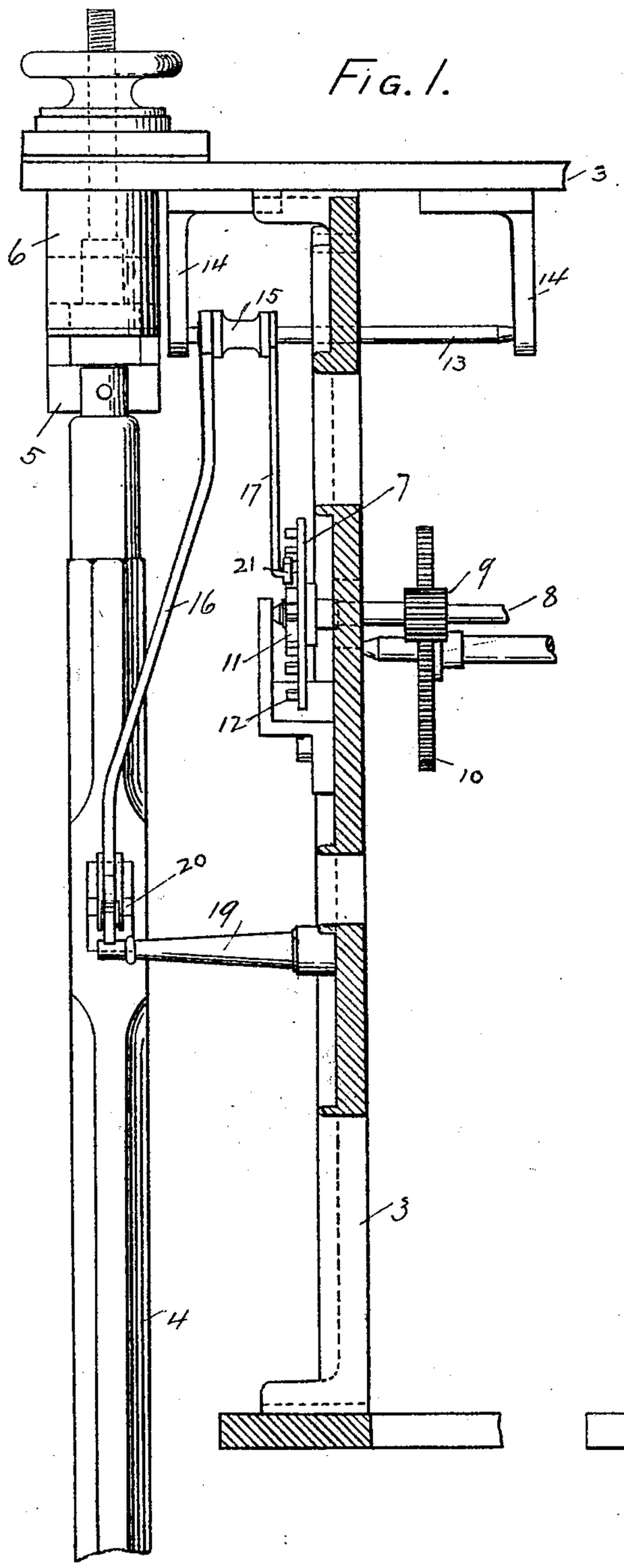
(No Model.) 2 Sheets—Sheet 1.

H. CONANT.

GRAVITY ESCAPEMENT FOR CLOCKS.

No. 519,421. Patented May 8, 1894.

Fig. 1.



