(No Model.)

3 Sheets—Sheet 1.

C. B. WANAMAKER.

WEIGHING ATTACHMENT FOR CARS.

No. 439,217. Patented Oct. 28, 1890.

Fig. 1.

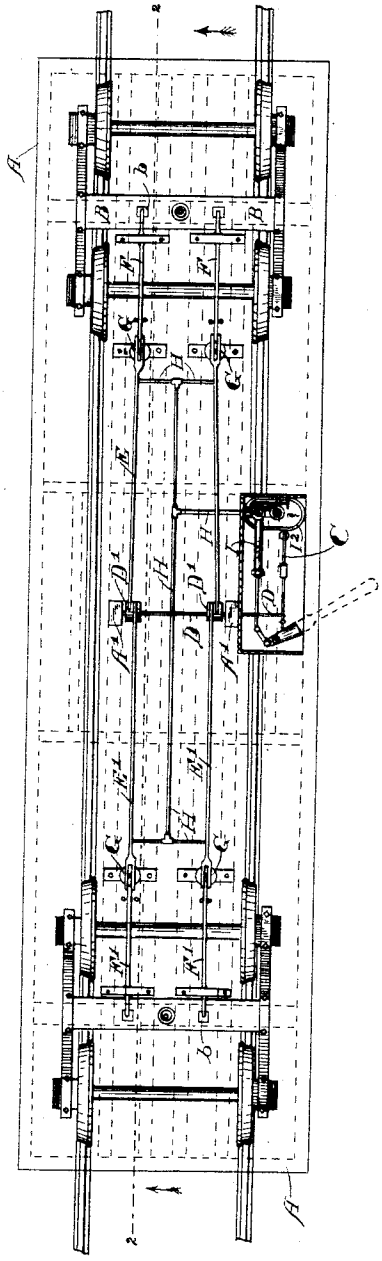


Fig. 2.

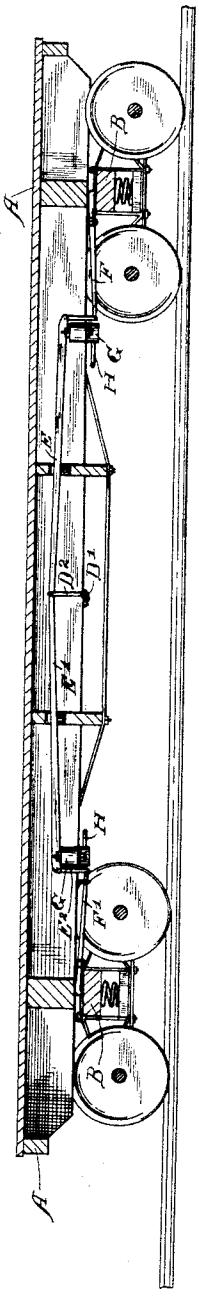
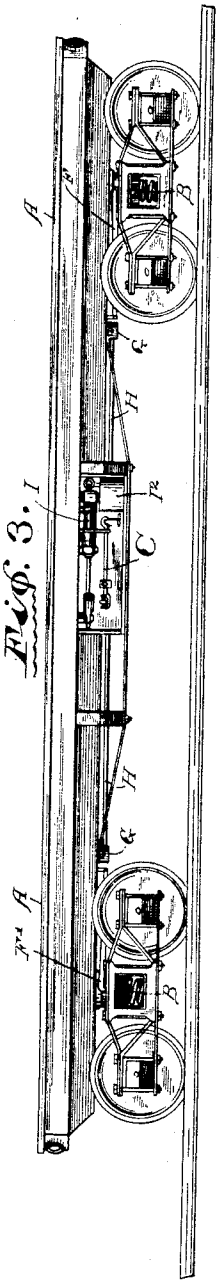


Fig. 3.



WITNESSES.

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(No Model.) 3 Sheets—Sheet 2.

