

(No Model.)

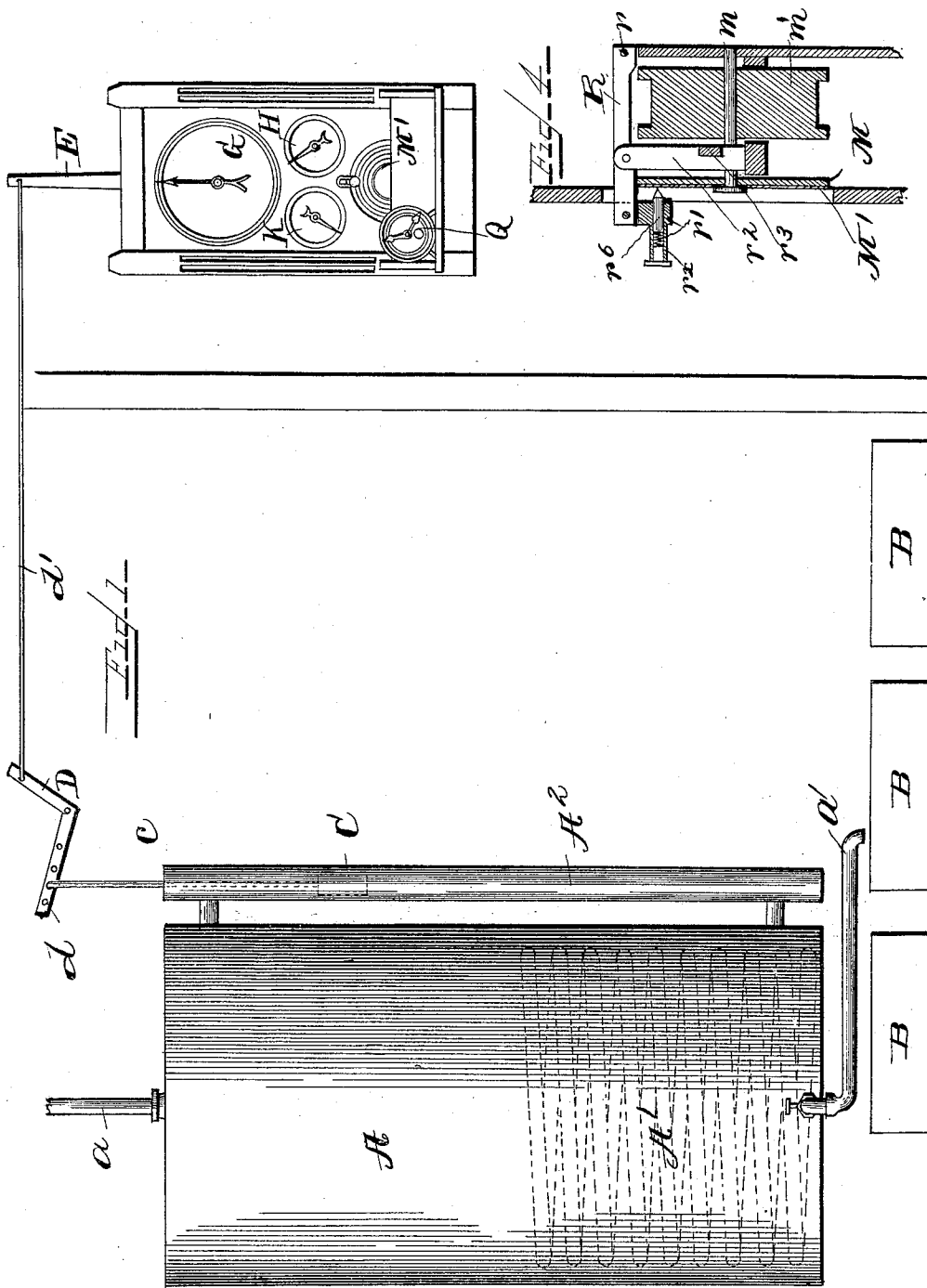
2 Sheets—Sheet 1.

A. J. McARTHUR.

SIGNALING AND REGISTERING DEVICE FOR ICE MAKING PLANTS.

No. 508,737.

Patented Nov. 14, 1893.



