H. S. CUSHING.

Scale Beam.

No. 54,509. Patented May 8, 1866.

Fig. 3.

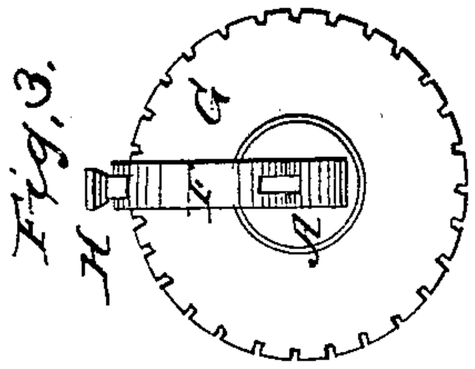
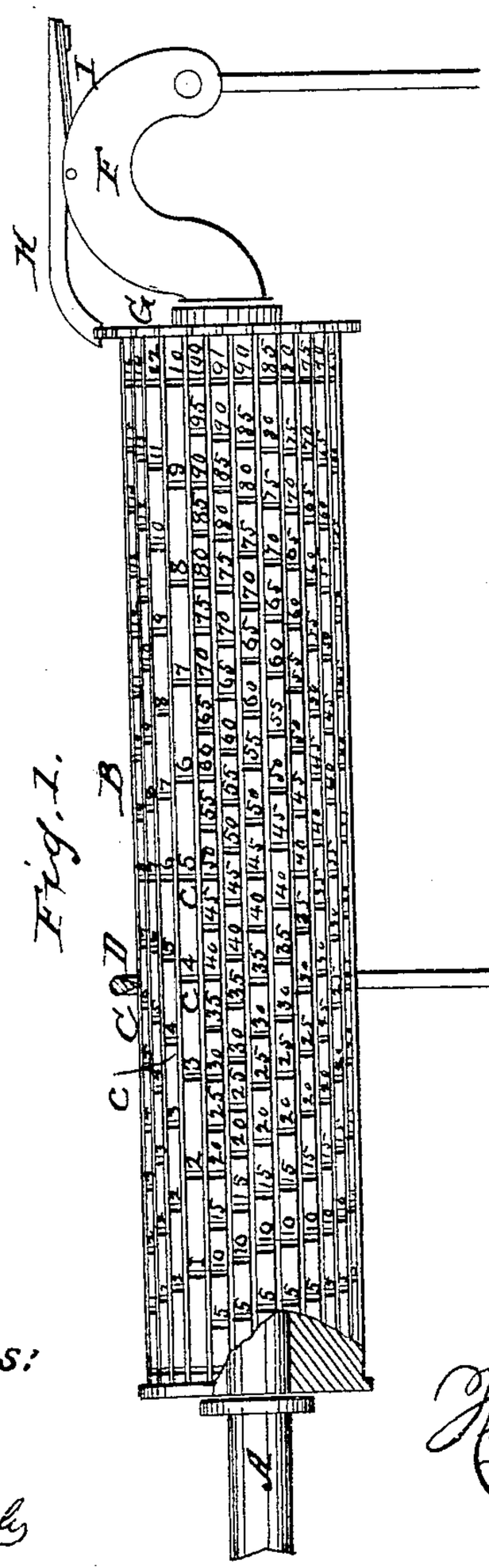


Fig. 1.



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UNITED STATES PATENT OFFICE.

H. S. CUSHING, OF BLOSSBURG, PENNSYLVANIA.

IMPROVEMENT IN SCALE-BEAMS.

Specification forming part of Letters Patent No. **54,509,** dated May 8, 1866.

To all whom it may concern:

Be it known that I, HIRAM S. CUSHING, of Blossburg, in the county of Tioga and State of Pennsylvania, have invented a new and useful Improvement in Scale-Beams; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a peripherical view of a scale-beam made according to my invention. Fig. 2 is an end view.

The object of this invention is to combine with a scale-beam a means of indicating to the eye, without reckoning, the value of fractions in the weight—as, for instance, the value of fractions of a pound where the pound is the unit of weight.

It consists in placing on the axis of the beam a cylinder which is free to be turned, and which is held in any desired position by a spring-catch fastened to the end of the beam. The periphery of the cylinder is divided into a series of planes running lengthwise of it and parallel with the axis of the beam. These planes are separated by grooves or lines, and the outer end of the cylinder, which is also the outer end of the beam, is inscribed with figures which are to stand for the price per pound of any article to be weighed. These figures may be from 2 upward. Each of such longitudinal planes is then divided into as many parts as there are units in the number at the end of such planes—that is to say, if the number 10 is inscribed or graven at the end of one of the planes at the end of the beam, that plane is to be divided by grooves or indentations across it into ten divisions, and so for each plane; but where the number on a plane is very large the unit of division may be a number of which such large number is a multiple.

