

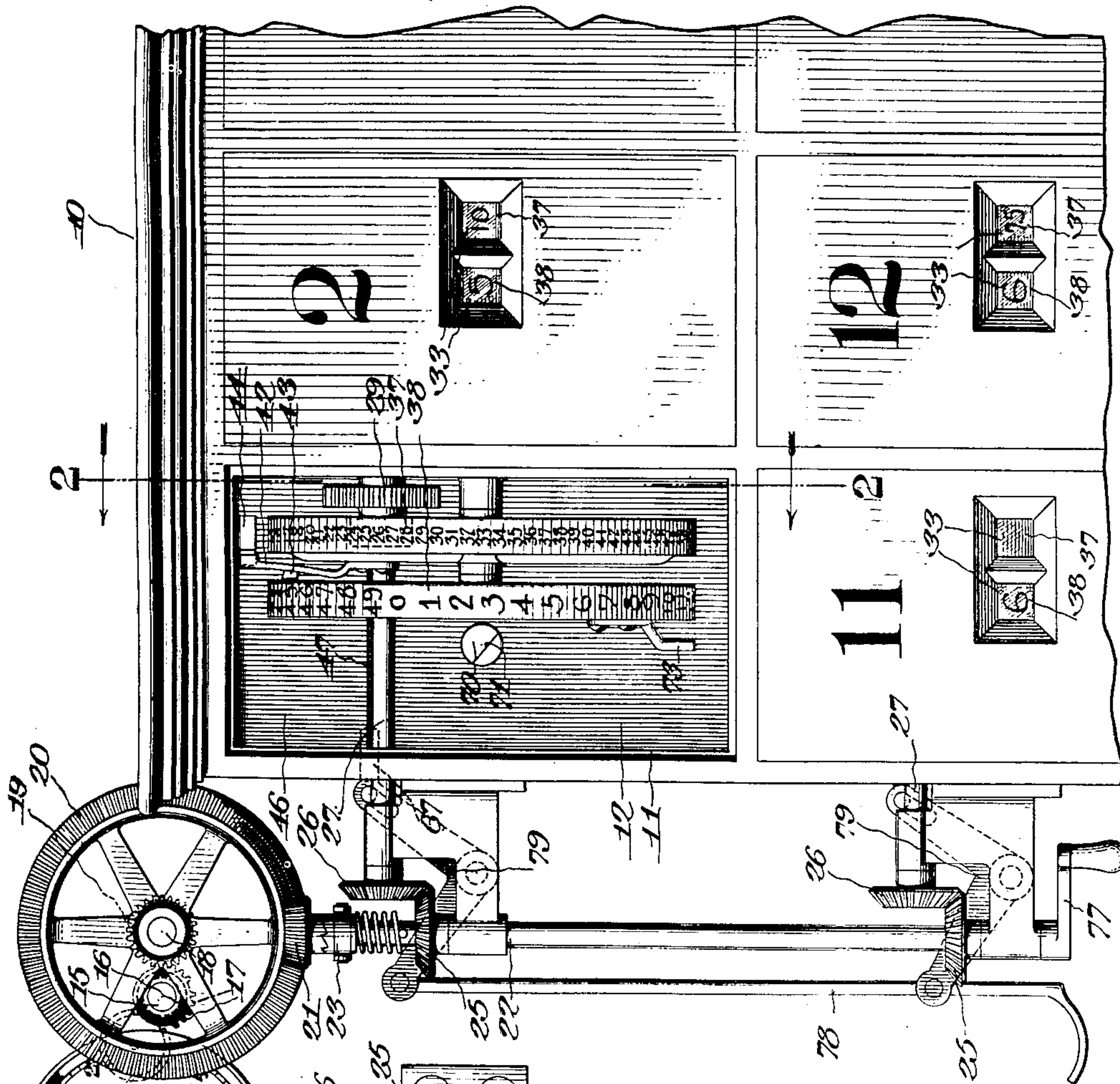
No. 816,760.

PATENTED APR. 3, 1906.

