Nov. 21, 1933. J. R. DALY 1,936,126

REGISTER MECHANISM

Original Filed Nov. 19, 1928 2 Sheets-Sheet 1

Fig. 1.

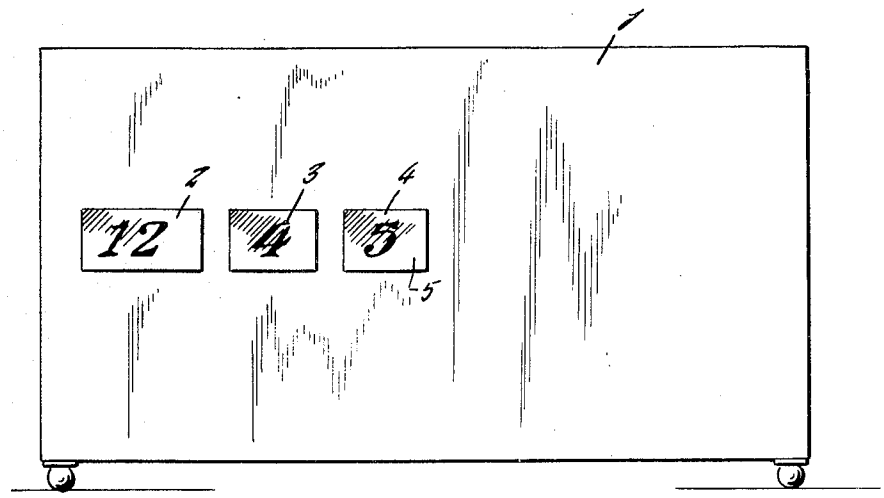


Fig. 5.

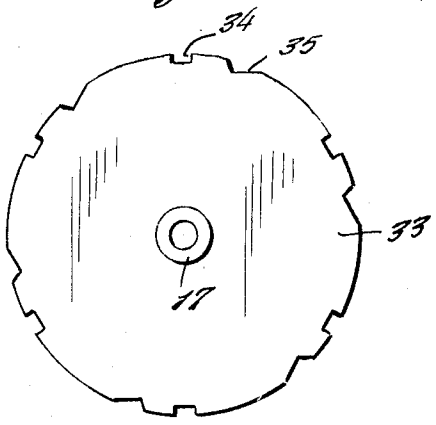


Fig. 6.

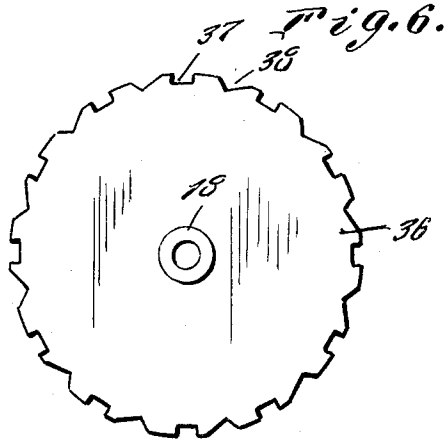
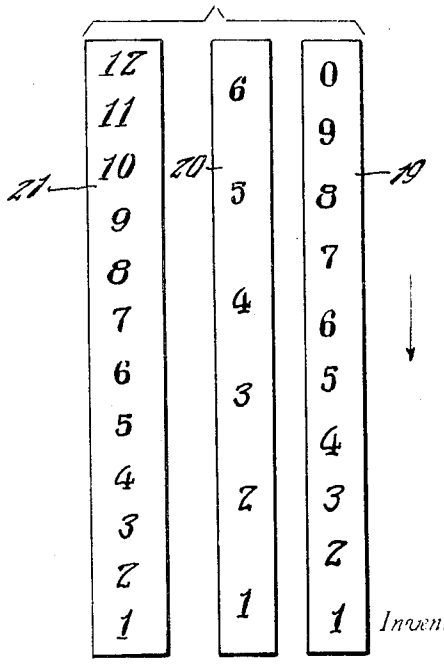


Fig. 7.



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Nov. 21, 1933. J. R. DALY 1,936,126

REGISTER MECHANISM

Original Filed Nov. 19, 1928 2 Sheets-Sheet 2

Fig. 2.

