No. 704,065. Patented July 8, 1902.

J. MANES.

WEIGHING APPARATUS.

(Application filed Oct. 29, 1901.)

(No Model.)

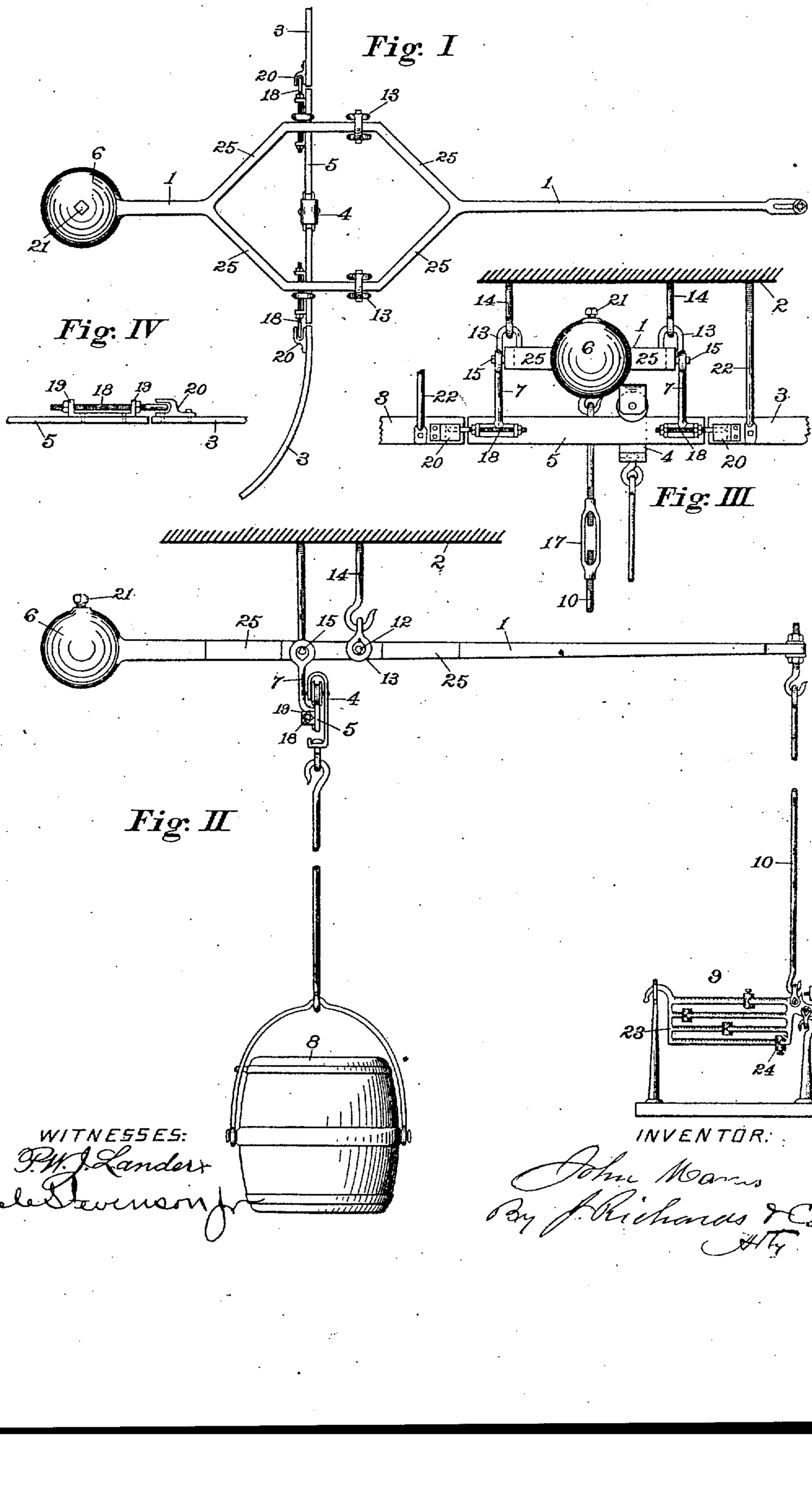

Fig. I

Fig. IV

Fig. III

Fig. II

WITNESSES:

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JOHN MANES, OF SAN FRANCISCO, CALIFORNIA.

WEIGHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 704,065, dated July 8, 1902.

Application filed October 29, 1901. Serial No. 80,393. (No model.)

To all whom it may concern:

Be it known that I, JOHN MANES, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Weighing Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to apparatus for weighing, especially heavy articles, while they are in transit and suspended on trolley-ways and without removal therefrom, being an improvement on an invention described in Letters Patent of the United States No. 660,097, dated October 16, 1900, and Letters Patent No. 677,526, dated July 2, 1901, granted to me for improvements in weighing-machines, also Letters Patent of the Republic of France No. 305,625, dated the 22d day of November, 1900, assigned and issued to the Suspension Beam Scale Company of San Francisco, California, U. S. A., and Letters Patent of the Kingdom of Belgium No. 153,327, dated the 15th day of December, 1900, also assigned and issued to the Suspension Beam Scale Company aforesaid.