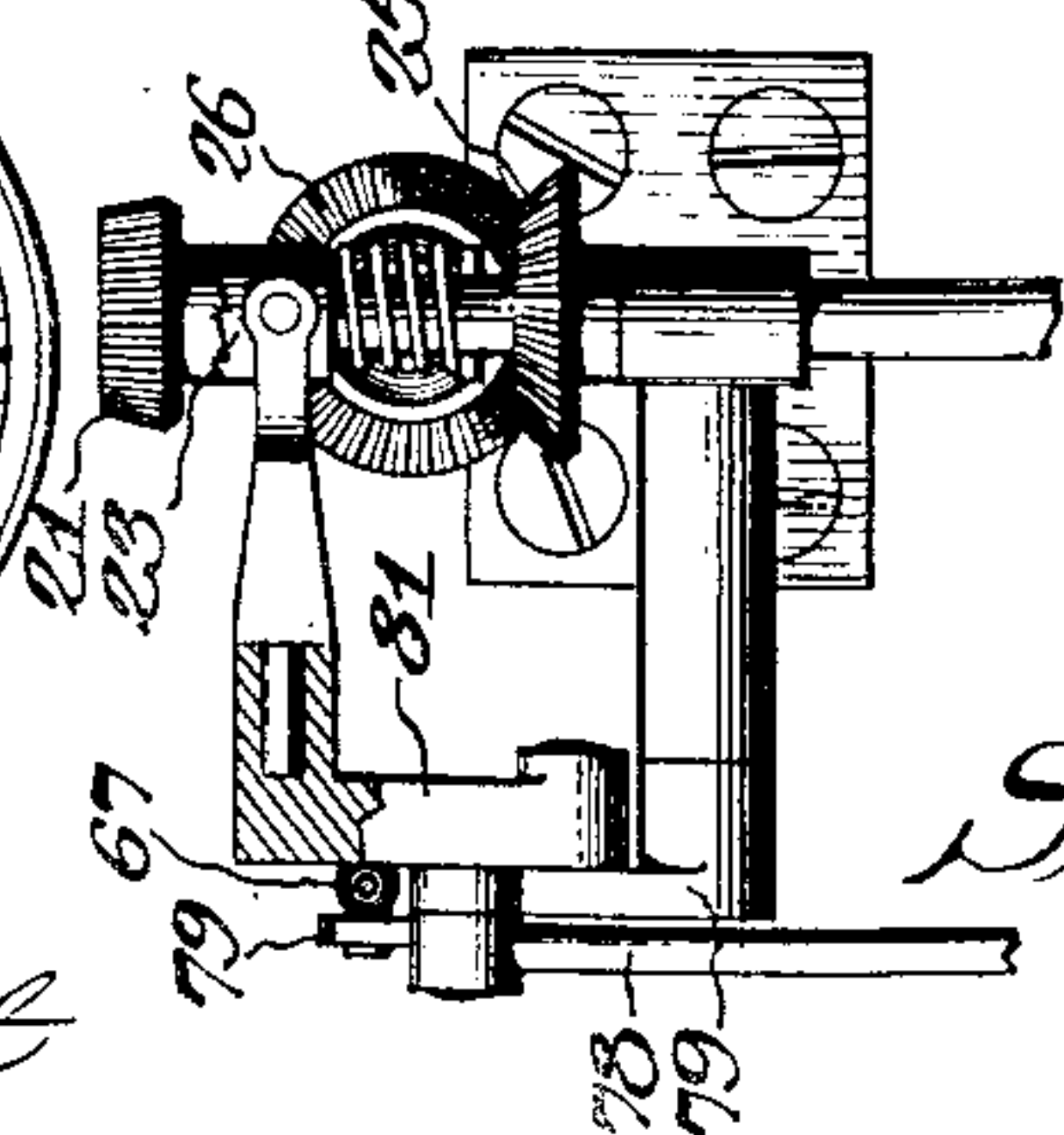
S. E. SWICK.  
CALCULATING MACHINE.  
APPLICATION FILED APR. 3, 1905.

