

E. G. W. BARTLETT.
Methods of Forming Receivers for Breech-Blocks of
Fire-Arms.

No. 145,717.

Patented Dec. 23, 1873.

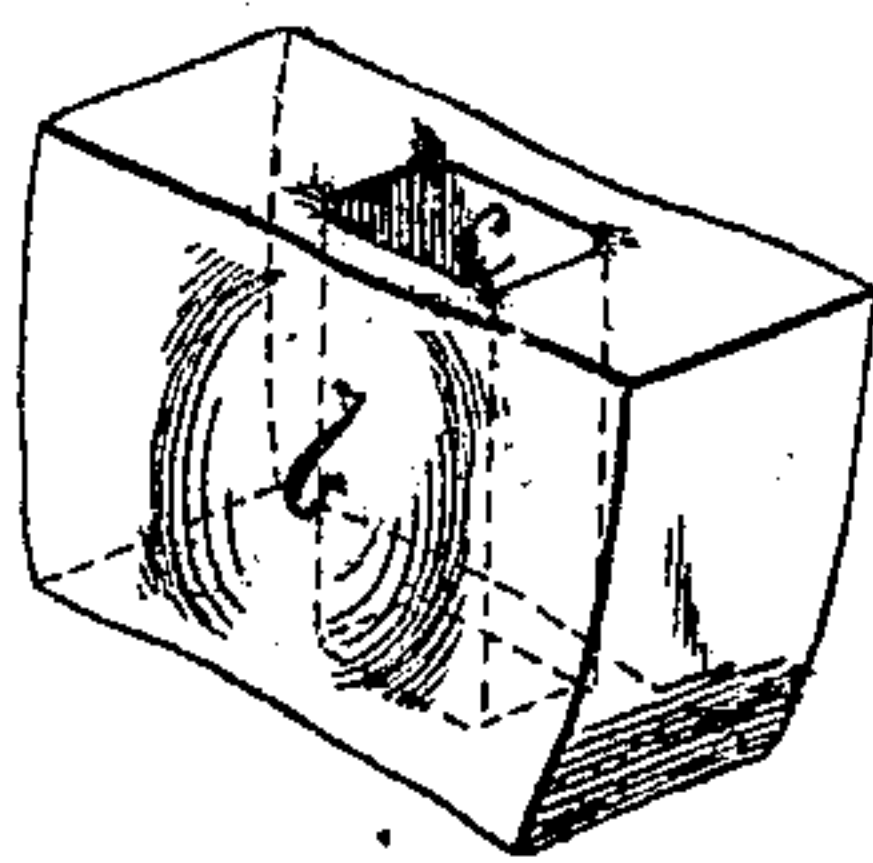


FIG. 1.

