

T. FAIRBANKS.  
Platform Scales.

No. 16.381.

Patented Jan. 13, 1857.

Fig. 1

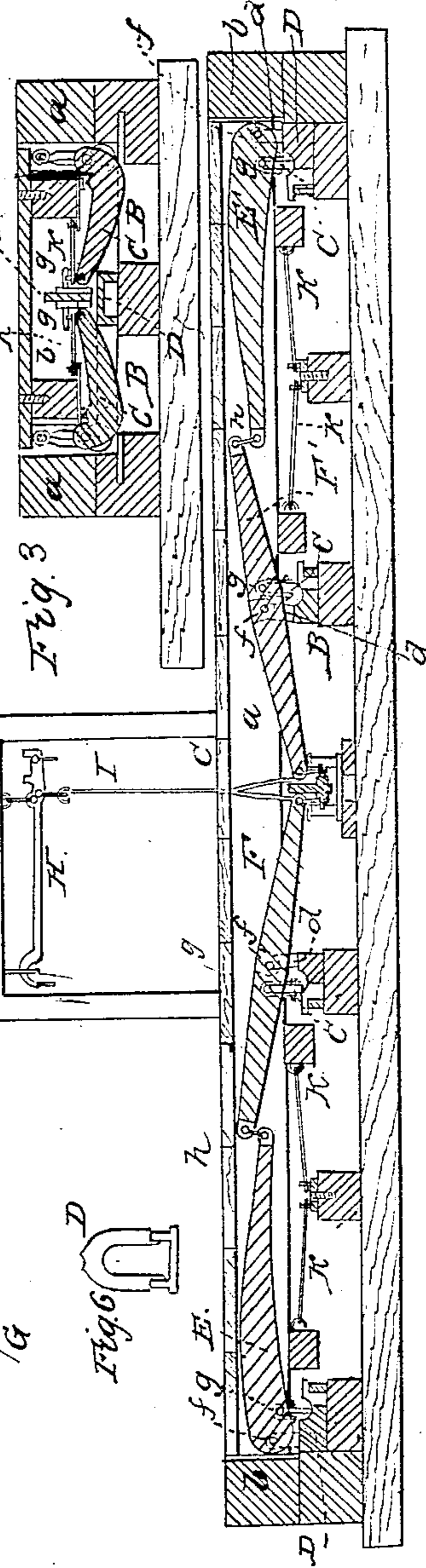
