H. G. ELFBORG.

RAILWAY CROSSING.

APPLICATION FILED JULY 27, 1909.

979,479. Patented Dec. 27, 1910.

3 SHEETS—SHEET 1.

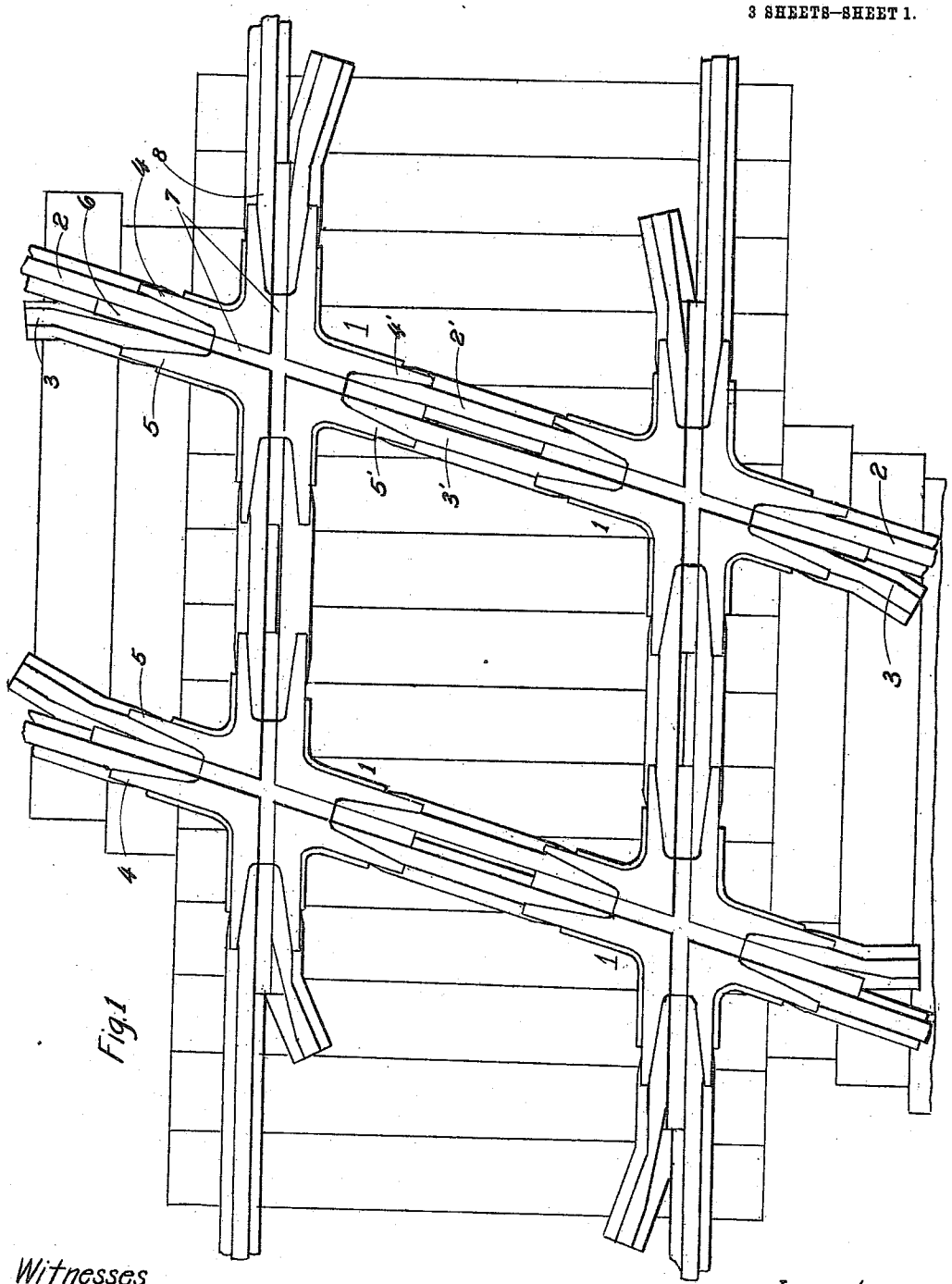


Fig. 1

Witnesses
C. C. Burnap
Henry A. Parks

Inventor:
Henry G. Elfborg
By Sheridan, Wilkinson & Scott
Attys.

