

(No Model.)

2 Sheets—Sheet 1.

T. H. HOVENDEN.

CALENDAR.

No. 254,014.

Patented Feb. 21, 1882.

Fig. 1.

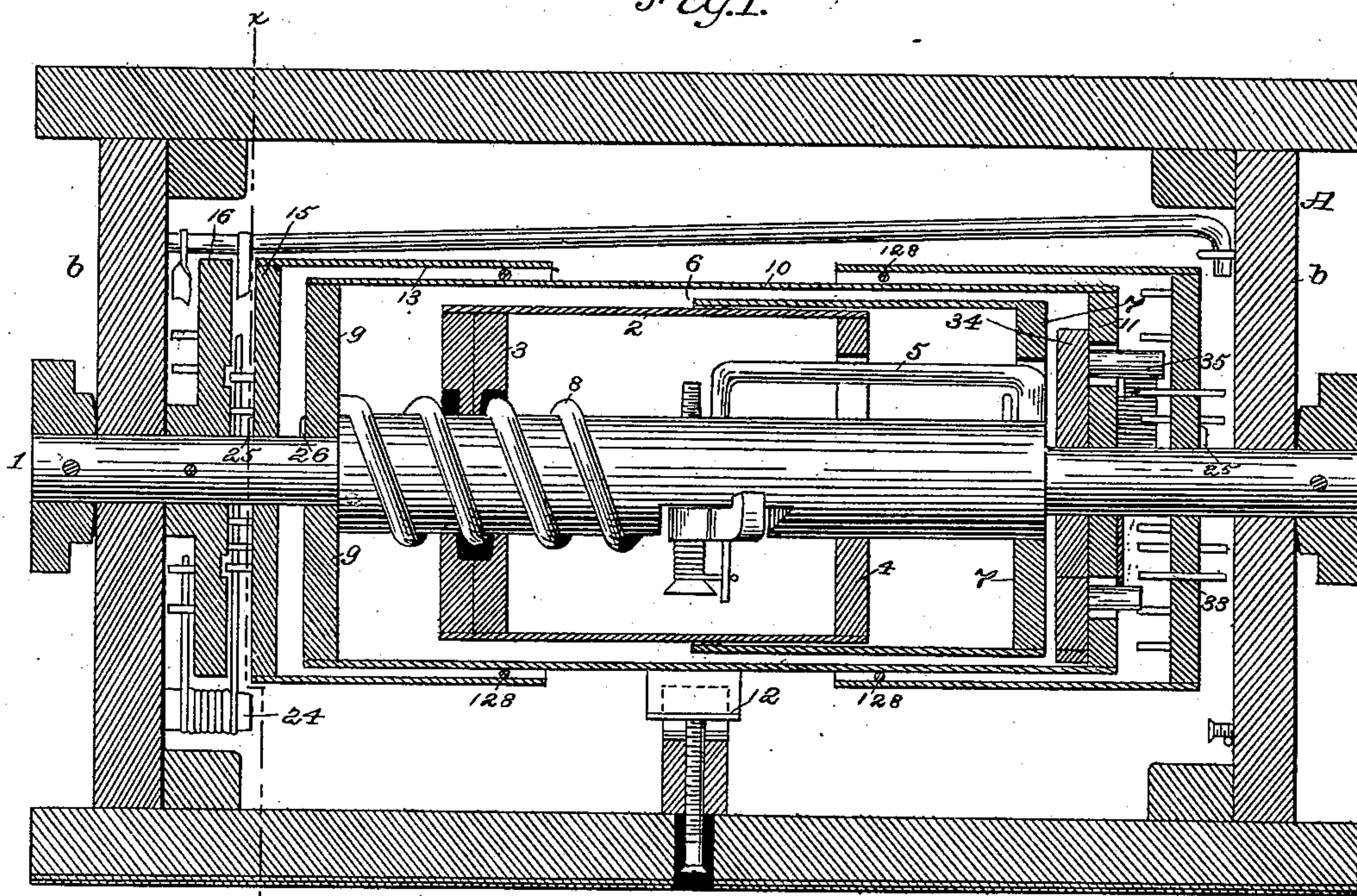
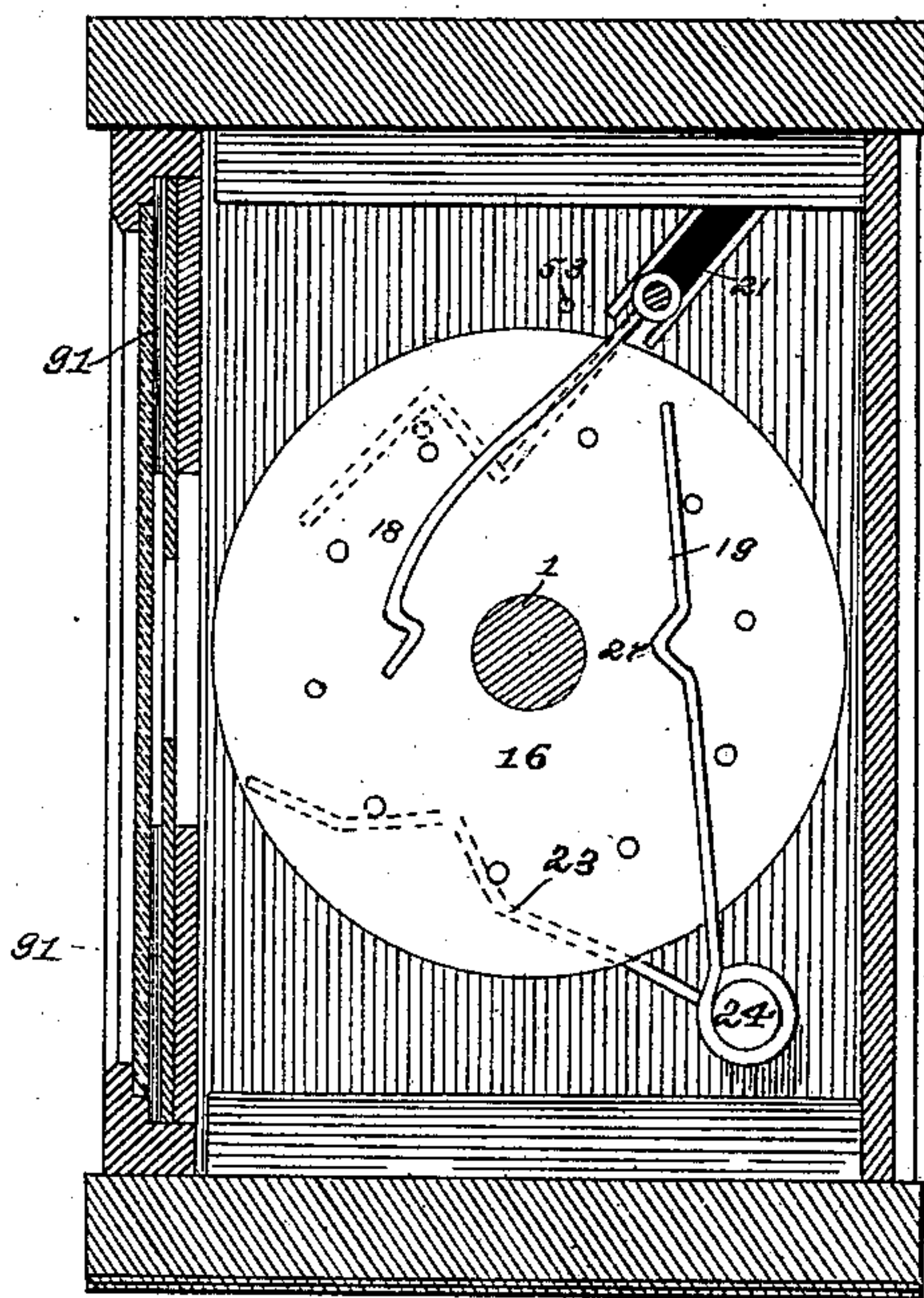