My invention consists in a main scale-beam pivotally supported over a trolley-way, a movable section of the latter being suspended to the scale-beam, so that weights of any kind when passing over this suspended portion of the trolley-way will rest upon and be borne by the main scale-beam, communicating a predetermined portion of the weight to a second indicating scale-beam that bears but a portion of the stress, accordingly as the fulcra are arranged. My invention also consists in a means of permanently adjusting the main or weighing beam and in various constructive and operative features hereinafter more fully explained, and illustrated by drawings that form a portion of this specification.

The object of my invention is to supply improved devices to accomplish the purposes before named, and to this end I construct apparatus as shown in the drawings.

Figure I is a plan view of the main scale-beam and a section of the trolley-way beneath the same. Fig. II is a side elevation of my improved apparatus transverse to the trolley-way; Fig. III, a horizontal rear elevation at a right angle to Fig. II; Fig. IV, a bottom view of the devices for connecting or holding the trolley-way in alinement.

In moving heavy articles on trolley-ways, especially when these latter are placed overhead, it is desirable to ascertain the weight of such articles while in transit or without their being removed or disconnected from the trolley-carriage. The devices for this purpose are susceptible of modification in various ways affording more or less security from accident or derangement and at greater or less cost of construction, and my present invention relates to these latter-named features.

Referring to numerals of reference on the different figures of the drawings, 1 is the main scale-beam; 2, the ceiling to which it is suspended; 3, a trolley-way on which moves a roller-carriage 4.

5 is a free section of the trolley-way suspended to the main scale-beam 1 by the links 7; 8, a weight of any kind to be moved and weighed, and 9 an auxiliary scale connected by a rod 10 to the main beam 1, for purposes hereinafter explained.

6 is a hollow extension of the main beam 1 to receive permanent weights, such as lead shot, to produce a balance or equilibrium of this beam, made integral therewith and closed by a screw 21 when adjustment is made.

The fulcra 12 of the beam 1 rest in the shackles 13, suspended to the ceiling 2 by the hooks 14. The knife-edges 15 of the beam 1 receive the links 7, that are rigidly attached to and support the movable section 5 of the trolley-way, as before explained.

The vertical position of the movable section 5 of the trolley-way is adjusted vertically by means of a turnbuckle 17 in the rod 10 and is guided laterally, vertically, and also longitudinally by means of the adjustable stems 18, that pass through lugs 19 on the footings of the links 7 and by screw-nuts, as shown in Figs. III and IV. The stems 18 slide vertically in the slotted guides 20, the ends of the former bearing or touching therein to maintain longitudinal adjustment of the section 5, thus performing adjustment of this latter in two different planes without friction that will interfere with free movement in weighing.

The fixed ways 3 are suspended to the ceiling 2 by rods 22 or are supported in any other suitable manner.

The auxiliary or compound scale 9 is by preference provided with several beams 23, having the usual sliding weights thereon and graduated in multiples of the first or top beam in the usual manner, the bottom weight 24 being commonly employed to adjust the equilibrium of the scale-beams 1 and their connected parts.

The main beam 1 is integrally formed, preferably cast of suitable material, with dual members 25 to spread the fulcra 13 and 15 and give stability in the direction of the trolley-way 3.

The operation is as follows: When the parts are erected and connected, the weight 24 is set in the middle of its beam to permit adjustment each way, the screw 21 is removed, and the spherical chamber 6 is supplied with lead or other suitable heavy material until the beam 1 and its connections are in equilibrium. The chamber 6 is then closed, and any further adjustment required is made by the weight 24 on the auxiliary scale 9. A weight of any kind, as at 8 in Fig. II, suspended on the rolling carriage 4, can be moved on the section 5 of the trolley-way, so its weight will rest on the knife-edges 15 of the main beam 1, and the weight in pounds can be read on the graduated beams 23 of the auxiliary scale 9.

Having thus explained the nature and objects of my invention, I claim as new and desire to secure by Letters Patent—

1. In weighing apparatus, a main scale-beam, integrally formed with a divided or dual intermediate section, provided with fulcra and knife-edges on said dual members, means for adjusting the balance of said beam at one extremity thereof, a compound auxiliary scale-beam at the other extremity thereof, suitably connected thereto, a trolley-way, a vertically-movable trolley-section suspended from said knife-edges of the main scale-beam, and adjustable means for guiding said movable trolley-section relatively to said trolley-way, substantially as specified.

2. In weighing apparatus, a main scale-beam, integrally formed with a divided or dual intermediate section, fulcra and knife-edges on said dual members, a trolley-way, a vertically-movable free section of said trolley-way suspended from the knife-edges of said main scale-beam, suspensory links having transverse stems 18 adjustable longitudinally on said trolley-section, and slotted guides on the fixed portions of the trolley-way coöperating with said transverse stems to permit free vertical movement thereof, substantially as specified.

3. In weighing apparatus, a main scale-beam having fulcra and knife-edges, a trolley-way beneath, a vertically-movable section of said trolley-way suspended from said knife-edges, a roller-carriage or trolley adapted to traverse upon said trolley-way and its movable section, guides 20 on the fixed portions of said trolley-way, and longitudinally-adjustable stems 18 on said movable section, coöperating with said guides 20 to limit lateral and longitudinal movement while permitting free vertical movement of said trolley-section relative to the fixed portions of the trolley-way, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN MANES.

Witnesses:
ALFRED A. ENQUIST,
P. W. J. LANDER.