

D. A. CARPENTER.

APPARATUS FOR RECORDING THE RISE AND FALL OF WATER.

No. 470,542.

Patented Mar. 8, 1892.

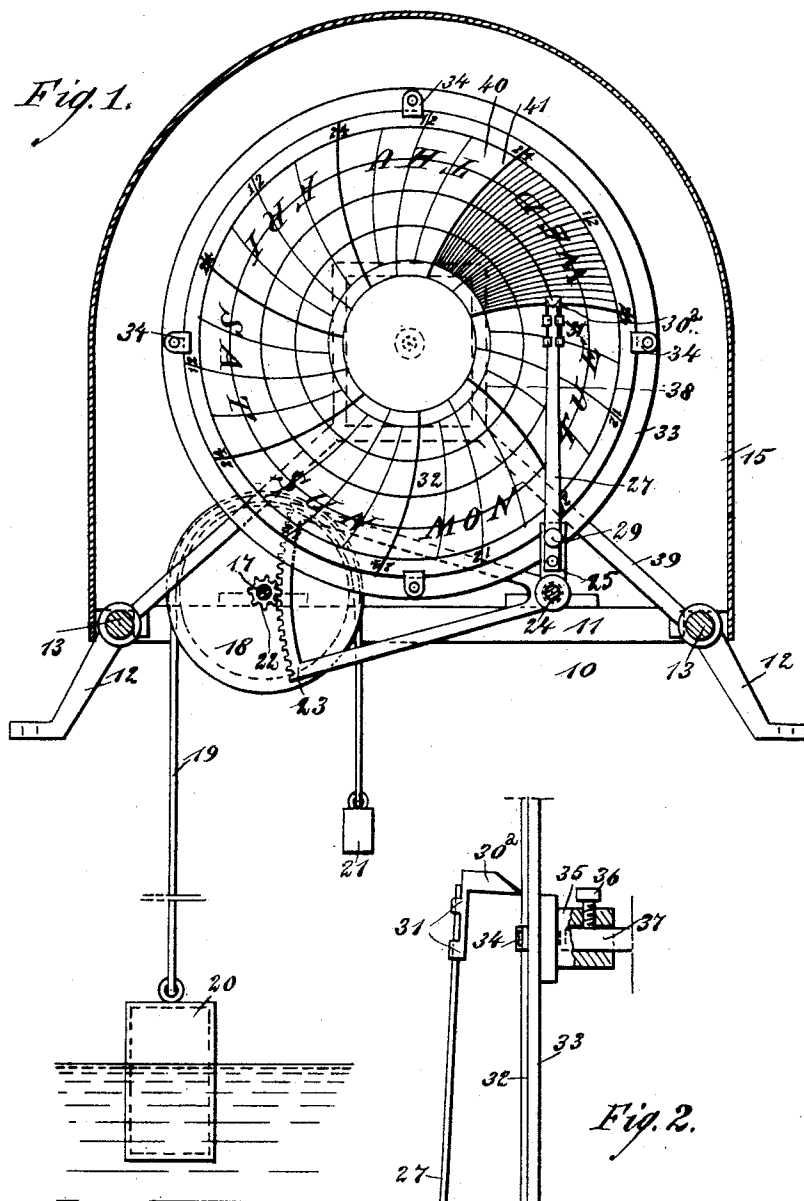


Fig. 2.

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Fig. 3.

