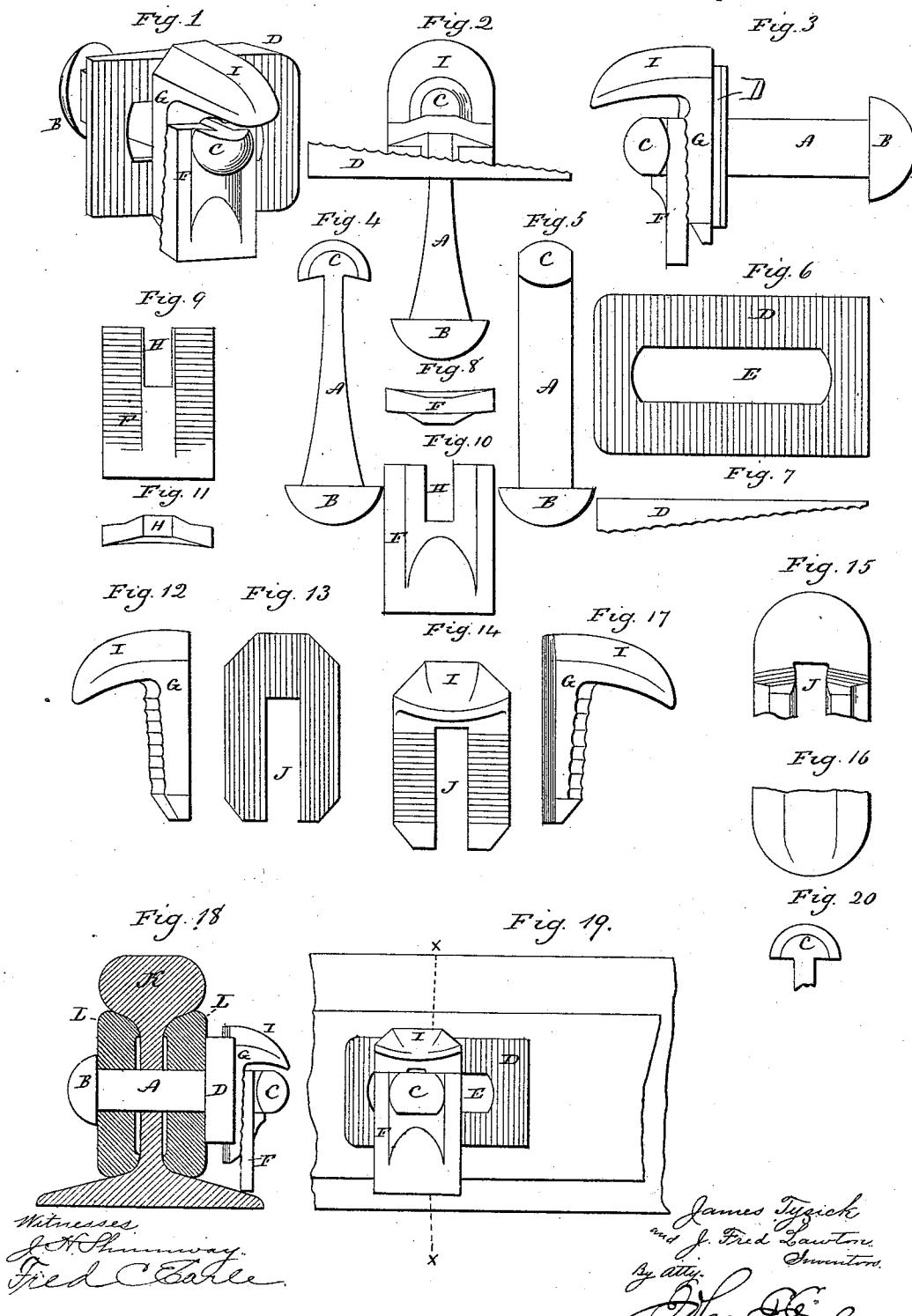


(No Model.)

J. TYZICK & J. F. LAWTON.  
FISH PLATE BOLT.

No. 428,431.

Patented May 20, 1890.



James Tyzick  
and J. Fred Lawton  
Inventors  
by atty.  
John D. Nichols

Witnesses:  
J. H. Shumway  
Fred C. Baker

# UNITED STATES PATENT OFFICE.

JAMES TYZICK AND JAMES FREDERICK LAWTON, OF ST. JOHN, NEW BRUNSWICK, CANADA.

