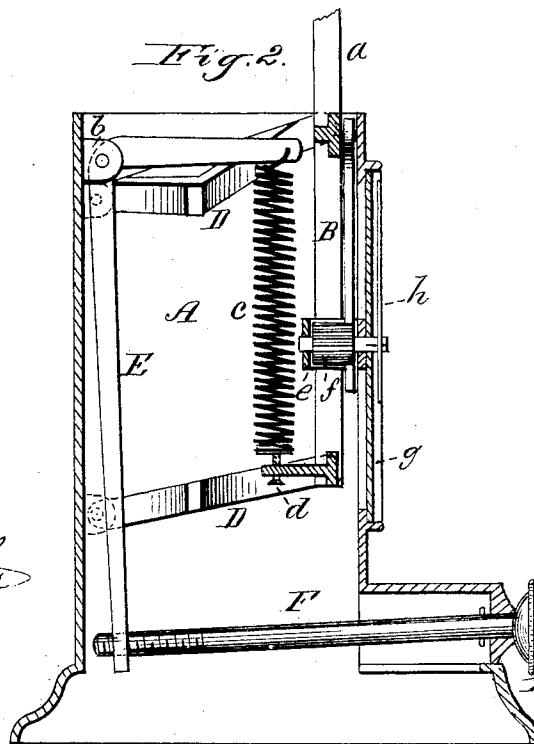
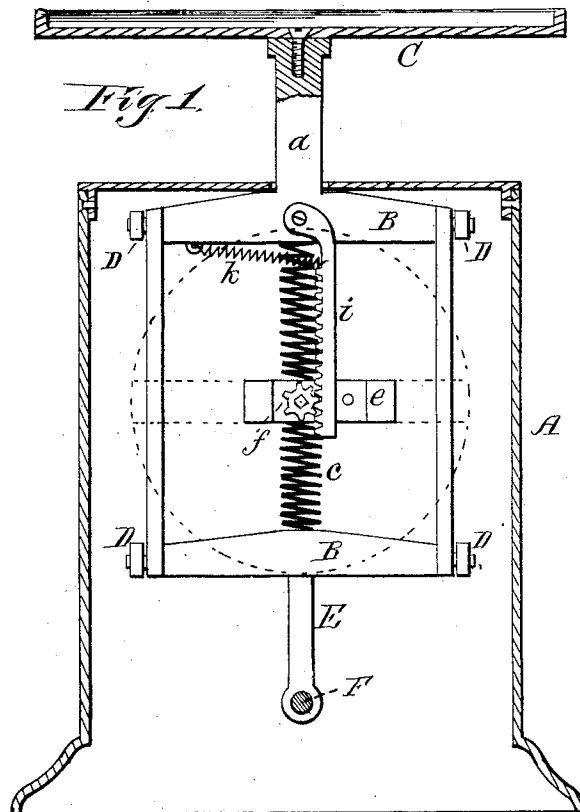


(No Model.)

J. S. FRAY & H. PIGG.
Spring Balance with Tare Device.
No. 243,539. Patented June 28, 1881.



Witnesses:
A. C. Fray
G. H. Moore

Inventor
John S. Fray
Horace Pigg.
per *Chas. H. Foster*
Attorney.

UNITED STATES PATENT OFFICE.

JOHN S. FRAY AND HORACE PIGG, OF BRIDGEPORT, CONNECTICUT.

SPRING-BALANCE WITH TARE DEVICE.

SPECIFICATION forming part of Letters Patent No. 243,539, dated June 23, 1881.

Application filed March 8, 1881. (No model.)

To all whom it may concern:

Be it known that we, JOHN S. FRAY and HORACE PIGG, citizens of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Spring-Scales; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a front elevation of our invention with the casing and weighing dish or platform in section, and Fig. 2 is a side elevation with the casing and a portion of the operative mechanism in section.

The present invention has relation to certain new and useful improvements in that class of spring-scales provided with means for regulating the tare.

The object of the invention is to simplify the mechanism for regulating or taking up the tare, whereby there is less danger of any inaccuracy in weighing by the spring or other sensitive parts of the operating mechanism becoming out of order. These objects we attain by the construction shown in the drawings and hereinafter described.

In the accompanying drawings, A represents the upright casing to receive the operative mechanism, the front side and top being removably connected thereto in any suitable manner.

A frame, B, is cast or otherwise formed with a standard, *a*, which passes up through an opening in the top of the casing A, and has connected to it a suitable weighing dish or platform, C. The frame B has pivoted to its upper and lower sides cross-arms D, the opposite ends of the cross-arms being pivoted to the rear side of the frame A, or to ears upon suitable arms rigidly connected thereto, as found desirable.

A right-angle lever, E, is pivoted to ears *b* projecting from the back of the frame A, and to the end of the horizontal portion of the lever is connected one end of a coil-spring, *e*, the lower end thereof being connected to the frame B by screw *d*, so that the tension of said spring may be regulated when required. To the front of the casing A, and upon the interior, is secured a bracket, *e*, which forms bearings for

the journals of a pinion, *f*, the front end of the journal projecting out beyond the dial-plate *g*, and has irregular sides, or is formed square to receive the pointer or hand *h*.

A rack-bar, *i*, is pivoted at its upper end to the frame B, and has connected to it and the frame a suitable spring, *k*, to keep the teeth of the rack-bar engaged with those of the pinion. Thus when the dish or weighing-platform C is depressed by any weight placed thereon the frame B will be correspondingly depressed and carry with it the rack-bar *i*, which will cause the pinion *f* to rotate and the pointer or hand *h* to register the weight upon the dial-plate *g*.

A rod, F, passes horizontally through the front of the casing A, and has screw-threads upon its end to engage with a screw-threaded opening in the lower end of the right-angle lever E.

It should be noticed that the spring *c* is arranged vertically, and at its upper end it is connected directly to the horizontal portion of the right-angle lever E, in place of being located horizontally between the horizontal operating-rod and the lower end of the right-angle lever. The advantages of this change of location of the spring *c* renders the adjustment much more sensitive, for the reason that there are a less number of bearing-surfaces, and consequently more certainty of action.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In a weighing-scale, the frame B, having pivoted thereto the cross-arms D, the opposite ends of said arms being pivoted to the casing A, in combination with the right-angle lever E, connected to the frame B by spring *c*, and operated by a rod, F, the screw-threads thereon engaging with a screw-threaded opening in the lower end of the right-angle lever, substantially as and for the purpose set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

JOHN S. FRAY.

HORACE PIGG.

Witnesses to the signature of John S. Fray:

L. S. CATLIN,

T. M. PALMER, Jr.

Witnesses to the signature of Horace Pigg:

H. J. ENNIS,

D. O'DONNOGHUE.