(No Model.)

W. R. DUNN.

COMPUTING SCALE BEAM.

No. 588,857. Patented Aug. 24, 1897.

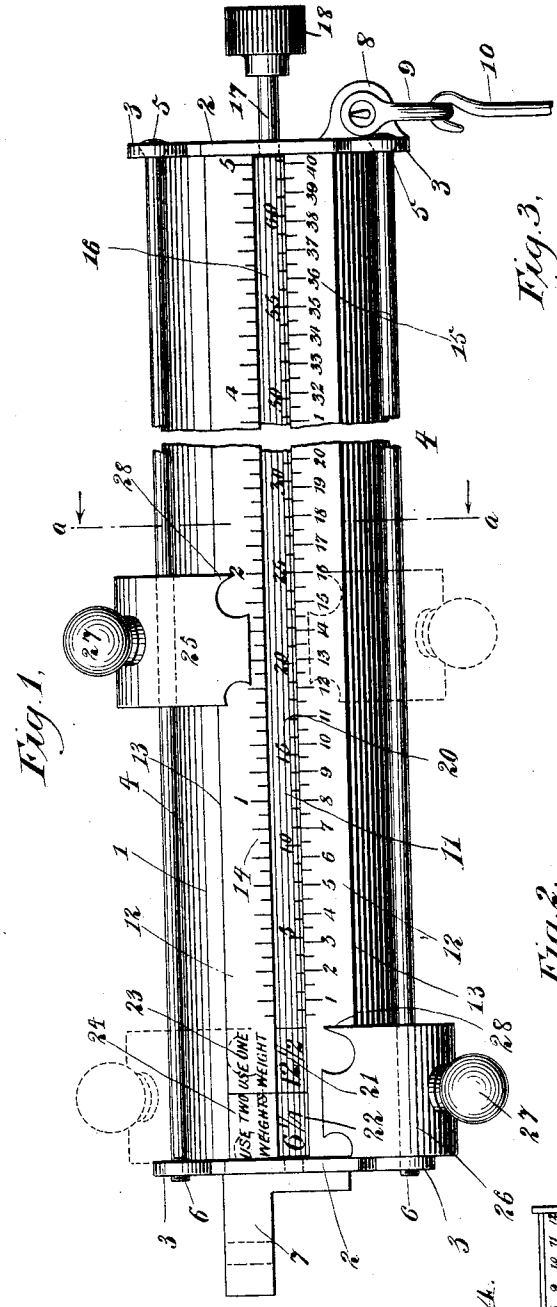


Fig. 1.

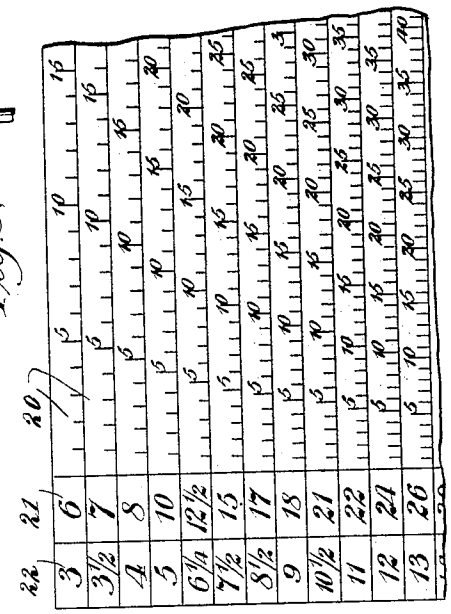


Fig. 3.

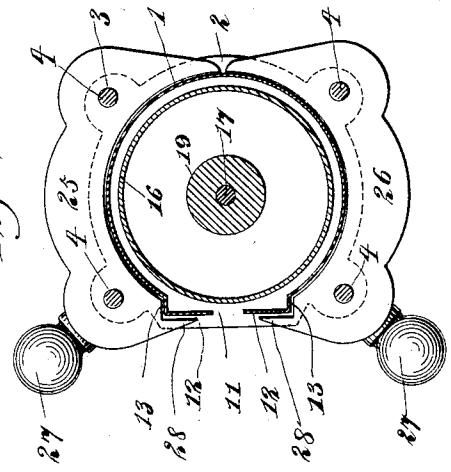


Fig. 2.

