

No. 691,750.

Patented Jan. 28, 1902.

J. S. CORTELYOU.
SCALE.

(Application filed May 6, 1901.)

(No Model.)

2 Sheets—Sheet 1.

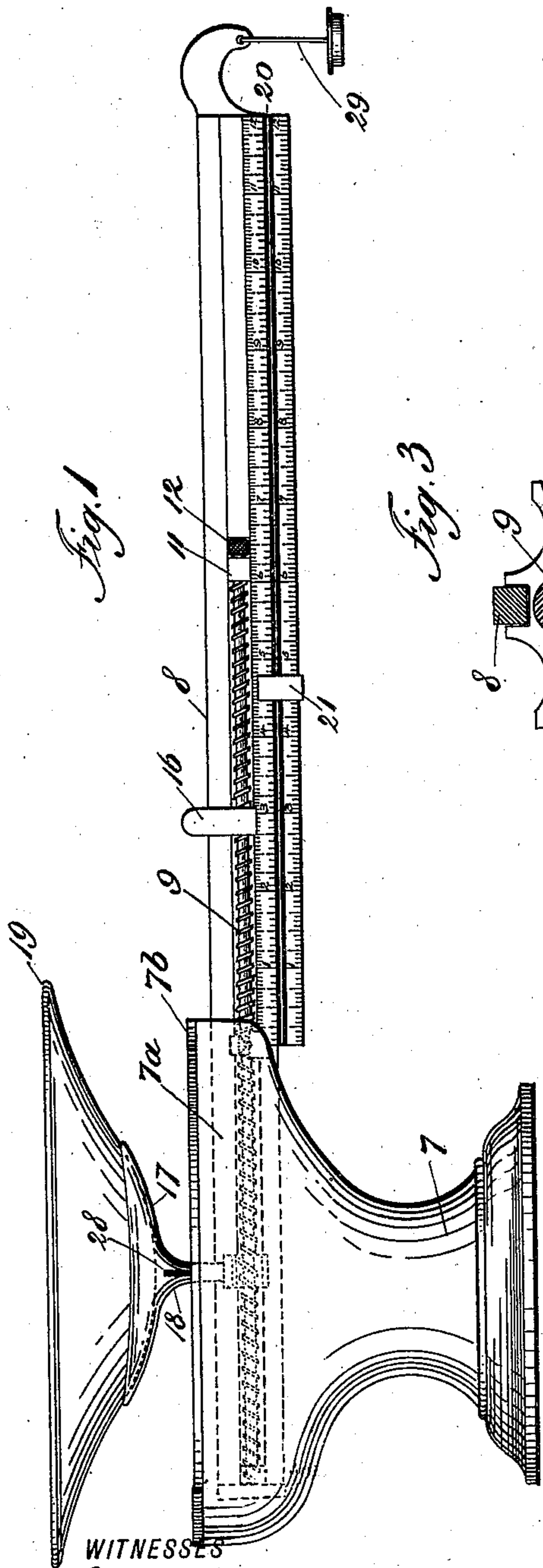


Fig. 1

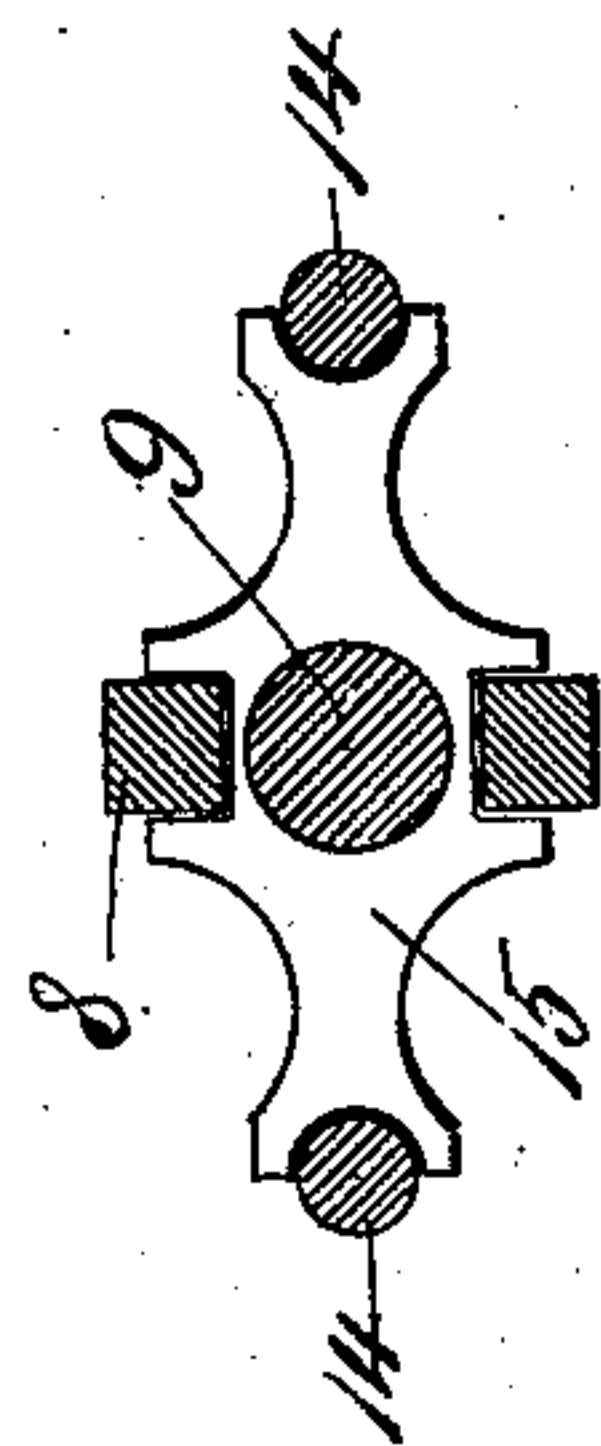
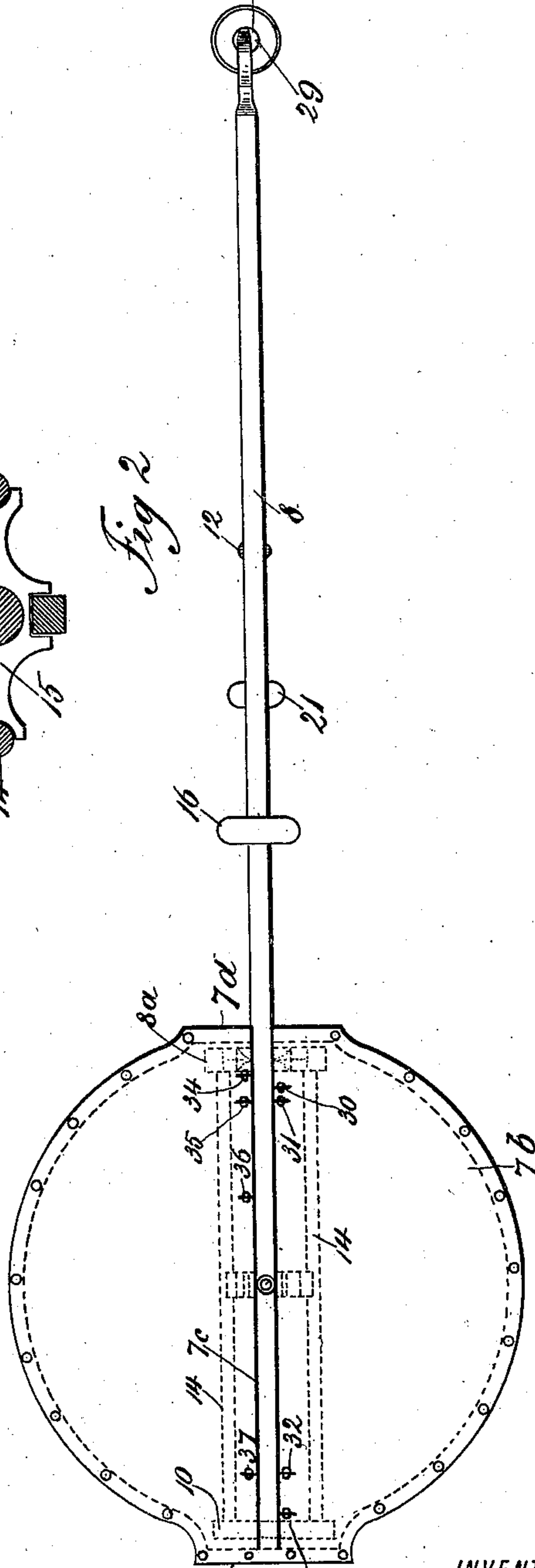


