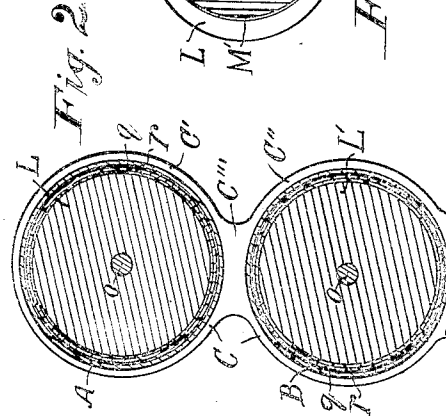
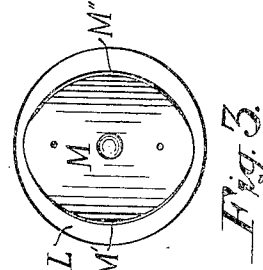
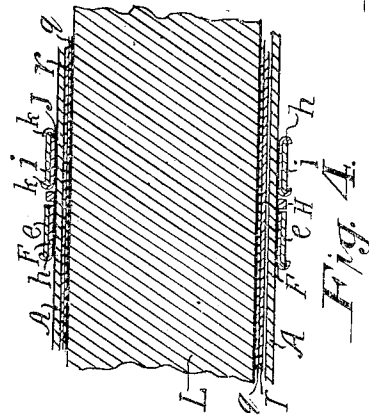
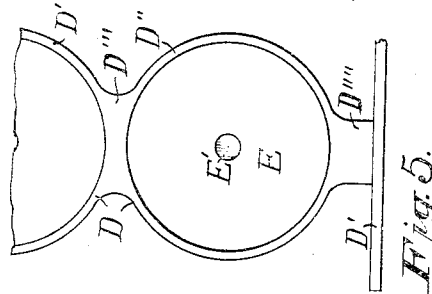
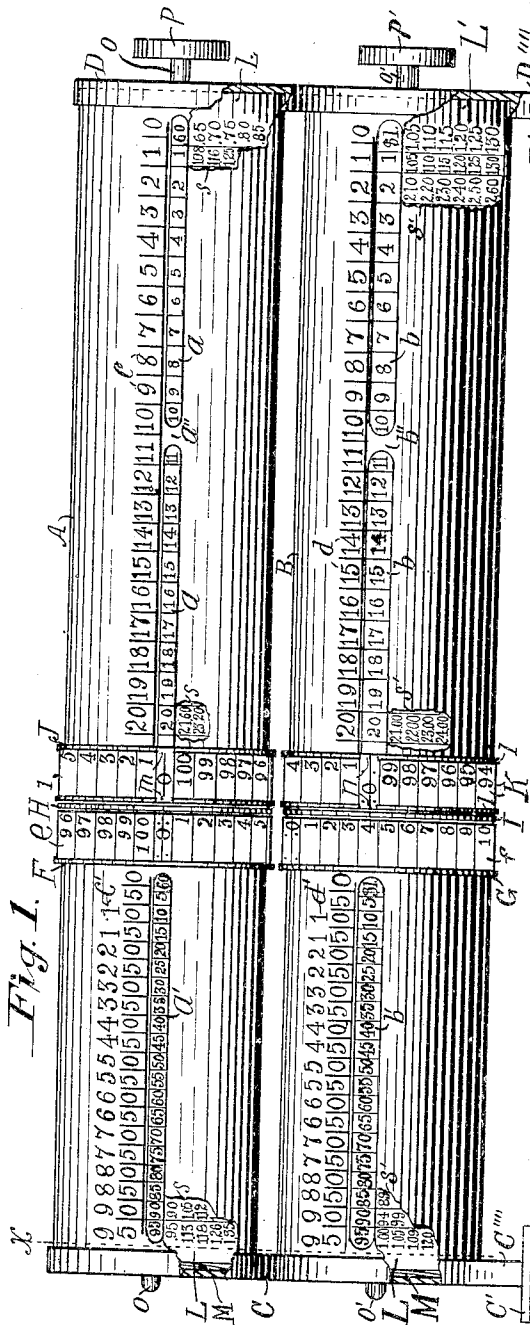


S. M. BOLING.
COMPUTING DEVICE.

APPLICATION FILED NOV. 2, 1908. RENEWED FEB. 15, 1910.

973,403.

Patented Oct. 18, 1910.



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UNITED STATES PATENT OFFICE.

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COMPUTING DEVICE.

973,403.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL M. BOLING, a citizen of the United States, residing at Chandler, in the county of Lincoln and State of Oklahoma, have invented certain new and useful Improvements in Computing Devices, of which the following is a specification.

