2 Sheets—Sheet 1.

F. FAIRBANKS.

Platform-Scale.

No. 212,364. **Patented Feb. 18, 1879.**

Fig. 2.

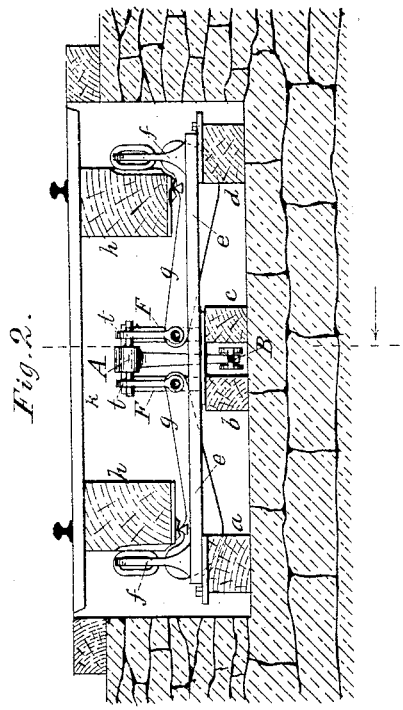

Fig. 1.

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Fig. 3.

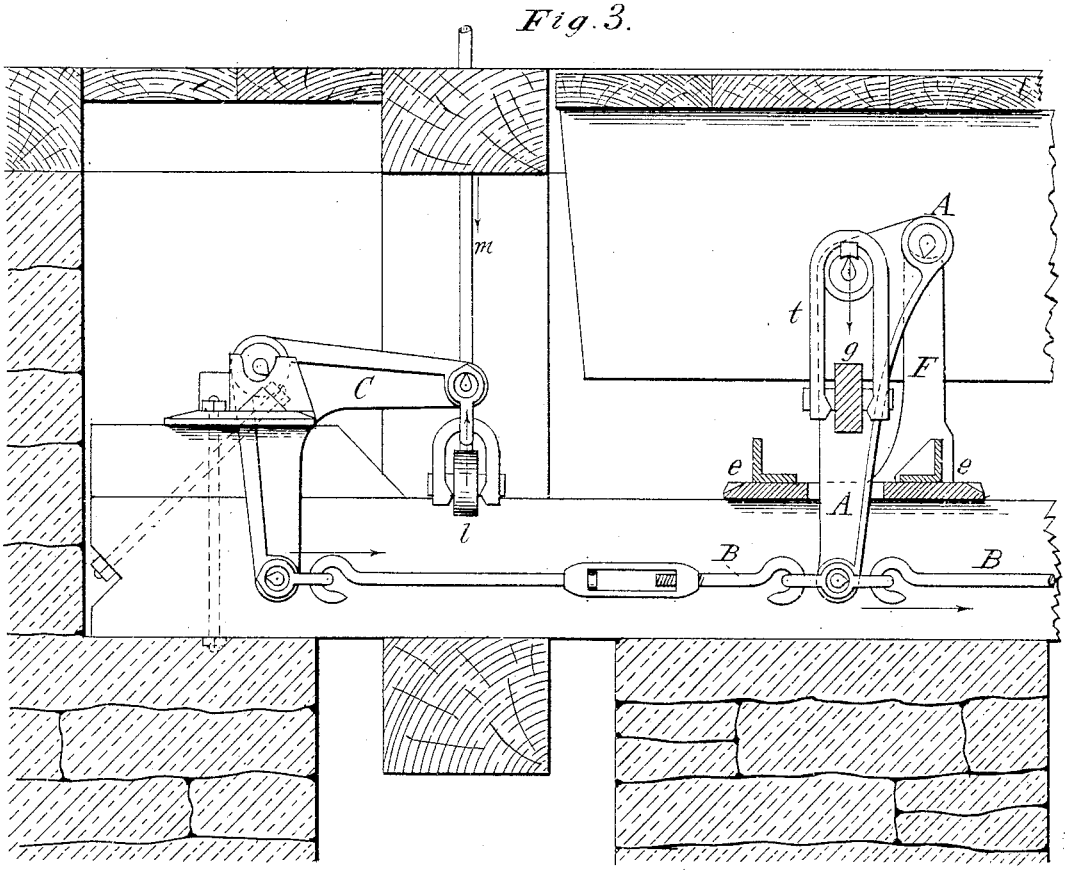
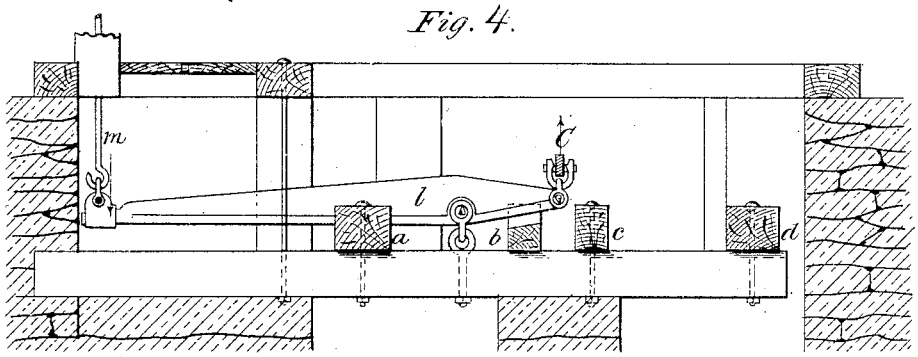


