Calculator,
Tabuler, Cylinder.

Draftsman.

No. 873,181. PATENTED DEC. 10, 1907.

C. J. SMITH.

CALCULATING MACHINE.

APPLICATION FILED AUG. 2, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

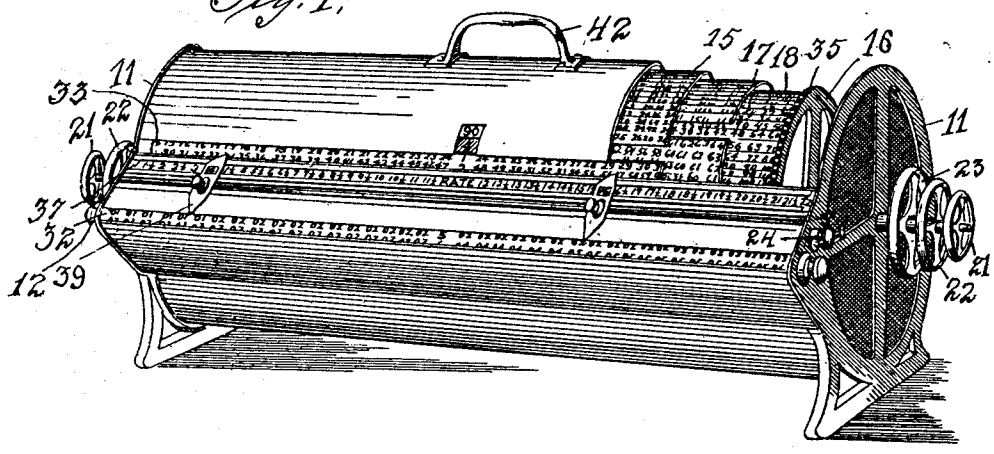
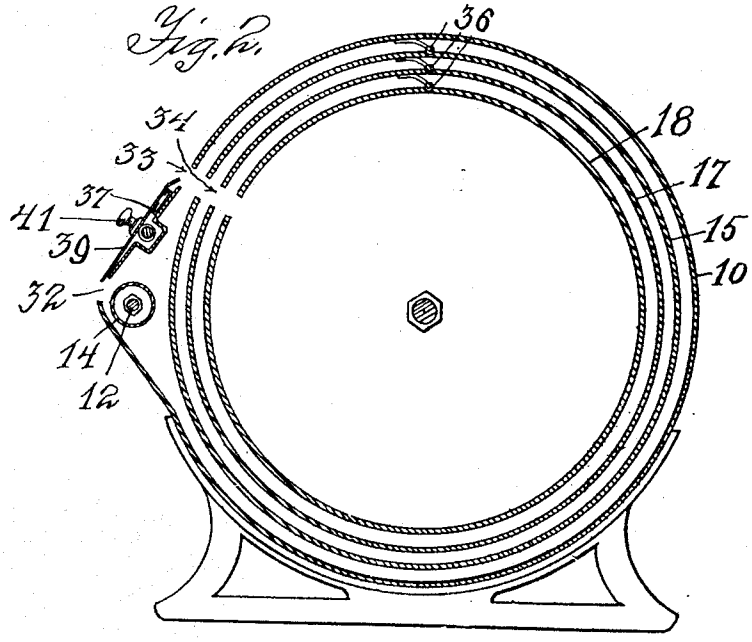


Fig. 2.



Inventor

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Witnesses

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THE... PETERS CO., WASHINGTON, D. C.

Calculators.
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87

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2 SHEETS—SHEET 2.

Fig. 3.