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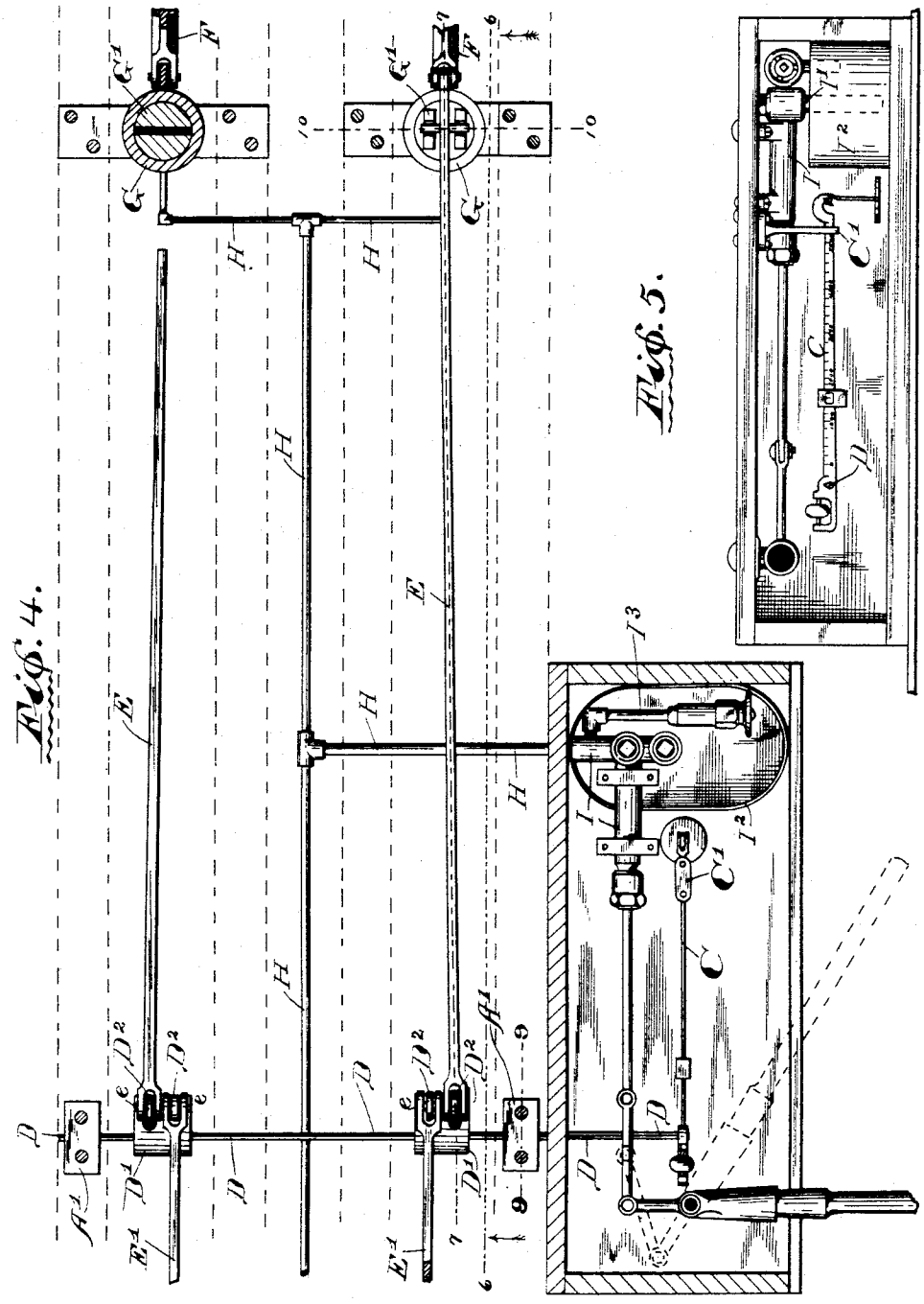


Fig. 4.

Fig. 5.

