. 8, a view in transverse section of one of the modified forms which the fore-arm may assume; Fig. 9, a broken view, in side elevation, showing another mode of striking up the fore-arm.

My invention relates to an improvement in wrought-metal fore-arms of the type shown in United States Patent No. 808,375, granted December 26, 1905, to The Winchester Repeating Arms Company on my application, the object being to produce a wrought-metal fore-arm of superior convenience and durability in so far as it is constructed with particular reference to affording a good grip for the hand of the user and to not being indented or distorted when it receives an external blow.

With these ends in view my invention consists in a wrought-metal fore-arm having certain details of construction and combination of parts, as will be hereinafter described, and pointed out in the claim.

In carrying out my invention I produce a hollow wrought-metal fore-arm 2 by shaping a blank of suitable form in dies. This fore-arm in its external appearance corresponds to an ordinary wooden fore-arm, though it may be made, and probably will be made, considerably smaller in all of its dimensions than a wooden fore-arm. It is formed, as

shown in Figs. 1, 2, and 3, with substantially parallel longitudinal corrugations 3, struck outwardly to form, as it were, protecting-ribs, which stand off from the body contour, so to speak, of the fore-arm to an extent sufficient to protect the same in case the gun provided with the fore-arm is dropped or receives in any way a severe external blow. The fore-arm is thus to a very great degree protected against being indented or disfigured or distorted, so as to impair its value as one of the units of the gun. The said corrugations also enable the fore-arm to be more readily and firmly gripped than if the metal were left smooth, and, furthermore, they reduce the area of metal brought into contact with the hand when the gun is gripped, whereby the fore-arm, though made of metal, is not as cold and hard when grasped by the hand as smooth metal would be, but has much of the feeling of an ordinary wooden fore-arm. In explanation of this it may be said that the high points of the metal are brought into contact with the hand, which is elsewhere separated from the metal by small air-spaces, the extent of which will vary according to the size and number of the corrugations. The corrugations also serve to stiffen the fore-arm and permit it to be made out of lighter stock than could otherwise be used. This is important, as it is desirable to reduce the weight of a gun as much as possible consistent with strength.

The number of the corrugations 3 and their size and location will vary according to circumstances. As shown, they extend under the fore-arm and about half-way up on each of the sides thereof. As shown, the side walls of the fore-arm are formed with corresponding longitudinal grooves 4, located opposite each other above the uppermost corrugations and designed to receive the tips of the fingers in clasping the fore-arm, as well as to stiffen it. The upper edges of the metal are bent or turned inward to form rounded flanges 5, which not only stiffen the structure, but also give the same along its edge an appearance of rigidity and thickness which otherwise it would not have, as the metal used in its construction is very thin. The corrugation of the metal in the manner described sets it up, as it were, "on edge," in which position it has much greater power of resisting blows than when it is struck flatwise. Most of the

blows to which a fore-arm is exposed are, as it may be further pointed out, at or substantially at a right angle to its longitudinal axis, from which it follows that if the metal is not corrugated or "set on edge" it is left exposed to blows at a right angle to its flat surface. At its front end the fore-arm is provided with a ring-shaped tenon-piece 6, secured in place by brazing or otherwise and projecting beyond the front end of the fore-arm just enough to form a tenon or shoulder 7 to take tenon-wise into a suitable fore-arm tip of any appropriate construction and arrangement. At its rear end the fore-arm is provided with a U-shaped tenon-piece 8, brazed or otherwise secured in place and at its rear end projecting beyond the rear end of the fore-arm to form a tenon or shoulder 9, adapted to take tenon-wise into a mortise or the equivalent of a mortise in the front end of the gun frame or receiver. (Not shown, but of any suitable construction.)

A wrought-metal fore-arm constructed as described has the external appearance of a wooden fore-arm and is applied and used in the same way. Over a wooden fore-arm it has the advantage of compactness, durability, lightness, elegance of appearance, and immunity from changes in the weather. At first blush it seems incredible; but it is a fact that the warping or twisting of an ordinary wooden fore-arm may exert such force on a gun-barrel as to bend the same to an extent which will measurably affect the accuracy of the arm. To provide for the swelling and distortion of a wooden fore-arm, it must be made larger than would otherwise be necessary, so as to provide for the required clearance when warped and distorted.

While my improved fore-arm is particularly well adapted for use in tubular magazine-guns, which, as now constructed, require a very large chamber for the accommodation of a tubular magazine and its appurtenances, my fore-arm is also well adapted for use in any gun requiring a detachable fore-arm.

As shown in Fig. 8, the corrugations instead of being struck outwardly beyond the body contour of the fore-arm are struck inwardly therefrom to form alternating flat-faced ribs 10 and rounding grooves 11, the former representing the body contour, as it were, of the fore-arm. The said ribs 10 thus produced operate to protect the fore-arm in

case the gun falls or receives a severe external blow, as well as to better qualify the forearm to be gripped by the hand and to make its feeling to the hand correspond very closely to the feeling of the wood, all as already set forth for the construction shown by Figs. 1, 2, and 3.

Fig. 9 shows the production of alternating elevations and depressions, forming pockets, as it were, for air and reducing the surface of metal brought in contact with the hand to the extent required for securing a firm and comfortable grip by two sets of intersecting corrugations struck one over the other and resulting in the production of isolated high points 12, each encircled by a depression 13. These regularly-alternating elevations 12 and depressions 13 give the surface of the forearm a sort of figure or pattern, which may of course be infinitely varied to produce ornamental and, if desired, trade-mark or allied effects. The construction just described will also protect the fore-arm from being distorted or disfigured by blows, as well as enable it to be more firmly gripped and give it a vastly more comfortable feeling when gripped than if it were smooth. The advantage of reducing the surface of metal brought into contact with the hand in frosty weather is obvious.

In view of the modifications shown and described and of others which may obviously be made I would have it understood that I do not limit myself to the construction herein shown and described, but hold myself at liberty to make such departures therefrom as fairly fall within the spirit and scope of my invention.

I claim—

As a new article of manufacture, a wrought-metal fore-arm for guns, the said fore-arm having its front and rear ends adapted to be operatively connected with parts of a gun and having those portions of its surface which are gripped by the hand in handling the gun, struck up to form alternating elevations and depressions for its protection against indentation and distortion and forming pockets for air.

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

THOMAS C. JOHNSON.

Witnesses:

DANIEL H. VEADER,
HERBERT F. BEEBE