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANKLIN FAIRBANKS, OF ST. JOHNSBURY, VERMONT, ASSIGNOR TO E. & T. FAIRBANKS & CO., OF SAME PLACE.

IMPROVEMENT IN PLATFORM-SCALES.

Specification forming part of Letters Patent No. **212,364**, dated February 18, 1879; application filed November 16, 1878.

To all whom it may concern:

Be it known that I, FRANKLIN FAIRBANKS, of St. Johnsbury, Caledonia county, Vermont, (assignor to E. & T. FAIRBANKS & Co., of same place,) have invented certain new and useful Improvements in Platform-Scales, of which the following is a specification:

My present invention applies more especially to the largest class of platform-scales, usually known as "railroad-track scales," for the weighing of railroad-cars, &c., which are run upon tracks upon the platform. In these scales the platform is necessarily very long and heavy, and the supporting and transmitting mechanism beneath accordingly requires great strength and accuracy to properly record the heavy weights for which such scales are designed.

The present improvement lies in an improved form and arrangement of levers and transmitting-rods intermediate between the main or platform levers and the "fifth-lever" and scale-beam, by which the strain of the main levers or weight of the platform is conveyed to the scale-beam, where the weight is registered; and this construction embodies a number of novel features, which are hereinafter fully described, each distinct feature of novelty being set forth in the final clauses.

In the drawings annexed, Figure 1 presents a longitudinal sectional elevation of a railroad-track scale constructed according to the present invention, but shown much contracted in length. Fig. 2 is a cross-section on line *x x* of Fig. 1, looking in the direction of the arrow. Fig. 3 is an enlarged fragmentary view of the left-hand corner of Fig. 1; and Fig. 4 is a cross-section of Fig. 1 on the line of the fifth-lever *l*.

As usual in large platform-scales, the platform is situated in the mouth of a shallow pit, which is walled around with masonry, as indicated in the drawings, which rises to nearly a level with the surface of the platform. Short piers or lines of masonry also extend at intervals across the floor of the pit, and on these strong beams *a b c d* (seen best in Fig. 2) are firmly secured and extend the full length of the pit, as seen in Fig. 1. Across these beams a number of iron frames or bases, *e e*, extend at intervals, their number being determined by the length of the platform, three being shown in Fig. 1, the central one of which appears in end elevation, while the others are shown in section, each being situated over a pier or line of masonry, as shown best in Fig. 1. These frames are firmly bolted to the timbers *a b c d*, and they are formed at each end with "arches" or upright supports *f f*, Figs. 1 and 2, from which strong levers *g*, usually known as "main levers," are suspended or fulcrumed, and which extend transversely of the platform. These main levers directly support the platform, which rests on knife-edge bearings near the fulcrumed end of the levers, as shown in Fig. 2, while the long arms of these levers meet or approach each other under the center of the platform, as shown. The platform usually consists of two strong beams, *h h*, extending the full length of the platform, one on each side, which are joined below by cross-beams *i i* at necessary intervals, and above by flooring-planks *k k*.

The general construction above described is substantially such as is ordinarily used in scales of this class; but heretofore in scales of this class the long arms of the main levers *g* have been arranged to connect with a series of long heavy levers extending longitudinally under the center of the platform, through which the weight of the platform was thus conveyed to the fifth or last lever *l*, and thence transmitted through the steelyard-rod *m* to the scale-beam *n*, where the weight is registered. As these central levers required to be very massive and strong, their great weight of metal added largely to the cost of the scales, besides rendering the construction more cumbersome and complicated.