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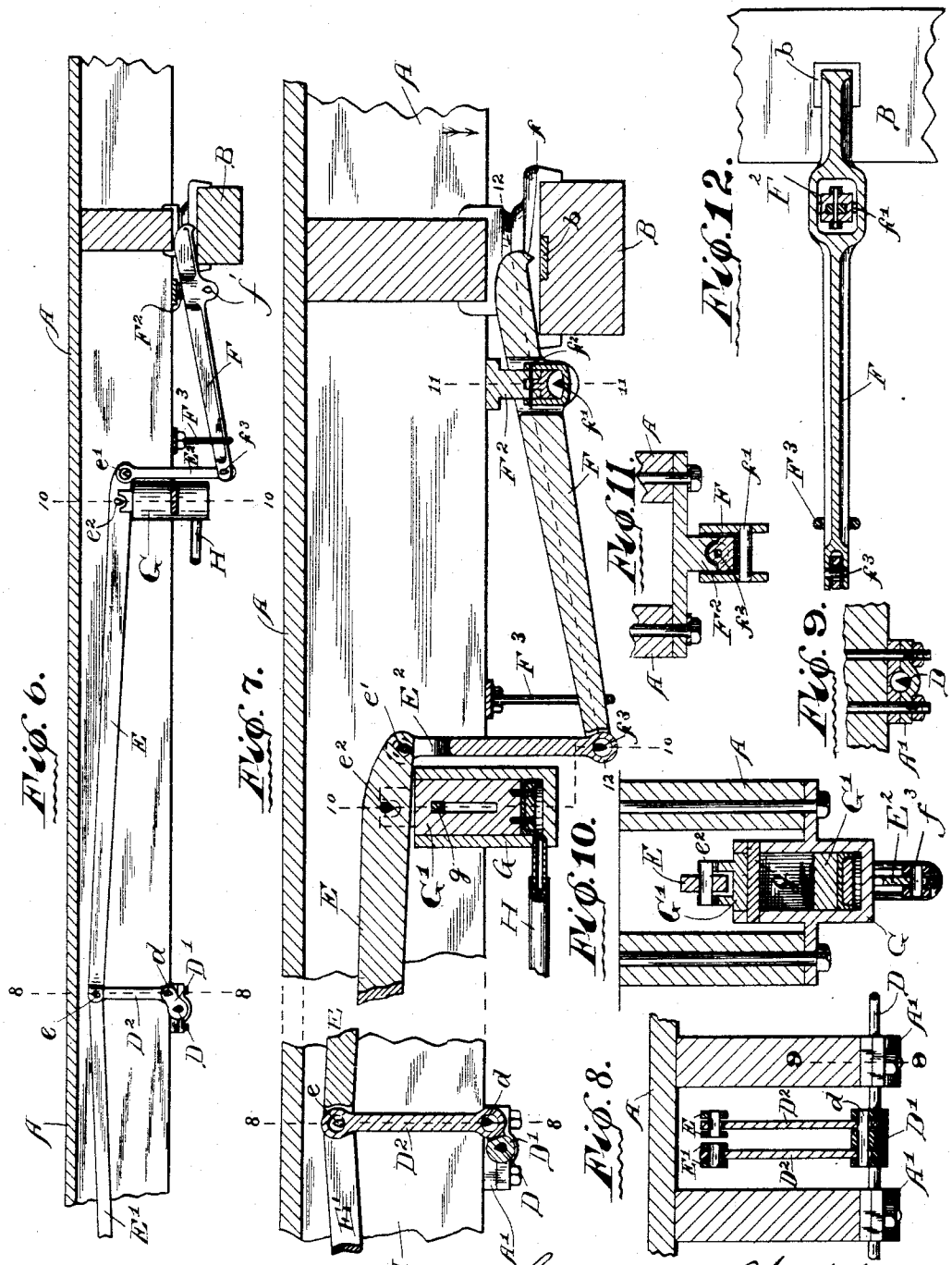
THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

CHARLES B. WANAMAKER, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO THE WANAMAKER CAR SCALE COMPANY, OF SAME PLACE.

WEIGHING ATTACHMENT FOR CARS.