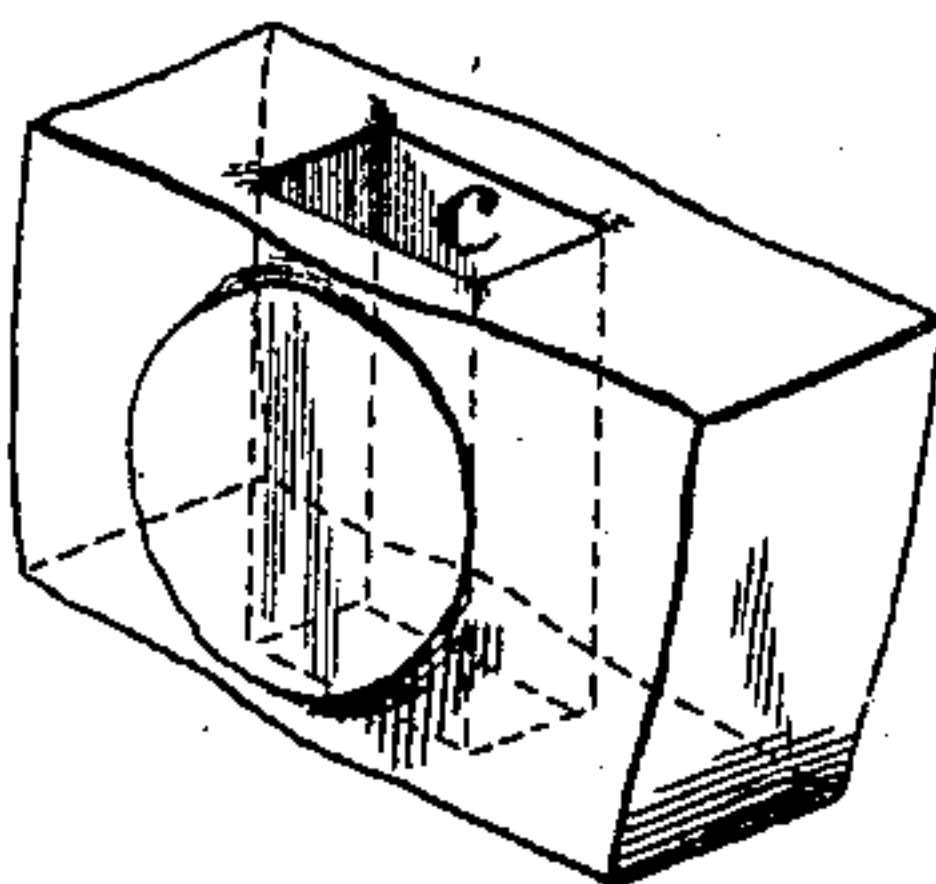


FIG. 2.

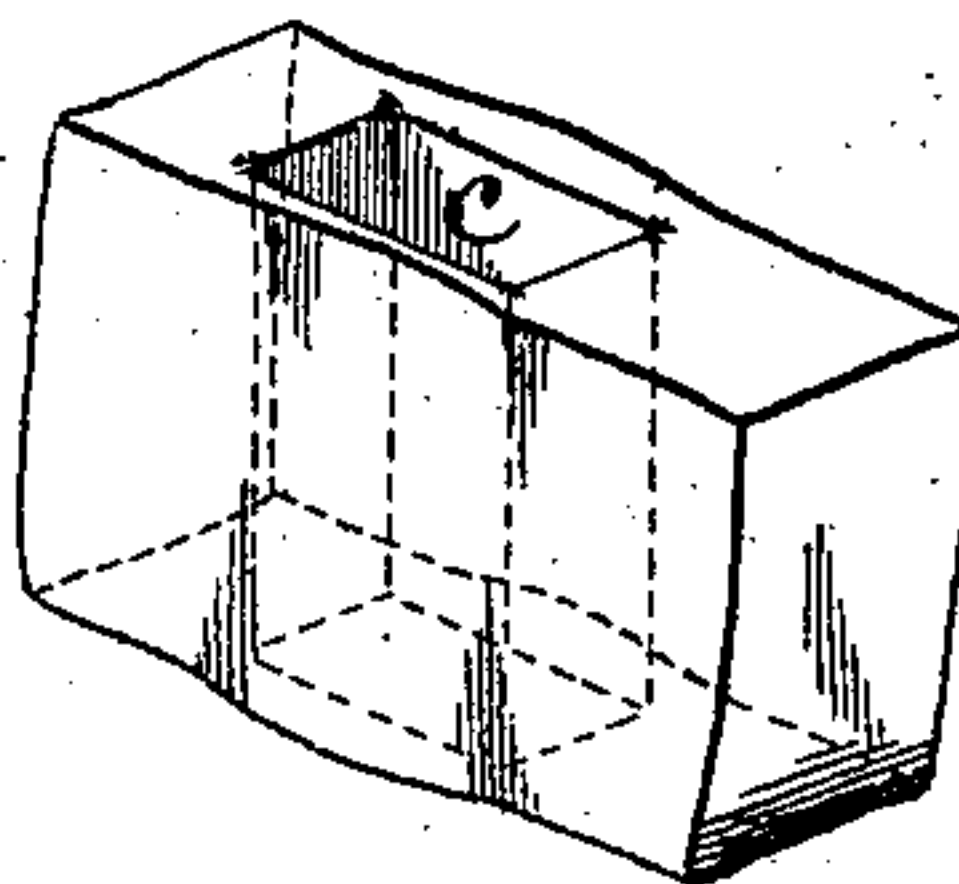


FIG. 3.

