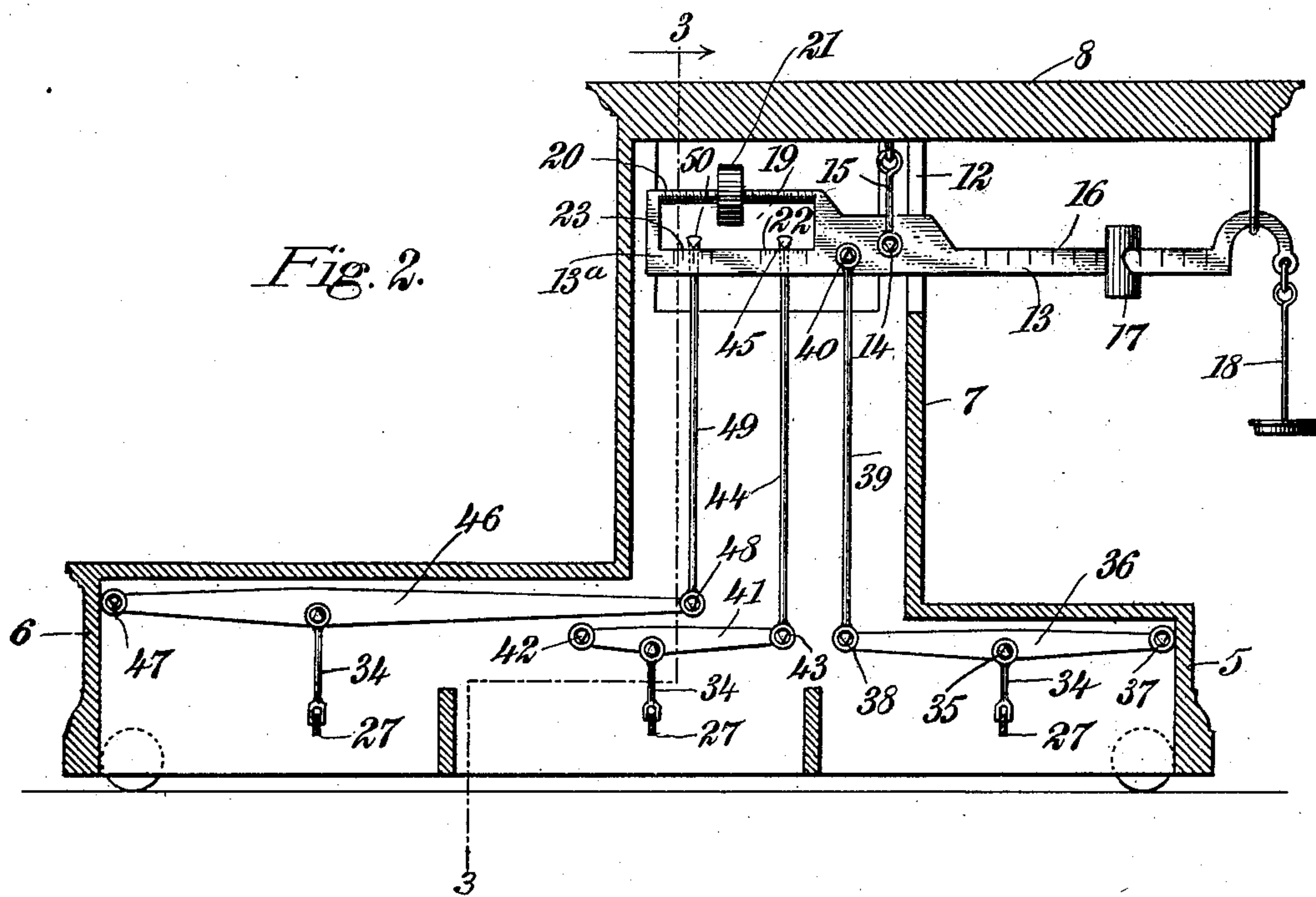