My invention relates to computing devices, in which a tube horizontally supported by standards attached to each end thereof has a slot or series of slots near its entire length to permit observation of interior parts; near said slots and at regular intervals numbers are stamped in the surface of said tube, the numbers being 0 to 20, inclusive, and placed consecutively from right to left; also, the left portion of said tube is provided with numbers increasing from right to left by 5 from 0 to 100, the first series of numbers being to indicate the weight by cwt. and the second series to indicate the pounds less than one hundred; within said tube is a rotatable cylinder having upon its periphery columns of cost numbers registering with said tube numbers to indicate the cost of any number of tons and pounds at a given price per hundred pounds, the cost numbers appearing in said slots, for determining the cost of articles bought and sold by the bushel; other tubes and cylinders are similarly arranged, and to determine the net weight of a load of material three bands are placed upon said tube the middle band being narrow and having an index or a starting point thereon; the left band having peripheral numbers thereon from 0 to 100 increasing by 1 as they are read downwardly in the column, the order being reversed upon the right band, all of which will hereinafter be fully explained and pointed out in the claim.

The objects of my invention are; first, to provide a labor saving device for determining the cost of articles which are bought and sold by the ton, hundred pounds and by the bushel at different prices; second, to minimize errors; to determine the net weight with little or no figuring. I accomplish these objects by the mechanism illustrated in the accompanying drawings, forming a part of this specification, in which:

Figure 1 is an elevation of my computing device consisting of two tubes; Fig. 2 is a

vertical section on line *x* Fig. 1; Fig. 3 is an elevation of the left end of one of the cylinders, showing the friction spring plate; Fig. 4 is a vertical section of a part of one of the tubes and cylinders including the bands thereon; Fig. 5 is an elevation of one of the duplicate standards or tube supports, having its upper portion broken away and showing the inner surface.

Similar letters refer to similar parts in the several views.

Referring to the drawings, A and B designate the housing or casement tubes which are in every essential duplicates and which have cut therein the longitudinal observation slots *a*, *a'* and *b*, *b'*, and to prevent the weakening and warping of the said casements one or more ties *a''* and *b''* are provided, dividing the slots *a* and *b* in two nearly equal portions; immediately above and parallel with said slots are imprinted the weight numbers 0 to 20, inclusive, which increase from right to left by one at regular intervals and which correspond with the "cwt." of the scale beams of ordinary hay, wagon and grain scales to indicate the weight in hundreds of pounds of articles and materials, said numbers, for convenience, being designated *c* and *d*. Immediately above the slots *a'* and *b'* in the tube casements A and B are permanently fixed the numbers *c'* and *d'* 1 to 95, inclusive, increasing from right to left by 5 at regular intervals and serve to indicate the number of pounds between the "cwt." which may occur in weighing loads of grain, etc.; the said numbers *c'* and *d'* may be made to increase by one instead of five by extending the tubes A and B or by making the figures smaller, or by both methods in combination. See Fig. 1.

The tube casements A and B are maintained in position by the duplicate supporting standards C and D, having circular depressions E cut or cast in their inner surfaces for the ends of said tubes to fit snugly into said depressions, being secured therein by the feet C' and D' being screwed to a desk, a shelf or other fixture. To save metal, preferably brass, the said supporting standards have narrow flanges C' and C'' and D' and D'' forming the boundary of said depressions nearly their entire circumferences, see Figs. 2 and 5, which are separated by a nar-

row body of metal, as at C''' and D'''; each of said standard supports terminate in a leg as C'''' and D'''' set in the feet C' and D' and each of said depressions have a central perforation or journal hole as at E', (Fig. 5), in the depression E, being the seat of the right end of the tube B. It will be understood that the said standards C and D may be extended to support three or more tubes or casements as necessity or convenience may require.

To readily determine the net weight of a load of grain or other material gross weight bands F and G encompass the tubes A and B, each of said bands having its left edge turned outwardly and slightly doubled back forming a small channel to receive the edge of a thin strip *e f* of material, preferably celluloid, having near its right edge a column of numbers from 1 to 100, inclusive, increasing downwardly by 1, the numbers being separated by a horizontal line and between the 1 and 100 a 0 or starting point is established; the said strips *e* and *f* being secured to the outer surface of said bands in any convenient manner, preferably by rivets as in the present case. The said numbers may be stamped in the periphery of each of said bands F and G and the numbers extended to 5000, or more, but the figures would necessarily be small and tend to confuse while with the strip of opaque celluloid, or other material upon which a common lead pencil may be used and the marks be erased the "cwt." may be written at the left of the number representing the pounds below 100, thus representing the gross weight of a load. See Figs. 1 and 4.

