

(No Model.)

W. H. FITCH.  
RAIL JOINT.

No. 577,018.

Patented Feb. 16, 1897.

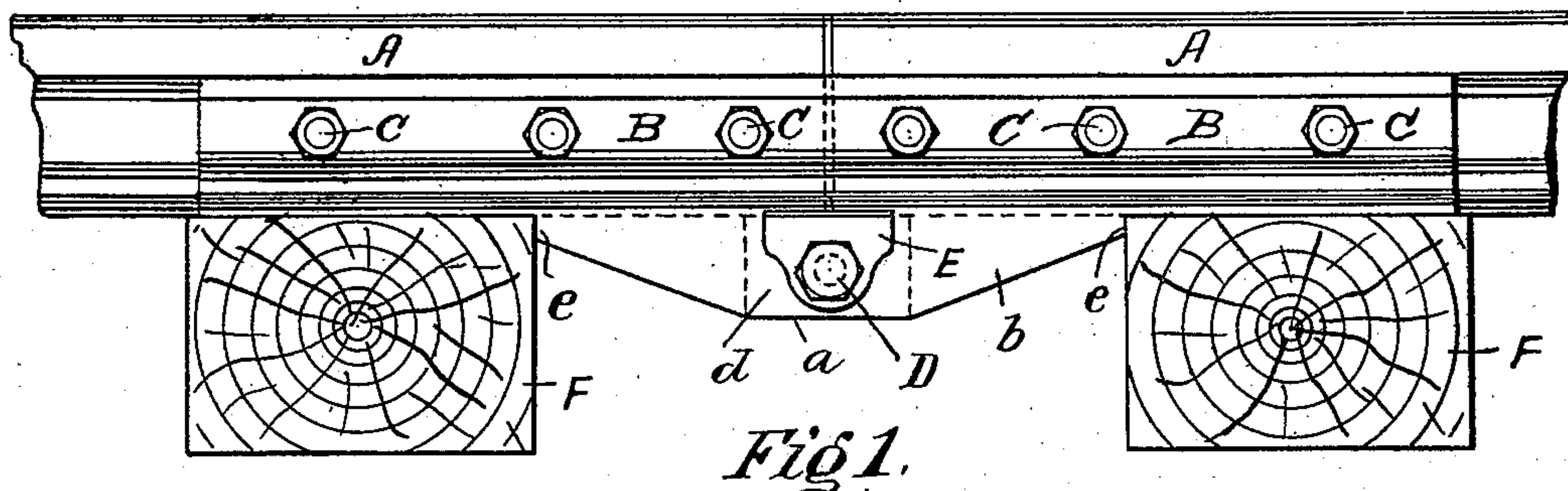


Fig 1.

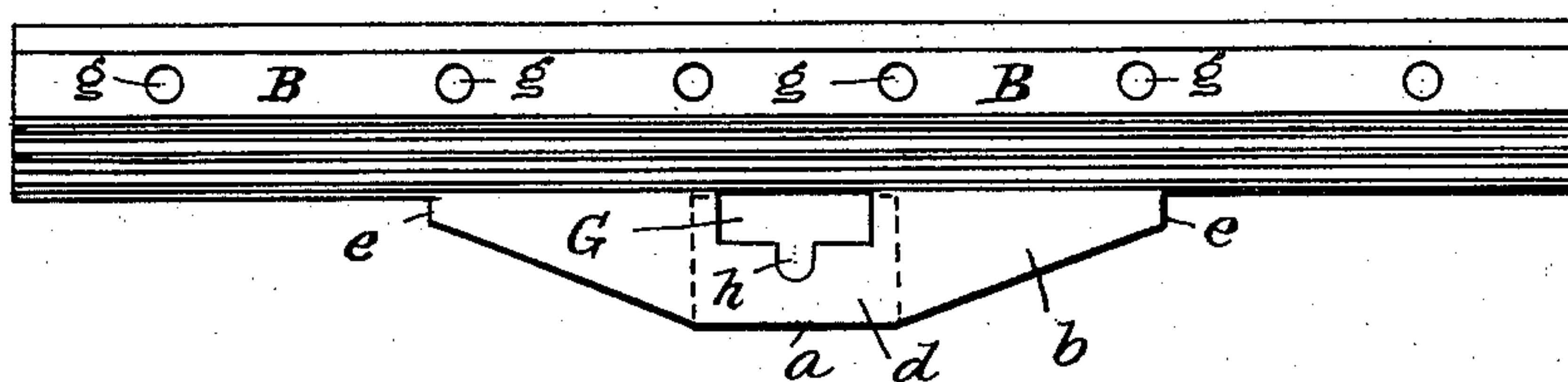


Fig 2.

