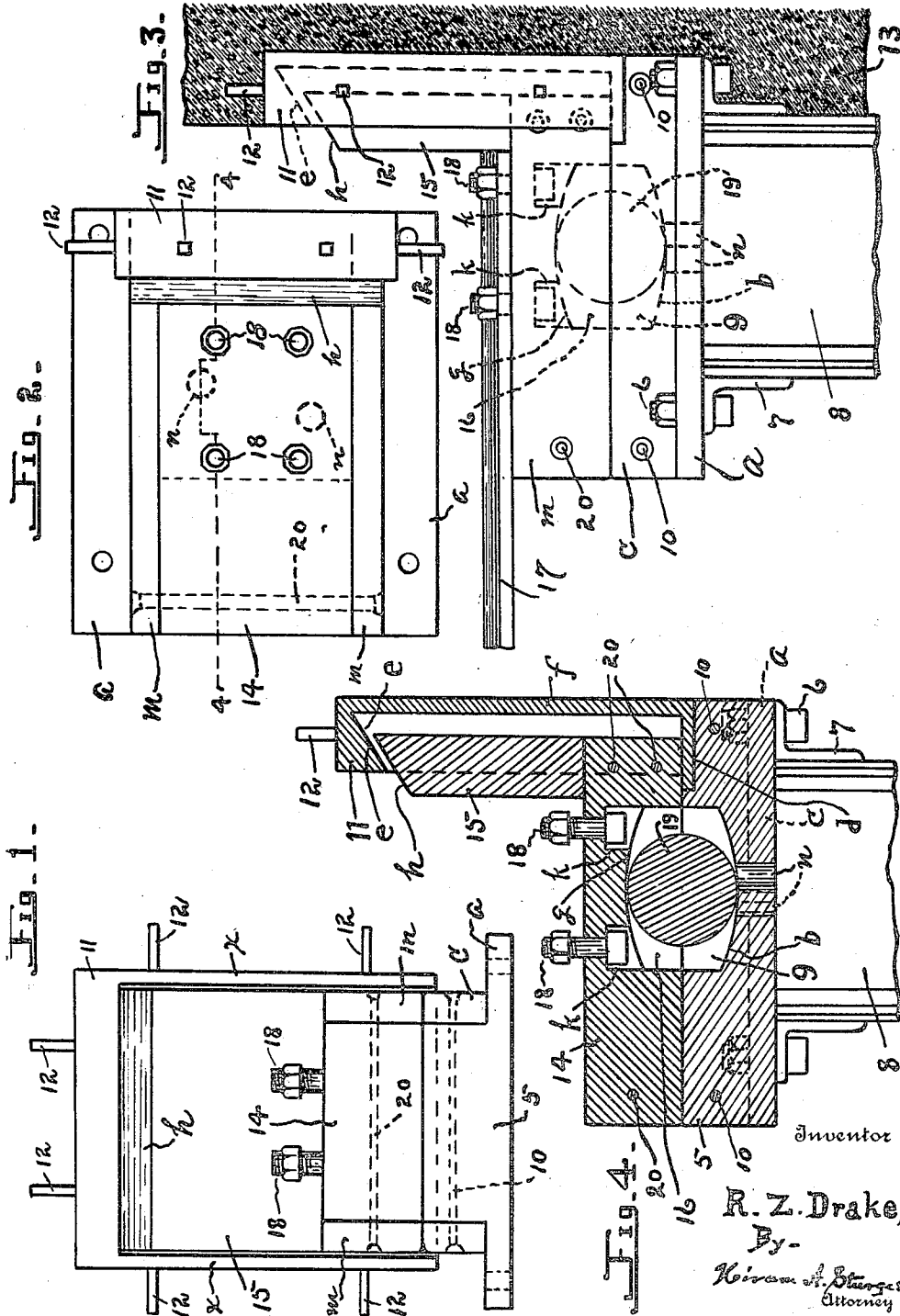


R. Z. DRAKE.
BRIDGE SHOE.

APPLICATION FILED NOV. 12, 1921.

1,425,320.

Patented Aug. 8, 1922.



Inventor
R. Z. Drake,
By
Kearney A. Stanges
Attorney

UNITED STATES PATENT OFFICE.

ROBERT Z. DRAKE, OF OMAHA, NEBRASKA.

BRIDGE SHOE.

1,425,320.

Specification of Letters Patent.

Patented Aug. 8, 1922.

Application filed November 12, 1921. Serial No. 514,545.

To all whom it may concern:

Be it known that I, ROBERT Z. DRAKE, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Bridge Shoes, of which the following is a specification.

This invention relates to a bridge shoe and has for its object, broadly, to provide such a bearing for building-trusses, girders or the spans of bridges that expansion or contraction of the connected, metallic parts will be permitted without any accompanying injury. Other objects more specific will be mentioned hereinafter.

The invention is fully described herein and is illustrated in the accompanying drawing, wherein,—

Fig. 1 is a front view of the bridge shoe. Fig. 2 is a plan view of the same. Fig. 3 is a view in side elevation of the parts shown in Figs. 1 and 2, supports for the lower, stationary box and its upright pan or casing being added. Fig. 4 is a longitudinal section on line 4—4 of Fig. 2.