Fig. 2.



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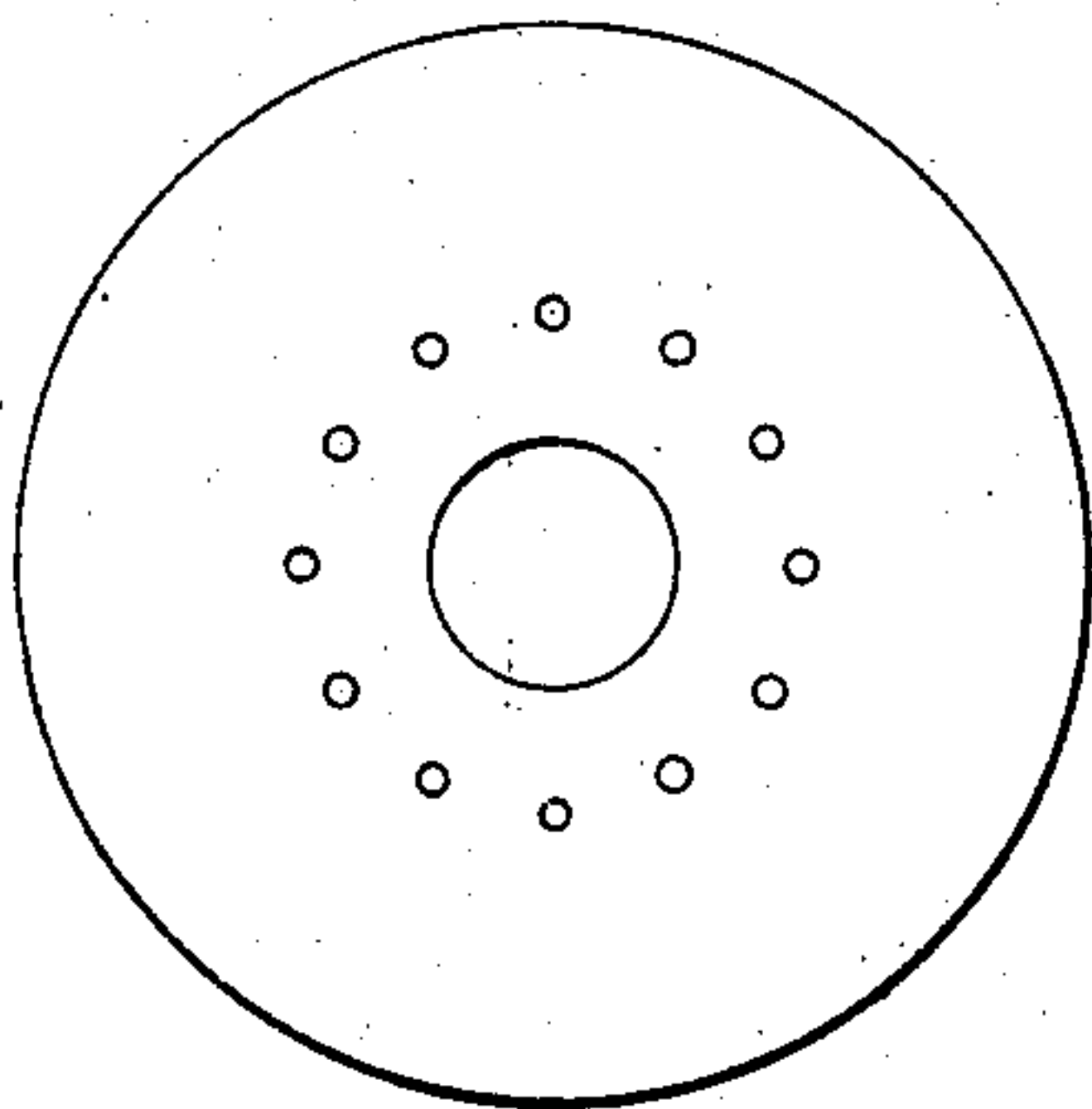
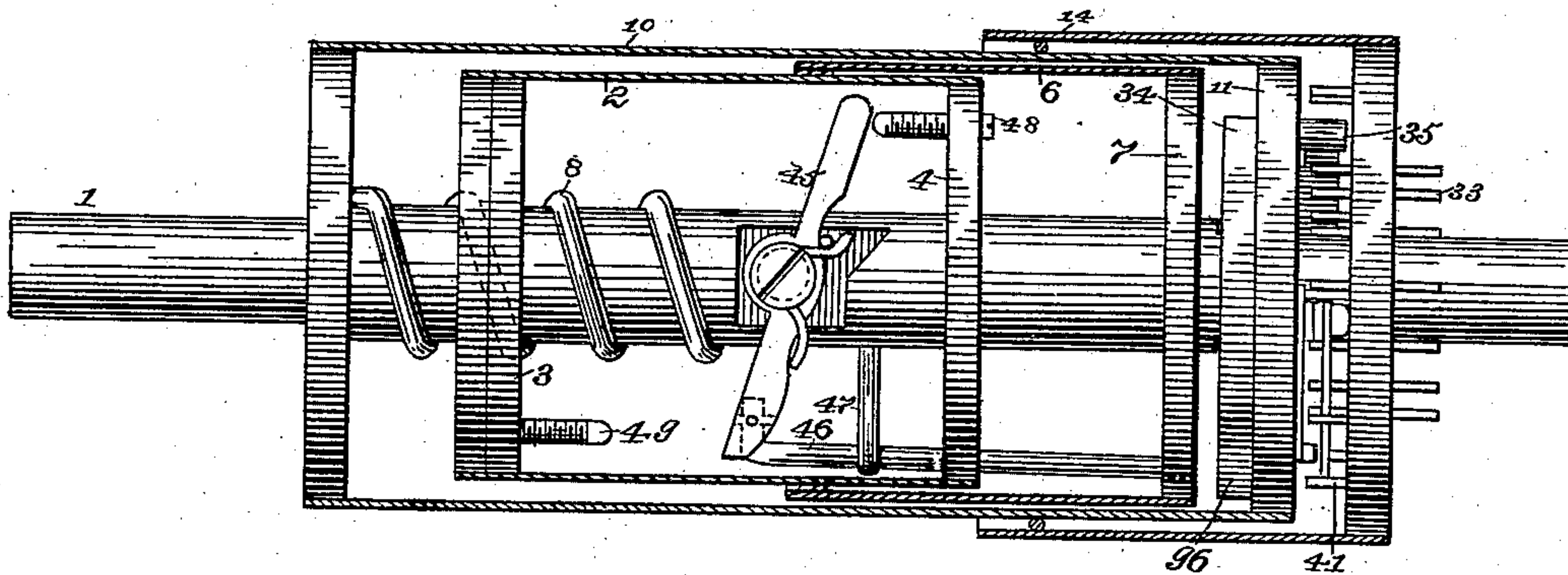
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T. H. HOVENDEN.  
CALENDAR.