2 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 5.*

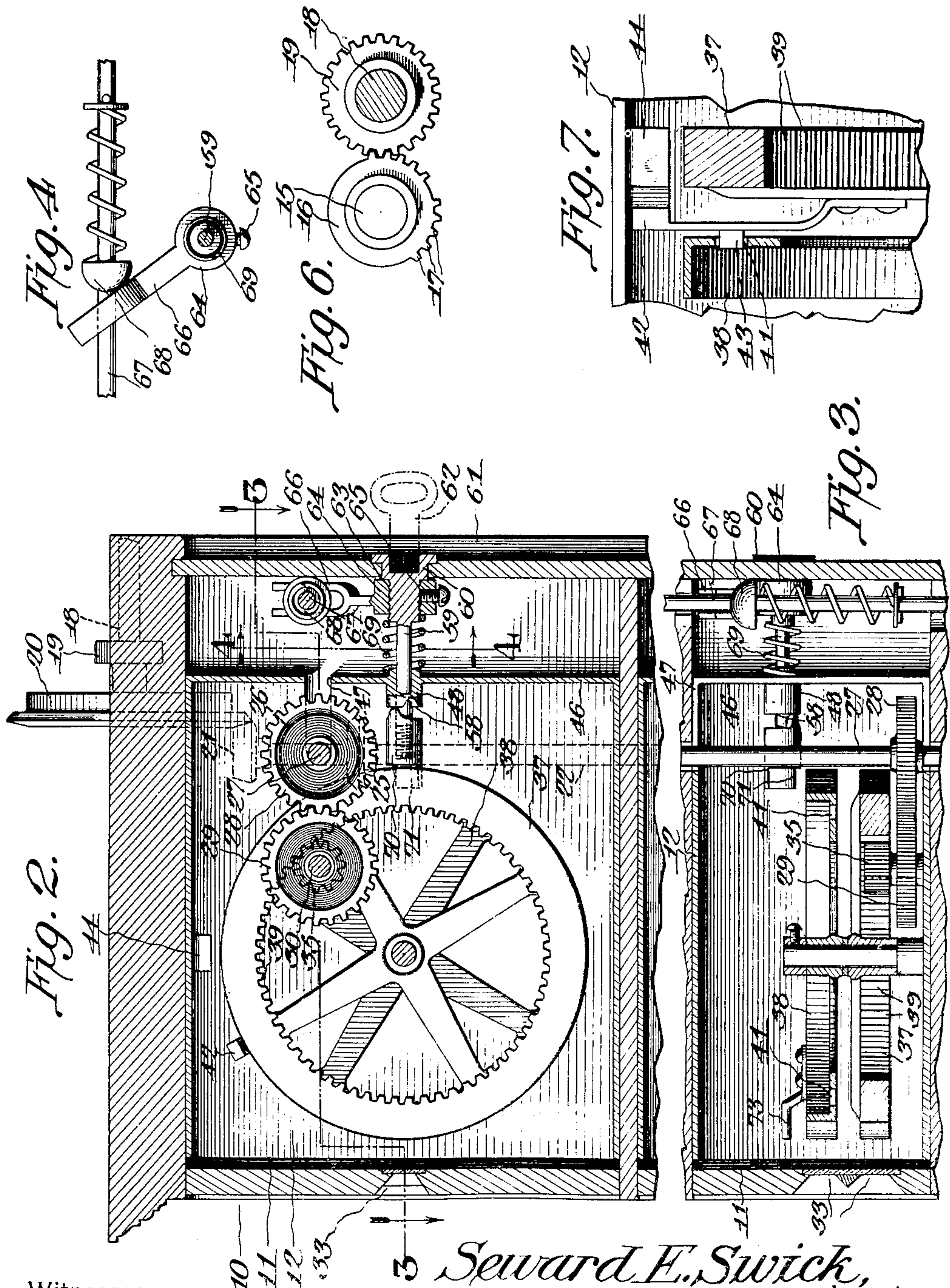


Witnesses  
*E. F. Stewart*  
*Geo. Parker*

*Seward E. Swick,*  
Inventor.  
by *C. A. Snow & Co.*  
Attorneys

S. E. SWICK.  
CALCULATING MACHINE.  
APPLICATION FILED APR. 3, 1905.

2 SHEETS—SHEET 2.



Witnesses  
*E. J. H. H. H.*  
*J. E. Parker*

*Seward E. Swick,*  
Inventor.  
by *C. A. Snow & Co.*  
Attorneys



# UNITED STATES PATENT OFFICE.

SEWARD EUGENE SWICK, OF MARYSVILLE, OHIO, ASSIGNOR OF ONE-HALF  
TO FRED E. WECKEL, OF MARYSVILLE, OHIO.

## CALCULATING-MACHINE.

No. 816,760.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed April 3, 1905. Serial No. 253,485.

*To all whom it may concern:*

Be it known that I, SEWARD EUGENE SWICK, a citizen of the United States, residing at Marysville, in the county of Union and State of Ohio, have invented a new and useful Calculating-Machine, of which the following is a specification.

This invention relates to calculating-machines, and has for its principal object to provide a mechanism of simple construction for indicating the amount due to workmen for services rendered, so that the timekeeper or other person may ascertain at a glance the amount due any workman at any moment of the day.

A further object of the invention is to provide an indicating mechanism for each separate workman, and to provide a means whereby such indicating mechanism may be connected to an operating device, such as a clock-train, when the workman enters the factory or other place of employment and disconnected therefrom when the workman leaves.

A still further object of the invention is to provide mechanisms which are interchangeable in character in accordance with the wage paid per hour, so that when the workman is employed a mechanism corresponding to his rate of wages is placed in position and connected to the operating means, the timekeeper having on hand mechanisms of different character corresponding to the wages ordinarily paid, such as fifteen, seventeen and one-half, twenty, and twenty-five cents per hour.

