(No Model.) 3 Sheets—Sheet 1.

C. I. FOWLER.

CALENDAR CLOCK.

No. 543,235. Patented July 23, 1895.

Fig. 1.

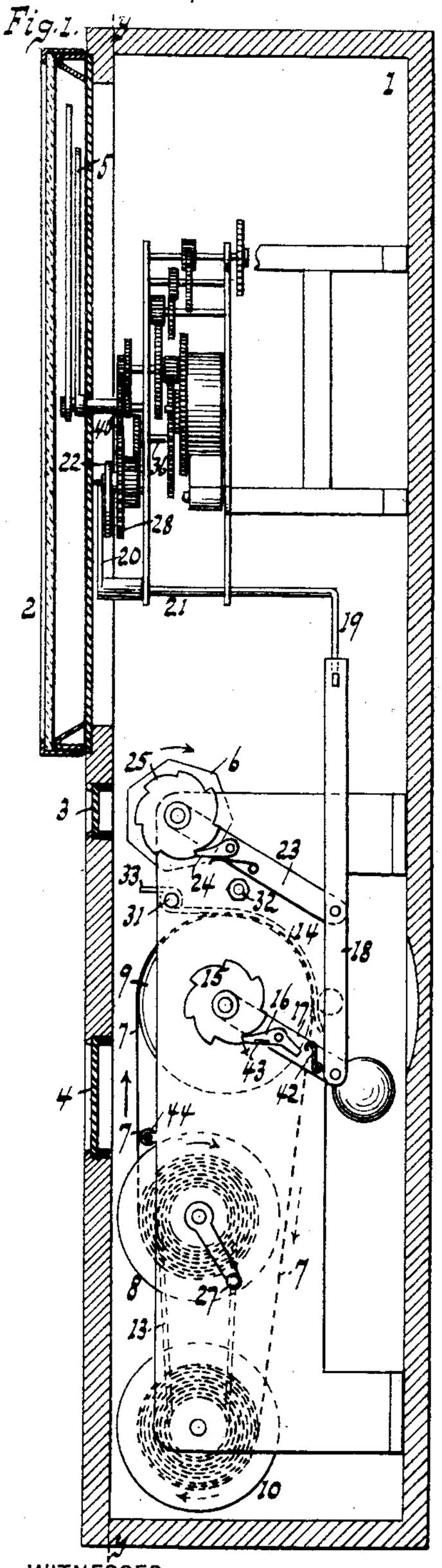
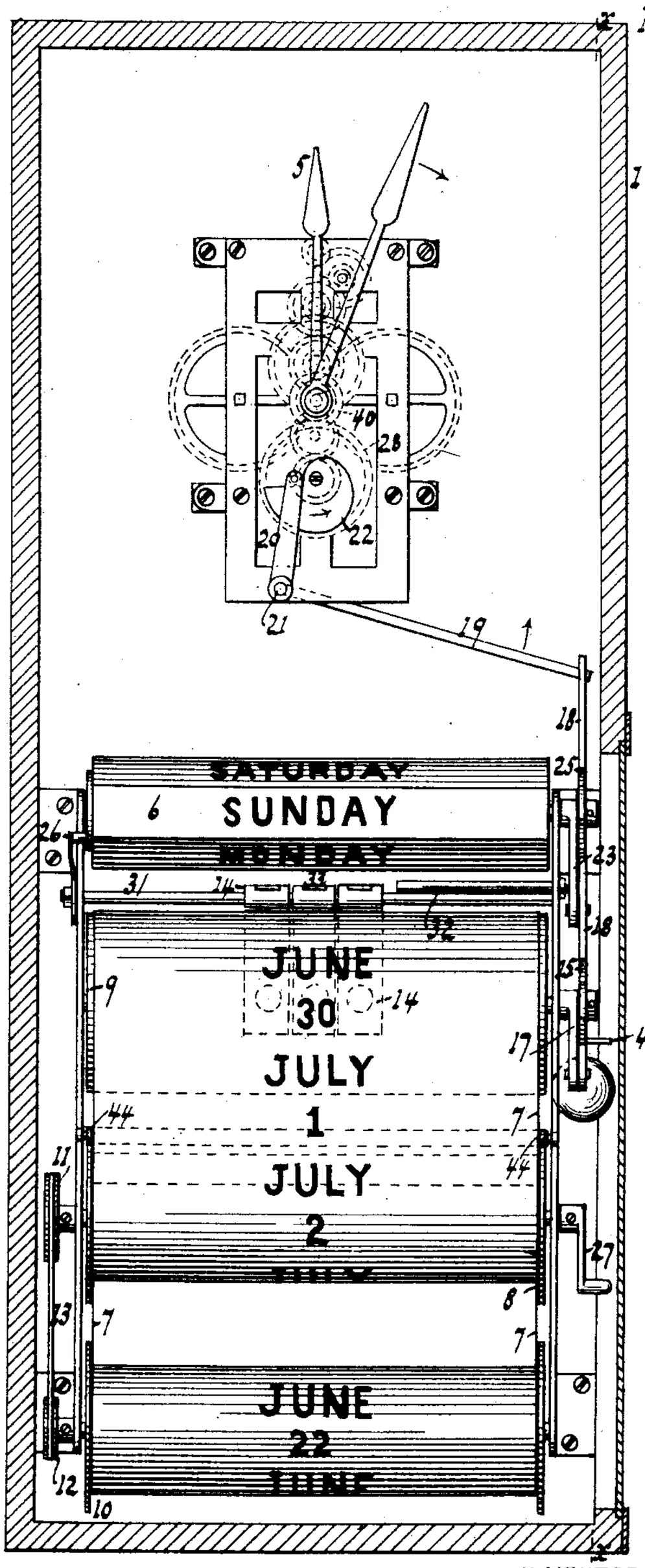


