No. 617,725.

Patented Jan. 17, 1899.

F. J. ENGLEN.

COMPUTING SCALE.

(Application filed Nov. 26, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

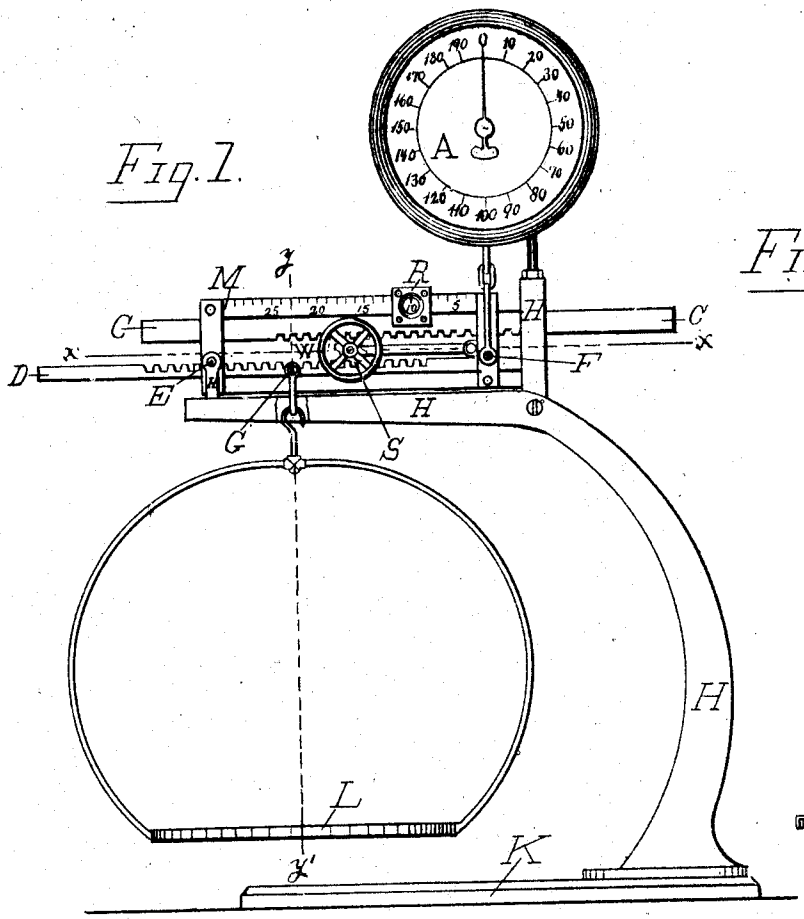



Fig. 2.

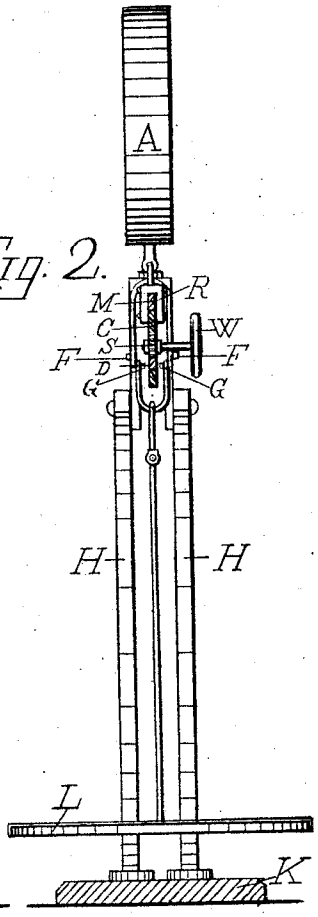
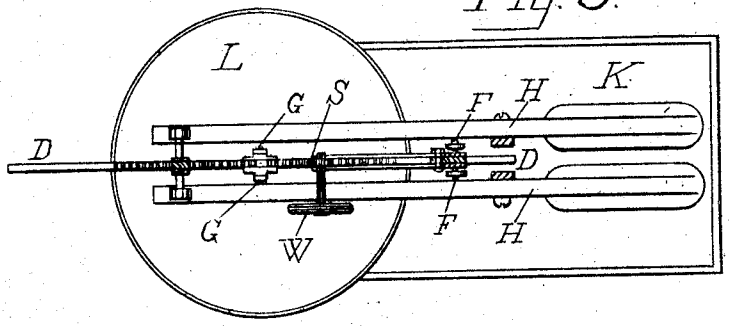



Fig. 3.




WITNESSES:

Ralph Richardson

Patrick Sheehy.

