(No Model.)

2 Sheets—Sheet 1.

J. N. BROWN.

WEIGHING TRUCK.

No. 569,997. Patented Oct. 27, 1896.

Fig. 1.

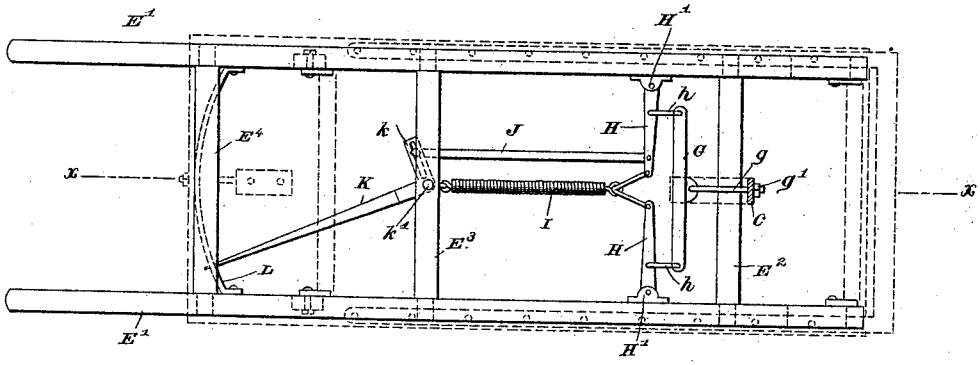

Fig. 8.

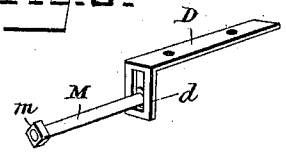

Fig. 2.

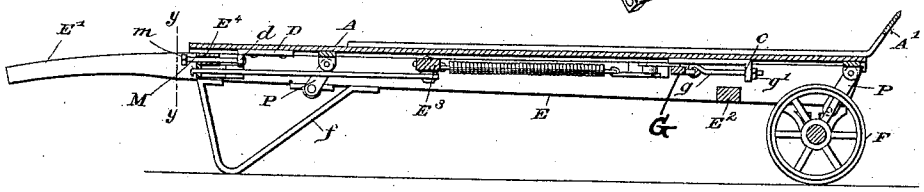

Fig. 3.

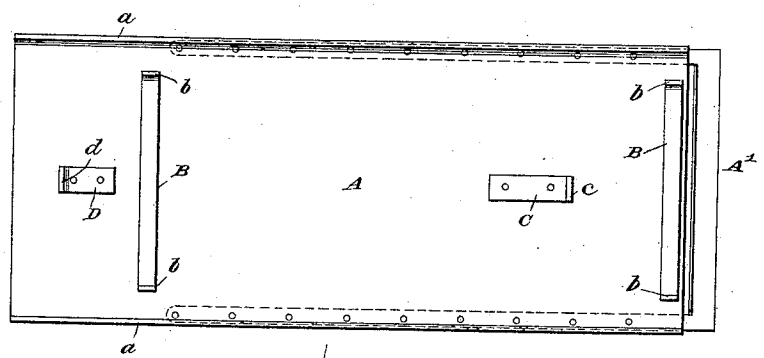

Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

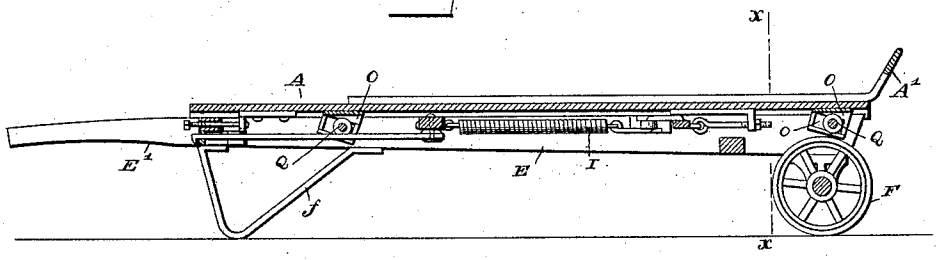


Fig. 6.

