

(No Model.)

2 Sheets—Sheet 1.

C. F. & C. K. CHRISTOPHER.
READY CALCULATOR.

No. 588,128.

Patented Aug. 17, 1897.

FIG. 1.

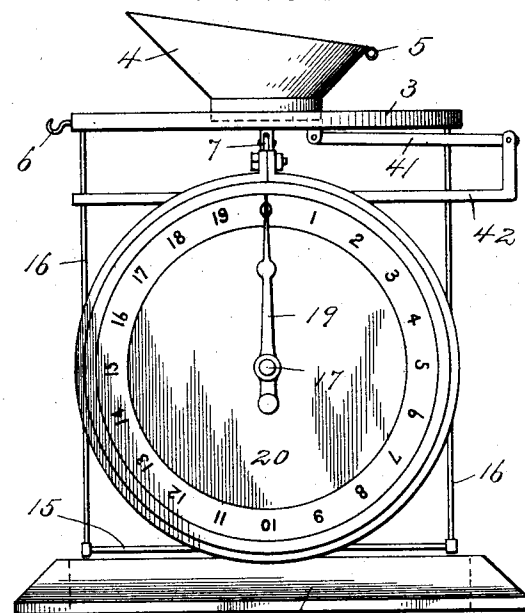


FIG. 4.

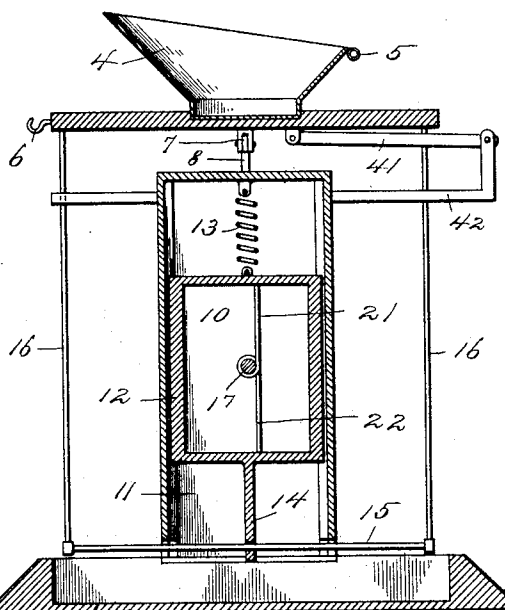
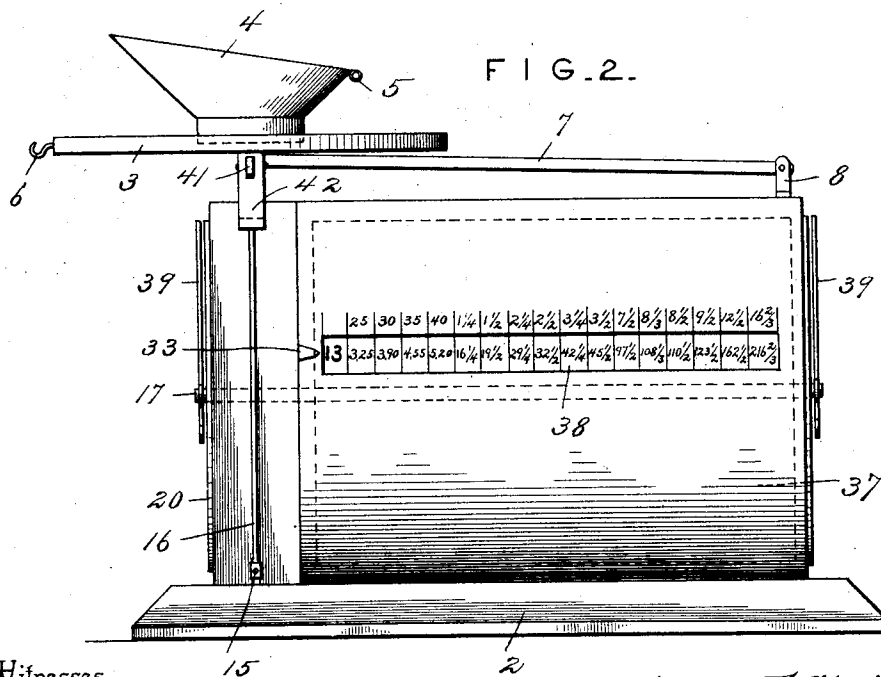


FIG. 2.