Witnesses
J. A. Fancher
E. P. Hubbard

Inventor
Andrew J. McArthur
By Whitake & Perosh
Attorneys.

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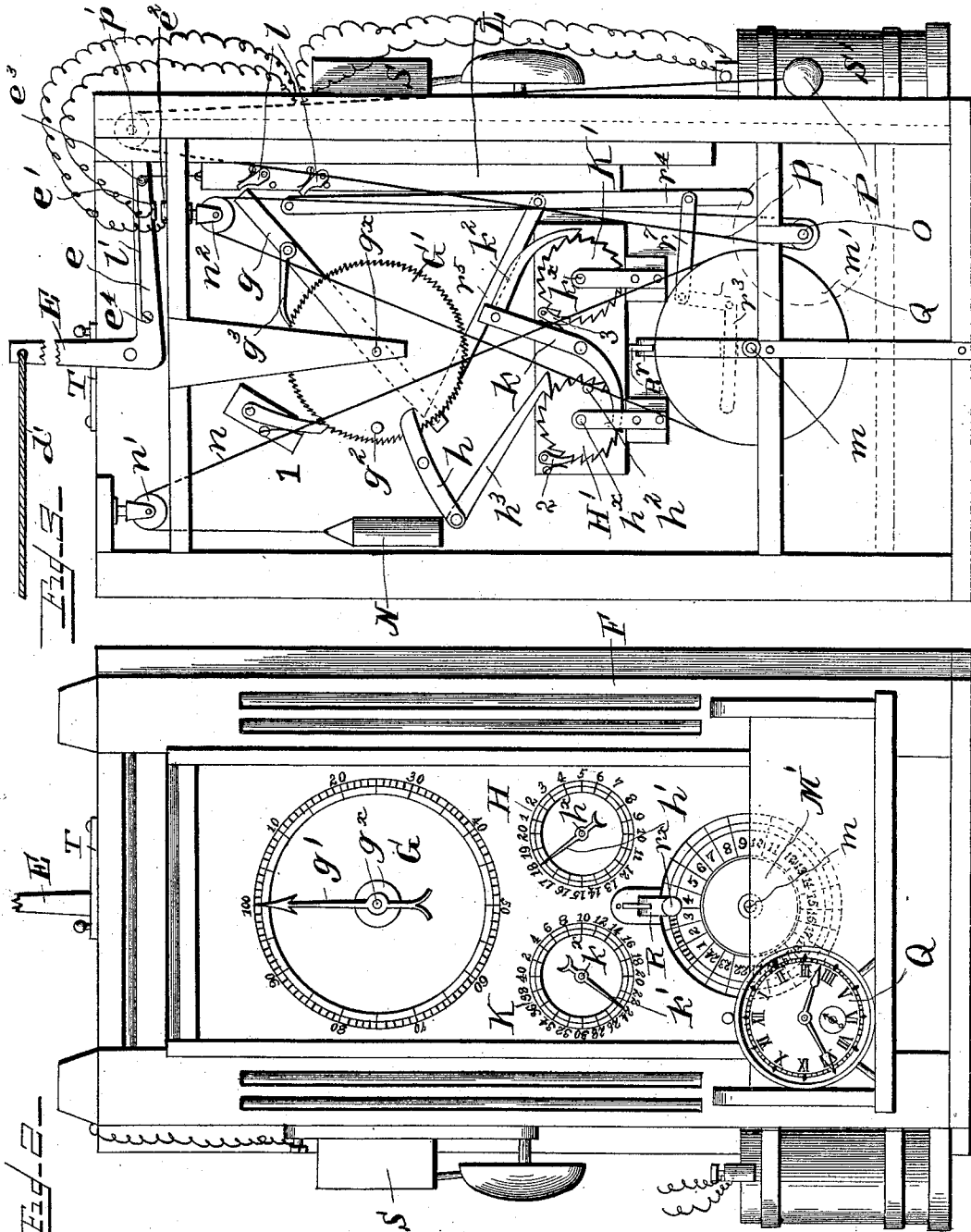
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UNITED STATES PATENT OFFICE.

ANDREW J. MCARTHUR, OF GAINESVILLE, FLORIDA.