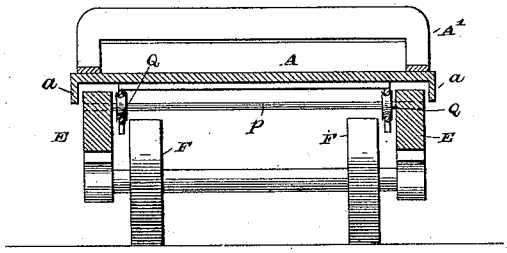
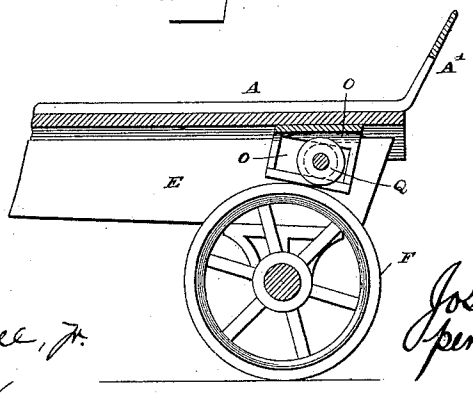


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH N. BROWN, OF MUSKEGON, MICHIGAN.

WEIGHING-TRUCK.

SPECIFICATION forming part of Letters Patent No. 569,997, dated October 27, 1896.

Application filed September 8, 1893. Renewed March 5, 1896. Serial No. 581,045. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH N. BROWN, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Weighing-Trucks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to hand-trucks which are commonly employed in warehouses and stores and on docks and other places of lading for moving boxes, barrels, and other packages.

The object of my present improvements is to provide means for weighing a package or article placed upon the truck without requiring any complicated construction of the mechanical parts of the truck and weighing mechanism to effect this result.

The invention therefore consists in the construction, arrangement, and combination of parts, substantially as will be hereinafter described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a bottom plan view of my improved weighing attachment for hand-trucks. Fig. 2 is a longitudinal section of same on the line $x\ x$ of Fig. 1. Fig. 3 is a bottom plan view of the truck-platform. Fig. 4 is a cross-section on line $y\ y$ of Fig. 2. Fig. 5 is a longitudinal section similar to Fig. 2, showing modified means for movably connecting the platform with truck-frame, so that the former may have the same double movement attained by the hinged construction shown in Fig. 2. Fig. 6 is a cross-sectional elevation on line $x\ x$ of Fig. 5. Fig. 7 is an enlarged partial sectional elevation of the foot end of truck, showing in detail the construction of the inclined track illustrated in Fig. 5. Fig. 8 is a perspective view of the bolt and angle-plate between the platform and the truck, whereby the two are movably connected together.

Similar letters refer to similar parts.

A indicates the platform of the truck, the forward or lower end of which is provided with a flange or foot A′.

E E designate the parallel side rails of the truck-frame, said rails being provided with handles E′ and also with the wheels F and the feet or supports f, as is usual with trucks of this character. The parallel side rails E are connected by means of the parallel cross-bars E^2, E^3, and E^4.

The truck-platform A is preferably made of a metallic plate or a sheet of metal having the longitudinal flanges $a\ a$, which fit down over the side rails E E of the truck-platform. The under side of the platform A is provided with two parallel transverse strips B B, having at their ends the right-angled downwardly-extending projections $b\ b$. These strips B, with their projections b, are clearly shown in Fig. 3. One strip B is located near one end of the platform A and the other near the other end. These projections b fit down between the inner edges of the parallel side rails E E of the truck-frame, while the aforesaid flanges $a\ a$ fit down on the outside of said side rails. The projections b are used for the purpose of holding the links or connections by means of which the platform is movably supported in a hinged manner to the truck-frame, as will be hereinafter more fully explained. The under side of the platform A is furthermore provided on a central longitudinal line with two angle-plates, one of which, D, has the right-angled projection d and is located near the hand end of the truck, while the other, C, has the right-angled projection c and is located near the foot end of the truck, or at least a short distance from said foot end, as is clearly shown in the drawings.

g designates a bolt which passes horizontally through the projection c on the angle-plate C, one end of said bolt being provided with a nut g', by means of which it is tightened or adjusted. The other end of the bolt g is attached to the transverse evener-bar G at its middle point. The ends of the evener-bar G connect by means of links $h\ h$ with the levers H H, whose inner ends are pivotally attached to the ear-plates H′ H′, which are secured to the inner faces of the parallel side bars E E of the truck-frame. The other ends of the levers H H lie near each other at the middle of the truck-frame and are both connected to one end of a longitudinal spring I, whose other end is fastened to the transverse bar E^3, which forms a part of the truck-frame.

Furthermore, it will be seen by referring to Fig. 1 that a rod or link J is pivotally attached to one of the levers H at one end, while at its other end it is connected to the slotted arm *k* of the pointer K, which pointer is pivoted by means of the pin *k'* upon the cross-bar E^3 at a point near where the spring I is attached to said cross-bar. The arm *k* of the pointer K is an angular arm, and the link J by acting on the arm *k* shifts the pointer K. The end of this pointer operates across the edge of an indicator L, on which may be marked figures designating the pounds, &c., to indicate the weight which may at any time be upon the platform of the truck.