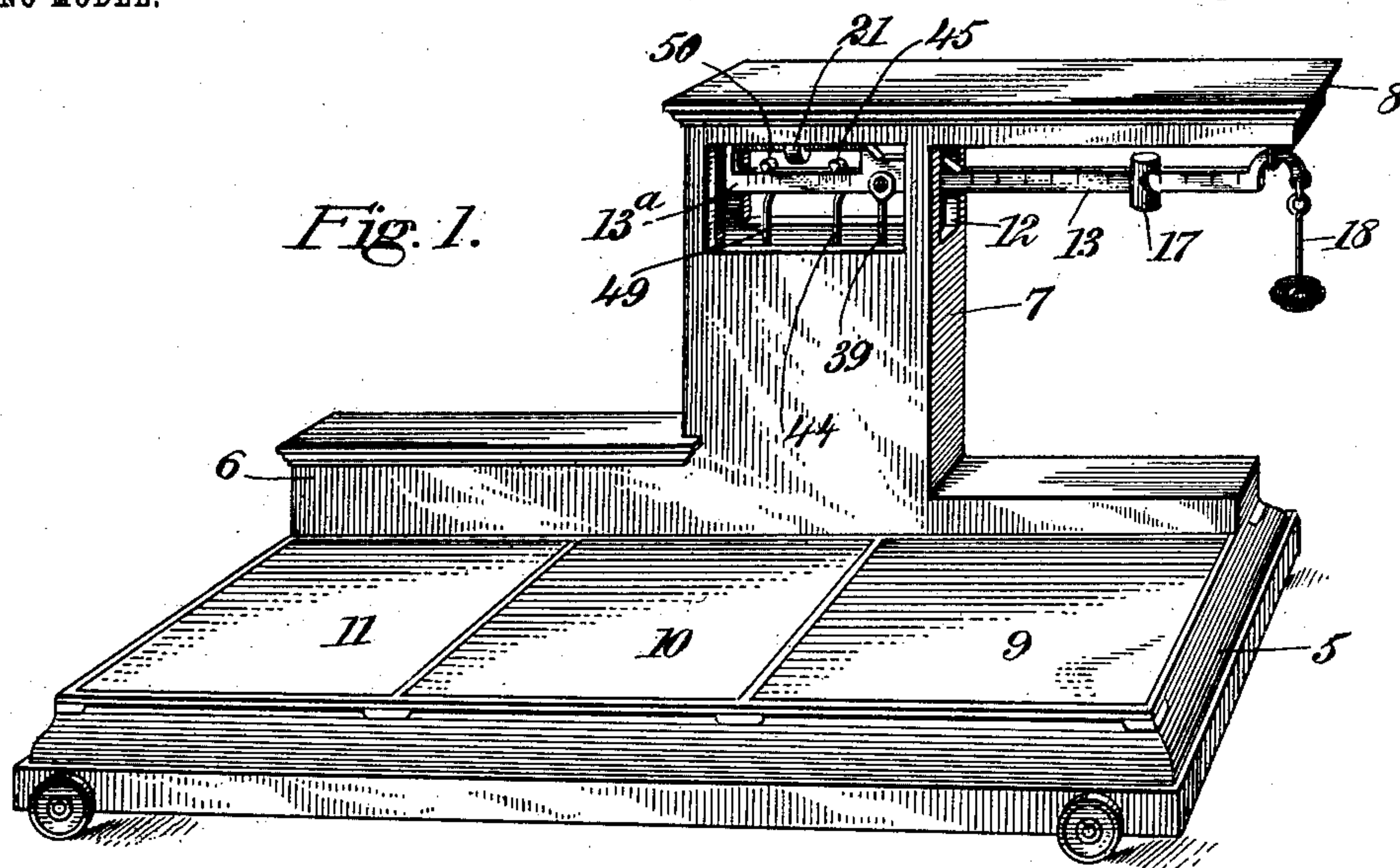