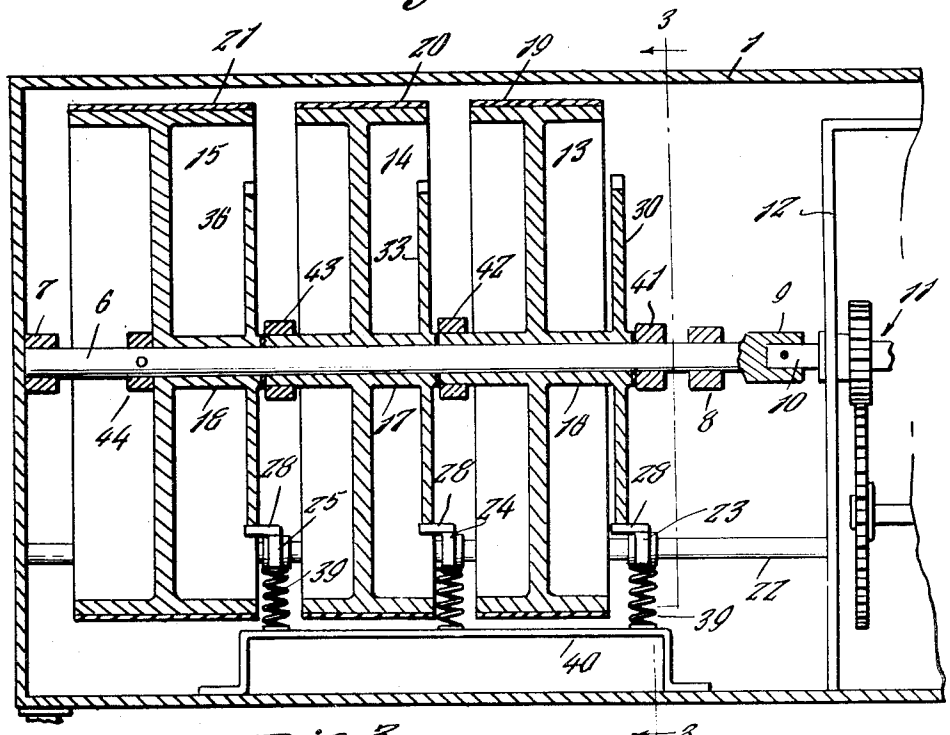


Fig. 3.

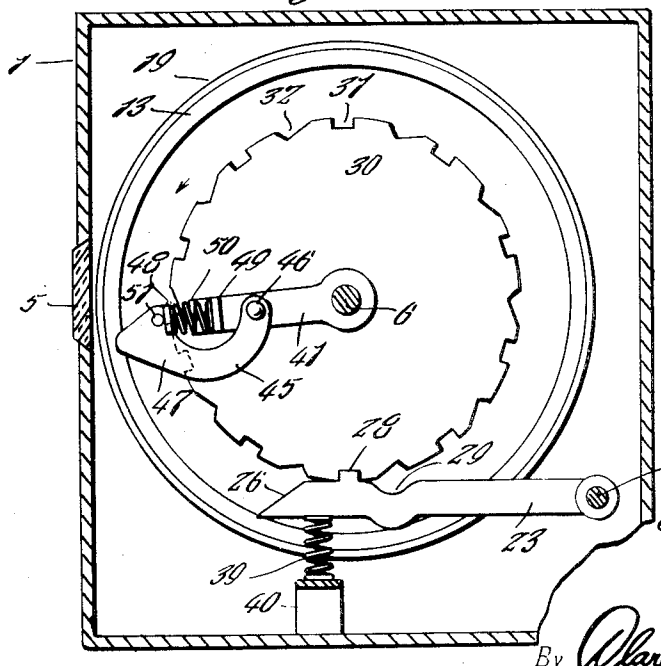
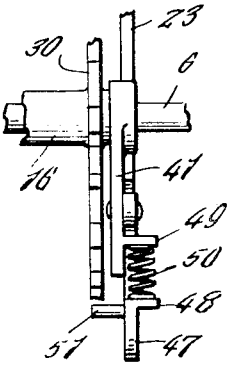


Fig. 4.



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Patented Nov. 21, 1933 1,936,126

UNITED STATES PATENT OFFICE

1,936,126

REGISTER MECHANISM

John R. Daly, Huntington, W. Va.

Application November 19, 1928, Serial No. 320,464
Renewed March 31, 1933

1 Claim. (Cl. 235—142)

The present invention relates to improvements in register mechanisms, and more particularly to a mechanism of this character for operative association with clocks and other time controlled devices.

Another important object of the invention is to provide a register mechanism of the above mentioned character which includes means for effecting the rotation of the cylinders so as to successively display the numerals printed on the periphery of the drum or cylinders through said sight openings, thus enabling the correct time to be ascertained at all times and shown in the conventional printed manner.

