(No Model.)

N. DU BRUL.

WEIGHING SCALE.

No. 299,759. Patented June 3, 1884.

Fig. 1.

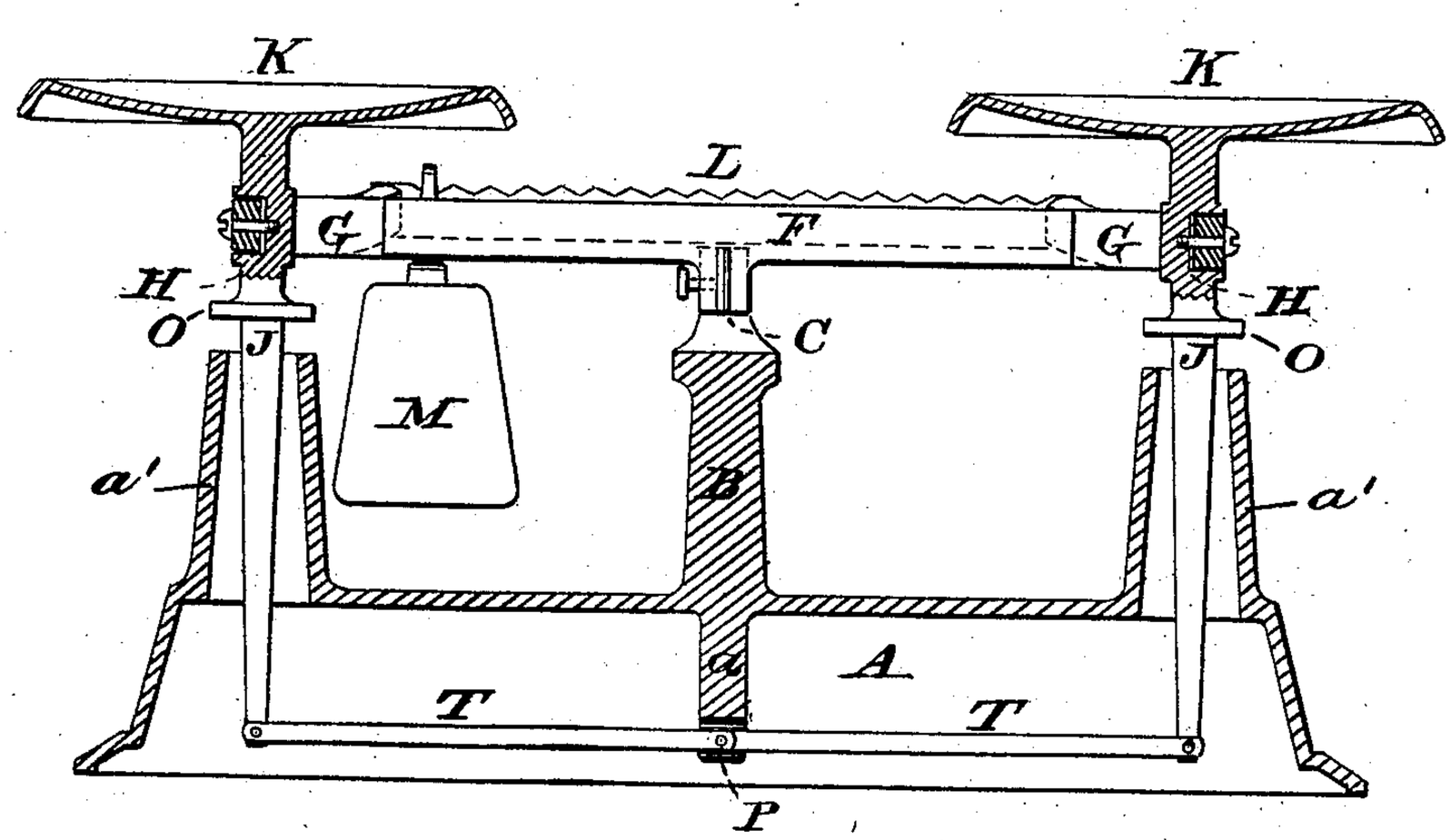
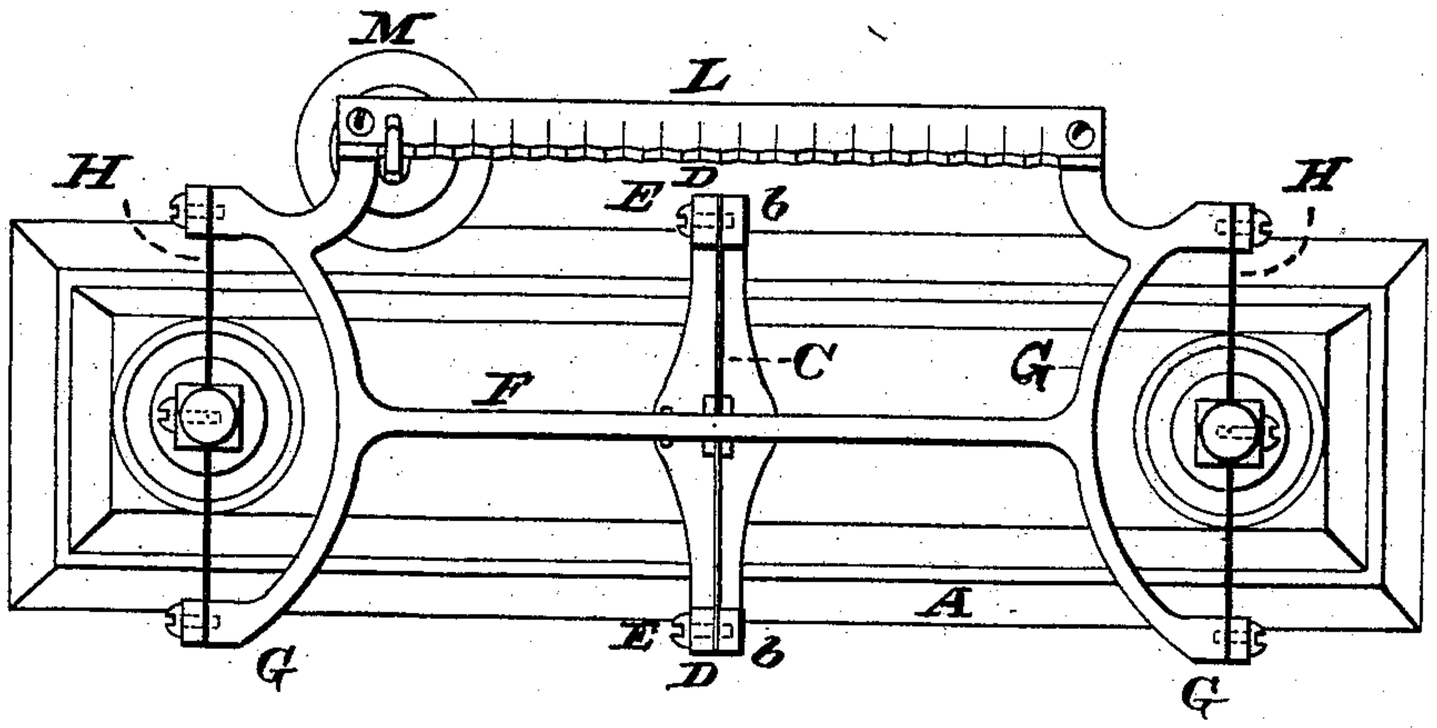