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

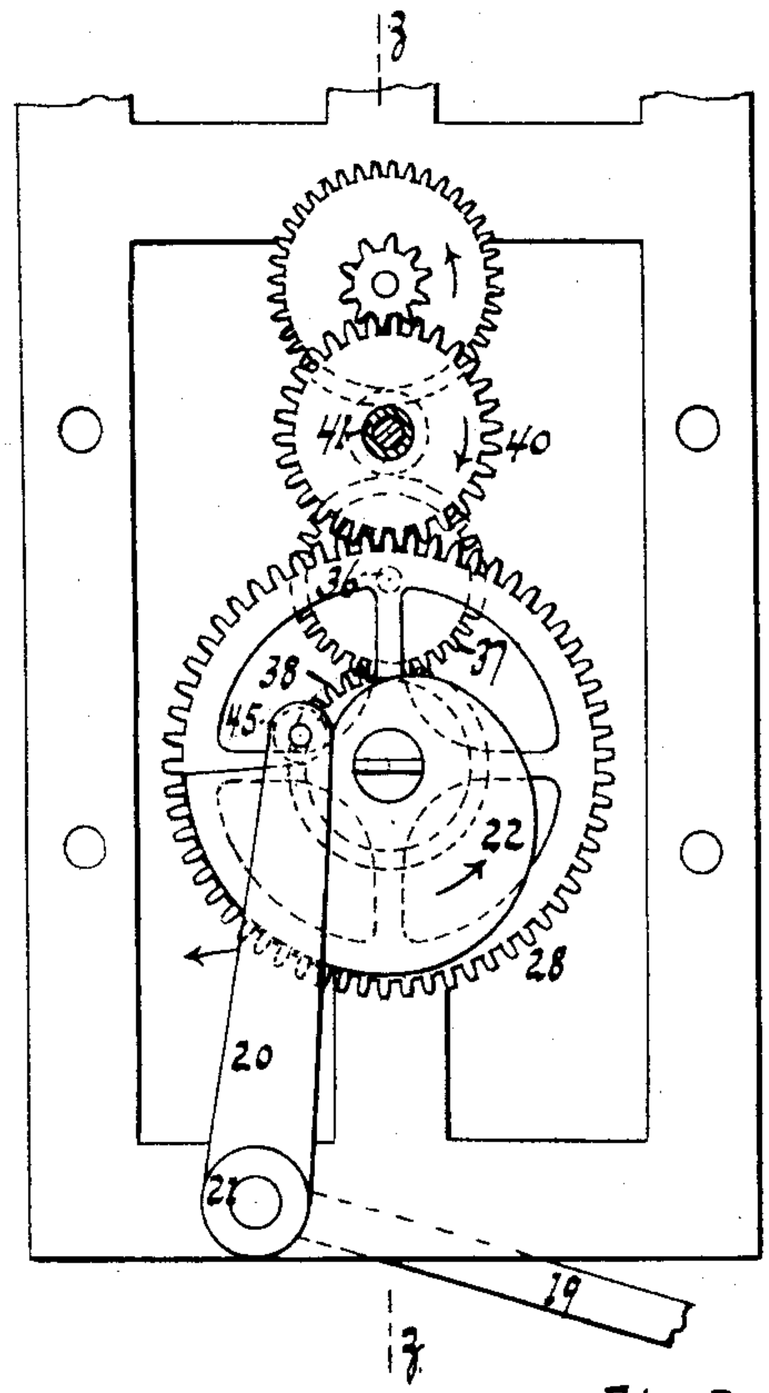

Fig. 4.