THE NORRIS PETERS CO., WASHINGTON, D. C.

H. G. ELFBORG.

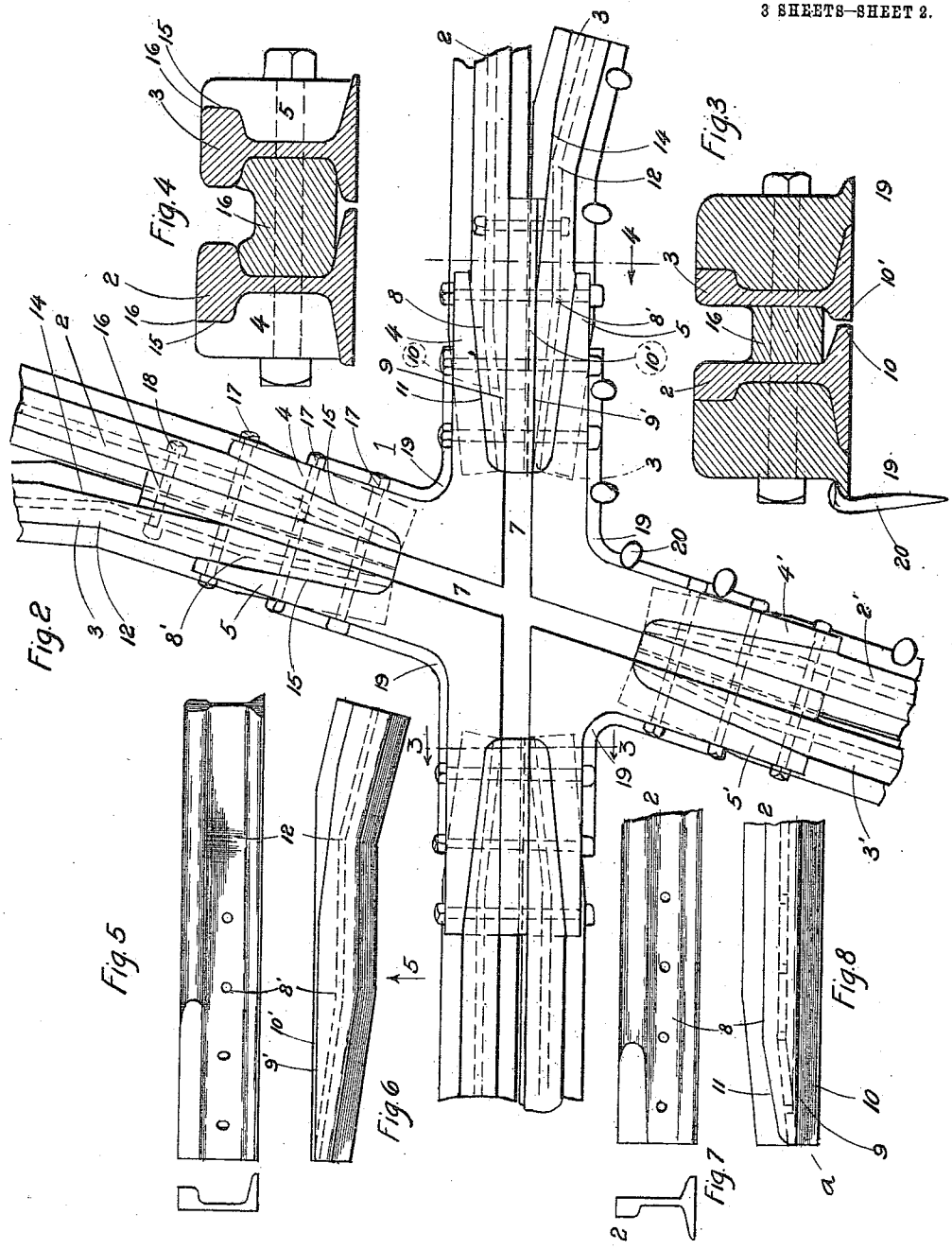
RAILWAY CROSSING.

