(No Model.)

# C. C. HIGHAM.

## LOCOMOTIVE ENGINE FRAME.

No. 475,112. Patented May 17, 1892.

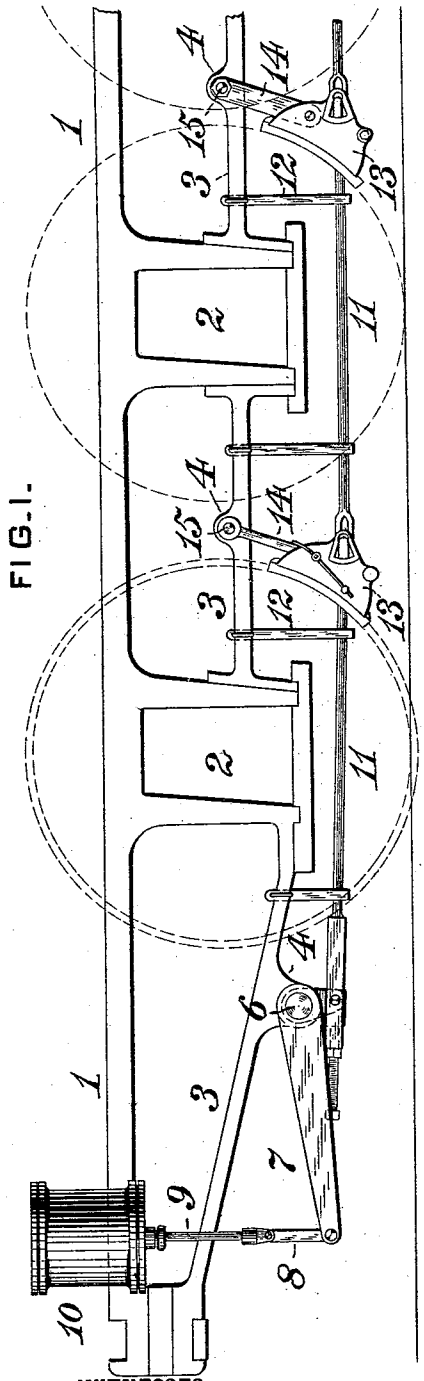


FIG. 1.

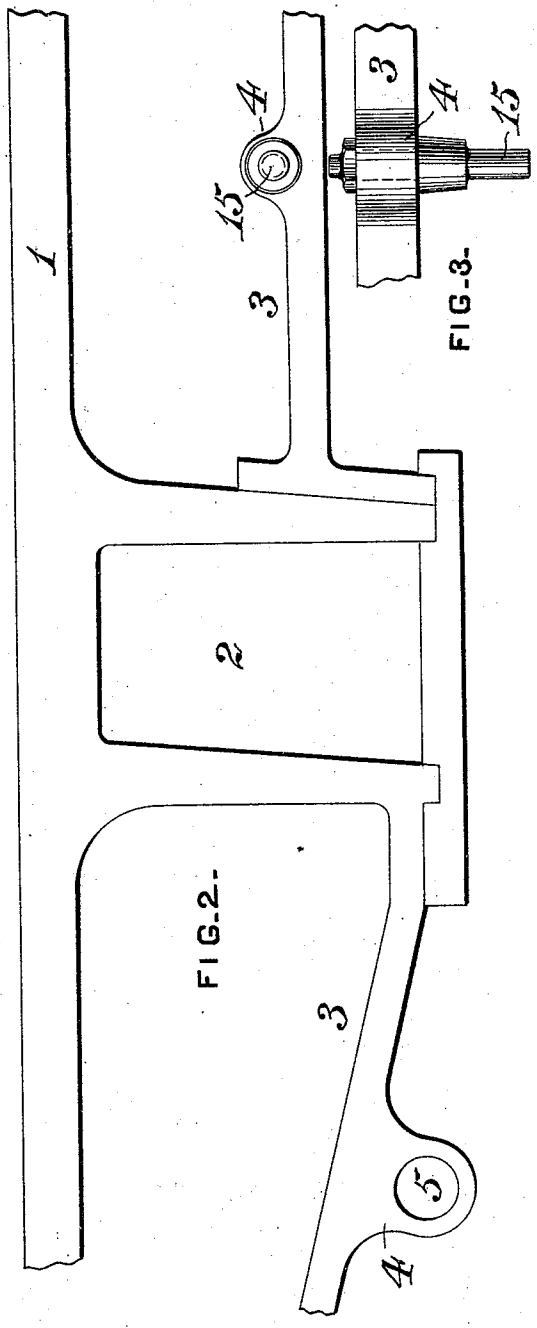


FIG. 2.




