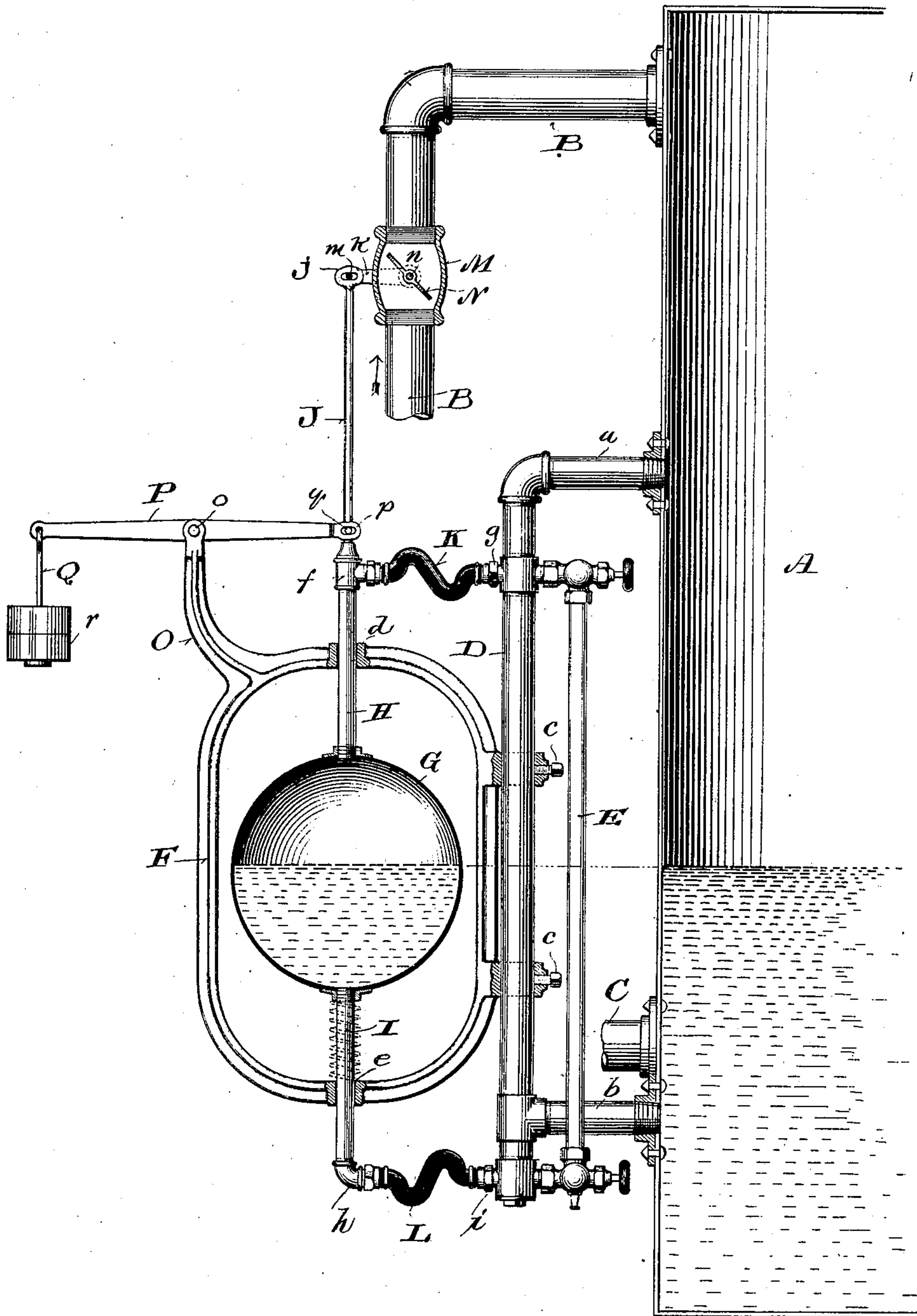


(No Model.)

J. E. CRAWLEY.
WATER SUPPLY REGULATOR.

No. 590,641.

Patented Sept. 28, 1897.



WITNESSES

Geo. W. Young.
B. C. Roloff.

INVENTOR,

James E. Crawley,
BY *H. G. Underwood,*
ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES E. CRAWLEY, OF MILWAUKEE, WISCONSIN.

WATER-SUPPLY REGULATOR.

SPECIFICATION forming part of Letters Patent No. 590,641, dated September 28, 1897.

Application filed December 30, 1896. Serial No. 617,468. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. CRAWLEY, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Water-Supply Regulators; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to devices for regulating the supply of water to a tank, feed-water heater, or other receptacle wherein there is constant withdrawal and replenishment; and it consists in certain means for effecting this regulation automatically, all as will be fully set forth hereinafter and subsequently claimed.

The drawing is a view, partly in elevation and partly in section, of a device embodying my invention in its preferred form.