J. COLLINS.  
WEIGHING SCALE.

APPLICATION FILED DEC. 28, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

*Robert Head*  
*A. J. Benham*

INVENTOR

*Jacob Collins*

BY

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ATTORNEYS.

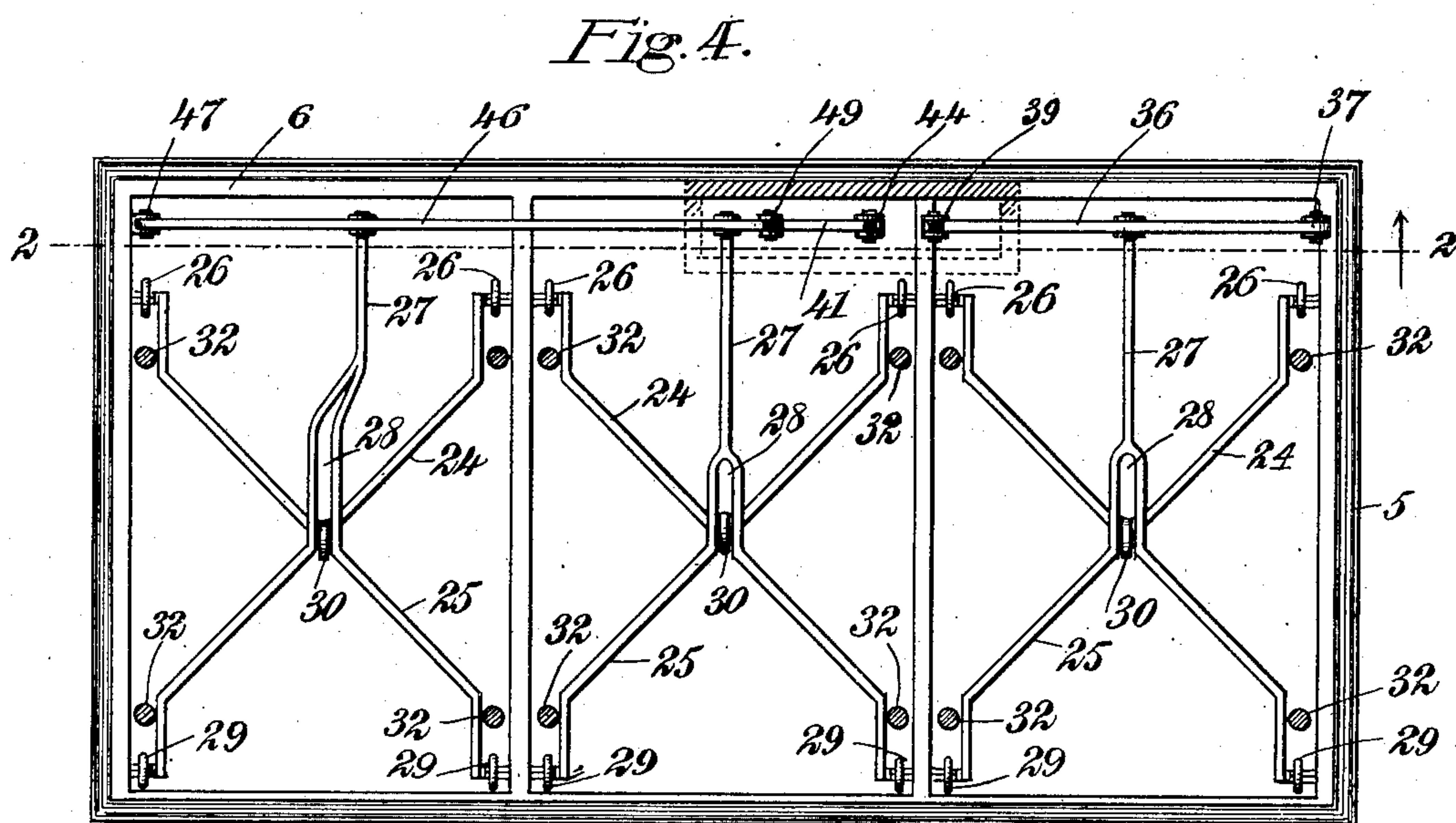
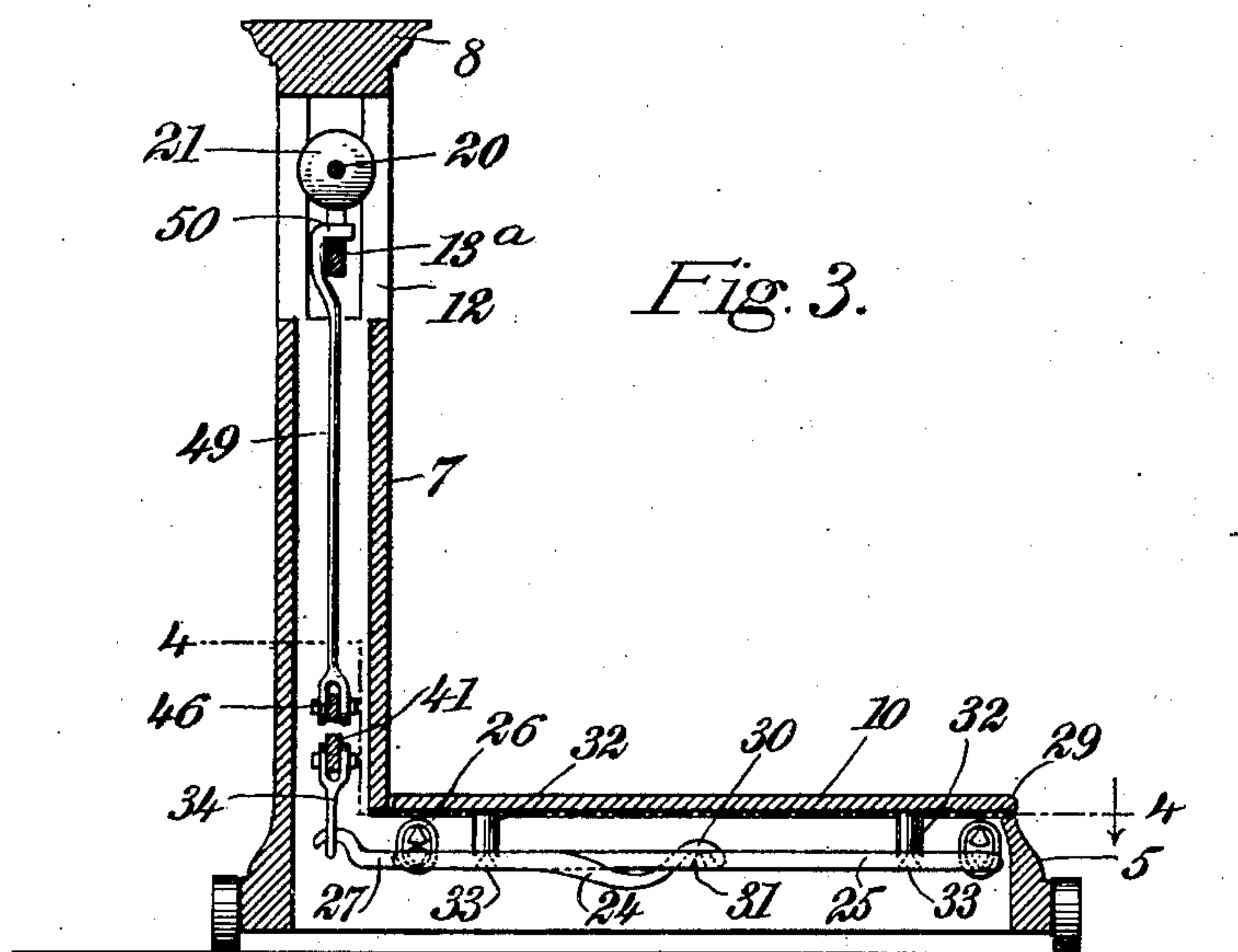
J. COLLINS.

