No. 818,418. PATENTED APR. 24, 1906.

G. H. CORNWELL.

FISH PLATE.

APPLICATION FILED AUG. 17, 1905.

Fig. 1.

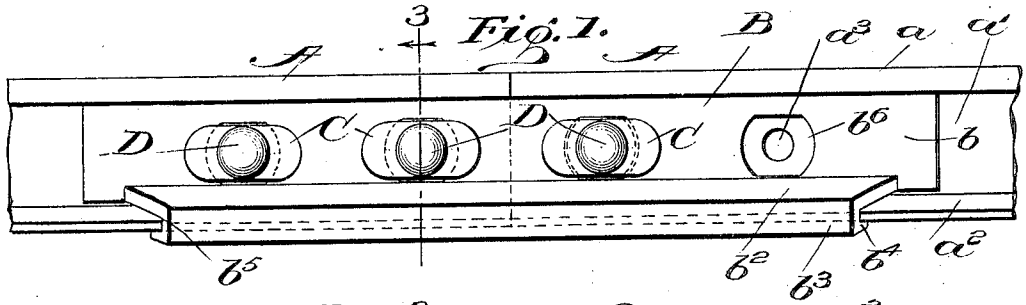


Fig. 2.

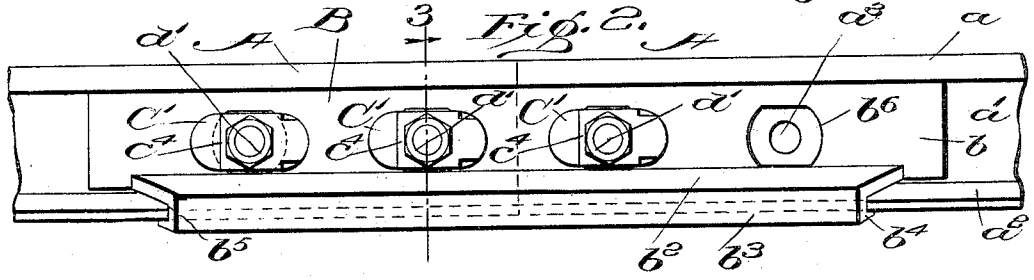


Fig. 3.

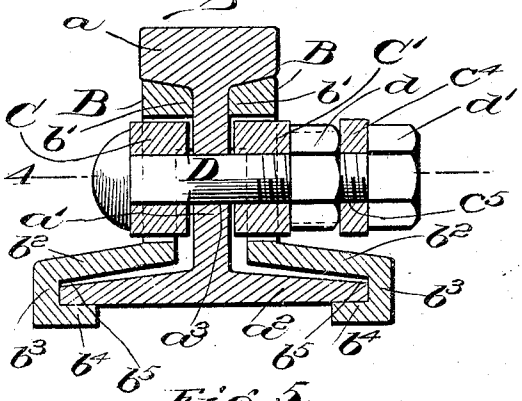


Fig. 4.

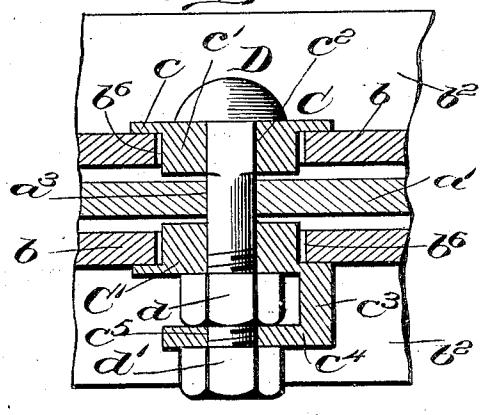


Fig. 5.

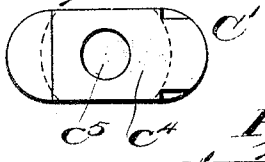


Fig. 6.

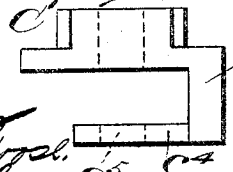


Fig. 7.

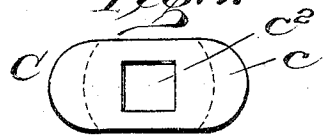
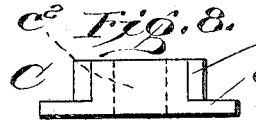


Fig. 8.