SPECIFICATION forming part of Letters Patent No. 439,217, dated October 28, 1890.

Application filed April 14, 1890. Serial No. 347,861. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. WANAMAKER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Weighing Attachments for Cars, of which the following is a specification.

My present invention relates, generally, to the same subject-matter as that shown and described in my application, Serial No. 336,155, filed January 7, 1890; and it consists in a new and improved construction and arrangement of parts whereby the object of said invention is accomplished, as will hereinafter be first fully described, and then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a top or plan view of the running-gear of a car and of the mechanism of my invention, the platform or body of the car being shown in outline and the frame-work thereof in dotted lines; Fig. 2, a longitudinal sectional view looking upwardly in the direction of the arrow from the dotted line 2 2 in Fig. 1; Fig. 3, a front elevation; Fig. 4, a plan view of the scale and one set of the parts connected thereto on a larger scale; Fig. 5, a front elevation of the scale and immediately adjacent parts separately; Fig. 6, an elevation of the mechanism as seen when looking upwardly in the direction of the arrow from the dotted line 6 6 in Fig. 4; Fig. 7, a sectional view, on an enlarged scale, of the working portions thereof on the dotted line 7 7 in Fig. 4; Fig. 8, a transverse sectional view looking toward the left from the dotted line 8 8 in Fig. 7; Fig. 9, a detail sectional view on the dotted line 9 9 in Fig. 8; Fig. 10, a detail sectional view looking toward the right from the dotted line 10 10 in Fig. 7; Fig. 11, a detail sectional view looking toward the right from the dotted line 11 11 in Fig. 7, and Fig. 12 a detail horizontal sectional view looking downwardly in the direction of the arrow from the dotted line 12 12 in Fig. 7.

In said drawings, the portions marked A represent the frame-work of the car; B, the running-gear; C, the scale-beam; D, a rock-shaft on which said scale-beam is mounted; E E E′ E′, pairs of levers connected to said rod and running thence to near the bolsters of the running-gear; F F F′ F′, sets of levers connected to the ends of levers E and running thence to the bolsters; G, cylinders containing pistons G′, adapted to be operated to throw the scale mechanism into operation; H, pipes running from said cylinders to a pump located, preferably, near the scale-beam, as in my aforementioned application.

The body A and running-gear B of the car are or may be of any ordinary and well-known construction and need no special description. To them or to suitable hangers connected thereto are attached the bearings for my present invention. As at present arranged, all this mechanism is attached to the body A, except that small plates *b* are provided (see particularly Fig. 7) with which the points of the levers F F F′ F′ will come in contact.

The scale-beam C is or may be an ordinary scale-beam, and it is rigidly mounted on the rock-shaft D at the rear end, and is preferable guided and steadied at its front end by a hanger C′. It is provided with the usual weights and adjusting devices common to scale-beams.

The rock-shaft D rests loosely in bearings or hangers A′ depending from the under side of the car-body, as shown most plainly in Figs. 8 and 9, and carries rigidly attached thereto small projecting arms D′, in the ends of which are mounted short knife-edge shafts *d*, which pass through holes in the lower ends of the links D^2, which links extend up and engage with similar knife-edge shafts *e* on the levers E E′. These arms D′ extend in the same general direction from the rock-shaft D as does the scale-beam C, although preferably at somewhat of an angle therewith. When at rest, said rock-shaft lies loosely on the bottom of the bearing, as shown in Fig. 9. Its upper side is a knife-edge, and when the scale is in operation this edge bears against the upper side of said bearings.

The pairs of levers E E and E′ E′ are connected to the rock-shaft D by links, as just described, and extend thence past the cylin-

ders G, and are connected to the arms F F F′ F′ by links E^2. As shown most plainly in Figs. 1 and 4, the individual levers of each pair are arranged substantially parallel with each other and at equal distances from a central line running longitudinally of said car, and thus reach four points substantially equidistant from the center of said car. These levers E E E′ E′ are provided with short knife-edge shafts *e*, which engage with the links D^2 with knife-edge shafts *e′*, which engage with the links E^2, and with knife-edge shafts e^2, which engage with the pistons of the cylinders G.

