

W. S. JOHNS.
COMPUTING MACHINE.
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1,031,852.

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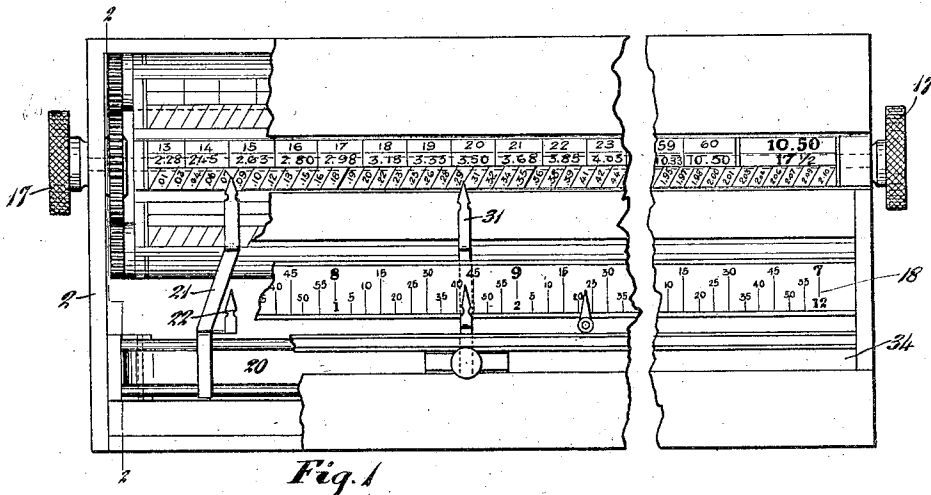


Fig. 1

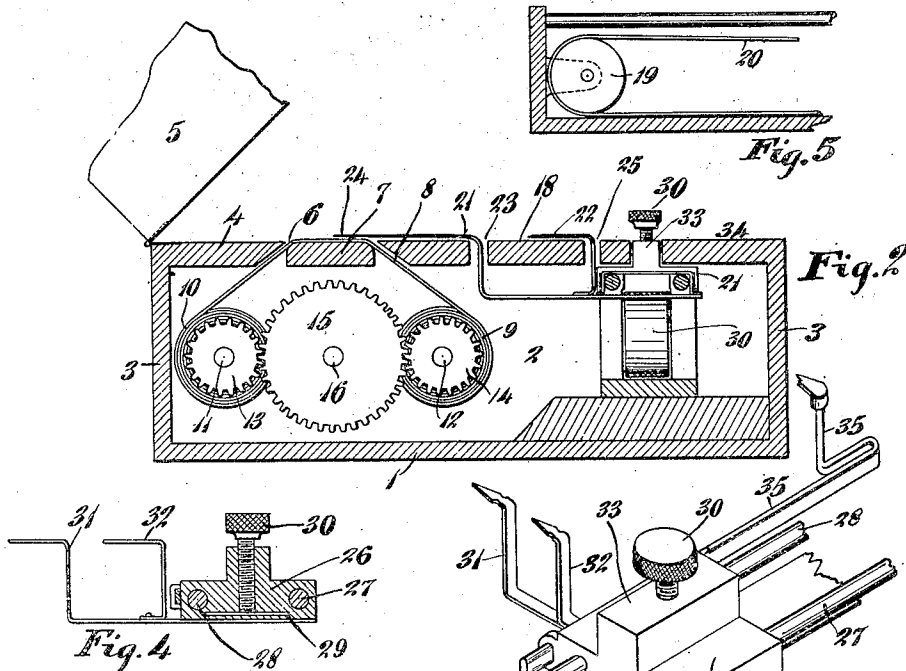


Fig. 2

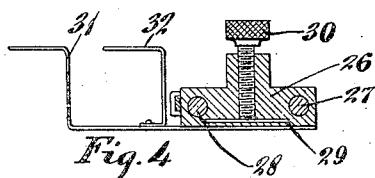


Fig. 4

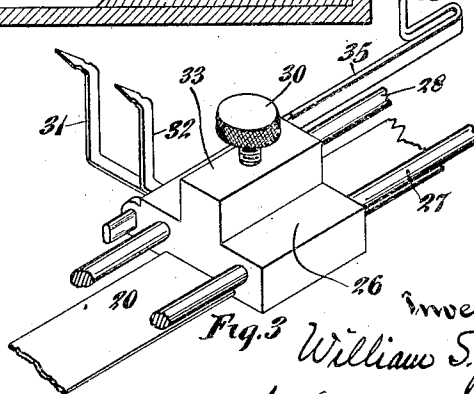


Fig. 3

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COMPUTING-MACHINE.

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To all whom it may concern:

Be it known that I, WILLIAM S. JOHNS, a citizen of the United States, and a resident of the city of Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Computing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

The object of my invention is to furnish a machine for the computation of wages, interest and the like, and especially for determining at a glance the amount of wages due for any fractional period of an hour, day or week at any desired rate of wages.