APPLICATION FILED JULY 27, 1909.

979,479.

Patented Dec. 27, 1910.

3 SHEETS—SHEET 2.



Witnesses

C. E. Burnap

By

Henry A. Parks

Inventor:

Henry G. Elfborg

Brenden, Wilkinson & Foot

Attys

THE NORRIS PETERS CO., WASHINGTON, D. C.

H. G. ELFBORG.

RAILWAY CROSSING.

APPLICATION FILED JULY 27, 1909.

979,479.

Patented Dec. 27, 1910.

3 SHEETS—SHEET 3.

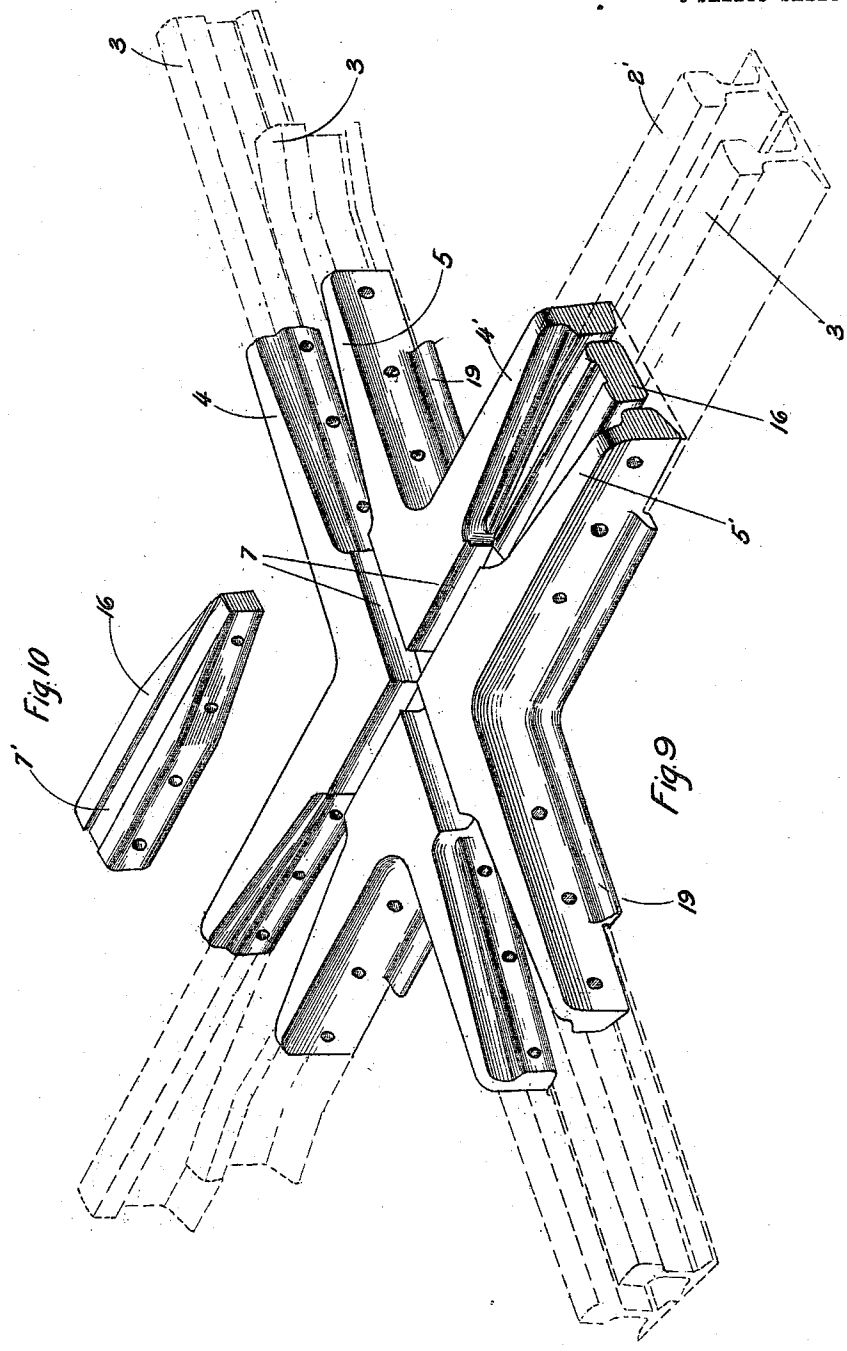


Fig. 10

Fig. 9

Witnesses

C. C. Burnap

Henry A. Parks

By

Inventor:

Henry G. Elfborg

Sheridan, Wilkinson & Scott

Attys

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY G. ELFBORG, OF CHICAGO, ILLINOIS.

RAILWAY-CROSSING.

979,479. Specification of Letters Patent. **Patented Dec. 27, 1910.**

Application filed July 27, 1909. Serial No. 509,842.

To all whom it may concern:

Be it known that I, HENRY G. ELFBORG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Crossings, of which the following is a specification.

The object of my invention is to provide a railway track crossing of a form adapted to present a smooth junction with the adjoining rails; to construct the individual intersections of such form that they will be reversible and interchangeable; to provide means for forming a secure connection with the adjoining traffic and guard rails; and to construct the intersections of such form as to secure the maximum of efficiency with the minimum of material with a view particularly to making the same of a hard alloy, such as manganese-steel, without incurring prohibitive expense.

Other and further objects of my invention will appear from the following description, and it will be obvious that certain features of my invention may be employed separately from other features, or in connection therewith.

