

(No Model.)

C. C. KENNISON.
MECHANICAL CALCULATOR.

No. 541,361.

Patented June 18, 1895.

Fig. 1.

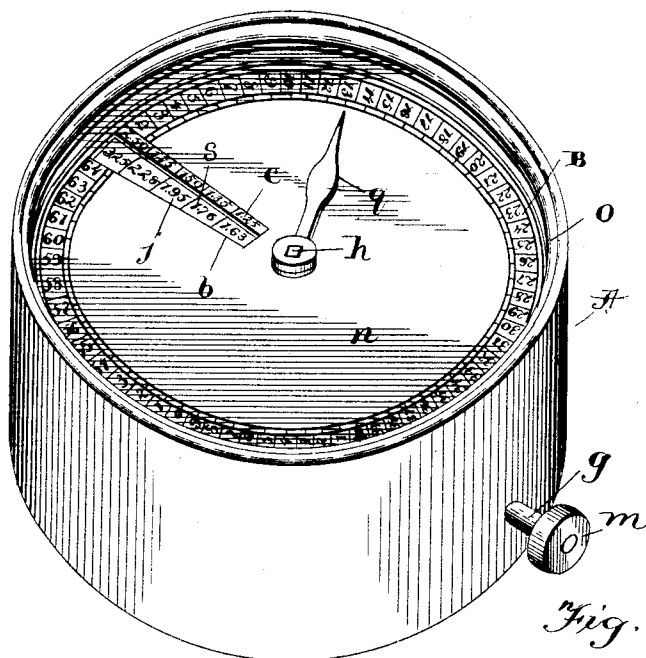


Fig. 3.

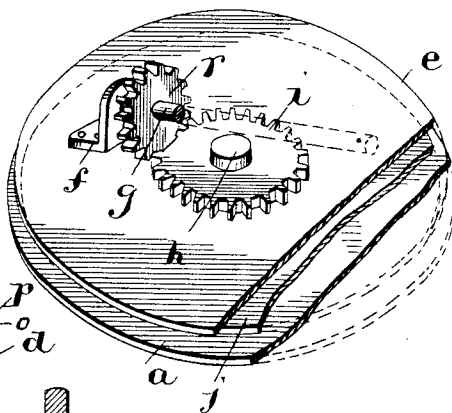
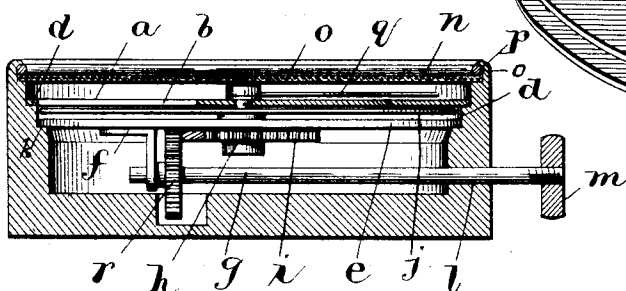


Fig. 2.



Witnesses

Geo. C. French,

James W. Berard.

Inventor

Charles C. Kennison

By his Attorneys

Pattison Nesbit,

UNITED STATES PATENT OFFICE.

CHARLES C. KENNISON, OF TIFFIN, OHIO, ASSIGNOR OF ONE-HALF TO ALBERT L. FLACK, OF SAME PLACE.

MECHANICAL CALCULATOR.

SPECIFICATION forming part of Letters Patent No. 541,361, dated June 18, 1895.

Application filed January 25, 1895. Serial No. 536,255. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. KENNISON, of Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful
5 Improvements in Mechanical Calculators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it,
10 reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in mechanical calculators, of that class in which
15 a dial is provided with a circumferential series of figures, the said dial having an opening to expose an under dial; a pointer and an operating mechanism.

The object of my invention is to provide
20 a mechanical calculator of the construction hereinaftershown and described, whereby calculations in interest, proportional calculation, multiplication, &c., can be quickly and accurately made by the turning of a button or
25 knob extending to the outside of a case containing the calculating mechanism.

In the accompanying drawings, Figure 1 is a perspective view of a calculator embodying my invention. Fig. 2 is a vertical transverse
30 sectional view taken longitudinally of the operating-shaft. Fig. 3 is an inverted detached perspective view of the calculating mechanism, the same being partly shown in section.