SIGNALING AND REGISTERING DEVICE FOR ICE-MAKING PLANTS.

SPECIFICATION forming part of Letters Patent No. 508,737, dated November 14, 1893.

Application filed August 16, 1892. Serial No. 443,253. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. MCARTHUR, a citizen of the United States, residing at Gainesville, in the county of Alachua and State of Florida, have invented certain new and useful Improvements in Signaling and Registering Devices for Ice-Making Plants; and I do hereby 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.

My invention is an improvement in signaling and recording devices for ice making plants and consists in the novel features of construction and combination of parts hereinafter fully described.

In the accompanying drawings I have shown one form in which I have contemplated embodying my invention and said invention is fully disclosed in the following description and claims.

Referring to the said drawings: Figure 1 is a diagrammatic view representing my improvement applied to an ice making plant. Fig. 2 is a front view of the registering and recording mechanism. Fig. 3 is a rear view of the same, and Fig. 4 is a detail sectional view of part of the mechanism.

In the practical operation of ice making plants, much difficulty is experienced in obtaining a regular and proper filling of the ice cans from the distilled water tank, without wasting any of the distilled water, and without running warm water into the cans. In distilled water tanks as ordinarily constructed the distilled water enters the tank hot and is gradually cooled as it nears the bottom of the tank, by a cold worm or coil, and is drawn off at a temperature near the freezing point. If the attendant whose duty it is to fill the ice cans from the tank fills a number of cans, and lowers the water in the tank so as to bring the upper heated portions into contact with the cold coils, warm water will be run into the cans, and the proper operation of the machine will be interfered with. It is therefore desirable in order to avoid such a condition of things, to draw off water to fill one or more cans when the tank is exactly full, and to let the tank refill before again drawing from it. In doing this with the apparatus now in use the carelessness of the attendant in keeping watch of a sight gage or similar device fre-

quently permits the tank to overflow before drawing, thereby wasting the distilled water and causing a waste of the fuel required to produce it.

My invention is designed to obviate the difficulties above noted and others, and to provide automatic devices for giving a signal to the attendant when the tank is filled, so that he can at once draw off enough to fill one or more cans, and also devices for recording the number of cans filled during certain divisions of time, as in each hour, so that it can be known whether the attendants have faithfully performed their duties or not. This is particularly desirable as the plants are usually run night and day and the attendants are not under surveillance for considerable portions of time.

In the drawings A represents the distilled water tank of an ice making plant, provided with a cooling coil A' in its lower half, and having an inlet pipe *a* leading from the boiler, and a discharge pipe *a'* from which any one of a series of ice cans B B may be filled.

The tank A is preferably provided with a vertical tube or cylinder A² connected at its upper and lower ends with the tank A, in a manner similar to a sight gage and in said tube A² is located a float C which rises and falls with the water in the tank. A flexible or other connection *c*, connects the float with the devices which it operates. In this instance I have shown the said connection, *c*, connected to one arm *d*, of a bell crank lever D, pivoted to a suitable support, the other end of said lever being connected by a wire or cord *d'* to a lever E of the mechanism to be presently described. I prefer to provide the arm *d* of lever D with a series of apertures as shown at different distances from its point of pivoting in order that the connection between said lever and the float can be so made that the movements of the float shall impart the desired movements to said lever.

The signaling and recording mechanism may be located at any desired point and connected with the float in any desired way. It will ordinarily be found convenient to locate the signaling device in the room where the ice cans are so that it may be heard by the operator and to locate the recorder in the office or other suitable part of the building. For convenience of illustration I have shown the signal device attached to the case of the mech-

anism, and it might be so arranged if it could be readily heard by the attendant.

