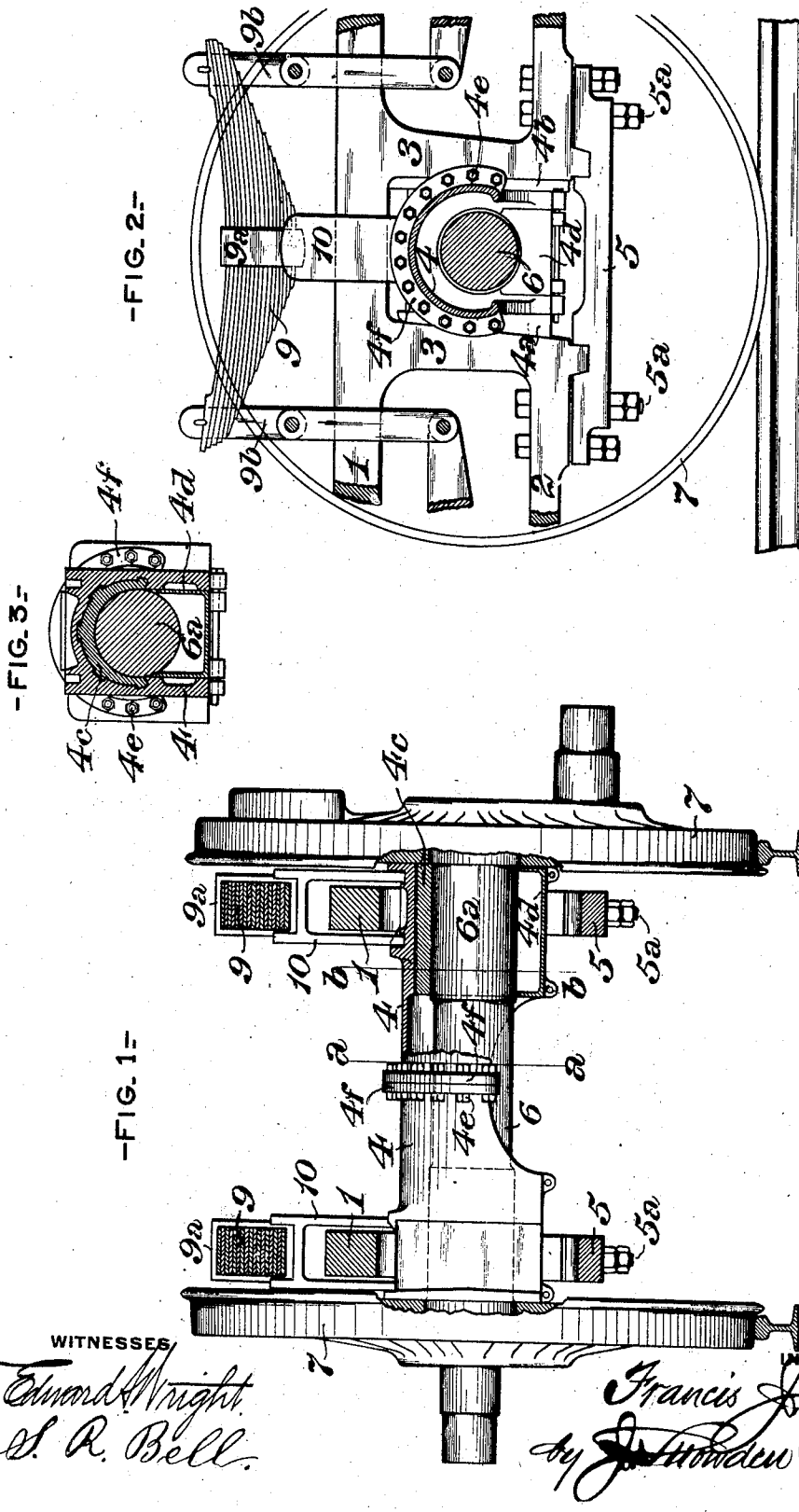


F. J. COLE.
LOCOMOTIVE DRIVING BOX.
APPLICATION FILED JAN. 21, 1913.

1,057,220.

Patented Mar. 25, 1913.



UNITED STATES PATENT OFFICE.

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1,057,220.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed January 21, 1913. Serial No. 743,256.

To all whom it may concern:

Be it known that I, FRANCIS J. COLE, of Schenectady, in the county of Schenectady and State of New York, have invented a certain new and useful Improvement in Locomotive Driving-Boxes, of which improvement the following is a specification.

My invention relates to driving boxes for locomotive axles in which the area of bearing surfaces on the axles is increased to a materially greater extent than that which is obtainable in ordinary practice, by an increase of the length of the driving box, an instance of which is exemplified in Letters Patent of the United States No. 1,024,620, granted and issued to me under date of April 30, 1912.

