

E. H. BELL.
PROCESS OF MANUFACTURING TIE PLATES.
APPLICATION FILED MAR. 10, 1911.

1,044,853.

Patented Nov. 19, 1912.

2 SHEETS-SHEET 1.

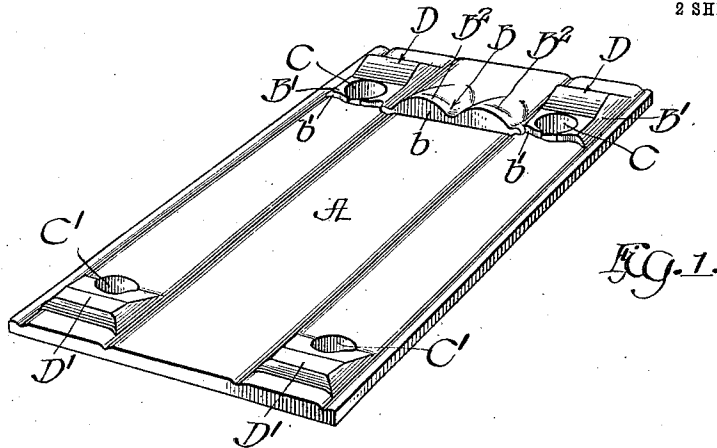


Fig. 2.

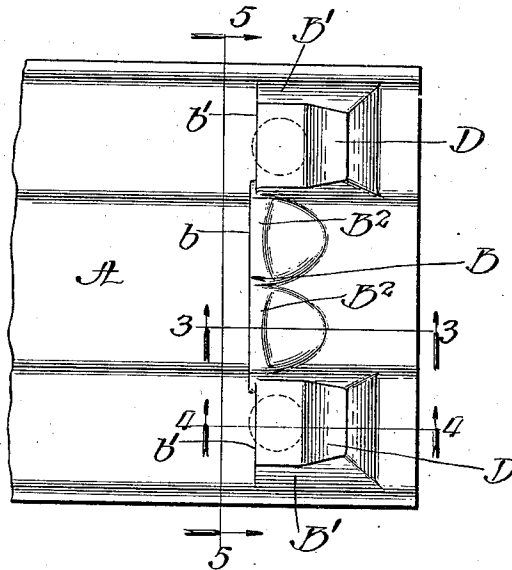


Fig. 3.

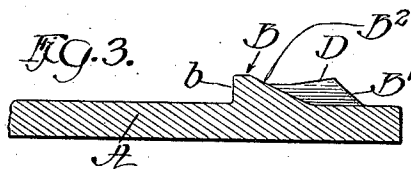
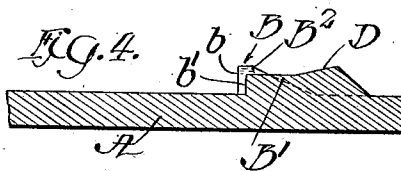


Fig. 4.



Witnesses:
J. H. Alfords
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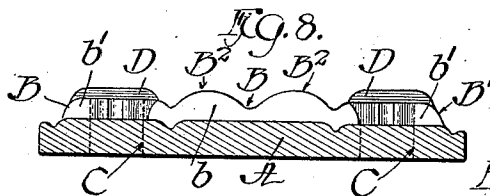
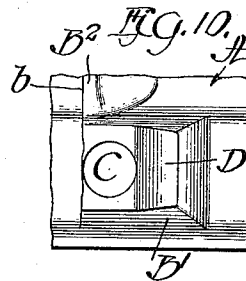
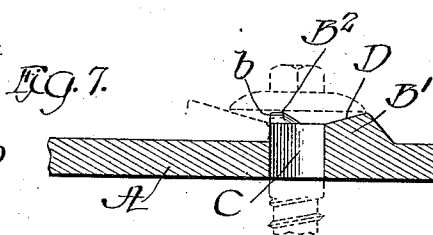
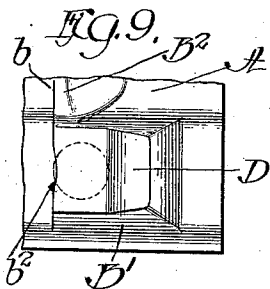
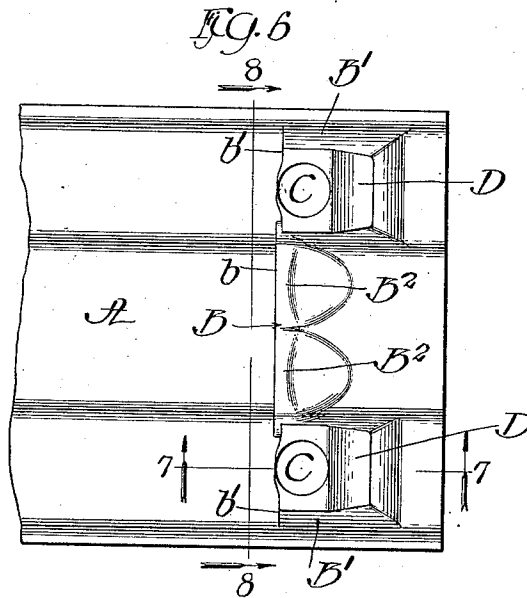
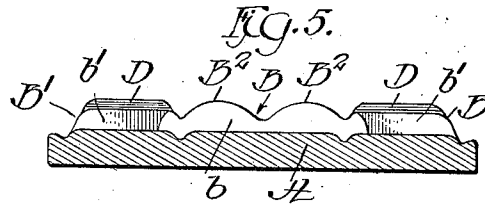
Inventor:
Edwin H. Bell
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EDWIN H. BELL, OF CHICAGO, ILLINOIS.