Now the present improvement dispenses with these long heavy levers, and in their stead a series of peculiarly formed and arranged "multiplying angle-levers," A, and connecting-rods B, as shown in the drawings, are employed to convey the strain of the platform and main levers *g* to the fifth-lever and scale-beam, which improvement secures many important advantages over the old construction.

According to this improvement, as shown in the drawings, the iron frames *e e* are fitted

at the center, and at the meeting ends of the main levers *g*, with stands or upright supports F, on which the angle or elbow levers A are fulcrumed. These levers hang between the two uprights of the stands F, and project between the approaching ends of the main levers *g*, the short arms of the levers being pivoted on the top of the stands, as shown in Figs. 1, 2, and 3, while the long arms extend downward through an opening in the base of the stands and approach the floor of the platform-pit. The number of the angle-levers, of course, corresponds to the series of main levers *g* and supporting-stands *e*—three or four series being usual; and the movement of the several angle-levers under the stress of the platform is simultaneous and in the same direction, as indicated. The long arms of the main levers *g g* are hung to these angle-levers on their short arms, and at the bend or angle by loops or stirrups *t* on suitable pivots projecting from each side of the lever, as shown in Figs. 1, 2, and 3, while the long arms of the angle-levers A are all coupled together by a connecting-rod or rods, B, which extend longitudinally under the center of the platform and close to the floor of the platform-pit, as seen best in Figs. 1 and 3. The movement of this rod is horizontal, as indicated, and its transmitting end is connected with one arm of an equal angle-lever, C, Figs. 1 and 3, which is pivoted at one end of the platform-pit, the other arm of which connects with the fifth-lever *l*, (seen best in Fig. 4,) which, in the usual manner, conveys the strain through the rod *m* to the beam, where the weight is finally registered. Now the center of each branch of the connecting-rod B is supported at a true level by pendulous rods D, which are suspended from knife-edge-pivots on suitable stands E, secured on the timbers *b c*, as seen in Fig. 1. These suspending-rods are found to be an essential feature where long spans of the connecting-rod are used, for if the connecting-rods sag up or down from a true level the accuracy of the scale is impaired. In smaller scales, however, where the spans of the connecting-rod will be shorter, these suspending-rods may sometimes be dispensed with.

The platform is held in proper position on the supporting-levers, and held from undue oscillations, by the usual check-rods, arranged in substantially the usual manner. For the sake of greater clearness in the illustration of the present subject, the check-rods are not shown in the drawings; but their proper positions will be understood by those acquainted with the construction of scales. I prefer, however, to employ an improved form of check-rod, having adjustable and non-rusting eyes, which I have made the subject of a separate application.

Instead of the equal elbow-lever C, any other suitable form of intermediate device may be used to form the connection between the connecting-rod and fifth-lever; but the device shown is preferred.

The form and arrangement of the angle-levers A, as may be observed, are such that great leverage is obtained, so that the strain rapidly diminishes from the platform to the beam, or conversely rapidly multiplies. Their form and manner of suspension are also such that the strain occurs in directions which the metal is well able to resist without deflections, and hence great strength and rigidity are secured with comparatively little metal, while the pivotal movements of the lever and its connections are rendered very easy and accurate.

This improved construction of the transmitting mechanism is adaptable to all the larger classes of platform-scales, and it renders the construction not only light, but strong, compact, and simple, and at the same time accurate and permanent, and, furthermore, effects an important saving in cost over the old construction.

What I claim as my invention is—

1. In a platform-scale, the combination, with the main platform-levers *g g*, of the multiplying angle-levers A A, arranged between the meeting ends of the long arms of the main levers, which are hung at opposite sides to the short arms of the said angle-levers, while the long arms thereof are extended downward and connected with the scale-beam, substantially as shown and described.

2. In a platform-scale, in combination with the multiplying angle lever or levers A, arranged to receive the strain of the platform, and the connecting rod or rods B, coupled to the long arm or arms of the said lever or levers, and arranged to transmit the strain to the scale-beam, the pendulous suspending-rods D, substantially as and for the purpose set forth.

FRANKLIN FAIRBANKS.

Witnesses:

WM. P. FAIRBANKS,

D. DEAN PATTERSON.