2 Sheets--Sheet 1.

H. ALLEN.

Railroad Rail-Joint.

No. 168,704.

Patented Oct. 11, 1875.

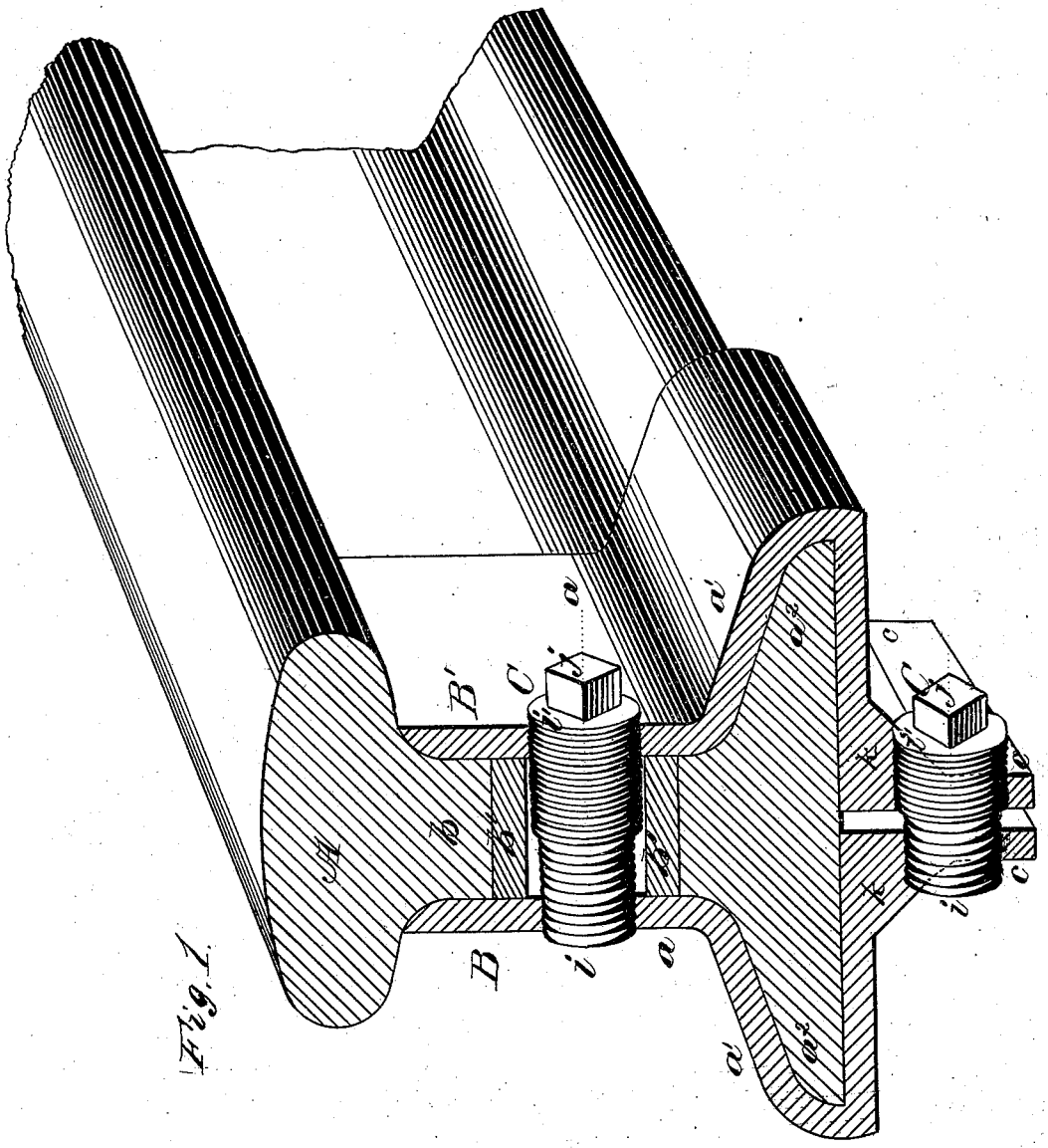

Fig. 1.

