(No Model.)

# J. CUMMING.

## RAILWAY CROSSING.

No. 381,056. Patented Apr. 10, 1888.

FIG. 1.

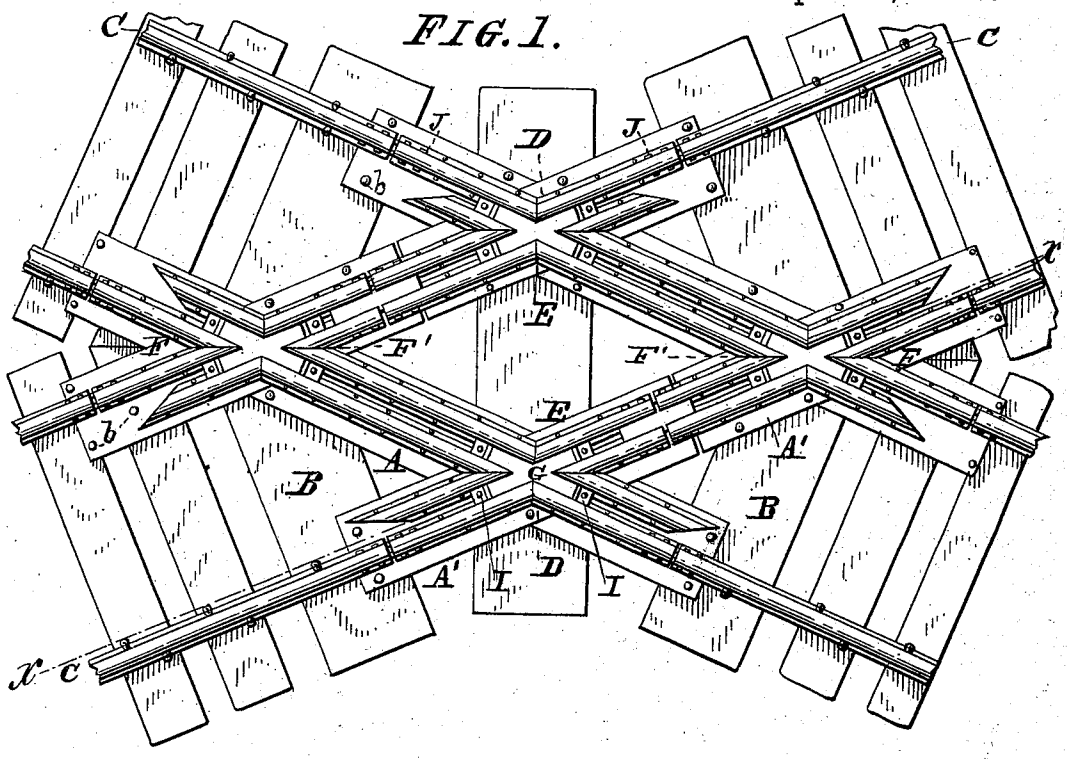



FIG. 2.

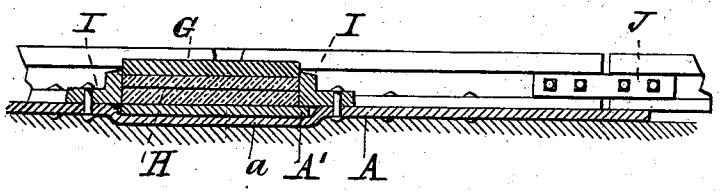



FIG. 3.

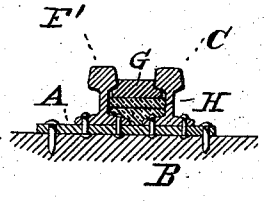
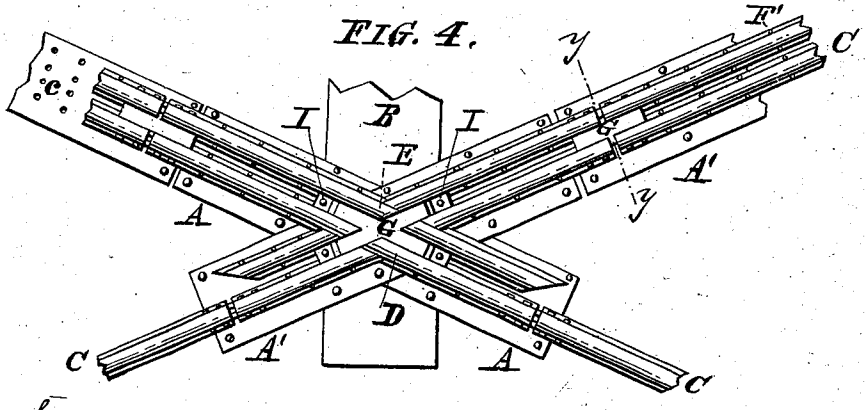



FIG. 4.




Witnesses.
Wm. O. Stark.
Al. Stark.

Inventor,
James Cumming,
by Michael J. Stark
Attorney.

N. PETERS. Photo-Lithographer. Washington, D. C.

# UNITED STATES PATENT OFFICE.

JAMES CUMMING, OF BUFFALO, NEW YORK.

## RAILWAY-CROSSING.

SPECIFICATION forming part of Letters Patent No. 381,056, dated April 10, 1888.

Application filed January 24, 1888. Serial No. 261,719. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES CUMMING, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements on Railway-Crossings; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

My present invention has general reference to improvements in railway-crossings; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already mentioned, which serve to illustrate my said invention more fully, Figure 1 is a plan of a set of crossing-frogs embodying my said invention. Fig. 2 is a longitudinal sectional elevation in line *x x* of Fig. 1. Fig. 3 is a transverse sectional elevation in line *y y* of Fig. 4. Fig. 4 is a plan of the crossing-frog slightly modified.