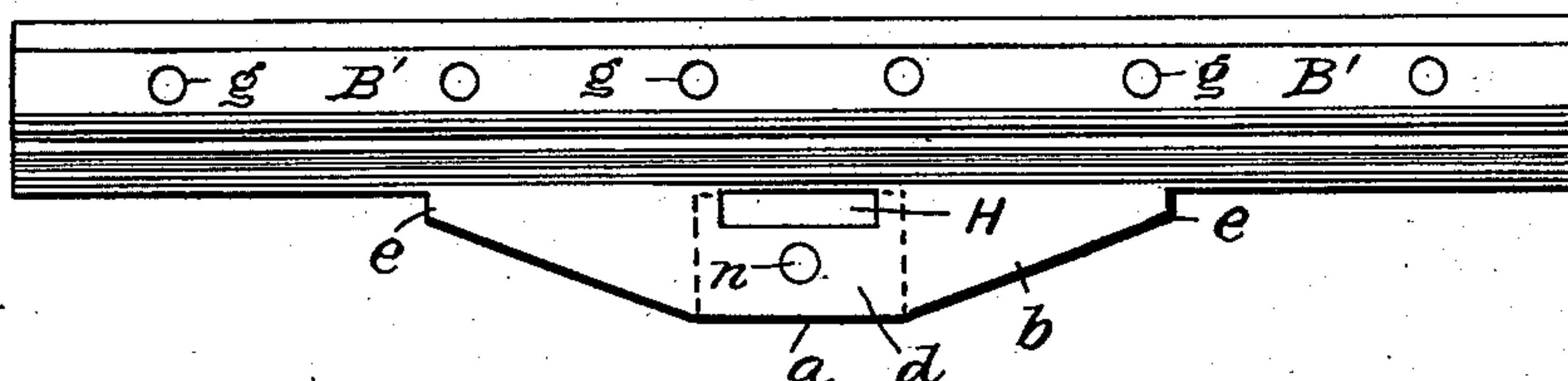


Fig 3.

