

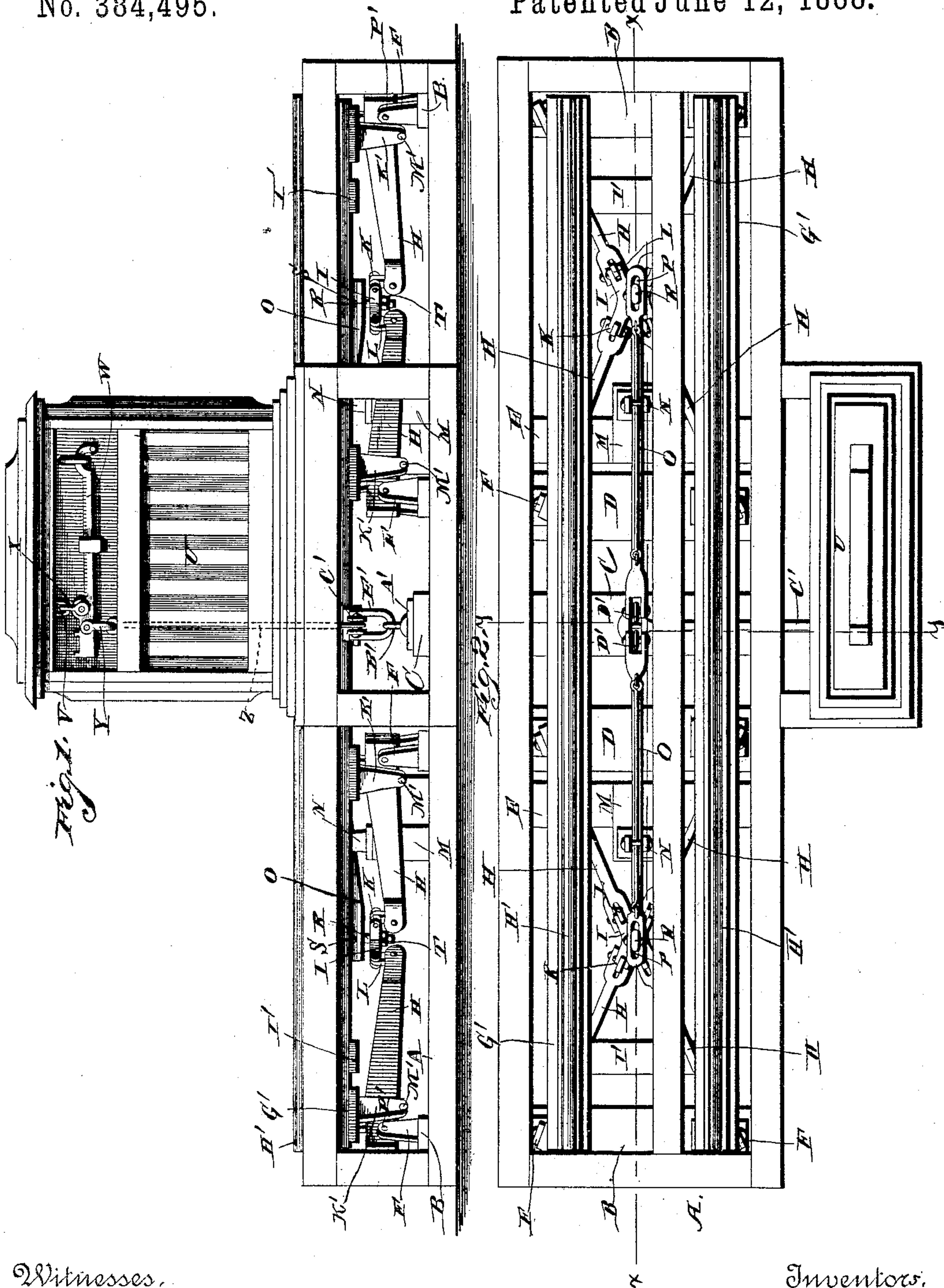
(No Model.)

2 Sheets—Sheet 1.

J. W. BALLARD & H. L. FISHER.  
SCALE FOR WEIGHING RAILWAY CARS.

No. 384,495.

Patented June 12, 1888.



Witnesses.

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Fig. 3.