The pairs of levers F F and F′ F′ are substantially continuations of the pairs of levers E E and E′ E′, and with said pairs of levers E E and E′ E′ form substantially pairs of compound levers. As just stated, they are connected to said levers E E and E′ E′ by links E^2. They are mounted in hangers F^2, and their extreme ends (see particularly Figs. 6 and 7) are formed substantially like ordinary scale knife-edges, and are adapted to come into contact with the plates *b* on the bolsters of the running-gear B. Near the ends which are connected to the levers E and E′ they pass through small supporting-hangers F^3, which carry the weight of these ends and of the ends of the levers E and E′ when the weighing attachment is not in use. The hangers F^2 are jointed, as shown most plainly in Figs. 7 and 11, and the two parts are connected together with a bolt or pintle f^2. This permits the slight rocking which may be necessary in order that the points *f* shall come squarely upon the plates *b*, notwithstanding any oscillation of the car. Said levers F and F′ are preferably so formed that the hangers F^2 shall pass through them, as shown in Figs. 7, 11, and 12, and are provided with knife-edge shafts *f′*, which engage with said hangers. They are also divided or bifurcated at the rear ends, where they engage with the links E^2, and have knife-edge shafts f^3, whereby said engagement is effected.

The cylinders G are firmly secured to the under side of the car upon appropriate framework or hangers, as shown most plainly in Figs. 7 and 10. The arrangement is best shown in Fig. 4, in which one of said cylinders is shown in horizontal section. As shown most plainly in Fig. 7, the pipes H communicate with the lower ends of said cylinders underneath their pistons. The pistons G′ to said cylinders are fitted therein and provided with appropriate packing to prevent leakage, as shown, and are adapted to be forced upwardly when pressure is produced by the action of the pump and lift the levers of the weighing apparatus, which in turn lift the car-body from its bearings on the running-gear. Said pistons have transverse slots cut through them, and through these slots pass bars *g*, which are firmly attached to the cylinders, and which prevent more than a predetermined movement on the part of said pistons. This is so that the weighing apparatus after it is brought into proper relation cannot be forced farther by any use of the pump. This movement of the pistons brings them up so that the yoke-shaped tops thereof shall come in contact with the knife-edges e^2 on the levers E and E′ and raise said levers, and also through the links E^2 raise the levers F F′, and also through the links D^2 and the arms D′ rock the rock-shaft D on which the scale-beam is mounted, and thus enable the weighing to be done. The relation of the pistons to the knife-edges e^2 is best illustrated in Fig. 7.

The pipes H lead from the cylinders G to the pump I in the manner which is shown most plainly in Figs. 1 and 4, and as will be readily understood. The pump I, with which said pipes connect, is shown as an ordinary force-pump, as in my aforementioned former application; but any other suitable pump may be used. A suction-pipe I′ is shown as extending down into a fluid-tank i^2, and there is also shown a by-path pipe I^3 with a relief-valve attachment, all substantially as in said aforementioned application. The pump and tank may, however, be located at a distance, as on the locomotive, and while oil is the fluid generally used air or any other suitable fluid may be substituted.

The general operation of my said invention is as follows: When it is desired to weigh a load, the pump is operated, which forces the fluid from the source of supply through the pipes H into the cylinders G, and the pistons G′ are thus operated, which raises the levers E E′ and they the levers F and F′, throwing the weight of the car-body and the load thereon onto said levers. The transverse bars *g* prevent the pistons from being forced up too far, and also cause the several corners of the car to stop at the same height, notwithstanding that the load may be unequally distributed on said car. As will be readily understood, the scale-beam acts as a lever on the rock-shaft D, by which the other levers may be moved, and said scale-beam, being properly adjusted and graduated, the placing of weights thereon weighs the load on the car in the ordinary and well-known manner. The levers being arranged as shown and described, a very slight weight upon the scale-beam will exert a very large pressure upon the points of the levers F, and thus a very heavy load can be weighed with but a comparatively small weight on the scale-beam.