Like parts are designated by corresponding letters of reference in all the figures.

The object of my present invention is the production of a durable railway-crossing—a matter rather difficult to accomplish, owing to the increased weight of the rolling-stock of the present day as compared with that of a few years ago.

I accomplish the object in view by constructing my railway-crossing with four separate frogs, consisting each of a very strong bed piece or plate, A, of iron of about ten inches in width and from three-fourths of an inch to one inch thick, one of such a set of frogs being shown in Fig. 4. In about the center of this plate A, I form a depression, *a*, Fig. 2, capable of receiving the base-piece or bed A′ at the angle required for the crossing to be produced in such a manner that the top surfaces of these plates are even and that the various rails hereinafter named may be riveted upon said base-plates.

In the plates A A′ are spike-holes *b* of suitable size and number, by means of which said plates are fastened upon the timbers B, and further holes, *c*, Fig. 4, receiving rivets by which the rails are riveted upon the plates.

C are the approaching rails of a railway. They reach a certain distance over the end of the plates A A′, so that their ends bear upon these plates, as hereinafter mentioned.

D are the obtuse-angled running-rails of the frog, and E the obtuse-angled guard-rails, while F are the acute-angled running and F′ the similarly-angled guard rails.

G is a steel bridge-plate of **X** shape, the angles of which correspond with the angles of the frogs, and H a rubber cushion placed underneath said bridge-plate G. This bridge-piece is retained in position at the intersecting points of the rails by means of stops I, placed, as shown in Fig. 2, on each end of the said plate G. The thickness of this plate G and its underlying rubber cushion H is such that the distance from the top surface of the plate to the top surface of the rails is somewhat less than the width of the flanges of the car-wheels, &c., passing over the crossing, so that while going over the plate G the wheels ride partly on the said plate and partly on the running-rails, the weight to be carried by either being regulated to quite a degree of exactness by the rubber H underneath said plate being made more or less thick and of more than one thickness when necessary or desirable.

All the rails entering into the construction of this crossing are accurately fitted in the joints and bolted together by fish-plates and bolts J, Fig. 2, in the usual manner.

It will now be observed that the entire crossing consists of four separate and independent frogs, (one of which, with a small portion of the adjoining frogs, is shown in Fig. 4,) either of which may be readily removed from its position for repairs, renewals, &c., without disturbing the remaining portions of the crossing—a result not capable of being accomplished by any other construction with which I am acquainted.

In railway-crossings as now constructed it is usual to make a solid foundation for the crossing from masonry, upon which are placed matched timbers—a substructure at once very costly, and often not even then capable of being properly made, owing to the nature of the soil into which the foundation is being placed. By constructing the frogs with the base-plates, as described, with the approaching rails bear-

ing with the ends upon said base-plates and all rails overlapping onto the adjoining base-plates, I am enabled to dispense with all such costly foundations and to use ordinary ties and timbers only—a matter of saving which forms quite an item in the cost of production and maintenance of this crossing as compared with other railway crossings and switches—while at the same time there is no possibility of the crossings tipping when heavy engines and loaded cars are running over the same.

In some cases this crossing may be modified by constructing the same of but two separable sections, as shown in Fig. 1, which will make a stronger crossing than the one constructed of four removable frogs, but not so readily removed and replaced where, owing to inclinations of the tracks at curves, &c., one frog is worn out sooner than the others in the same crossing.

It will be further observed that by the introduction of the stops I, I obtain the following results, viz: First, the bridge-plates are more securely kept in their position and prevented from lateral playing, resulting in the wearing of the rubber cushion H; second, should a bridge-piece be accidentally broken, which in cold weather is liable to happen, it or pieces thereof cannot be carried away or misplaced so as to cause accidents, while, third, they prevent the rubber cushion from creeping, and thereby reducing its thickness, and consequently its carrying capacity and usefulness. These stops are therefore quite essential elements in the present construction of my railway-crossings.

It is obvious that my improved railway-crossing is capable of being used without the bridge-pieces, and will without the same be found much more durable than the common or other improved crossings heretofore in use—a fact which has been frequently demonstrated where my frogs, having been substituted for the former, have invariably proven to last at least twice as long and longer than the ones which they have replaced.

Having thus fully described my invention, I claim as new and desire to secure to me by Letters Patent—

1. In railway-crossings, the series of removable frog-sections, each having base-plates crossing one another in depressions, as described, secured together, with the rail of one section overlapping the joints of the base-plates of the adjoining sections, substantially as and for the object specified.

2. In railway-crossings, a series of frogs consisting each of a base-plate, A, having centrally a depression, *a*, a base-plate, A′, intersecting said base-plate at said depression, the running and guard rails riveted to said base-plates, the bridge-pieces located at the intersection of said rails, the cushion underneath, and the stops for said bridge-pieces, constructed and combined substantially in the manner as and for the object stated.

3. In combination with the intersecting rails of a crossing or switch frog, a bridge-piece, substantially as described, having the rubber cushion and the end stops, as and for the purpose indicated.

4. In a railway-crossing, a series of removable frogs, each having the rails of one overlapping the adjoining edge of the opposite base-plate, said rails being riveted to their respective base-plates and secured to the rails of the adjoining frogs by fish-plates and bolts, as described, whereby each series of frogs may be readily removed without disturbing the remaining frogs, as and for the purpose specified.

In testimony that I claim the foregoing as my invention I have hereto set my hand in the presence of two subscribing witnesses.

JAMES CUMMING.

Attest:
MINNIE HEIM,
WM. O. STARK.