The essential features of my invention involve the use of a series of tables containing tabulated computations of amounts of wages at varying rates for fixed intervals of time, and I arrange in connection with these tables a time scale divided into intervals to conform to the fixed intervals for which the amounts of wages are calculated, and in connection with these two tables I employ a slidable or shifting member carrying pointers fixed thereto and adapted to be shifted over the tables to indicate the amounts on the wages table to correspond with the intervals of time on the time scale, and I further provide an adjustable member also carrying pointers for the two scales with the adjustable member arranged to actuate the sliding member by being clamped thereto, but adapted to be adjusted along the sliding member without actuation thereof.

The construction consists of that certain novel arrangement of parts to be hereinafter particularly pointed out and claimed, whereby the best results are attained in the simplest and most efficacious manner.

In the drawings, Figure 1 is a top plan view of my machine with portions of the top broken away. Fig. 2 is a sectional end elevation taken on the lines 2, 2, of Fig. 1. Fig. 3 is a perspective view of a portion of the pointer actuating device. Fig. 4 is a cross section of the parts shown in Fig. 3. Fig. 5 is a detail of one of the pulleys for the endless tape.

The operating mechanism is inclosed in a rectangular box, comprising a bottom 1, ends 2, 2, sides 3, 3, and top 4, while to inclose and cover the entire apparatus I provide a lid 5. A pair of slots 6, 6, are formed

lengthwise in the top, leaving a tablet 7, and over this tablet is carried a sheet of flexible material 8, which is run from one roller 9 to another roller 10, the spindles 11, 12 of these rollers being suitably journaled in the ends of the casing. These spindles are provided with the pinions 13, 14, which are engaged by the gear 15 mounted on a stud 16, which stud projects through the end 2 of the case and is provided with a knurled head 17 for rotating the gear 15, and thus winding the flexible sheet 8 from one roller to the other and carrying the sheet over the tablet 7. Upon this sheet 8 is printed a set of tables giving the computations of wages at varying rates and for fixed intervals of time. In the present instance, computations are made for the amounts of wages at varying rates for each five minute interval, say from 7 a. m. to 6 p. m., and the rates of wages, one rate for each table running from—say—four cents an hour to seventy-five cents per hour. The length of the tabular sheet 8 will of course depend on the extent of the tables; but for ordinary purposes, a few turns on each roller will be all that is required, and therefore I have not arranged for any slip between the rollers 9 and 10, as the variation in diameter of the two rolls will be very slight under ordinary conditions.

For convenience in computation in addition to indicating on the sheet 8 the wages computations for the five minute intervals, I also indicate the computations at the given rate for the hours from 13 to 60, in order that the weekly payroll may be readily and easily made up, and in illustrating the table on the sheet 8, the amounts indicated in the horizontal row immediately above the values for the five minute intervals give the amounts at the figured rate per hour for the hours that are indicated in the uppermost horizontal row.

Arranged parallel to the table of amounts of wages and running across the top of the machine from side to side, is a time scale 18, divided into five minute periods, and the divisions on the table of wages are arranged to correspond to the five minute divisions on the time scale, so that, for example, if the time scale begins at seven o'clock, at any selected hour or five minute interval, the amount of wages for that particular time at the selected rate will appear on the wages table opposite the time selected.

Journalled in suitable supports at each end in front of the time scale within the casing are a pair of pulleys 19, over which runs an endless flexible tape or band 20, in the present instance a flexible steel tape being employed. Riveted to this steel tape are a pair of pointers 21, 22. The pointer 21 is extended upwardly and rearwardly along the face of the table top through a slot 23 in the top, with the outer end of the pointer 21 extending to the list of wages computations on the wages scale 8, while the pointer 22 extends upwardly through a slot 25 in the top and over the time scale 18.

26 is a block mounted to slide on the guide rods 27, 28, which extend across the casing above and at either side of the endless tape 20, and this block is provided with a slot 29 near its base through which the tape 20 passes, and the block is clamped to or released from the tape 20 by turning the set screw 30. The block 26 also carries pointers 31, 32, which correspond to the pointers 21, 22, and which extend upward through the slots 23, 25, and along the top of the casing to the wages table and the time scale in the same way as the pointers 21 and 22. The central portion 33 of the block 26 extends through a slot 34 in the top of the case and the set screw 30 extends upwardly above the top so that it can be readily grasped by the operator. Of course the method of securing the pointers to the tape 20 and the block 26 is not material, but in the present instance I loop the inner end of the pointer 21 around the guide rods 27, 28, so that the guide rods also guide and sustain the belt or band 20 from sagging. Adjustably secured to the block 26 is a third pointer 35, which is frictionally held in the block or may be secured by set screw.