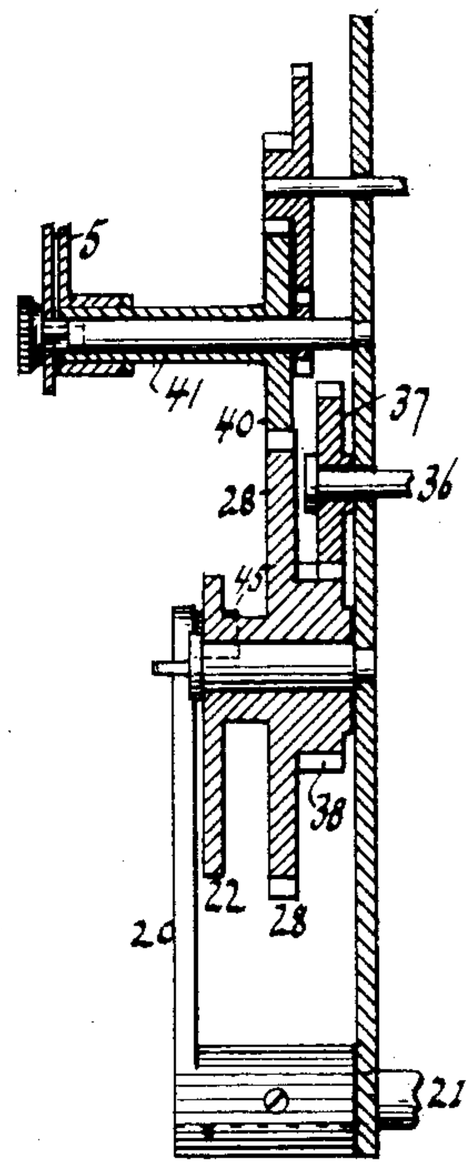

Fig. 5.

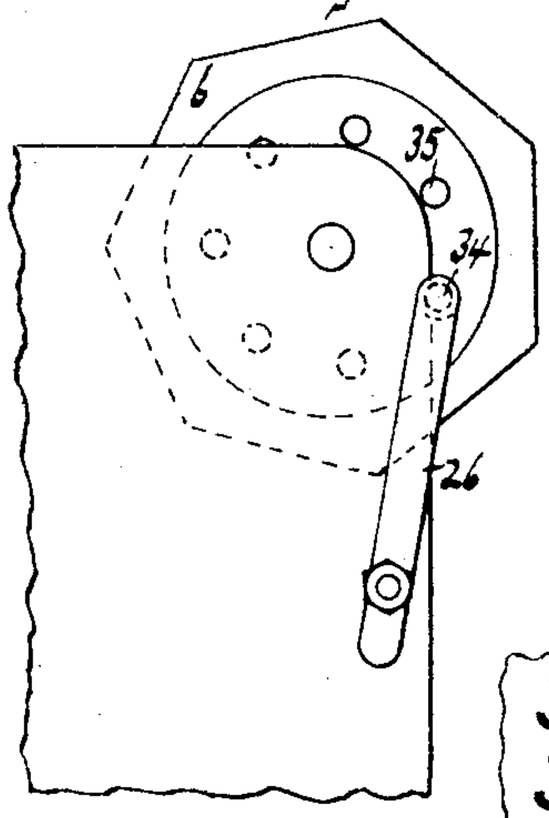

Fig. 7.

