

No. 685,213.

Patented Oct. 22, 1901.

O. M. KNOX.
RAILWAY CROSS TIE.
(Application filed Jan. 7, 1901.)

No Model.)

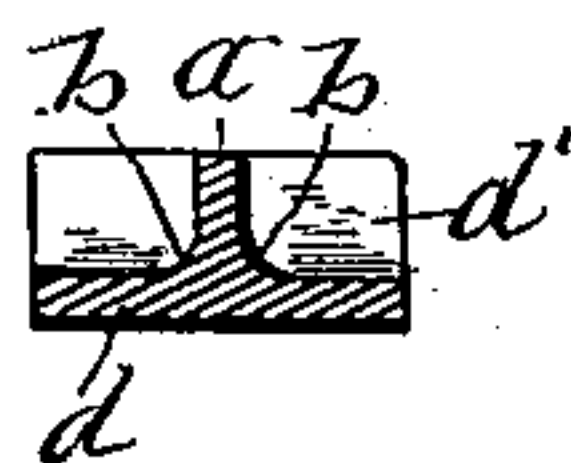
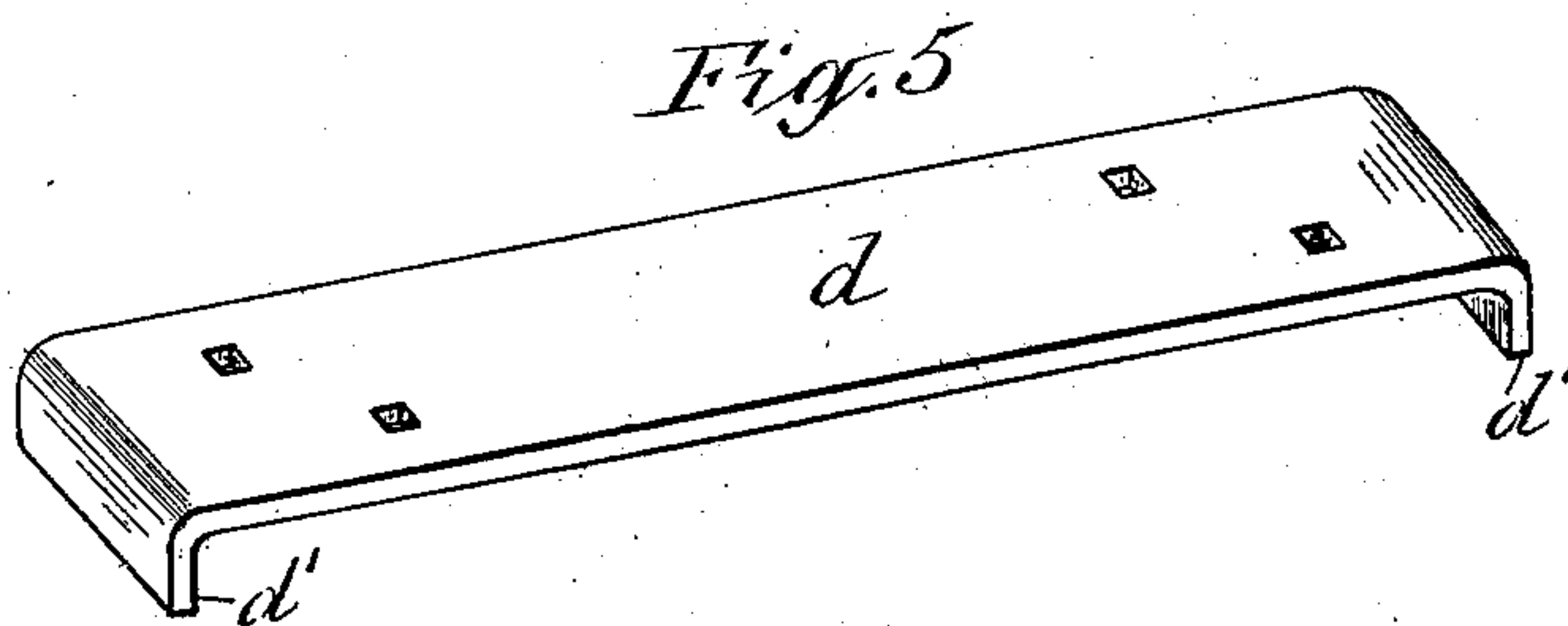
