(No Model.) 2 Sheets—Sheet 1.

F. A. ROEDER.

PLATFORM SCALES.

No. 262,906. Patented Aug. 15, 1882.

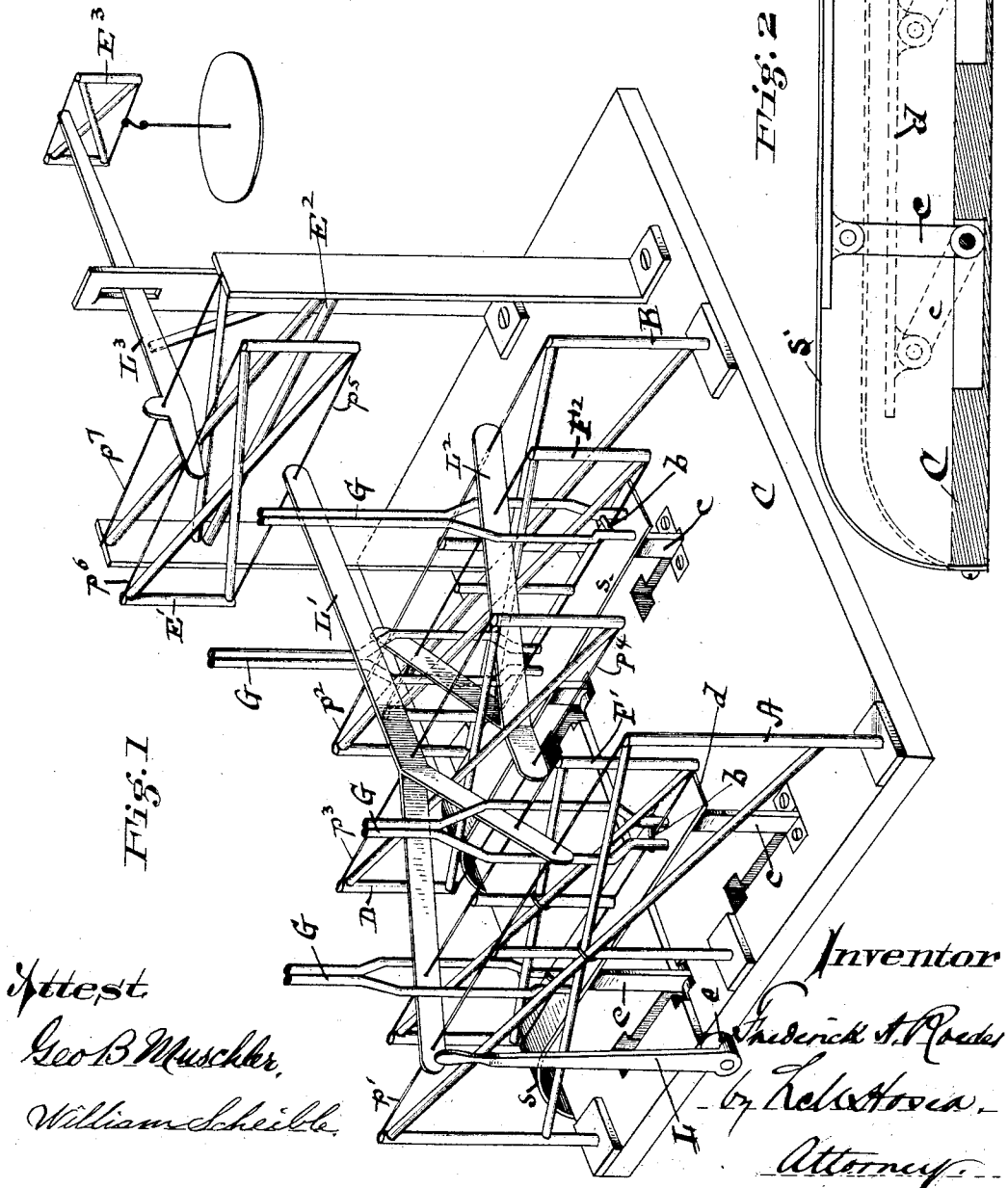


Fig. 1

Fig. 2

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(No Model.) 2 Sheets—Sheet 2.