Fig. 3

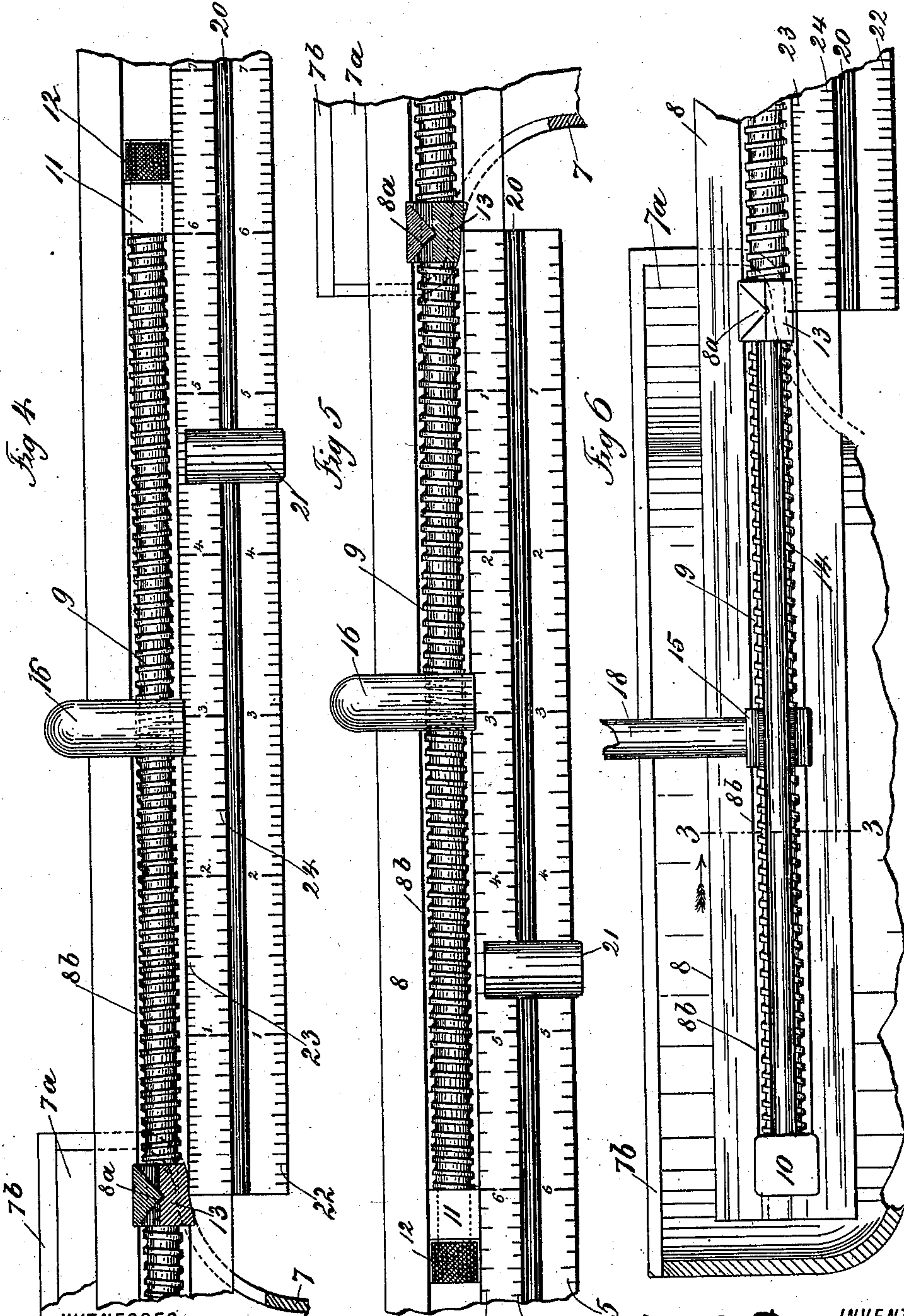


WITNESSES

G. F. Miller.
F. A. Stewart

BY

INVENTOR
J. S. Cortelyou
Edgar F. Fitch
ATTORNEYS



WITNESSES
F. J. Miller
F. A. Stenmark

INVENTOR
J. S. Cortelyou
BY
Edgar Tate
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOSEPH S. CORTELYOU, OF NEW YORK, N. Y.

SCALE.

SPECIFICATION forming part of Letters Patent No. 691,750, dated January 28, 1902.

Application filed May 6, 1901. Serial No. 58,896. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. CORTELYOU, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Scales, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to scales; and the object thereof is to provide an improved combination device of this class by means of which various articles may be weighed according to any of the standard systems, such as the metric system, the avoirdupois, the troy, or the apothecary system; and with this and other objects in view the invention consists of a scale constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by the same reference characters in each of the views, and in which—

Figure 1 is a right-hand side view of my improved scale; Fig. 2, a plan view thereof; Fig. 3, a partial section on the line 3-3 of Fig. 6; Fig. 4, a right-hand side view of the scale-bar on a larger scale than that shown in Fig. 1 and showing the pivotal support thereof in section; Fig. 5, a left-hand side view similar to Fig. 4, and Fig. 6 a right-hand side view of a part of the scale-support and showing a part of the scale-bar and its pivotal support.