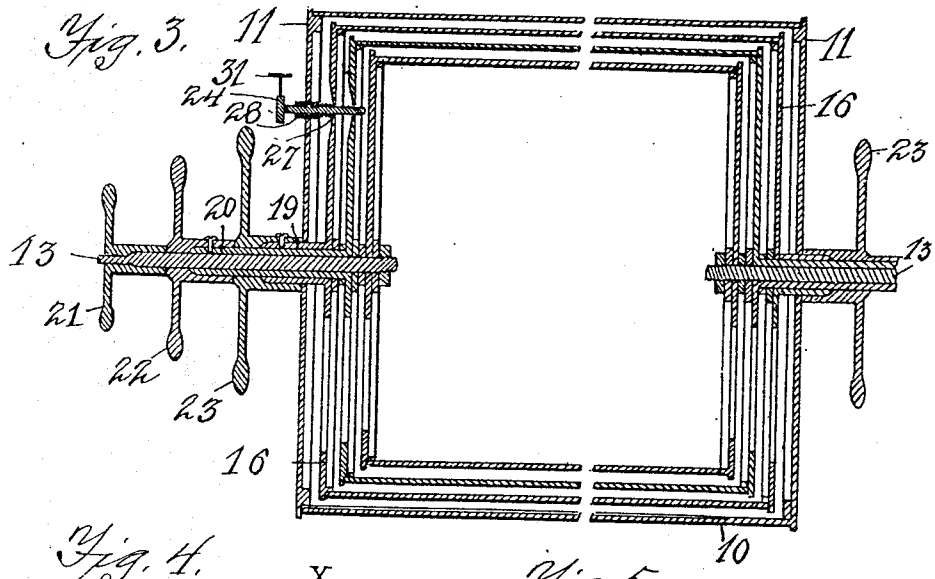


Fig. 4.

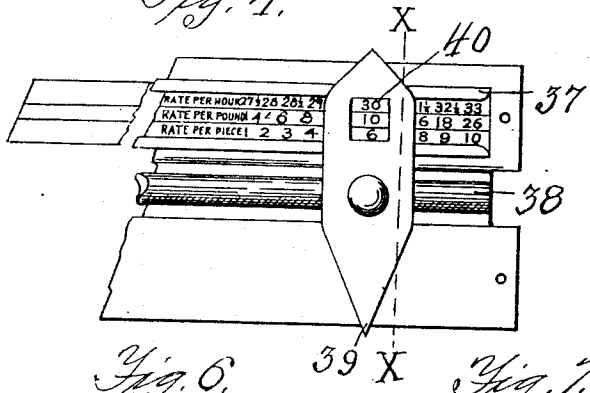


Fig. 5.

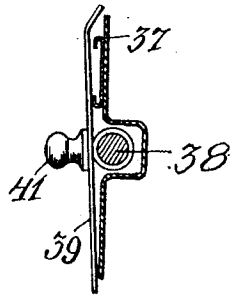


Fig. 6.

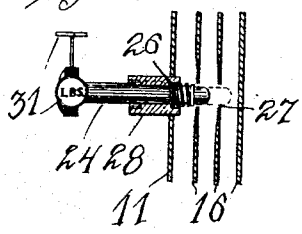
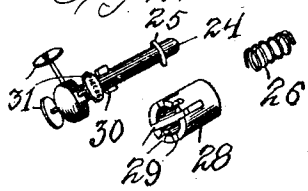


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHESTER J. SMITH, OF JAMESTOWN, NEW YORK.

CALCULATING-MACHINE.

No. 873,181 Specification of Letters Patent. Patented Dec. 10, 1907.

Application filed August 2, 1907. Serial No. 386,704.

To all whom it may concern:

Be it known that I, CHESTER J. SMITH, a citizen of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Calculating-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The invention relates to calculating machines and more particularly to machines for calculating wages or interest or the price of a commodity, and the present construction is an improvement upon my application for Letters Patent Serial Number 365,734; and the object of the improvement is to enlarge the capacity of the machine without enlarging the size of the machine itself and toward this end to provide means for operatively mounting a number of concentric cylinders one within the other so that the different parts of a table or scale may be placed on the different cylinders and each may be operatively brought into view when desired, or so that the quantity table may be placed on one cylinder, the price table on another and the time or interest table on still another cylinder; a simple means of control being provided by which any one of the cylinders may be instantly turned to a desired point, thus in a simple manner greatly enlarging the capacity of the machine.