A still further object of the invention is to provide a mechanism which will require no attention whatever in cases where the workmen are employed by the week and spend a given number of hours each day at their tasks, the operating means being arranged, for example, to record time from seven a. m. to noon, and from one p. m. to six p. m., the ordinary working day, and then remaining idle from six p. m. to seven a. m. of the following day.

A still further object of the invention is to provide a wage-recording mechanism of such character that the workman may start at any time during the day and his wage-indicating mechanism will start into operation at the same time.

With these and other objects in view, as

will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is an elevation of a wage-computing mechanism constructed in accordance with the invention, showing a number of mechanisms connected to common operating means, the casing of one of such mechanisms being shown in section. Fig. 2 is a transverse sectional view of a portion of the same on the line 2 2 of Fig. 1. Fig. 3 is a sectional plan view of a portion of the mechanism on the line 3 3 of Fig. 2. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 2. Fig. 5 is a detail elevation, partly in section, showing on an enlarged scale the clutching mechanism used to disconnect the operating member of timing devices when the indicating devices are to be restored to zero position. Fig. 6 is a detail elevation, on an enlarged scale, of the primary and second wheels forming part of the gear-train for transmitting movement to the indicating devices. Fig. 7 is a detail of the transfer mechanism between the cents and dollar indicating disks.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The mechanism forming the subject of the present invention is designed to be placed in the office of the timekeeper or cashier, and the working parts are mounted within a suitable casing 10, having a number of compartments 11 equal to the number of men employed, and in each of said compartments is arranged a casing 12, containing the means for indicating the amount of wages due the employee. This mechanism is so arranged that it may be connected to or disconnected from an operating means, such as a time-train, of which the primary shaft is indicated at 15, and the casings 12 are made removable, so that casings indicating different amounts may be interchanged in accordance with the wages paid.