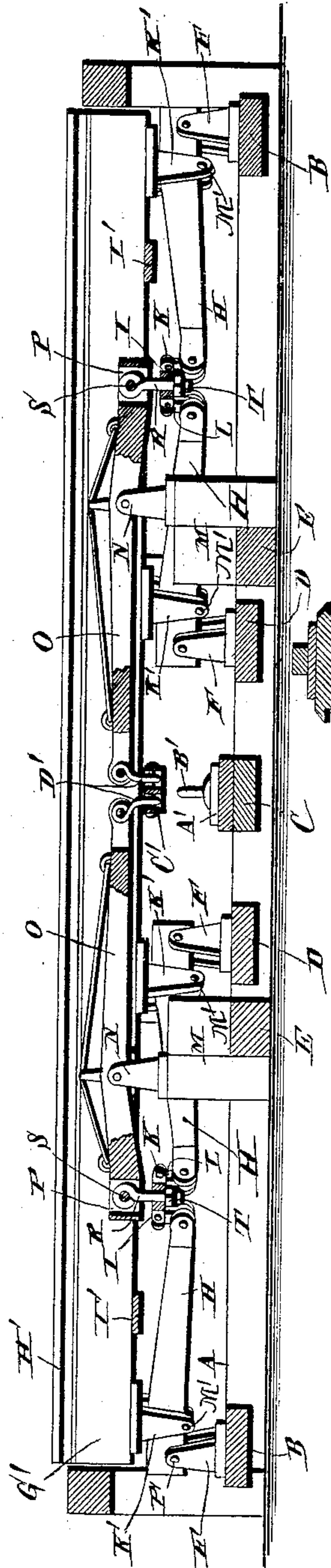


Fig. 5.