The object of my invention is to provide a driving box of such type, in which the advantageous results in practice which are fully set forth in Letters Patent No. 1,024,620 aforesaid, may be attained, which shall be applicable in connection with pedestals, shoes, wedges, and spring arrangement of the ordinary construction, and which shall be readily insertible and removable, as may be required, thereby correspondingly simplifying and economizing the cost of construction and maintenance.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings: Figure 1 is a transverse section through the side frame members of a locomotive engine, illustrating, partly in side elevation and partly in vertical longitudinal section, a driving box structure embodying my invention; Fig. 2, a transverse section through the axle and driving box, on the line *a a* of Fig. 1; and, Fig. 3, a similar section on the line *b b* of Fig. 1.

My invention is herein exemplified as applied in connection with a locomotive engine, the frame of which is of the standard "bar" type, and comprises two side members, which are, as in present practice, spaced at the maximum distance apart available under the necessary limitation imposed by the width between driving wheel hubs. Each of the side frame members comprises, so far as the portion thereof in which the driving axles are fitted is concerned, the usual top rail, 1, bottom rail, 2, and connecting vertical pedestals, each of which consists of a pair of pedestal jaws, 3, in which one of the sections of a driving box structure, here-

inafter described, is fitted between a wedge, 4^a, and a shoe, 4^b, in the ordinary manner. The open space between the sections of the lower frame rail, at the bottom of the pedestal, is spanned by a pedestal tie, 5, secured removably in position by bolts, 5^a.

If the practice of my invention, the journals, 6^a, of the driving axle, 6, which are, as usual, located on the inner sides of, and immediately adjoining, the wheel seats on which the driving wheels, 7, are fixed, are made of materially increased length, as compared with the ordinary practice prior to Letters Patent No. 1,024,620 aforesaid, and the portion of the weight of the locomotive which is supported by the driving axle, is applied thereto through a rigid driving box structure comprising two open bottomed sections, 4, 4, the opening of each of which is of greater width than the major diameter of the driving axle, and each of which has an integral driving box, of substantially ordinary form, on its outer end, within which driving box there is secured a journal bearing, 4^c, fitting on, and corresponding in length with, one of the axle journals, 6^a. The sections, 4, 4, abut in the longitudinal central plane of the locomotive, and are rigidly secured together by a plurality of bolts, 4^d, passing through end flanges, 4^e, on the inner ends of the sections. A lubricant cellar, 4^f, is fitted in each of the driving box sections, below the axle journal, and is held removably in position by bolts, in the usual manner.

The connection of the driving boxes of the two axle journals as above described, provides a continuous structure, which is both rigid in service, and separable, as desired, extending from the outer end of one axle journal to the corresponding end of the other, and thereby enables the pedestal jaw extensions and special forms of spring arrangement appliances set forth in Letters Patent No. 1,024,620, to be wholly dispensed with. It will, further, be obvious that, by the application of the rigid structure described, journals of increased length may be used with the usual spring arrangement, without uneven wear on the ends of the journals or bearings, for the reason that, while the transverse central planes of the journals do not coincide with the longitudinal central planes of the springs, yet the load is transmitted across the locomotive by means of the stiff and unyielding driving box structure, and

thereby substantially uniform wear will be obtained.

The conditions of locomotive engine construction and maintenance require that the driving boxes shall be insertible and removable for purposes of assembly, renewal, and repair, without interference with the axle and wheels, and, with the driving box structure above described, their removal may be readily effected by withdrawing the bolts, 4^a, by which the sections, 4, 4, are connected, the driving box wedges and shoes, and the pedestal ties, and turning one of the sections in one direction and the other in the opposite direction, thereby permitting each section to be removed by a movement equal to half the height of the end bolting flange, 4^f. The insertion of the driving box structure is correspondingly effected.

The spring arrangement, through which that portion of the weight of the frame and members of the locomotive connected thereto which is borne by the driving axles is transmitted to the latter, is, as in ordinary practice, located in line centrally with the side frame members. In the instance exemplified, the weight acting on the springs, 9, is transmitted from the springs to the connected driving box sections through vertical spring saddles, 10, the legs of which rest in recesses in the tops of the driving box sections on opposite sides of the frame members, and which support the spring bands, 9^a, in seats on their upper ends. The weight bearing on the frame is transmitted therefrom to the ends of the springs through spring hangers, 9^b, in the ordinary manner.

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

1. A driving box structure for a locomotive driving axle, comprising two sections, each having an integral driving box at one of its ends and a journal bearing secured therein, and a bolting flange on its opposite end, and a plurality of bolts passing through the bolting flanges and securing the sections rigidly and detachably one to the other.

2. The combination, in a locomotive engine, of a pair of side frame members, a transversely extending driving box structure comprising two sections secured together rigidly and detachably at their inner ends, each having a driving box formed integral with its outer end and fitting in a pedestal in one of the side frame members, and a driving axle journaled in said driving boxes.

3. The combination, in a locomotive engine, of a pair of side frame members, a transversely extending driving box structure comprising two sections secured together rigidly and detachably at their inner ends, each having a driving box formed integral with its outer end and fitting in a pedestal in one of the side frame members, a driving axle journaled in said driving boxes, and springs located a greater distance apart than the middle transverse planes of the driving boxes, each bearing on one of said driving boxes, through spring saddles, on opposite sides of the adjacent side frame member.

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Witnesses:

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