In the practice of my invention I provide a scale comprising a support 7, which is provided with a top portion 7^a, which is preferably circular in form and provided with a cover 7^b, and the said cover 7^b of the top portion 7^a of the support 7 is provided with a diametrical slot 7^c in line with the scale-bar 8, and the top portion 7^a of the support 7 is preferably slightly enlarged at the opposite side in line with the scale-bar 8, as shown at 7^d, so as to give room for that portion of the scale-bar within said top portion of the support 7.

The scale-bar 8 is provided with a pivotal support 8^a just within the right-hand top portion of the support 7, and said scale-bar is provided with a longitudinal slot 8^b, in which

is placed a screw 9, one end of which is provided with a transverse support or bearing 10 at the inner end of the scale-bar within the top portion 7^a of the support 7 and the other end of which is provided with a support or bearing 11, which, as shown in the drawings, is placed about midway of the scale-bar proper, or that part thereof which projects from the top of the support 7.

The screw 9 is free to turn in the supports or bearings 10 and 11, and said screw passes through the support or bearing 10 and is provided with a milled head 12, whereby it may be turned when desired and for the purposes hereinafter described. The support or bearing 10 of the inner end of the screw 9 is secured in the inner end of the scale-bar and projects laterally therefrom at both sides, as indicated in dotted lines in Fig. 2, and the pivotal support 8^a of said scale-bar, which has a bearing at 13, also projects laterally at each side of the scale-bar, as indicated in dotted lines in Fig. 2, and connected with the supports 8^a and 10 are two lateral side bars 14, (shown in full lines in Figs. 3 and 6 and in dotted lines in Fig. 2,) and said supports 8^a and 10 and the lateral side bars 14 swing vertically with that end of the scale-bar which is in the top of the support 7.

