

No. 678,988.

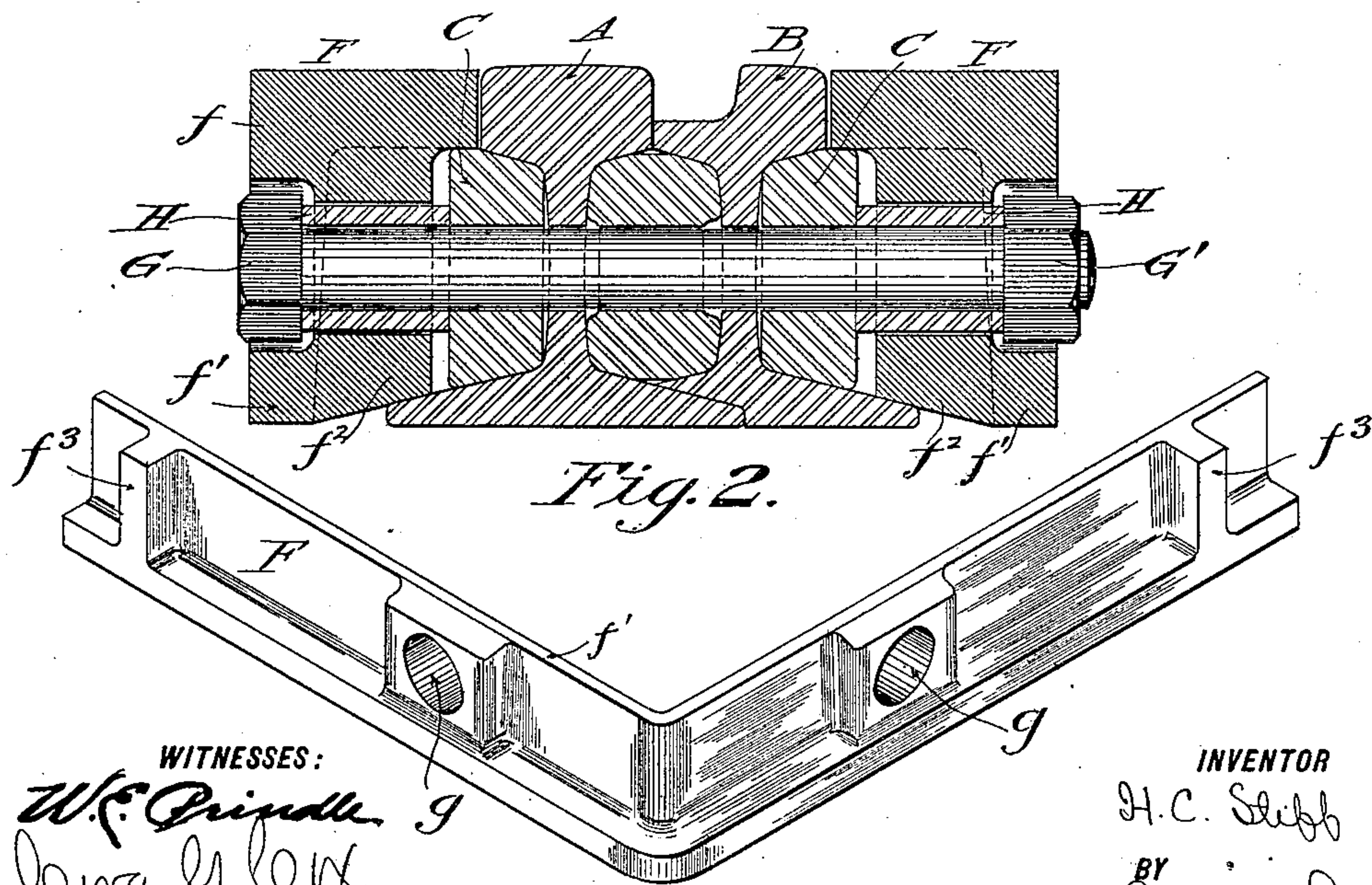