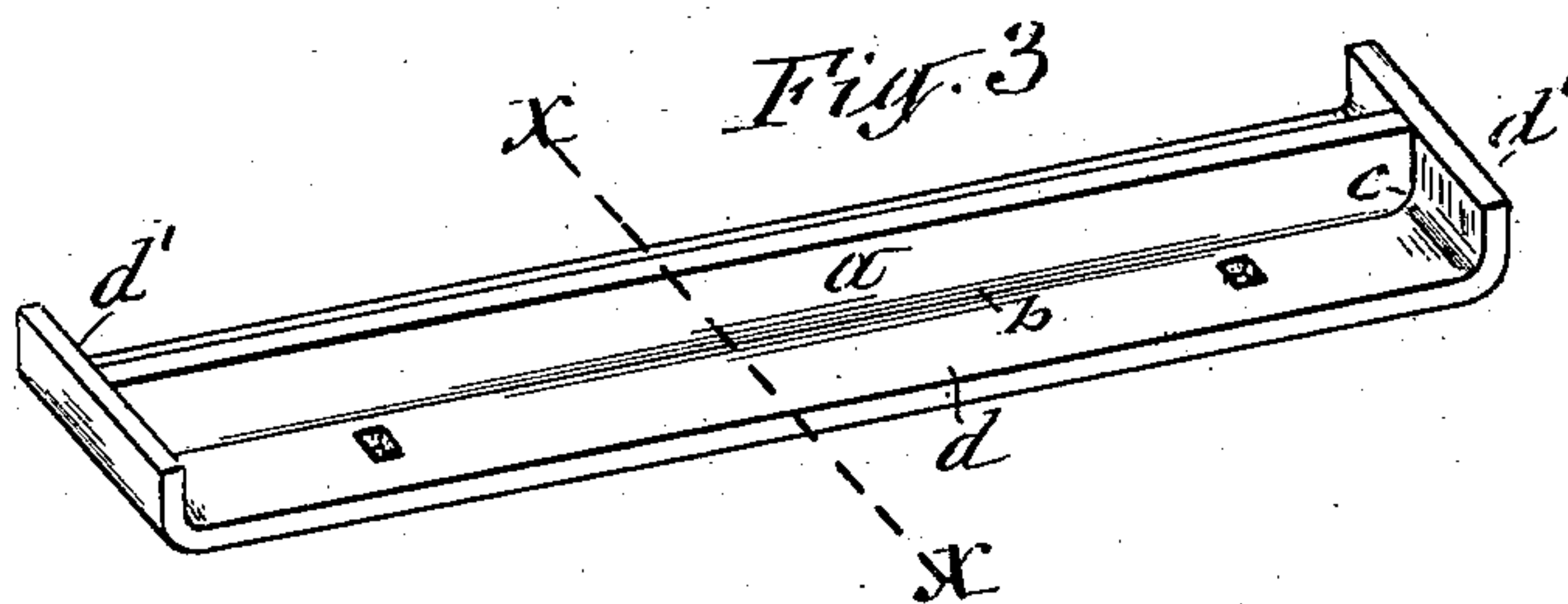
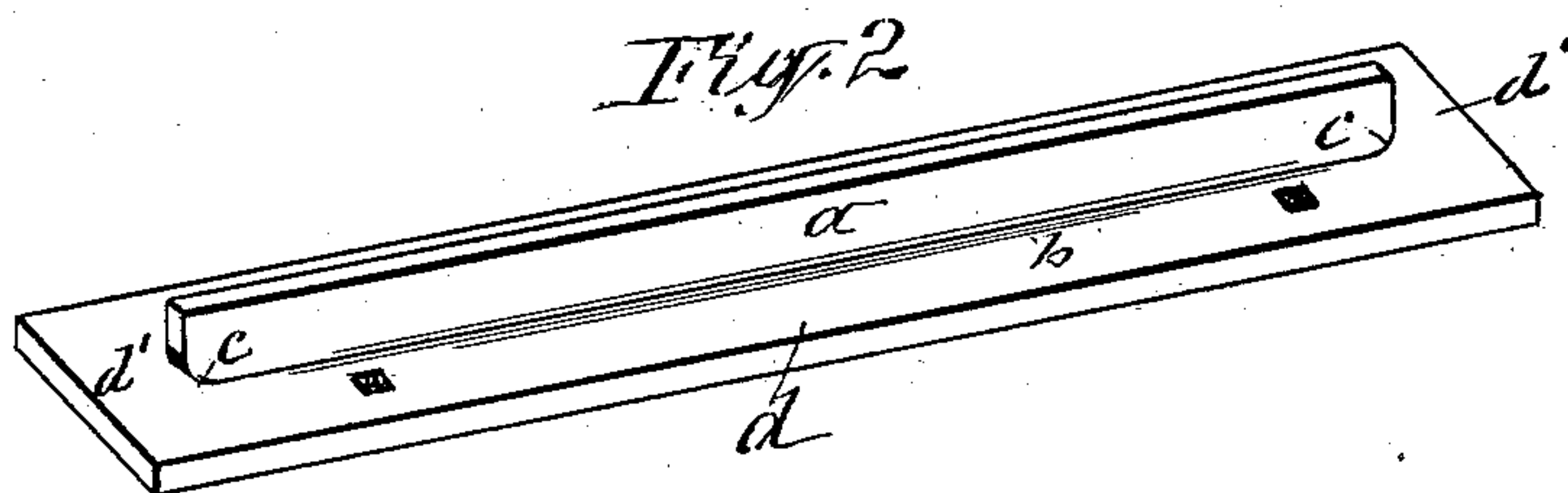
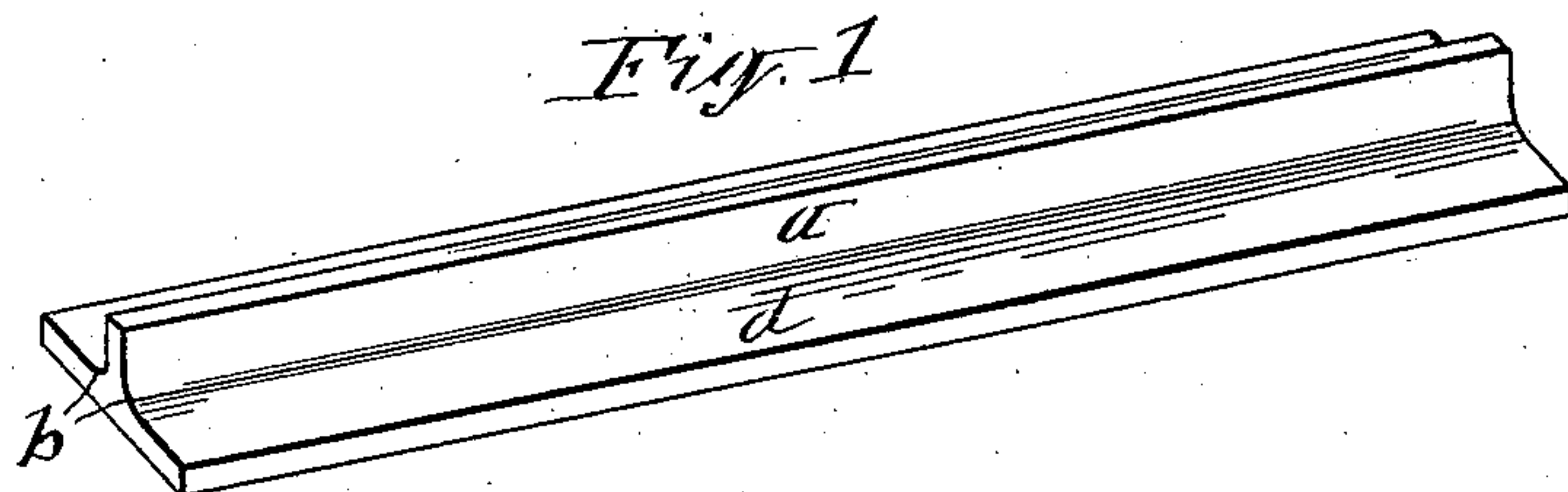