In the drawings Figure 1 is a general view of a track crossing. Fig. 2 is a detail view of one of the individual intersections, showing part of the adjoining traffic and guard rails. Fig. 3 is a section on the line 3 of Fig. 2. Fig. 4 is a section on the line 4 of Fig. 2. Fig. 5 is an end and side elevation of one of the outer guard rails. Fig. 6 is a plan view of the guard rails shown in Fig. 5. Fig. 7 is an end and side elevation of the terminal part of one of the traffic rails. Fig. 8 is a plan view of the rails shown in Fig. 7. Fig. 9 is a perspective of one of the individual intersections with the traffic and guard rails shown in dotted lines. Fig. 10 is a wedge-shaped filler used between the traffic and guard rails.

Before proceeding to a detailed description of my improved crossing, it will be obvious from an inspection of the drawings that each individual intersection 1 is symmetrically formed, the configuration of the opposite ends of each arm being the same, and preferably the terminal parts of all four arms are of the same shape. This renders it possible to use one of the intersections in any one of the four positions shown in Fig. 1, and to reverse the position of any one of the intersections by turning it on its center. For instance, any of the intersections 1, shown in Fig. 1, might be turned 180 degrees, thus joining the alining rails by a different pair of alining arms of the intersections. In those cases where there is a greater wear upon one of the tracks than upon the other, the intersection can be turned in this manner to a new position after one track has become worn more than the other, thus prolonging the life of the track crossings, and by constructing the intersections of manganese-steel, or other hard alloy, a structure of great durability is secured.