Witnesses

Harry L. Amer.
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By their Attorneys,

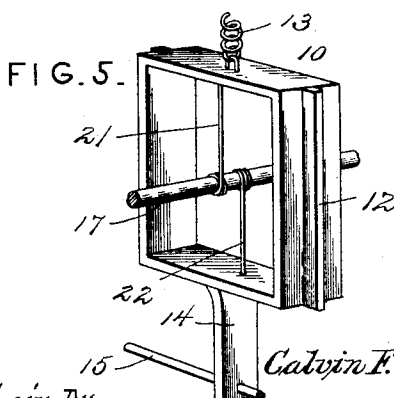
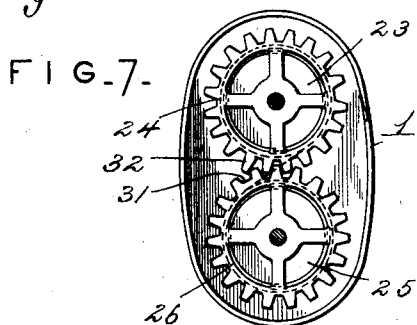
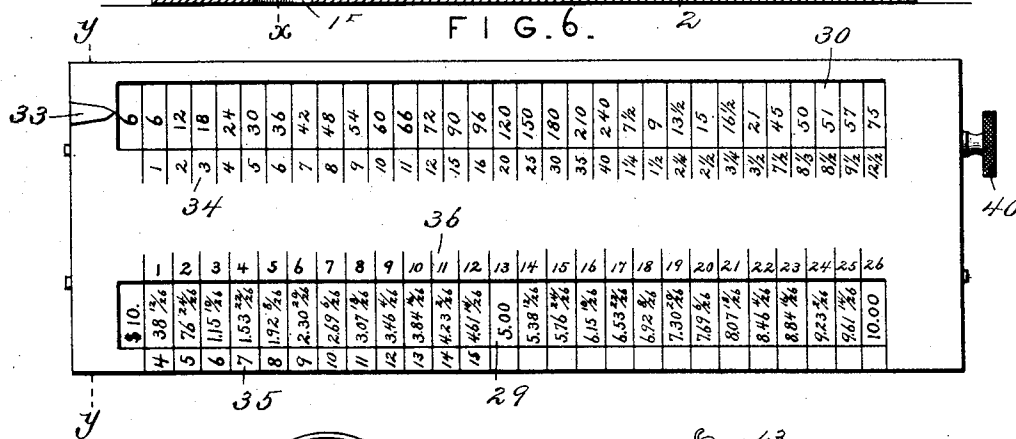
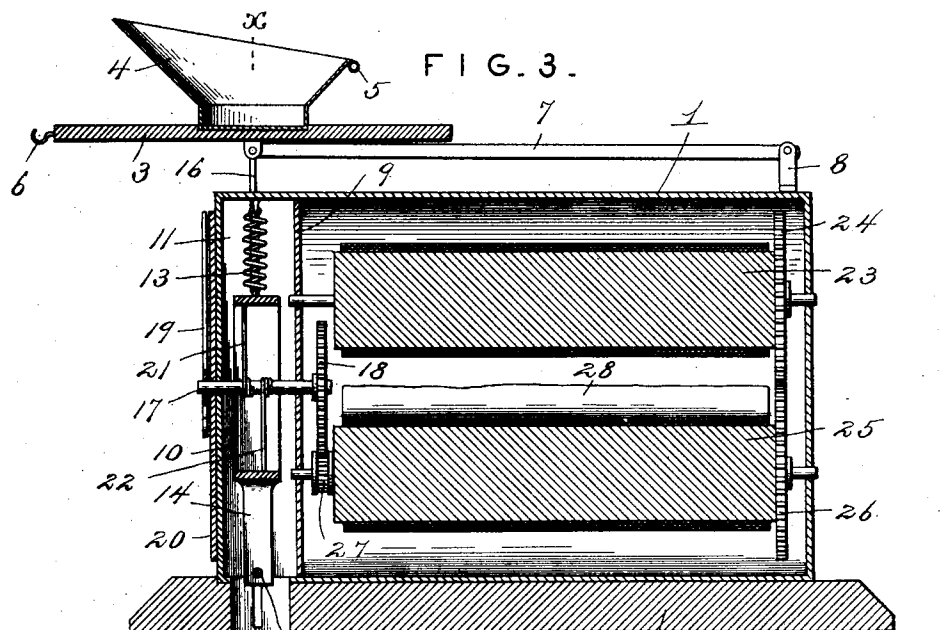
Calvin F. Christopher
and
Colonel K. Christopher.