Fig. 4

WITNESSES:

H. B. Smith

J. J. Lasee

INVENTOR

Orville M. Knox

By E. Lasee

ATTORNEY

UNITED STATES PATENT OFFICE.

ORVILLE M. KNOX, OF ONEIDA, NEW YORK.

RAILWAY CROSS-TIE.

SPECIFICATION forming part of Letters Patent No. 685,213, dated October 22, 1901.

Application filed January 7, 1901. Serial No. 42,343. (No model.)

To all whom it may concern:

Be it known that I, ORVILLE M. KNOX, a citizen of the United States, and a resident of Oneida, in the county of Madison, in the State of New York, have invented new and useful Improvements in Railway Cross-Ties, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of railway cross-ties which are formed of metal.

The object of this invention is to provide a railway cross-tie which shall be easily and expeditiously manufactured from a bar of rolled steel or iron, and when in use it shall permit thorough tamping under the tie in the most convenient and effective manner and shall also permit free escape of water from under the sides of the tie, and thus obviate entrapping water, which is liable to loosen the tie on the road-bed. Said object is attained by my improved cross-tie, consisting of a rolled steel or iron bar of T shape in cross-section and having the vertical web continuous from end to end of the surface plate of the cross-tie and the entire width of said surface plate in a uniform horizontal plane to permit free escape of water from under the sides of the cross-tie, said surface plate terminating with downwardly-bent end portions, as hereinafter more fully described.

To obtain maximum strength of the material of the cross-tie, I form it of a bar of wrought steel or iron of T shape in cross-section, which bar is produced by passing a bloom between rolls of a rolling-mill, which convert the bloom into a prolonged bar of the desired T shape in cross-section. In case the rolling-mill is equipped with the necessary tools for manufacturing from said rolled bar a complete cross-tie then said shaping of the bar becomes one of the steps in the process of manufacturing the cross-tie. However, the subsequent treatment of the aforesaid rolled bar may be carried on in a separate factory.

The annexed drawings illustrate the effects of the successive steps in the process of manufacturing a cross-tie embodying my invention.

In said drawings, Figures 1, 2, and 3 are in-

verted perspective views of the effects of the first, second, and third steps, respectively, of the process of manufacturing the cross-tie. Fig. 4 is a transverse section on line X X in Fig. 3, and Fig. 5 is a perspective top view of the completed cross-tie.

In manufacturing my improved cross-tie I proceed as follows: I form a blank (shown in Fig. 1 of the drawings) by cutting a section of the requisite length transversely from a bar of rolled steel or iron of T shape in cross-section, which bar may be of a length to form a plurality of said blanks therefrom. This blank is of a length exceeding that of the bed-plate *d* of the cross-tie to be formed, the excess being nearly or quite equal to twice the depth of the vertical web *a*. By means of fillings *b b*, formed in the upper corners of the sides of the web, said web and bed-plate are braced to maintain them transversely in their respective planes. I next remove from each end of the web *a* about one-half of the aforesaid excessive length, which removal is readily accomplished by subjecting the end portions of the web to the shearing or punching action of suitable dies in a press. The lines of cutting across the web are at right angles to the bed-plate *d* to form vertical end walls on the web, the blank then presenting the appearance shown in Fig. 2 of the drawings. I next bend or depress the projecting ends *d' d'* of the horizontal portion *d* of the blank down onto the vertical end faces of the web *a*, as shown in Fig. 3 of the drawings. Said depressed portions *d' d'* thus form on the ends of the tie-vertical abutments which are braced against inward pressure, and by their hold in the road-bed they effectually prevent the cross-tie from being shifted endwise or laterally in relation to the track, and consequently maintain the track in line.

The object of curving the upper corners *c c* of the web is to obtain perfect bearings for the depressed end portions *d' d'* and to obviate the necessity of bending said portions into abrupt angles to obtain the said bearings on the web.

The top portion *d* constitutes the bed-plate of the tie, which bed-plate is maintained in a uniform horizontal plane across the entire width thereof to provide the cross-tie with a

bearing of maximum width and efficiency upon the road-bed and at the same time permit free escape of water from under the sides of the cross-tie, and thus obviate the liability of entrapping water under the cross-tie, such entrapped water tending to loosen the hold of the tie on the road-bed. Said entrapping of the water under the tie is also guarded against by limiting the depth of the end walls or abutments d' d' , so as to prevent their projecting beneath the bottom of the web a . Furthermore, it will be observed that the horizontal bed-plate d , with the continuous single web a in the center thereof, affords the most convenient access for thoroughly tamping the ballast under the tie from opposite sides thereof and uniformly throughout the length of the tie.

What I claim as my invention is—

As an improved article of manufacture, a railway cross-tie formed of a rolled iron or steel bar of T shape in cross-section; reinforced by fillings in the corners at the junction of the web and top plate and having its vertical web terminated with vertical end faces and its top plate maintained straight across its entire width and throughout the length of the web and the end portions of said top plate bent down onto the end faces of the web and forming thereat vertical abutments for more positively confining the tie endwise in its position on the road-bed as set forth.

ORVILLE M. KNOX.

Witnesses:

J. J. LAASS,

H. B. SMITH.