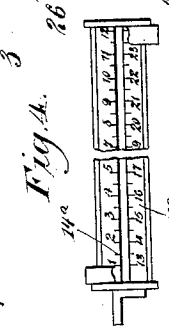


Fig. 4.

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WILLIAM R. DUNN, OF ALTON, INDIANA, ASSIGNOR TO HIMSELF, JOHN T. HOLLCROFT, TEMPLE H. DUNN, LYCURGUS HARRISON, AND A. N. PECKINPAUGH, OF SAME PLACE.

COMPUTING SCALE-BEAM.

SPECIFICATION forming part of Letters Patent No. 588,857, dated August 24, 1897.

Application filed May 11, 1896. Serial No. 591,053. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. DUNN, of Alton, in the county of Crawford and State of Indiana, have invented a new and Improved Computing Scale-Beam, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in that class of computing-scales of which the scale shown and claimed in my pending patent application, Serial No. 541,076, filed March 14, 1895, is a type; and the object of the invention is to improve and simplify the construction of such scales, so as to reduce the cost and weight of the scales and render them capable of more extensive use.

The invention consists in a computing scale-beam having a weighing-beam provided with graduations to indicate pounds and ounces, a price-indicating beam having several series of graduations to indicate the price, and two weights or peas movable along one beam and adapted for independent or joint use to indicate the weight and the price.

The invention also contemplates certain novel features of the construction, combination, and arrangement of the various parts of the improved scale-beam, whereby certain important advantages are attained, and the device is made simpler, cheaper, and otherwise better adapted and more convenient for use than various other similar devices, all as will be hereinafter more fully set forth.

The novel features of the invention will be carefully defined in the 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 views.

Figure 1 is a side elevation showing the beam of a computing-scale embodying my invention. Fig. 2 is a transverse section taken through the beam in the plane indicated by the line *a a* in Fig. 1. Fig. 3 is a diagrammatic view showing a portion of a graduation on the periphery of the price-indicating beam; and Fig. 4 is a view similar to Fig. 1, but drawn to a small scale and showing a modified form of the beam.

In the views, 1 indicates the body portion of the weighing-beam, which is made tubular, as shown in Fig. 2, and is provided with caps or heads 2 at its ends, said caps or heads being grooved on their inner surfaces to receive the ends of the tubular body of the beam and being provided with projecting lugs 3, preferably four in number, arranged equidistant and perforated to receive tie rods or bolts 4, extending longitudinally of the beam outside the hollow or tubular body thereof, said tie-rods being provided with heads 5, having kerfs to receive a screw driver or equivalent tool and having their opposite ends screw-threaded, as indicated at 6, to screw into the perforations of the lugs 3 of the cap or head at the opposite end of the beam.

At one end the weighing-beam is provided with a projecting block or lug 7 of any suitable shape adapted for attaching to any weighing-scale to which the computing-beam may be attached, and at the opposite end of the beam is formed a projecting lug 8, to which is pivotally connected a loop 9, adapted to receive a hook 10, carrying a weight in the ordinary way.

The tubular portion 1 of the weighing-beam is provided with a longitudinal slot 11, formed at one of its sides, and on opposite sides of said slot are produced flattened projecting portions 12, forming at their upper and lower edges, respectively, shoulders 13, extending longitudinally of the beam on opposite sides of the slot 11, and on the flattened portion 12 above the slot 11 is produced a series of graduations 14, indicating pounds and ounces and adapted to be used in connection with a sliding poise or weight, as will be hereinafter explained, when the pan of the scale is used for weighing, this invention being especially adapted for use in connection with scales having both pans and platforms, as will be readily understood by an examination of my above-named patent application, and on the flattened surface 12 below the slot 11 is formed a second series of graduations 15, indicating pounds and fractions thereof and adapted for use in connection with a sliding weight or pea when the scale is employed for weighing articles placed upon its platform.