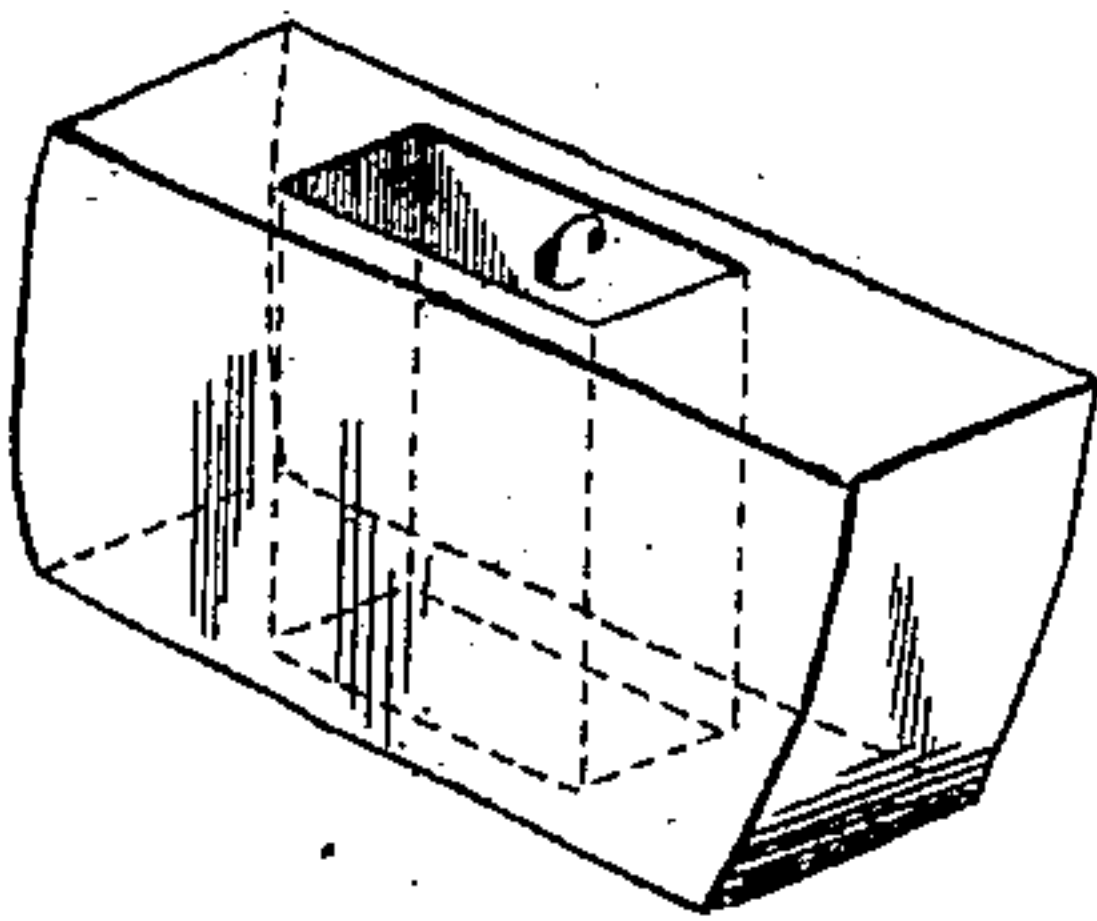


FIG. 4.