WITNESSES:

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BY his ATTORNEYS

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UNITED STATES PATENT OFFICE.

GEORGE H. CORNWELL, OF PARK RIDGE, NEW JERSEY, ASSIGNOR OF TWO-FIFTHS TO W. F. PIPPEY, OF NEW YORK, N. Y.

FISH-PLATE.

No. 818,418. Specification of Letters Patent. Patented April 24, 1906.

Application filed August 17, 1905. Serial No. 274,514.

To all whom it may concern:

Be it known that I, GEORGE H. CORNWELL, a citizen of the United States, and a resident of Park Ridge, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Fish-Plates, of which the following is a specification.

My invention relates to improvements in fish-plates for railroad-rails and means for securing the ends of rails and the fish-plates together.

It is well known that fish-plates as heretofore constructed when in use are easily broken, due partly to the twisting strain they receive, caused by the up-and-down movement of the rail ends when the wheels of a car pass from one rail to the other. When a car passes over the rail, first one end of the rail is forced down and then the abutting end is forced down as soon as the wheel passes to the next rail, causing an up-and-down vibratory motion, which twists the fish-plate. This vibratory motion of the ends of the rails also breaks the bolts which fasten the rails and the fish-plates together.

One of the objects of my invention is to produce fish-plates which will not be twisted and broken when a train passes over a rail-joint.

Another object is to provide fish-plates which will secure the abutting ends of rails together, so that one end will not move up and down independently of the other.

Another object is to provide fish-plates that can be so connected to the rail-joints that the bolts or fastening means will not be broken.

Other objects will appear from the hereinafter description.

My invention will be fully understood from the following description, taken in connection with the accompanying drawings.

Referring now to the drawings, in which the same reference character indicates the same part in the several views, Figure 1 is a side elevation of a fish-plate applied to the abutting ends of two rails. Fig. 2 is a view of the opposite side of the same. Fig. 3 is a cross-section of Figs. 1 and 2 on line 3. Fig. 4 is a section of Fig. 3 on line 4. Fig. 5 is an end view of one of the locking devices. Fig. 6 is a top plan view of the same. Fig. 7 is an end view of the special form of washer used with my fish-plates, and Fig. 8 is a top plan view of the same.

The parts marked A on the drawings represent the abutting ends of two rails, to which the fish-plates B are attached, one being on each side of the rail. The rail has the usual tread a, the web a', and flanges a^2, the said flanges resting on the ties of the track in the usual manner. The ends of the rails are provided with the usual bolt-holes a^3, through which pass the bolts that secure the fish-plates and the rails together. Each fish-plate is preferably made of a single piece of metal and consists of a vertical web b. The upper end of the plate is thickened to form an inwardly-projecting flange b'. The inner edge of this flange rests against each side of the web of the rail, and the upper edge of the flange is beveled to fit snugly underneath the tread of the rail, as clearly shown in Fig. 3. b^2 represents the outwardly-extending flanges of the fish-plates. These flanges are turned down to form vertical edges b^3, and the ends are inwardly turned to form seats b^4, against which the flanges of the rails rest. These turned-over ends of the fish-plate flanges form spaces b^5, which are greater than the thickness of the rail-flanges, so that the said flanges can have a vertical play in said spaces.

The webs of the fish-plates are provided with holes b^6, which are considerably larger than the bolt-holes a^3 in the rails. These enlarged holes in the webs of the fish-plates are to receive the lugs of the washers which are used in connection with the fastening device. The washers, which fit under the heads of the fastening-bolts, are marked C. These washers are provided with flanges c, which rest against the outer surface of the webs of the fish-plates, and they are also provided with inwardly-projecting lugs c', which fit in the openings b^6. These lugs are smaller than the openings b^6, thus permitting the bolts to have a small amount of vertical play in one direction and the rail to have a longitudinal play to allow for expansion and contraction caused by heat and cold.

The washers are provided with openings c^2, through which the fastening-bolts D pass. The washers C′, which go under the ends of the bolts, are provided with outwardly-projecting lugs c^3 and have attached thereto the plates c^4, made of springy metal. These plates c^4 lie parallel to the faces of the washers and are at a slightly greater distance from the washers than the thickness of the nuts d,

which secure the bolts in place. These plates are also provided with openings c^5, through which the screw-threaded ends of the bolts pass. d' represents the lock-nuts screwed on the outside of these plates.