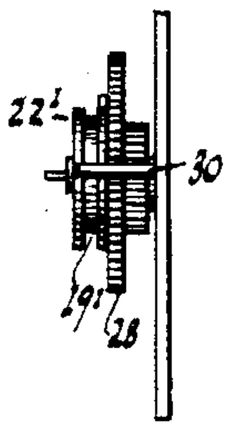

Fig. 6.

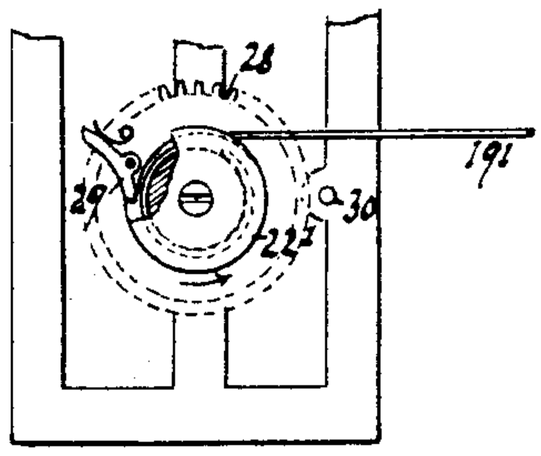

Fig. 8.

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(No Model.) 3 Sheets—Sheet 3.

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CALENDAR CLOCK.

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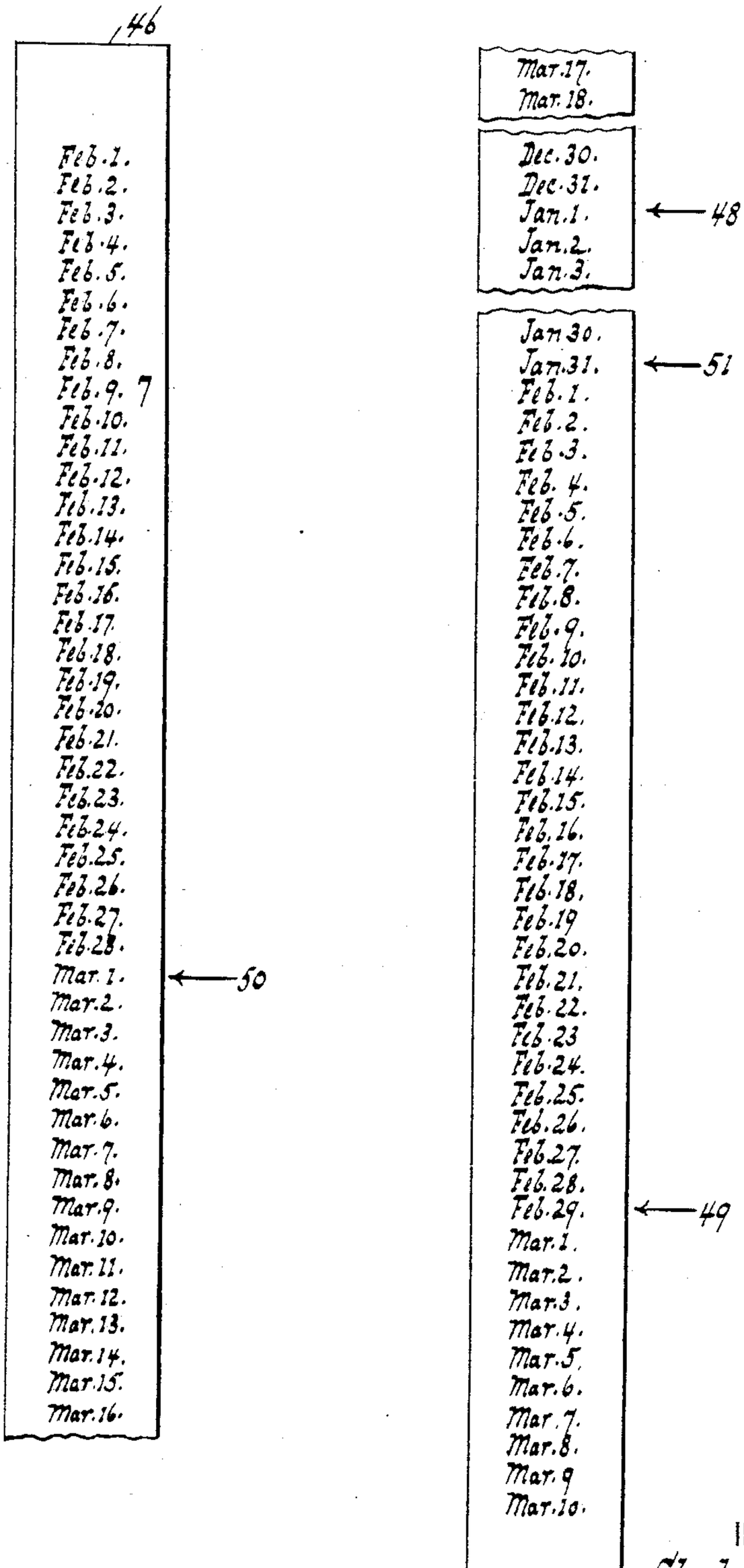
Fig. 9.