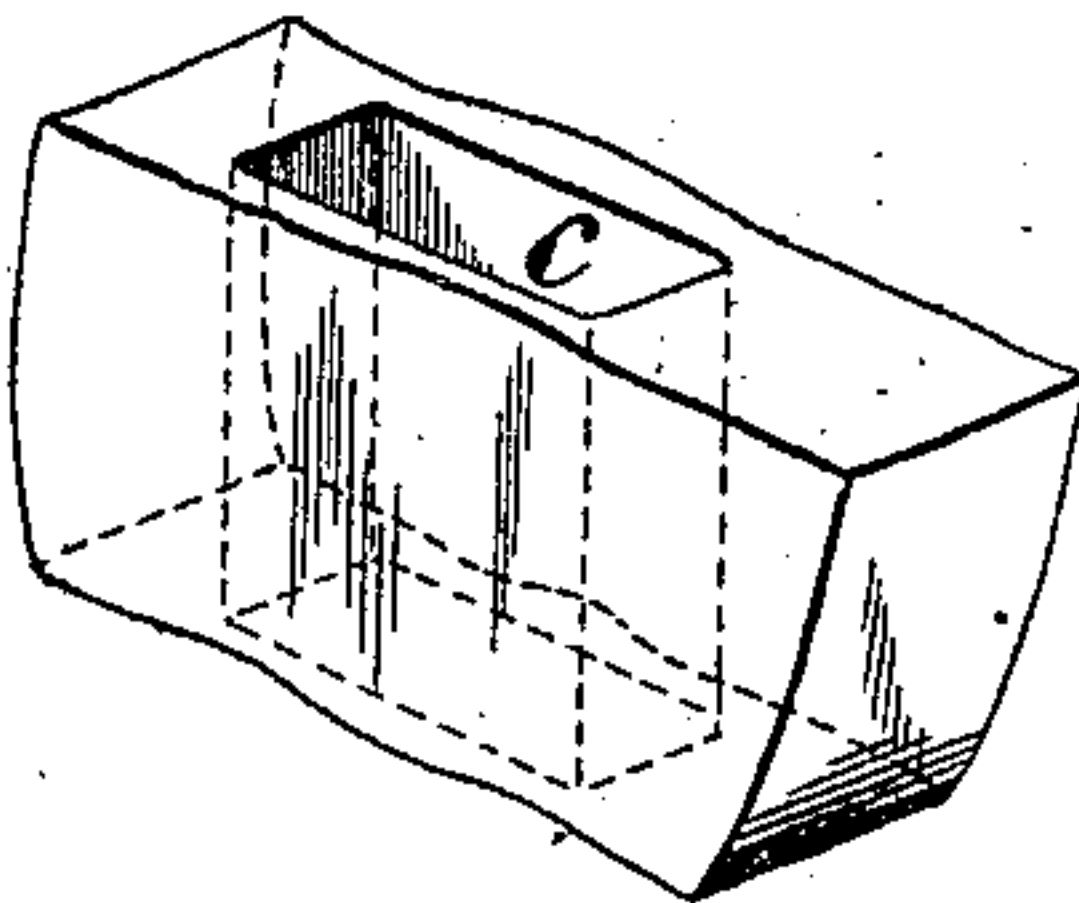


FIG. 5.

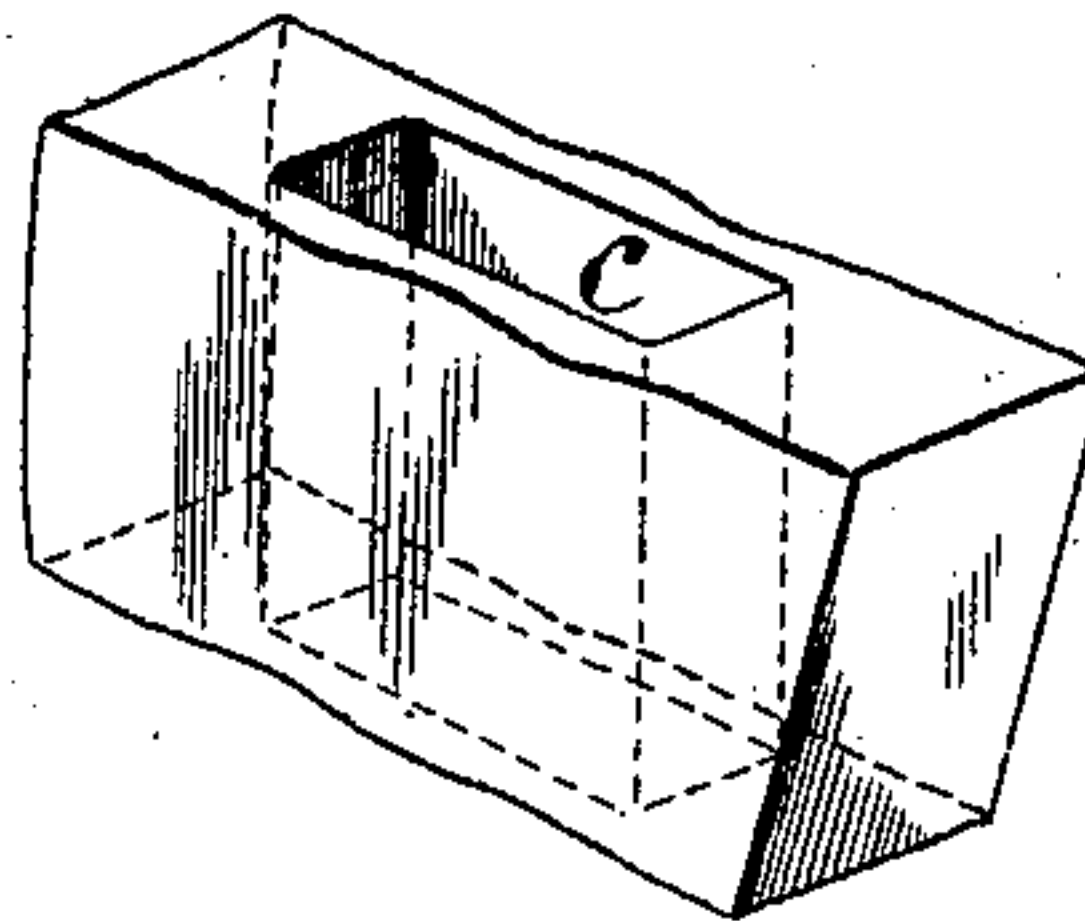


FIG. 6.

