N. SPOFFORD & C. CORLISS.

INSTRUMENT FOR ADDING AND REGISTERING NUMBERS.

No. 79,272. Patented June 23, 1868.

Fig. 1.

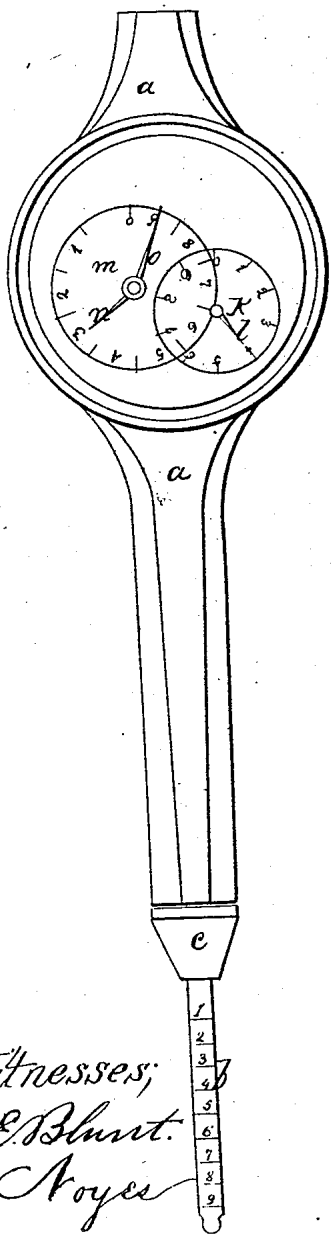



Fig. 2.

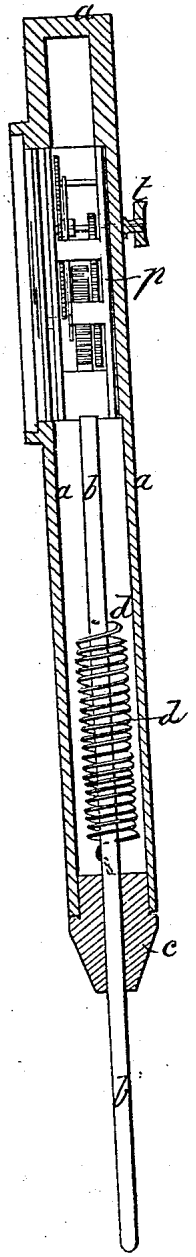



Fig. 3.

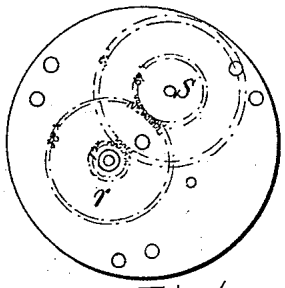
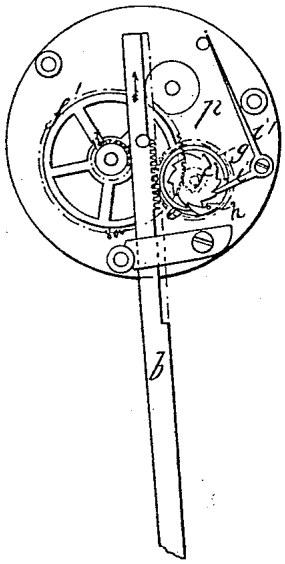



Fig. 4.

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# United States Patent Office.

NELSON SPOFFORD AND CHARLES CORLISS, OF HAVERHILL, MASSACHUSETTS, ASSIGNORS TO CHARLES CORLISS.

*Letters Patent No.* 79,272, *dated June* 23, 1868.

## IMPROVEMENT IN INSTRUMENTS FOR ADDING AND REGISTERING NUMBERS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that we, NELSON SPOFFORD and CHARLES CORLISS, both of Haverhill, in the county of Essex, and State of Massachusetts, have invented a new and improved Instrument for Adding and Registering Figures or Numbers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a front elevation of an instrument embodying our invention.

Figure 2 is a vertical transverse section, and

Figures 3 and 4 are views of the interior working parts of the same.

The object of our invention is to produce a simple, portable, and effective instrument for adding up columns of figures, and also for counting off and adding together measures, weights, &c., whether in whole or fractional parts of numbers, and at the same time indicating and registering the amounts measured upon a dial attached to or forming a part of the instrument; and the invention consists of a graduated sliding rod, confined within a casing, with one end projecting a short distance from the said casing, and at the other end connected with a system of gearing or watch-work, made to operate indicators upon a dial-plate.

The projecting end of the said bar or rod is graduated, and marked with a series of figures or numbers, and is retained in position by means of a spring, so that by pressing in the projecting end of the said bar, the line or mark denoting the figure on the graduated bar that coincides with the end of the casing, will be indicated, and at the same time registered on the dial, by which means a series of columns of figures or amounts of measures or weights may be mechanically, accurately, and very quickly added up and registered.