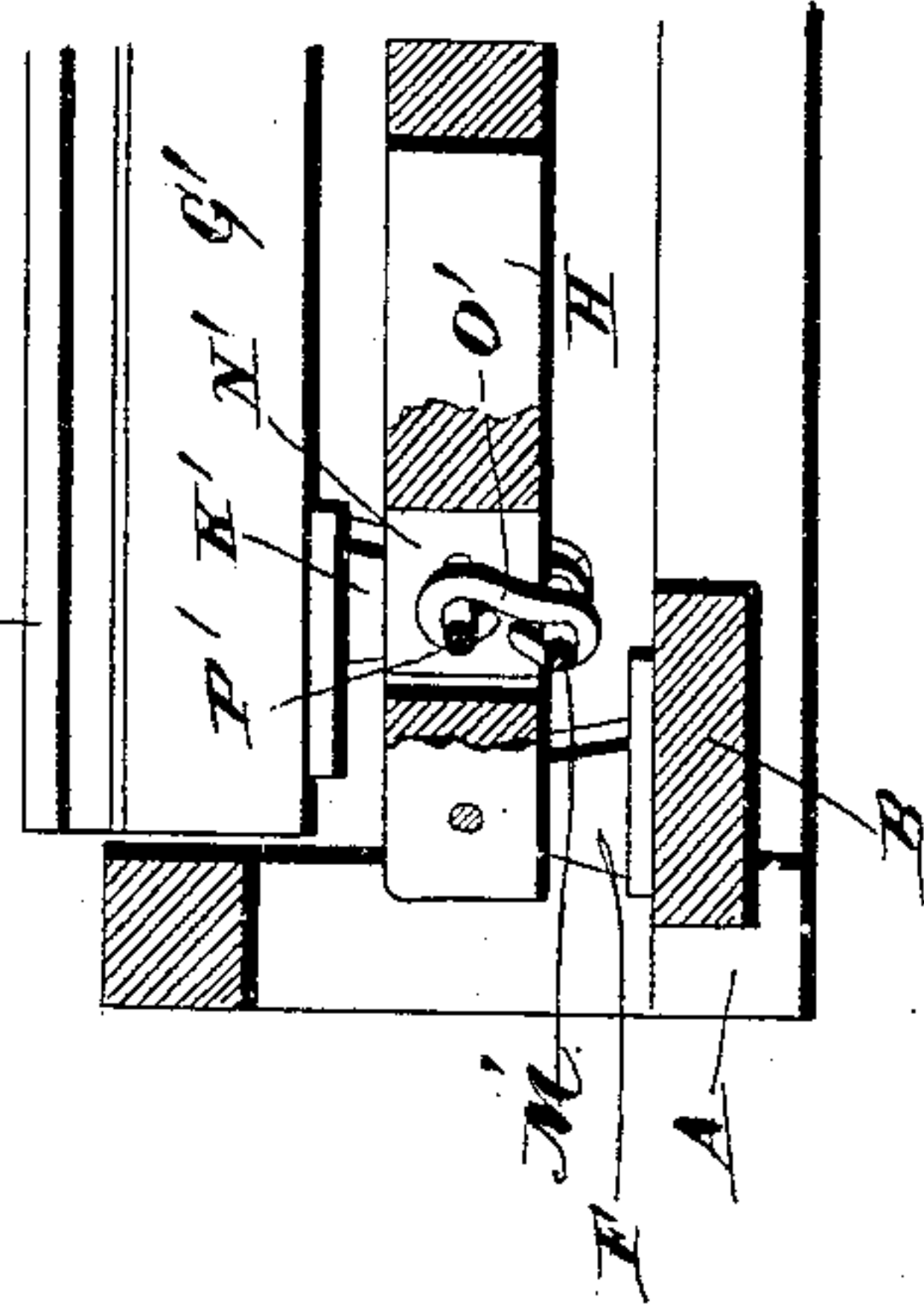
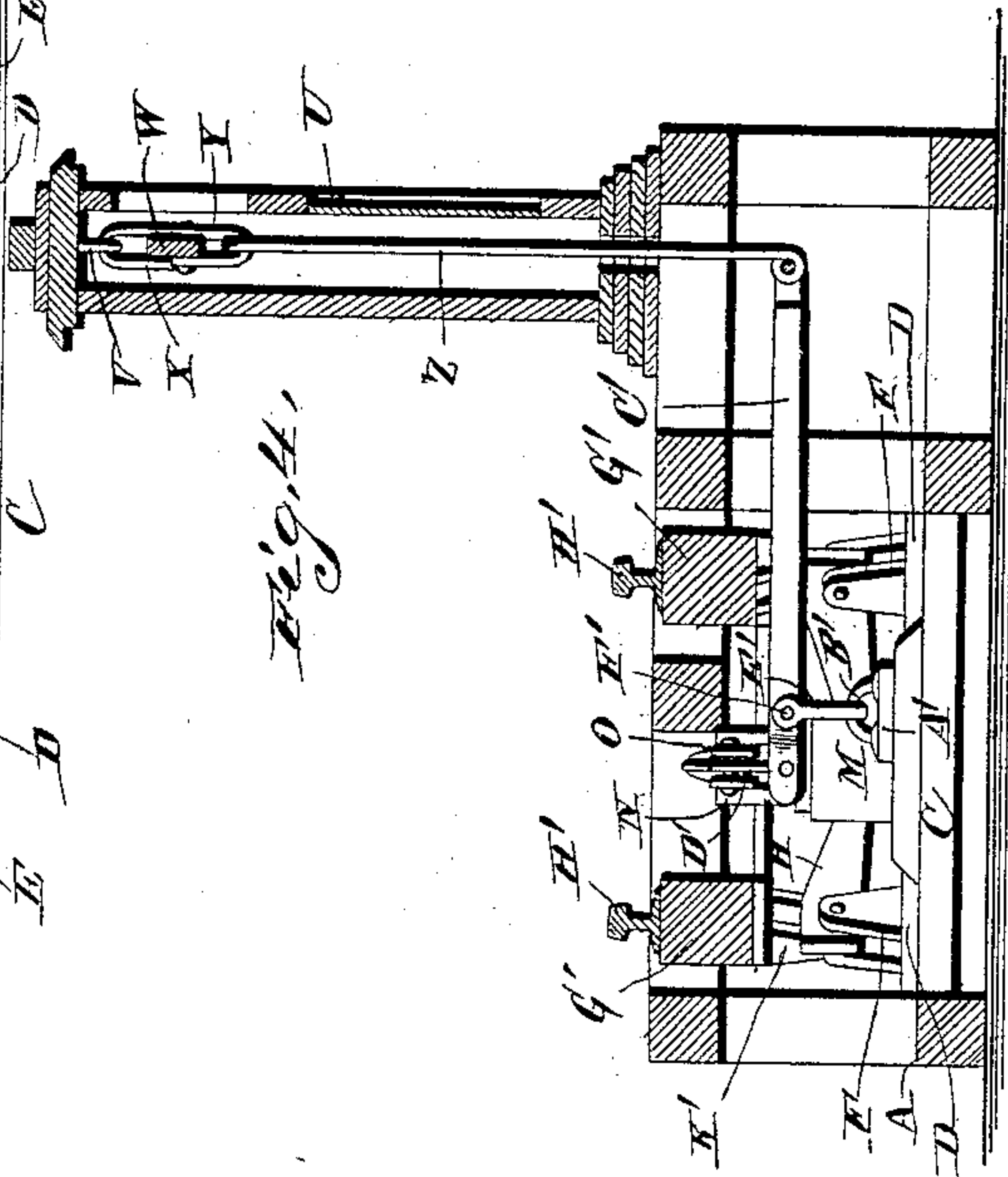