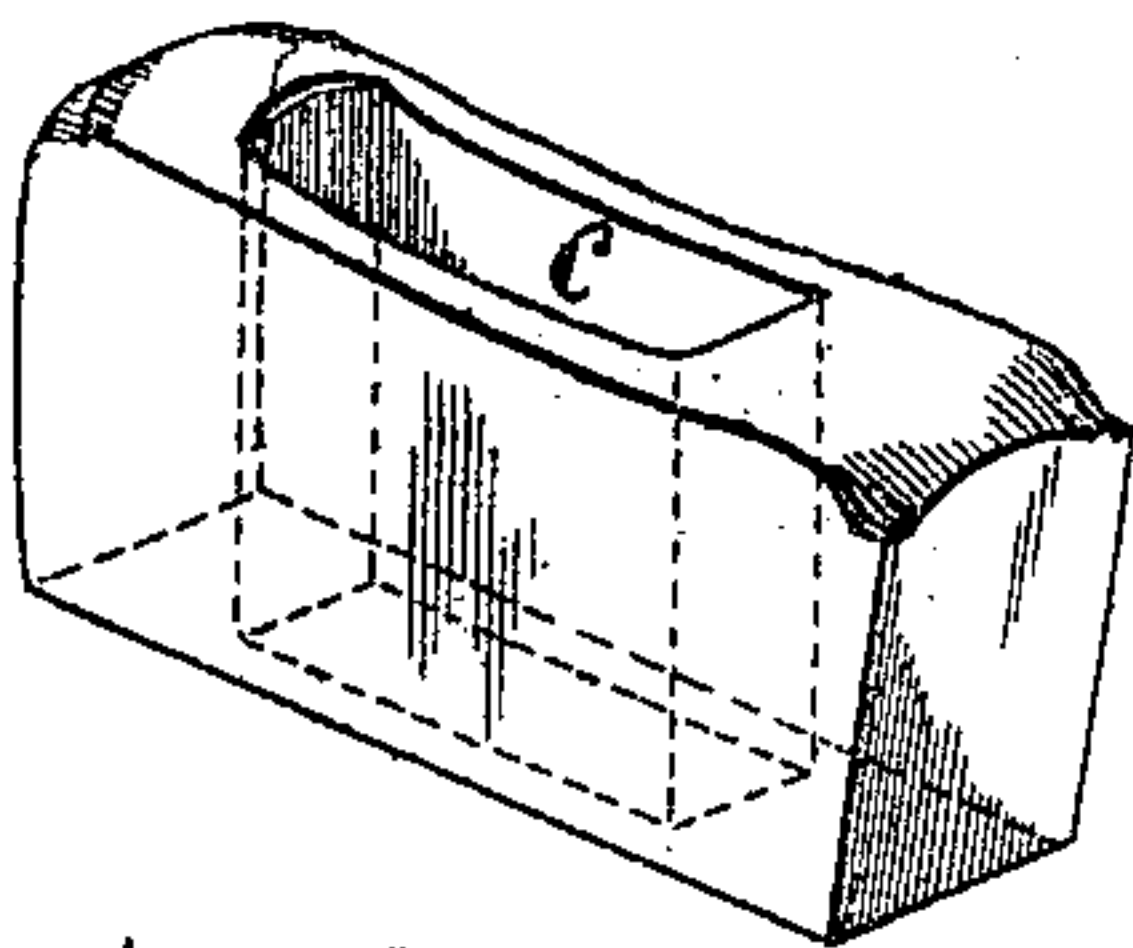


FIG. 7.

