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DEVICE FOR CONTROLLING THE SUPPLY OF WATER TO WINDMILL TANKS.

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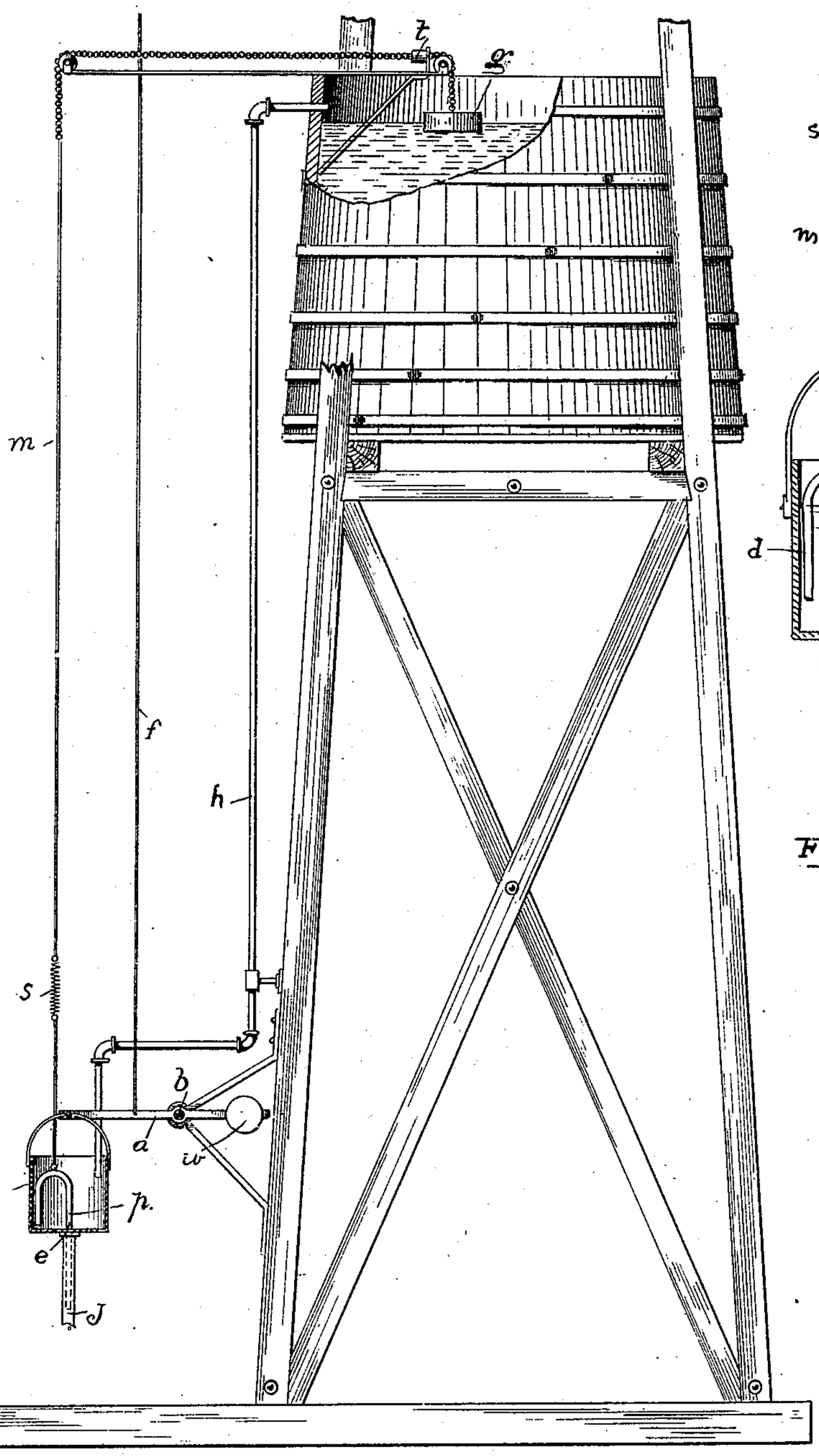

Fig. 1.