A indicates a case preferably circular in
35 form and preferably made from a single piece of wood or metal. The calculating mechanism is entirely separate from the case and connected so that it can be wholly removed therefrom without displacing the relative position
40 of any of the parts. The calculating mechanism consists of an outer disk *a* having a peripheral series of numerals B, (which will be referred to farther on) and an opening *b* having the marginal numbers *c* which will also
45 be referred to hereinafter. This disk *a* rests upon a flange *d* within the casing A, and beneath this disk *a* is a plate or supporting frame *e* carrying a bracket *f* which forms a bearing for the inner end of the driving shaft
50 *g*. This frame or disk *e* also forms a bearing for a shaft *h*, which carries a cog-wheel *i* rigidly

connected thereto, and this shaft *h*, extends through said plate *e* and has rigidly connected thereto between the plate or frame
55 *e* and the outer disk *a* a second disk *j*, which is smaller in diameter than either the supporting frame or disk *e* or the outer disk *a*, whereby this intermediate disk *j* is permitted a free
60 rotary movement between the outer disk *a* and the inner supporting frame or plate *e*. This inner supporting frame or plate *e* rests upon a shoulder *k* of the case A, and thus forms a support for the calculating mechanism. The outer disk *a* fits in the case sufficiently tight to prevent its rotation, and the
65 driving shaft *g* extends through an opening *l* made in the case A and carries at its outer end a knob or button *m* held thereto preferably by screw threads. From this description it will be seen that the calculating mechanism
70 can be placed in the case by inserting the driving shaft *g* first, like unto the insertion of the winding shaft of a stem winding watch, and then the placing of a glass *n* over the same
75 and said glass supported by flanges or shoulders on the case A and this glass *n* is held in place by means of a spring wire *o* fitting in a groove *p* of the case as clearly shown in Fig. 2.

The outer end of the shaft *h* which extends through the plate or supporting frame *e*, and through the outer disk *a*, has attached firmly
80 thereto a pointer *q*, and the inner end of the driving shaft *g* is provided with a pinion *r* meshing with the cog-wheel *i* on the inner end of said shaft *h*, whereby when the knob or
85 button *m* on the end of the driving shaft is rotated in either direction the intermediate disk *j* is rotated and with it the pointer *q*, both the pointer and the intermediate disk being firmly connected to the said shaft.
90

The intermediate disk is provided with a series of calculations which vary according to the kind of calculation to be made—that is to say, as here shown the circumferential numbers B on the outer disk *a* begin at 1 and
95 extend around to any desired number, (here shown to be 64) the numbers varying according to the size of the calculator. These numbers represent hours and in this instance the calculator is used as a time calculator. The
100 figures *c*, at the side of the opening *b* represent the different amounts of pay workmen

receive per day, here shown to range from two dollars and fifty cents to one dollar and twenty-five cents.

Supposing a laborer to have worked thirteen hours at two dollars and fifty cents a day, the turning of the knob *m* to carry the pointer to the figure 13 will show a number *s* on the disk *j* opposite the number \$2.50 the wages received for the thirteen hours, and so on with the other numbers shown at the side of the opening *b* as will be readily understood.

While I here show the calculator with the numerals suitable for a time calculator, it will be readily understood that the numerals may be changed and the instrument used as an interest calculator, a multiplier or other similar calculator without varying the mechanism.

I am aware that it is not novel to have an outer disk with circumferential figures, an opening with marginal figures and a disk under the same together with a pointer for calculating, but so far as I am aware it is novel to provide an inner supporting frame or disk, supporting a driving or operating shaft which extends through the side of the casing, and also forming a bearing, the vertical shaft carrying at its lower end a cog-wheel, the said shaft being rigidly attached to the intermediate disk and the pointer rigidly attached to the opposite end of the shaft, whereby a very convenient and accurate mechanism is produced. The pointer is rigid with the intermediate disk, and their relative position cannot be changed so that the calculations of the machine can be absolutely depended upon at all times. As here shown the outer end of the shaft *h* is preferably angular and the pointer fitted thereon, so that there can not possibly be any movement whatever.

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

1. A calculator comprising a case, an outer disk supported by the case, carrying circumferential numerals and having an opening with side numerals, a supporting frame or plate beneath the said outer calculating disk, and supported by the said case, a driving shaft having its inner end supported by said plate and extending through the case and carrying an operating knob or end, a disk between the outer disk and the said supporting plate and parallel therewith carrying numerals, a vertical shaft journaled in the said supporting plate or frame, and carrying at its inner end a cog-wheel, said vertical shaft being rigidly attached to the intermediate disk and passing freely through the outer disk, a pointer firmly connected to the outer end of the said shaft, and a pinion upon the driving or operating shaft meshing with the said vertical shaft cog-wheel, the parts combined to operate substantially as shown and described.

2. A calculator comprising a casing, and a calculating mechanism consisting of an outer disk, an inner disk or supporting frame, a driving or operating shaft having its inner end supported by the said supporting disk, a vertical shaft concentrically journaled in said plate or supporting frame and extending freely through the same, a disk between the said supporting plate and the outer disk rigidly connected to the said vertical shaft and parallel with the outer disk, a pointer firmly connected to the outer end of the said vertical shaft whereby all of the mechanism is connected together and capable of being removed from the said case for any purpose, substantially as set forth.

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

CHARLES C. KENNISON.

Witnesses:

FRANK L. FROST,
SCOTT GARRETT.