Referring particularly to Fig. 9, it will be observed that each crossing consists of intersecting pairs of alining arms, each arm terminating in extensions 4 and 5 which project beyond the top of the casting, thus forming a space for the reception of the traffic and guard rails 2 and 3. Flange grooves 7 are provided in the top of the intersection. Upon their inner faces, the extensions 4 and 5 are tapered outwardly from the flange groove 7 and formed upon their inner sides to fit against the webs and between the heads and bases of the adjoining traffic and guard rails, the parts being so proportioned that when assembled the upper surfaces of the rails and intersection are flush.

The object of tapering the extensions 4 and 5 of the crossing 1 is to form a diagonal joint with the adjoining rails, thus avoiding the shock incident to the passage of wheels over a butt-joint extending transversely to the line of movement of the wheels. Of course, the necessity for such a diagonal joint pertains more particularly to the junction between the traffic rails and intersection, the form of connection between the guard rails and intersection not requiring such a precaution. By constructing all of the joints uniformly, however, the intersection is made reversible and interchangeable in the manner above referred to. It will be obvious that upon reversing the position of one of the intersections by rotating it through an angle of 180 degrees the guard sides of the grooves become the traffic sides and the traffic sides become the guard sides. As the wear is almost wholly upon the upper surface of the intersection on the traffic side of the grooves, the reversal of one of the intersections after it has become worn brings new and unworn parts into action,

thus greatly prolonging the life of the structure.

In order to prepare the rails for connection with the intersections, they are bent toward each other at about the point where they are received between the extensions 4 and 5. Referring to the traffic rails 2, illustrated in detail in Figs. 7 and 8, these rails are first bent at the point 8. The head of the rail is then planed off, as indicated at 9, to make the gage line continuous, and the base is planed away at 10 where the traffic and guard rails abut in the converging space between the extensions 4 and 5. The inclined side 11 which is given its inclination by bending the rail, as above described, matches the inclination of the intersection extension 4, thus forming a diagonal joint therewith, over which the wheels pass smoothly and without shock. The guard rails 3 are prepared in a similar manner for joining the same with the rail intersection. They are given the usual bend at 12 at the termination of the part of the guard rail which slopes toward the traffic rail, and are also bent at 8′ for the purpose of forming a joint with the rails similar to that described in connection with the traffic rail 2. The head of the guard rail is planed away at 9′ in alinement with the wall of the grooves 7 in the rail and crossing, the space between the face 9 of the track rail and the face 9′ of the guard rail forming a continuation of said groove. The base of the guard rail is planed away at 10′ where it abuts against the cutaway section 10 of the track rail in the converging space between the extensions 4 and 5. The inner face of the guard rail 3 may also be planed away at 14 for the purpose of more gradually tapering the converging space between the traffic and guard rails, and the outer faces of the heads of the traffic and guard rails may be planed away slightly, as indicated at 16, for the purpose of forming a right-angular joint at 16 between the rail heads and the extensions 4 and 5, instead of forming the extensions to overlie the curved upper edges of the rail heads. After the traffic and guard rails 2 and 3 are inserted between the extensions 4 and 5, a wedge-shaped filler 16, illustrated in detail in Fig. 10, is driven between said rails, thus forcing them apart and into intimate contact with the inner faces of said extensions. The upper face of each of the wedges is provided with a groove 7′ which forms a continuation of the flange grooves 7 in the main body of the intersection 1. The extensions 4 and 5, the ends of the guard rails 2 and 3, and the wedges 16, are provided with bolt holes which aline when the parts are assembled and the wedges driven home, and bolts 17 passing through these parts hold the structure securely in assembled position. An additional bolt 18 may pass through the rails and wedge beyond the ends of the extensions 4, 5 in the case of the outer traffic and guard rails, the term "outer" being applied to the traffic and guard rails outside of the angle formed by the intersection. The intersection 1 is provided with base flanges 19 in the angles between the arms, thus affording a hold for spikes 20. The inner guard and traffic rails 2′, 3′, and the inner extensions 4′, 5′ are of precisely the form above described in connection with the inner rails and extensions, except that the inner guard rails 3′ do not have the bend 12 referred to in connection with the outer guard rails, but extend in a straight line from one rail crossing casting to the other, having only the bend 8′ and the other modification of form above described.