INVENTOR

Frederick J. Englen

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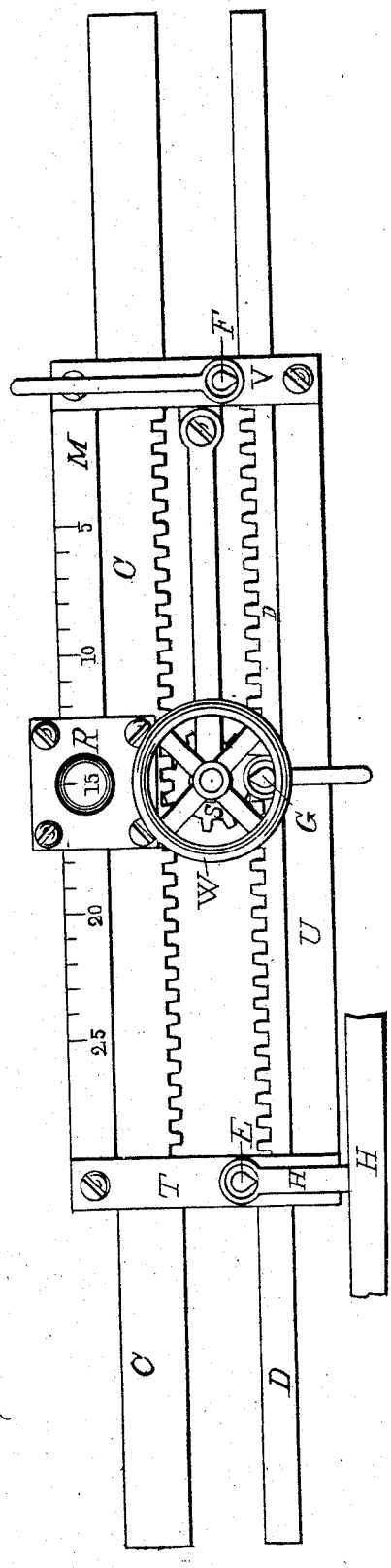
COMPUTING SCALE.

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(No Model.)

2 Sheets—Sheet 2.

Fig. 4.




WITNESSES:

Ralph Richardson

Patrick Sperry

INVENTOR

Frederick J. Englen

# UNITED STATES PATENT OFFICE.

FREDERICK J. ENGLEN, OF OMAHA, NEBRASKA, ASSIGNOR OF ONE-HALF TO DANIEL CAMERON AND ROBERT J. RUSSELL, OF SAME PLACE.

## COMPUTING-SCALE.

SPECIFICATION forming part of Letters Patent No. 617,725, dated January 17, 1899.

Application filed November 26, 1897. Serial No. 659,921. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK J. ENGLEN, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented a new and useful Improvement in Computing-Scales, of which the following is a specification.

My invention relates to an improvement in computing-scales by which the value of any article placed thereon is accurately determined, registered, and shown.

It is a common difficulty in the use of ordinary scales that considerable time is consumed and often mistakes made in computing the value of the article or the quantity required to equal a certain value, especially where the price per pound contains a fraction of a cent and inexperienced clerks are employed. The object sought in my invention is to avoid this by providing a scale which shall automatically determine the price and quantity and at the same time indicate it to the merchant and customer. In order that this purpose shall be accomplished with accuracy, ease, and expedition, it is necessary that the mechanism be compact, that it be simple, that its parts be so adjusted and combined that interference with the proper working thereof is impossible, that it be elevated to such a height as that the results can be discerned without effort, and that the operator have such control over the same that a minimum effort is required to produce the desired result. This object I accomplish by means of the device illustrated in the accompanying drawings, in which—

Figure 1 is a vertical view of the entire machine. Fig. 2 is a vertical section of the machine at line $y\,y$ on Fig. 1. Fig. 3 is a horizontal sectional view of machine at line $x\,x$ on Fig. 1. Fig. 4 is a detailed side view of lever or beam, drawn on a larger scale than that of Figs. 1, 2, and 3.

Similar letters refer to similar parts throughout the several views.

The machine consists of a frame H H, which is fastened to base K; also, a pan or receptacle L or lever or beam, (shown in Fig. 4,) particularly described hereinafter, from which the pan or receptacle L is suspended, and a spring-dial A, from which is suspended one end of the lever or beam. This dial registers values in money and in mechanism is similar to the dials now in use on spring-balance scales. The lever or beam consists of a rectangular frame T U V M, through which openings are made for the passage of an upper and a lower slide. In Fig. 4 the slides are marked C and D. In the center of this lever or beam is a fixed pinion which registers with teeth cut in slides C and D. On the axis of this pinion is placed a hand-wheel W to turn same. When this pinion is turned to the left, the upper slide C is moved to the left and the lower slide D to the right, and vice versa. By the knife-edge bearing G and clevis the pan or receptacle L is suspended from the lower slide D. To the upper slide C is fastened an indicator R, fitted to encompass the upper bar M, which indicator by a needle points to figures stamped on upper bar M. The figures on the upper bar M are graded from lower to higher and indicate the price per pound of the article to be weighed.