To provide means for changing the initial or starting point in determining the net weight the index bands H and I are snugly mounted upon the tubes A and B, at the right of the bands F and G; each index band being narrow and having a horizontal mark or index in its outer surface. See Figs. 1 and 4. To further assist in determining the net weight of loads of grain and materials, at the right of the index bands H and I the tare number bands J and K are mounted upon the tubes A and B, the said bands having their edges turned outward and back forming slight grooves *g* and *h* to hold in place the strips *i* and *j* of celluloid which bear the numbers 1 to 99, inclusive, placed in reverse order or in a column increasing by 1 upward. See Figs. 1 and 4. The tare numbers may be stamped upon the periphery of said bands J and K, but preferably as in the present case, upon strips of opaque celluloid; the index or starting point being marked 0 and a horizontal line being placed between each two numbers. To provide for inserting said number strips *i* and *j* the beads or flanges *l l* upon each edge of the tare bands J and K are cut away as at *m* and

n; to hold the ends of said strips in place they are riveted to said bands J and K. See Figs. 1 and 4.

To indicate the cost of articles sold by the 100 pounds and articles sold by the bushel which weigh 60 pounds per bushel when the price is 60 cents per bushel, a number cylinder L is incased within the tube or casement A and to provide means for rotating said cylinder it has centrally secured therein the shaft *o* passing through the journal perforations in the standards C and D, the said shaft having secured upon its end a thumb-disk *p* by which to rotate the said cylinder. See Figs. 1 and 2. Upon said cylinder a cost number paper *q* is firmly secured to the periphery of said cylinder, said paper having plainly printed thereon annular columns of numbers *q'* also arranged in parallel horizontal lines, the columns registering with the "cwt." numbers *c* and the lb. numbers *c'* impressed or engraved in the surface of the tube A, the said cost numbers *q'* being visible when they register with the observation slots *a* and *a'*; the right or end column being to indicate the price per "cwt."; a portion of the tube or casement A being broken away at *s* to show the position of the cost numbers *q'*. See Figs. 1 and 2. To prevent the said cost numbers and price numbers from becoming soiled or erased the said cylinders are each incased in a roll-sheet of transparent celluloid *r*. See Fig. 2. To prevent the accidental rotation of the said cylinder L it has secured upon its left end the spring disk M having a shaft perforation and having its opposite edges at two points M' and M'' bent away from the end of the said cylinder to press against the inner surface of the upper depression in the standard C. See Fig. 3.

The lower cylinder L' within the tube or casement B is a duplicate of the cylinder L, except that the price and cost numbers on the cylinder L' are different as will be readily seen where the tube or casement B is broken away at *s'*, all cost numbers being based upon the "cwt." See Fig. 1. The range of prices may be extended by increasing the size of the cylinders, and the weight numbers may be extended on the tubes. Wheat, corn and oats have special cylinders with price and cost numbers thereon adapted to each kind of grain. Any one of said cylinders may be substituted at any time for those of L and L'.

It will be understood that by the same principle upon which the cylinders in the present case are prepared others can be prepared for any kind of grain having a given number of pounds per bushel and various prices per bushel the cost of any number of bushels, within the capacity of the cylinder can be shown.

In operation, place the gross weight

shown by the scale beam upon the gross weight band F or G, if not found thereon, and turn the band until the initial or starting point registers with the initial point on the index band and the net weight band; *e. g.*, the gross weight band G indicates that the gross weight is 4 cwt. and no lbs.; if the tare is 1 cwt. the net weight (opposite the 1) is 3 indicating the net weight to be 3 cwt., by referring to the 3 cwt. on the tube or casement the number 3 is found immediately below it in the observation slot *b*, indicating that the cost of the article to be 3 dollars, the price indicated being \$1 per cwt. If the price upon which the calculations are being made does not appear in the right end of the observation slot turn the cylinder L or L' until it does appear, or the nearest price number to it. In case the exact price is not given, as for example 62 cents per cwt. or bushel, find the cost at 60 cts., and add $\frac{2}{60}$ or $\frac{1}{30}$ to the cost at 60 cts. In case pounds occur in the gross and tare weights, on the principle above described, find the difference of the lbs. first and then the cwt.; the cost of the lbs. being found at the left in the slot *a'* or *b'* and the cost of the cwt. is found at the right in the slot *a* or *b* (as the case may be) and the total cost is obtained by adding the two

costs together. See Fig. 1. It will be understood that, in case the number of lbs. in the tare weight is greater than the number of lbs. in the gross weight, one must be deducted from the cwt.

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

In a computing-device, supporting means, outer, stationary, cylindrical tubes positioned in said supporting means and carrying longitudinally-extending series of numbers, and having longitudinally-extending slots cut therethrough, movable, cylindrical tubes disposed within said outer tubes and carrying, circumferentially, columns of numbers, and a spring disk carried by the end of each movable tube and having two opposite edges thereof bent away from said end of the movable tube and bearing against the inner surface of said supporting means, for preventing accidental movement of the movable tubes.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL M. BOLING.

Witnesses:

H. W. JOHNSON,
W. K. DYER.