No. 675,763. Patented June 4, 1901.

J. WEJROSTEK & C. WIEDEMANN.

CALENDAR CLOCK.

(No Model.) (Application filed Nov. 21, 1899.)

Fig. 5.

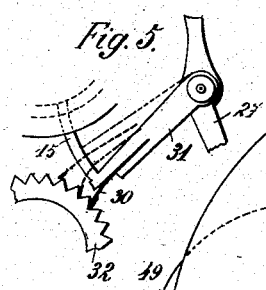


Fig. 1.

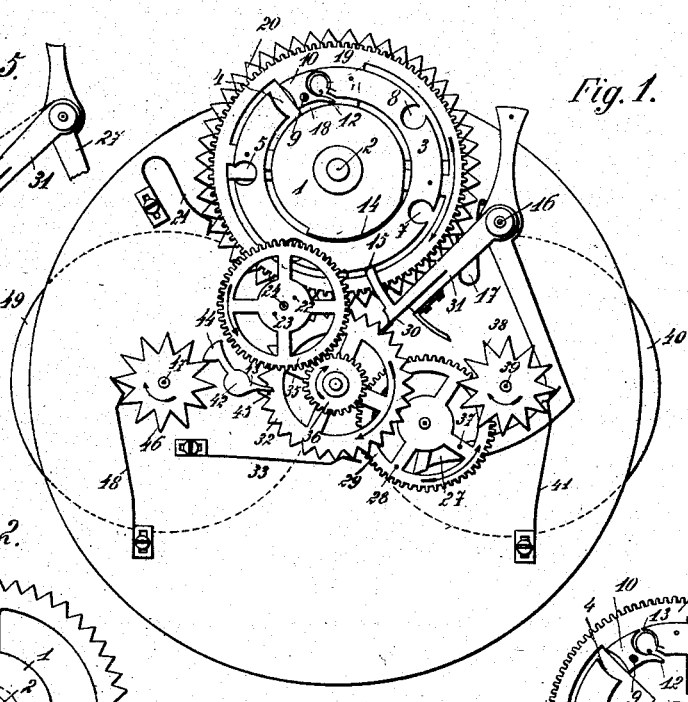


Fig. 2.

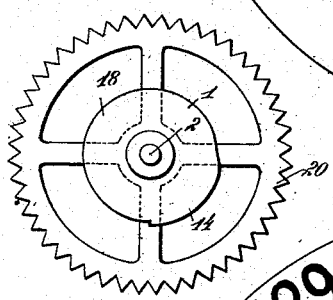


Fig. 3.

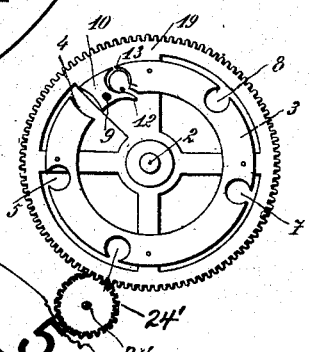
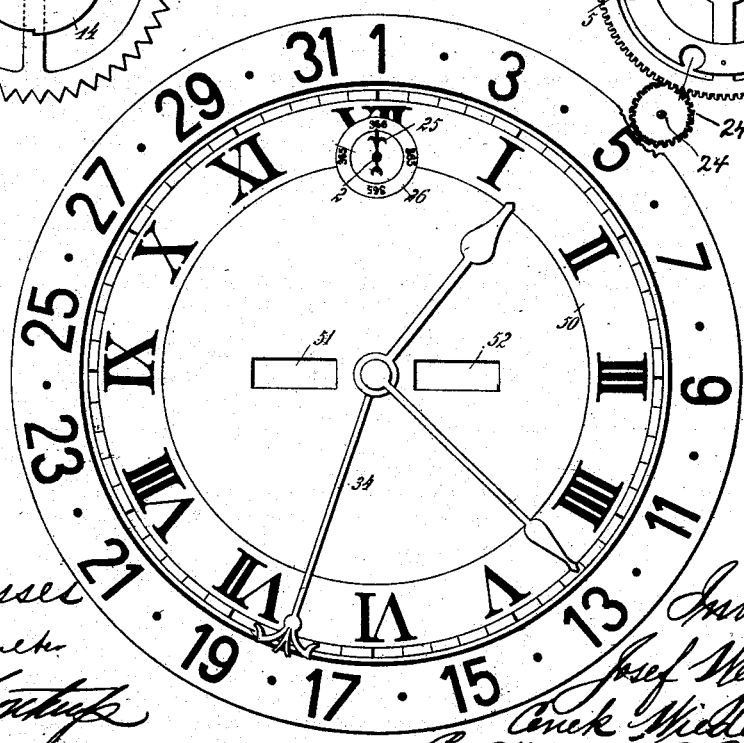


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEF WEJROSTEK, OF BEDHOST, AND CENEK WIEDEMANN, OF VINOHRADY-PRAGUE, AUSTRIA-HUNGARY.