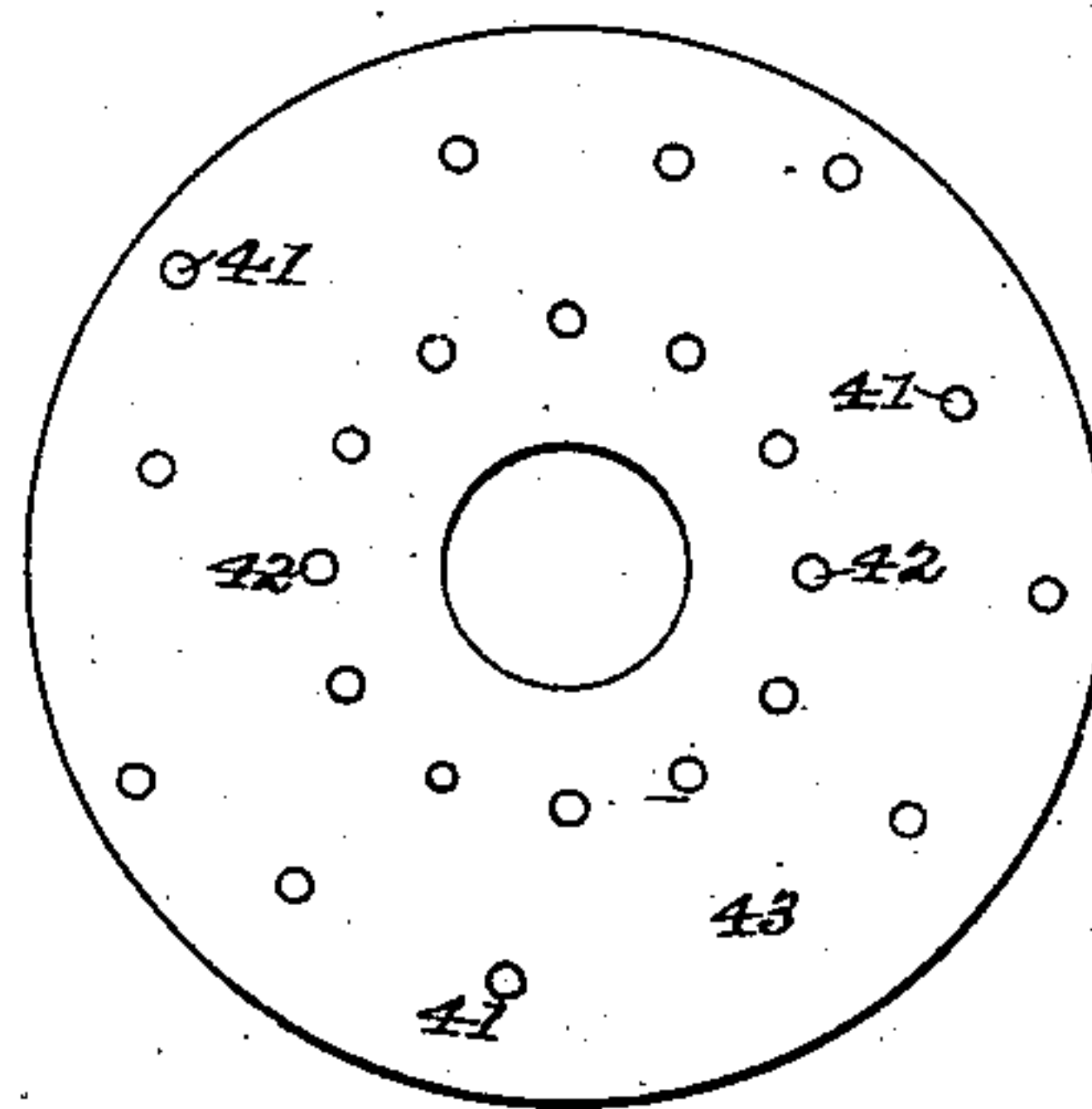
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