The beam shown in the drawings is graduated for employment with scales in which

both a pan or scoop and a platform are employed, and in which the leverage system under the platform is so arranged as to require eight pounds of load on the platform to equal one pound of load in the scoop or pan. If, for example, one of the weights employed be placed at the one-pound mark on series 14 above the slot 11, then one pound of goods in the pan or scoop will balance the scale. If the goods are removed from the pan and eight pounds of goods placed on the platform, the scale will balance as before, the weight remaining in the same place. The figures in series 15, which are especially used when weighing articles on the platform, are therefore eight times the value of those in series 14. It will be noticed that the eight-pound figure in the series 15 for platform weighing is directly under the one-pound figure in series 14 for scoop or pan weighing, the sixteen-pound figure directly under the two-pound figure, &c., and the forty-pound figure in the series 15 at the end of the beam is directly under the five-pound figure in series 14. The spacing of pounds or graduations of series 14 are thus eight times longer than those of series 15. This is essential because of the difference of leverage under the pan and platform.

Series 14 above slot 11 begins at zero and ends at five pounds, using the full length of the weighing-beam, and series 15 begins at zero and ends with forty pounds, using the full length of the weighing-beam.

The weighing-beam is circular in cross-section, as indicated in Fig. 2, and it is hollow, as shown, a cylindrical price-indicating beam 16, also hollow by preference, being mounted to turn within the weighing-beam and having one end journaled on a stud projecting centrally from one cap of the weighing-beam and having its other end journaled on the tare beam or rod 17, having a handle 18 projecting from the end of the weighing-beam, as shown in Fig. 1, and provided with a weight 19, arranged in the hollow of the price-indicating beam, as seen in Fig. 2.

The tare-weight 19 is arranged to rotate the price-indicating beam when the handle 18 is turned, and the tare beam or rod 17 is adjustable longitudinally, so that the weight 19 can be moved to change the adjustment of the scale for tare.

On the periphery of the price-indicating beam 16 is produced a number of longitudinal series of graduations 20, adapted to indicate the price at the rate per pound, and at one end of the beam 16 is produced a double series of index-characters 21 and 22, there being one character of each series opposite the end of each of the series of graduations 20 on the beam. The characters 21 indicate the rate per pound for which the corresponding graduations 20 are calculated and the corresponding characters 22 indicate to one-half the rate per pound for which said graduations 20 are calculated.

When the price-indicating beam is in place in the weighing-beam, as shown in Fig. 1, the graduations 20 will be visible through the slot 11 in the weighing-beam between the two series of graduations 14 and 15, and the index-characters 21 will appear at one end of the said slot, an inscription "Use one weight" being produced above the point in the slot at which said characters are visible, as indicated at 23 in Fig. 1, and the index-characters 22 will likewise appear at the end of the slot 11, the inscription "Use two weights" being produced above the point at which they appear, as indicated at 24 in Fig. 1.

At the upper and lower portions of the weighing-beam are mounted weights or peas 25 and 26, arranged to slide longitudinally along the weighing-beam, being made to conform to the curvature of the weighing-beam in cross-section and guided on the tie-rods 4, which extend along the beam, each weight or pea being held by said rods out of contact with the surface of the weighing-beam and being guided on two of said rods. Each weight or pea 25 and 26 is provided with a handle 27, whereby it may be conveniently manipulated, and is also provided with an index 28, the index of the upper weight or pea being arranged to play along the graduations 14 above the slot 11, while the index of the lower weight or pea is arranged to play along the graduations 15 below the slot 11.

Both the indexes 28 are arranged to play along the graduations 20 on the price-indicating beam 16. The index-characters 21 and 22 are adapted to be used in connection with the weights or peas 25 and 26. The characters 21 indicate the rate per pound for goods weighed in the pan when using one weight or pea and the corresponding characters 22 indicate the rate per pound for goods weighed in the pan when using the two weights or peas 25 and 26, as will be hereinafter described.

In operation either of the sliding weights or peas 25 or 26 can be used in connection with either of the three rows of graduations 14, 15, and 20. The weights or peas 25 and 26 are of equal balancing-power whether used for weighing in the pan or on the platform, but it must be understood that if weighing on the platform one or both weights must be used with reference to the graduations 15 below slot 11, and if weighing in the pan one or both weights must be used with reference to the graduations 14 above the slot 11. When either of the weights or peas 25 or 26 is moved out to the end of the weighing-beam, it will serve to counterbalance, as the parts are shown herein, five pounds in the pan or forty pounds on the platform.