Referring to the drawings, *a* represents a casing, of metal or other suitable substance, such as hard rubber, gutta percha, &c., of the general form shown in fig. 1.

Near one end, it is of circular form, to accommodate a system of watch-work and dial-plates, and within the casing is fitted a sliding bar, *b*, which projects from the end of the casing, as shown, passing through a head, *c*, and working snugly but freely in the same. The bar *b* is maintained in its projected position by means of a spring, *d*, attached to the bar at one end, and at the other to the casing.

One end of the bar *b* passes into the circular portion of the casing, and is provided with a rack or series of teeth, as shown in fig. 4, which engage with a tooth-wheel, *e*, and to which it is made to impart a rotary reciprocal motion, as the bar is moved in and out of the casing.

The toothed wheel *e* is of a cup-shape, or hollowed out in the centre, and within the same is fitted a ratchet-wheel, *f*, that engages with a pawl, *h*, that is pivoted to the toothed wheel *e*, and moves with it, the said pawl being held in contact with the ratchet by means of a curved spring, *g*, so that as the bar *b* is moved forward in the direction of the arrow, the ratchet *f* will move with the wheel *e*, and upon retracting the bar *b*, the ratchet will be prevented from rotating backward again with the wheel *e*, by means of a click or arm, *i*, engaging with the ratchet *f*.

The arm *i* is pivoted to the rear plate of the movement, and is connected to a spring-arm, *i'*, by which it is retained in position.

The ratchet-wheel *f*, it will thus be seen, has a motion only in one direction, and upon its axis or spindle, which projects through the smaller dial *k*, is an indicator, *l*, which has a motion corresponding to that of the ratchet-wheel, so that as the bar *b* is forced into the casing, it will impart a motion to the indicator corresponding with the forward movement of the said bar.

The projecting face of the bar *b* is graduated, and marked with a series of numbers, as shown, from 1 to 9, corresponding to a similar series on the dial *k*, and the line of coincidence of the graduated bar with the end of the head *c* of the casing will determine the position of the indicator *l* on the dial *k*.

Attached to the spindle or axis of the ratchet-wheel *f*, is a pinion, which engages with a toothed wheel, *f'*, and by which motion may be imparted to a train of wheels and gears.

The dial-plate *k* designates units, and the wheel *e*, to which the ratchet *f* is connected, communicates motion

to a system or gear-wheels, so as to operate the indicators *n o*, on the larger dial *m*, in a well-known manner, and so that tens, hundreds, and thousands can be registered on the said dial.

The bar *b*, and also the dial *k*, may be graduated to designate the fractional parts of numbers.

Instead of the graduations and numbers or figures being at the end of the bar *b*, they may be made on the same, inside of the casing, with a hole or slot in the latter, through which the numbers, &c., may be seen, or the graduations, &c., may be marked on the casing at the side of the slot, with a projection or point on the bar, indicating the movement of the latter.

Instead of indicators upon the dial-plate, the latter may be made with holes, through which figures on rotating wheels may be shown.

In the rear of the circular portion of the casing *a* is a thumb-piece, *t*, attached to the spindle, which operates the gearing that moves the hands or indicators on the large dial *m*, for the purpose of setting all the hands to the proper starting-point.

The operation is as follows: Suppose a column of figures is to be added up; the instrument being grasped in the hand, the end of the bar *b* is placed at or near the figure to be added, each one in succession. The instrument is then pressed down, and the bar *b* forced into the casing, until the end of the latter is coincident with the line or mark having the figure or number corresponding with that at which the end of the bar is placed near; the same number is at once indicated on the dial *k*.

The instrument being raised, the bar *b* is projected by the spring *d*, when it is again pressed upon the next figure, and so the process continues, each figure or number being taken by the end of the bar, and the total amounts successively registered on the dials.

For instance, should the bar *b* be moved into the casing until the graduated line marked 3 is coincident with the end of the head *c*, the indicator *l* will point to the number 3 on the dial-plate *k*, and each successive number indicated on the graduated bar will be added to the amount already indicated on the dials.

The graduations on the sliding bar may be omitted, and the said bar be made to act directly on the dial-plate, denoting the units, so that the figures to be added will correspond with those on the dial plate.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The graduated sliding spring-bar *b*, when applied and operating substantially in the manner and for the purpose set forth.

2. The sliding graduated bar *b*, in combination with ratchet *f*, and toothed wheel *e*, as and for the purpose specified.

3. The combination, with the bar *b* and spring *d*, of the system of gearing, and the indicators, as set forth.

4. The combination of the graduated bar *b*, casing *a*, and head *c*, substantially as and for the purpose specified.

5. The method of adding a series ot figures or numbers, by means of a sliding bar, operating a system of gearing or watch-work, substantially as set forth.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses.

NELSON SPOFFORD,
CHARLES CORLISS.

Witnesses:
C. J. NOYES,
WM. E. BLUNT.