Fig. 2.



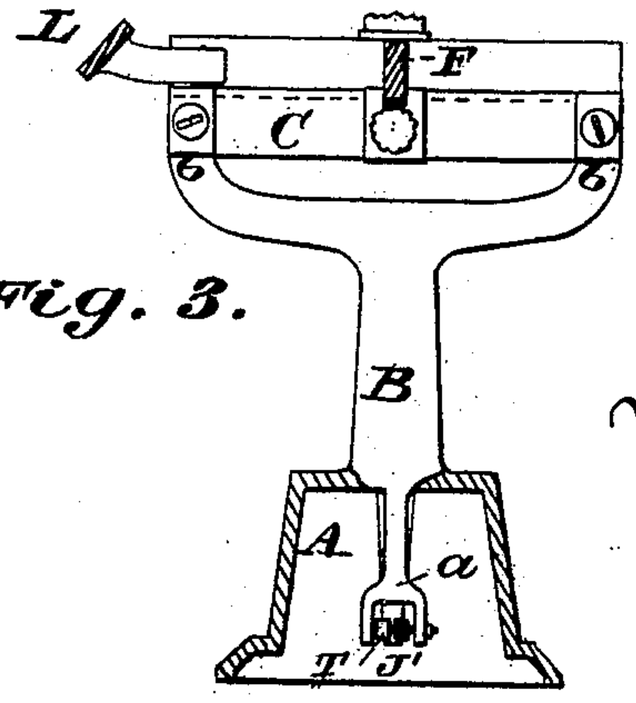


Fig. 3.

