(No Model.)

S. FOX.

MANUFACTURE OF FRAME PLATES FOR ROLLING STOCK.

No. 397,177. Patented Feb. 5, 1889.

FIG. 1.

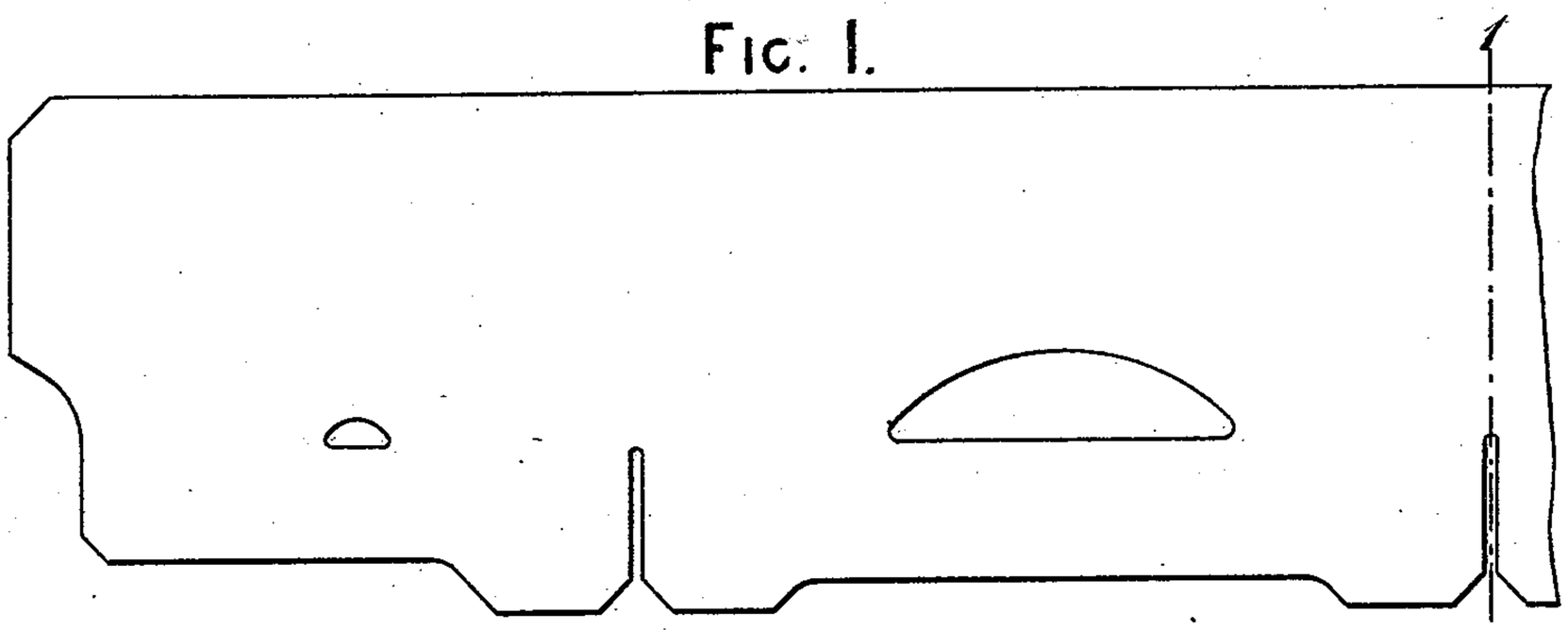

FIG. 2.