The shaft 15 is driven from a time-train and rotates once each twenty-four hours. On this shaft is a mutilated gear 16, on which are arranged teeth 17 of a number corresponding to the number of hours constituting a day's work, ten of such teeth being shown in the present instance, and these being arranged in two spaced groups of five each, the first five representing the hours from seven a. m. to twelve noon and the second group, which is separated from the first by the space of a single tooth, representing the working hours from one p. m. to six p. m. The remaining portion of the wheel is blank, and the operating-teeth disposed thereon are of such pitch that twenty-four may be placed at the periphery of the wheel, and as the wheel rotates once in each twenty-four hours each tooth will represent one hour. Where the working hours are eight or nine, a wheel bearing a corresponding number of teeth may be employed, and if the dinner-time be restricted to a half or three-fourths of an hour the first tooth of the second group will be placed nearer the final tooth of the first group.

Arranged parallel with the shaft 15 is a shaft or arbor 18, having a gear 19, having twenty-four teeth, with which the teeth 17 intermesh, so that said gear 19 will receive in the present instance ten twenty-fourths of a revolution each twenty-four hours.

Secured to the shaft 18 is a large bevel-gear 20, having in the present instance two hundred and forty teeth, which intermesh with a bevel-pinion 21, having ten teeth, so that as the wheel 20 is moved one twenty-fourth of a revolution each hour or to an extent equal to ten of its teeth the pinion 21 will receive one complete revolution each hour. The bevel-pinion 21 is mounted loosely on a shaft 22, but normally is clutched thereto by means of a clutching-sleeve 23, having teeth for engagement with corresponding teeth formed in the pinion. The shaft 22 is provided with bevel-gears 25 of a number corresponding to the number of rows of indicating mechanisms in the frame 10, the number being practically unlimited.

Intermeshing with each of the bevel-gears 25 is a bevel-gear 26, said gears being of corresponding diameter, and the shafts 27, on which they are mounted, each receiving one complete revolution per hour. The shaft 27 extends throughout the length of the casing 10, and at a point within each of the compartments is provided with a gear 28, that intermeshes with a gear 29 of the same diameter, the latter being mounted on a shaft 30, carried by the vertical side walls of the removable casing 12, said shaft 30 also receiving one revolution per hour. Each of the removable casings 12 is approximately rectangular in form, and at its front are openings 33, through which the amount due the workman is displayed, and the front of each re-

ceptacle is provided with a number or other character to identify it with the workman whose time is being computed or indicated. Secured to the gear-wheel 30 is a pinion 35, having a number of teeth, depending on the rate of wages per hour, and in the present instance the pinion is provided with fifteen teeth, indicating a rate of fifteen cents per hour, said pinion rotating once per hour. From one side of the casing 12 projects a stud or fixed shaft on which are mounted two indicating-wheels 37 and 38, the first wheel 37 having on its periphery numerals ranging from "1" to "99" and "0," that are displayed successively at one of the openings 33. This indicating-disk is provided with an internal gear 39, having one hundred teeth, with which the teeth of the pinion 35 intermesh, and as the latter makes one complete revolution per hour it will move the indicating-disk fifteen one-hundredths of a revolution per hour or to an extent sufficient to display the numeral "15" at one of the openings 33, indicating that fifteen cents is due the workman for the first hour's work.

The periphery of the disk 38 is provided with numerals from "1" to "49" and "0," indicating dollars, and these numerals are successively displayed at one of the openings 33 to the left of the opening at which the numerals indicating cents are displayed. In one side of the disk 38 is an annular row of recesses 41, fifty of such recesses being arranged at equidistant intervals and adapted for the reception of a transfer-pin 42. The transfer-pin is secured at one end to the disk 37 and is provided with a lug or tooth 43, arranged to enter recesses 41. The end of this pin projects beyond the periphery of the disk 37 and is arranged to engage with a stationary cam 44, carried by the casing once during each revolution of said disk 37, so that as the disk is completing a revolution the pin will engage the cam, and tooth or lug 43 will be forced outward into one of the recesses 41, and will be held in engagement therewith for a length of time to transmit one-fiftieth of a revolution to the indicating-disk 38 and move the latter to display the next numeral at the opening 33, and in this manner the amount, in dollars and cents, due to the workman at any moment of the day can be ascertained at a glance.

