

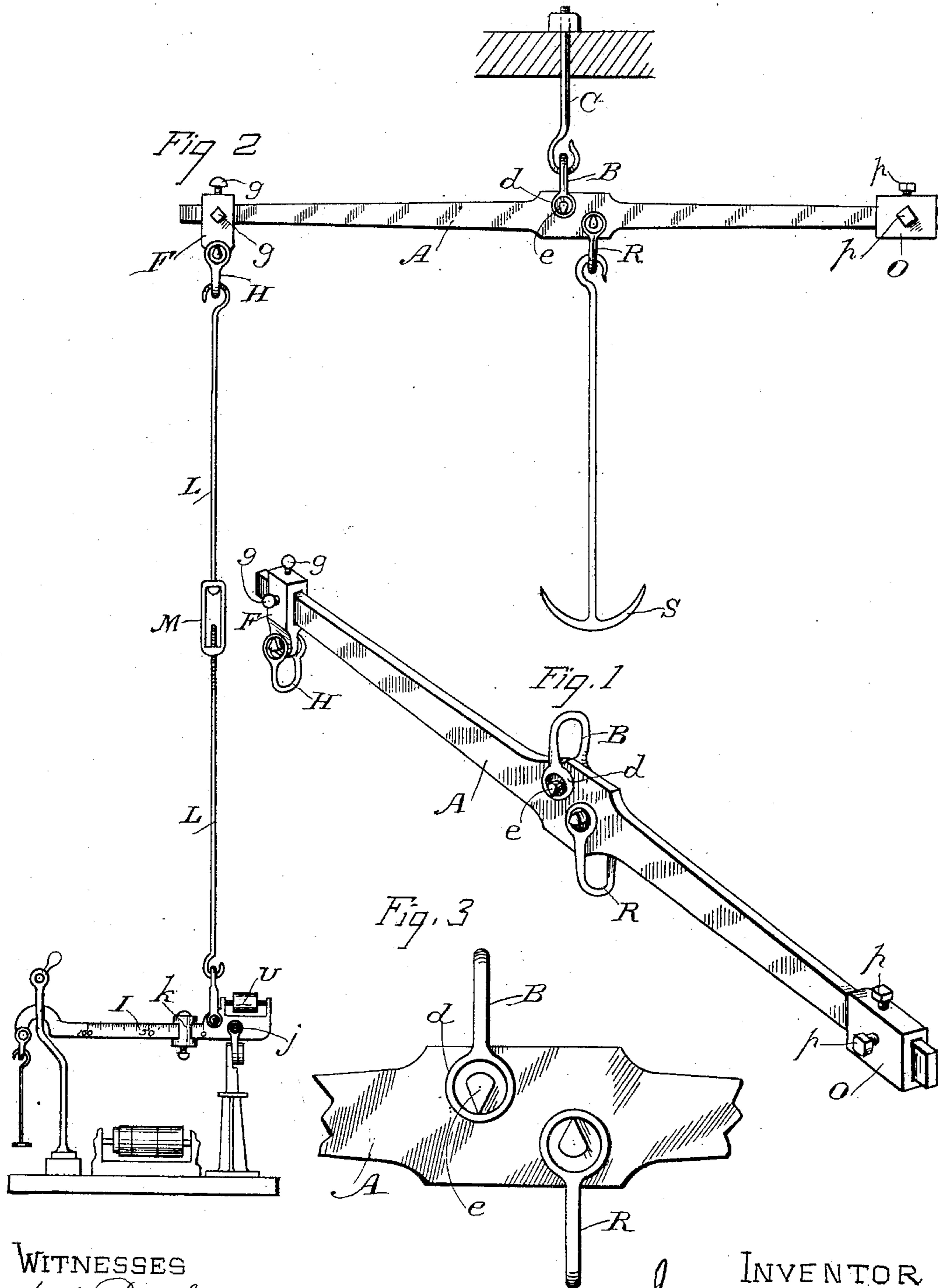
No. 660,077.

Patented Oct. 16, 1900.

J. MANES.
WEIGHING MACHINE.

(Application filed Dec. 9, 1898.)

(No Model.)



WITNESSES
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UNITED STATES PATENT OFFICE.

JOHN MANES, OF SAN FRANCISCO, CALIFORNIA.

WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 660,077, dated October 16, 1900.

Application filed December 9, 1898. Serial No. 698,765. (No model.)

To all whom it may concern:

Be it known that I, JOHN MANES, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Weighing-Machines; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention relates to an improved weighing-machine for weighing heavy articles; and it consists of a single beam suspended at or near its middle from a ceiling or other overhead support and connected at one end with a graduated scale-beam in such a manner that any heavy article suspended from the opposite end of the beam can be weighed and the weight accurately indicated on the scale-beam.