In order to determine the amount of wages of an operative, I proceed as follows: Let us assume that it is desired to determine the amount of wages or the labor cost for certain work in which the wages rate is—say—17½ cents an hour, and the operative, as shown by the time card, commences work at 8.15; works until 10.05 and then ceases work on this job until 11.25; works until 12.30; commences again at 1.15 and continues until 4.05. The operator turns the knob 17 to bring the table for 17½ cents an hour calculation over the tablet 7. The pointers 21 and 22 are assumed to be normally at the left hand end of the machine indicating no wages and the commencement hour of the day; but if these pointers are not in this position, the operator turns the set screw 30 to release the block 26 from the tape 20 and sliding the block to the left, the face of the block contacts with the inner ends of the pointers and carries these pointers and the tape to which they are

riveted to the left, bringing all of the pointers 21, 22, 31 and 32 in line. The operator then carries the pointers 31 and 32, or rather the pointer 32 to the time 8.15, at which the work was commenced, tightens the set screw 30, and then shifts the block 26 and the pointer 32 to 10.05. This movement carries with it the tape 20 and these pointers. The block is then loosened and shifted without moving the tape to 11.25. It is then clamped to the tape and the block moved to 12.30 on the time scale. The block is then released, and the pointers moved to 1.15; the block tightened and the pointer moved to 4.05. Then reading from the pointers 21 and 22 attached to the tape, we find on the wages sheet the amount of wages or the labor cost of this work, that is, \$1.01, and in the fixed time scale the time expended five hours and forty-five minutes.

By the simple arrangement of sliding the block 26 on the tape when the work is intermittent, and clamping the block 26 to the tape when the work is in progress, the result is that we shift the tape 20 and with it the pointers 21, 22, only during the working time.

If there is any fixed interval in calculating a series of time cards, such as thirty minutes for luncheon that must always be omitted, the pointer 35 is made use of instead of the pointer 32, and this pointer is adjusted on the time scale a thirty minute interval ahead or in advance of the pointer 32. Adjustments are then made with this pointer on the time scale, although the readings are taken from the other pointers.

If the work is continuous, and the employees commence at the commencement time on the time scale, then the tape 20 and pointers 21 and 22 need not be used at all, because the time scale and the wages computations are calculated to correspond and the pointers 31, 32, or if lunch time is to be omitted, pointer 35 can be simply shifted to the quitting time, and the reading taken from the pointer 31.

If the workman did not commence at the regular time, then it will be necessary to shift the pointers 21, 32 to the time at which the wages commence, and then to clamp the tape 20 and its pointers 21, 22 to the block 26 and proceed as before, taking the reading from the pointers 21 and 22.

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

1. In a calculating machine, the combination with the casing and a fixed scale, of a holder carrying a series of computations at varying rates for each interval of the fixed scale, a sliding device with pointers secured thereto to indicate the desired computation with reference to any selected interval on the fixed scale, a second sliding device also car-

rying a set of pointers, and means for securing together said sliding devices for intervals to be included in the computation.

2. In a calculating machine, the combination with a casing and a fixed scale, of a holder carrying a series of computations at varying rates for each interval of the fixed scale, an endless tape, with an indicator attached thereto, a second indicating device, with means for securing and releasing the same from said endless tape, both indicators indicating computations corresponding to the division intervals on the fixed scale whereby for intervals to be omitted from the computations the second indicator may be moved over the scale independently of the first indicator.

3. In a calculating machine, the combination with a casing and a fixed scale, of a holder carrying a series of computations at varying rates for each interval of the fixed scale, an endless tape, with pointers secured to said tape to indicate the desired computation with reference to any selected interval on the fixed scale, a block loosely mounted on said tape carrying a second set of pointers, and means for clamping the block to the tape for intervals to be included in the computations.

4. In a calculating machine, the combination with a casing and a fixed scale mounted on top of the casing, of a pair of rollers mounted in the casing and carrying a sheet imprinted with a series of computations at varying rates for each interval of the fixed

scale, a tablet over which said sheet is displayed, and means for actuating the rollers to bring any desired set of computations over said tablet, a sliding device with an indicator attached thereto, a second indicating device, with means for securing and releasing the same from said sliding device, both indicators indicating computations corresponding to the division intervals on the fixed scale whereby for intervals to be omitted from the computations the second indicator may be moved over the scale independently of the first indicator.

5. In a calculating machine, the combination with a casing and a fixed scale mounted on top of the casing, of a pair of rollers mounted on the casing and carrying a sheet imprinted with a series of computations at varying rates for each interval of the fixed scale, a tablet over which said sheet is displayed, and means for actuating the rollers to bring any desired set of computations over said tablet, an endless tape, with pointers secured to said tape to indicate the desired computation with reference to any selected interval on the fixed scale, a block loosely mounted on said tape carrying a second set of pointers, and means for clamping the block to the tape for intervals to be included in the computations.

WILLIAM S. JOHNS.

Attest:

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