F represents the frame of the mechanism closed on the front by a glass door to prevent 5 tampering with the mechanism. The front of the device is provided with a suitable arrangement of counting dials, three dials being shown, which I shall denominate as follows: the units dial G registering each time 10 a can is filled and registering one hundred; the hundreds dial H registering one for each rotation of the units dial, and the thousands dial K, registering one for each rotation of the hundreds dial. The hundreds and thou- 15 sands dial may be made to register as many as desired. In rear of each dial is a ratchet wheel, G' being the wheel for the units dial mounted on a shaft g^x , H' the wheel for the hundreds dial mounted on a shaft h^x and K' 20 the wheel for the thousands dial K mounted on a shaft k^x as shown in Fig. 3. The lever E to which the float is connected has a horizontal arm e to which is secured a vertically moving operating rod, or slide L which is provided with one, two or more pivoted pawls l, 25 l, which, as the slide is drawn upward, engage successively the end of a pawl lever g having a pawl g^3 engaging the teeth or ratchet G', thereby moving it one tooth, each time 30 the pawl lever is engaged or raised by one of the pawls l, and causing the hand g' on the shaft g^x , to register on the units dial G. The usual construction is provided for securing the movements of the other dials. A pin g^2 35 on the ratchet wheel G' engages a pivoted lever h having a pawl h^3 for operating the ratchet H', and said ratchet has a pin h^2 thereon which in a similar manner engages a lever k and operates the ratchet K' by means 40 of the pawl k^2 . The shafts h^x and k^x of ratchets H' and K' will be provided with hands or pointers h' and k' respectively to travel over their respective dials.

It will be understood that the ratchet wheels 45 and their corresponding dials are mounted upon the same shaft for joint movement therewith.

1, 2, and 3 are detent pawls to prevent the backward movement of the ratchet wheels G' 50 H' and K' respectively.

Adjacent to the lower portion of the device I have shown a revolving disk M (see Fig. 4) for carrying a ruled indicator card M' adapted to be removably secured thereto in any de- 55 sired manner, and I also provide means for moving said disk and card preferably at the rate of one rotation every twelve or twenty four hours as preferred, and said card is divided into twelve or twenty four, segmental 60 spaces, accordingly. On the shaft m of the disk M I locate a pulley m' and a weight N is connected to a cord or chain n which extends up over a pulley n' secured to the upper part of the frame, down around pulley m' , thence 65 over a pulley n^2 to a controlling shaft O, upon which it is wound when the weight is drawn up. The shaft O is also provided with means

for winding up the cord n , which may be a key or other device. In the drawings I have shown a cord or chain p secured to the shaft 70 O and adapted to wind thereon as the cord n winds off. This cord extends up over a pulley p' , to the exterior of the frame where it is provided with a ball or handle P, so that by pulling on the cord p the cord n will be 75 wound on the controlling shaft.

In order to control the unwinding of the shaft O and consequently the rotation of the paper carrying disk, I provide a clock Q hav- 80 ing one of its rotating shafts or spindles suitably connected with the said shaft as by a polygonal socket in the one fitting over a polygonal part of the other, and the parts are so arranged that the disk will be permitted to revolve the distance of one of the segmental 85 spaces on the card, in an hour, or other predetermined period.

I provide a pencil or marker for making a mark upon the indicator card or paper carried by the revolving disk. To this end (see 90 Fig. 4) I provide a pivoted marking arm R pivoted to a stationary portion of the frame at r and having its free end extending to the front of the device where it is provided with a pencil holder r^x having a spring r' adapted 95 to press the pencil r^x against the paper M' on the revolving disk, M. To the marking arm R, is pivoted a vertical arm r^2 which is engaged and operated by one arm of a bell crank lever r^3 connected with and adapted to be 100 moved by the pawl lever g , the connection being secured in this instance by means of a lever r^4 connected at one end of the lever r^3 by a link r^7 and at the other to the frame, 105 and connected to the pawl lever g by a link r^5 see Figs. 3 and 4.

S, is a signal, in this instance an electric bell, provided with a battery S'. The terminal wires of the electric circuit are connected to a circuit controller adapted to be operated 110 by the lever E. I have shown the arm e of the lever provided with a contact strip e' to which one wire is connected and a second contact strip e^2 is secured to the frame in position to be engaged by the contact e' when 115 the arm e is lowered. I may employ some other form of signal if desired, connected for operation with the float, instead of the electric signal just described.

