

(No Model.)

C. I. PENROSE.
BOLT LOCKING DEVICE.

No. 442,455.

Patented Dec. 9, 1890.

Fig. 1.

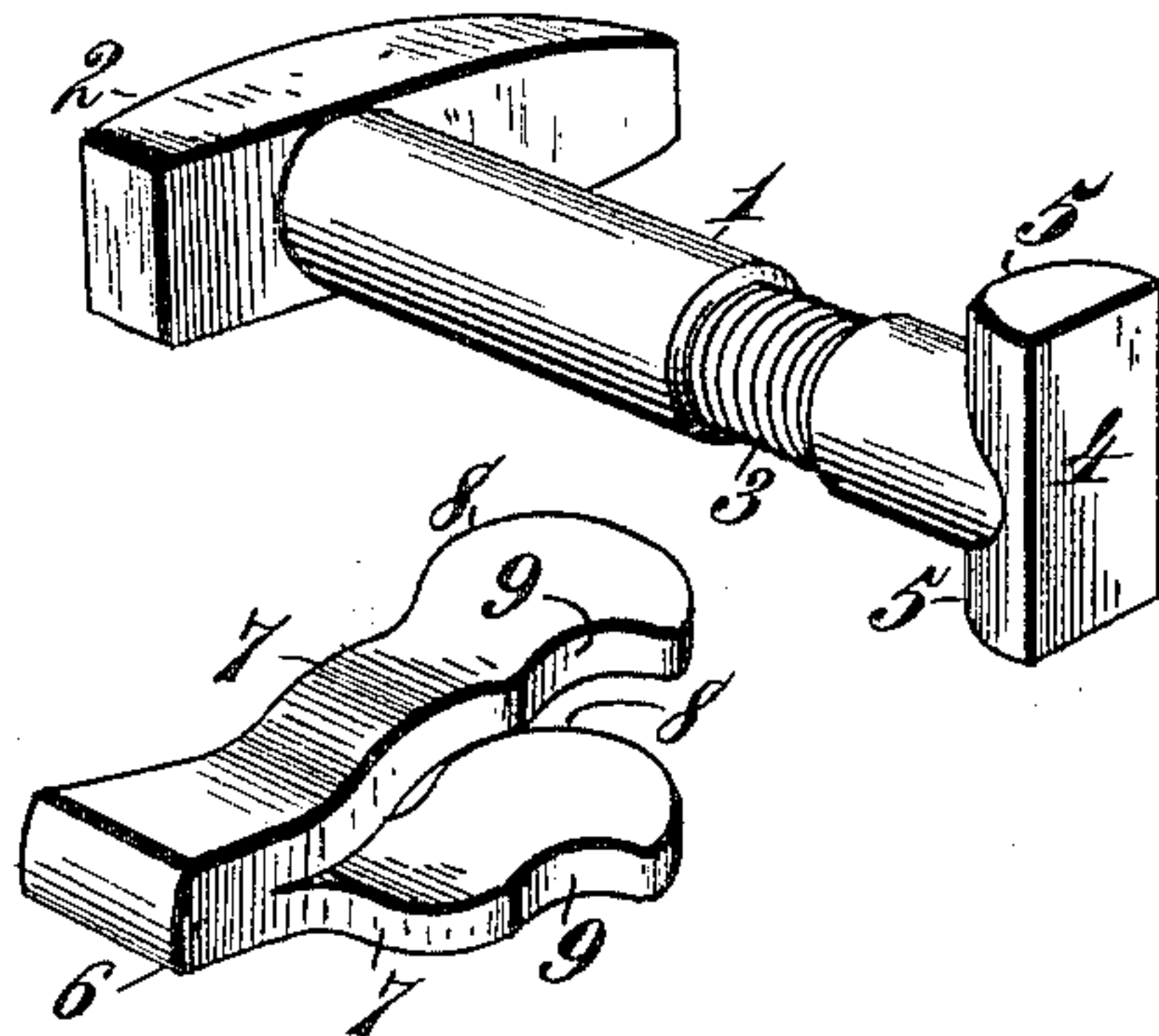


Fig. 2.