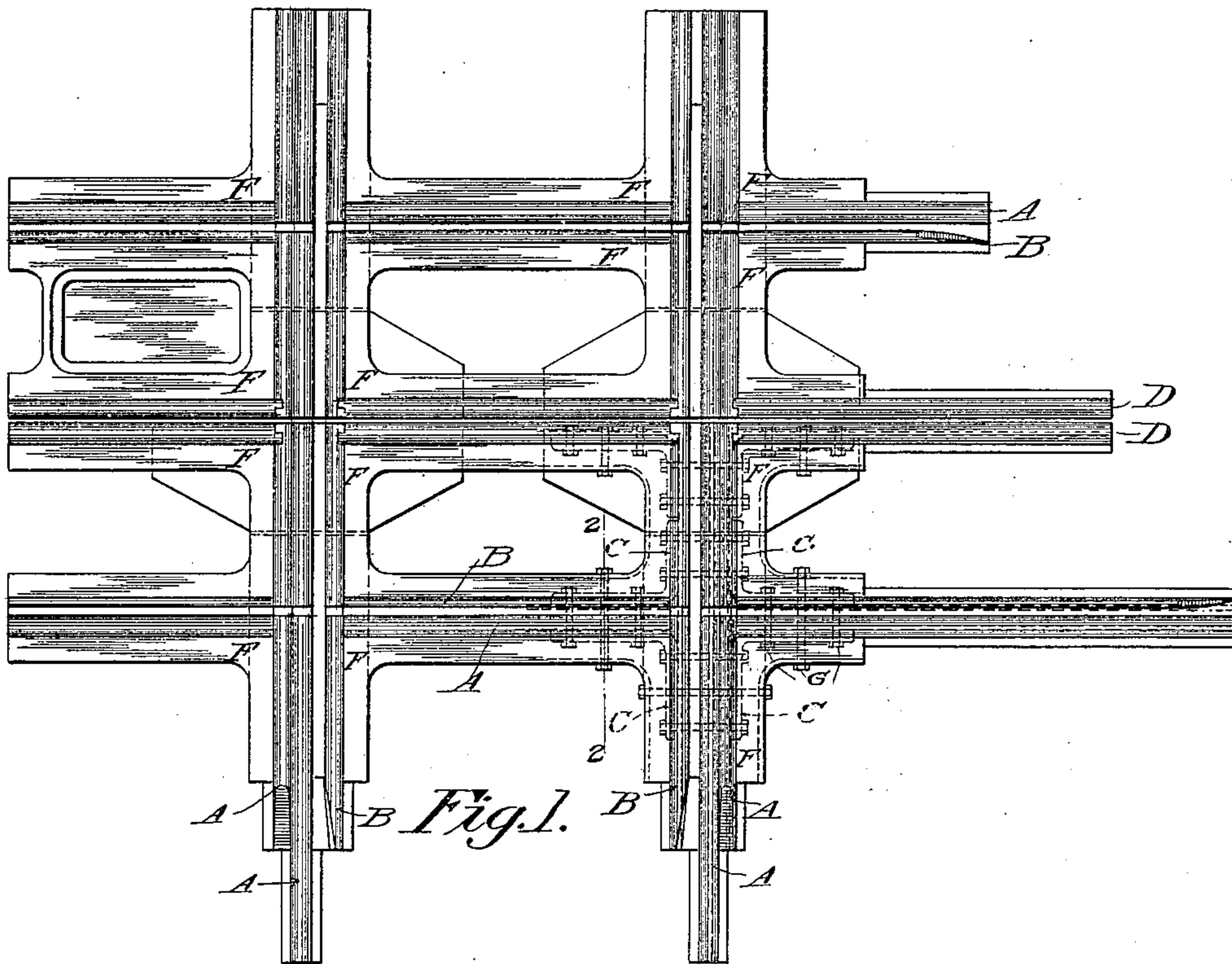
Patented July 23, 1901.