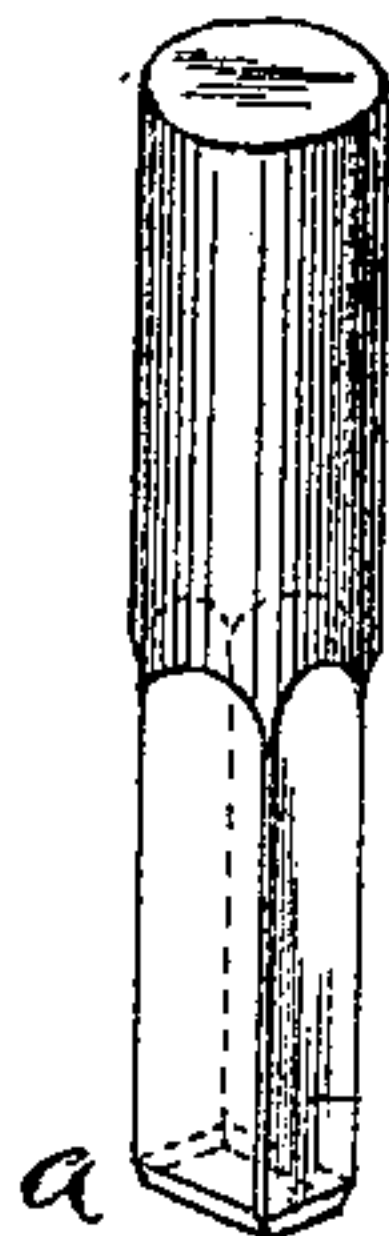


FIG. 9.

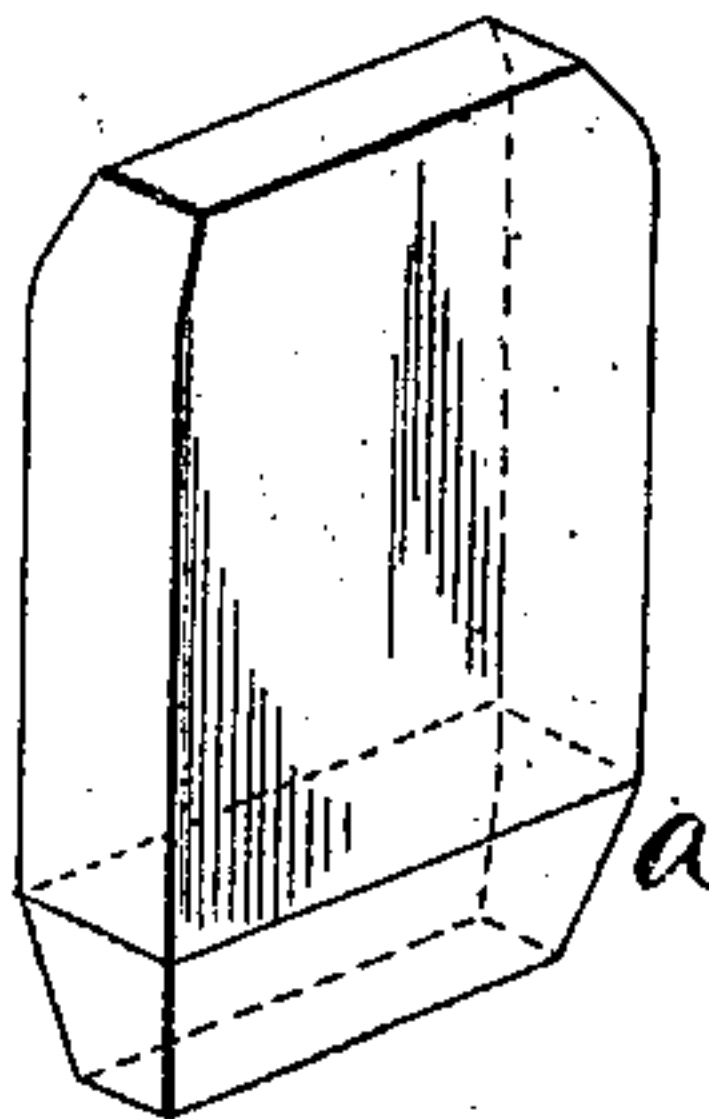


FIG. 10.