The rear wall 46 of each of the casings 12 and the side walls thereof are provided with slots 47 for the passage of the shaft 27, and at the central portion of said rear wall is a boss 48, having a face-cam 58 at its inner end. This boss is perforated for the passage of a stem 59, having a head 60, that projects through the rear wall 61 of the main casing and is provided with a suitable slot or opening for the reception of a key 62, this being of any suitable construction and being carried by the timekeeper or cashier, the key being



preferably of such nature that it would be difficult to turn the heads 60 by any tool of ordinary character. Between the head 60 and the stem 59 is a peripherally-threaded portion 63, on which is mounted a collar 64, locked in place by a set-screw 65, and from said collar projects an arm 66, that is bifurcated or forked at its free end to embrace a longitudinally-movable rod 67, that is provided with a tappet 68 at each of the computing mechanisms. Between the enlarged portion 63 and the rear face 46 of the casing is a helical compression-spring 69, that tends normally to thrust the casing outward, and if this be allowed the casing, together with all of its mechanism, will be moved outward, the gear 29 moving out of mesh with the gear 28, and movement is no longer transmitted from the shaft 27 to the computing and indicating mechanism. To the inner end of the stem 59 is secured a collar 70, having at one end a cam-face for engagement with the cam-face 58, and if said stem is turned in the proper direction the movable cam-face engaging with the fixed one will force the casing 12 inward until the gears are in mesh, and it will be clear that when a new workman is started the turning of the key 62 will be all that is necessary to connect the time-keeping mechanism of that workman to the main operating-shaft 27.

The outer end of the collar 70 is provided with a cam-face 71, and said collar is screwed on the end of the stem 59 in such position that it may be readily engaged by a tool inserted within the casing after the removal of the front thereof, the front being preferably made detachable for this purpose. The dollars-indicating disk 38 is provided with a finger 73, arranged in such position with respect to the zero-mark of such disk that immediately after it engages with the cam 71 and turns said cam the zero-mark will be moved opposite the display-opening.

The shaft 22 is provided at one end with a manually-operable crank 77, and adjacent to the crank is the finger-piece of a pull-rod 78, that is connected by a bell-crank lever 79 to the rod 67, that extends throughout the length of the main casing. To one arm of the bell-crank lever is connected a clutch-operating arm 81, that in turn is connected to the clutching-sleeve 23, so that when the pull-rod 78 is moved longitudinally the pinion 21 will be unclutched from shaft 22 and all of the tappet-blocks 68 will move into engagement with the arms 66, thus turning the stems 59, and causing all of the time-indicating mechanisms to move into engagement with the operating-gears. The pull-rod is then released, allowing the tappets to recede. On turning the cranks 77 all of such time-indicating mechanisms will be operated, the turning movement being continued until the tongue or finger 73 engages the cam-face 71,

and in turning the collar 70 the cam-face of the latter will ride against the cam 58, releasing the indicating mechanism and allowing the same to move outward under the stress of the spring 69, and said mechanisms being released or disconnected from the operating-shaft as each is restored to the zero-indicating position.

By making the casings removable and keeping on hand indicating devices of different character a mechanism indicating one rate of wages may be substituted for another at will, and while in the present instance the cents-indicating disk is provided with one hundred teeth to intermesh with a fifteen-toothed pinion rotating once per hour, and indicating a rate wage of fifteen cents per hour, the gears may be provided with two hundred teeth and thirty-five teeth, respectively, and the latter rotating once per hour, and by moving the indicating-disk to the extent of thirty-five teeth indicate a rate of seventeen and one-half cents per hour, or by the employment of an indicating-disk having one hundred teeth and an initial pinion having twenty teeth a rate of twenty cents per hour will be registered.

Where the apparatus is used in a factory or other place, having fixed hours of work—such, for instance, as eight, nine, or ten hours with an interval at the middle of the day for lunch—the teeth of the initial operating-gear—that is to say, the gear connected to the clock-train—is provided with a corresponding number of teeth suitably spaced and arranged to start the mechanism at the proper hour in the morning, temporarily ceasing registration during lunch-time, and to again cease at the end of the day, the operation being again started at the proper time the next morning.