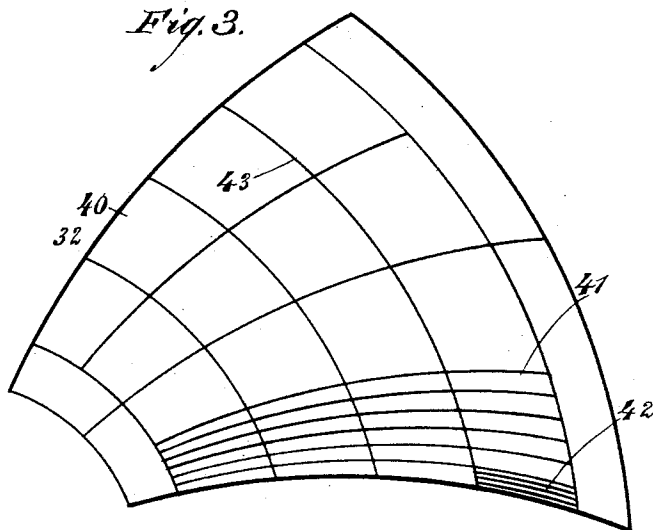
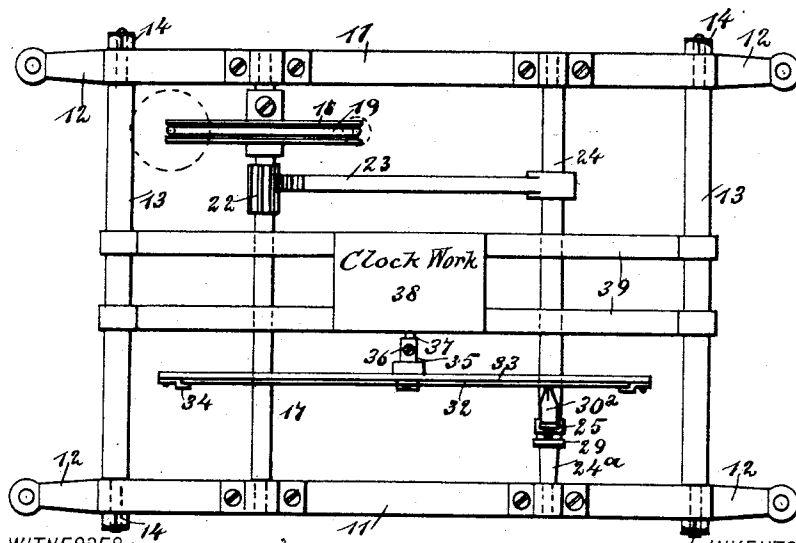


Fig. 4.



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DON A. CARPENTER, OF FORT COLLINS, COLORADO.

APPARATUS FOR RECORDING THE RISE AND FALL OF WATER.

SPECIFICATION forming part of Letters Patent No. 470,542, dated March 8, 1892.

Application filed October 17, 1891. Serial No. 409,013. (No model.)

To all whom it may concern.

Be it known that I, DON A. CARPENTER, of Fort Collins, in the county of Larimer and State of Colorado, have invented a new and Improved Apparatus for Indicating and Recording the Rise and Fall of Water, of which the following is a full, clear, and exact description.

My invention relates to improvements in that variety of machines which are adapted to indicate and record the rise and fall of a body of water and which are therefore especially useful in countries where irrigation is largely resorted to.

The object of my invention is to produce a simple, compact, and durable machine of the character described which may be easily adjusted and easily understood, which is not apt to get out of order, and which will indicate and accurately record the slightest rise or fall of water.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which the same figures of reference indicate the same or corresponding parts in all the views.

Figure 1 is a front sectional view of the machine embodying my invention. Fig. 2 is a broken enlarged detail view, partly in section, showing the connection between the dial-disk and the clock-spindle, and also the construction and arrangement of the recording-stylus. Fig. 3 is an enlarged detail view of a segment of the dial, and Fig. 4 is a plan view of the machine with the case removed.

The machine is provided with a suitable frame 10, which serves as a base, the frame consisting of the side pieces 11, having legs 12 at their ends, which legs terminate in suitable feet, and the cross-rods 13, connecting the side pieces and having nuts 14 at their outer ends, so that the side pieces and rods may be firmly united. The cross-rods 13 are preferably provided with shoulders, which abut with the inner sides of the side pieces.

The mechanism of the machine is preferably inclosed by a case 15, which may be of any approved form; but which has preferably

a glass door in front like the door of an ordinary clock.