At a predetermined distance from the pivotal support of the scale-bar and within the top of the support 7 a slide 15 is mounted in the scale-bar, and the ends thereof bear on the lateral side bars 14, as clearly shown in Fig. 3, and the screw 9 passes through said slide, and the opening in said slide, through which said screw passes, is threaded to correspond with said screw.

A counterbalance-weight 16 is also placed on the scale-bar, and the top portion of said scale-bar passes therethrough, as does also the screw 9, and the opening in the counterbalance-weight, through which the screw 9 passes, is threaded to correspond with said screw, and said counterbalance-weight is placed at a distance from the pivotal support 8^a of the scale-bar exactly equal to the distance of the slide 15 from said pivotal support, and by turning the screw 9 by means of the milled head 12 thereof the said slide 15 and the counterbalance-weight 16 will be caused to approach or recede from the piv-

otal support 8^a, according to the direction in which said screw is turned, this result being accomplished by reason of the fact that the threads on the opposite ends of the screws 9 are opposite threads, one being a left and the other a right hand thread.

The slide 15 carries a support 17, which is connected therewith by a standard or arm 18, and the support 17 is adapted to receive a pan or other receptacle 19, in which the article to be weighed is placed. The slide 15, the support 17, and the pan 19 are exactly counterbalanced by the weight 16, and in order to accomplish this result the said slide and all the parts mentioned which move therewith are made of very light material, such as aluminium or a compound of aluminium with other metal, while the counterbalance 16 is made of very heavy material, and before the parts above described are assembled the scale-bar with the screw 9 are exactly balanced on its support at 8^a, this result being accomplished in any desired manner. The scale-bar proper, or that part thereof which projects from the top of the support 7, is wider vertically than that part thereof within the said support, the bottom portion of said scale-bar being extended downwardly in order to accomplish this result, and formed in each of the sides of the bottom portion of the scale-bar proper, or that part thereof which projects from the top of the support 7, is one longitudinal groove 20, and placed thereon is a movable weight 21. The bottom portion of the scale-bar passes through the weight 21, and said weight is provided on its opposite sides with inwardly-directed projections which fit in the grooves 20 and hold said body in place on the scale-bar, while allowing it to move freely longitudinally thereof.

The right-hand side of the scale-bar proper, or that portion thereof which projects from the top of the support 7, is provided below the groove 20, as shown at 22, with a scale according to the avoirdupois system of weights and above the groove 20 with two separate scales, as shown at 23 and 24, and both of which belong to the troy system of weights, the reason for having two scales according to the troy system of weights being that the number of drams in an ounce is not the same as the number of ounces to the pound, as in the avoirdupois system, where sixteen drams make one ounce and sixteen ounces make one pound, in which case one scale can be used for both drams and ounces, and the scale 23 on the right-hand side of the scale-bar represents troy drams, while the scale 24 represents troy ounces.

On the left-hand side of the scale proper, or that portion thereof which projects from the top of the support 7, and below the groove 20 therein is placed a scale 25 according to the metric system, while above said groove 20 is placed two scales 26 and 27 according to the apothecary system, the top scale 26 de-

noting drams while the bottom scale 27 represents ounces.

In order to weigh according to the separate systems herein referred to, the slide 15 must be placed in a certain position for each system, and on the opposite sides of the slot 7^c in the top plate 7^b of the support 7 are placed certain marks which indicate the position in which the support 17 of the pan 19 must be placed when weighing according to the different systems, and it will be understood that the support 17 of the pan 19 is adjusted to various positions by turning the screw 9 by means of the milled head 12, and by means of this operation the counterbalance-weight 16 moves with the support 17, which moves with the slide 15, it being understood that the movement of these parts is always jointly toward or from the pivotal support 8^a of the scale-bar. It will also be seen that the arm or standard 18 of the support 17, which connects said support with the slide 15, is provided with a vertically-arranged index-mark 28, and this index-mark is exactly the same on both sides of said standard or arm.