It is obvious that a workman may start at any time and his wage-indicating device be set into operation at the same minute, so that the bookkeeper may have before him the total amount of wages due each workman at any hour of the day.

The zero mechanism is intended to be used only after a pay-day, all of the indicating devices being restored to zero position in readiness for another operation.

It is obvious that the indicating-disks may be provided with numerals representing the number of hours and minutes each employee is at work instead of indicating the actual amount due. The latter indicating method, however, is preferable for the reason that it saves considerable time in computing the amounts due after the time has been ascertained.

Having thus described the invention, what is claimed is—

1. In mechanism of the class described, an indicator arranged to display the amount due for time worked, and an indicator-operating



means including a transmission member arranged to make one complete revolution during each twenty-four hours and having gear-teeth corresponding to the actual number of working hours.

2. In mechanism of the class described, an indicator arranged to display the amount due for time worked, and an indicator-operating means including two transmission-gears arranged to intermesh, the first gear having teeth of a number corresponding to the number of hours constituting a given working period, the teeth being divided into groups by a space representing the period of noon intermission, said gear being arranged to make one complete revolution during each twenty-four hours, and the second gear being provided with twenty-four teeth representing the number of hours in a day.

3. In mechanism of the class described, a support, a plurality of removable and interchangeable casings carried thereby, an indicating mechanism in each casing, transmission-gears carried by the casing, a timed operating-shaft having a plurality of gears arranged to intermesh with such transmission-gears, and an independent means for moving each casing to connect and disconnect its transmission-gear from the shaft-gear.

4. In mechanism of the class described, a support having a plurality of removable casings, indicating means in each of said casings, transmission-gear carried by the casings, a timed operating-shaft having a plurality of gears arranged to intermesh with said transmission-gear, and a key-controlled cam for moving the casing and controlling the intermeshing of its transmission-gear with the shaft-gear.

5. In apparatus of the class described, a support, a plurality of movable casings carried thereby, indicating means in each casing, transmission-gear carried by the casing, a timed operating-shaft having a plurality of gears arranged to intermesh with the transmission-gear, a cam, and a spring for controlling the movement of each casing, and a key-actuated means for controlling the movement of the cam.

6. In mechanism of the class described, a support provided with a plurality of compartments, movable casings arranged in said compartments, an indicating means in each of the casings, transmission-gears carried by the casings, a timed operating-shaft having gears for intermeshing with the transmission-

gear, a fixed cam on the casing, a stem extending through said cam, a cam carried by the stem and engaging with the fixed cam, a spring tending to move the casing in one direction, and a key for revolving said stem and altering the position of the casing.

7. In apparatus of the class described, an indicating-disk bearing numerals representing money values and provided with gear-teeth, a pinion intermeshing with the teeth, the number of teeth of said pinion corresponding to a predetermined wage-rate, and a timed operating means for revolving said pinion.

8. In apparatus of the class described, the combination with an indicating means, of an operating means, gearing connections between the two, a cam controlling the mesh of such gearing connections, and means carried by the indicating mechanism for engaging such cam and disconnecting the gearing when the indicating means arrives at zero.

9. In mechanism of the class described, a support having a plurality of compartments, casings arranged in the compartments and provided with indicating mechanisms, a timed operating-shaft, common to all of the indicating mechanisms, and means for simultaneously connecting all of said indicating mechanisms to the shaft.

10. In mechanism of the class described, the combination with a time-train, of a gear operated thereby, a shaft on which said gear is loosely mounted, clutching means between the gear and shaft, a second shaft having gearing connections with the first, a plurality of gears on the second shaft, a plurality of indicating devices having gears movable toward and from the gears of the second shaft, cams controlling the movement of the indicating devices, stems carrying said cams, arms extending from the stems, a rod engaging all of said arms, and means connecting the rod and the clutch mechanism, whereby on movement of said rod all of the indicating mechanism will be connected to the second shaft, and the time-train will be unclutched to permit restoring of the indicating devices to zero.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

SEWARD EUGENE SWICK.

Witnesses:

JOHN H. KINKEED,  
FRANK Z. BALLINGER.