C. F. & C. K.

2 Sheets—Sheet 2.

READY CALCULATOR.

Patented Aug. 17, 1897.



Inventors

By *Their* Attorneys,

Calvin F. Christopher
and
Colonel K. Christopher.

Ca Snowbcs.

UNITED STATES PATENT OFFICE.

CALVIN F. CHRISTOPHER AND COLONEL K. CHRISTOPHER, OF SPARTANBURG, SOUTH CAROLINA.

READY CALCULATOR.

SPECIFICATION forming part of Letters Patent No. 588,128, dated August 17, 1897.

Application filed January 16, 1896. Serial No. 575,777. (No model.)

To all whom it may concern:

Be it known that we, CALVIN F. CHRISTOPHER and COLONEL K. CHRISTOPHER, citizens of the United States, residing at Spartanburg, in the county of Spartanburg and State of South Carolina, have invented a new and useful Improvement in Ready Calculators, of which the following is a specification.

This invention relates to calculating devices for indicating the required amount or product of numbers, whereby interest at any rate and for any length of time, labor, commodities, &c., can be quickly determined without any mental effort or the exercise of manual energy.

The calculator is portable and can be made of such dimensions as to be carried in the pocket, or can be combined with a pair of weighing-scales to be operated automatically, so that the mass and the value of the same at a given rate can be read off.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is an end view of a pair of weighing-scales equipped with the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal section showing a different arrangement of the parts. Fig. 4 is a section on the line X X of Fig. 3, looking to the right. Fig. 5 is a detail view of the movable frame, showing the relation of the pointer-supporting shaft and the actuating devices therefor. Fig. 6 is a top plan view of the calculator detached from the weighing mechanism and appearing as it will be constructed for carrying in the pocket. Fig. 7 is a section on the line Y Y of Fig. 6.

Corresponding and like parts will be designated and referred to in the following description and all the figures of the accompanying drawings by similar reference-characters.

A casing 1 is mounted upon a platform 2 and incloses the operating parts of the calculator and the weighing mechanism and may be constructed of metal or any other material suitable for the purpose and will have a shape to conform to the parts inclosed thereby. A base 3 receives the commodity to be weighed and supports a scoop 4, in which such substances as sugar, coffee, &c., are placed to be weighed.

When it is required to weigh articles which can be placed directly upon the base 3, the scoop is removed, and in order to preserve the balance of the weighing apparatus the said scoop is suspended from the base 3, being provided with an eye 5 to engage with a hook 6 at the end of the base for the purpose. A bar 7 connects the base 3 with a stud 8, having connection with the casing, and the purpose of the bar 7 is to steady the base in its vertical movements attendant upon the weighing of articles. A partition 9 divides the casing so as to form a compartment at one end to receive the weighing mechanism and to form a support for the inner ends of the several shafts. A frame 10 is placed in the compartment 11 and is adapted to reciprocate vertically therein, being provided at its sides with vertical ribs 12, which operate in ways in the sides of the casing, so as to give proper direction to the frame in its reciprocating movements. A properly-tempered spring 13 connects the top of the frame 10 with the upper portion of the casing and serves to hold and to return the frame to a normal position. An extension 14 is pendent from the lower side of the frame 10, and through this extension passes a rod 15, which connects at its outer extremities with the lower ends of vertical rods 16 at the sides of the casing, and which rods 16 have attachment at their upper ends with the base 3. Thus it will be seen that any downward movement of the base 3 will cause a corresponding depression of the frame 10 by reason of the connections just described.