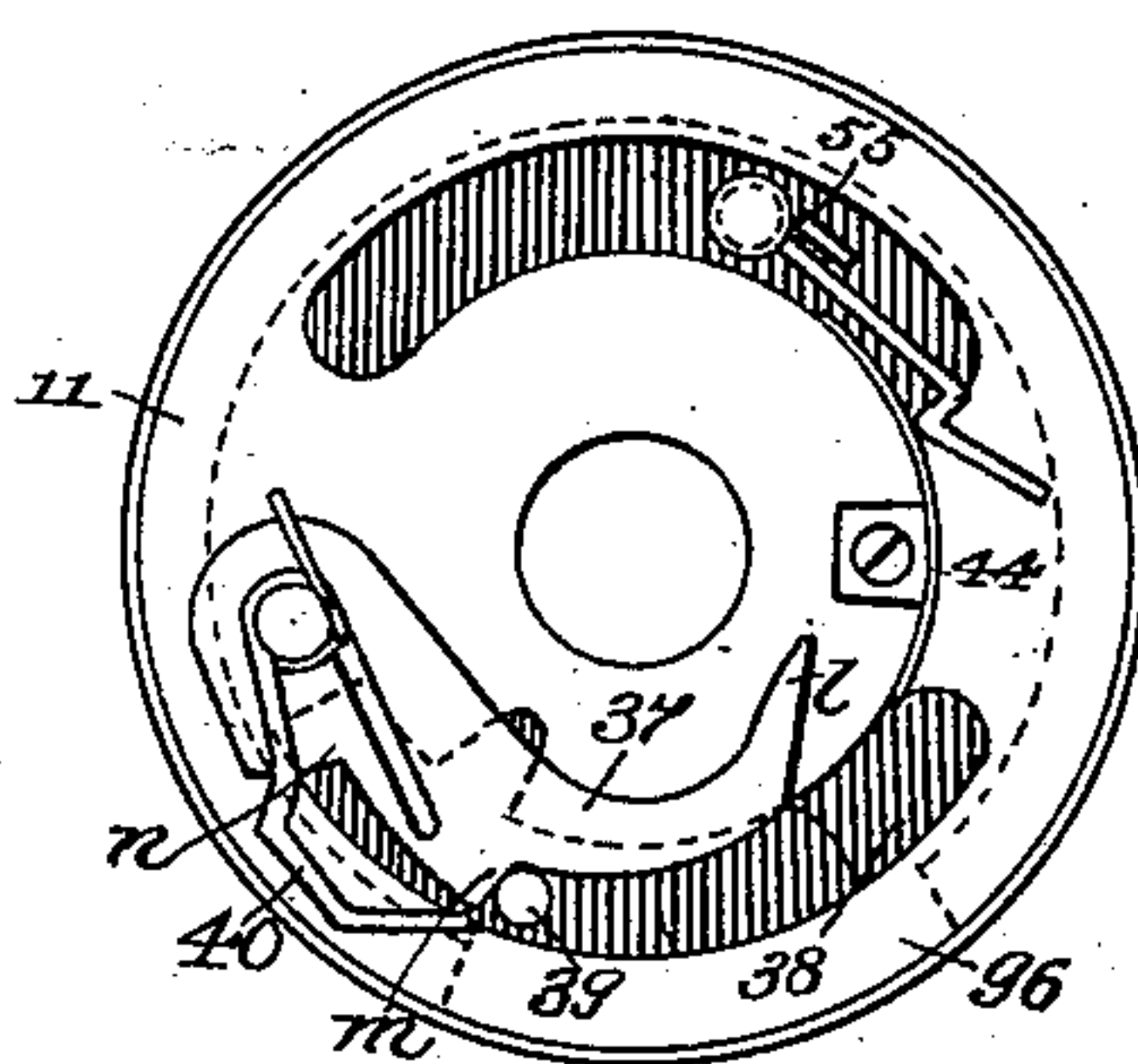
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