A designates the axis of a scale-beam broken away so that the devices by which it is connected to the platform or scales are not seen in this example.

F is the curved end of the beam, on which the pendulum of the scale is suspended. Upon its back is pivoted a catch, H, which moves or vibrates in a plane that passes vertically through the axis of the beam.

Upon the axis A is placed a cylinder, B, which is allowed to rotate on the axis, but is not allowed to move endwise thereon. Its periphery is formed into a number of narrow planes, which extend from one end to the other of the cylinder, and which are divided by grooves or lines. The outer end of said cylinder has a flange, G, which is notched on its periphery in such a manner as that each notch comes opposite one of the planes on the cylinder.

The inner end of catch H is made sharp, and is turned down so as to intersect the flange, into one or another of whose notches it is driven by a spring, I, that operates to raise its outer end.

The outer end of each plane on the cylinder, next to the flange G, is inscribed or engraved with a series of numbers running, if desired, from unity upward. In this example the lowest number is 10 and the highest 100. Each plane is next divided across by notches into as many divisions as there are units in the number at the head or end of that plane—as, for instance, in the case of the plane marked 10, the notches will be so made as to divide the whole length of the plane into ten equal parts, and each part is numbered from units up to 9, and so with every other plane, except that, where the number on a plane is large, the divisions are taken to represent any smaller number of which such large number is a multiple, which number is then taken for the unit of division of that plane—as, in the case of the plane numbered 100, the number 5 is taken as the unit of division, and the plane is divided into twenty equal divisions, each division being separated from the other by notches, and such notches being marked with the numbers that express the progression or addition of such divisions from left to right up to the end of the plane, so that if the plane marked 100 is divided into twenty parts each part will be of the value of the numeral 5, and the parts will be numbered, from left to right, 5, 10, 15, 20, and so on until the last division but one is reached, which will be marked 95, the last one at the end of the plane being already marked 100.

E is a weight having a hook, D, to hang on the cylinder. The hook has a sharp edge, which will articulate with any of the transverse notches, C, of the several planes. The scales

and beam are arranged so that the scales will be balanced when the weight E is hung on the left-hand end, and when the weight is placed at the right-hand end, next the flange G, it balances the weight of one pound.

The numbers at the ends of the planes indicate price, and the numbers which mark the several divisions of each plane indicate divisions or fractional parts of such price. For instance, taking the number 10, at the end of the beam, to designate the price of an article, as that it is ten cents a pound, it is evident that each of the equal divisions into which that plane is divided is equal to one-tenth of that price, and therefore if the beam is balanced when a one-pound weight, E, hangs beneath the cross-groove marked 7, it is clear that the article weighed out is seven-tenths of a pound, and that its value is seven cents. The figures, therefore, indicate cents instead of ounces.

The operation of the beam is as follows: Suppose one wants an article of which the price is eighteen cents a pound. The clerk turns the cylinder until the catch H engages the notch which is in line with the plane numbered 18. If three pounds of the article are to be weighed out, he places a three-pound weight on the pendulum of the scale, and then, by hanging the light weight F on the beam, he ascertains the exact weight by bringing its hook to the division of the plane where the beam is balanced. Thus, if it is balanced when the hook rests in the notch 9, that number expresses the fractional value in cents which the article weighs over three pounds, the whole price being ascertained by multiplying eighteen by three and adding nine to the sum so obtained. So that in weighing by this beam the expression will be three pound and nine cents instead of three pounds nine ounces. My invention is thus, in effect, a ready reckoner, inasmuch as it expresses in decimals of the price the value of parts of a pound.

The following additional example will illustrate my invention still further: If a customer wishes to buy ten cents' worth of tobacco, and tobacco is selling at seventy-five cents a pound, the merchant turns the cylinder until the plane marked 75 is directly beneath the catch, and then places the weight E so that its hook engages the cross notch or groove 10, the amount of tobacco which will bring the beam to a balance will be the amount called for. If no rotating cylinder is used, and the beam is divided on its length according to the principle of this invention only on one line or plane, the use of the beam is limited to reckoning the price of fractions of a pound of only such articles as have the same value per pound, and if the beam has several lines or planes on its upper side so marked its capacity will be to that extent increased.

I claim as new and desire to secure by Letters Patent—

The combination of the scale-beam A, the rotating cylinder B, marked and divided longitudinally and transversely, as shown, and the catch H, and rachet-plate G, for holding the cylinder stationary, substantially as shown and described.

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