One particular advantage of my present invention over that shown in my said former application is that all the parts (except the plates *b*) which are provided specially for my invention are attached to the car-body and not to the running-gear, and therefore running-gears can be removed from cars fitted with this attachment and others substituted without in any way disturbing said weighing attachment. To those experienced in railway work this advantage will be obvi-

ous, for it is frequently the case that running-gears become broken or worn so as to be unfit for use while the body of the car is still in good condition, and by my present arrangement by the placing of the small simple plates *b* on the bolster, no other change need be made.

As will be noticed by the examination of the several figures of drawing, the arrangement, as in my former applications for patent, is such that the edges of the knife-edge shafts when the scale is out of use are not in contact with the bearing-surfaces, but instead said knife-edge shafts rest on their backs, thus keeping said edges from unnecessary wear.

The drawings show the apparatus in the situation it occupies when not in use.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a weighing apparatus for cars, of a rock-shaft, a scale-beam rigidly mounted on said rock-shaft, arms also rigidly mounted on said rock-shaft, and a series of levers and links connecting said arms with said levers, said apparatus being mounted on the car-body, substantially as set forth.

2. The combination, in a weighing apparatus for cars, of a series of levers secured to the under side of the car-body, a scale-beam connected to said series of levers, cylinders arranged below knife-edges on certain of said levers, and a pump connected with said cylinders, whereby the pistons thereof may be forced upwardly against said knife-edges, and said levers thus be operated to sustain the weight of the car-body and its load, substantially as set forth.

3. The combination, in a weighing apparatus for cars, of the running-gear, the car-body, a scale-beam, a series of levers connected thereto and interposed between the car-body and the running-gear, the terminating levers being suspended upon the under side of the car-body and extending over and adapted to engage with the upper surfaces of the bolsters of the running-gear, hangers for securing said levers to the under side of the car-body, said hangers being divided and the parts secured together by a pivot-bolt running transversely to the knife-edges on the levers, and said knife-edges, substantially as shown and described.

4. The combination, in a weighing apparatus for cars, of the car-body, the running-gear thereto, the scale-beam, a series of levers connected thereto, and apparatus for operating the same secured to the under side of the car-body, the terminal levers F and F′ being suspended to said car-body by hangers F^2 and F^3 and extending over the bolsters and adapted to raise the car-body and its load by being lifted into contact with said bolsters, said hangers F^2 being divided, and thus capable of oscillation, substantially as set forth.

5. The combination, in a weighing apparatus for cars, of the car-body, hangers or supports secured to said car-body, levers mounted in said hangers or supports, cylinders also mounted in hangers or supports, the pistons whereof are adapted to come in contact with knife-edges on said levers, links connecting said levers, a rock-shaft, arms thereon, links also connecting said levers with said arms, and the scale-beam on said rock-shaft, said several parts being arranged and operating substantially as set forth.

6. The combination, in a weighing apparatus for cars, of a series of levers suspended to the car-body and adapted to be forced into position to carry the weight of said car-body and its load, cylinders, and pistons for effecting such result, said pistons being slotted and provided with bars passing through said slots and attached to the cylinders, whereby the movement of said pistons is limited as predetermined, substantially as set forth.

7. The combination, in a weighing apparatus for cars, of the rock-shaft D, the scale-beam C thereon, the four levers E E and E′ E′, links D^2, connecting said shaft to said levers, the four levers F F F′ F′, links connecting the corresponding ones of said sets of levers together, hangers F^2 and F^3, carrying said levers F F and F′ F′, the running-gear B, bearing-plates on the bolsters of said running-gear with which the points of said last-mentioned levers will come in contact when the scale apparatus is operated, and means whereby said operation is effected, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 9th day of April, A. D. 1890.

CHAS. B. WANAMAKER. [L. S.]

Witnesses:

CHESTER BRADFORD,

JAMES A. WALSH.