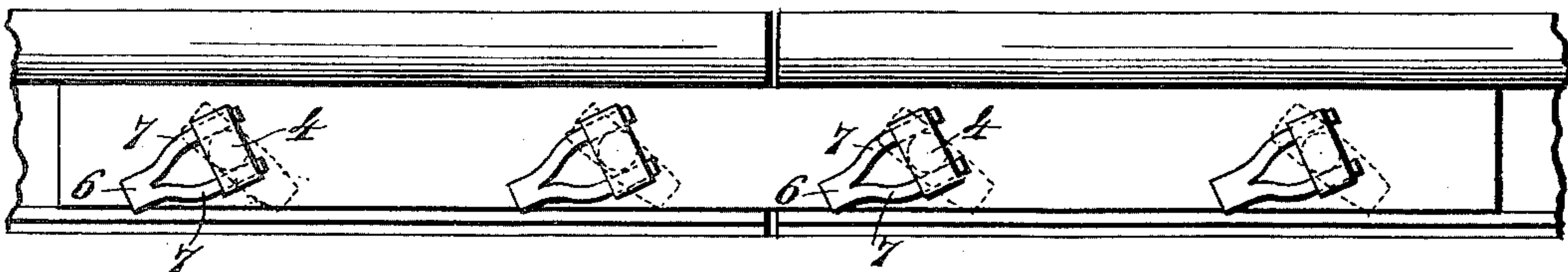


Fig. 4.