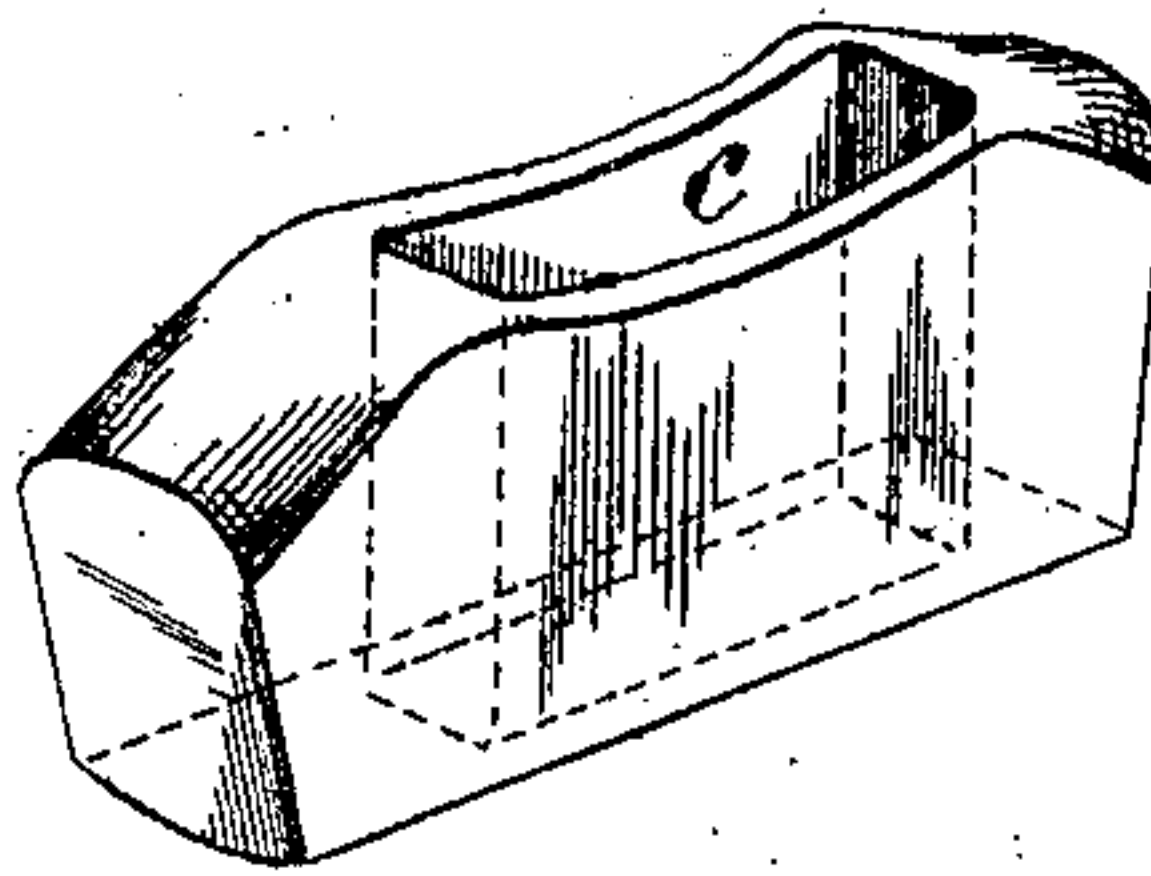


FIG. 8.

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UNITED STATES PATENT OFFICE.

ELBRIDGE G. W. BARTLETT, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR
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IMPROVEMENT IN THE METHODS OF FORMING RECEIVERS FOR BREECH-BLOCKS OF FIRE-ARMS.

Specification forming part of Letters Patent No. **145,717**, dated December 23, 1873; application filed
August 11, 1873.

To all whom it may concern:

Be it known that I, ELBRIDGE G. W. BARTLETT, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in the Methods of Making the Receivers for Breech-Blocks for Breech-Loading Fire-Arms, whereby an important economy in the manufacture is effected, and resulting in a receiver-blank of a novel character, of which the following is a specification:

The several figures, from 1 to 8, inclusive, exhibit the receiver in its several progressive stages, from the first operation to the completed receiver. Figs. 9 and 10 represent tools of peculiar construction used in the process.

The receiver or the "body," as it is sometimes termed, of a breech-loading fire-arm, is a block of metal with a rectangular mortise cut through it, in which is placed the movable breech-block, and which also forms the link of connection between the stock and the barrel. An instance of a receiver such as is referred to is shown in the drawings of H. O. Peabody's patent of July 22, 1862.

Heretofore it has been the practice to cut the mortise in the receiver by drilling a number of contiguous holes through the block of metal out of which a receiver is to be made; then punch out the metal remaining between the holes, so as to convert the openings into an irregular-sided mortise, and finally, by a series of cutter-broaches forced through the block one after another, shape and dress the opening into a finished mortise. By this means the whole mass of metal which occupied the space of the mortise, and weighing upon the average two pounds, is wasted in the form of chips and shavings; besides, too, the expense of keeping in order the drills and large number of broaching-tools required, and the time consumed in the necessary manipulation of them is attended with a very considerable expense.