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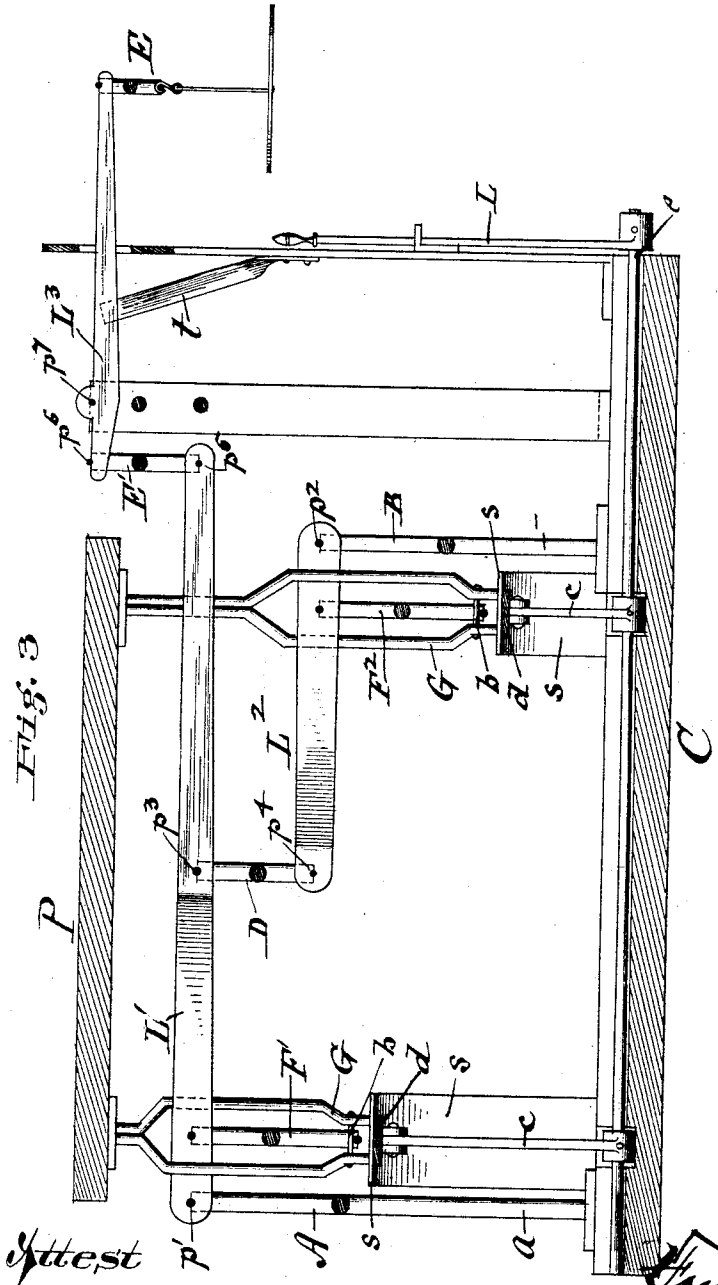


Fig. 3

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UNITED STATES PATENT OFFICE.

FREDERICK A. ROEDER, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO ALFRED SPRINGER.

PLATFORM-SCALE.

SPECIFICATION forming part of Letters Patent No. 262,906, dated August 15, 1882.

Application filed April 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK A. ROEDER, a citizen of the United States, residing at Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in Platform-Scales, of which the following is a specification.

My invention relates to a class of balances in which the principle of torsional elasticity of metal wires is utilized for pivot-bearings of the scale-beam as a substitute for contact or knife-edge bearings, which are liable to derangement from various causes; and its object is to embody the principle and obtain the advantages of such torsional bearings in a platform-scale for weighing heavy bodies.

The drawings accompanying this specification exhibit a platform-scale in which my invention is applied.

Figure 1 is a perspective view of the scale with the platform removed to exhibit the construction and relation of the working parts with greater clearness. Fig. 2 is a detached view, showing the operation of the arresting device; and Fig. 3 is a sectional elevation of the scale, showing the arrangement of the various parts.

Referring to the drawings in aid of the specification, the construction and operation of my invention will be understood from the following description.