H. C. STIFF.  
RAILWAY CROSSING STRUCTURE.

(No Model.)

(Application filed Nov. 27, 1900.)

2 Sheets—Sheet 1.



WITNESSES:  
*W. F. Prindle*  
*Wm. H. Cox*

*Fig. 3.*

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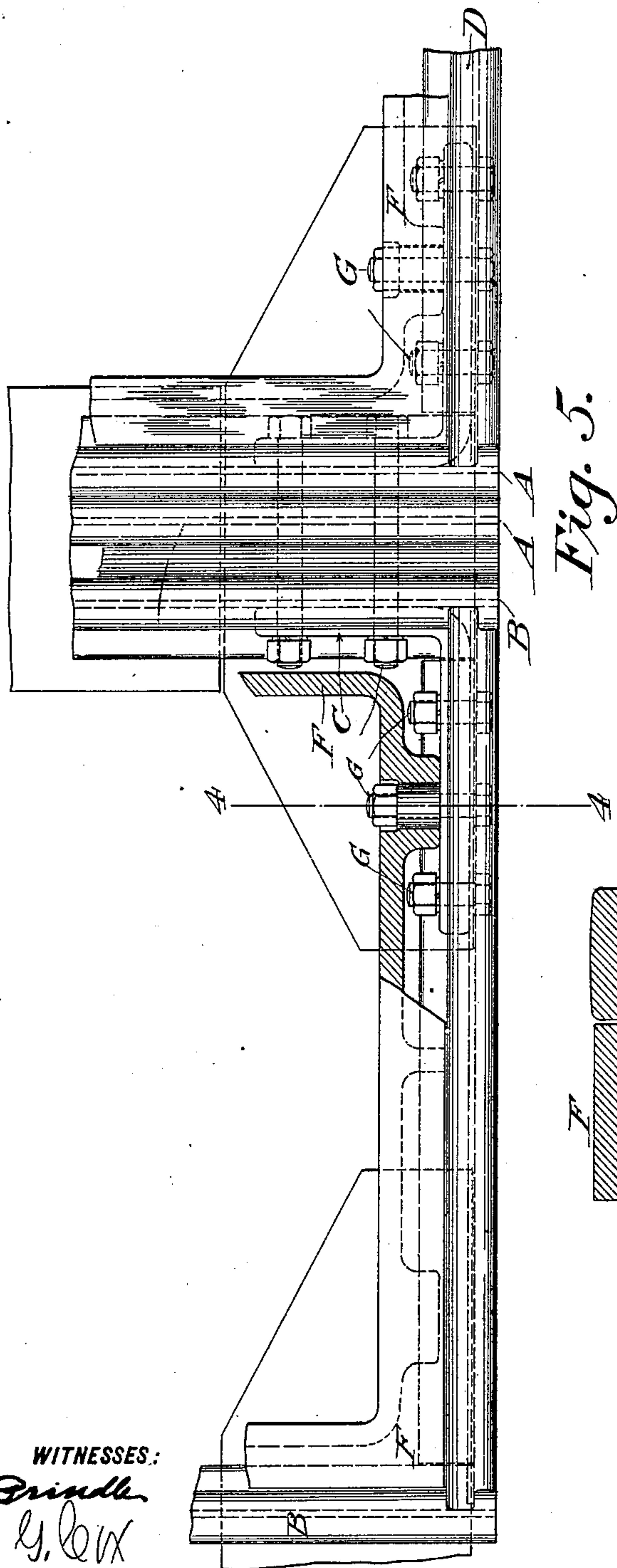


Fig. 5.