Referring now particularly to the drawing, numeral 5 indicates a stationary box or recessed block. It may be maintained stationary by any suitable means, the means herein shown being bolts 6 engaging the brackets 7 of a pier or column 8 and flanges *a* of said block, said member 8 being a part of a substructure of a bridge. The recess of block 5 is indicated at 9, and preferably its bottom wall *b* is of concaved form, the curvature being longitudinal of the block. This recess may be conveniently formed since, as best shown in Figs. 1 and 3, side-plates *c* are provided for the block which operate as end walls for the recess 9, the side-plates being secured to the block by any suitable means, as by bolts 10.

Numeral 11 indicates an upright pan or casing adapted to be disposed upon and approximately at right-angles to the block 5, its mounting being upon one of the ends thereof, a recess *d* (Fig. 4) preferably being formed in said block 5 for receiving the lower end of the casing. This casing, at its upper end, preferably has its inner wall *e* inclined downwardly and outwardly from its back *f*. Also it is provided with projections 12 for engaging in a wall 13 of cement or other similar material, and it will be noted that the pan or casing thus described is adapted to resist, to great advan-

tage, any and all stresses directed thereto from any direction.

At 14 is indicated a second box or recessed block which is provided at one of its ends with an upright locking-plate 15, its recess, which is indicated at 16, having a curved bearing-wall *g* corresponding to the curvature of the wall *b* above described, said block being adapted to be slidingly disposed upon the block 5 with its recess 16 opening upon the recess 9, its locking-plate being disposed within and adapted to partly fill the pan or casing 11. The top of the plate 15 is formed with a wall *h* which is inclined downwardly and outwardly of the casing, and it will be understood that the form of the walls *e* and *h* and their relative position tend to prevent rain, snow or dust from entering the casing. Upon the block 14 may be secured girders 17 or trusses and other parts (not shown) belonging to the superstructure of a bridge or truss, bolts 18 being shown for this purpose, said bolts projecting upwardly from secondary recesses *k* which open upon the recess 16.

At 19 is indicated a roller which is disposed in the recesses 9 and 16, said roller being normally disposed at the middle of these recesses and providing a bearing for the upper block 14. It will be seen that expansion of the superstructure caused by heat may cause a movement of the locking-plate 15 inwardly of the casing 11, the roller 19 thereby having a limited movement toward said casing, and on account of this construction the support of piers 8 and substructure of a bridge or truss will be relieved from stresses which might otherwise be injurious. Also contraction of the superstructure caused by low temperatures will not cause injury to the substructure of a bridge, since the roller will move in the recesses in a direction opposite to the direction last named, the block 14, by this operation, being elevated so that the weight of the superstructure will be sustained by said block 14, and stresses directed to the substructure will be relieved. As described, the roller will constantly engage the curved walls *b* and *g* and during normal temperature said roller will be disposed at the lowermost part of the curved wall *b*.

The upper block 14 is provided with side-plates *m*, these being secured thereto by bolts 20. In order that accumulations will not form in the recess 9, drain-apertures *n* are

provided for the block 5, near the middle of the wall 3.

It will be noted that the sides x (Fig. 1) of the casing extend downwardly a sufficient distance to lie on the outer sides of the side-plates c , or parts thereof, which tend to support transverse stresses directed to both of the blocks 5 and 14, and to maintain said blocks in vertical alignment.

While I have described construction in detail, I do not wish to be understood as limiting myself in this respect, and changes in form, size, proportion and minor details may be made, as found to be of advantage, said changes to be within the scope of the invention as claimed.

I claim as my invention:

1. In a shoe for the purposes described, a stationary block having a recess and provided with an upright casing, a second block movably disposed upon and having a recess opening on the recess of the stationary block and also having an upright locking-plate engaging in said casing, and a roller disposed in the recesses of said blocks.

2. In a shoe for the purposes described, a stationary block provided with an upright casing and having a recess with a concaved bottom, a second block movably disposed upon and having an upright locking-plate engaging in the casing and also having a recess opening on the recess of the stationary block, and a roller in the recesses of said blocks.

3. In a shoe for the purposes described, a stationary block provided with an upright casing and having a recess formed therein, a second block movably disposed upon and having a recess opening on the recess of the stationary block and having a locking-plate engaging in the casing, a roller in the recesses of said blocks, the recess of the second block having a concaved wall for a bearing upon said roller.

4. In a shoe for the purposes described, a stationary block having a recess and provided with an upright casing having a downwardly inclined wall, a second block movably disposed upon and having a recess opening on the recess of the stationary block, a roller in said recesses, said second block being provided with an upright locking-plate having a convergent terminal and disposed in the casing with its convergent terminal adjacent to and below the downwardly inclined wall of the casing.

5. In a shoe for the purposes described, a stationary block provided with a casing, a second block movably seated on the stationary block and having a locking-plate for engaging in the casing, said blocks having recesses with concaved walls opening upon each other, and a roller disposed within normally midway between the ends of said recesses for bearings upon said concaved walls, and being movable from its normal position for elevating the second block from the stationary block.

6. In a shoe for the purposes described, a stationary block, a second block movably seated on the stationary block, said blocks having recesses with concaved walls opening upon each other, a roller within the recesses normally bearing upon and midway between the ends of said concaved walls, said roller being movable from its normal position for moving the second block upwardly from the stationary block, and cooperating devices carried by said blocks including a casing and a locking-plate for maintaining said blocks in vertical alignment.

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

ROBERT Z. DRAKE.

Witnesses:

HIRAM A. STURGES,
ARTHUR A. STURGES.