I will have it understood that I do not desire to limit myself to the precise construction and arrangement of parts shown in the drawings, and herein described, as various modifications or alterations may be made without departing from my original invention.

I claim:

1. An intersection having intersecting grooves in its upper surface, two extensions at the end of each of the arms of said intersection, and a traffic rail and a guard rail fitted between and secured to the extensions of each of said arms.

2. A reversible intersection having intersecting grooves in its upper surface, traffic rails and guard rails, the free end of each arm of said intersections being formed to fit against the adjoining traffic and guard rails, the fitting ends of alining arms being of the same form.

3. A reversible intersection having intersecting grooves in its upper surface, traffic rails and guard rails, the free end of each arm of said intersection being formed to fit against the adjoining traffic and guard rails, the fitting ends of all of said arms being of the same form.

4. An intersection having flange grooves and elevated sections, said elevated sections being extended at the ends of the arms of said intersection beyond the main body thereof and tapered.

5. In combination, an intersection having flange grooves and elevated sections, said elevated sections being extended at the ends of the arms of said intersection beyond the main body thereof, a traffic rail and a guard rail between the extensions at the end of each arm, the ends of said traffic rails and extensions being tapered to form diagonal joints.

6. In combination, an intersection having flange grooves and elevated sections, said elevated sections being extended at the ends of the arms of said intersection beyond the

main body thereof, a traffic rail and a guard rail between the extensions at the end of each arm, the ends of said rails and extensions being tapered to form diagonal joints.

7. In combination, an intersection having flange grooves and elevated sections, said elevated sections being extended at the ends of the arms of said intersections beyond the main body thereof, a traffic rail and a guard rail between the extensions at the end of each arm, the ends of said traffic rails and extensions being tapered to form diagonal joints, wedge-shaped fillers between the ends of said traffic and guard rails, and bolts passing through said extensions, rails and wedge-shaped fillers.

8. In combination, an intersection having flange grooves and elevated sections, said elevated sections being extended at the ends of the arms of said intersection beyond the main body thereof, a traffic rail and a guard rail between the extensions at the end of each arm, the ends of said rails and extensions being tapered to form diagonal joints, wedge-shaped fillers between the ends of said traffic and guard rails, and bolts passing through said extensions, rails and wedge-shaped fillers.

9. An intersection having flange grooves and elevated sections, extensions at the ends of the arms of said intersection, said extensions being beveled on their inner surfaces and formed to fit between the bases and heads of attached rails received between said extensions.

10. In combination, an intersection having flange grooves and elevated sections, said elevated sections being extended at the ends of the arms of said intersection beyond the main body thereof, a traffic rail and a guard rail between the extensions at the end of each arm, the extension adjoining each traffic rail being tapered and each traffic rail being bent inwardly to fit said tapered extension and being tapered on its inner side to form a continuous gage line.

11. In combination an intersection having flange grooves and elevated sections, said elevated sections being extended at the ends of the arms of said intersection beyond the main body thereof, a traffic rail and a guard rail between the extensions at the end of each arm, the extension adjoining each rail being tapered and each rail being bent inwardly to fit said tapered extension and being tapered on its inner side.

12. A railway track crossing comprising track and guard rails and intersections, said parts being provided with registering bolt holes, all of said intersections being of the same form and each of said intersections being symmetrically formed and reversible.

13. A railway track crossing comprising traffic and guard rails, wedge-shaped fillers and intersections, all of said intersections being of the same form and each of said intersections being symmetrically formed and reversible.

In testimony whereof, I have subscribed my name.

HENRY G. ELFBORG.

Witnesses:
D. M. Holley,
G. M. Guleck.