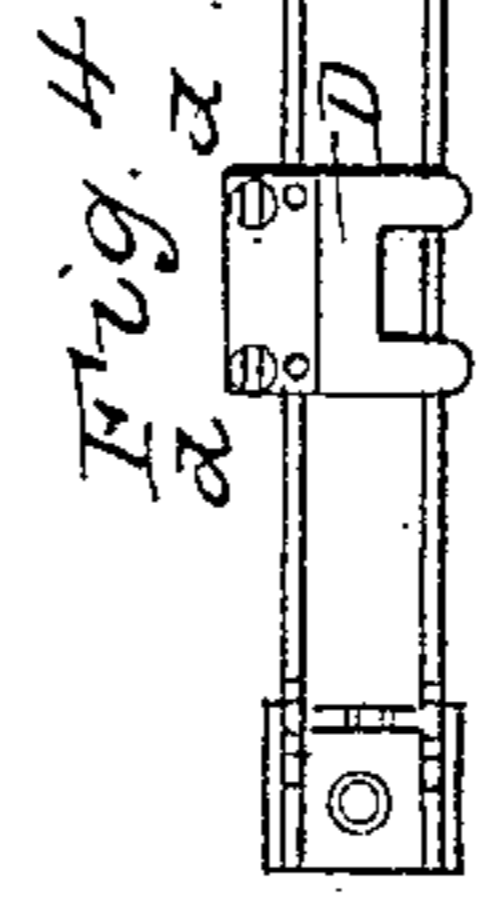
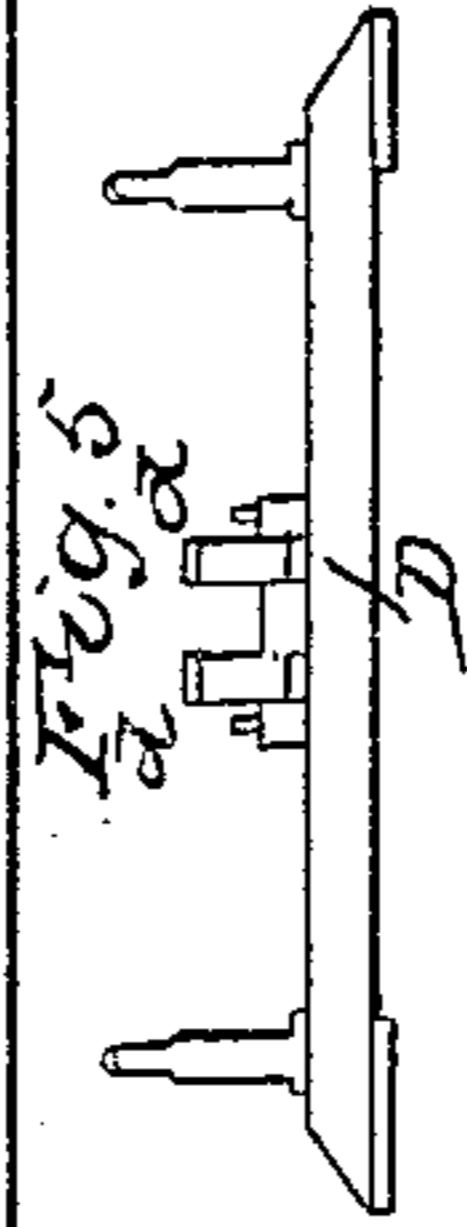