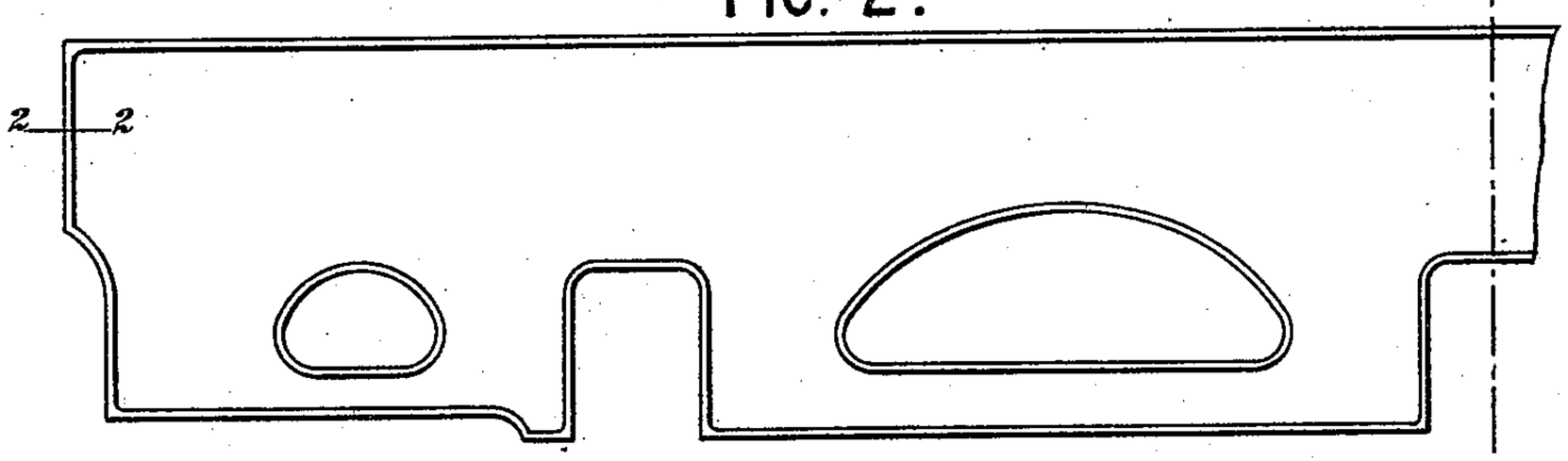

FIG. 3.

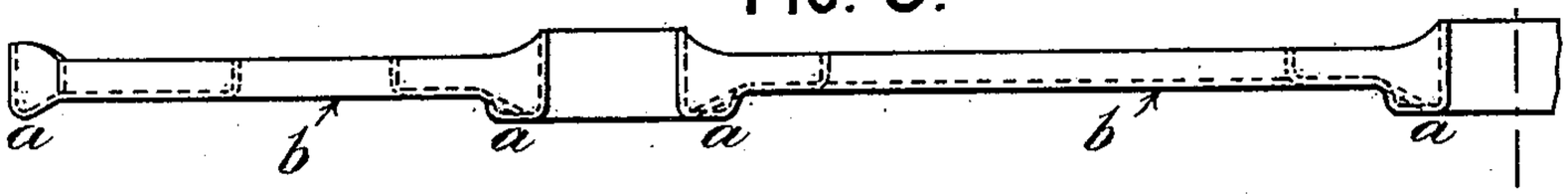

FIG. 4.