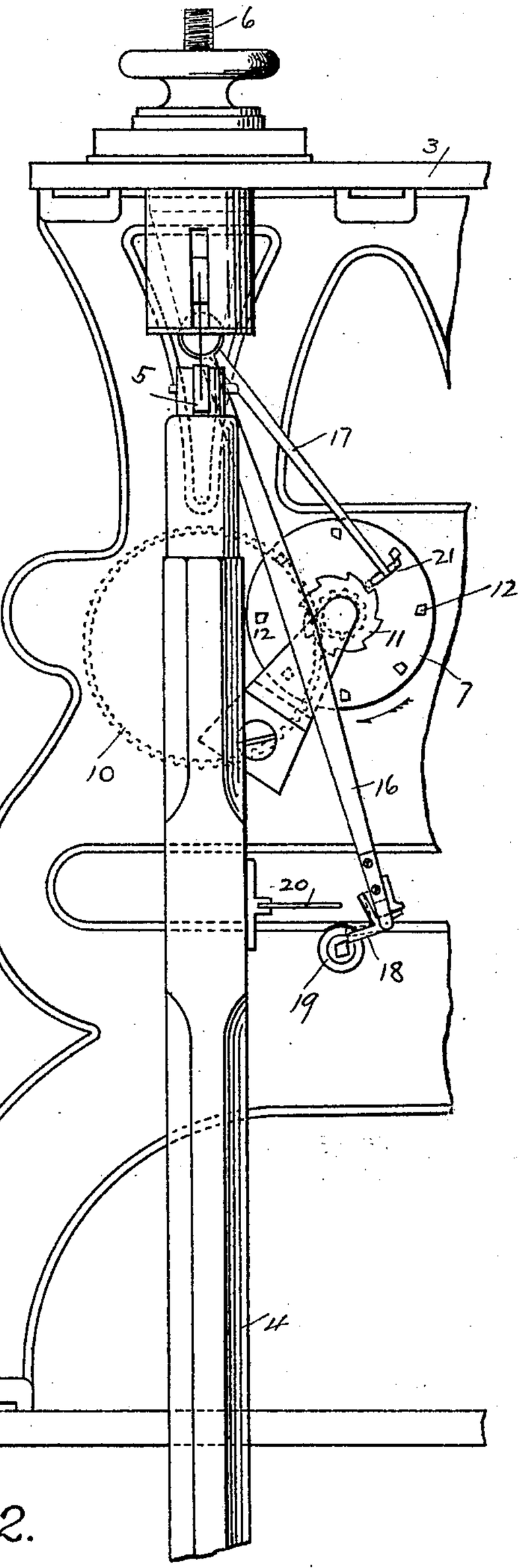


Fig. 2.

WITNESSES.

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(No Model.) 2 Sheets—Sheet 2.

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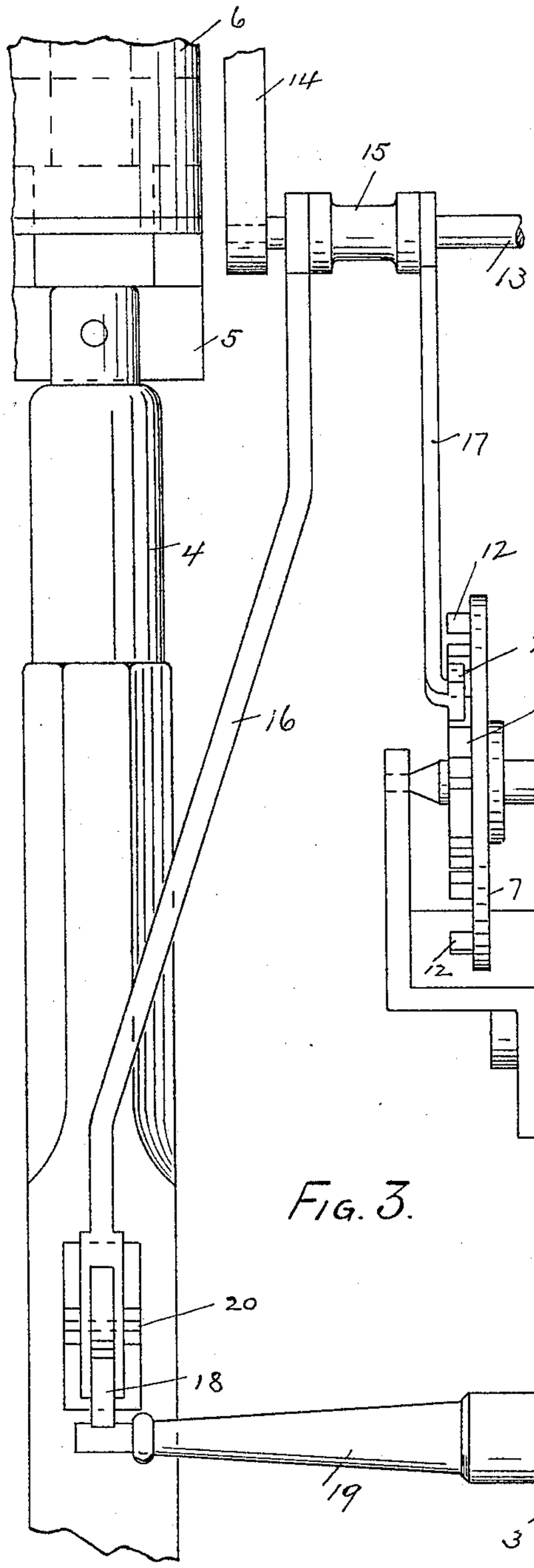

FIG. 3.