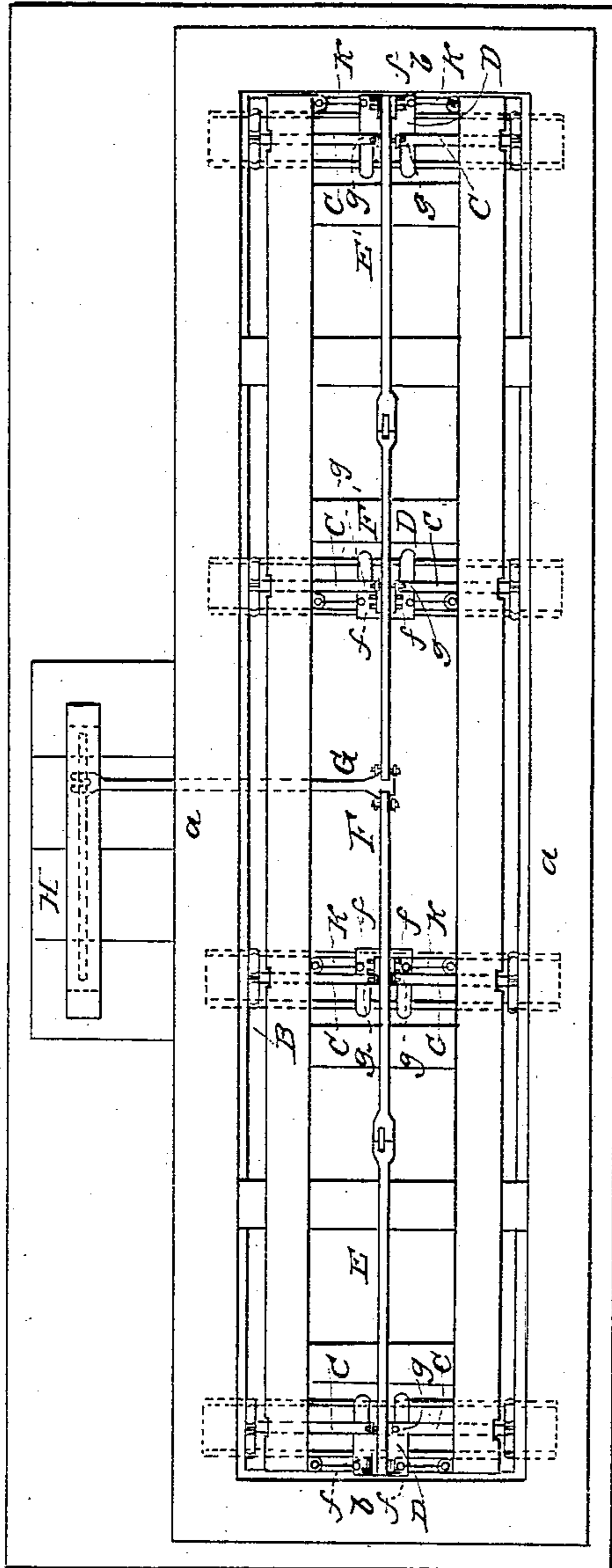
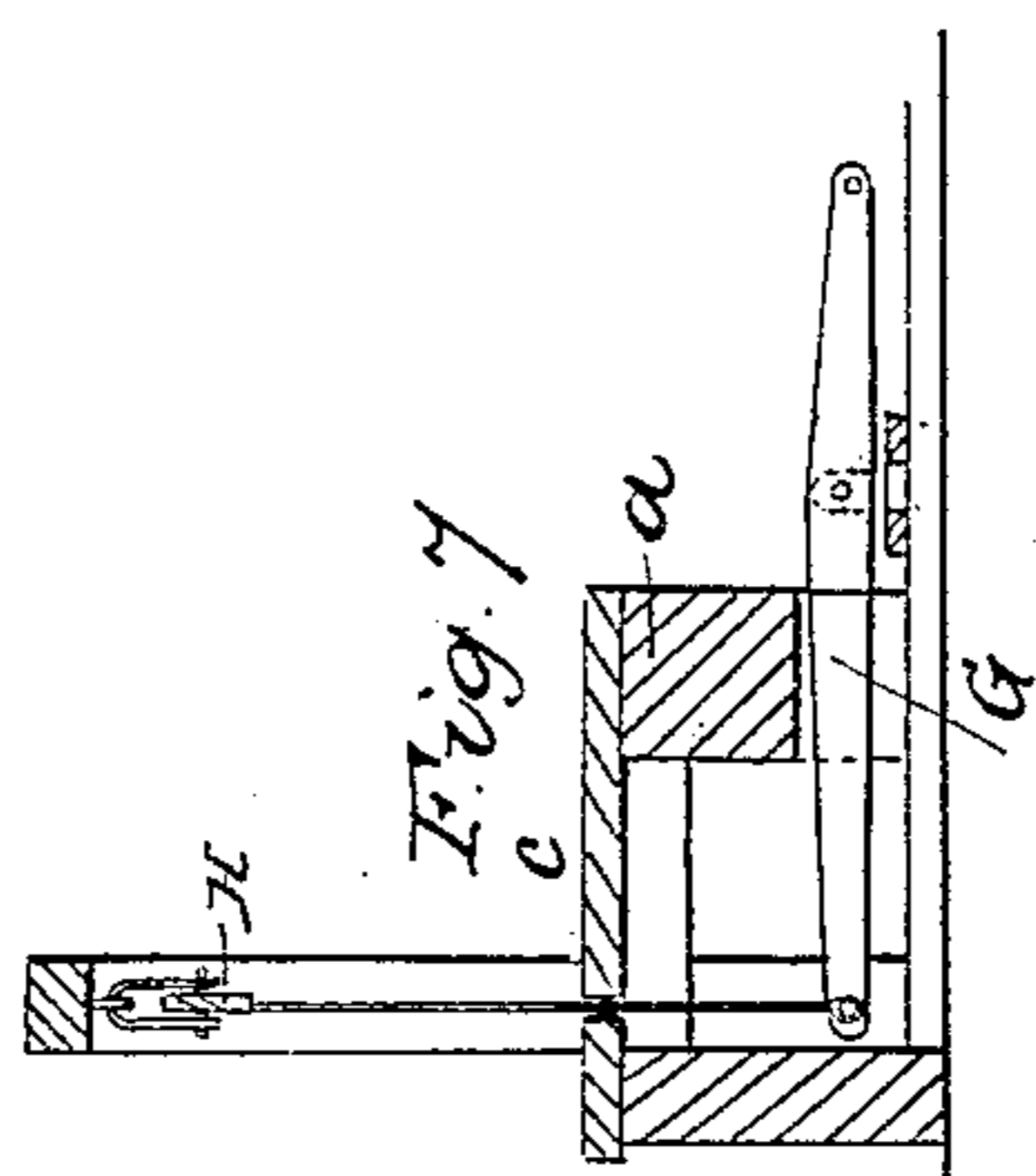
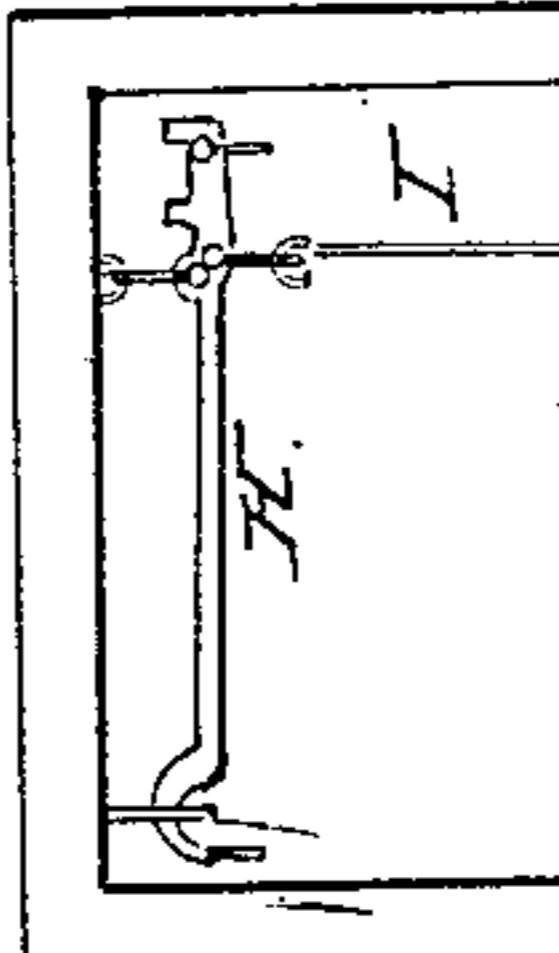