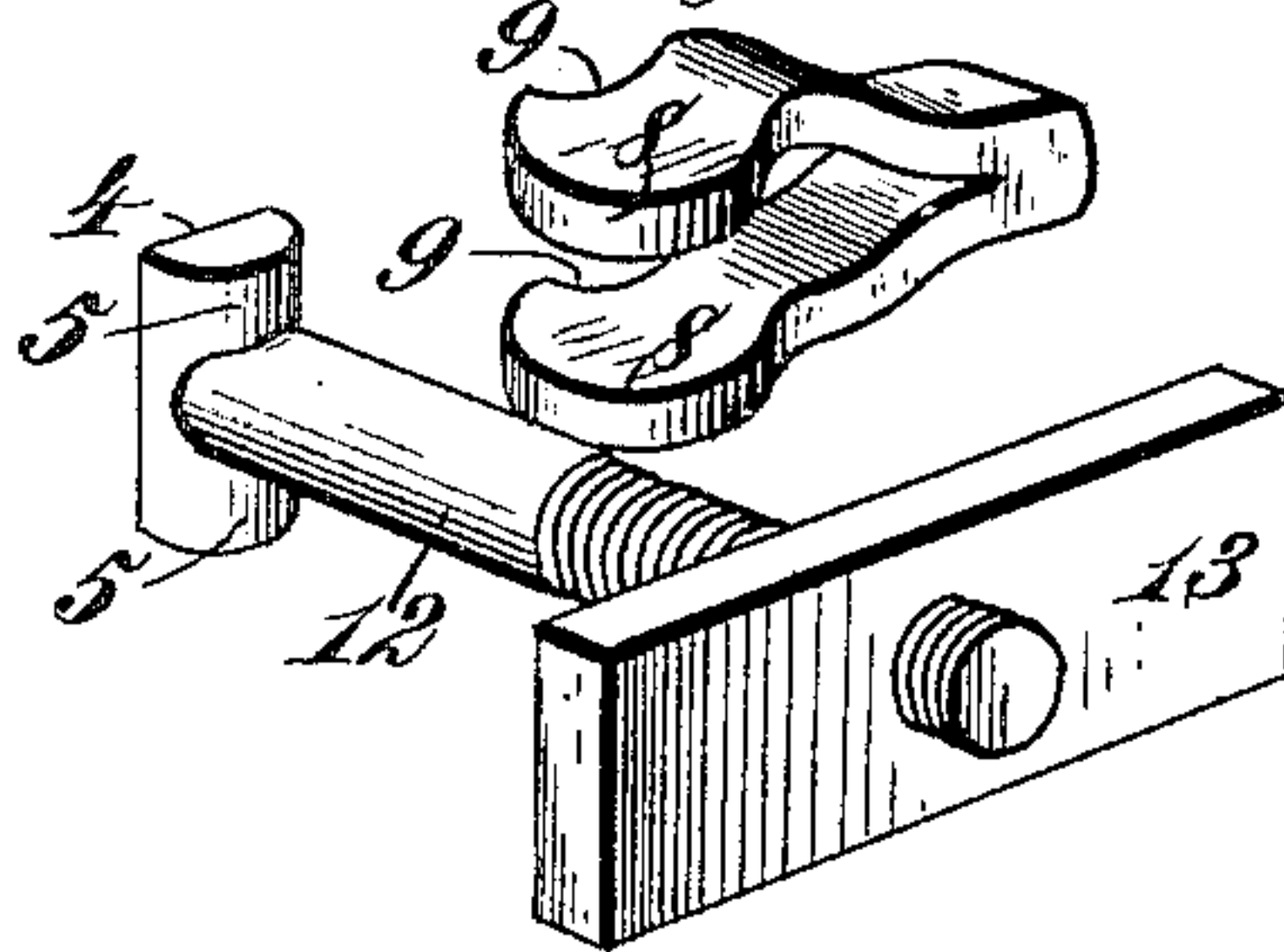
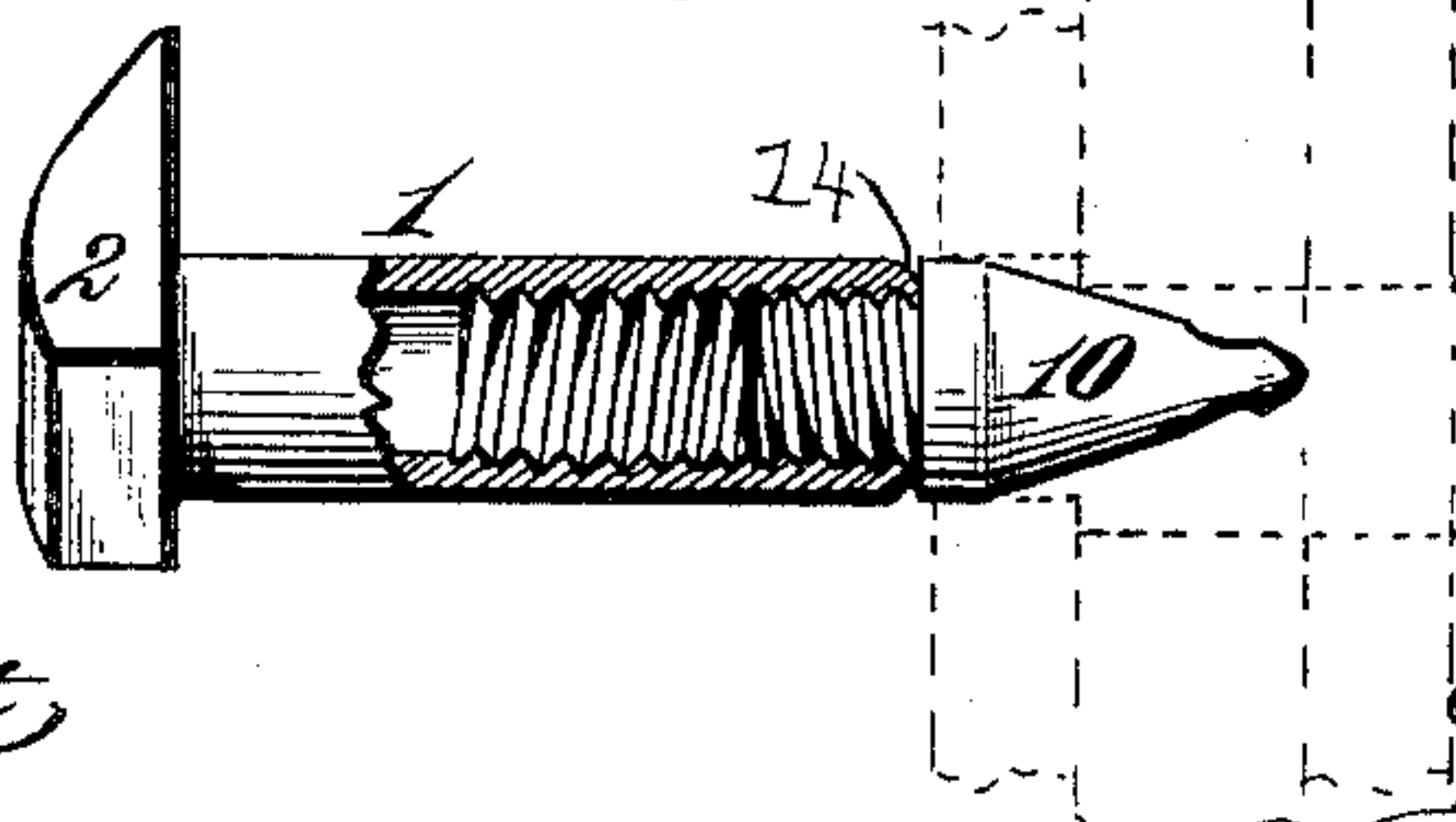


Fig. 3.