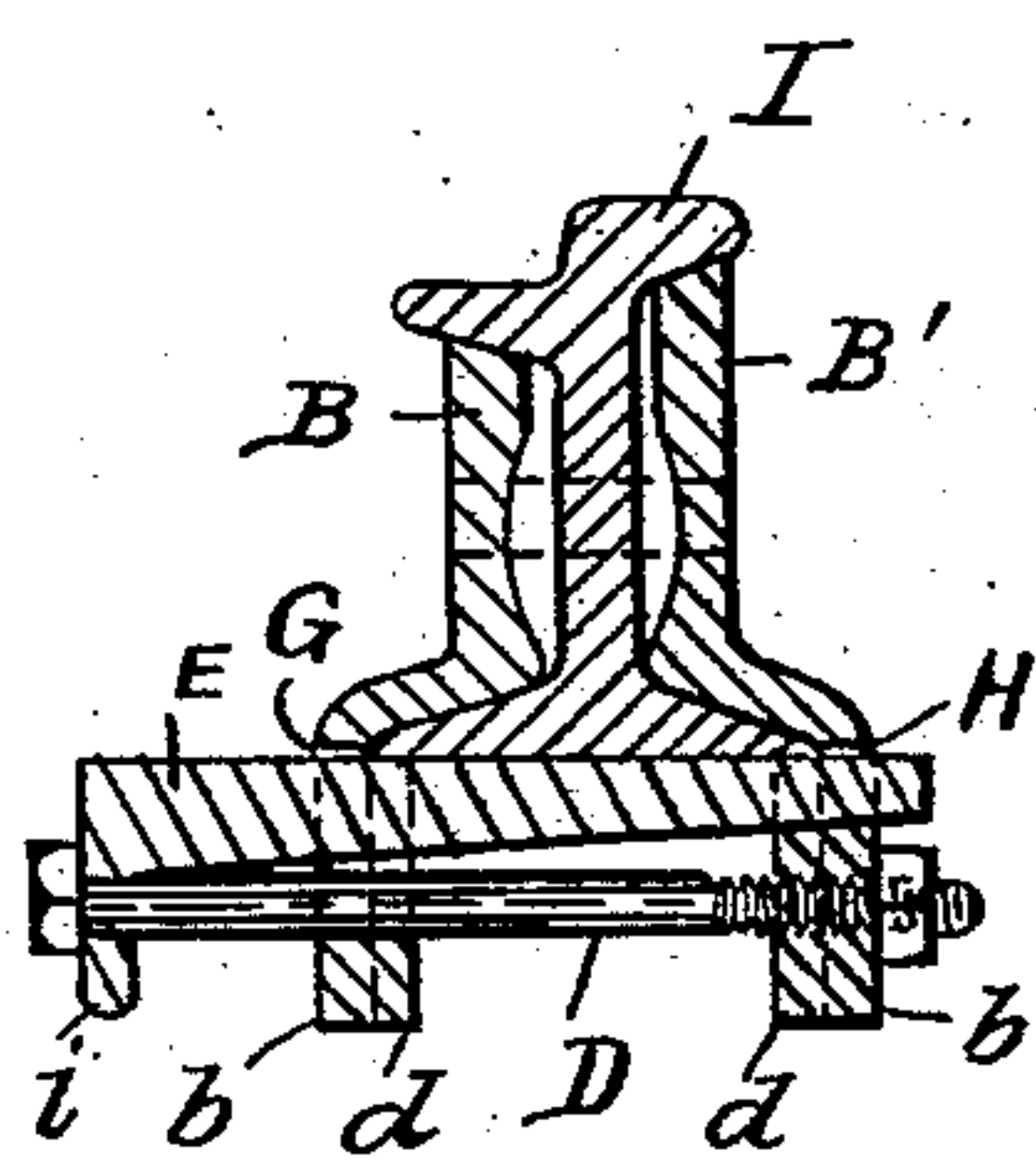


Fig 5.