Referring to the drawing, A represents a tank or receptacle, B a supply-pipe leading thereto from any source of water-supply, and C an outlet-pipe, which may be connected to a pump or suction device (not shown) for withdrawing the water from the tank or receptacle A.

D is a vertical pipe having upper and lower branches *a b*, which are open to the tank A. E is a water-gage communicating with the said pipe D.

F is a frame rigidly secured to the pipe D, as by set-screws *c c*, and having smooth-bore vertical bearings *d e*, formed, respectively, in its top and bottom.

G is a hollow sphere having threaded openings at top and bottom to receive the adjacent screw-threaded ends of the pipes H I, which pass through the described smooth-bored bearings *d e* of the frame F.

On the upper end of the pipe H there is a coupling *f*, whose top is closed and from which there extends upward a rigid vertical rod J, while the lateral arm of the coupling receives one end of a flexible hose K, (preferably of rubber,) whose other end is coupled, as shown at *g*, to the upper part of the pipe D. The lower end of the pipe I is connected, by a coupling *h*, to one end of a similar flexible hose L, whose other end is coupled, as shown at *i*, to the lower part of the said pipe D.

There are no valves or cut-offs in the pipes

D H I or flexible hose K L, and hence there is always free communication between the tank A and the interior of the sphere G, and the communicating water-gage E will always show the level of the water in the tank A, pipe D, and sphere G.

M is a valve-casing interposed in the inlet or supply pipe B, and N is a butterfly-valve mounted on a rod or journal *n* in said casing.

The upper end of the described rigid vertical rod J is provided with an oblong slotted top *j*, to which is connected an arm *k*, said arm having a pin *m* passing through the slot in the said top *j* and the other end of said arm being rigidly secured to the rod or journal *n* of the valve N.

O is an arm rising from the frame F, and to the upper end of this arm there is centrally pivoted, as shown at *o*, a lever P. The inner end of this lever is formed with an oblong slot *p* for the reception of a pin *q*, projecting from the described rod J, and from the outer end of said lever P there is suspended a weight-carrier Q, on which are sustained weights *r r*, as shown.

The operation of my device will be readily understood from the foregoing description of its construction, taken in connection with the accompanying drawing.

The weights are of such heaviness as is required, according to the water-level which it is desired to maintain in the tank. Now let it be understood that water is being withdrawn therefrom through the pipe C. This will lower the level in the tank A, and consequently in the sphere G, and as the water is withdrawn from the latter its weight decreases and the weights *r r* (which are practically counterbalanced by the weight of the sphere in the water-level shown in the drawing) begin to draw down the outer end of the lever P and raise the inner end, and this through pin *q* will raise the rod J, drawing up the sphere G within the frame F and raise the outer end of the arm *k*, thereby opening the valve N to its fullest extent till said valve assumes a vertical position, thus permitting a full inflow of water through the pipe B. When the water thus admitted to the tank A rises to a higher level than the device is adjusted for, the increased weight of the sphere G (in which the water-level, as

explained, is always equal to that in the tank) will overcome the weight of the weights *r r* at the end of the lever *P* and the sphere *G* will begin to settle down, and as it descends it will draw down the rod *J*, and this will draw on the end of the arm *k* and close the valve *N*, which when it assumes a horizontal position will cut off the further supply of water to the tank through the pipe *B*. The action of the device is thus purely automatic, and the proper level in the tank is thereby regulated and increased or diminished, as requisite to maintain the predetermined point, without the necessity of any interference with or manipulation of the said device after it has been properly adjusted.

It is obvious that a spiral spring of the required tension could be interposed between the bottom of the sphere and the top of the bearing *e* in the frame, said spring surrounding the pipe *I*, as indicated in dotted lines, in place of using the weighted lever *P*, or a spring could be used at the end of said lever in place of weights, but ordinarily I prefer the construction fully illustrated in the drawing. Similarly while the spherical form is the best on account of its strength for the hollow water-holder *G*, I do not limit myself to that or any particular form for said part.

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

In devices for regulating the supply of wa-

ter to a tank or receptacle, the combination of said tank and its inlet and outlet pipes, of a valve located in the inlet-pipe, a vertical pipe having free communication with the interior of the tank, a water-gage in free communication with said vertical pipe, a frame secured to said vertical pipe and having smooth-bored bearings in its top and bottom, a vertically-movable hollow water-holder having vertical pipes projecting from its top and bottom in free communication with its interior and passing through the said smooth-bored bearings in said frame, flexible hose connecting said pipes with the first-named vertical pipe whereby there is free communication between the interior of the holder and tank and so that the water-level in said holder, vertical pipe, water-gage and tank is always equal, a direct connection between one of the vertical pipes projecting from the holder and the valve in the inlet-pipe of the tank, and means for overcoming the weight of the said holder when the water-level therein becomes reduced below a predetermined height.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

JAMES E. CRAWLEY.

Witnesses:

H. G. UNDERWOOD,
B. C. ROLOFF.