CALENDAR-CLOCK.

SPECIFICATION forming part of Letters Patent No. 675,763, dated June 4, 1901.

Application filed November 21, 1899. Serial No. 737,810. (No model.)

To all whom it may concern:

Be it known that we, JOSEF WEJROSTEK, residing at Bedhost, Moravia, and CENEK WIEDEMANN, residing at Vinohrady-Prague, Bohemia, Austria-Hungary, subjects of the Emperor of Austria-Hungary, have invented a new and useful Timepiece, (for which we applied for a patent in Austria on the 6th day of August, 1899,) of which the following is a specification.

Our invention relates to improvements in timepieces; and our invention is applicable to every kind of watch or clock showing not only the hours, with their subdivisions, but also the days of the week and names of the months, the dates, and also the leap-years. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a rear view of the mechanism. Fig. 2 shows the wheel adapted to make one complete revolution in four years, corresponding with leap-years, and provided with a cam. Fig. 3 indicates the wheel 3, adapted to turn once a year around its axis and having a notch-ring for all the months which have less than thirty-one days and with a special notch for the leap-years. Fig. 4 shows the dial-plate. Fig. 5 is a detail view showing the working of the catch in its different positions.

Similar numerals refer to similar parts throughout the several views.

1 is a cam turning once in four years around its axis 2. It is integral with a wheel 20, which is provided with forty-eight teeth. Mounted on the same spindle or axis 2 is wheel 19, having one hundred and forty-four teeth. A concentric ring 3 is secured to the wheel 19. The wheel 20, with its cam 1, is secured to the spindle 2, while the wheel 19, with its ring 3, turns freely on said spindle. In arranging the parts the wheel 20 is the lowest or next to the dial-plate. Above wheel 20 is the wheel 19, and the cam 1 is situated inside the ring 3 on one and the same level with this ring, the portion 14 being quite near the inner edge of ring 3, while the portion 18 stands farther away from the inner edge of ring 3. Notches 4 5 6 7 8 are provided on the outer periphery of the ring 3, and their signification will be explained farther on.

It will be noted that the notches 5 6 7 8 are all of similar shape, while the notch 4 is of different shape and extends from edge to edge of the ring. In the notch 4 is arranged a piece 10, mounted upon a pin 9, so as to enable it to turn around this pin. Its outer edge forms a continuation of the circular outward edge of the disk 3. Toward the center of the wheel it is provided with a pawl 12 and on the other side a cavity, into which a spring 11 is fitted, which is secured at one end to the disk 3, while it presses at its free end against the pawl 12 and presses the latter toward the center. The piece 10 cannot be turned farther than the pawl 12 will permit, toward which it is pressed by the spring 11.

It will be noted that in the relative position of the different parts as shown in Fig. 1 the pawl occupying its lowest position nearly touches the edge 18 of the cam. As soon as this part of the ring reaches the elevated edge 14 of the cam 1 the pawl 12 is lifted up.

15 is a catch on the lever 31, which is pivoted at 16, the said lever having also an arm 27. The catch 15 is continually pressed toward the ring 3 by a spring 17. At the end of the lever 31 is a spring 30, which presses against one of the teeth of the wheel 32. This wheel 32 has thirty-one teeth and is governed by a spring 33. The lever 27 is swung once a day by the pin 28 from left to right, the pin 28 being secured to the wheel 29, which is moved by the clockwork in any usual way. The amplitude of swing of the lever 27 31 in Fig. 1 is just sufficient to move the wheel 32 one tooth each time. The cock-wheel 29 turning once a day around its axis will move the wheel 32 one tooth farther, therefore once around its axis in thirty-one days if the catch reposes on the circular periphery of the disk 3. This is really the case through all the months of the year which have thirty-one days. At the end of all the other months of the year which have less than thirty-one days the catch 15 must fall deeper, so as to be able to turn the wheel 32 more than one tooth. In the months which have thirty days only it

must turn on the thirtieth day of each such month two teeth at once, and on the 28th of February in an ordinary year it must turn four teeth at once. On the 29th of February in a leap-year it must turn three teeth on the wheel 32.