Fig. 4.



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# UNITED STATES PATENT OFFICE.

JAMES W. BALLARD AND HARVEY L. FISHER, OF TOLEDO, IOWA.

## SCALES FOR WEIGHING RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 384,495, dated June 12, 1888.

Application filed January 5, 1888. Serial No. 259,841. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES W. BALLARD and HARVEY L. FISHER, citizens of the United States, residing at Toledo, in the county of Tama and State of Iowa, have invented new and useful Improvements in Scales for Weighing Railway-Cars, of which the following is a specification.

Our invention relates to an improvement in scales for weighing railway-cars; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a railway-scale embodying our improvements. Fig. 2 is a top plan view of the same with parts broken away to show the subjacent mechanism. Fig. 3 is a vertical longitudinal sectional view, taken on the line *x x* of Fig. 2. Fig. 4 is a vertical transverse sectional view, taken on the line *y y* of Fig. 2. Fig. 5 is a detail sectional view to show more clearly the connection between the levers and the platform-beams.

A represents a rectangular frame of suitable length, width, and height, provided near its ends at its lower side with cross-beams B, and provided at its center with a cross-beam, C. At a slight distance from each side of the beam C is a cross-beam, D, and on the outer sides of the beams D are cross-beams E. The frame A is supported in a suitable manner with its upper side on a level with the bed of the railway-track. On the upper sides of the cross-beams B and D, near the ends of the said cross-beams, are secured standards F. Each standard F is composed of a pair of parallel vertical arms.

H represents levers which have their upper ends pivoted between the upper ends of the arms of the standards. The inner ends of the said levers H converge toward each other, as shown in Fig. 2. There are two series of these levers in the frame, one series of four levers being arranged at each end of the frame. I represents blocks provided each with four pairs of radial ears, K. Between the said pairs of ears are pivoted the upper ends of links L. The lower ends of the said links depend from the said blocks I, and are pivoted to the inner

ends of the levers H. On the upper sides of the cross-beams E, at the centers thereof, are secured blocks or knees M, on the upper ends of which are secured standards N, which are similar in construction to the standards F, as will be understood on reference to Figs. 2 and 3.

O represents a series of longitudinal levers which are arranged in line with each other, their inner ends being only a slight distance apart, and the said levers are fulcrumed, at a slight distance from their outer ends, to the standards N. In the outer end of each lever O is made a vertical opening, P, which extends entirely through the same.

R represents a pair of bolts which have their upper ends inserted in the openings P and pivoted to the outer ends of the levers by means of cross-pins S, which extend transversely through the outer ends of the levers and through the upper ends of the bolts. The said bolts depend from the outer ends of the levers, pass through central openings in the blocks I, and are provided at their lower ends with nuts T, which bear against the under side of the said blocks and thereby secure the same to the bolts.

On one side of the center of the frame A is erected an inclosing-case, U, from the upper side of which depends a hook, V.

W represents a scale-beam of the usual construction, which is arranged in the case U and is suspended from the hook V by means of a yoke, X, which yoke is pivotally connected to the scale-beam at a suitable distance from one end thereof.

Y represents a yoke which is pivoted to the scale-beam at a slight distance beyond the pivotal connection of the yoke X, and depends from the scale-beam, as shown. A vertical rod, Z, has its upper end hooked to the yoke Y, and the lower end of the said rod extends downward below the beam of the case U.

A' represents a plate which is bolted to the upper side of the central cross-beam, C, and is provided on its upper side with an eye, B'.