Mounted transversely in the frame 10, near one end, is a shaft 17, which turns in suitable bearings on the side pieces of the frame, and secured to which is a grooved pulley 18, over which runs the cable 19, the cable being secured at one end to a float 20, which is preferably an air-tight vessel, and at the other end to a counterpoise 21. The counterpoise will take up all the slack of the cable, and any rise or fall of the float will cause the pulley 18 and shaft 17 to move. The shaft 17 is provided with a pinion 22 adjacent to the pulley 18, and this pinion meshes with a segmental rack 23, which at its smaller end is secured to a shaft 24, the latter shaft being arranged parallel with the shaft 17 and turning in suitable bearings on the main frame 10. The shaft 24 has one end tapered slightly, as shown at 24^a in Figs. 2 and 4, and secured on this tapered portion is an arm 25, having a prolonged upper end 26, which extends vertically upward and is thinner than the arm, and secured to the arm opposite the part 26 is a bar 27, the bar fitting at its lower end against a shoulder 28 on the arm 25. The bar carries a thumb-screw 29, the inner end of which impinges on the prolonged end 26 of the arm 25, and between the bar and the prolongation of the arm is a spring 30, which normally presses the bar outward. It will be seen that by adjusting the thumb-screw 29 the position of the bar in relation to the end 26 of the arm may be adjusted and the position of the stylus carried by the bar regulated.

At the upper end of the bar 27 is an angular stylus or pen 30^a, which has clips 31, which embrace the bar and hold it thereon, and the point of this stylus presses against a dial 32, which is preferably of paper, and which is secured to a metallic disk 33 by means of clips 34. This disk 33 is provided with a hollow hub 35 on its back, which is secured by means of a set-screw 36 to the spindle 37 of a clock 38, which clock is mounted on bars 39, or their equivalent, and which is adapted to rotate the disk 33.

The clock mechanism is not shown in detail, as any ordinary clock may be used; but an eight-day clock is preferably used in con-

nection with the machine, so that it will not need attending to but once a week. The clock-work is timed so that the disk 33 will make but one complete revolution a week.

5 The dial, which is secured to the disk, is divided into seven equal segmental parts 40, as best shown in Fig. 3, which parts represent the days of the week and are appropriately lettered, and the parts or segments are divided
10 by slightly-diverging lines 41, which are curved outward from the center of the disk and are indicative of the hours of the day, the hours being written in the margin of the dial. These hour-spaces are further subdivided into one-
15 quarter-hour spaces, as shown at 42 in Fig. 3.

The dial is also adapted to indicate the height of water in feet, and to this end it is provided with a series of concentric lines 43, which are produced near enough together to
20 indicate the one-hundredth part of a foot and may be placed nearer together, if desired. In the drawings I have not shown the foot-lines and time-lines so near together, as described, as it is practically almost impossible to pro-
25 duce the lines clearly upon the dial, and it will be readily understood from the description that the lines may be placed as near together as desired.

The machine is preferably adjusted so that
30 when the float 20 moves one foot the stylus 30^a will move the tenth of a foot; but this arrangement is not arbitrary and may be varied, as is necessary or desirable.

The operation of the machine is as follows:
35 The machine is placed above the water, so that the float 20 may rest upon the water and have the cable 19 align with the pulley 18, although it will be understood that the float may be placed in any desired position rela-
40 tive to the case, and that the counterpoise 21 will take up the slack of the cable. When the position of the float varies, the movement

of the cable 19 will turn the pulley 18 and shaft 17, and the rack 23, actuated by the pin-
ion 22, will also move and cause the stylus 45 30^a to be swung to the right or lefts, as the case may be, and the stylus will consequently impress a line upon the dial, which line, at the point where it crosses the time-lines, will indicate the exact height of water at any time
50 of the day or week, the time-lines indicating the hour of any given day and the concentric lines the height of water.

Having thus described my invention, I claim as new and desire to secure by Letters
55 Patent—

1. In a machine of the character described, the combination of the revoluble recording-dial, the stylus held against the dial, an os-
60 cillating shaft to carry the stylus, a shaft arranged parallel with the stylus-shaft and provided with a grooved pulley, a cable extending over the pulley and having a float at one end and a counterpoise at the other, and a pinion-
and-rack mechanism connecting the two 65 shafts, substantially as described.

2. An apparatus of the character described, comprising a revoluble recording-dial, an os-
cillating shaft mounted adjacent to the dial, a bar carried by the shaft and adjustable in
70 and out in relation to the dial, a stylus mounted on the bar and held to press upon the dial, a shaft journaled parallel with the stylus-shaft and having a pulley thereon, a rack se-
cured to the stylus-shaft and engaging a pin- 75 ion on the pulley-shaft, and a cable extending over the pulley, the cable having a float at one end and a counterpoise at the other, substantially as described.

DON A. CARPENTER.

Witnesses:

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