THOMAS H. HOVENDEN, OF INGERSOLL, ONTARIO, CANADA.

## CALENDAR.

SPECIFICATION forming part of Letters Patent No. 254,014, dated February 21, 1882.

Application filed October 29, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS H. HOVENDEN, of Ingersoll, in the county of Oxford and Province of Ontario, Canada, have invented a new and useful Improvement in Calendars; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to perpetual calendars, and is an improvement upon the apparatus shown in an application filed by me on the 14th day of July, 1881.

It consists principally in combining with the essential features of the machine shown in said application a varying stop mechanism, whereby the cylinder carrying the numbers of the days of the month is arrested at different points for the months differing in length.

It consists also of certain improved details, all of which are hereinafter fully explained, and particularly indicated in the claims.

In the apparatus described in my said application motion was permitted to the cylinder which bore the consecutively-arranged numbers of the days of the months, so as to include the number 31 and to bring it into position before the aperture in the front of the case. At that point, and at that only, motion of this cylinder in this direction was arrested, so that the operator, at the end of a month having a less number of days than thirty-one, would be compelled to take care not to turn the cylinder another step and show an incorrect record—an incident not unlikely to happen if the person using the apparatus were shifting it as a matter of habit, and not with special attention.

To render the machine automatic in this respect I have devised and applied a variable stop, which will permit the cylinder to run to include the number 31 for all months having that number of days, but will arrest it at the proper point before reaching that number for shorter months. This renders the apparatus more accurate and self-regulating.

In the accompanying drawings, Figure 1 is a central longitudinal section of the apparatus, with the shaft and spiral in side elevation. Fig. 2 is a transverse section of the apparatus on line *x x* of Fig. 1. Fig. 3 represents the shaft, with the heads of the cylinders and case, the cylinders and case being in section. Fig. 4 represents two sides of the head of the month-

cylinder, and Fig. 5 shows the latch and connected devices for automatically varying the stop for different months.

The general construction of the apparatus is the same as that in my said application. This includes the same arrangement of the cylinders carrying the names of the days of the week and the names of the months, and the same arrangement of cylinders carrying the numbers of the days of the month, and the stop mechanism is operated upon in a like manner as in the machine referred to by a pin carried by the numeral-cylinder, which moves longitudinally upon the shaft. In these drawings this main shaft is indicated at 1. The cylinder which carries the unit figures of the day-numbers is marked 6, this being supported upon a wheel, 7, fixed on the main shaft. The cylinder 2, carrying the decimal numbers, is moved longitudinally on the shaft by the fixed spiral 8. The cylinder 2 is turned with the shaft by means of a spline, 5, on which it slides longitudinally at the same time. In the previous machine the moving cylinder 2 carried a pin projecting from its head 4, held rigidly therein, which pin, as the cylinder 2 advanced up to the head 7, projected through said head and struck on the front side of the weighted projection 96, moving said projection to the rear, and moving a pawl, 36, attached to the pin 35 in the upper part of said weighted disk to the front, thereby turning the month-cylinder one step. The cylinder 2 in its movement the other way—that is to say, in its direct movement—was stopped by a fixed pin in the other end coming against a fixed shoulder in the head of the fixed case.

In the present invention the stop-pin is modified and is made movable. It is shown at 46, and is adapted to be moved alternately in or out of the heads 4 and 7, moving freely in an enlarged hole in head 4 and closely in head 7, with a bearing in the eye of pin 47. This movement is accomplished by means of a lever, 45, pivoted upon the main shaft 1, and extending across the same. It is provided with a spring, by means of which the end to which the rod 46 is attached is automatically thrown back to retract the rod within the head 7.