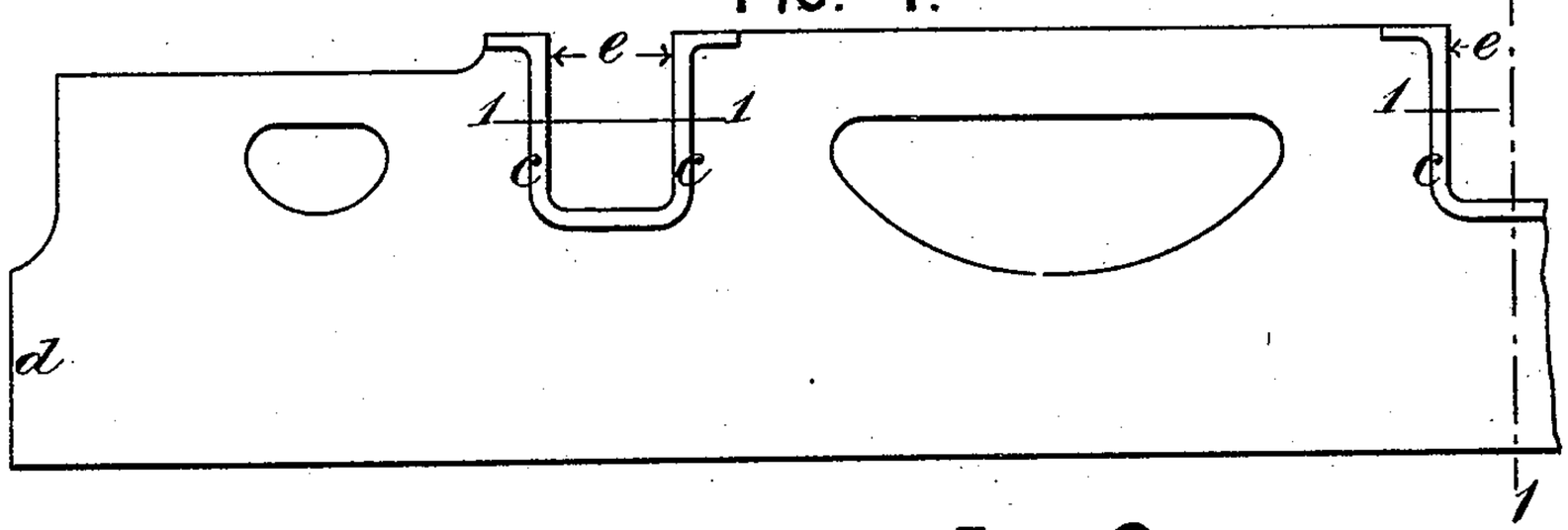

FIG. 5.

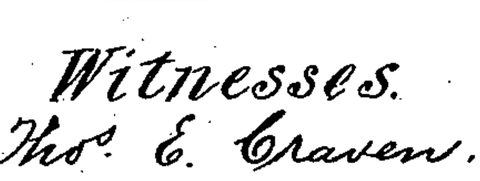

FIG. 6.

Witnesses.
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MANUFACTURE OF FRAME-PLATES FOR ROLLING-STOCK.

SPECIFICATION forming part of Letters Patent No. 397,177, dated February 5, 1889.

Application filed January 18, 1888. Serial No. 261,165. (No model.)

To all whom it may concern:

Be it known that I, SAMSON FOX, a subject of the Queen of Great Britain and Ireland, residing at Harrogate, in the county of York, Kingdom of Great Britain and Ireland, have invented new and useful Improvements in the Manufacture of Frame-Plates for Rolling-Stock, of which the following is a specification.

In the specification of former Letters Patent granted to me under date of the 11th day of May, 1886, No. 341,802, is described the manufacture of frame-plates for locomotives and other rolling-stock, each made of the desired form with flange or flanges to give it the required strength or rigidity of a single plate of metal by pressing or stamping.

Now my present invention has reference to a further development of the said former invention, according to which I produce not only a flange or flanges at one side of the plate, but likewise a fillet or fillets (or projection or projections) where required (as, for example, around the openings for the axle-boxes) at the other side of the plate, as I will proceed to describe.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 represents part of the metal plate to be subsequently formed into the frame-plate. Fig. 2 represents a plan view of the plate as pressed preparatory to the final shaping. Fig. 3 represents a section through Fig. 2, showing the shape of the metal before completion. Fig. 4 represents a plan view of the opposite side of the plate shown in Fig. 2, showing the completed fillets or projections; Fig. 5, a section through Fig. 2 on the line 2 2 when the same has been pressed to a square corner; Fig. 6, a section through Fig. 4 on the line 1 1.

In my said former invention the plate and the flanges, after being formed by pressing or stamping, were of uniform thickness, or nearly so, and in no case was any flanged or bent part thicker than the plate from which it had been formed. In dressing any part of the frame thus formed by planing where the boxes are to be fitted the thickness is still further reduced. In my present invention I not only supplement the flanges formed by pressing or stamping, as in the former case, by the addition of fillets or projections on the opposite side of the plate, but by means of these fillets or projections I increase the thickness of the parts to such a degree as to permit the after planing to sides without reduction of thickness below the first thickness of the plate from which it is formed.