WEIGHING SCALE.

APPLICATION FILED DEC. 26, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES:

Robert Head  
N. J. Bernhardt

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# UNITED STATES PATENT OFFICE.

JACOB COLLINS, OF SEWEE, TENNESSEE.

## WEIGHING-SCALE.

SPECIFICATION forming part of Letters Patent No. 737,907, dated September 1, 1903.

Application filed December 26, 1902. Serial No. 136,568. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB COLLINS, a citizen of the United States, and a resident of Sewee, in the county of Meigs and State of Tennessee, have invented a new and useful Improvement in Weighing-Scales, of which the following is a full, clear, and exact description.

My invention relates to improvements in weighing-scales, in which I seek to provide simple and efficient means adapted for operation in a way to ascertain the relative values of commodities which differ in values—such, for example, in using the apparatus by wheat-millers to determine the quantity of flour and bran to be given in exchange for a predetermined or unknown quantity of wheat the grade or quality of which may be up to or below a required standard.

Further objects and advantages of my invention will appear in the course of the subjoined description and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a weighing-scale constructed in accordance with my invention. Fig. 2 is a vertical transverse section on the plane indicated by the dotted line 2 2 of Fig. 4. Fig. 3 is a vertical section at right angles to Fig. 2 and taken in the plane of the dotted line 3 3 of Fig. 2. Fig. 4 is a sectional plan view on the line 4 4 of Fig. 3.

In carrying my invention into practice I employ a hollow base 5, which is provided at its rear edge with a chambered upstanding member 6 and from this member rises a hollow post 7, adapted to carry the usual head 8, similar to ordinary platform-scales. The hollow base is elongated sufficiently to carry or support a series of independent platforms 9 10 11, each of which is separately mounted in the base to have a limited amount of vertical play therein, said platforms lying substantially flush with the top of the base and with each other.

The chambered post or column 7 is provided at a point just below the head 8 with a vertical slot 12, through which freely passes

a scale-beam 13. This scale-beam is fulcrumed by knife-edged bearings 14 in a clevis or hanger 15, suspended from the head 8, and one arm of the scale-beam is provided with graduations 16, adapted to indicate the weight in pounds. On this graduated arm of the beam is fitted a slidable poise 17 and to the free end of the beam is loosely connected a weight-hanger 18, the same being similar to devices ordinarily used in the art. The scale-beam 13 is provided on the opposite side of its fulcrum from the graduated arm with an extension 13<sup>a</sup>, arranged or constructed to form a slot 19, the upper edge of said slot being bounded by a threaded rod 20, on which is screwed an adjustable balance 21, the latter serving under certain conditions to restore the balance of the scales when certain parts of the platforms 10 or 11 are adjusted, as will be hereinafter described. The member 13<sup>a</sup> of the scale-beam is provided with two series of notches, (indicated at 22 23,) and the face of this member 13<sup>a</sup> adjacent to the series of notches 22 is graduated to indicate the weight in pounds of flour proportionately to each bushel of wheat and adapted to be placed on the platform 10, while the member 13<sup>a</sup> is furthermore graduated adjacent to the notches 23 to indicate the weight in pounds of bran proportionately to each bushel of wheat and which is adapted to be placed on the remaining platform 11 of the series supported by the hollow base 5.

Beneath each platform 9 10 11 of the series is arranged a part of the scale mechanism, the same being shown more particularly by Figs. 3 and 4. The devices just referred to consist of two levers 24 25, each having the shape shown more particularly by Fig. 4. The lever 24 is substantially V-shaped, and the arms of this lever at one end thereof are supported within the hollow base by knife-edged bearings 26. The other lever 25 is provided with an arm 27 and with a slot 28, said lever 25 being substantially Y-shaped. This lever has its terminals fulcrumed within the base by knife-edged bearings 29, and the arm 27 of the lever is extended across the lever 24 and into the chamber of the upstanding hollow member 6, forming a part of the framework. (See Fig. 3.) It will be observed that the companion levers 24 25 are fulcrumed at



opposite ends in the chambered base 5, and that the lever 24 is disposed in underlapping relation to the slotted part 28 of the arm 27, forming a part of the Y-shaped lever 25.