The lever 45 is moved in opposition to the spring by means of a stud, 48, fixed in the head



4. It will therefore be observed that as the head 4 moves to the left in the revolution of the cylinder 2 from front over to rear to show the numbers increasing in their direct order, and as it approaches the end it brings the pin 48 against the lever 45 and thrusts forward the rod 46 through the head 7. The motion of the lever is rendered sufficient by the adjustment of the parts to thrust the rod 46 sufficiently forward to bring the end of it into the path of the offset 96 on the rear side thereof, and this acts as a stop to limit the movement of the cylinder in that direction. The position of the offset 96 will determine the position at which the cylinder 2, and with it the cylinder 6, shall stop. This position is varied, and is determined by the peculiar construction and adaptation of the mechanism used in connection with the weighted disk.

It will be observed that the rod 46 is thrust forward in the manner described, both when the cylinder 2 is advancing near its limit to the right, and when it approaches, also, its extreme limit at the left. The advance caused by the movement to the left has been described. The right-hand movement brings the stud 49 against the lever 45 and pushes the pin directly out; but movement to the right of cylinder 2 takes place when the cylinder is turned backward to bring the numerals in their reverse order. It turns to zero—that is, to bring zero to the aperture, and when it reaches that point the rod 46 is thrust through the head 7 into the path of the offset 96, but on the opposite or front side. This also forms a stop which is made invariable, as the motion imparted to the weighted disk brings the pin 35 against the end of the slot in which it moves.

I proceed now to describe the construction of the parts connected to the weighted disk, the offset of which arrests on both sides the movement of the pin and the revolution of the cylinder 2.

The slot in the head 11, against which the weighted wheel is placed, is about three times the length of that in the form described in my former application, heretofore mentioned, and the weighted wheel has three times the possible movement. It will be borne in mind that the number-cylinders have an upward surface-movement in front when changing the daily record in its advancing order, and therefore the pin, when projected at the last of the month, will strike the rear side of the projection on the weighted disk. This disk therefore is held to three various positions corresponding to the three different lengths of months. When held with the offset farthest to the rear, or in such position that the pin will strike earlier, the number-cylinder is arrested when the number 29 is displayed, (that being the maximum of February, and no note being taken of its variations,) when in a second position less removed to the rear the cylinder is stopped when the figure 30 is displayed, and the last position of the weighted disk permits movement of the numeral-cylinder to the number 31. This ad-

justment is accomplished by means of a latch, 37, on the side of the case-head 11 opposite the weighted disk, as shown in Fig. 5, which shows the outer face of the case-head and the weighted disk behind it in dotted lines. This latch is pivoted at the end of a curved slot, 38, similar to the upper slot in said head, in which moves a pin, 39, set in the face of the weighted disk. This slot is on the lower side of the head, as shown in Fig. 5, and the latch drops by gravity. It has three equidistant shoulders, *l m n*, and when the latch is at its lowest limit the first stop, *l*, arrests the pin, and thereby the weighted wheel, in position adapted to bring the offset in place to stop the cylinder at the figure 29. Raised a trifle higher, the latch lets the pin pass to the second step, *m*, and higher still, to the last step, *n*, thus arresting the cylinder at the numbers 30 and 31 respectively.

The position of the latch is regulated by means of an arm, 40, attached thereto, and made in the shape shown, to permit it to ride over pins 41, projecting inwardly on the month-cylinder head. There are three rows of pins thus projecting on this head. The inner row, 42, twelve in number, are to operate in connection with the pawl. The two outer rows act with the arm of the latch. Referring to Fig. 4, which shows the faces of this wheel, (the left-hand figure being the outer and the right-hand the inner,) a space, 43, will be observed. Into this the arm of the latch is arranged to drop when the month of February is recorded, allowing the latch to fall to its lowest position. The next pin is on the inner circle of the two last mentioned, and lifts the latch to its extreme limit for a long month, March. The next pin represents a thirty-day month, April, and lifts the latch to the intermediate position. The other pins (there being eleven in all) will be observed to be arranged in their proper order for the months following. Obviously by this arrangement the pawl sometimes moves through two and three spaces. In order that it may not act on more than one pin at a time, I have arranged a shield, 44, over the pawl-pins, so that the pawl for the second or third space rests on the shield, and cannot act on more than one of the pins at a time. An arm, 55, prevents too great outward movement of the pawl, which might cause the pawl to be entangled with the outer pins.