## FISH-PLATE BOLT.

SPECIFICATION forming part of Letters Patent No. 428,431, dated May 20, 1890.

Application filed March 15, 1889. Serial No. 303,409. (No model.)

To all whom it may concern:

Be it known that we, JAMES TYZICK and JAMES FREDERICK LAWTON, of St. John, in the Province of New Brunswick, Canada, have 5 invented a new Improvement in Fish-Plate Bolts; and we do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact 10 description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of the bolt with the locking devices attached; Fig. 2, an 15 under side view of Fig. 1, looking upward; Fig. 3, a side elevation of the same; Fig. 4, an edge view of the bolt; Fig. 5, a side view of the bolt; Fig. 6, a face view of the washer; Fig. 7, an edge view of the washer; Fig. 8, a 20 lower end view of the stop; Fig. 9, a rear view of the stop; Fig. 10, a face view of the stop; Fig. 11, an upper end view of the stop; Fig. 12, a side view of the wedge; Fig. 13, a 25 rear view of the wedge; Fig. 14, a face view of the wedge; Fig. 15, a lower end view of the wedge; Fig. 16, an upper end view of the wedge, a portion broken away for convenience 30 of illustration in the last two figures; Fig. 17, a side view of the wedge the reverse of Fig. 12; Fig. 18, a transverse section of a rail and plates with the bolt applied, cutting on line  $\alpha\alpha$  of Fig. 19; Fig. 19, a side view of the rail, fish-plates, and fastenings. Fig. 20 is a 35 modification.

This invention relates to an improvement 40 in bolts for securing fish-plates to railroad-rails and other places where like bolts may be employed, the object of the invention being to dispense with the screw-threaded nut usually employed and provide a locking device as a substitute for the nut, which will be a positive lock and in which there is no liability of loosening from the jar of passing trains or from other causes; and the invention 45 consists in the construction, as herein-after described, and particularly recited in the claims.

In illustrating the invention we show it as applied to securing the fish-plates of railroad- 50 rails.

A represents the bolt, which is provided with a head B at one end. This head may be

of any desirable shape. (Here represented as semi-spherical.) The body of the bolt instead of being round in transverse section is made 55 square at the head, and then is gradually reduced on two sides, as seen in Figs. 4 and 5, toward the other end of the bolt, and so as to reduce the body of the bolt in thickness at the other end. Said end terminating in a 60 tail C the width of the bolt (see Fig. 5) corresponds substantially to the width of the slot in the fish-plate or whatever it may be desired the bolt should pass through. The tail C forms a T-shaped termination of that end of 65 the bolt, as seen in Fig. 4.

D represents the washer, which is a metal plate having a longitudinal slot E formed therein, as seen in Fig. 6, the width of the slot corresponding substantially to the width 70 of the body of the bolt. This washer is made of wedge shape, reducing in thickness from one end toward the other, as seen in Fig. 7. One face is flat and the other face serrated vertically or at right angles to the line of the 75 slot E, as seen in Figs. 6 and 7.

The lock consists of two parts F G. The part F forms what we call the "stop," and, as seen in Figs. 8, 9, 10, and 11, it is constructed with a vertical slot H at one end, the width 80 of the slot corresponding to the thickness of the body of the bolt at the tail C. The tail C is undercut upon its two sides, as seen in Fig. 4, and the face of the stop F is of corresponding shape, as seen in Figs. 8 and 9, and 85 so that when set onto the bolt, as seen in Figs. 1 and 3, the inner surface of the tail C will bear against the outer face of the stop. The back of the stop F is serrated transversely, as represented in Figs. 1, 3, and 9. The other 90 part G, which we call the "wedge," is constructed with a head I upon its one end, and from that head diminishes in thickness, as seen in Figs. 12 and 17. The wedge is constructed with a slot J opening from its thinner or lower end, as seen in Figs. 13 and 14, and on its back it is serrated vertically or in the direction of the length of the slot, as seen in Fig. 13, and corresponding to the serrations of the washer D. The front or face of 95 the wedge is serrated corresponding to the transverse serrations of the stop F, and preferably the wedge on its face is beveled to the right and left from the slot, as seen in Figs.

12, 15, and 17, and the back of the stop is of corresponding shape, as seen in Figs. 8 and 11, and so that when the parts are set together, as seen in Figs. 1, 2, and 3, the stop F stands close under the tail C, the washer D in rear of it, and the wedge G is driven in between the washer and the stop F until the proper bearing is attained.