The object of my invention is to reduce to a nominal amount the waste in stock, and to cheapen generally the cost of making this part of the weapon.

I take a block of steel or suitable iron whose weight is but very little less than, say, four ounces in excess of the weight of the receiver

when finished, and heat it in a suitable furnace to the proper degree to enable a blunt bevel-faced punch to be driven through the block. The block is then to be placed between gages on the bed of a punching-machine, and a rectangular opening is made through it by a punch of the form shown at Fig. 9. The edge of the punch, it will be noticed, is beveled, as seen at *a*, the effect of which form of construction is to displace the metal sidewise from the punch after the manner of the action of a wedge, so that when the punch has gone through the block only about one and one-half ounce in weight of metal will be separated from the mass as waste. The block, after this operation, is in the form shown at Fig. 1, its sides bulging outward from an excess of metal, as seen at *b*. The operation of heating the block is now to be repeated, after which the opening *c* is to be stretched by the insertion of a tool in character like the punch first used, having beveled corners, and which removes none of the metal, but elongates and widens the mortise. The result is shown at Fig. 2. The operations of heating the block and stretching the mortise with tools of the character substantially as shown at Figs. 9 and 10 are to be repeated until the block is brought to the shape shown at Fig. 6, the outer surfaces of the side walls of the block being also at each operation, or as often as may be necessary, subjected to pressure between swaging-dies while the punch is within the mortise. The block, being then reheated, has a proper shaper inserted to preserve the form of the mortise, and the outside configuration required to adapt the block to the stock and to the barrel is given to it by means of dies of suitable form.

The result of all the operations described is a receiver, as seen at Fig. 8, and which can be accurately finished on the outside by the usual milling-tools, and in the mortise with a broaching-tool, with only that trifling loss of stock which is incident to the removal of the superficial scale, the shape and size of the receiver, including the mortise therein, being almost exact upon the completion of the forging operations.

The preceding operations have been described with reference to the formation of a

single receiver; but it is to be understood that in the manufacture, as practically conducted, a large number of receivers are in progress of construction at the same time, and are passing consecutively through the different stages.

I have found that the best results are obtained by subjecting the block which is to form the receiver to seven successive drawings and swaging operations, as described, to bring the mortise from the shape shown in Fig. 1 to the shape and size shown at Fig. 7; but I do not limit myself to this particular number of such operations.

From the foregoing description it is to be understood that my improvement in the manufacture of mortised receivers for breech-loading fire-arms, from solid blocks of metal, involves the following operations: First, making an opening through the block, by means of a wedge-shaped punch, and displacing the metal sidewise thereby; secondly, enlarging the opening thus made and reducing the side walls of the intended mortise, by the use of a succession of stretching-tools applied interiorly and swaging-tools applied exteriorly; and, finally, giving the proper shape to the exterior of the receiver by means of dies, while the shape of the mortise is preserved by a block inserted therein.

It will be seen that the successive operations described result in causing a block of steel of considerably lesser length than the finished receiver to be drawn to the desired length, and proportionately decreased in breadth and thickness, by the combined action of the internal drawing and stretching devices, and the external compressing devices, and that every portion of the blank receiver so made

possesses, necessarily, the character of well-rolled and thoroughly-condensed metal, and therein essentially differing from the receivers made, as heretofore, from a large bar of steel, and possessing, when finished, dimensions in every respect less than the original block of steel from which they were made.

The forged blanks, as made by my method, are susceptible of being completed with but little expenditure of labor, and also of receiving a higher degree of surface-finish than receivers composed of metal having no greater density than that of the average large bar-steel. The finer the surface-finish the less the liability of injury thereto by corrosion, and it is well known that corrosion of the inner surfaces would materially affect the efficiency of the arm by preventing free action of the breech-block, surrounded or incased as it is by the receiver.

Having thus described my invention, I claim as new, to be secured by Letters Patent—

The improvement in the art of manufacturing blanks for breech-block receivers, which consists in perforating, mainly by lateral displacement, a block of metal of lesser longitudinal dimensions than the finished receiver, and in extending said block longitudinally, and reducing it laterally and vertically, by means of a series of internal stretching or drawing tools applied consecutively, and compressing-tools applied exteriorly, in connection with interior resisting-tools, substantially as described.

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Witnesses:

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