PROCESS OF MANUFACTURING TIE-PLATES.

1,044,853.

Specification of Letters Patent.

Patented Nov. 19, 1912.

Application filed March 10, 1911. Serial No. 613,636.

To all whom it may concern:

Be it known that I, EDWIN H. BELL, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes of Manufacturing Tie-Plates; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in the process of manufacturing railway tie-plates of that kind made of rolled metal and in which the tie-plate is provided at its upper surface with an elevated part or rib, forming a rail-abutting shoulder and with one or more holes for screw-spikes, extending through the plate adjacent to said shoulder.

The invention consists in the matters hereinafter described and pointed out in the appended claim.

My improved process may be better understood by reference to the accompanying drawings, illustrating a tie-plate blank as completed by a rolling process, preparatory to the formation of the spike-holes therein, together with a completed tie-plate.

In said drawings: Figure 1 is a perspective view of a completed tie-plate. Fig. 2 is a plan view of the rolled blank, showing the end thereof on which the rail-abutting shoulder is formed. Fig. 3 is a sectional view, taken on line 3—3 of Fig. 2. Fig. 4 is a sectional view, taken on line 4—4 of Fig. 2. Fig. 5 is a sectional view, taken on line 5—5 of Fig. 2. Fig. 6 is a plan view corresponding with Fig. 2 of the completed tie-plate. Fig. 7 is a sectional view, taken on line 7—7 of Fig. 6. Fig. 8 is a sectional view taken on line 8—8 of Fig. 6. Fig. 9 is a detail plan view of the part of the rib adjacent to a spike-hole, showing a slightly different construction in the blank. Fig. 10 is a like detail plan view showing the same part of the blank after the formation of the spike-hole therein.

The completed tie-plate, made by my improved process, is shown in Figs. 1, 6, 7 and 8, the same consisting of a main part or

body A, provided near one of its margins and at one side of the rail seat thereof with an elevated rib B, having an inwardly facing, vertical face *b* forming a rail-abutting shoulder. The tie-plate is provided with circular holes for screw-spikes. The tie-plate illustrated has four of such spike-holes, indicated by C C and C¹ C¹. The spike-holes C C are located at the same side of the rail-seat as the rib B, and the holes C¹ C¹ at the opposite side of said rail-seat. The spike-holes C C extend through the end portion of the rib B with their inner sides in line with the vertical face or rail-abutting shoulder *b*, so that the spikes inserted through said holes will be in contact with the edge of the base-flange of the rail which bears against said shoulder, as clearly seen in Fig. 7.

The tie-plate shown is provided, exterior to the spike-holes C and C¹, with elevated spike-head seats D and D¹ having upwardly facing bearing surfaces for contact with the annular, downwardly facing shoulders on the heads of the screw-spikes. The said shoulders on the screw-spikes are made slightly conical in form so as to properly engage the inclined top surface of the base-flanges of the rails, and the spike-head seats D D¹ are inclined to correspond with the inclination of the shoulders of the spike-heads so that the latter will have firm bearing both on the rails and the said spike-head seats, as shown in dotted lines in Fig. 7.

In the case of the spike-head seats D D which are associated with the spike-holes C C, the same are shown as formed on elevated parts B¹ B¹ of the plate, made continuous with or as outward lateral extensions of, the rib B, while the spike-head seats D¹ D¹ associated with the spike-holes C¹ C¹, are shown as formed in separate elevated parts or lugs (Fig. 1) on the plate.

The part of the rib B between the elevated parts B¹ B¹ is shown as formed by means of a plurality of rounded projections B² B² joined with each other and with the said elevated parts B¹ B¹ so as to form in effect a continuous rib, although said rounded projections need not necessarily be so joined. So far as this feature of construction in the rib B is concerned, the same

is so made to facilitate the formation of said rib in the process of rolling the plate, as set forth in my prior Patent, No 879,238, dated February 18th, 1908, but the formation of the rib with such rounded projections constitutes no part of the present invention.