A further object is to provide a mechanism of the above mentioned character which will at all times be positive and efficient in its operation, the same being further simple in construction, inexpensive, strong and durable and further well adapted to the purpose for which it is designed.

Other objects and advantages of the invention will become apparent from the following description when taken in connection with the accompanying drawings.

In the accompanying drawings wherein like reference characters indicate corresponding parts throughout the several views:

Figure 1 is a side elevation of the clock embodying my invention.

Figure 2 is an enlarged longitudinal sectional view therethrough showing the manner in which the three or more cylinders can be arranged on the shaft, and also showing the connection between the shaft and a clock train mechanism.

Figure 3 is a vertical sectional view taken approximately on the line 3—3 of Figure 2.

Figure 4 is a detail plan view of the outer end portion of one of the pivoted cam members showing the rotating arm and the trip carried by the outer end thereof, the notched disc being also shown fragmentarily.

Figure 5 is a face view of one of the notched discs.

Figure 6 is a similar view of another one of said discs, and

Figure 7 is a plan view of the indicia carrying strips that are adapted to be secured around the peripheral faces of the respective cylinders.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates a substantially rectangular shaped casing within which is housed the mechanism constituting my improved clock structure. Upon referring to Figure 1, it will be observed that the front side of the casing is provided with three sight openings 2, 3, and 4, respectively, of substantially rectangular shape, the purpose of which will be presently described. A transparency 5 is arranged in each opening as more clearly shown in Figure 3.

Arranged for rotation within the casing 1 is the horizontal shaft 6, one end of this shaft being journaled in a suitable bearing 7 located at the inner side of one end of the casing, while the other end of the shaft extends through a bearing 8 arranged in an intermediate portion of the casing as shown in Figure 2. The inner end of the shaft 6 is formed with a socket 9 for receiving the outer end of the drive shaft 10 of a clock train mechanism denoted generally by the reference character 11, which mechanism is mounted in a frame 12 arranged within the casing. The shaft 6 is operatively connected with the shaft 10 whereby these shafts will rotate in unison for a purpose to be presently described.

Arranged for rotation on the shaft 6 are the cylinders, 13, 14, and 15, respectively, the cylinder 13 being designated the minute cylinder, the cylinder 14 being adapted to designate the ten minute interval cylinder, while the other cylinder designates the hour cylinder. The hubs of these cylinders are shown at 16, 17 and 18, respectively, and it will be observed upon referring to Figure 2 that the hubs 16 and 17 project at one end beyond the adjacent side of the respective cylinders.

Strips 19, 20 and 21, as shown in Figure 7 are secured around the outer peripheral faces of the cylinders 13, 14 and 15, respectively, and upon referring to Figure 7 it will be noted that the numerals arranged on the strip 19 runs from 0 to 9, the numerals on the strip 20 running from 1 to 0, while the numerals on the strip 21 run from 1 to 12. The numerals on the strips are adapted to be successively positioned in the rear of each of the sight openings during the operation of the clocks as will also be hereinafter more fully explained.

Arranged longitudinally within the rear lower portion of the casing is a rod 22, and mounted to swing vertically on the said rod 22 are levers 23, 24 and 25, said levers being disposed adjacent the cylinders 13, 14 and 15, respectively, as brought out in Figure 2. The forward free end of each lever is formed with the beveled nose or cam 26.

An upwardly extending lug 28 is formed on each lever, the lug cooperating with the respective notched disc as shown in Figure 3. Also each lever is formed with an offset intermediate portion thereby to form a depression 29 in the upper edge portion of each lever.

Carried by one end of the hub 16 is the disc 30 that is formed in its peripheral edge with a series of spaced notches 31, 10 of such notches being preferably formed in the disc.

The peripheral edge of this disc is further

formed with a series of angularly formed teeth 32 that are arranged between the notches 31, and the purpose thereof will be presently described.

A disc 33 is formed on the right hand end of the hub 17, there being six notches similar to the notches 31 formed in the peripheral edge of the disc 33 and these notches are denoted by the reference character 34. Arranged between the spaced notches 34 are the teeth 35 in a manner similar to the arrangement of the teeth 32 with respect to the notches 31 of the disc 30.

The right hand end of the hub 18 carries thereon the disc 36 and this disc is formed with twelve notches 37 that are similar to the notches 31 and 34. In addition, the disc 36 is formed with the angularly disposed teeth 38 that are arranged between the spaced notches 37.

The laterally extending lug 28 that is associated with each lever is normally held in engagement with the lowermost notch of the respective disc through the medium of the coil spring 39 that is disposed between the free end of each lever and a supporting bracket 40.