Witnesses:
Robert G. Smith
J. A. Rutherford

Inventor:
Charles I. Penrose.
By *James L. Norris*
Atty.

UNITED STATES PATENT OFFICE.

CHARLES I. PENROSE, OF CHATHAM, NEW YORK.

BOLT-LOCKING DEVICE.

SPECIFICATION forming part of Letters Patent No. 442,455, dated December 9, 1890.

Application filed May 12, 1890. Serial No. 351,494. (No model.)

To all whom it may concern:

Be it known that I, CHARLES I. PENROSE, a citizen of the United States, residing at Chatham, in the county of Columbia and State of New York, have invented new and useful Improvements in Bolt-Locking Devices, of which the following is a specification.

This invention relates to the bolt-locking device described by Letters Patent No. 403,132 issued to me May 14, 1889, wherein a cam-lever engages an end part of the bolt and binds against the fish-plate or other object to tighten and lock the bolt against axial rotation.

The objects of my invention are to simplify the prior construction, to render the locking device more practicable, durable, and effective; to avoid a detachable pivot-pin passing through the bolt end for the engagement of the cam-lever; to provide a novel cam-lever which tightens the bolt and co-operates with the rail-base or other like part to lock the bolt against axial rotation; to provide for the detachment of the cam-lever without removing a pivot-pin from the bolt end; to provide novel means for applying the bolts where the bolt-holes of the objects to be secured are slightly out of coincidence; to provide a sectional bolt and means for locking the sections against axial rotation, and to generally improve the devices claimed in my Letters Patent alluded to. To accomplish all these objects my invention involves the features of construction, the combination and arrangement of devices, and the principles of operation hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a perspective view of the improved bolt and its locking cam-lever. Fig. 2 is a side elevation of a portion of a railway, showing the invention applied for securing the fish-plates. Fig. 3 is a detail view of a portion of the improved bolt, showing it temporarily converted into a drift-pin for bringing bolt-holes into proper alignment. Fig. 4 is a perspective view of a modification.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring first to Fig. 1, wherein—

The numeral 1 indicates an internally-screw-threaded sleeve-section formed inte-

gral or otherwise provided with rigid laterally-extended head 2, and 3 indicates an externally-screw-threaded bolt-section, which screws into the sleeve, and is formed or otherwise provided with a rigid cross-head 4, having convex inner faces 5. The bolt constructed in this manner is extensible and adapted to the varying thickness of rails and fish-plates. The sleeve-section is first introduced through the bolt-holes of the fish-plates and rail-web, and then the male bolt-section is screwed into the sleeve until the proper adjustment is effected, when the male section is locked against axial rotation by a duplex cam-lever comprising a bifurcated stem 6, the two branches or members 7 of which are each formed into an eccentric or cam surface 8 at one side and a concave recess 9 at the opposite side. The two members of the lever are adapted to embrace the bolt with the concave recesses in engagement with the convex faces of the cross-head and the cam-surfaces bearing against the fish-plate. The projecting stem 6 is then struck with a hammer or mallet to drive each stem toward the fish-plate and force the cam-surfaces into position, so that the greatest projecting point of the eccentrics or cams 8 are driven past the center lines of the cross-head 4 and concave recess 9. The extremity of the lever-stem may rest against the rail-base or similar part of a rail-joint at that side of the bolt which will prevent turning movement of the bolt in a direction to unscrew it, while the head 2 of the sleeve may rest by one corner against the rail-base or other stationary part of the rail-joint to prevent unscrewing of the sleeve-section. The position of the parts when locked is represented in Fig. 2, where the heads of the sleeve-sections appear in dotted lines.