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UNITED STATES PATENT OFFICE.

CHARLES I. FOWLER, OF NEW YORK, N. Y.

CALENDAR-CLOCK.

SPECIFICATION forming part of Letters Patent No. 543,235, dated July 23, 1895.

Application filed January 3, 1895. Serial No. 533,721. (No model.)

To all whom it may concern:

Be it known that I, CHARLES I. FOWLER, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Calendar-Clocks, of which the following is a specification.

The object of this device is to simplify the construction of calendar-clocks, and the invention resides in the novel features of construction set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a side elevation of the calendar-clock sectioned along *x x*, Fig. 2. Fig. 2 is a section along *y y*, Fig. 1. Fig. 3 is a face view of a cam. Fig. 4 is a section along *z z*, Fig. 3. Fig. 5 is an end view of the day-cylinder. Fig. 6 is a face view of a modification. Fig. 7 is a side elevation of Fig. 6. Fig. 8 is a detail view of a date-strip. Fig. 9 shows the beginning and end portion of a date-strip, some intermediate portions being torn out.

The casing 1 has three windows or sight-openings 2 3 4. Through window 2 the clock dial and hands are exposed to view, one hand being shown at 5. Through window 3 the day of the week is exposed, the week-days being noted on the faces of the heptagonal roller 6. Through window 4 the day of the month—for example, July 1, July 2, and so on—are exposed, these days, with the respective months, being successively indicated on the strip of paper 7. This date-strip 7 contains the dates for an entire year. The date-strip 7 is drawn or rolled off from the delivery-roller 8 by means of the friction or propelling roller 9 onto take-up roller 10. The pulleys 11 and 12, with belt 13, cause the take-up roller 10 to rotate with the delivery-roller 8. The weighted arms 14 cause the strip 7 to be pressed into frictional contact with roller 9. This propelling-roller 9 is given a step-by-step movement by means of ratchet 15, engaged by pawl 16 on weighted arm 17. The link 18 raises the arm 17, and when at midnight the weighted arm 17 is allowed to sink it rotates roller 9 to advance the strip 7 one space or date. The link 18 is engaged by arm 19 of lever 19 20, fulcrumed at 21 and actuated by cam 22, rotated once in twenty-four hours and suitably geared to or driven by the clockwork. As the high part of cam 22 acts on lever 20 19, the arm 17 is raised until at midnight the lowest part of cam 22 comes to lever-arm 20 to allow the lever-arm 19 with weighted arm 17 to swing down under the influence of said weighted arm. The link 18 also imparts motion by arm 23 and pawl 24 to ratchet 25 of day-cylinder 6. The detent or spring finger 26 prevents excessive or retrograde rotation of the day-cylinder 6. At the end of the year the pawl 16 is held out of gear until by the crank 27 the date-strip 7 is wound back on the delivery-roller 8.

In Fig. 6 the cam 22 is replaced by a pulley 22′, and the link 18 would now be raised by the cord 19′, wound on said pulley. This pulley is mounted loosely on the arbor of a gear-wheel 28 driven by the clock, and the pulley is compelled to rotate with the wheel 28 by means of pawl 29 on the wheel engaging the pulley. At midnight the pawl 29 is brought into contact with stud 30, so as to be swung to releasing position, allowing the pulley 22′ to turn back for unwinding cord 19′ and allowing weighted arm 17 to drop, as before.