During the month of January the part of the periphery of ring 3 which is situated between the notches 4 and 5 will turn so as to pass under the catch 15. On the 28th day of February in an ordinary year the notch 4 will pass under the catch 15, which then falls upon the edge 18 of cam 1, which is the most advanced position shown in the diagram Fig. 5. Before the wheel 19 turns so far as to pass the notch the catch 15 is drawn out of it by the pin 28, and the spring 30 will move the wheel 32 four teeth farther. During the month of March and nearly the whole of April the part of the periphery of the ring 3 will be under the catch 15, and this will fall into the notch 5. The pin 28 will draw it out and it will this time move the wheel 32 two teeth farther. The same will happen on the thirtieth day of each month which has thirty days only, so that the notches 6, 7, and 8 will pass under the catch 15 on the thirtieth day of the months of June, September, and November.

In a leap-year the cam 1 will turn its elevated part 14 toward the pawl 12, which in consequence will be pushed a little farther from the axis 2. This is calculated so that the space 4 will be partly closed just two-thirds of its width, or one three-hundred-and-sixty-fifth part of the periphery of the ring 1. Then this notch will pass under the catch 15 on the twenty-ninth day of February each leap-year. This catch 15 will fall into the part 14 of the cam, and on its way upward the spring 30 will move the wheel 32 three teeth farther.

The wheel 38 has fourteen teeth. It is turned around its axis 39 by the pin 37 of the wheel 29, and it is moved step by step by means of the spring 41. The wheel 29 being turned by the clockwork once in a day, the wheel 38 will advance one tooth daily and will turn once in two weeks around its axis. On the dial the spindle 39 carries a disk 40, which turns in fourteen days once around its own axis. Upon this disk the week-days are written twice in a radial direction, so that each day must pass under the opening 51, Fig. 4, to indicate the name of each present day. In the opposite opening 52 the names of the months will appear. This will be the case each time when the wheel 32 has turned once around its own axis. There is a pin 45 secured to wheel 32, and this pin will once each month swing the hook 43 around its axis 42, and therefore the other end of the same hook will advance the wheel 40 one tooth. This wheel is kept in place by the spring 48. It has twelve teeth, and therefore will turn on its axis 47 once each year. Spindle 47 carries a disk 49 with inscriptions of the twelve months of the year divided into equal distances and in radial directions, so as to make them appear beneath the opening 52 upon the dial, Fig. 4.

Upon the spindle of the wheel 32 is mounted a hand 34, Fig. 4, pointing to the days of the month. Upon the same spindle a wheel 36 with forty teeth is mounted, gearing with a wheel 35, and it has two pins 22 and 23, which gear with the wheel 20 by the spring 21.

The spindle 24 is fitted with a wheel 24', having twenty-four teeth, which gears with the wheel 19, having one hundred and forty-four teeth. In the drawings only a portion of the teeth of the wheels 24' and 19 are shown.

The action of the apparatus will be as follows: Wheel 29 being revolved by the clockwork once in twenty-four hours, it will swing the lever 27 31 by means of the pin 28 once each day. If at this moment the catch 15 is not engaged in any of the several notches of the disk 3, but lies against the periphery of said disk 3, as shown in Fig. 1, the pin 28 will cause the spring 30 to move the wheel 32 one tooth farther. This will not be the case on the thirtieth day of any month which has only thirty days, neither at the end of February. At the end of February the piece 10 will come near the catch 15, and in the ordinary years the relative position of piece 10 and cam 1 will be such that the elevated part 14 will be near and opposite to the pawl 12. Only in leap-years the part 14 of this cam will be near the pawl 12 and will elevate it and turn the piece 10 around its pin 9, so as to make the notch 4 narrower and to push the end 10 one day backward in the direction of the arrow. Thus in the ordinary years the end of the part 10 will pass under and clear the catch 15 on the twenty-eighth of February, and in a leap-year this will happen on the twenty-ninth of February. In the first instance the catch 15 will drop into the notch 4, and owing to the depth of said notch said catch will assume its deepest position, so that when said catch is drawn out of said notch the spring 30 will cause the wheel 32 to advance a distance of four teeth, thus advancing the time four days, while in the case of a leap-year the catch 15 will fall in the notch 4 on the twenty-ninth of February and only so deep that when drawn out of it its spring 30 will advance the wheel 32 three teeth. It will be understood that the wheel 29 works continually and that therefore the catch 15 is being drawn out of the notches 4 to 8 in due time by the pin 28 of this wheel, which also moves the other parts of the mechanism continually forward, so that the week-days are pushed into their places beneath the opening 51 at the end of each day passed by the pin 37 of the wheel 38 and its disk 40, which on its face shows the names of the week-days, appearing through the opening 51. At the end of each month the pin 45 of the wheel 32 will, by the intermediate action of the piece 43 44, advance the wheel 46 one tooth, and the disk 49, which on its front face bears the