5 This underlapping end of the lever 24 is bent to produce an arm 30, having a knife-edged bearing 31 in the slotted part 28 of the lever-arm 27, thus operatively connecting the levers 24 25 at their meeting ends. Each platform 10 is provided with a series of depending posts 32, arranged to engage with the levers 24 25 by knife-edged bearings, (indicated by dotted lines at 33 in Fig. 3 of the drawings.)

Although I have described the parts 24 and 15 25 as being fulcrumed or connected by knife-edged bearings, I have not considered it necessary to particularly illustrate this detail in the drawings, because these features are well-known expedients to those skilled in the art, 20 and, furthermore, I reserve the right to fulcrum and connect the parts by any well-known equivalent means. The lever mechanisms of the series of platforms are connected operatively with the scale-beam 13, but 25 these levers do not have direct connection with said scale-beam.

The arm 27 of the lever 25 associated with each platform extends rearwardly into the chamber formed by the hollow upstanding 30 member 6 of the framework, and these arms of the series of levers 27 are provided with links 34. (See Figs. 2 and 3.) The link which is connected with the lever 25 of the platform 9 is pivoted by a knife-edged bearing 35 to a lever 36, said lever being fulcrumed at one 35 end by a knife-edged bearing 37 in the chambered member 6. The link 34 is connected to the middle of the lever 36, and the other end of this lever has pivotal connection by a 40 knife-edged bearing 38 with an upstanding rod or pitman 39, the latter being pivoted in a permanent manner by a knife-edged bearing 40 to the scale-beam 13, at a point adjacent to the fulcrum 14 thereof. The lever 45 25 of the next platform 10 of the series has its link 34 connected to another lever 41 at a point quite close to the fulcrum 42 of said lever, as shown by Fig. 2, and the other end of the lever 41 is connected pivotally at 43 to an up- 50 standing rod 44, the latter being formed at its upper end with a hook 45, the lower edge of which is beveled so as to form a knife-edged bearing adapted to engage with the notches 22 of the scale-beam. The lever 25 associated 55 with the platform 11 has its link 34 connected to another lever 46, the latter being hung at one end in the chambered member 6, as indicated at 47 in Fig. 2. The link 34 is pivoted to the lever 46 in a way to provide long and 60 short arms, the short arms being fulcrumed at 47, while the long arm is extended over the lever 41, so as to have its free end, which has a knife-edged bearing 48, lie in the vertical plane of the post or column 7. This long arm 65 of the lever 46 is pivoted to an upstanding rod 49, the upper end of which rod is bent to provide a hook 50, having a knife-edge adapt-

ed to shiftably engage with the series of notches 23 of the scale-beam.

By reference to Fig. 2 it will be seen that 70 the levers 36, 41, and 46 are disposed in such a way that one arm of each lever terminates in the vertical plane of the hollow post 7 and that the series of rods 39, 44, and 49 all lie 75 within said hollow post, so that the upper ends of the series of rods may engage with the scale-beam, and at the same time these rods are spaced apart to allow the rods 44 and 49 to be shifted relatively to the notches 22 80 23 of said scale-beam. The pivotal connection of the levers 41 46 and the pivotal connection of the rods 44 49 to the levers 41 46 are made by knife-edged bearings, as shown by Fig. 2.

The weighing-scales herein described are 85 especially adapted for use by millers in computing the difference between two or more commodities of different values, and at the same time the scales are adjustable to the different grades of values of said commodities. 90 For example, a customer brings to a miller a lot of wheat which proves to be a high-grade No. 1 article. The miller must give to the customer forty pounds of flour to the bushel 95 of wheat and ten pounds of bran for the bushel. In weighing the wheat it is placed on the platform 9 and the poise 17 is shifted on the beam to ascertain the weight. The miller now removes the wheat from the platform 9 and the 100 hook 45 of the rod 44 is adjusted to the graduation indicating forty on the notched scale 22, thus enabling the miller to weigh a sufficient amount of flour on the platform 10 to pay for the amount of wheat. To weigh out the proper 105 quantity of bran, the hook 50 of the rod 49 is adjusted to the graduation indicating ten on the notched scale 23 and the bran is placed on the platform 11 until the scale balances. Between the intervals of weighing the flour 110 on the platform 10 and the bran on the platform 11 it is necessary to adjust the balance 21 if the hooks 45 50 of the rods 44 49, or either of them, are shifted on the scale-beam. It is not material whether the miller does or does 115 not note the weight of the wheat, because the scale will indicate the quantity of flour or bran to be given in exchange for a bushel of wheat. It would not be necessary to have the graduations and notches 22 23 on the 120 scale-beam if all the wheat brought to the mill were of a uniform standard, because the platforms 10 11 and the devices associated therewith would correctly compute the amount of flour and bran that each lot of wheat calls for, but it is a fact that nearly 125 every farmer has a different grade of wheat, ranging from good to very bad, and this calls for a different ratio of flour and bran to the bushel of wheat.