When the scale is not in use, the hand on the dial A stands at zero. The relative movements of the slide C and its attachments R and the slide D and its attachments C and L do not of themselves affect the pressure upon point F or upon the dial A when the scale is empty; but when anything is placed in the pan or receptacle L then the pressure of such article upon the dial A is in proportion to the amount indicated as the price per pound. This is by reason of the fact that as the indicator R moves to the higher price per pound so the knife-edge bearing G, from which is suspended the pan or receptacle L containing the matter to be weighed, moves closer to point F and exercises a proportionately greater strain upon the dial A. Thus if a ten-pound weight is placed in the pan or receptacle L of scale and the indicator is set at the price "10¢" the strain this ten-pound weight exercises upon point F will turn the hand of the dial A to indicate "$1." If, however, this same weight is placed in the pan of scale and the indicator R is moved to the point "20¢," the ten-pound weight being nearer point F exercises a greater strain upon the dial A,

and consequently turns the hand of the dial to the "$2" mark. All other and intermediate graduations are in the same proportion.

The lever or beam rests upon point E by means of a knife-edge in a bearing which is part of frame II II. At point F it is suspended from dial A.

Because of the fact that to the pinion S is attached a hand-wheel W to turn the same the operator has complete and easy control of the machine and can most readily adjust the same to the desired price per pound.

By reason of the fact that the indicator R and the knife-edge bearing G, from which receptacle is suspended, can each pass either to the right or left of pinion S there is secured the greatest possible space whereon to indicate the price per pound without enlarging the dimensions of the scale, and thus while maintaining the compactness of the machine there is secured the greatest possible accuracy. If all the variations of price per pound were indicated in the space of three (3) inches accuracy in the indication thereof would be difficult, whereas if these variations are indicated in the space of eight (8) inches greater accuracy is easily obtained.

Accuracy in the operation of this scale is further insured by the fact that the matter to be weighed is placed below the mechanism of the beam, and thus no drippings from the scale-pan can interfere with the teeth of the bars or the operation of the pinion.

A higher degree of accuracy is further secured by this mechanism by reason of the fact that the movable slides C and D are both fixed and determined in their relation to the pinion S, because they are firmly held in their course, and thus it is impossible for the upper bar C to be elevated in the slightest degree from the pinion S; but it is equally impossible for the pinion S to be elevated in the slightest degree from the slide D, and thus as the pinion necessarily maintains its position with respect to the two bars any movement of the pinion will always produce exactly the same movement of the respective bars.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in the lever or beam of a computing-scale, of a rectangular frame constructed as specified, through which pass an upper and lower slide, cut with teeth, in the center of which frame is a fixed pinion provided with teeth cut to register with teeth in the slides, on the journal of which pinion is placed a hand-wheel to turn same, the upper bar of said frame being marked to indicate price per pound, and the upper slide having fastened to it an indicator fitted to encompass the upper bar, and the lower slide having suspended from it as specified a pan or receptacle, the same being constructed so as to permit the indicator and the knife-edge bearing sustaining the pan or receptacle to pass either to the right or left of the fixed pinion.

2. The combination, in a computing-scale, of a framework constructed to support a dial marked to register values, from which dial is suspended one end of a lever or beam, the other end of said lever or beam resting by a knife-edge upon a bearing upon said framework, which said lever or beam is constructed with a rectangular frame through which two movable slides pass, the one being situated above the other, the upper bar of said frame being marked to register the price per pound, the upper slide having attached thereto an indicator fitted to encompass the upper bar and so constructed as to indicate, by needle-point, a price per pound, a pinion being fixed in the center of said frame, with teeth cut to register with teeth cut in the movable slides, to the journal of which pinion is attached a hand-wheel, from which lower movable slide is suspended, by a knife-edge bearing, a pan or receptacle, said lever or beam being so constructed that the indicator and the mechanism sustaining the pan or receptacle may each pass to the right or left of said pinion.

FREDERICK J. ENGLEN.

Witnesses:
WILLIAM D. MCHUGH,
HENRY P. LEAVITT.