The index-marks on the top plate 7^b of the scale-support, and with which the index-mark "28" of the pan-support must register in weighing according to the separate systems, are indicated in Fig. 2 on the opposite sides of said slot 7^c. The said index-marks on the right-hand side of the slot 7^c are designated, counting from the pivotal support of the scale-bar backwardly, by the reference-numerals "30," "31," "32," and "33," and the index-marks on the left-hand side of the slot 7^c, counting from the pivotal support of the scale-bar backwardly, are designated by the reference-numerals "34," "35," "36," and "37." The index-mark "30" represents the position of the index-mark "28" on the pan-support 17 when weighing according to the avoirdupois system and when heavy articles are to be weighed and it is not desired to determine the weight of such articles in less than ounces, while if it be desired to determine minutely the weight of such articles in less than ounces the support 17 will be adjusted so that the index-mark "28" thereon will register with the index-mark "33" on the top plate 7^b of the scale-support. In the first of the above cases the scale 22 or the numerals thereof represent pounds and the subdivisions represent ounces, while in the second instance the numerals on said scale represent ounces and the subdivisions drams.

In weighing according to the troy system, in which two scales are employed, if it be desired to weigh material where a reading of less than ounces is not required the bottom scale 24 is employed and the numerals of said scale represent pounds, while the subdivisions represent ounces it being understood that the pan-support is moved so that the index-mark "28" registers with the index-mark "31" on

the top plate 7^b of the support 17, and if it be desired to obtain minute readings, or readings of smaller denominations than ounces, the upper scale 23 is employed, and the numerals on said scales represent ounces, while the subdivisions thereof represent penny-weights, and in this case the pan-support 17 is adjusted so that the index-mark "28" thereon will register with the index-mark "32" on the top plate 7^b of the support 17. The use of the opposite side of the scale in weighing according to the metric and apothecary systems will be understood from the foregoing description, and it will also be understood that in the use of the scale-weight 21 the said weight, serves as a pointer for all of the separate scales on both sides of the scale-bar, the said scales being read from the front edge of said weight, or that edge thereof adjacent to the support of the scale-bar.

The weighing apparatus herein shown and described and as represented in Figs. 1 and 2 is made according to a scale, the transverse diameter of the top plate 7^b being six inches, while the total length of the scale-bar is eighteen inches and that portion thereof which projects from the pivotal support being twelve inches, and in the construction of this apparatus the index-marks "30" and "33" of the avoirdupois system on the top plate 7^b of the scale-support are placed, respectively, three-eighths ($\frac{3}{8}$) inch and six inches from the pivotal support of the scale-bar. The index-marks "31" and "32" of troy system are placed, respectively, one-half ($\frac{1}{2}$) inch and five and one-half ($5\frac{1}{2}$) inches from the pivotal support of the scale-bar. On the opposite side of the slot 7^c the index-marks "34" and "36," which belong to the metric system, are placed, respectively, one-sixth ($\frac{1}{6}$) and one and seven-tenths ($1\frac{7}{10}$) inches from the pivotal support of the scale-bar, while the index-marks "35" and "37," which belong to the apothecary system, are placed, respectively, one-half ($\frac{1}{2}$) and five and one-half ($5\frac{1}{2}$) inches from the pivotal support of the scale-bar. Of course these figures are not the result of absolute measurements, but they are approximate in all cases, and when placed as shown and described the operation of the scale will be sufficiently definite and correct for all practical purposes.

In the construction of my improved scale, however, the exact point at which the index-marks on the top plate 7^b of the scale-support are placed may be absolutely determined, so as to cause the scale to operate with exact certainty according to any of the systems and the minutest readings desired. It will also be apparent that notwithstanding the fact that I have described the scale-bar herein shown and described as of a certain length my improvement is applicable to all sizes and styles of scales working on the lever-and-fulcrum principle and my invention is not limited to any of the dimensions of the scale-bar

or the other parts of the apparatus as herein shown and described.

