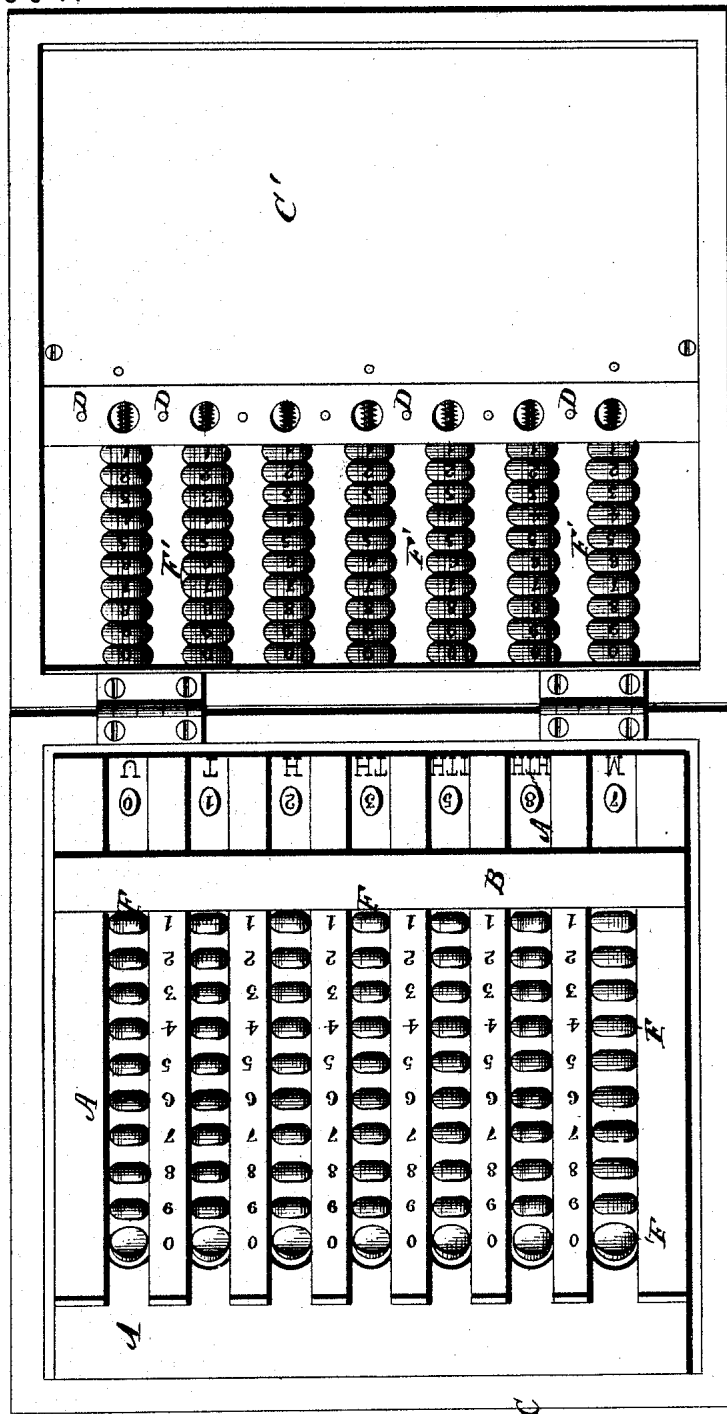


A. C. WELLMAN. Calculator.

No. 165,964.

Patented July 27, 1875.



WITNESSES

W. S. Newman
Robt. M. Barr.

BY

Alfred C. Wellman.
INVENTOR

Luggin & Luggin.
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A. C. WELLMAN.
Calculator.

Fig. 2.

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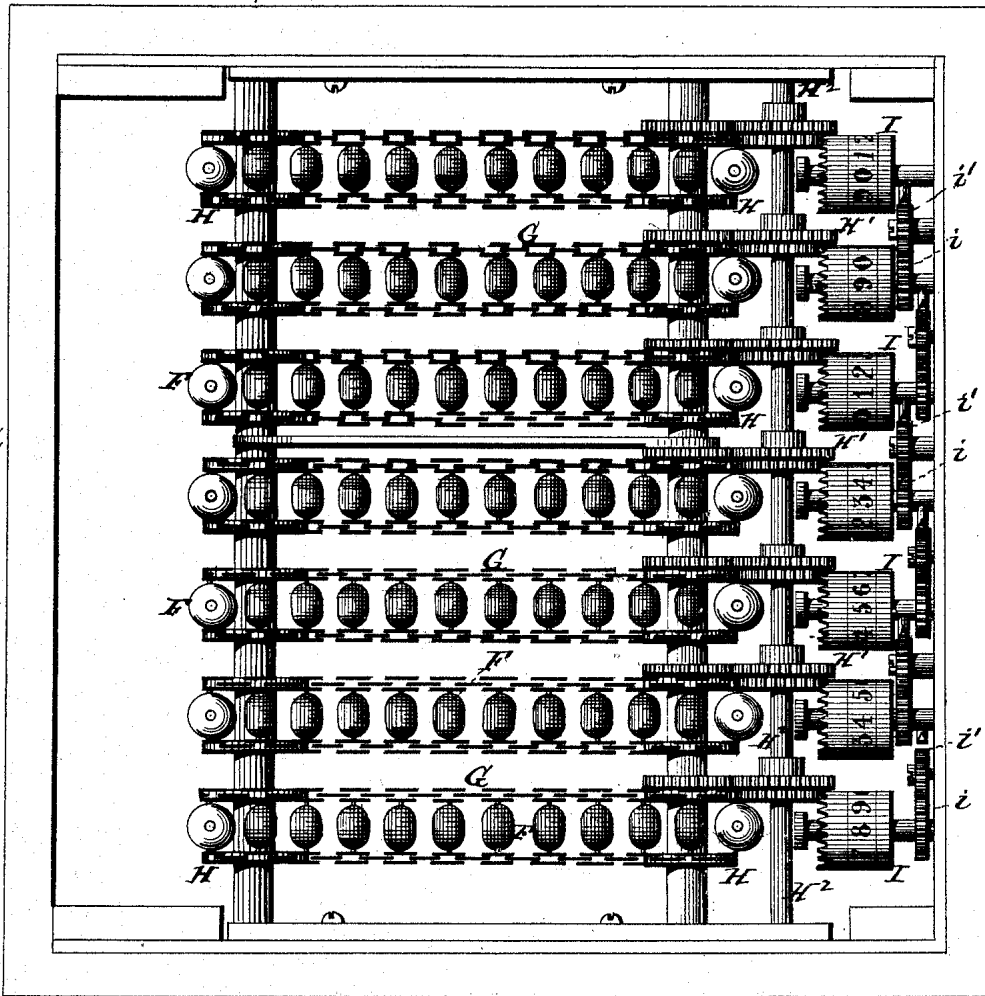
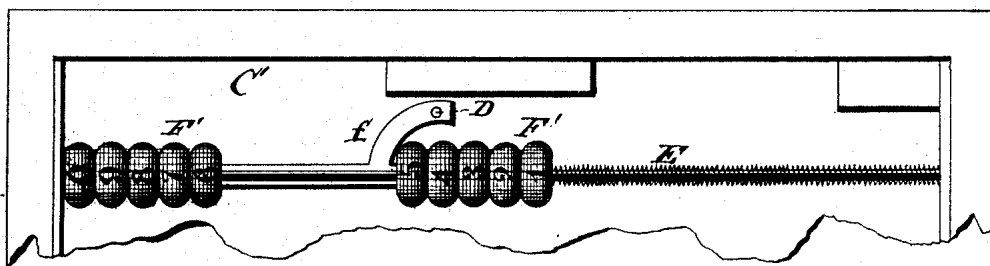