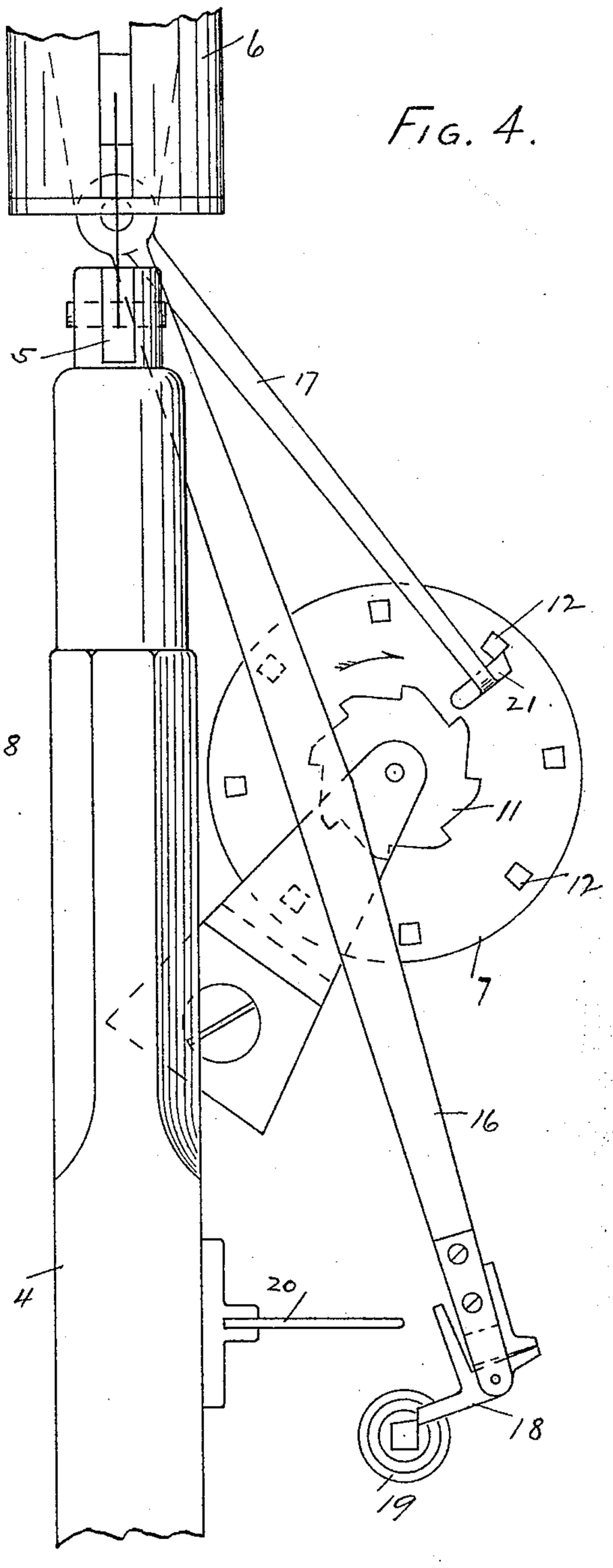

FIG. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

HEZEKIAH CONANT, OF LINCOLN, RHODE ISLAND.

GRAVITY-ESCAPEMENT FOR CLOCKS.

SPECIFICATION forming part of Letters Patent No. 519,421, dated May 8, 1894.

Application filed May 26, 1893. Serial No. 475,669. (No model.)