Forming a salient part of the present invention are the arms 41, 42, and 43, respectively. The arm 41 is secured at its inner end on the shaft 6 adjacent the outer side of the disc 30 for rotation with the shaft. The arm 42 is secured at its inner end on the projecting end portion of the hub 16 for disposition adjacent the outer face of the disc 33. The arm 43 is secured at its inner end on the projecting end of the hub 17 for disposition adjacent the outer face of the disc 36, and these last mentioned arms rotate with the respective hubs. A stop collar 44 is secured on the shaft 6 to prevent sliding movement of the hub of said shaft. The following description will suffice to impart an exact understanding of all the arms alluded to. An arcuate shaped link 45 is pivotally secured at its inner end on one side of each arm inwardy of the outer free end thereof as at 46, and formed on the free end of this link is the substantially triangular shaped head 47 that is adapted to cooperate with the beveled nose 26 of the respective pivoted lever. It will be observed upon referring to Figure 4 that the head 47 projects beyond the peripheral edge of the disc, and a laterally extending ear 48 is formed on the outer side of the inner end portion of the head 47 for cooperation with a similar ear 49 carried by the free end portion of the arm and a compression coil spring 50 is arranged between these laterally extending ears for normally maintaining the pivoted links 45 in the position shown in Figure 3.

A pin 51 extends laterally from the opposite sides of the triangular shaped head 47 for cooperation with the angularly disposed teeth formed in the respective discs and normally this pin 51 is maintained in spaced relation with respect to the peripheral edge of the toothed disc, as also clearly indicated in Figures 3 and 4. The elements referred to and numbered 23, 41 and 47 are not identical for all of the means. It will be apparent that different dimensions of parts are necessary to perform a carry to each of the wheels 14 and 15 and to drive wheel 13, each of the said wheels having a different number of teeth and a different pitch as will be understood from the drawings.

The operation of my improved clock is thought to be readily obvious from the construction shown and described, as will be apparent that when the shaft 6 rotates in a counter clock-wise direction, the arm 41 will rotate therewith and when the triangular shaped head 47 comes in contact with the beveled nose 26 of the lever 23, said spring 50 will be compressed to move the triangular shaped head 47 inwardly toward the arm 41 so that the pin 51 will engage with the angular tooth that is located directly above the beveled nose 26, and a further rotation of the shaft will cause the head 47 to actuate the pivoted lever 23 to disengage the lug 28 from the lowermost notch 31. This will result in the cylinder 13 being turned a predetermined distance so as to advance the number displayed through the opening 4 indicative of the minute. As soon as the triangular shaped head 47 passes over the cam shaped forward end of the lever 23 and the pin 51 reaches the depression 29, the spring 50 will actuate the pivoted link 45 to move the pin away from the toothed edge of the disc 30, and simultaneously the spring 39 will force the free end of the levers 23 upwardly to move the lug 28 into engagement with the next adjacent notch 31.

The arm 42 will be actuated by the rotation of the hub 16 to effect the actuation of the cylinder 14 whereby the ten minute intervals of the hour will be successively displayed through the opening 3, and in a similar manner, the hub 17 will actuate the arm 43 which arm cooperates with the lever 25 to actuate the disc 36 so that the hour cylinder 15 will be operated for displaying the hour successively through the opening 2.

It will be understood from the foregoing that the distances between the center of movement of the arm and the pivot points of their respective links are different or varied; also, that within the purview of my invention the disks 33 and 36 may have their pitch diameters changed—i. e., 33 may be decreased in ratio of 6 to 10 and 36 increased in ratio of 10 to 12, using the diameter of disk 30 as standing, the levers being changed to suit the said pitch diameter.

It will thus be seen from the foregoing description that I have provided a clock or watch that will at all times indicate the exact time of the day, and the actuating mechanism will furthermore be positive and efficient in carrying out the purposes for which it is designed. Also the parts of my clock are so arranged as to enable the same to be readily and easily assembled or disassembled, and access thereto may be had whenever necessary.

While I have shown the preferred embodiment of my invention, it is to be understood that minor changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claim.

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

In a registering mechanism comprising a plurality of numeral wheels, a transfer mechanism comprising an arm carried by the wheel of lower order, a disk carried by the wheel of higher order; said arm having a lateral ear, a link pivoted to said arm and having a lateral ear and also having a head and means for cooperating with said disk, a compression spring interposed between said ears, and means engaging the disk and adapted to be disengaged therefrom by said link.

JOHN R. DALY.