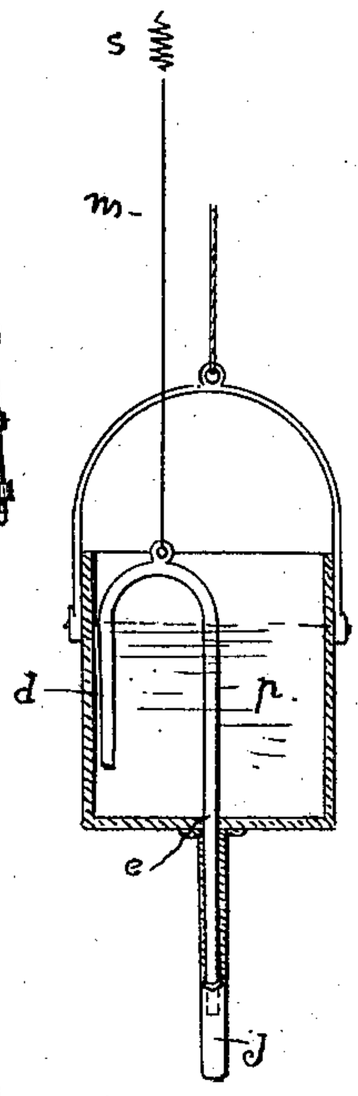

Fig. 2

WITNESSES.

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DEVICE FOR CONTROLLING THE SUPPLY OF WATER TO WINDMILL-TANKS.

966,664. Specification of Letters Patent. Patented Aug. 9, 1910.

Application filed April 7, 1908. Serial No. 425,648.

To all whom it may concern:

Be it known that I, WILLIAM BAKER DE CARTERET, a citizen of the United States, and a resident of Napa, in the county of Napa and State of California, have invented new and useful Improvements in Devices for Controlling the Supply of Water to Windmill-Tanks, of which the following is a specification.

This invention relates to the control of the water supply to a storage-tank, directly by the state of the water-level, or quantity of water held in the tank. Its object is chiefly to provide a means or device as an attachment to a pumping station, or a pumping outfit such as a windmill operated pump and a storage-tank for automatically shutting off the power or stopping the pump as often as the tank becomes full, and for setting the pump in motion again when the water level in the tank has been reduced by consumption to a predetermined point.

To such end and object the said invention comprises certain novel parts and combinations of parts, producing an automatic means or device for shutting off and turning on the supply of water to a storage-tank directly by or from variations in the water-level, all as hereinafter fully described and pointed out in the claims at the end of this specification.

In the accompanying drawing to which reference is made in the following description, I have illustrated a device or apparatus of my invention for operation with a windmill tank. It should be noted, however, that the same construction or embodiment of the invention is applicable as well to the controlling of other pumping machinery by variations in the level of the water in the tank as it becomes alternately filled and emptied.

The invention is not necessarily restricted in its application and use to water-tanks; but is obviously applicable to the control of other liquid-storing tanks which may require to be refilled as often as they are emptied.

The drawing illustrates what I consider the best construction and arrangement of my invention; the same showing the controlling device arranged on the wind-mill tank or frame-work, and connected with the tank.

The wind-wheel and mechanism connecting it with the pump are omitted from the drawings, for the reason that the same are of well-known construction, or contain no novel features that require to be described with reference to the drawing.

Figure 1 is an elevation of the tank and tower of a windmill, showing my invention applied thereto; a portion of the device being shown in section. Fig. 2 is a longitudinal sectional view on an enlarged scale of the bucket counter-poise, showing in detail its siphon operated means for emptying it.