To all whom it may concern

Be it known that I, HEZEKIAH CONANT, a citizen of the United States, residing at Lincoln, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Gravity-Escapements; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of clock escapements known as gravity escapements, and the object of my invention is to give to a clock pendulum impulses of a constant and uniform power. I attain this object in the following manner which is fully illustrated in the accompanying drawings forming part of this specification, and of which—

Figure 1 is a vertical section through the frame showing a side view of the pendulum rod and of my gravity-escapement mechanism. Fig. 2 is a front view of the same. Fig. 3 is an enlarged side view, and Fig. 4 is an enlarged front view of the same.

Similar figures refer to corresponding parts in each view.

3, 3, is the framework of the clock.

4, is the pendulum rod pinned to the swinging crosshead 5, which is suspended through the adjustable hanger 6, from the clock frame.

7 is the escapement disk fixed to the shaft 8, carrying the pinion 9, which meshes with, and is driven by, the gear wheel 10, of the clock train. It is immaterial, as to my gravity escapement, how the train is driven, whether by weight, spring or other suitable appliance. The escapement disk 7, carries the pallets 12, 12, which project from one of its faces. Lying in the same plane with the pallets and fixed to the shaft 8, is the ratchet shaped cam 11, whose teeth correspond in number with the pallets. The shaft 13, journaled in the bearings 14, which project from the frame and whose axis ranges with the pendulum's center of vibration, carries fixed upon it the hub 15, from which project the gravity lever 16, and the detent arm 17, the latter bent at its lower end so as to form a detent 21 for the pallets 12, substantially as shown, and the former provided at its lower end with the bent lever 18, pivoted thereto, with freedom of motion to rock back and forth through the short arc, to which its motion is limited.

19, is a stud projecting from the clock frame having its outer end squared and beveled to the proper form to engage with the bent lever 18.

20 is an arm projecting from the side of the pendulum rod next to the bent lever 18.

Having thus indicated the various parts of my gravity escapement I will now describe its operation. Starting with the initial position of the various parts shown, in which the pendulum hangs vertical, we will suppose the pendulum rod Fig. 2, swung to the right until the arm 20, coming in contact with one arm of the bent lever 18, rocks it over against the gravity lever 16 and so releases the other arm from its engagement with the stud 19. The pendulum having now reached its extreme position in this direction begins to vibrate to the left and is assisted in so doing by the gravity lever 16, whose weight now imparts an impulse to the pendulum through a short arc, until the detent 21, which is rigidly connected with the gravity lever 16, comes in contact with the base of a tooth on the ratchet shaped cam 11. This slight rotary movement of the detent 21 has released from contact with its upper end, one of the pallets 12, and thus allowed the escapement disk 7 to rotate through one of its divisions in the direction indicated by the arrow. This partial rotation of the escapement disk and cam, which are driven by the clock train, raises the detent 21 which bears upon the cam to the height of the cam tooth, and so brings its upper end into the path of the pallets 12, in time to engage with the next pallet of the series, and arrest the rotation of the escapement disk. The gravity lever 16 has at the same time, by the nature of its construction, been raised to such a position above the stud 19, that the bent lever 18 drops sufficiently to engage with said stud and lock the parts again in the position shown, where they stand ready to impart a fresh impulse to the pendulum.

While the figures show my gravity escapement in position to act upon one side of the pendulum rod, it is understood that it can be adapted to the opposite side with equal facility.

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

1. In a gravity escapement, the bent lever 18, pivoted to the gravity lever 16 fixed upon the shaft 13 journaled in bearings 14, and rigidly connected through said shaft 13, and the arm 17 with the detent 21, in combination with the pendulum rod, the arm 20 projecting therefrom, and the stud 19, substantially as shown.

2. In a gravity escapement, in combination, a shaft 8 bearing a pinion 9 an escapement disk 7, pallets 12—12, and the ratchet shaped cam 11 all rotated by the clock-train, and the detent 21 rigidly connected with the gravity lever 16 carrying pivoted to its lower end the bent lever 18 all mounted upon the shaft 13 whose axis lies in the same line with that of the pendulum, as described.

3. In a gravity escapement, the combination with a clock train, of an escapement disk bearing a series of pallets, a ratchet shaped cam, a detent rigidly connected with a gravity lever and mounted upon a shaft whose axis ranges with that of the pendulum, a stud on the clock frame, and an arm on the pendulum rod, all arranged to operate substantially as herein shown and described, and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HEZEKIAH CONANT.

Witnesses:

E. R. BULLOCK,

CLARENCE E. PEIRCE.