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UNITED STATES PATENT OFFICE.

NAPOLEON DU BRUL, OF CINCINNATI, OHIO.

WEIGHING-SCALE.

SPECIFICATION forming part of Letters Patent No. 299,759, dated June 3, 1884.

Application filed January 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, NAPOLEON DU BRUL, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Weighing-Scales, of which the following is a specification.

My invention relates to improvements in those balances or weighing-scales in which the torsional elasticity of metal or analogous material is employed to control the oscillations of the beam.

My improvements have for their object the production, at a moderate expense, of a torsion-balance of great sensitiveness and durability.

In another application, No. 118,691, I have shown, described, and claimed, and applied to one form of scale, a flat torsion strip, bar, or rod stretched horizontally, and set up edgewise to form a fulcrum strip, bar, or rod for a beam. In other applications, Nos. 118,692, 118,694, 118,695, and 118,979, I have shown and described the employment of such torsion strip, bar, or rod with other forms of scales. The present form of my device has the beam extending in both directions, with two pan-supports, one on each side of the beam.

In the accompanying drawings, Figure 1 is a vertical longitudinal section. Fig. 2 is a top view. Fig. 3 is a vertical transverse section.

A is a base or foot, upon which is a post, B, having forks or branches *b*, in which are fastened the ends of a central torsion strip, bar, or rod, C, of steel or equivalent elastic torsional material. This torsion strip, bar, or rod is, while under stretch, firmly clamped at each end by any suitable means, preferably by means of a clamping-block, D, and a screw, E. The post B, with the forks *b*, is the fulcrum-post, and the strip, bar, or rod C is the fulcrum torsion strip, bar, or rod. To this torsion strip, bar, or rod C is attached, at or near its mid-length, a beam, F, which terminates at one or both ends in a T-head or cross-bar, G, to whose extremities are fastened the ends of two torsion strips, bars, or rods H, of similar form to the strip C. To these end torsion strips, bars, or rods are fastened rigidly and directly, at their mid-lengths, the stems of pan-supports J of pans K. To the lower extremities of the pan-supports J are pivoted link-rods T, whose outer ends are secured by pivot P to a projection, *a*, from the interior of base A. The object of these link-rods is to keep the pan steady while oscillating. The beam F may have attached to it one or more scale or graduated bars, L, for one or more sliding peas or weights M. The base or foot A is provided with tubular projections *a'*, which surround the pan-supports, and the pan-supports are provided with collars O, to limit the oscillations of the beam F within a range that will not impair or strain the torsion strips, bars, or rods by excessive weight put into the pans.

The form here selected to illustrate my improvement is susceptible, without departure from the characteristic features of the invention, of various modifications. For example, knife-edge supports may be substituted for the described central fulcrum-torsion; or the ends of the torsion strips, bars, or rods may be fastened to extended arms on the center of the beam, while the post B could be fastened to the center of the torsion strip, bar, or rod, and the beam thereby oscillate, and this without departure from the essential characteristics of my invention.

I claim as new and of my invention—

1. In a weighing-scale, the combination of a base, a beam having its fulcrum-support acting torsionally, torsion strips, bars, or rods, secured rigidly and directly to the ends of the beam, pan-supports rigidly and directly fastened to the end torsion strips, bars, or rods, and link-rods connecting the lower portions of the pan-supports to the base, as set forth.

2. In a weighing-scale, the combination of a base, beam pivoted to oscillate on the base, torsion strips, bars, or rods fastened to the ends of the beam, pan-supports attached directly and rigidly to the end torsion strips, bars, or rods, and links connecting the pan-supports to the base, as set forth.

In testimony of which invention I hereunto set my hand.

NAPOLEON DU BRUL.

Attest:

GEO. H. KNIGHT,

S. S. CARPENTER.