In Figs. 18 and 19 we show the invention as applied to fish-plates of railroad-rails, K representing the rail and LL representing the two fish-plates. The plates are set in place in the usual manner, and the bolt is introduced from one side through the slot in one plate and through the slot in the rail, and then through the slot of the other plate in the usual manner. The washer D is then passed on over the tail end of the bolt, and the stop F set in place against the tail of the bolt so as to rest upon the foot of the rail below. The wedge is then introduced, the washer being adjusted longitudinally, so as to leave the proper space between the stop F and the washer for the wedge to be driven in. The wedge is then driven in between the stop and the washer, as seen in Figs. 18 and 19, the serrations on the back of the wedge interlocking with the corresponding serrations of the washer, and as the wedge is driven the serrations on its face slip over the serrations of the stop until the wedge has been driven to the required extent to bring the fish-plates to their proper bearing. The serrations of the washer interlock with the serrations of the wedge and prevent the washer from slipping longitudinally, while the serrations between the stop and the wedge prevent vertical movement of the wedge; hence the lock is so firmly made that the wedge is practically immovable and the bolt cannot give way under any jar or concussion which may be brought to bear upon it. This illustration of the bolt as applied to fish-plates will be sufficient to enable others to understand its application to other places where bolts of this class are desirable, as in bridge-work and for other purposes.

The under-cut of the tail of the bolt prevents the possibility of the stop splitting or separating, so as to escape from its engagement with the bolt. This under-cut may be omitted, in which case the face of the stop will be made plain, corresponding to the bearing-surface of the tail C. This modification is represented in Fig. 20.

The serrations on the face of the wedge and the stop may be very light, it only being necessary that there shall be sufficient protuberances on the one with corresponding recesses on the other to interlock the one with the other, yet permitting the wedge to be driven until brought to a bearing.

We have represented the inner sides of the tail as rounded, as seen in Figs. 5 and 18, and this is desirable, in order to permit a rocking movement of the stop, and so as to insure a firm bearing of the stop against the tail.

The serrated surfaces, as before stated, make so firm a lock as to prevent possible separation under the ordinary jar or concussion brought upon such fastenings.

When made from iron, the natural roughness of the metal may be sufficient to produce the required interlocking. We therefore do not wish to be understood as limiting the invention to serrating the surfaces, as we have described.

We claim—

1. The combination of a bolt A, constructed with a head B at one end and with a T-shaped tail C at the other end, the wedge-shaped washer D, constructed with a longitudinal slot corresponding in width to the tail end of the bolt, and so as to set over the tail end of the bolt, a stop F, constructed with a vertical slot H, opening from one end, corresponding to the thickness of the bolt at the tail, and a wedge G, adapted to be driven between the said washer and stop, substantially as described.

2. The combination of the bolt A, provided with a head B at one end, the body of the bolt reduced in thickness toward the other end and terminating in a T-shaped tail C, the wedge-shaped washer D, constructed with a longitudinal slot corresponding to the width of the body of the bolt, the face of the washer serrated at right angles to the length of the slot, the stop F, constructed with a slot H, opening from one end, the width of the slot corresponding to the thickness of the body of the bolt at the tail and the face of the stop corresponding to the shape of the inner surface of the T-shaped tail, the back of the said stop serrated transversely, with the wedge G, constructed with a slot J, corresponding in width to the body of the bolt near the tail, serrated on its back corresponding to the serrations of the washer D, and on its face transversely serrated, corresponding to the serrations of the stop F, substantially as described.

3. The combination of the bolt A, constructed with a head B at one end and with a T-shaped tail at the opposite end, the inner surface of the tail undercut, the wedge-shaped washer D, constructed with a longitudinal slot E, corresponding in width to the bolt, and so as to set over the tail of the bolt, a stop F, constructed with a vertical slot H, corresponding in width to the bolt at the tail, the face of the stop beveled to the right and left corresponding to the undercut surfaces of the tail, and the wedge G, constructed with a vertical slot J, corresponding to the bolt and adapted to be driven between the said washer D and the said stop F, substantially as described.

JAMES TYZICK.

JAMES FREDERICK LAWTON.

Witnesses:

CHARLES J. COSTER,  
HARRY H. BRITTAINE.