When the strip 7 is being wound back the weighted arm or arms 14 should be out of contact with the strip. The arms 14 being jointed loosely on the pivot or shaft 31, said arms can slide as well as swing on said shaft. By raising the arms 14 sufficiently high and sliding them laterally, so that they come to rest on finger 32, said arms will be held out of action. The finger 32 is suitably fixed to a frame-plate. The tail-pieces 33 of the arms 14 form handles for suitably lifting and sliding said arms.

With regard to the day-cylinder 6, it is noticed that the detent 26 engages the end of the cylinder opposite to that engaged by the driving-arm 23, so that the two mechanisms will not be crowded. The detent 26 engages its lug or finger 34, Fig. 5, into suitable eyes 35 in the end of the cylinder, said finger 34 being suitably rounded to slip out of the eyes or depressions 35 when the cylinder is rotated, but engaging said eyes with sufficient force to prevent accidental or excessive rotation of the cylinder.

The motive power of the clock imparts motion to shaft 36, Fig. 4, on which the gear-

wheel 37 is frictionally secured. This wheel 37 drives the pinion 38 on gear-wheel 28, carrying cam 22. The wheel 28 engages wheel 40, carrying sleeve 41, on which the hour-hand 5 is mounted. In case the hour-hand is being set back or forth, the consequent rotation of wheels 40, 28, and 37 will not affect the motive power, as the frictionally-mounted wheel 37 will rotate independently of shaft 36. When the strip 7 is being wound back onto the delivery-roll 8, the pawl 16 should be out of action. This pawl 16 being pressed sufficiently far away from the ratchet 15 to have its tail engaged or held by the spring or detent 42, Fig. 1, said pawl will be held out of action as long as required. A finger 43 projecting from the pawl 16 forms a handle for moving the pawl into and out of action.

By making the pulley 11 on delivery-roller 8 of larger diameter than the pulley 12 of take-up roller 10 the circumferential speed of the latter roller will be greater than that of the delivery-roller, so that the strip will be kept tightly stretched or smooth.

The dates can be put on the date-strip, as seen in Fig. 2, with the number of the day under the name of the month, or if space is to be saved the device can be made more compact by placing the number of the day alongside the name of the month, as in Fig. 8.

In order to keep the date-strip 7 with its exposed part in proper position relative to window 4, a guide-roller 44, Fig. 1, is provided for said strip.

The date-strip can be made to take account of the leap-year as follows: Starting with February 1, the successive dates of an ordinary year are marked down to and including January 31, or, in other words, the dates of an ordinary year are marked down, and succeeding said January 31 are noted down the successive days of the leap-month, or the month of February, with twenty-nine days. Supposing a leap-year is to be taken note of, the strip is allowed to unroll after the close of January 31 until the twenty-nine days of February are rolled off, after which the strip is rolled back, while in ordinary years the strip is rolled back after January 31 has been noted.

In order to avoid the necessity of turning back immediately on the close of February 29 a certain number of days—as, for example, the first ten days in March—can be added to the strip below February 29.

An antifriction-pulley 45, Fig. 3, on lever-arm 20 will secure easy running.

The date-strip 7 is shown in Fig. 9 as having its beginning at 46 and its end at 47. Supposing a new year is to be started, and that such year is a leap-year, the strip is wound or moved to bring the point of the strip marked 48 into position to expose January 1, and is allowed to travel so as to successively expose the proper dates from point 48 to point 49, so that the leap-day, February 29, is exposed at the proper time, and at the close of said leap-day the strip can be moved or wound back onto delivery-roller 8 to bring the point 50 into position to expose the date March 1 as well as to permit a successive exposition of the remaining dates of the year, as required, to and including December 31. Then at the beginning of the next year, which is now an ordinary year, the strip will again be in position to expose January 1 at the point 48 already named, and said strip is then allowed to travel forward as required for the proper successive exposition of dates until the point 51 of the strip is in position to expose the date January 31, after which the strip can be wound or rolled back to its starting portion at 46 to expose the next succeeding date—namely, the 1st of February, and which February is now the ordinary February of twenty-eight days, and is so noted on the strip portion between the points 46 and 50. The blank extensions at the beginning and end portions 46 and 47 of the strip are, of course, made long enough or provided with extensions to allow proper lapping or securing of the strip to the rollers 10 and 8.