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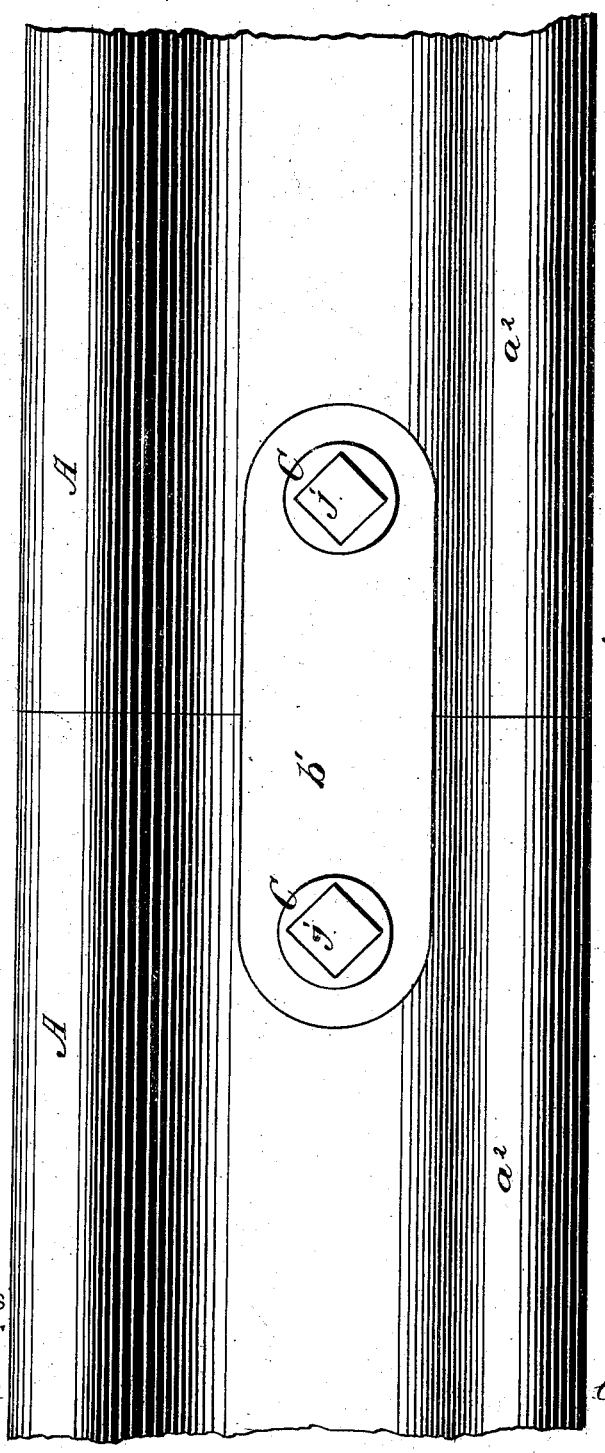

Fig. 2.

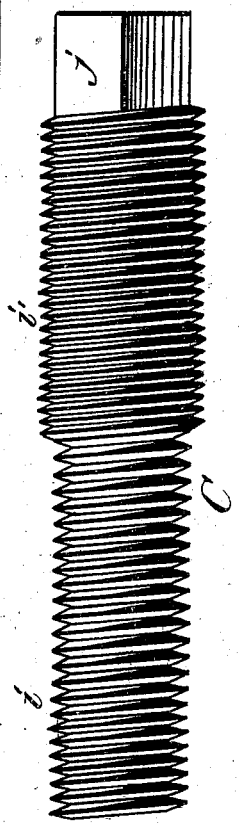

Fig. 3.

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UNITED STATES PATENT OFFICE.

HOSEA ALLEN, OF TITUSVILLE, PENNSYLVANIA.

IMPROVEMENT IN RAILROAD-RAIL JOINTS.

Specification forming part of Letters Patent No. **168,704**, dated October 11, 1875; application filed September 28, 1875.

To all whom it may concern:

Be it known that I, HOSEA ALLEN, of Titusville, in the county of Crawford and State of Pennsylvania, have invented a new and valuable Improvement in Lock-Bolts for Railroad-Rail Joints; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a transverse vertical section of a railroad-rail having my lock-bolt. Fig. 2 is a side view of the same. Fig. 3 is a view of the differential screw-bolt.

This invention has relation to improvements in lock-bolts for railroad-rail fish-plates, and for other purposes; and it consists in a bolt made with screw-threads of different pitch, and in two parts of different diameters, the coarser thread being on that portion of the bolt having the lesser diameter, and the finer thread on that portion having the greater diameter, whereby a means is provided for clamping the plates against the web of the rails without the use of nuts, all as will be hereinafter more fully explained.