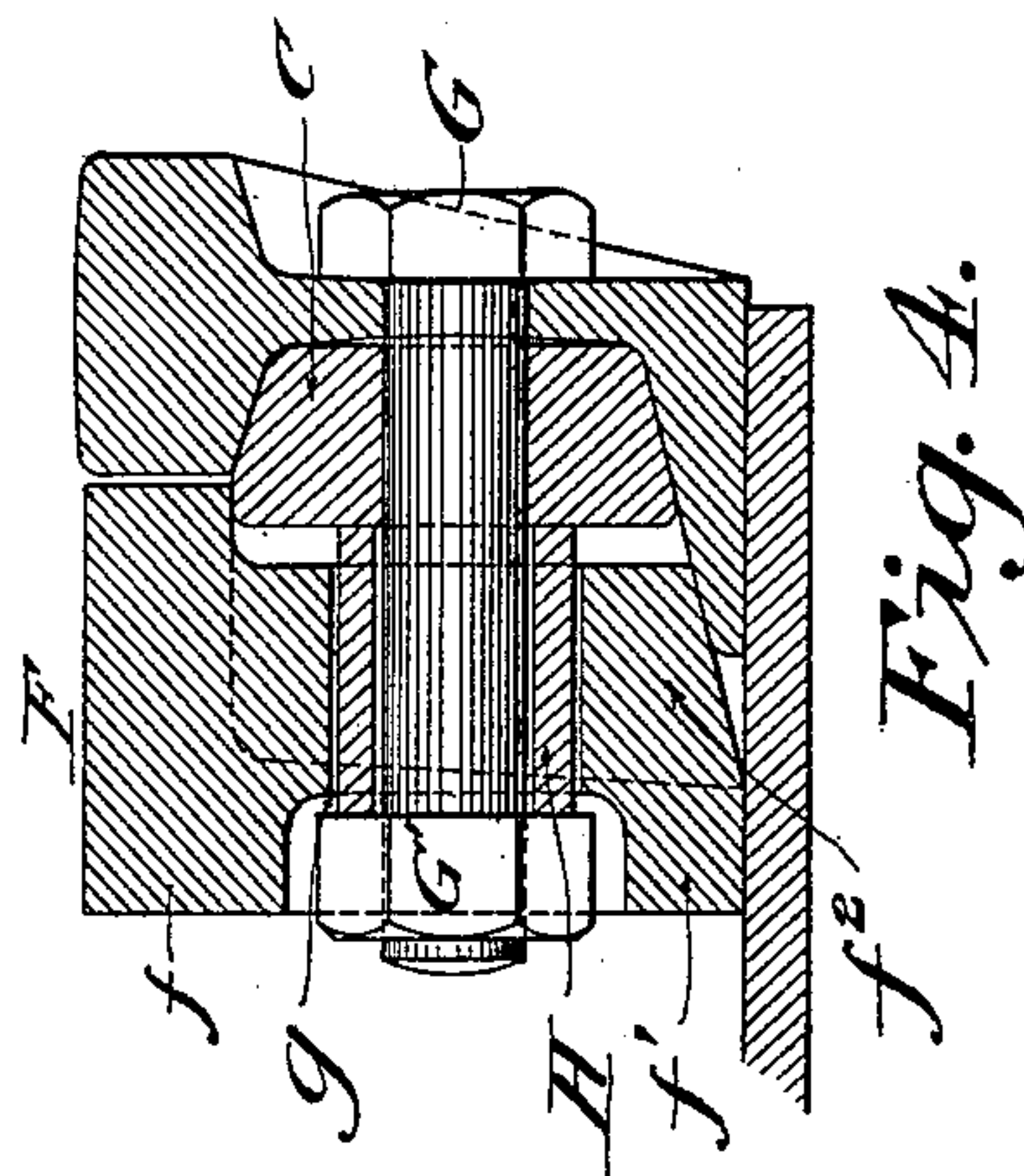


Fig. 4.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

HENRY C. STIFF, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO THE  
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## RAILWAY-CROSSING STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 678,988, dated July 23, 1901.

Application filed November 27, 1900. Serial No. 37,941. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY C. STIFF, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Railway-Crossing Structures, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to railway-crossing structures, and more particularly to structures which are used at grade-crossings in paved streets.

Certain features of my invention specifically relate to crossing structures in which one or both of the intersecting tracks include slot-rails, as in cable and underground system electric railways.

My object is mainly to provide means of simple and efficient character for firmly securing together the various parts of the structure without multiplication of fastenings and without weakening or straining any of such parts.

Other objects of the invention will hereinafter appear.

I attain these objects by the novel construction, arrangement, and combination of parts, all as hereinafter described, and pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a railway-crossing embodying my invention. Fig. 2 is a section on the line 2 2 of Fig. 1; Fig. 3, a perspective view of one of the paving-strips inverted; Fig. 4, a section on the line 4 4 of Fig. 5; and Fig. 5 is a plan view, partly broken away, of a portion of the crossing structure.

The letter A designates the rails or rail-sections which form the crossing-tracks, B the guard-rails therefor, and C the angle braces or knees which fit the webs of the rails in the angles formed by the intersections thereof.

D designates slot-rails, which in accordance with my invention consist of lengths of ordinary T-rail, whose base-flanges are cut away on the slot side in the manner clearly shown in Fig. 4 and which are secured in place by fitting their ends into recesses in the guard-rails B. These lengths of T-rails not only se-

curely brace the structure, but they also form slot-rails of sufficiently rigid character to prevent them from bending or springing to such an extent as to close or obstruct the slot.

The angle braces or knees C are usually thicker than the extent of the head and base flanges of the rails, as shown in Fig. 2, and are secured in place by through-bolts G, whose heads and ends, together with the projecting portions of the knees, make it difficult to properly pave in and around the crossing. For the purpose, therefore, of providing a crossing with smooth paving-abutments members F, known as "paving-strips," are provided. These strips are preferably integral iron castings varying in shape according to the location in which they are used. Those strips which are fitted within the central portion of the crossing are of rectangular outline, cored out at the center for the pavement, while those which fit in the exterior angles of the structure are either of L shape or U shape, according to whether they fit one or two angles. In each case, however, they are formed with horizontal flange portions  $f$ , whose vertical edges abut the head of the adjacent rail-sections, with their upper surfaces substantially flush with the top surfaces of said sections, and with vertical flange portions  $f'$ , on which they rest.