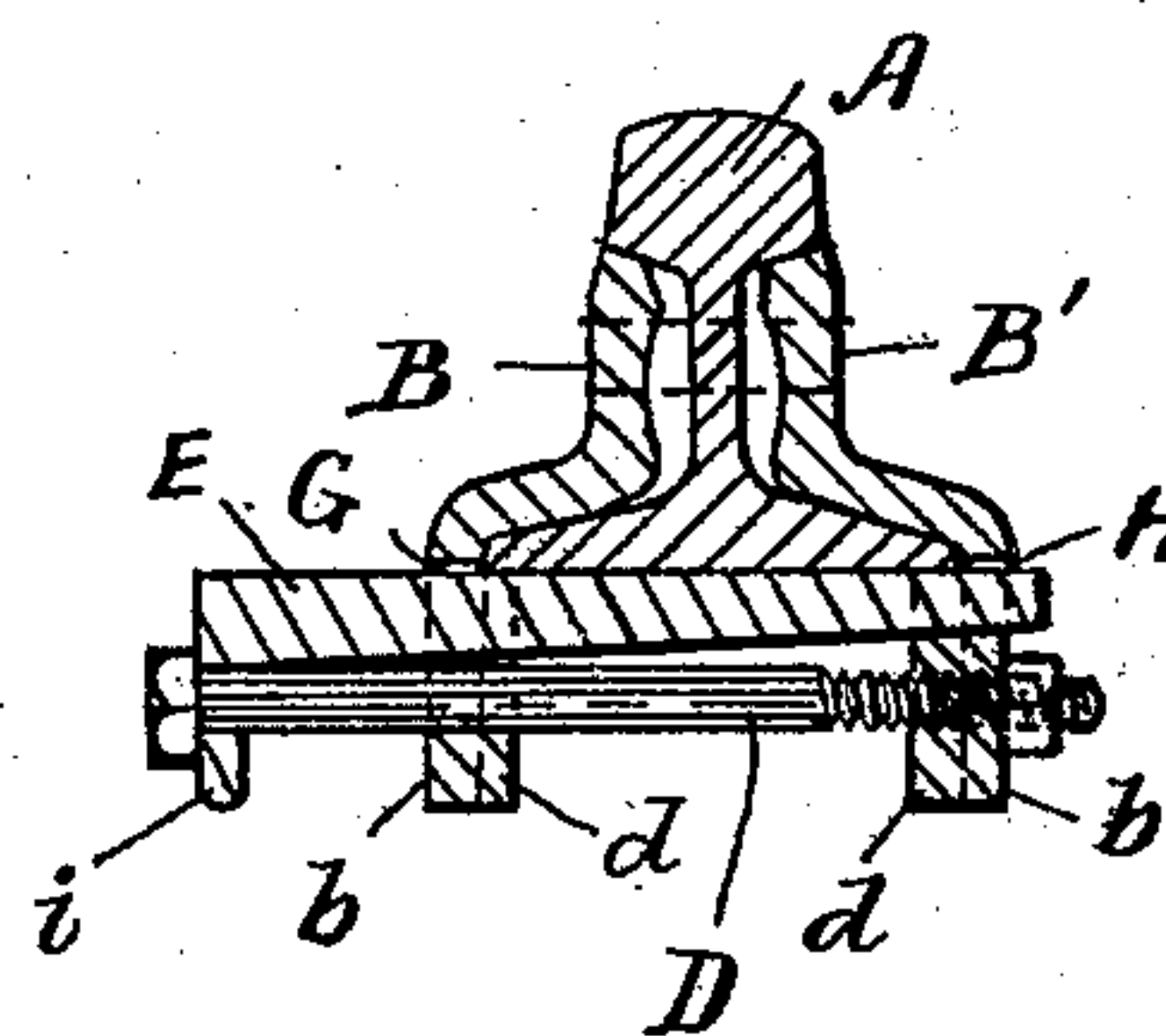


Fig 4.

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# UNITED STATES PATENT OFFICE.

WALTER HAYES FITCH, OF INDIANAPOLIS, INDIANA.

## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 577,018, dated February 16, 1897.

Application filed June 27, 1896. Serial No. 597,129. (No model.)

*To all whom it may concern.*

Be it known that I, WALTER HAYES FITCH, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Rail-Joints; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to a new and novel means for splicing or connecting together the ends of the rails comprising railways in that class of joint commonly termed a "suspension-joint," in which the rails are connected between two cross-ties; and it consists of a pair of angle-bars having integral reinforced truss-plates supporting an adjustable wedge controlled by means of a locking bolt and nut, all of peculiar construction and arrangement, whereby the abutting rail ends are rigidly secured vertically and laterally with relation to each other and the joint strengthened vertically, as will be described in detail hereinafter.

The object of my invention is to provide a suspension-joint having a vertical strength equal to any other portion of the rails to which it is connected, which shall be capable of application to rails already in use without alteration of the rails or roadway, which shall be reliable in securing the rail ends rigidly in relation to one another, and which may be readily adjustable and capable of being tightened after long use shall wear the parts sufficiently to cause a slight looseness of the parts.

A further object is to provide a joint which shall so bind the rail ends vertically and reinforce the joint that as a car-wheel is about to leave one rail its load is partly sustained by the abutting rail before the weight is directly transferred to it by the wheel passing onto it, and so when it receives the direct load part of the weight is transferred through the joint connections to the rail the wheel has passed from, as would be the case where a wheel passes over any given portion of a continuous rail.

With these objects in view my invention is of few parts, cheaply manufactured, and is durable and economical in use. It has, furthermore, the advantage of preventing the ends of the rail-heads from becoming flattened by the passing car-wheels.

Referring to the drawings, Figure 1 represents a side elevation of a T-rail joint embodying my invention. Fig. 2 represents a side view of the outside of one of my angle-bars or splice-bars. Fig. 3 represents a like view of the companion splice-bar, the two bars being identical except at the part where the wedge and bolt passes through. Fig. 4 is a transverse sectional view through the longitudinal center of bars at rail-joint; and Fig. 5 is a similar view, but showing my improvements as applied to a street-rail.

In adapting my invention to the various forms of rails in use the only modification necessary is to make the upper portion of the splice-bars of such height as to conform to the under side of the rail-head to which they are to be applied.

In the drawings, A designates abutting rail ends of the form in common use in steam-railways, and I illustrates a form of rail usually used for street or electric railways. The two splice-bars required for a joint are designated by B and B'. Both are provided with bolt-holes *g* to receive the usual form of bolt C, by which the bars are secured to the rails.