Now referring to the construction of the blank, or plate as prepared for the punching of the spike-holes, as shown in Figs. 2 to 5, of the drawings, the rib B is so shaped or formed that its inner face b , forming the rail-abutting shoulder, is recessed at or adjacent to the parts of the shoulder at which the spike-holes C C are located; the recessed parts of said shoulder being indicated by b^1 b^1 . In other words, the rail-abutting shoulder of the plate, instead of being originally made straight or flat from end to end, is so shaped as to provide the rabbeted or recessed parts b^1 b^1 at or adjacent to the points at which the spike-holes are to be punched. The positions of the spike-holes are indicated by dotted lines in Fig. 2. The purpose of so shaping or forming the blank is to provide for the shifting or distortion of the metal which takes place in punching round holes through the plate, in a manner to bring the inner sides of the holes in line with the vertical face of the rib or rail-abutting shoulder; the effect of the punching at a point close to the shoulder and in such manner as to cut through the same, is to force the metal outwardly from the plane of such shoulder so as to form two protuberances at opposite sides of the slot or opening formed in the shoulder by the punching of the hole. If the said vertical face or shoulder were originally made straight or continuous, the effect of punching of the spike-holes at the points indicated in the drawing, would be to force outwardly the metal at the holes so as to form protuberances against which, (if not removed by a subsequent operation, as by planing or milling,) the side edge of the rail-base would rest in a manner preventing the rail-base from coming into proper bearing contact with the rail-abutting shoulder. If, however, the rail abutting face or shoulder be recessed as described, the parts of the metal forced or bulged out by the punching operation at either side of the place at which the hole is opened through the shoulder, will still be within, or will not project beyond, the general line of the shoulder, and no additional work will be needed to permit the rail base to come into firm bearing against substantially the full length of the shoulder. Preferably the recessed surfaces b^1 , b^1 are located at such distance outside of the general line of the shoulder, that, after the adjacent metal has been forced or bulged out by the punching operation, the outer faces of the bulged out parts will

be approximately in line with the main part of the shoulder, so that in the finished plate, the recessed parts will aid the main parts of the shoulder in resisting the lateral thrust of the rail. Moreover, it is not necessary that the recessed parts b^1 , b^1 , of the shoulder should be as long as shown in Figs. 1 to 8, but they may be made as shown in Fig. 9 wherein a curved depression or shallow concave recess b^2 is formed in the flat face of the shoulder, with the result that, when the hole is punched, as shown in Fig. 10, the bulged out parts of the metal will come substantially in the same plane with the remainder of the face of the shoulder and form a substantially continuous bearing face for the rail.

From the above description of the form of the blank and of the completed plate, it will be manifest that the process constituting my invention consists in the steps of first forming the plate, in the rolling operation, with a rail-abutting shoulder, recessed from the general line of the shoulder at or adjacent to the point or points where the spike-holes are to be punched, and then punching out the metal to form the spike-holes, in such manner that a part of the metal will be removed from the face of the recessed part, while the adjacent outwardly displaced or bulged out parts of the metal will occupy all or a part of the space or spaces provided therefor by recessing the shoulder.

It is to be understood that the rib or shoulder, as a whole, may be formed on the plate, in rolling the same, either by the process set forth in my prior patent hereinbefore referred to, or by any other process, and the shoulder may be formed on or by a rib, as shown, or by giving any other suitable shape or formation to the plate. Moreover, the tie-plate, so far as is concerned its parts other than the rail-abutting shoulder, may be of any desired shape or form, and the process described may be used in making a plate grooved on its top as shown or without grooves, or flat on its bottom, as shown, or with ribs, flanges or grooves on its under surface. Moreover, where a rib is employed to form the rail-abutting shoulder said rib may be continuous, or may be formed by a series of projections, connected with each other, as in the construction illustrated, or not so connected, as desired.

I claim as my invention:—

The process of manufacturing a rolled metal tie-plate provided with a rail abutting shoulder and with a spike hole extending through the plate with its margin tangential with the face of the said shoulder, said process consisting in first forming the shoulder with a recessed part adjacent to the place

at which the spike hole is to be made, and
then forming the spike hole by punching
out the metal at the recessed part of the
shoulder so as to force the metal of the
5 recessed part of the shoulder substantially
into the plane of the face of the shoulder.

In testimony, that I claim the foregoing

as my invention I affix my signature in the
presence of two witnesses, this 25th day of
February, A. D. 1911.

EDWIN H. BELL.

Witnesses:

GEORGE R. WILKINS,

T. H. ALFREDS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