In order to avoid extra drilling or punching of the rail-sections and multiplication of fastenings, it is desirable to secure these paving-strips in place by the same bolts G, (or some of them,) which secure the angle braces or knees in place, and consequently the vertical portions  $f'$  of the strips are provided at intervals with thickened portions  $f^2$ , provided with bolt-openings  $g$ . If, however, the nuts on the bolts G be screwed up sufficiently tight to properly secure the braces or knees, there is danger of putting sufficient strain on the cast-iron strips to fracture them. To avoid this, I make the bolt-apertures  $g$  of considerably larger size than the diameter of the bolts and place in said apertures around the bolts collars or bushings H, whose inner ends bear against the knees or braces and whose outer ends form bearings for the nuts  $G'$ , which are preferably countersunk in the



strips. (See Fig. 2.) The strips are also provided with lugs  $f^3$ , which abut the webs of the rails.

By the construction and arrangement above described the ends  $G'$  may be screwed up as tightly as necessary without putting any strain whatever on the paving-strips. The apertures  $g'$  are preferably not large enough to pass the ends  $G'$ ; but it is not of great importance by reason of the fact that the main office of the fastenings is to secure the strips against vertical displacement, and for the further reason that the strips in all cases have two or more arms or branches at an angle to each other each provided with a bolt, so that any movement which might be permitted if there were but one bolt is effectually checked by another bolt or bolts at an angle thereto.

It will be apparent from the foregoing that I provide a very simple and efficient means of securing the parts firmly together without multiplication of fastenings and without unduly weakening the rail-sections by reason of apertures therethrough. It will be readily understood that this part of my invention is not limited in application to crossing structures which embody slot-rails, as shown in Fig. 1, but that it may be used in all crossings.

I do not wish to be limited to the precise construction and arrangement which I have illustrated and described, since the details thereof may be varied without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a railway-crossing structure, the combination with the rail-sections, angle braces or knees, and paving-strips, of bolts extending through said parts, and collars or bushings on the said bolts, said bushings bearing at one end against the said braces or knees, and at the other end forming a bearing for the nuts which secure the bolts.

2. In a railway-crossing structure, the combination with the rails or rail-sections, the angle braces or knees, and the paving-strips, having enlarged bolt-apertures therein, of bolts extending through the rails, knees and paving-strips, and collars or bushings on said bolts in said enlarged apertures, and bearing at one end against the knees or braces, and at the other end forming bearings for the nuts which secure the said bolts.

3. In a railway-crossing structure, the com-

bination with the rails or rail-sections, the angle braces or knees, and the paving-strips, of a plurality of bolts securing said knees or braces to the rails, some of said bolts being also extended through the paving-strips, with nuts at the outer sides of the said strips, and bearing-pieces interposed in said paving-strips intermediate the knees or braces and the said nuts, whereby said strips are relieved from strains.

4. In a railway-crossing structure, the combination with the rail-sections, angle braces or knees, and paving-strips, of bolts extending through said parts, and collars or bushings on the said bolts and extending through said paving-strips, said collars or bushings bearing at one end against the knees or braces and at the other end forming a bearing for the nuts which secure the said bolts, each of said strips having bolts therethrough at different angles.

5. In a railway-crossing structure, the combination with the rail-sections, angle braces or knees, and the paving-strips, of the through-bolts  $G$ , nuts  $G'$ , and bushings or collars  $H$  extending through the said paving-strips and interposed between said nuts and the knees or braces.

6. In a railway-crossing structure, the combination with the rail-sections, and guard-rails of the intersecting tracks, of the slot-rails consisting of lengths of T-rails having their base-flanges removed on the slot sides and having their ends secured to the said guard-rails.

7. In a railway-crossing structure, the combination with the rail-sections, and guard-rails forming the intersecting tracks, of the slot-rails consisting of lengths of T-rails having their base-flanges removed on the slot sides, and having their ends fitted into the said guard-rails.

8. In a railway-crossing structure, the combination of the rails forming the intersecting tracks, the slot-rails, the angle-braces securing the various rails, the paving-strips fitting the angles formed by said rails, and bolts which secure said angle-braces to the rails, and which also secure said paving-strips.

In testimony whereof I have affixed my signature in presence of two witnesses.

HENRY C. STIFF.

Witnesses:

CORA G. COX,  
H. W. SMITH.