C' represents a lever which is arranged transversely under the upper side of the center of the frame A, has one end connected to the opposing ends of the levers O by means of pivotal links D', and has its opposite extrem-



ity pivoted to the lower end of the rod Z. A yoke, E', is pivotally connected to the eye B', and has the upper ends of its arms pivoted to a fulcrum-pin, F', that extends transversely through the lever C' at a slight distance from the inner end thereof.

G' represents a pair of platform-beams, which are arranged longitudinally in the upper portion of the frame A and are parallel with each other. On the upper side of the said beams G' are secured track-rails H', which are arranged in line with the track-rails of the railroad-track and form a part of the same. The beams G' are connected together near their ends by means of cross-bars I', the ends of which are bolted or otherwise secured to the under sides of the platform-beams. To the under sides of the platform-beams are secured hangers K', which are arranged adjacent to the standards F, there being as many of the said hangers as there are standards. The said hangers are each composed of a pair of depending arms, the lower ends of which are connected by transverse bolts or shafts M'. The levers H extend between the depending arms of the hangers K', and in the said levers, at suitable distances from their outer ends, are made vertical openings N'.

O' represents links which engage the transverse bolts or shafts M' and extend upward in the openings N', and have their upper ends pivoted on transverse pins or bolts P', which extend through the levers H and through the openings therein.

From the foregoing description it will be readily understood that the platform-beams are supported by the levers H, and that the latter are supported in their normal position by means of the levers O and C', and by the scale-beam W, which is connected to the free end of lever C'.

The operation of our invention is as follows: When a car is rolled onto the track-rails on the platform-beams G', its weight causes the said platform-beams to descend, and thereby lower the inner converging ends of the two series of levers H. As the said levers have their converging inner ends connected to the outer ends of the levers O, it follows that the inner ends of the said levers O are raised, and consequently the free end of the lever C' is depressed, thereby drawing downward on the rod Z, which is pivotally connected to the scale-beam W, and consequently raising the latter. The said scale-beam is provided with the customary weights, by means of which the exact weight of the car on the platform-beams may be ascertained, as will be readily understood. By having the two series of levers H at opposite ends of the frame, and by employing the levers O to connect the said levers H to the lever C', the weight of the car on the platform-beams is distributed evenly to both ends of the said beams, although one end of the car may be more heavily weighted than the other.

In order to enable the levers O to withstand

the severe strain to which they are sometimes subjected, the said levers are provided with trusses on their upper sides, as shown.

Having thus described our invention, we claim—

1. The combination of the frame A, the series of pivoted levers arranged in the ends of the frame, the levers of each series converging toward a common center, the blocks I, connected to the inner ends of the levers of each series, the longitudinal levers pivoted within the frame and having their inner ends close together and having their outer ends provided with the openings P, the pins S, inserted transversely through said openings, the bolts R, depending from said pins and passing through the blocks I, the nuts on said bolts below the blocks I, the scale-beam, and connections between the scale-beam and the longitudinal levers, as set forth.

2. The combination of the frame A, the cross-beam C within the same, the series of pivoted converging levers arranged in the ends of the frame, the longitudinal levers O, pivoted within the frame and having their outer ends connected to the ends of the converging levers and their inner ends brought close together, the scale-beam, the lever C', having its opposite ends connected, respectively, to the scale-beam and the levers O, the eye B' on the cross-beam C, and the yoke E', depending from the lever C' and pivotally connected to the eye B', as set forth.

3. The combination of the frame A, the series of converging levers pivoted in the ends of the frame, the blocks I, having the diverging ears K, the links L, having their upper ends pivoted between said ears and their lower ends connected to the inner ends of the converging levers, the longitudinal levers O, having their outer ends connected to the blocks I and their inner ends brought close together, the scale-beam, and connections between the scale-beam and the inner ends of the levers O, as set forth.

4. The combination of the frame A, the series of converging levers pivoted in the ends of the frame and having openings N' in their outer ends, the platform-beams, the hangers K', depending therefrom and composed of parallel arms passing on opposite sides of the levers, the bolts M', passed through the lower ends of said parallel arms beneath the levers, the bolt P', passed transversely through the opening N', the link O', engaging the bolts P' M', the scale-beam, and connections between the scale-beam and the converging levers, as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

JAMES W. BALLARD.  
HARVEY L. FISHER.

Witnesses:

E. H. BALLARD,  
N. S. JOHNSTON, Jr.