Referring to the accompanying drawings, Figure 1 is a perspective view of my suspension-beam. Fig. 2 is a side elevation showing the suspension-beam and its connection with a graduated scale-beam. Fig. 3 is a detail of the beam.

Let A represent a strong beam which is preferably made of metal. This beam I suspend at or near its middle from a ceiling or other overhead support by means of a stirrup B and hanger C. The lower open end of the stirrup straddles the beam, and it has a ring or eye *d* formed on each of its ends, into which a short trunnion-arm *e* projects on each side of the beam. The under side of each of these trunnion-arms is made V-shaped, so as to form what is known in scale-bearings as a "knife-edge," so that whatever weight is put upon the bearings is supported on the points or knife-edges of the arms or trunnions, and thereby furnishes frictionless and sensitive bearings. On one end of this suspended beam I place an adjustable clip F, which can be moved for a limited distance along the outer end of the beam and be fixed at the desired point by a set-screw *g*. To the under side of this clip I suspend a small stirrup H on knife-edge bearings similar to those above described except that the knife-edges of the arms or trunnions which support it are on the upper side of the arms or trunnions.

I is an ordinary graduated scale-beam which is located on some permanent object at a convenient position near the floor and directly underneath the clip end of the suspended beam. It is fulcrumed on a suitable pivot at or near one end (indicated in the drawings by the letter *j*) and has a sliding weight-indicator *k*, arranged to move upon it. It also has an adjustable compensating-weight U, which moves on a screw-shaft on the short end of the beam, over its pivotal support, in the usual manner of constructing such scale-beams.

The depending clip-stirrup H of the suspended beam is connected with this graduated scale-beam by means of a rod or other suitable connecting device L at a point just in front of its fulcrum-pivot *j* by a knife-edge bearing similar to those above described. A turnbuckle M is inserted in the length of the connecting-rod L, by means of which the length of the connection is adjusted.

On the opposite end of the suspension-beam A is an adjustable weight O, which can be shifted toward or from the middle of the beam, and which has a set-screw *p*, by means of which it can be fixed at any point.

A weighing-stirrup R is suspended from the beam A, between the suspending-stirrup B and the weight O, by a knife-edge bearing similar to those above described. This stirrup-bearing is below the median line of the lever, while the bearing of the suspending-stirrup B is above the median line, and the distance between them constitutes the weighing leverage of the machine. A suitable platform or suspension-hook S depends from the stirrup R, on which the article to be weighed is placed.

The weighing leverage or distance between the stirrups B and R having been determined and the clip F adjusted so as to pull directly upward on the graduated scale-beam, the weight Q is moved along the beam A toward or from the point of suspension until the graduated scale-beam is nearly in equilibrium. The adjusting-weight U on the graduated scale-beam is then moved forward on its screw-shaft until the upward pull of the suspended beam is counteracted and the scale-beam is in perfect balance. If now a heavy object be suspended from the weighing-stirrup R or its appendage, the upward pull of the clip end of

the suspension-beam will raise the graduated scale-beam. The sliding weight-indicator K is then moved along the scale-beam until the scale-beam is brought to an equipoise, when
5 the figure indicated on the scale-beam, multiplied by the leverage of the suspended beam, will give the exact weight of the article being weighed.

The scale-beam which I use may be the scale-
10 beam of any ordinary weighing or platform scale, the only requirement being that in order to obtain the correct weight of the heavy object which is weighed on the suspended beam I must multiply the weight indicated
15 on the scale-beam by the leverage of the suspended beam.

I thus provide an extremely simple and cheaply-constructed weighing attachment for ordinary scale-beams by means of which ar-
20 ticles can be accurately weighed.

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

1. A weighing-machine, comprising an over-
25 head suspension balancing-beam, supported at or near its middle, a weighing-stirrup suspended from said beam upon one side of the point of support, a connecting-rod adjustably secured to the said beam upon the other side
30 of the point of support and a small graduated scale-beam, mounted below one end of said

scale-beam and connected therewith by said rod; the construction being such that a small graduated scale-beam of ordinary construction may be used for weighing bulky and
35 heavy articles, substantially as described.

2. A weighing-machine, comprising an overhead suspension balancing-beam, a support for pivotally suspending the said beam at or near its middle point, a weighing-stirrup sus-
40 pended from said beam from one side of the said support, an adjustable clip secured to the said beam upon the other side of the said support, a connecting-rod suspended there-
45 from, a counterbalance-weight mounted upon the extended free end of the said beam, a small graduated scale-beam mounted beneath one end of the balancing-beam and connected therewith by means of the said connecting-
50 rod; the construction being such that the balancing-beam in weighing large and heavy articles may be connected and operated by a small graduated scale-beam of ordinary construction, substantially as described.

In witness whereof I have hereunto set my
55 hand, in the presence of two witnesses, this 1st day of December, A. D. 1898.

JOHN MANES.

Witnesses:

JOHN BRUCKMAN,
CHAS. J. ARMBRUSTER.