In driving or forming the cam-lever to the locking position described the excessive pressure on the screw-threads of the bolt-sections is relieved the instant the greatest projections of the cam-surfaces pass the center of the bolt and convex seats, thereby providing for a yielding action when the train passes. The concavities of the duplex cam-lever might be dispensed with; but the convex faces of the cross-head should be employed for the correct and useful application of the locking-lever in the manner described. The action

of the cam-surfaces on the outside of the fish-plate is such as to tighten the bolt by drawing it lengthwise, and also to lock the bolt against rotation without extraneous provision, such as square parts on the bolt, which make it impossible to turn a bolt and render it essential to use rotary screw-nuts and nut-locking devices.

In applying the bolts to railway-tracks it is frequently difficult to insert the bolts by reason of the bolt-holes being jarred or otherwise placed out of coincidence. If an externally-threaded bolt be driven in place where the bolt-holes are out of correct alignment, the threads are injured and the usual screw-nuts cannot be applied with facility. To avoid this it is usual to employ drift-pins, which are first driven through the bolt-holes, and subsequently removed for the passage of the bolts. This is avoided by my invention, as the sleeve is smooth on its exterior and the threads are internal, in consequence of which a conical steel plug can be screwed or otherwise detachably applied to the sleeve and be driven through to place the bolt-holes in proper alignment, as will be obvious from Fig. 3, where the steel plug is shown screwed into the sleeve. The plug can be detached from the sleeve after the latter has been driven into position, and then the male bolt-section can be adjusted, tightened, and locked by the duplex cam-lever. The male bolt-section can be removed and replaced, if desired, without disturbing the sleeve, and the sleeve, being smooth-surfaced externally and receiving the male-section within it, provides effective means for guarding and protecting all the screw-threads, thereby preventing injury to them during transportation and other handling.

In the modification shown in Fig. 4 the convex faces 5 on the cross-head 4 are employed on a screw-bolt 12, adapted to screw into a nut 13, which in practice stands stationary by resting against a rail-base or other object. The concave recesses 9 and eccentric or cam surfaces 8 on the branches 7 of the lever-stem 6 are constructed as hereinbefore described, and the manner of applying the lever is the same. The inner end of the sleeve-section may be chamfered or beveled, as at 14, if desired, to facilitate its insertion without the steel plug.

By my present invention the cam-lever is a distinct element disconnected from the bolt, and by the cross-head I avoid the presence of a detachable pivot-pin passing through an orifice in the bolt end.

The formation of the cross-head as an inte-

gral part of the bolt provides a stronger and more durable fastening, and avoids a weakening perforation to accommodate the separate or independent pivot pin or bolt for the cam-lever.

In the locking action of the lever the cam-surfaces ride in contact with the fish-plate or other object to be secured, in order that the greatest projection of the cam-surfaces can pass the center of the convex faces, and the lever having two distinct points of contact with the fish-plate or other object at opposite sides of the bolt effectually prevents such movement of the lever as would permit unscrewing the bolt.

Having thus described my invention, what I claim is—

1. The combination of a bolt formed integral with a cross-head having convex faces, and a duplex cam-lever having outer edges to engage the convex faces and inner cam surfaces or edges to ride in contact with the surface of the fish-plate or other object to be secured, substantially as described.

2. The combination of a bolt having a cross-head formed integral with a part of the bolt and provided with convex faces, and a bifurcated cam-lever having concave recesses to receive the convex faces and cam-surfaces to bear against the surface of the fish-plate or other object to be secured, substantially as described.

3. The combination, in a fastening-bolt, of the internally-threaded sleeve-section having a head to rest against a stationary object, a male bolt-section engaging the sleeve and having a head, and means for engaging and locking the male bolt-section against axial rotation, substantially as described.

4. The combination, in a fastening-bolt, of the internally-threaded sleeve having a head to rest against a stationary object, a male bolt-section having a head and screwing into the sleeve, and a cam-lever for engaging the head of the male bolt-section to lock it against axial rotation, substantially as described.

5. The combination, in a fastening-bolt, of the internally-threaded sleeve having a head, a male bolt-section screwing into the sleeve and having a cross-head, and a duplex cam-lever for engaging the cross-head to lock the male bolt-section against rotation, substantially as described.

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

CHARLES I. PENROSE.

Witnesses:

JAMES A. RUTHERFORD,
GEO. W. REA.