From the description given of these parts it will be understood that the position of the latch is determined by the pins set in the inner face of the head of the month-cylinder, and that the position of the latch determines the position at which the pin 39 is arrested, and consequently the position of the weighted disk, the offset of which, on the rear side, acts as a stop to limit the direct movement of the number-cylinder. Obviously the action of the parts will be the same, whether the cylinder 2 telescopes into the cylinder 6, and the numbers of the cylinder 2 are used as decimals of the unit figures on cylinder 6, or whether the cylinder



2 be used alone. Under some circumstances this latter condition may be observed. The action of the pawl 35, when the motion of the cylinder is reversed for the commencement of the record of a new month, is the same as that in my said application. The construction of the pawl, however, in respect to its connections is somewhat simplified.

In the former application the pawl was mounted upon a screw bearing on the smooth shank of the screw which held it to the weighted disk. In the present construction I form the pawl with an elongated eye, the elongation being sufficient to pass through the head 11 and bear against the surface of the disk. For its support a plain pin is inserted in the disk, over which the eye of the pawl is slipped. When the parts are in position the pawl is held in place by the head of the month-cylinder, and requires no other fastening. This makes a cheaper and simpler construction.

In this machine, also, I have discarded the ferrules upon which the heads of the cylinders turn, and have placed these heads or wheels directly upon the shaft. The construction of the apparatus is such throughout that considerable play is allowed without interfering in any respect with the accuracy of its working, and no such closeness of fit is required as to occasion any appreciable friction or require extreme accuracy in manufacture.

I have also modified and improved the pawl which holds with a yielding grasp the wheel 16. It will be borne in mind that this wheel is fixed to the shaft which also carries by positive movement the numeral-cylinder, and therefore requires to be accurately held in order properly to center the figures at the aperture. This I accomplished in my former application by means of a loose wheel upon the pawl, which wheel rode freely over the pins and found lodgment between them. The parts, however, were expensive to make, and I have accomplished the same object by a much simpler device. This consists of a spring-pawl, 23, formed in one piece with the pawl 19, which latter acts upon the head of the week-cylinder 13. The coil of the two spring-pawls forms the eye, which is slipped upon a plain stud, 24, upon which it is held simply by the pawls themselves, which pass up on opposite sides of the wheel 16. The centering action of the pawl 23 is accomplished by the V-shaped bend, the legs of which are made long enough to rest upon the pins when the V is accurately centered, as shown in Fig. 2, which represents the position the pawl as-

sumes in relation to the pins, which position accurately centers the numbers at the aperture. When the ferrules were used the weighted disk was secured on one end and had free play thereon, exempt from any crowding from the heads of the fixed case 10. I secure this disk now from friction between the head 11 and the shoulder on the main shaft by means of a pin, 26, set in the shaft. Other pins, 25, hold the heads of the week and month cylinders in place.

Having thus described my invention, what I claim is—

1. In combination with the cylinder of a calendar having characters indicating the numbers of the days of the month, and adapted to turn to bring these characters successively to view, and with a cylinder carrying the names of the months arranged in proper order, a variable arresting device, substantially as described, regulated by the month-cylinder and adapted to arrest the numeral-cylinder at the proper point for each month, substantially as set forth.

2. The combination of a cylinder having stop pin or rod and turning on its axis to bring successive numbers representing days of the month to an aperture, a weighted disk, 34, having offset 96 for said stop pin or rod, pawl 35, acting on month-cylinder, latch 37, and devices, as described, for operating the same, said latch acting on pin 39 of the weighted disk, substantially as described.

3. The combination of the weighted disk, having offset adapted to act in connection with stop pin or rod on the cylinder, and carrying pawl 35, the latch pivoted on the head 11, having stops to act on pin 39 in weighted disk, and arm 40, adapted to be operated upon by the pins upon the head of the month-cylinder, the whole constructed and operating substantially as described.

4. The improved double pawl 19 23, formed out of one piece of wire, having an eye formed to fit over its holding-pin, and with the pawls extending on opposite sides of the wheel, said pawls being formed with V-shaped bends to form yielding stops, and adapted to the pins of the wheel and head and in combination therewith, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOS. H. HOVENDEN.

Witnesses:

L. W. SEELY,

F. L. MIDDLETON.