In the drawings, Figure 1 is a perspective view of the machine with certain portions of the case and outer cylinders broken away in order to show a portion of the tables on each of the cylinders as well as the operating mechanism. Fig. 2 is a crosswise sectional view through the central portion of the machine. Fig. 3 is a lengthwise sectional view of the end of the cylinders and operating wheel showing the relation of the cylinders to the different hand wheels and also the lock for the outer cylinders. Fig. 4 is a plan view of the index or pointer, the guide rod for the index and the rate or price slot; and Fig. 5 is a sectional view at line X X in Fig. 4. Fig. 6 is a side elevation of the locking pin for the cylinders, a portion of the cylinders and case being shown in section; and Fig. 7 is a perspective view of the locking pin and tubular holder for the same.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 indicates the case which is preferably made of sheet metal in substantially a cylindrical form with cast metal ends 11 which extend out in feet at each side to provide suitable supports for the case and also to provide suitable bearings to revolubly support the rods 12 and 13 upon which the rollers or cylinders are mounted within the case 10.

A small cylinder 14 is provided alongside of a large cylinder 15, as in my former construction, which cylinders have suitable disk-shaped ends 16 for mounting the cylinders on rods 12 and 13. Rods 12 and 13 preferably only extend through the ends 16 of the cylinder as shown in Fig. 3, a suitable set nut being provided on the inner end of the rod 13 to hold the same at each end within the cylinder.

In my present construction I show cylinders 17 and 18 concentrically mounted on rod 13 within the large cylinder 15. Cylinders 17 and 18 are provided with tubular projections 19 and 20 which are revolubly mounted upon rod 13 or upon one another. As for example, as shown in section in Fig. 3, the inner cylinder 18 is attached directly to the rod 13 and is operatively actuated by means of a suitable hand wheel 21 on the outer end of the rod 13. The cylinder 17, next larger in size than the cylinder 18, has the tubular projection 20 which is revolubly mounted on rod 13 and has the hand wheel 22 which is sufficiently larger in size than hand wheel 21 to be easily recognized by the pressure of the hand. Cylinder 15 has tubular end 19 which is revolubly mounted on tube 20 and has a still larger hand wheel 23 attached thereto. This same arrangement is provided at both ends so that the cylinder may be actuated by either hand or both hands when so desired.

A lock is provided for the outer cylinders, composed of the pin 24 which is mounted in the end 11 of the case and has the flange 25 near its inner end against which the coil spring 26 presses, the other side of the coil spring pressing against the inner side of the case end 11 thereby holding the pin 24 firmly in place. An opening 27 is provided in line with the end of pin 24 in the ends 16 of the two outer cylinders. A tubular locking piece 28 is provided in the end 11 which has therein the slots 29 of different depths

to receive the lugs 30 on opposite sides of pin 24.

In order to quickly and correctly place these slots flat plates 31 are provided on the outer end of pin 24 which are so placed in relation to lugs 30 that when a certain cylinder is desired the plate 31 corresponding to said cylinder is moved to the vertical position. which then allows the lugs 30 to pass in to the correct slot 29 in the tube 28 for turning the cylinder or cylinders, and when the opening 27 is reached the pin 24 will seek its correct position locking the outer cylinder not desired. The name or an abbreviation for the name of each of the different tables may be placed upon the plates 31, as for example, the abbreviation for pounds is shown in Fig. 6 and in Fig. 7 the word "Pieces" as for tables for piece work, as in worsted mills. Thus when it is desired to use the outer cylinder 15 the correct plate 31 is turned to the vertical position, which locks the pin 24 entirely outside of and free from the end 16 of cylinder 15, allowing it to revolve freely. The hand then naturally seeks the larger wheel 23 by which cylinder 15 is rotated and it is instantly turned to the correct position. Should it be desired to use the next smaller cylinder 17, the plate 31 which corresponds to the particular slot 29 and which bears the name of the table on cylinder 17 is turned to the vertical position and the cylinder is rotated by the hand wheel 22 until pin 24 seeks its correct position in the hole 27 thereby locking the outer cylinder 15. In a similar manner when it is desired to use cylinder 18, the two outer cylinders 15 and 17 may be locked. It is of course immaterial that the cylinders within the one in use turn with said used cylinder.

The outer casing 10 is provided with the lengthwise slot 32 opposite the small cylinder 14 and the similar and parallel lengthwise slot 33 opposite the large cylinders, and similar slots 34 are provided in the cylinders to receive the amounts in the tables on said cylinders which tables are placed on the outer sides of the cylinders.

