J. H. EHRHARDT.

Machine for Determining the Load of Car Axles.

No. 52,653. Patented Feb. 13, 1866.

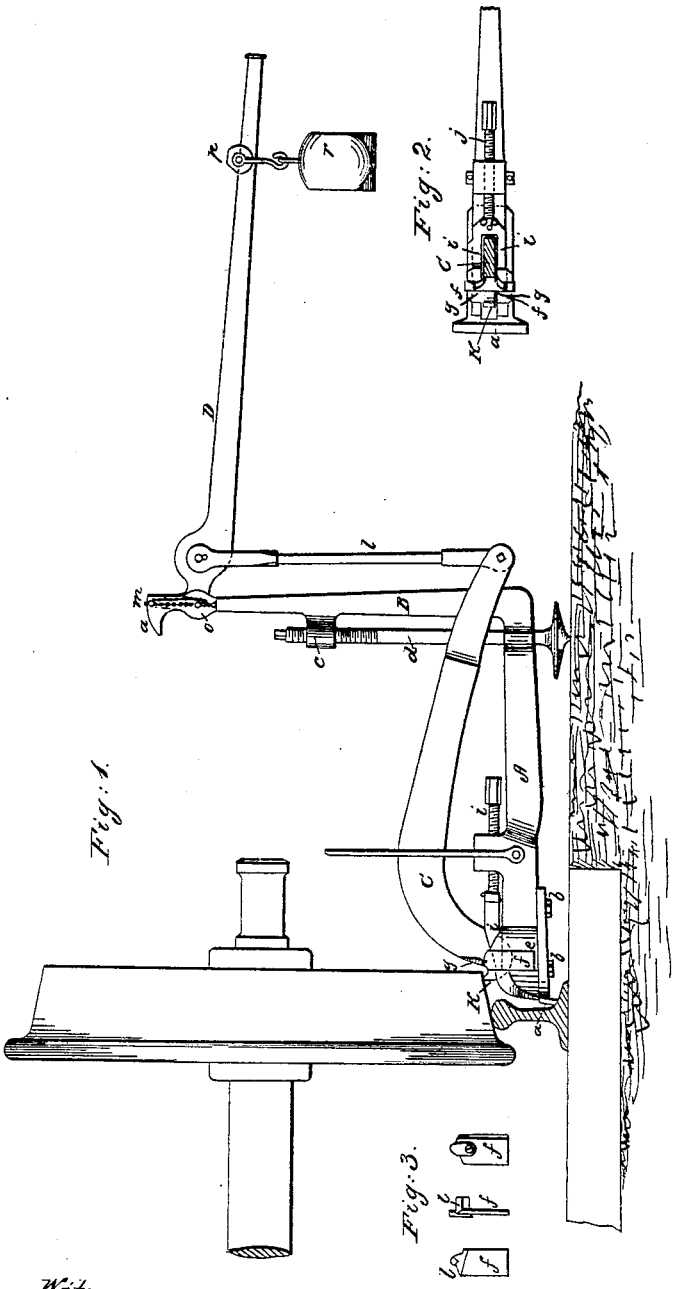

Fig. 1.

Fig. 2.

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

J. H. EHRHARDT, OF DRESDEN, SAXONY.

IMPROVEMENT IN MACHINES FOR DETERMINING THE LOAD OF CAR-AXLES.

Specification forming part of Letters Patent No. **52,653**, dated February 13, 1866.

To all whom it may concern:

Be it known that I, J. H. EHRHARDT, of Dresden, Saxony, have invented a new and Improved Apparatus for Determining the Loads of Car-Axles, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of this invention, showing its application to a locomotive-wheel. Fig. 2 is a sectional view of a portion of this apparatus, showing its construction. Fig. 3 is a detached side elevation of one of the slides which support the scale-beam.

Similar letters of reference indicate like parts.

This invention relates to an apparatus which is intended to balance the weight of a locomotive, tender, or railroad-car, so as to bring an equal pressure to bear on each of the wheels.