inscriptions of the months, will therefore show the present month through the opening 52 of the dial. At the end of the spindle 2 and in front of the dial is a small hand turning with the spindle 2 once around its axis in four years. At the beginning of each year it points to the numbers "365," or once in four years to the number "366," when the leap-year begins. During the year it moves slowly toward the next quarter of its small dial, and it will be understood that it belongs to the number which it has passed on the first of January of that year. This simple mechanism can be applied to every watch or clockwork, so as to give five almanac indications.

We are aware that prior to our invention of this timepiece different mechanisms have been invented for the continuous indications of calendar time. We therefore do not claim as our invention such a combination broadly; but

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination with clockwork mechanism of the toothed wheel 19, the ring 3 on said wheel and having notches 4, 5, 6, 7, and 8, shaped as described, the toothed wheel 20, the cam 1, having elevated portion 14, a spindle upon which the wheel 19 is loosely mounted and upon which the wheel 20 and cam are fixedly mounted, and a pivoted piece 10 arranged as described and acted upon by elevated portion 14, as specified, a pivoted lever having an arm adapted to fall into notches of the ring, means for actuating the said lever once each day from the clockwork mechanism, the wheel 32 having thirty-one teeth, means intermediate the said pivoted lever and wheel 32 whereby the latter is actuated step by step, the pivoted lever carrying between the wheel 32 and wheel 19, the toothed wheel 38 having fourteen teeth, the wheel 29 carrying a pin 37 adapted to engage the teeth on wheel 38, and means for actuating the wheel 29 from the clockwork mechanism.

2. The combination with clockwork mechanism of the toothed wheel 19, the ring 3 on said wheel and having notches 4, 5, 6, 7, and 8, shaped as described, the toothed wheel 20, the cam 1, having elevated portion 14, a spindle upon which the wheel 19 is loosely mounted and upon which the wheel 20 and cam are fixedly mounted, and a pivoted piece 10 arranged as described and acted upon by elevated portion 14, as specified, a pivoted lever having an arm adapted to fall into notches of the ring, means for actuating the said lever once each day from the clockwork mechanism, the wheel having thirty-one teeth, means intermediate the said pivoted lever and wheel 32 whereby the latter is actuated step by step, the pivoted lever carrying between the wheel 32 and wheel 19, the toothed wheel 38, having fourteen teeth, the wheel 29 carrying a pin 37 adapted to engage the teeth on wheel 38, and means for actuating the wheel 29 from the clockwork mechanism, a toothed wheel 46 having twelve teeth, a pawl adapted to engage at one end the teeth of wheel 46, and a wheel 32 adapted to engage the other end of the pawl.

3. The combination with clockwork mechanism of the toothed wheel 19, the ring 3 on said wheel and having notches 4, 5, 6, 7, and 8 shaped as described, a toothed wheel 20 and cam 1, having elevated portion 14, and a spindle upon which the wheel 19 is loosely mounted, and upon which the wheel 20 and cam are fixedly mounted, a pivoted piece 10 arranged as described and acted upon by the elevated portion 14, a pivoted lever having an arm adapted to fall into the notches of the ring, means for actuating the said lever once a day from the clockwork mechanism, the wheel 32 having thirty-one teeth, means intermediate the said pivoted lever and wheel 32 whereby the latter is actuated step by step by the pivoted lever, the toothed wheel 38 having fourteen teeth, as described, the toothed wheel 29 carrying a pin 37 adapted to engage the toothed wheel 38, means for actuating the wheel 29 from the clockwork mechanism, the toothed wheel 46 having twelve teeth, a pawl adapted to engage at one end the toothed wheel 46, and a wheel 32 adapted to engage the other end of the pawl, the wheel 36, spindle, and wheel 32 having forty teeth, and wheel 35 engaged by wheel 36 and having eighty teeth, the pins 22 and 23 on the wheel 35 engaging wheel 20, a wheel 24′ having twenty-four teeth mounted on the spindle of wheel 35 and gearing with the wheel 19.

In witness whereof we have hereunto set our hands in presence of two witnesses.

JOSEF WEJROSTEK.
CENEK WIEDEMANN.

Witnesses:
ARTHUR J. NOVAK,
ADOLPH FISCHER.