Fig. 2





# UNITED STATES PATENT OFFICE.

T. FAIRBANKS, OF ST. JOHNSBURY, VERMONT.

## PLATFORM-SCALE.

Specification forming part of Letters Patent No. 16,381, dated January 13, 1857; Reissued March 31, 1857, No. 445; again Reissued January 13, 1874, No. 5,726.

*To all whom it may concern:*

Be it known that I, THADDEUS FAIRBANKS, of St. Johnsbury, in the county of Caledonia and State of Vermont, have invented an Improved Platform-Scale for Weighing Railway-Cars Either Alone or in Train or for Various other Useful Purposes; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, exhibits a top view of the framing and mechanism of said platform scale. Fig. 2, a vertical, central and longitudinal section of the same. Fig. 3, a transverse section taken through one pair or set of the bearing levers. Fig. 4, is a top view of the arched frame or "suspension" bridge of the bearing levers. Fig. 5, is a side elevation of the same. Fig. 6, an end view of it. Fig. 7, will be hereinafter described.

In these drawings, A, represents a long frame or platform which is composed of horizontal stringers *a, a*, united by cross ties *b, b*, and covered by flooring, *c*, such flooring being generally omitted in Fig. 1, in order to show more conveniently the system of levers by which the platform is supported and operated. This platform is arranged within a pit or chamber, B, in the usual way, and is supported on several sets of multiplying bearing levers, C, C, which are arranged under the platform and in arched frames or suspension bridges D, D, as seen in the drawings—there being a set of two of said levers in each of said bridges, which are arranged within the pit, and supported on its bottom by masonry or piers. Each of these frames I usually construct of cast iron and with bearings, *d, d*, for the knife edge fulcra of a longitudinal lever to rest upon; also, with two arched standards, *e*, extending upward from its two ends, and by the sides of the platform, A, as shown in the drawings.

To the arched standard of each suspension bridge, D, the two bearing levers, C, C, of said bridge are suspended at or near their outer ends, their inner ends being hung to knife edge bearings *g, g*, of one of the longitudinal levers E, or F, or E', F'. Each of said longitudinal levers has its knife edge journals, *f, f*, resting on the bearings, *d, d*, of the suspension bridge; and the knife edge bearings, *g, g*, by which the bearing levers are suspended to the said longitudinal levers

are arranged near to the fulcra of said levers as shown in the drawings. I would remark that each of the longitudinal levers, F, F', has its fulcrum arranged in the middle, and therefore in consequence of such an arrangement of its fulcrum, and the arrangement of its knife edge bearings, which support the hanging loops of its bearing levers, C, C, such lever F, F' becomes not only a "multiplying" but an "equalizing" lever, the other two levers, viz E, E', being "multiplying" levers.

The terms "multiplying" and "equalizing" as applied to the levers as well as the functions to be performed by such lever so constructed will be readily understood by scale makers. Each two levers E E', or F, F', are arranged with respect to each other, and connected by a link, *h*, as shown in Fig. 2—each lever, F, or F', being looped to the inner arm of a horizontal lever, G, extended at right angles to them and connected to the steelyard or weighing lever H, by a connection rod, I, as shown in Figs. 2 and 7, the latter being a transverse section of the weighing apparatus and taken through the middle of the same.

K, K, K, the counter sway rods or chains, such as are generally used to prevent injurious, longitudinal or lateral swaying of the platform.