Through the right-angled projection *d* of the plate D, which we have seen is attached to the platform A near the handle end of the truck, passes a bolt M, which likewise passes through the cross-bar E^4 of the truck-frame. That end of the bolt M nearest the handle E' is provided with an adjusting-nut. This bolt M serves the purpose of keeping the platform A from moving too far toward the foot end of the truck and is necessary because an extreme movement of the platform might endanger the weighing mechanism.

The platform A is supported in a hinged manner upon the truck-frame.

P P designate short strips or links, which are pivoted by means of short horizontal pins or studs to the right-angled projections *b b*, which extend downward vertically from the strips B underneath the platform A. These links P are also pivoted at their lower ends by means of similar short pins or studs to the side bars E. Thus it will be seen that the platform A may be permitted to swing upon the links P P, and can thus have a movement horizontally back and forth and also a movement vertically up and down in consequence of this peculiar arrangement for connecting the platform with the truck-frame. It is therefore to be particularly observed that the platform in my improved weighing-truck has a double movement when a weight is placed thereon, first, a downward movement toward the frame, and, second, an endwise movement toward the foot end of the truck.

As soon as the weight is placed upon the platform A the tendency is to press the said platform toward the truck-frame, thereby swinging the connecting-links P P downward, but as they move downward they also tilt toward the foot of the truck, and this action draws upon the spring I in consequence of the several connections which we have already seen, said spring holding the platform and keeping it from any undue movement, while simultaneously with the movement, through the interaction of the several levers, the pointer, and the indicator, the amount of the weight which is placed upon the truck may quickly be read off on the face of the indicator. Therefore it will be found desirable in arranging the parts of my weighing-truck to see to it that the connections P P are set on an angle, which will insure a direct downward motion of the platform when the truck is standing in an inclined position. The evener G, which I have mentioned in describing the arrangement of the mechanical parts, performs an important function in causing an equal strain to be imparted to the scale parts when the weighing operation is taking place in order that a more correct indication of the weight may be seen on the index-plate.

The links P P for hinging the platform to the truck-frame are only one form of means for connecting said platform to the truck-frame in such a manner that the platform may have a double movement, as hereinabove alluded to, comprising a downward movement toward the frame and an endwise movement toward the foot end of the truck. I wish it therefore to be distinctly understood that these hinges P P are given by way of example merely. In Figs. 5, 6, and 7 I have shown substitute means for the hinges whereby the same result in the way of a double movement is accomplished. In this modification I employ angle-plates, blocks, or strips of suitable form and size, which are secured to the under side of platform A near each end thereof, said blocks or pieces being designated by the reference-letters O O, and these pieces are provided with slots *o o*, to furnish inclined tracks, as clearly shown in Figs. 5 and 7. These inclined tracks are parallel to the longitudinal axis of the truck, that is, they lie in the same direction as said longitudinal axis, but they are inclined at an acute angle to the surface of the platform A, said inclinations of the tracks when the platform is in a horizontal position being from the handle end of the truck toward the foot end thereof, so that they are lowest at their ends nearest to the foot end of the truck, as is clearly shown in Figs. 5 and 7. Within these slots *o o*, and engaging the tracks thereby furnished, are peripherally-grooved rollers Q Q, secured on transverse axles *p p*, which are journaled at each end in the side rails E E of the truck-frame, there being obviously four of the wheels or rollers Q engaging the four tracks therefor, located at about the four ends of the truck. Thus it will be seen that there is hereby a roller connection furnished between the truck-platform and the truck-frame and that when the platform and frame move interrelatively or when the platform has a sufficient weight upon its surface to push it downward it will move not only downward, but in consequence of the inclined tracks will move endwise, which movement will, in consequence of the manner of the inclinations, be toward the foot end of the truck, and thus will be gained the double movement, of which I have already spoken, toward the foot end and downwardly toward the truck-frame. If the tracks were not inclined to the surface of the platform, but were parallel thereto, then the platform could have only

an endwise movement and not the double movement mentioned. The double movement, therefore, it will be seen, can be obtained just as easily by means of the roller arrangement as it can by means of the hinged joint; also it is conceivable that many other substitute arrangements may be employed in lieu of either the hinged connection or the roller connection, and I reserve the liberty of employing any mechanism whereby the aforesaid double movement can be achieved. The great excellence and preëminent superiority of the result obtained by this double motion of the platform is that the truck can be made to weigh accurately not only when it is in a nearly vertical position, that is, when inclined but a very few degrees, but also when it is inclined at a considerable angle from the vertical line. Ordinarily, as is well known, a weighing-truck of this character can be effectively employed for weighing purposes only when the truck is upright or in a vertical position.