By moving both weights out to the end of the weighing-beam, so that both weights stand at their outermost position, the two will serve to counterbalance ten pounds in the pan or eighty pounds on the platform.

The price-scale shown is computed for pan weighing only, and when the price of an ar-

ticle weighed on the platform is desired to be known the indications of the scale 20 must be multiplied by eight to obtain an accurate result, and if the series of graduations 14 above the slot 11 are used in connection with platform weighing then these graduations must also be multiplied by eight. Thus if a package worth twenty-five cents per pound is placed on the platform and to balance it the weight twenty-five is moved out to two pounds then the index 28 will point to the price (fifty cents) on the price-scale. As the price-scale and the graduations 14 above the slot are computed for pan-weighing it is plain that it will be necessary in this instance to multiply the pound and price indications by eight in order to get the correct weight and price of the article on the platform.

Again, if it be desired to weigh in the pan sixty-two and one-half cents worth of goods at twelve and one-half cents per pound this may be accomplished by moving either of the weights or peas 25 or 26 out to the end of the beam, so that its index 28 corresponds with the graduation "62½" upon the price-indicating beam 16, and said index will at the same time register five pounds on the series 14 above slot 11.

The second series 22 of index-characters permits of using the scales to weigh out articles at one-half the rates indicated by the series 21. For example, if it be desired to weigh in the pan ten pounds, or sixty-two and one-half cents worth of goods at six and one-quarter cents per pound, both of the weights or peas 25 and 26 will be moved out to the end of the weighing-beam, so that their indexes 28 will correspond with the "62½ cents" graduation on the price-indicating beam, and both indexes will then register five pounds on series 14 above slot 11, and as each weight when in this position will counterbalance five pounds in the pan both together will counterbalance ten pounds, which would be the proper quantity of the article in the pan.

If the article at twelve and one-half cents per pound is weighed on the platform and either of the weights 25 or 26 when moved out to the "62½ cents" graduation on the price-indicating beam 16 counterbalances the weight on the platform, then the price, sixty-two and one-half cents, must be multiplied by eight to give the correct price, five dollars, and the series 15 below the slot will give the weight of the article—viz., forty pounds.

If both weights 25 and 26 when moved out to the "62½ cents" graduation on the price-indicating beam are counterbalanced by goods on the platform at six and one-fourth cents per pound, then the price, sixty-two and one-half cents, must be multiplied by eight to give the correct price—viz., five dollars—and the pounds registered by the two indexes 28, both understood as playing on series 15 below slot 11, must be added together to give the correct weight, eighty pounds.

Again, if it be desired to weigh in the pan ninety cents worth of goods at twelve and one-half cents per pound it is evident that this cannot be accomplished with one weight or pea, being beyond the limit of the beam shown, which is only adapted to weigh five pounds in the pan when using one weight. In order to weigh out ninety cents worth of goods at twelve and one-half cents per pound, both weights or peas 25 and 26 must be employed. To perform the operation, one of the weights 25 or 26 may be placed at "60 cents" on the price-indicating beam and the other weight placed at "30 cents," or each of the two weights may be placed at "45 cents" on the price-indicating beam, the sum of the amounts indicated by the indexes 28 of the two weights on the series of graduations 14 equaling the weight of goods in the pan.

In price-weighing material on the platform when it is necessary to employ two weights the same operation above described is performed, the indications of the two weights on the price-indicating beam being multiplied by eight to determine the accurate price.

From the above description it will be seen that the invention is extremely simple and inexpensive and by its employment permits the capacity of an ordinary scale to be practically doubled at a slight cost. The length of the weighing-beam is reduced one-half by using the two weights and the diameter of the price-indicating beam is reduced one-half by the use of the two index-characters 21 and 22 in connection with the two weights 25 and 26, so that the scale is made much more compact and light than it would otherwise be. It will also be seen that the invention is susceptible of some modification without material departure from its principles and spirit, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the parts herein set forth.

When the beam is to be used in connection with scales having only a platform or only a pan, one series of the graduations 14 and 15 is, as will be understood, useless, and for such scales I preferably employ the arrangement shown in Fig. 4, wherein one of the two series of graduations 14^a and 15^a above and below the slot in the weighing-beam forms a continuation of the other, the graduations on the upper scale 14^a varying, as shown, from "1" to "12," while the lower graduations 15^a range from "13" to "24." In this way by employing one weight quantities up to twelve pounds may be weighed, and by employing two weights quantities up to twenty-four pounds may be weighed.