When my improved apparatus is used for weighing railway cars or trains its platform is to be furnished with rails and arranged in line with the railway track so that cars or carriages of the railway may pass off and on said platform.

The advantages to be derived from my peculiar arrangement of the longitudinal and bearing levers may be stated as follows: One great advantage consists in the facility by which the mechanism may be set up in consequence of its bearing levers and their supporting frames or suspension bridges being arranged at right angles with respect to the longitudinal equalizing and multiplying levers. The advantage of having an equalizing and multiplying lever in one bar as described, is that by means of it, the machinery may be readily adapted to a platform of any desirable length. I am aware, however, that the employment of an equalizing and multiplying lever is not new in platform scales. Its use, however, in connection with the longitudinal and multiplying levers



with which it is connected, gives to the combination important advantages. I am aware that it is not new to employ a series of transverse bearing and multiplying levers, 5 and a multiplying lever confined to a long longitudinal shaft and an arm extended transversely therefrom, the inner ends of the bearing levers being suspended from the shaft at one side of its axis, while such shaft 10 rested on bearings applied on the other side of its axis. This is the arrangement and combination shown in the patent of El-nathan Sampson granted July 25th 1854. My invention not only differs from the lat- 15 ter, but has important advantages over it, as it completely avoids the difficulty incident to the longitudinal shaft, and which prevents the apparatus from weighing correctly, trains of varying lengths and large 20 weights. The effect of tension on such shaft is such as to bend its loop supporting bearings, more or less, out of place, or their true position with respect to the supporting bearings of the shaft. This, in practice has 25 been found to prevent the apparatus from weighing correctly, or at least, renders it very uncertain for determining weights widely varying from each other. The bad results of the effect of torsion on so long a 30 shaft as is required to extend underneath a platform capable of supporting a train of twenty or thirty railway cars, render a weighing apparatus dependent on such a device of little or practical value. While 35 the sets of transverse and multiplying levers C, C, C, C, secure advantages in supporting the platform, the longitudinal lever, E and the longitudinal lever F, made so as to operate as an equalizing 40 and multiplying lever, perform their duty correctly without any of the bad effects of torsion and enable me to continue the system and platform to any desirable extent, 45 producing thereby a scale which for railway purposes is perfect in its action, however great may be the difference of the loads weighed upon it. The peculiar manner of constructing the suspension bridge insures great strength to the support of the 50 bearing levers and also enables us to extend the arched standards up by the sides of the platform, thus reducing the depth of the pit or the walls or frame thereof in comparison to what would be neces- 55 sary were the standards arranged underneath the platform in the usual way. In connection with this arrangement, the levers C, C, and their bearings are placed entirely below the platform, as seen in Fig. 3. Room 60 is thus afforded between the timbers of the

of the longitudinal levers E, F. Thus with the minimum of depth of pit we secure the necessary room for vertical play of the longitudinal levers. 65

I do not claim a combination of levers wherein four platform bearing levers are multiplying levers and radiate from one common center, and are there suspended to a multiplying lever connected with an 70 equalizing lever as I am aware that such is a common method of making a platform scale. Nor do I claim the combination of a multiplying lever, an equalizing lever and an equalizing and multiplying lever, as I 75 am aware that such have been employed and the platform thereof upheld by being made to rest directly on the first and last of said levers. This differs essentially from my combination and arrangement, as by such I 80 am enabled to employ an additional series of levers, viz. the transverse levers C, C, C, whereby I gain an extra or many fold increase of leverage and thus render the weighing apparatus useful for determining the 85 weights of railway carriages. Nor do I claim the employment of a series of transverse and multiplying levers, with a lever composed of a long longitudinal shaft and an arm arranged transversely and project- 90 ing from such shaft, the transverse bearing levers of the platform being applied to the long shaft with reference to its axis as above described but

I claim— 95

1. My improved arrangement and combination of four bearing multiplying levers, C, C, C, C, a multiplying lever E, and a lever F, made as described so as to act at the same time as an equalizing and multi- 100 plying lever, the whole being applied to a steelyard weighing lever by means substantially as set forth.

2. I also claim arranging the suspension bridge so that its arched standards shall 105 extend upward by the sides of the platform, and between it and the sides of the pit in manner as stated in combination with arranging the transverse levers C, C, and their bearings, below the platform, the same af- 110 fording the necessary room for the vertical play of the longitudinal levers, while it secures an advantage as regards the depth of the pit as stated.

In testimony whereof, I have hereunto 115 set my signature this third day of June A. D. 1856.

THADDEUS FAIRBANKS.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.