My apparatus is composed of an angular supporter, A B, the horizontal arm A of which is provided with a lip, *a*, which is adjustable by means of screws *b*, whereas, the vertical arm B of said supporter is furnished with a socket, *c*, which is tapped to receive the leg *d*. The leg passes down through a hole in the arm A, and its upper end is made square so that a wrench can be applied to it for the purpose of adjusting the same up or down as may be requisite.

In the sides of the arm A, near that end of the same to which the lip is secured, are dovetailed recesses, *e*, which form the guideways for slides *f*, and the upper ends of these slides form boxes intended to receive the knife-edge bearings *g* of the scale-beam C. The slides *f* are provided with lips *l* on their inner surfaces, (see Fig. 3,) and said lips rest on a wedge, *i*, which straddles the scale-beam and rests on the upper edge of the arm A, as shown in Fig. 1. A screw, *j*, serves to adjust said wedge back and forth and to raise and lower the slides, as will be presently more fully explained.

The knife-edge bearings *g* divide the scale-beam in two parts of unequal length, and the short arm of said scale-beam forms a hook, *k*, which is intended to bear on the circumference of a locomotive or car wheel, as shown in Fig. 1, whereas, the long arm terminates in a fork which straddles the leg *d*, and which connects, by a rod, *l*, with the steelyard. This steelyard is provided at one end with knife-edge bearings which rest in suitable boxes in the upper end of the vertical arm B of the supporter A B, and an index, *m*, which rises from this end and travels over a curved scale, *n*, giving an opportunity to determine the position of said steelyard and to bring it in a horizontal position, if required, while a plumb, *o*, suspended from a pin in the back of the scale, serves to indicate the desired position of the supporter A when obtained by operating the foot-screw *d*.

On the steelyard moves a saddle, *p*, which can be secured in any desired position by a set-screw, and from which is suspended a suitable weight, *r*, for the purpose of balancing and determining the weight bearing on the hook *k* at the short end of the scale-beam.

In order to ascertain the weight carried by a locomotive-engine, tender, or car, an apparatus of this description is placed under each wheel so that the lip *a* rises on the bottom flange of the rail and the scale-beam C bears with its hook-shaped end *k* against the circumference of the wheel. The apparatus under each wheel is then brought in a vertical position by means of the foot-screw *d* and plumb *o*, and then the wedge *i* is moved forward by the action of the screw *j* until the steelyard D will arrive at a certain angle over the horizontal position. This angle, on which the height of the lift of the wheels from the rails depends, will be determined by the index *m*, playing on the scale *n*. If desired, the steelyard might be replaced by an ordinary spring-balance or any other equivalent device. After all the apparatuses under the several wheels have been thus adjusted the weights *r* are slipped out on the steelyards D until the index of every apparatus points to the starting-point. By these means every wheel will be raised equally high from the rails, and the weight bearing on each wheel can be ascertained by examining the positions of the different weights *r* on their steelyards.

The difference in the results obtained from the several apparatuses shows the inequality

in the load and the different strain on the springs over each wheel, and by increasing or decreasing the tension of the several springs this inequality can be corrected without difficulty.

The sum of the different weights gives the weight of the locomotive, tender, or car.

What I claim as new, and desire to secure by Letters Patent, is—

1. The supporter A B, with lip *a* and leg *d*, in combination with the scale-beam C and steelyard D, or its equivalent, constructed and operating substantially as and for the purpose described.

2. The adjustable wedge *i*, in combination with the slides *f*, bearings *g*, scale-beam C, and supporter A B, constructed and operating substantially as and for the purpose set forth.

3. The index *m*, in combination with the steelyard D, supporter A B, and scale-beam C, constructed and operating substantially as and for the purpose described.

The above specification of my invention signed by me this 21st day of September, 1865.

JOHANN HEINRICH EHRHARDT.

Witnesses:

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