Fig. 3.



WITNESSES
W. T. Newman,
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UNITED STATES PATENT OFFICE.

ALFRED C. WELLMAN, OF WALLA WALLA COUNTY, WASHINGTON TER.,
ASSIGNOR OF ONE-HALF HIS RIGHT TO B. W. GRIFFIN, OF SAME PLACE.

IMPROVEMENT IN CALCULATORS.

Specification forming part of Letters Patent No. **165,964**, dated July 27, 1875; application filed
February 15, 1875.

To all whom it may concern:

Be it known that I, ALFRED C. WELLMAN, of the county of Walla Walla, in the Territory of Washington, have invented certain Improvements in Calculators or Adders, of which the following is a specification:

The first part of my invention relates to a combination of numeral balls fixed and adjusted to a series of endless chains in such a manner that the said combination balls shall be capable of acting upon the perpendicular index-rollers, moving in time and manner desired. The object of this part of my invention is to add and carry up any given numbers, from units to tens, tens to hundreds, hundreds to thousands, and so on, and to register the result of such numbers in the door of its proper name.

The second part of my invention relates to the register or numeral box, numeral-balls being adjusted on wires operated by index-finger confined by stops operated by springs released by pressure on thumb-pins, and thrown up by spiral spring. The object of this part of my invention is to give a convenient and true register of the result of operations performed on the upper part of the instrument, and such other operations in subtraction, multiplication, division, and fractions desired.

Figure 1 is a plan view of the instrument in process of operation embodying my invention. Fig. 2 is a plan view of the rollers and endless chains carrying numeral-balls. Fig. 3 is a sectional view, showing the spiral spring used, and adjusted under numeral-balls in register-box.

C is box or frame of the instrument, which should be substantially constructed, of sufficient strength to hold the necessary gearing, pinions, cog-wheels, and chains firmly in place without vibration of the operating parts. A A is the door or register plate, through which the result of the operations is read. B B is bar dividing endless chains from perpendicular register-rollers. D D is thumb-stops to release numerals in register-box. H are rollers, over which pass endless chains, and are so arranged with teeth or grooves as to pre-

vent the chain from slipping. G is the endless chain passing over set of wheels H, above and below, so arranged and geared as to mesh into corresponding toothed wheels H¹, working upon a horizontal shaft, H², driving the index-rollers I under the door-plate A A, which rollers are provided with toothed wheels *i*, so arranged that at the time proper mesh into corresponding wheels *i'*, and carry forward the operation. F is a numeral-ball, showing attachment for chain. E is a spiral spring to work under numeral-balls in register or statement box C'. The balls F', being pushed down by the index-finger, are held by a spring-stop, *f*, which is released by pressure on the thumb-pins D D acting on the spring-stops, and are thrown up by the spiral spring E.

The process to be performed is read to or kept before the operator, who, with the index-finger, moves the balls corresponding to the number called or read, the result appearing in the proper door on the upper register-plate. The problem is read and worked from right to left, or left to right, at the will of the operator, the instrument making the proper calculation.

I claim as my invention—

1. The box, composed of two halves or leaves, C C', one, C, containing the mechanism for calculating, and the other, C', the statement-box, containing the mechanism for registering or stating the different amounts as they are developed by the calculating mechanism, the parts C C' hinged together and adapted to fold together with the mechanism in the interior when the instrument is not in use.

2. The combination of the numeral-balls F, thumb-pins D, spiral spring E, substantially as and for the purpose hereinbefore set forth.

3. In combination with the series of endless chains G and numerical balls F secured there-to, the index-rollers I and their transmitting-gears *i*, *i'*, &c., constructed and arranged as and for the purposes described.

A. C. WELLMAN.

Witnesses:

R. JACOBS,
W. T. BARNES.