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

1. In a computing-scale, the combination of a hollow weighing-beam having graduations to indicate units of weights, a price-indicating beam located within the hollow weighing-beam and having price-indicating graduations, and two weights or peas movable along

the hollow weighing-beam and adapted for joint or independent use to indicate the weight and the price at the same time, substantially as set forth.

2. In a computing-scale, the combination of a hollow weighing-beam having two series of graduations to indicate units of weight, a price-indicating beam located within the hollow weighing-beam and having price-indicating graduations, and two weights or peas movable along the hollow weighing-beam and having indexes arranged to play along the two sets of graduations on the hollow weighing-beam and the graduations on the price-indicating beam at the same time, substantially as set forth.

3. In a computing-scale, the combination of a hollow weighing-beam having graduations to indicate units of weight, a price-indicating beam mounted to turn therein and having several series of graduations to indicate the price, each series of graduations on the price-indicating beam being provided with two index-characters, and two weights movable along said hollow weighing-beam and adapted for use in connection with the graduations on the weighing-beam and the price-indicating beam and with the index-characters on the price-indicating beam, substantially as set forth.

4. In a computing-scale, the combination of a hollow weighing-beam having a slot and a series of graduations extending along the same, a price-indicating beam mounted to turn in the hollow of the weighing-beam and provided with peripheral price-indicating graduations to appear at the slot in the weighing-beam, heads for the hollow weighing-beam, tie-bolts extending longitudinally of the weighing-beam and connecting the heads to hold the same in place, and a weight or pea movable along the weighing-beam and adapted for use in connection with the graduations on the weighing and price-indicating beams, substantially as set forth.

5. In a computing-scale, the combination of a hollow weighing-beam having a slot and a series of graduations extending along the same, a price-indicating beam mounted to turn in the hollow of the weighing-beam and provided with peripheral price-indicating graduations to appear at the slot in the weighing-beam, heads for the hollow weighing-beam, tie-bolts extending longitudinally of the weighing-beam and connecting the heads to hold the same in place, and a weight or pea guided on one of the tie-bolts and movable along the weighing-beam, and adapted for use in connection with the graduations on the weighing and price-indicating beams, substantially as set forth.

6. In a computing-scale, the combination of a hollow weighing-beam having two series of graduations to indicate units of weight, a price-indicating beam located within the weighing-beam and provided with several series of price-indicating graduations, each series of price-indicating graduations being provided with two index-characters, and two weights movable along the hollow weighing-beam and adapted for joint or independent use to indicate the weight and the price at the same time, substantially as set forth.

7. In a computing-scale, the combination of a hollow weighing-beam having a slot, a series of graduations at each side of the slot, a price-indicating beam mounted to turn in the said hollow weighing-beam and provided with peripheral price-indicating graduations arranged to appear at the slot in the weighing-beam, and two weights or peas movable along the weighing-beam and adapted for joint or independent use to indicate the weight or price, substantially as set forth.

8. In a computing-scale, the combination of a weighing-beam having a longitudinal slot or opening and provided with two series of graduations to indicate units of weight, the two series of graduations being located one at each side of the said longitudinal slot or opening, a price-indicating beam having several series of price-indicating graduations, the said price-indicating beam being movable, whereby either of the series of graduations can be made to appear at the opening between the two series of graduations on the weighing-beam, and two weights or peas movable along one beam and adapted for joint or independent use to indicate the weight or price, substantially as set forth.

9. In a computing-scale, the combination of a weighing-beam having a longitudinal slot or opening formed therein, the said beam being provided with two series of graduations located one at each side of the said longitudinal slot or opening and indicating units of weight, a price-indicating beam having several series of price-indicating graduations, each series of graduations on the price-indicating beam being provided with two index-characters for the purpose set forth, the said price-indicating beam being movable, whereby either of the series of graduations and its accompanying index-characters may be caused to appear in the opening between the two series of graduations on the weighing-beam, and two weights or peas movable along one beam and adapted for independent and joint use to indicate the weight or price, substantially as specified.

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Witnesses:
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