The parts are assembled as follows: A pair of fish-plates are placed one on each side of the meeting ends of two rails, with the inturned ends b^4 underneath the flanges of the rails and with the openings b^6 in line with the openings a^3 in the rails and with the upper part of the webs resting against the under sides of the treads and against the webs of the rails, as shown in Fig. 3. The washers C are placed on the bolts D, and said bolts are passed through the openings b^6 and a^3, with the lugs c' of the washers projecting into said openings b^6. The other washers C' are slipped over the screw-threaded ends of the bolts, and the lock-nuts d are screwed on these ends between the washers C' and the plates c^4. The nuts d are screwed up far enough to permit the screw-threaded ends of said bolts to pass through the openings c^5 of the plates c^4, when the lock-nuts d' are screwed onto these ends. As the plates c^4 are made of springy metal, the lock-nuts d' will press these plates toward the washers C' and put these plates under tension and cause them to so press against the inner surfaces of the lock-nuts d' as to prevent the lock-nuts from turning, thereby securely holding the bolts in place and preventing the nuts thereon from turning, thus preventing the loosening of the bolts. This construction, it will be seen, will prevent one end of a rail going down without the other; but if there should be any tendency to force one end of the rail down when the car is passing over it the fish-plate will not receive any strain, because it is so constructed as to permit the rail to have a vertical movement in the fish-plate, and thereby any twisting strain will be taken off the fish-plate. As the vertical height or diameter of the opening b^6 is greater than the corresponding diameter of the washer, as shown, the rail will be permitted to have a certain amount of vertical play without causing any strain or action on the fish-plate or on the bolts which secure the fish-plate and the rail together, thereby preventing the bolts from being strained or broken. The longitudinal diameter of the opening b^6 also being greater than the longitudinal diameter of the lug c' of the washer will permit the rail to contract or expand without causing undue strain on the bolt, as the said bolt will move longitudinally with the rail.

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

1. In a rail-joint, the meeting ends of rails having bolt-holes therein, a fish-plate on each side of the rail, said plates having openings therein larger than the bolt-holes, bolts passing through said openings, washers having flanges which rest against the outside of the fish-plates and having lugs which project into said openings, the said lugs and openings being of such relative diameter as to permit the said rails to move vertically and to expand or contract longitudinally without straining the bolts or the fish-plates.

2. In a rail-joint, the meeting ends of rails having bolt-holes therein, a fish-plate on each side of the rail and overlapping the joints, said fish-plates consisting of vertical webs and flanges at the upper ends which rest against the web of the rail and against the under side of the tread of the rail, said fish-plates having outwardly-extending flanges and the edges thereof being inturned so as to fit over and under the edges of the rail-flanges and permit the rail-flanges to move vertically, and means for fastening the fish-plates and the rail ends together so that the rail may have vertical movement and may be moved longitudinally by contraction and expansion without straining the fastening device and the fish-plates.

3. In a rail-joint, the meeting ends of rails having bolt-holes therein, a fish-plate on each side of the rail and overlapping the ends thereof, each fish-plate consisting of a vertical web, an enlarged upper part forming an inwardly-projecting flange which rests against the vertical web of the rail near the tread and also against the under side of the tread, an outwardly-extending flange having an overinturned edge which rests under the flange of the rail, the distance between the inturned end of the flange being such as to permit the rail-flange to have vertical play, said webs of the fish-plates having openings therein which mate with the openings in the rail-bolts passing through the rails and the webs of the fish-plates, the said bolts fitting snugly in the holes in the rails, lugs projecting into the openings in the fish-plates, other such washers under the nuts of the bolts, a second set of nuts on the bolts, and means between the bolts to prevent the said second set of nuts from turning.

4. In a rail-joint, the meeting ends of rails, the fish-plates on opposite sides thereof being connected by bolts which pass through holes in the rail and fish-plates, said bolts being provided at one end with a washer having a plate thereon which bears against a nut and prevents the nut from turning.

In witness whereof I have hereunto set my hand, at the city of New York, county of New York, and State of New York, this 3d day of August, 1905.

GEORGE H. CORNWELL.

In presence of—

HENRY BOSSONG,

JOH. J. RANAGAN.