A shaft 17 is journaled in the partition 9 and the adjacent head or end of the casing and is provided at its inner end with a gear-wheel 18 and at its outer end with a pointer 19, which coöperates with proper graduations

on a dial 20, so as to indicate correctly the mass or weight of the article or commodity placed either upon the base 3 or in the weighing-scoop 4. A cord or tape 21 is connected at its upper end with the top portion of the frame 10, and its lower end portion is wound around the shaft 17 and is connected therewith, and a companion cord 22 is secured at its lower end to the bottom portion of the frame 10, and its upper end portion is wound around the shaft 17 in a reverse direction to the lower end of the cord 21 and is secured to the said shaft. From this construction and arrangement of the cords or tapes 21 and 22 it will be seen that as the frame 10 reciprocates the shaft 17 will be positively rotated in each direction, and it will be observed that as one cord unwinds from the shaft 17 the other cord will wind thereon, thereby insuring a positive turning of the shaft 17 and the parts 18 and 19 connected therewith.

A roller 23 is journaled in the partition 9 and in the remote end or head of the casing and is provided with a gear-wheel 24, and a corresponding roller 25 is similarly mounted to the roller 23 and has a gear-wheel 26 at one end, which meshes with the gear-wheel 24, and a pinion 27 at its opposite end, in mesh with the gear-wheel 18, so that a rotation of the shaft 17 will impart a movement to the rollers 23 and 25, as will be readily comprehended. A strip 28 of paper, fabric, or like material is secured at its ends to the rollers 23 and 25 and is adapted to be reversely wound thereon, so that as the strip unwinds from one roller it will wind upon the opposite roller. This strip will have columns of figures upon each side, disposed in parallel lines, so as to indicate the desired results and computations in connection with corresponding numerals or figures at the sides of observation-openings 29 and 30 in the sides of the casing 1.

To prevent and limit the overwinding of the strip upon the rollers, the gear-wheels 24 and 26 are provided with a stop device consisting of a shallow tooth 31 and a long tooth 32 to interlock with the shallow tooth when the two teeth come together, such as commonly provided in a train of gearing to limit the number of revolutions of any required part thereof. A pointer 33 extends into the observation-opening 30, and its purpose is to indicate the correct position of the column of figures coming directly opposite, so that the proper column may be correctly designated in the event of a portion of two columns appearing through the opening.

When preparing and graduating the strip 28, the columns of figures are arranged so as to indicate units and fractional parts thereof, the numerals at the heads of the columns designating the pounds, yards, or other denominate values and the succeeding numerals representing the value when compared with the numerals bordering upon the marginal edge of the opening. For instance, referring

to the right-hand column of Fig. 6, it will be seen that the topmost figure is "6," and if the article is represented by pounds a comparison thereof with the column of figures 34 on the left of the opening 30 will show that six pounds at one cent or one dollar a pound will be indicated by a corresponding numeral "6" opposite the numeral "1" in the column 34. Again, suppose the commodity be butter at thirty cents a pound and it be required to ascertain the value. By running down the column 34 until the numeral "30" is reached "180" will be found opposite the said numeral, showing that the value is one dollar and eighty cents. Suppose the article is to be measured. Then "6" will represent the number of yards, and if the price of the goods is thirty cents a yard the same result will be attained. The column of figures to the left hand of Fig. 6 is for indicating interest and wages, the line of figures 35 representing the rate of interest and the column of figures 36 designating the number of days. Suppose a person is earning ten dollars per month having twenty-six working days and it is required to ascertain how much is due for, say, twenty days. By running down the column of figures 36 until "20" is reached the amount seven dollars and sixty-nine cents and a fraction will appear opposite, and is the amount due. Like calculations are determined in a similar way, according to the value and quantity to be reckoned.