In applying the principle of torsional bearings to balances it is chiefly necessary that the wires forming the pivotal supports for the scale-beam and its pendants should be held in tension, in order to render its elasticity effective; and to this end I use a skeleton consisting of diagonal cross-bars constituting a frame around whose extremities the wire is stretched and secured, forming a rectangle whose long sides constitute the pivotal supports of the scale-beam and pendants. These frames I will, for convenience, designate "torsion-frames." Two frames, A B, consisting substantially of uprights held apart by diagonal cross-braces, maintain horizontal wires p' p^2 in tension as the pivotal end supports of the main levers L′ L^2, upon which, by means of intermediate mechanism, hereinafter described, the platform rests. The levers L′ L^2 are of the second order, bifurcated, secured to the pivotal wires p' p^2 at their outer or bifurcated ends, and arranged to vibrate in the same vertical frame, one beneath the other. The frames A B, which maintain the pivotal wires p' p^2, are supported at opposite sides of a base, C, by uprights or suitable blocking, the levers L′ L^2 projecting inwardly toward the center, and being pivotally connected by a link consisting of a torsion-frame, D, such as before described, holding wires p^3 p^4 in tension. The end of the shorter lever, L^2, is thus connected with the longer lever, L′, near its center by the torsion-frame D, the levers being rigidly secured to the wires constituting its longer sides. The outer end of the lever L′ is pivotally suspended by a similar torsion-frame, E′, holding wires p^5 p^6 in tension from a lever of the first order, L^3, which is the scale-beam proper. The balance or scale-beam L^3 is also pivotally supported by a wire, p^7, held in a torsion-frame, E^2, suitably upheld from the base, and its scale-pan is also preferably suspended from the balance-beam by a similar torsion-frame, E^3.

The levers L′ L^2 L^3 and connnecting-link torsion-frames D E′ together constitute the compound-lever system of the platform, which is supported upon the same in the following manner: From points near the bifurcated ends of the levers L′ L^2, within the points of pivotal support, are suspended torsion-frames F′ F^2, rigidly secured by their upper horizontal sides to the levers, and upon the lower horizontal sides rest standards G G, carrying the platform P. The standards G are, for convenience, bifurcated, in order that the constituent arms may pass around at the sides of the bifurcated ends of the levers and the diagonal braces of the torsion-frames, but without contact with the same, and the support is taken by cross-bars *b*, of cylindrical section, connecting the lower extremities of the bifurcated arms.

It remains but to describe the construction of the arresting device. This consists of cranks *c c*, pivoted to the base-plate, arranged upon parallel pivots, and carrying parallel plates *d*, which rise and fall as the crank-shafts are revolved. The parts being so arranged that the parallel plates move beneath and in the plane of the standards supporting the platform, in rising they come in contact with the lower extremities of the standards and support the same, and prevent any mo-

tion of the levers. One of the pivots or crank-shafts is extended beyond the base, as at *e*, and furnished with a hand-lever, L, for its due manipulation. I find it desirable to interpose between the parallel plates and the standards a sheet or strip, *s*, of metal, to relieve friction of the parallel plates against the standards and lessen the liability of displacement by the lateral movement of the parallel plates.

I also find it desirable to use a friction device to act upon the balance-lever. A leaf-spring, *t*, attached to some fixed portion of the apparatus, is all that is required, arranged so that its end rests against the balance L^3 and slightly retards its movement. This somewhat facilitates the operation of the device in saving time.

Having described my invention, I claim and desire to secure by Letters Patent—

1. In a platform-scale, the bifurcated levers $L' L^2$, supported upon stretched-wire pivots p' p^2, and connected by a suspended link, D, secured to the levers upon stretched-wire pivots $p^3 p^4$, all acting torsionally, substantially as set forth.

2. In a platform-scale, in combination with the system of levers $L' L^2$ and their connections, the torsion-frames $F' F^2$, suspended from the levers, and constituting the pivoted supports of the platform P, substantially as set forth.

3. In a platform-scale, in combination with the supporting-lever system, the torsion-frame E', connecting the supporting-levers with the balance-beam, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FREDERICK A. ROEDER.

Witnesses:
L. M. HOSEA,
GEO. B. MUSCHLER.