The important feature connected with my 130 improved scales is that the weighing mechanism associated with the platforms 10 and 11 may each be easily and quickly adjusted from one grade to another of the different sub-



stances to be weighed on the respective platforms. If a customer brings to the miller a lot of wheat that is of poor quality and in bad condition, the miller is not required to  
 5 give him in exchange the same quantity of flour and bran, and it frequently happens that the customer is only entitled to receive about thirty pounds of flour and fourteen pounds of bran for each bushel of wheat.  
 10 The miller now adjusts the hook 45 of the platform 10 opposite to the graduation "30" of the notch and scale 22 on the beam and now proceeds to weigh out the proper quantity of flour by using the platform 10 and the  
 15 scale mechanism associated therewith and with the beam 13. The flour is removed from the platform 10, and the hook 50 of the rod 49 is adjusted opposite to the graduation "14" of the series of notches 23 on the scale-  
 20 beam, the balance 21 being adjusted to bring the scales into balance. The miller now proceeds to weigh out the requisite quantity of bran by using the platform 11 and the weighing devices associated therewith. It will  
 25 therefore be seen that my improved weighing mechanism is easily adjusted from one relative value to another in computing the difference in value between one commodity and another and that the scale is arranged to com-  
 30 pute from thirty to forty pounds of flour for each bushel of wheat and from ten to fourteen pounds of bran to each bushel of wheat, although these ratios may be varied as desired.

The improved scale, with a multiplicity of  
 35 platforms, may be arranged to perform any kind of work that requires an exchange of commodities of different value, such as exchanging corn for meal or other commodities in that line.

40 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. Weighing-scales comprising a beam, a series of platforms, a lever mechanism asso-  
 45 ciated with each platform, a rod connected to the lever mechanism of one platform and having a pivotal connection with said beam, and other rods connected individually with the lever mechanisms of the remaining platforms

and fitted shiftably at different points to the 50 beam.

2. Weighing-scales comprising a beam having different graduations at different distances from the fulcrum thereof, a series of platforms, a lever mechanism associated with 55 each platform, and rods between the respective lever mechanisms and the beam, one or more of said rods having shiftable engagement with the beam.

3. Weighing-scales comprising a beam having separate rows of graduations at different distances from the fulcrum thereof, a series of independent platforms, different sets of lever mechanisms operatively related to the 60 respective platforms, and rods independently connecting the respective lever mechanisms with the beam, certain of said rods having shiftable engagement with the beam and relatively to the different graduations thereof.

4. Weighing-scales comprising a beam having separate sets of graduations at different distances from the fulcrum thereof, a series of platforms, a lever mechanism associated with each platform, intermediate levers connected with said platform-levers, a series of 75 rods between the intermediate levers and the beam, and an adjustable balance carried by the beam.

5. Weighing-scales comprising a beam having independent sets of graduations at different distances from the fulcrum thereof, a series of independent platforms, levers operatively connected with said platforms, intermediate levers connected with the platform-levers, a rod connected with one intermediate 80 lever and having a permanent pivotal connection with said beam, other rods connected with the respective intermediate levers, each having a shiftable engagement with the beam, and a balance carried by the beam. 90

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JACOB COLLINS.

Witnesses:

GUS. SHIPLEY,  
 W. A. FORESTER.