FIG. 3.

WITNESSES:

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INVENTOR,

Chas. C. Higham,

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Att'y.

# UNITED STATES PATENT OFFICE.

CHARLES C. HIGHAM, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF PITTSBURG, PENNSYLVANIA.

## LOCOMOTIVE-ENGINE FRAME.

SPECIFICATION forming part of Letters Patent No. 475,112, dated May 17, 1892.

Application filed December 24, 1891. Serial No. 416,072. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES C. HIGHAM, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented or discovered a certain new and useful Improvement in Locomotive-Engine Frames, of which improvement the following is a specification.

The object of my invention is to provide a locomotive-engine frame of the standard type which shall admit of the ready attachment of a driver-brake mechanism thereto under any desired conditions of location and arrangement and without diminishing the strength of the frame members by the reduction of sectional area due to the drilling of bolt-holes heretofore required for the connection of the brake apparatus.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side view in elevation of so much of a locomotive-engine frame embodying my invention as serves to illustrate the application of a driver-brake thereto; Fig. 2, a similar view, on an enlarged scale, of a portion of the same; and Fig. 3, a plan or top view of part of one of the frame-braces.

In the instance shown the frame is in its general features of construction similar to those ordinarily employed in locomotives having more than two pairs of driving-wheels. The main bar 1 of the frame is provided with the usual jaws or pedestals 2 for the reception of the driving-axle boxes and their wedges, the outer legs of the adjacent pedestals being connected one to the other near their lower end and the rear leg being connected to the main bar 1 by the pedestal-braces 3. These braces may be either forged integral with the main bar and pedestals or, as shown, those which extend from a leg of one pair of pedestals to the adjacent leg of another may be separate pieces secured by bolts to the legs.

The driver-brake apparatus illustrated, which in and of itself forms no part of my present invention, consists of a cylinder 10, secured to the main bar 1 and provided with suitable means for the supply and exhaust of fluid under pressure, brake-shoes 13, each adapted to bear against the tread of one of the driving-wheels, and interposed mechanism for transmitting fluid-pressure exerted in the cylinder to the treads of the driving-wheels through the brake-shoes 13. The brake-cylinder 10 is fitted with a suitable piston, the rod 9 of which is coupled by a link 8 to the longer arm of a bell-crank 7, fixed upon a shaft 6, journaled on the rear pedestal-braces and having shorter arms coupled to pull-rods 11, which are in turn coupled one to another and to the brake-shoes 13, which are suspended by hangers 14 from pins 15, fixed in bearings on the several pedestal-braces forward of the rear driving-axle.

As heretofore constructed, the bearings of the bell-crank shaft and brake-shoe hanger-pins have been separate from the frame and connected thereto by bolts passing through holes drilled at the different locations required, thereby involving the weakening of the frame by the reduction of sectional area thus made, and being also in some cases difficult of attachment by reason of the special form of other parts adjacent to the frame. To obviate these objections I provide a series of bearings 4, which are formed integral with the frame members upon which they are respectively located, each of said bearings having an eye or cylindrical opening 5 to receive a bell-crank shaft or a brake-shoe hanger-pin, as the case may be. The bearings 4 are in this instance formed upon the pedestal-braces 3, but may, if preferred, be located on the main bar 1 of the frame, and their projection from the frame members in a vertical plane is such that their eyes 5 may be either substantially or completely outside or clear of the adjacent side of the frame member, the sectional area of which is consequently not diminished in any degree. It will also be seen that as no fitting of the bearings to the frame is required and no projecting bolt-heads or nuts are presented the bearings may be readily located in any desired positions—as, for example, where the attachment of separate bearing-pieces would be difficult or impracti-

cable by reason of the form and position of other parts located in close proximity to the frame.

I claim as my invention and desire to secure by Letters Patent—

1. The combination of a locomotive-engine frame, a series of bearings formed integral therewith, and a driver-brake mechanism having brake-shoes, and a bell-crank supported in said bearings, substantially as set forth.

2. The combination of a locomotive-engine-frame member and a bearing formed integral therewith for the support of a member of a driver-brake mechanism, said bearing having an eye, which is substantially outside or clear of the side of the frame member adjacent to its axis, substantially as set forth.

In testimony whereof I have hereunto set my hand.

CHARLES C. HIGHAM.

Witnesses:
ALBERT BLAIR,
A. DIGBY.