In the annexed drawings, the letter A designates an ordinary T-rail, in connection with which I propose to illustrate my invention. B B′ represent two metallic plates, operating after the manner of a fish-bar, which plates are designed to be arranged at the joint of two rails, one on each side thereof. Plates B B′ are provided with a portion, *a*, fitting snugly to the web *b* of the rail, of a part, a^1, embracing the foot of a rail, and of a flange, a^2, at right angles to the under side of the supporting-flange *c* of the rail, as shown in Fig. 1. When these plates are arranged one on each side of the joint of two rails, they will present the appearance shown in Fig. 1.

Heretofore it has been usually customary to clamp plates B B′ together about the rails by means of suitable bolts and nuts, the use of which was attended with this objection, that the nuts, owing to the vibration of the rails caused by passing trains, frequently rotated on the bolt and allowed the plates to separate from each other, and thus release the rails; and to the objection that the nut, where a lock was used, broke off bodily under the changes of temperature to be expected in a moderate climate, as from warm to cold, and the reverse. This objection I propose to remedy in the following manner, to wit: The supporting-flanges *c* of plates B B′ are each provided with a number of screw-threaded perforations, those in one plate being adapted to register with those in the other, as are also the perforations in the portions *a* thereof, which fit to the web of the rail and the web itself. Through these perforations screw-bolts C are passed, and being properly set up have the effect to clamp the plates B B′ against the rail without using either the detached clamp-nut or the headed bolt, for the following reasons: Bolts C are made in two parts, *i* *i′*, of different diameters, the part *i* of the lesser diameter being provided with a coarser thread than the part *i′* of the greater diameter. Plates B B′ being provided the one with screw-threaded perforations adapted to receive the part *i* of the bolt, and the other with similar perforations adapted to receive the part *i′* of the bolt, the plates B B′, when put into position on the rail, and when the bolts are set up by means of a key applied to their prismatic heads *j*, will be rigidly clamped around the web of the rail, the plate B being endowed with the functions of a clamp, in consequence of the coarser thread of the part *i* of the bolt.

It will be seen and readily understood that when bolts C are set up the plate B will be more rapidly clamped against the web of the rail than plate B′, though their movements inward toward each other will be simultaneous, the effect of which is to obtain a very fine adjustment, and to take up very rapidly any slack which may have occurred.

In order to strengthen these flanges *c* and prevent them from flexing when under strain, they are provided with a re-enforce, *k*, at their angle of junction with the body of the plate, which re-enforcement I purpose to make the subject-matter of a separate application.

The letter *b′* represents a joint-block fitted into recesses in the ends of the rail, and is provided with perforations of the same diameter as the bolt C.

Heretofore differential clamping-bolts for fish-

plates have been made having screw-threads cut along the end portions of the bolts of different pitch and the same diameter, with an intermediate plane space of less diameter than the screw-threaded ends in connection with nuts; but in this construction the plates cannot be clamped closely together, because the clamping process ends with the screw-threads, and hence, with a space between them, the plates cannot be drawn together farther than the termination of the screw-threads, thus leaving an intermediate space; secondly, the space between the screw-threads lying in the rail-slot being necessarily of less diameter than the slot in the rail, allows a vibration of the bolt from the oscillation due to passing trains, tending to wear it, and preventing the formation of a tight joint.

The difference in the diameters of the screw-thread is also very important for the following reasons: By my construction the screw-threaded portion of the bolt of the smaller diameter can readily be inserted and passed through the larger screw-threaded perforation in one of the fish-plates, and thence through the perforation in the block fitted in the ends of the rails, and screwed into the perforation in the opposite fish-plate, thus bringing and locking the plates together against the rail without the use of nuts, heads, or washers.

What I claim as new, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, the headless clamping lock-bolt C, provided with square upper end, and screw-threaded from thence to its termination, the diameter of the upper screw-threaded portion being greater than the diameter of the screw-threaded lower end, and the screw-threads of the latter being coarser than the screw-threads on the upper end, substantially as specified.

2. The headless clamping-bolt C, constructed as set forth, in combination with the block *b'*, fitting in a slot in the rail, and provided with perforations of the same diameter as the upper screw-threaded part of the bolt, substantially as described, and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HOSEA ALLEN.

Witnesses:
WALTER C. MASI,
BRYAN H. MORSE.