The principle involved in the construction of my improved scale may also be employed in the construction of counting-machines and other machines of this class, and my invention is not limited to the use of this principle in a scale as herein shown and described, the main principle of this invention being the use of a pivoted slotted bar, a screw mounted in said bar and the opposite ends of which are provided with opposite threads, a support connected with one end of said screw, and a counterbalance-weight connected with the other end of said screw.

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

1. A scale comprising a circular hollow support, a scale-bar pivoted in one side thereof and projecting therefrom, a longitudinally-arranged screw mounted in said bar and the ends of which are provided with opposite threads, a slide mounted on said bar within said support and through which one end of said screw passes, said slide being threaded to correspond with said screw, and a counterbalance-weight mounted on the outer end of said bar and through which the other end of said screw passes, said slide and said weight being adapted to move toward and from the pivotal support of said bar according to the direction in which the screw is turned, and said slide being provided with a supplemental support which passes upwardly through the top of the main support, said top of the main support being also provided with a longitudinal slot over and parallel with the scale-bar, substantially as shown and described.

2. A scale comprising a hollow support, provided with a slot in the top thereof, a scale-bar pivoted in said support at one side thereof and projecting therefrom, and extending thereinto parallel with said slot, said scale-bar being provided with a longitudinal slot, and a screw placed therein, a supplemental support mounted on the bar within the main support and through which said screw passes, a counterbalance-weight mounted on the outer end of the bar and through which said screw passes, said screw being provided at its opposite ends with opposite threads, and said supplemental support and said counterbalance-weight being correspondingly threaded, and said scale-bar being provided on its opposite sides with a plurality of scales according to separate systems, substantially as shown and described.

3. A scale comprising a hollow support, provided with a slot in the top thereof, a scale-bar pivoted in said support at one side thereof and projecting therefrom, and extending thereinto parallel with said slot, said scale-bar being provided with a longitudinal slot and a screw placed therein, a supplemental

support mounted on the bar within the main support and through which said screw passes, a counterbalance-weight mounted on the outer end of the bar and through which said screw
 5 passes, said screw being provided at its opposite ends with opposite threads, and said supplemental support and said counterbalance-weight being correspondingly threaded, and said scale-bar being provided on its opposite
 10 sides with a plurality of scales according to the separate systems, and the top plate of the main support being provided on the opposite side of the slot therein with index marks which correspond with the separate systems
 15 on the scale-bar, substantially as shown and described.

4. A combination-scale adapted to weigh according to different systems of weights, said scale comprising a hollow support provided
 20 with a diametrical slot in the top thereof, a scale-bar pivoted in said support at one side thereof below the top thereof and projecting therefrom and thereinto parallel with said slot, a screw mounted in said scale-bar, a slide
 25 mounted on said scale-bar within said support and through which said screw passes, a counterbalance-weight mounted on the outer end of the scale-bar and through which said screw passes, the opposite ends of said screw
 30 being provided with opposite threads, and said slide and said counterbalance-weight being similarly threaded, said scale-bar being also provided with a plurality of scales according to different systems of weights, and
 35 the top plate of the support being provided

at the opposite sides of the slot therein with index-marks according to each of said systems, said slide being also provided with a support which passes upwardly through the
 40 slot in the top of the main support, the opposite sides of which are provided with an index-mark, and said scale-bar being also provided with a sliding weight which operates as a pointer for each of the scales thereon
 45 substantially as shown and described.

5. An apparatus of the class described, comprising a support, having a diametrical slot in the top thereof, a scale-bar pivoted at one side of said support and projecting therefrom and extending thereinto parallel with and be-
 50 neath said slot, said bar being provided with a longitudinal slot and a screw mounted therein and provided at its opposite ends with opposite threads, a support mounted on one end of said screw and a counterbalance-weight
 55 mounted on the other end, said support and said weight being threaded to correspond with the ends of said screw on which they are mounted, said scale-bar being also provided with a plurality of scales according to differ-
 60 ent systems, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 2d day
 65 of May, 1901.

JOSEPH S. CÔRTELYOU.

Witnesses:

F. A. STEWART,
 F. F. TELLER.