The truck is almost useless, ordinarily, for taking weight when it is in a horizontal position. Now by connecting the platform and the frame by a hinged connection or some equivalent arrangement like the roller connection or some other analogous mechanism the truck will weigh effectively when it is at an angle of about forty-five degrees. By varying the angle at which the connecting-hinges are set the angle through which the weight can be correctly ascertained will be varied. This principle of a weighing-truck so constructed that the platform may move in the two directions indicated and thereby allow correct weights to be ascertained through a large varying angle is in practice found to be a feature of great importance.

Numerous changes in the exact construction and arrangement of the several parts may take place without varying from the true intent and scope of the invention, and I reserve the liberty of modifying and rearranging as may seem requisite to produce the best results.

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

1. In a truck or vehicle for moving objects, a weighing mechanism for ascertaining the weight of the transported objects while the truck is in a variably-inclined position, consisting in the combination with the truck-frame, of a platform, hinges connecting the platform and frame, an indicator, and operating mechanism therefor connecting the platform and frame, substantially as described.

2. In a truck or vehicle of the character herein described, a truck-frame having wheels at one end and handles at the other so that it can be lifted for the purpose of transporting objects when it is in a variably-inclined position, in combination with the weighing-platform extending from end to end of the frame, hinging devices for connecting the platform and the truck-frame, and an indicator operative when a weight is upon the platform to ascertain the amount of such weight, substantially as described.

3. In a truck or vehicle for moving objects, a weighing mechanism for ascertaining the weight of the transported objects while the truck is in a variably-inclined position, consisting in the combination with the truck-frame, of a platform, hinged links for connecting the platform and the frame, said links being inclined to both the frame and platform, and spring mechanism connecting the platform with the frame, and an indicator, substantially as described.

4. In a truck or vehicle for moving objects, a weighing mechanism for ascertaining the weight of the transported objects, while the truck is in a variably-inclined position, consisting in the combination with the truck-frame, of a platform, hinges connecting the frame and platform, a device for movably connecting one end of the platform to the truck so as to limit the movement of the platform, a spring-leverage arrangement, and an indicator mechanism for noting the weight which may be placed upon the truck, substantially as described.

5. The combination of the truck-frame, the platform, the hinges connecting them, the levers pivoted to the frame and provided with a spring attached to the frame, an evener-bar connected to the platform and to the levers and an indicator operated by said levers, substantially as described.

6. In a truck or vehicle for moving objects, a weighing mechanism for ascertaining the weight of transported objects while the truck is in a variably-inclined position, consisting in the combination with the truck-frame and the platform, of inclined hinges connecting the frame and the platform, a pair of spring-provided levers, an evener-bar linked thereto and connected to the platform, and an index-finger operated by said mechanism, substantially as described.

7. The combination with the truck-frame, of the platform, having a flange or foot, the pivoted links connecting the platform to the truck with the hinge connection, a bolt movably connecting one end of the platform to the truck so as to limit the movement of the platform, a spring-leverage arrangement and an indicator mechanism for noting the weight which may be placed upon the truck, all arranged to operate substantially as described.

8. In a truck or vehicle for moving objects, a weighing mechanism for ascertaining the weight of the transported objects while the truck is in a variably-inclined position, consisting in the combination with the truck-frame of a platform and hinges, consisting of pivoted links which are pivoted to the platform and to the frame and which occupy an

inclined position to both the frame and platform in order that the platform may have both an endwise movement and a downward movement, together with suitable indicator mechanism for noting the weight of the transported objects, substantially as described.

9. The combination with the truck-frame and the platform A, of the links P P, pivoted to the platform and to the truck-frame, the levers H H pivoted to the frame and connected to a spring I, which is attached likewise to the frame, an evener-bar G connected by links *h h* to the levers H H and by a bolt *g* to the platform, and an indicator K having an arm *k*, and connected by a link J with one of the levers H, substantially as described.

10. In a weighing-truck, the combination of the truck-frame, the platform and the hinges connecting them which are inclined to the frame and the platform, together with the weighing mechanism operated by the platform, substantially as described.

11. In a truck or vehicle for moving objects, a weighing mechanism for ascertaining the weight of the transported objects while the truck is in a variably-inclined position, consisting in the combination with the truck-frame, of a platform inclined hinges connecting the platform and the frame said hinges being located near each end of the platform, an indicator and operating mechanism therefor connecting the platform and frame, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH N. BROWN.

Witnesses:
GERTRUDE VOGEL,
WILLIAM CARPENTER.