In constructing my devices I make the splice-bars of the usual form, so that the upper edge shall bear against the under side of the rail-head and the bottom of the horizontally-inclined angle shall bear against the upper side of the rail-flange, while the vertical portion of the bar does not have a contact with the web of the rail. Each splice-bar has at its central portion an apron-like flange *b*, extending vertically downward from the horizontal flange and is an integral part thereof. At the central portion *a* of the vertical flange is a reinforced portion *d*, of increased thickness, to provide additional strength and provide sufficient bearing-surface for the keying or wedging device. This reinforcing may be all applied at the inside of the plate, as shown, or partly at the outside, as may be desired. From the central part, where the depth of the flange is greatest, the lower edge tapers



to the ends *e*, the length being designed to occupy the space usually allowed between two cross-ties *F*.

The splice-bar *B* has through its vertical angle-plate a rectangular opening *G*, having centrally at its lower side a notch *h*; but in some cases I may provide instead a separate bolt-hole similarly located. The bar *B'* also has through its vertical angle-plate a rectangular opening *H* of the same width but less depth than the opening *G* of the opposite bar, and has also a hole *n*, having screw-threads, below. These openings are situated at the reinforced portions *d*, and the upper edges of the rectangular openings are higher, when applied to a rail, than the bottom thereof to afford clearance for the wedge when pressing against the rails.

I make a wedge *E*, having a head *i* turned downward, as shown; but in some cases I form the head at one side of the wedge, in which case the openings to receive the bolt are located at one side of the rectangular openings of the splice-bars instead of below. The head of the wedge has a bolt-hole, or it may have instead a notch, to receive the body of the retaining-bolt *D*. In some cases the head *i* is recessed to take in the bolt-head flush. This bolt has its end threaded a suitable distance, and fitted thereon is a threaded nut of usual form.

In assembling and using my devices the pair of splice-bars are bolted to the rails in the usual manner. The wedge is inserted into the opening *G* and through it into the opening *H* and driven up solidly, the bottoms of the openings being beveled to conform to the bevel or taper of the wedge and forming a rigid support for the wedge, while its upper side bears hard against the under side of the abutting rail ends, forcing the rail-flanges solidly against the horizontal flanges of the splice-bars, the latter being further supported by contact with the under side of the rail-head. The bolt *D* is then inserted and its end screwed into the hole *n* until its head bears against the wedge-head, and to secure it against jarring loose the lock-nut is screwed on and seated against the flange.

It will be understood that the various parts are suitably made of iron or steel and formed in the manner well known in the art to which they appertain.

Having described my invention, what I

claim, and desire to secure by Letters Patent, is—

1. In a rail-joint, the combination of two abutting rail ends, a pair of splice-bars substantially of the form shown, the upper edge of the vertical portion of which bars bears against the under surface of the rail-head but the body of which does not bear against the web or stem of the rail, the foot of which vertical portion of said bars bears against the upper side of the flange of the rail adjacent to the web thereof, the horizontally-inclined portion of said bar conforming to the upper surface of said flanges, said horizontally-inclined portion having the vertical portion or flange extending downward from the outer edge thereof and integral therewith, said vertical portion having its greatest depth at its longitudinal center and there reinforced in thickness, through which are suitable openings to receive a wedge and a retaining-bolt; an adjusting-wedge adapted to pass through said openings in said vertical flanges and having a head at one side of its thickest end provided with a bolt-hole; a securing-bolt passing through the openings in said head and said vertical flanges, said bolt being screwed into the hole in the farthest of said flanges and having a lock-nut screwed on the end thereof bearing against said flange, said wedge and bolt together binding said rails rigidly and preventing the spreading apart of said flanges, substantially as and for the purposes shown and described.

2. In a rail-joint, the combination of the splice-bars *B B'* having the downward-depending vertical flanges *b* reinforced centrally at *d* and having the openings *G H* and *h n*, the latter of which is provided with screw-threads; the wedge *E* having the head *i* provided with a bolt-hole; the securing-bolt *D* having the threaded end passing through said hole *n* and securing said wedge in its openings, and a lock-nut engaging said bolt end and seated against the adjacent flange, all operating substantially as shown and described, for the purposes set forth.

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

WALTER HAYES FITCH.

Witnesses:

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