The roller 10 has a tendency to rotate faster than the roller 8, or to take up the strip faster than it is delivered from roller 8; but said take-up roller 10 will merely tighten or take up the slack of strip 7 without any portion of the strip being drawn from delivery-roller 8 by the take-up roller 10, since, after the strip 7 has been tightened, the pulley 11, if still rotating, or rotating to excess as regards the tightening of the strip, will either slip without moving belt 13, or the belt 13 will slip without moving pulley 12. This belt 13 is made sufficiently slack or of sufficiently elastic or springy material, and the pulleys 11 and 12 are smooth enough to prevent the roller 10 being rotated to draw the strip from the roller 8. The drawing of the strip from roller 8 is thus accomplished only by the propelling-roller 9, so that said drawing off will be uniform to avoid derangement of the strip.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a calendar movement, of a delivery roll, a take-up roll, a driving-roll arranged above the delivery roll, a strip extending from the delivery-roll over the driving-roll and to the take-up roll, and weighted, gravitating pivoted arms adapted to swing in the arcs of circles and extending partially around the driving-roll to hold the strip in engagement therewith, substantially as described.

2. A calendar movement comprising a delivery roll and a take-up roll, in combination with a strip made to extend from the delivery to the take-up roll and a driving roll for the strip, said delivery and take-up roll being provided with a pulley and belt connection, the pulleys of said connection being of varying diameters substantially as described.

3. A calendar movement comprising a delivery roll and a take-up roll, in combination with a strip made to extend from the delivery to the take-up roll and a driving roll for the

strip, a ratchet and pawl for the driving roll, a weighted arm made to carry the pawl, a lifting connection for said weighted arm, and a clock movement for actuating said lifting connection, said delivery and take-up roll being provided with a pulley and belt connection, the pulleys of said connection being of varying diameters substantially as described.

4. A calendar movement comprising a delivery roll and a take-up roll, in combination with a strip made to extend from the delivery to the take-up roll and a driving roll for the strip, a ratchet and pawl for the driving roll, a spring catch for holding the pawl out of action, a weighted arm made to carry the pawl, a lifting connection for said weighted arm, and a clock movement for actuating said lifting connection, said delivery and take-up roll being provided with a pulley and belt connection, the pulleys of said connection being of varying diameters substantially as described.

5. A calendar movement provided with a day cylinder, a driving pawl for said cylinder, and a ratchet secured to one end of said cylinder and engaged by the driving pawl, said cylinder being provided at its other end with eyes or perforations, and a spring pressed lug or detent adapted to engage said eyes, said eyes being sunk into an end of the cylinder in a longitudinal direction, and said lug being rounded to permit a springing of the lug out of the eyes by a rotation of the cylinder in either direction while preventing accidental rotation of said cylinder substantially as described.

6. A calendar movement comprising a delivery roll and a take-up roll, in combination with a strip made to extend from the delivery to the take-up roll, a driving roll for the strip and a weighted swinging arm or arms made to rest about the driving roll for holding the strip in engagement with said roll, said arm being made laterally movable, and a finger placed in proximity to said arm and over which said arm can be moved to be held out of action thereby substantially as described.

7. The combination in a calendar movement, of a day-cylinder 6 having a ratchet 25, a date-strip propelling cylinder 9 having a ratchet 15, pivoted swinging pawl arms 23 and 17 provided with pawls which respectively engage the ratchets of the day and date-strip propelling cylinders, a link 18 connecting the said pawl arms, and a clock movement for actuating said link to vibrate the pawl arms, substantially as described.

8. A calendar movement provided with a date strip propelling cylinder, an actuating ratchet and pawl arm for said cylinder, and a lever and clock movement for actuating the pawl arm, said pawl-arm being provided with a detent spring placed in proximity to the pawl for engaging and holding the latter in its releasing position, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES I. FOWLER.

Witnesses:
WM. C. HAUFF,
E. F. KASTENHUBER.