Locking slots 29 for pin 24 are so placed as to bring the slots 34 into conjunction with the slot 33 when the outer cylinders are locked as above described. It is thus apparent that even the table on the inner cylinder 18 may be seen easily through the slots 33 and 34.

One end of each of the cylinders is preferably provided with a ratchet having round ended ratchet teeth 35, as shown in Fig. 1, and a spring roller ratchet 36 is provided on the inner side of the casing and on the inner side of each of the outer cylinders 15 and 17, which engage teeth 35 and thereby hold the cylinder in place, the teeth 35 being so arranged as to fix the numerals of the tables directly in line in front of slots 33 and 34 as the cylinders are turned. The teeth 35 are of such a size as to move each cylinder exactly one line of numerals. The ratchet 36 works easily backward or forward over the rounded ends of the teeth 35.

A flanged holder 37 is attached to the case 10 immediately below and adjacent to slot 33 to receive the price or rate slip. It is preferably placed below instead of above the slot in order that it shall not cast a shadow over the numerals in slot 33 and also to be more easily readable. A single series showing the different rates per hour or a number of series of different rates may be placed in holder 37, as for example, in Fig. 4, three different series are shown placed upon the strip of paper which is slipped into the holder 37 so that the rates are in line with and close to the amount of desired computation.

A rod 38 is provided midway between slots 32 and 33 in case 10 and a double pointed index 39 is slidably mounted on rod 38 so that the index may be slipped back and forth from one end to the other of the cylinders. The ends of the index are preferably made pointed to indicate the computations within the slots, and a slot 40 is provided in the index over holder 37 for the rate numerals and a small handle 41 is attached to index 39 to control the same. On long machines it is convenient to have two indexes as shown in Fig. 1. As in my former construction, the hours are preferably placed at the center and the computations according to the rates per hour are arranged horizontally at each side of the number of hours.

A handle 42 is provided for case 10 in order to easily handle or carry the same.

To use my device, the accountant turns the locking pin 24 so as to give him the correct table which he desires to use according to the cylinder upon which said table may be placed, which cylinder is indicated by the sign on the plate 31, plate 31 being placed in a vertical position and the cylinders are turned until locked in the desired position. The index 39 is then moved along the rod 38 to the desired rate in holder 37. The cylinders are then turned to the correct number of hours where the computation as per rate, plus the number of cents for the minutes on the smaller roll, will calculate the exact amount for the given time.

My present arrangement allows of the division of the table upon the different cylinders where a large number of hours and corresponding computations are required. It is apparent that the plurality of cylinders permit also of much more complicated calculations being performed. Thus computations both at the selling and the cost prices of commodities by the pound or yard may be simultaneously computed and the computations greatly accelerated by the use of my device.

I claim as new:—

1. In a calculating machine, a casing having a lengthwise slot, concentric cylinders revolubly mounted in said case and having similar lengthwise slots, hand wheels of progressively different sizes separately attached to said cylinders to revolubly actuate any one of the same, a lock for one or more of said cylinders consisting of a spring pin having lugs thereon, said cylinders having an opening for the end of said locking pin, and a tubular projection on said case having slots corresponding to the different positions in which it is desired to lock said cylinders by said lugs.

2. In a calculating machine, a case having lengthwise parallel slots, cylinders revolubly mounted in said case one to each slot, computations on said cylinders corresponding to said slots, a price holder on said case between and parallel to said slots, a rod on said case between and parallel to said slots, a double pointed index having an opening opposite said price holder and pointing into said slots to indicate said computations, said index slidably mounted on said rod and having a suitable handle, substantially as and for the purpose specified.

3. In a calculating machine, a case 10 having lengthwise slots 32 and 33, cylinders concentrically mounted in said case and having lengthwise slots 34 corresponding to slot 33, hand wheels separately attached to said cylinders to actuate the same, a spring locking pin 24 having lugs 30 thereon, a tubular projection 28 on said case having slots 29 corresponding to the different positions in which it is desired to lock said cylinders by said lugs, said cylinders having an opening 27 for the end of said locking pin.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHESTER J. SMITH.

Witnesses:
A. W. KETTLE,
I. A. ELSWORTH.