The operation of my improved device is as 120 follows: The engineer will adjust the distilled water producing mechanism so that it will run into the water tank a supply equal to the amount drawn off, and the ice making apparatus will be arranged to necessitate the 125 filling of cans at a certain rate per hour, according to the capacity of the machine. As the distilled water runs into the tank the float will rise and the arm e of lever E will be lowered until at the moment the tank is 130 filled, the two contacts e' and e^2 will engage each other and sound the alarm. The attendant then proceeds to fill a can from which the ice has been emptied. As the water is

drawn from the tank, the arm *e* of lever *E* is raised together with the slide *L* the pawl *l* engaging the pawl lever *g* and registering one can filled on the register. At the same instant the pencil of the marking device will make a vertical movement and a vertical mark upon the indicator card *M'* or disk, in the space corresponding to the hour in which the operation takes place. If it is customary to fill two or more cans at once, the slide *L* will be provided with two or more pawls *l* (two being shown) so that the registering and recording devices will be operated once for each can filled. It will be seen that the attendant will be notified each time the water supply tank is filled, and he can then fill the water cans without loss of water by overflow, and at the same time the registering apparatus keeps an accurate register of the number or cakes of ice made. Further the revolving indicator card will show in each segment corresponding to one hour a number of vertical marks equal to the number of cans filled during that hour, so that it can be seen at a glance whether the plant has been properly operated or not.

When the machine is not in use I preferably employ a pivoted catch *T* see Figs. 2 and 3, for engaging the lever *E* and holding it in position with the contacts *e'* *e''* separated as shown in Fig. 3. I also prefer to provide means for adjusting the vertical slide *L* with respect to the lever *E* which consists in this instance of a flexible connection such as a wire or chain *l'*, see Fig. 3 which passes over a roller *e''* at the end of the arm *e* of the lever *E* and is secured to an adjusting screw *e''* on said arm. By turning the screw *e''* the adjustable connection will be wound up or unwound and the parts adjusted so that the lowering of the water in the tank in filling a can will give the correct movement of the slide *L*. In this way the device can be adjusted according to the size of the cans employed. Other adjusting devices might however be employed.

I do not desire to be limited to the exact details of construction and combination of parts herein shown and described as variations may be made therefrom without departing from the spirit of my invention.

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

1. In an ice making plant, the combination with the water supply tank, provided with a float, of a signal, a registering device, and a time recorder, a lever connected with said float, connections between said lever and said signal for operating the signal on the upward movement of the float and connections between said lever and the registering device and time recorder for operating the same on the downward movement of the float, substantially as described.

2. In an ice making plant the combination with the water supply tank, provided with a float, a lever connected with said float, a sig-

nal device, a registering device, connections between said registering device and the lever for operating said registering device when the lever is moved in one direction and connections between said lever and signal device for operating the latter when the lever is moved in the opposite direction, substantially as described.

3. In an ice making plant the combination with the freezing cans, and a water supply tank capable of holding water enough to fill two or more cans, of a float adapted to rise and fall, with the water in the tank, a lever connected with said float and mechanism connecting the said lever and register for operating the same to cause it to register one for each of two or more cans filled in succession from the tank, substantially as described.

4. In an ice making plant, the combination with the water supply tank having a float of a registering device including a pawl lever, a slide having a part secured thereto in the path of said pawl lever for operating the same, and a connection between said slide and the float, the said part yielding when moving past said lever in one direction, whereby the register is operated by the downward movement of the float only substantially as described.

5. In an ice making plant the combination with the water supply tank and freezing cans, of a float adapted to rise and fall with the water in the tank, a discharge pipe for filling the cans, a register, a time recorder and connections between the float and said register and said recorder for causing the former to register one for each can filled and the recorder to record the time of filling the same, substantially as described.

6. In an ice making plant in combination with a water supply tank and freezing cans, of a float adapted to rise and fall with the water of the tank, a discharge pipe for filling said cans, a register, a lever and pawl for operating said register, a slide provided with spring pawls or projections for engaging and moving said lever and pawl when moving in one direction only, and connections between said float and slide, substantially as described.

7. The combination with the tank and a float adapted to rise and fall with the water in the tank, of a register, the register operating lever and pawl, a time recorder having a record disk and a movable record pencil connections between the register-operating lever and said pencil, a slide for actuating the said register-operating lever when moving in one direction only and connections between said float and slide, substantially as described.

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

ANDREW J. MCARTHUR.

Witnesses:

D. L. FURGASON,
J. W. ELDER, Jr.