A plate of metal—such as mild steel, as referred to in my former specification—having been cut roughly to form somewhat larger than the intended frame-plate, and having been otherwise suitably prepared—for example, as represented in half-length in Fig. 1 of the accompanying drawings—is heated to a suitable temperature (say 900° Fahrenheit, or thereabout, or, say, to a bright-red heat) and pressed or stamped to nearly the required shape, as represented in Figs. 2 and 3, (also in half-length,) with flange or flanges on one side. Those parts at which it is intended to form fillets or square corners are bulged or embossed outward at the reverse side of the plate to that at which the flange or flanges is or are formed, as shown at *a*, Fig. 3, this bulged or embossed part being for the purpose of obtaining at or near the plates where the fillets are to be formed an amount of metal sufficient to fill the dies used to give form in succeeding operations. This having been done, the plate is again heated once or oftener, as required, and while hot is subjected to a further pressing or stamping operation or operations, whereby the bulged or embossed parts *a*, above referred to, are mainly flattened, so as to coincide with the plain surface *b* of the main body of the plate; but part of the surplus metal of each bulged or embossed part *a*, by being pressed or caused to flow into a recess or recesses in a suitable die, has imparted to it the form of a fillet or fillets—such as shown at *c*, Fig. 4, and in Fig. 6 in section taken at 1 1, Fig. 4, to a larger scale—and at the same time is made to form square corners at *d* and *e*, Figs. 4 and 5, (large scale section in line 2 2, Fig. 2,) and Fig. 6. The said fillets or projections *c* allow of being trued up after they become worn by the friction of the axle-box flanges or by lateral play or oscillation of the rolling-stock without encroaching on the material of the main body or part of the frame-plate, the said fillets or projections forming likewise extra wearing-surfaces at

the points desired, and also adding to the strength and stiffness of the structure by reason of the increase of the thickness of the metal of this part. The fillets and the edge or edges of the flange or flanges, after being produced as described, may be trimmed.

For producing frame-plates according to this invention, any suitable apparatus may be employed, preferring such as is described and illustrated in the specification of my other application for Letters Patent of even date herewith and numbered 261,166. It is necessary, however, that in the second part of my process the pressing shall be done between two dies and not simply by forcing the material through a female die. It is obvious, likewise, that the square corners are not an essential part of my invention.

I do not claim as new a flanged frame for rolling-stock formed with a plate by pressing or stamping, such having been already invented and patented by me.

What I claim is—

1. The method or process of manufacturing frame-plates for rolling-stock with flanges and with square corners and fillets or projections, which consists in cutting a suitable plate to approximately the form, but somewhat larger than the required frame-plate, heating same, producing by pressure the required flange or flanges at one side and bulgings or embossments at the contrary side, reheating the plate, and by pressure forming out of the metal of said bulgings or embossments the desired square corners and fillets or projections, substantially in the manner hereinabove described.

2. As a new article of manufacture, a pressed-steel frame-plate having a flange or flanges at one side and fillets or projections at the other side, formed integral with the body of the frame-plate itself, substantially as described.

3. The method or process of manufacturing frame-plates with flanges and with fillets or projections, which consists in cutting a suitable plate to approximately the form, but somewhat larger than the required frame-plate, heating the same to produce by pressure the flange or flanges at one side and bulgings or embossments at the contrary side, and by reheating and by pressure between two dies forming out of the metal formed by said bulgings or embossments the desired fillets or projections, substantially as described.

4. As a new article of manufacture, a pressed-steel frame-plate for rolling-stock, having fillets or projections on one side and flanges formed on the other side, the fillets and the flanges being integral with the body of the frame-plate itself and of greater thickness at the junction than the body of the plate from which they are formed, substantially as described.

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