In the form shown in Fig. 2 a single roller 37 is employed, and its surface will be graduated similar to the strip 28, and only a single observation-opening 38 will be provided in the casing for the column of figures to be exposed through, and the journals of the roller will extend beyond the ends of the casing and each will have a pointer 39 to cooperate with the adjacent dials at the ends of the casing.

When the calculator is disconnected from the weighing mechanism and is used for ready reckoning, one or the other of the rollers will have its projecting journal provided with a knob 40, to be readily grasped for rotating the rollers so as to bring the required column of figures opposite the observation-openings.

To prevent lateral motion of the base 3, a bar 41 is supplied and is pivotally connected at its inner end to a lug pendent from the base 3 and has pivotal connection at its outer end to the vertical extension of a bracket-arm 42, secured to the casing, and this bracket-arm is extended and is apertured for the passage of the guide-rods 16, so as to direct the latter in their vertical movements. The bars 7 and 41 are free to follow the vertical movements of the base 3, but act jointly to prevent any material lateral play thereof, thereby maintaining the base 3 in proper working relation.

Having thus described the invention, what is claimed as new is—

1. In a combined weighing and calculating

mechanism, the combination of a casing having a slot and provided with a line of figures adjacent to the slot, a dial at one end of the casing, a shaft bearing a pointer to cooperate with the dial, a frame reciprocally mounted in the casing adjacent to the dial and guided in its vertical movements, and having the shaft passing therethrough, a weighing base or platform, side rods connecting the weighing-base with the reciprocal frame, a spring interposed between the casing and frame to hold the latter and the weighing-base in a normal position, a roller operated from the aforesaid shaft and bearing a series of columns of figures to be read in connection with the figures bordering upon the slot of the casing, and flexible connections secured at their outer ends to opposite portions of the reciprocating frame and having their inner ends connected with and reversely wound upon the aforesaid shaft, substantially as shown for the purpose described.

2. In a combined weighing and calculating mechanism, the combination of a casing having a longitudinal slot and a line of figures adjacent to the said slot, a weighing-base, means for yieldingly supporting the base, an indicating mechanism actuated by means of the weighing-base, a longitudinal bar pivoted at one end to the casing and having pivotal connection with the weighing-base, a second bar arranged approximately at right angles to the longitudinal bar and having pivotal connection with the casing and with the weighing-base, and a calculating mechanism cooperating with the line of figures bordering upon the said slot of the casing and controlled by the weighing-base, substantially as set forth for the purpose described.

3. In a combined weighing and calculating mechanism, the combination of a casing having a longitudinal slot and a line of figures bordering upon the said slot, a weighing-base,

longitudinal and transverse bars pivotally supported at their outer ends and having pivotal connection with the weighing-base to steady the latter in its vertical movements, a reciprocating frame supporting the weighing-base, a spring for holding the reciprocating frame in a normal position, a dial, a shaft passing through the reciprocating frame and bearing a pointer to cooperate with the dial, flexible connections secured at their outer extremities to the ends of the reciprocating frame and having their inner terminals secured to and reversely wound upon the said shaft, and a roller mounted upon the said shaft and bearing a series of columns of figures to be read in connection with the figures bordering upon the slot of the casing, substantially as set forth.

4. In combination, a calculating mechanism, a shaft in gear with the calculating mechanism and bearing a pointer to cooperate with a suitably-graduated dial, a reciprocating frame having a pendent extension, a spring for returning and maintaining the reciprocating frame at a normal position, a base, a cross and side rods connecting the base with the said pendent extension of the frame, cords or tapes connecting the reciprocating frame with the shaft to positively rotate it in each direction, and a bar having pivotal connection with the base and with a support so as to steady the movements of the said base, substantially in the manner and for the purpose set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

C. F. CHRISTOPHER.

C. K. CHRISTOPHER.

Witnesses:

JOHN H. SIGGERS,

G. C. SHOEMAKER.