The parts of the device illustrated in the drawing consist of a lever *a*, movable in an arc on a fulcrum or center *b;* a bucket or receptacle *d* suspended from one arm of the lever, and supported by the lever beneath the outlet end of an overflow pipe or conductor on the tank; a siphon-operated outlet *e* in the bucket *d*, and devices connecting the said operating means with a weighted float *g* in the tank; and a connecting means between the lever *a* and some controlling part of or on the wind-wheel, such as a rope or cable *f*. Through this connecting means the lever *a* on being depressed by the weight of the loaded bucket *d* will exert or apply sufficient power to disconnect the wind-mill operated mechanism from the pump; or, being connected to a brake or lock on it, will prevent that part from acting on the pump whereby the latter will remain inactive as long as the lever *a* is held down. The weight of the bucket and its load acting on or through the lever *a* and its connection *f* are thus adapted to temporarily shut off the power or stop the operation of the pump. On the other hand, by emptying the bucket of its load the weight is reduced to a sufficient extent or degree to allow the lever *a* to rise and restore the working condition of the pump, or connect it with the power again.

According to my invention the overflow from the tank is utilized to depress the controlling lever, and the reduction of the water-level in the tank through consumption of the water is caused to empty the bucket and so relieve the lever of the weight as often as the water-level in the tank is lowered to a given point. The first mentioned end is attained by arranging the lever *a* in such position with relation to the outlet end

of the overflow pipe *h* that the bucket *d* will be directly beneath the mouth of the pipe and always ready to catch the overflow. On becoming filled thereby the weight is sufficient to depress the lever *a*, and the latter is depressed and held down as long as the water is retained by the bucket. For the purpose of emptying the bucket at the required time, a float *g* is arranged in the tank to rise and fall with the water-level, and by means of a cord, wire or other connection *m* the float *g* is connected with a siphon-tube *p* in the bucket movably fitted to an outlet in the bottom of the bucket, in such manner that on being drawn up with a short and quick movement the siphon-tube will be set in operation and will continue to draw off the contents of the bucket until it is relieved of its load.

In Fig. 1 of the drawings the various parts are shown in the position occupied when the wind-mill and pump mechanism are connected and the tank is filling. The float *g* is shown in its lowest position, being held from descending farther by a stop *t* on the connection *m*, and therefore the siphon tube *p* is in its highest position. As the water flows into the tank the float *g* is raised, allowing the siphon tube *p* to descend, so that the shorter arm rests against the bottom of the bucket *d*. The water in the tank rises until it reaches the overflow level and the bucket *d* is then filled through the overflow pipe *h* as the tank is filling. The float *g* rises sufficiently to allow some slack in the connection *m*, before the overflow level is reached, so that as the bucket *d* is depressed by water flowing into it, the siphon tube *p* is free to move with it, still retaining the shorter arm in close contact with the bottom. The weight of the counterbalance *w* is so proportioned that the bucket will not descend and operate the clutch mechanism until the bucket has filled with water. The supply of water to the tank being cut off, the level of the water therein drops, allowing the float *g* to descend raising the siphon tube, and thereby pulling the shorter arm off the bottom of the bucket. The relative position of the siphon tube and bucket at this time is shown in Fig. 1, the end of the siphon tube being raised slightly from the bottom of the bucket. The pressure of the water in the bucket has the effect to start the flow through the siphon and empty the bucket. As that part becomes lighter than the counter-balance *w*, the lever *a* will be moved, thereby connecting the pump mechanism with the wind-mill. A tube *j* is preferably secured to the bottom of the vessel *d* and into this extends the lower end of the long arm of the siphon, such tube serving to support and steady the siphon and guide it in its movements.

Under the ordinary movement of the lever *a*, as the bucket becomes filled by the overflow the siphon will remain at rest without starting to empty the bucket, but on the other hand, the float will start the siphon working as soon as the water level in the tank being lowered allows the float to drop. The movement of the siphon is assisted or accelerated to advantage by placing a coiled spring *s* in the connection *m* between the float and the siphon; the effect of which is to impart a quick pull on the siphon as soon as the strain thrown on the connecting cord by the descending float becomes sufficiently great to overcome the spring, and the tension on the latter part becomes greater than the resistance offered by the siphon-tube.

A stop *t* on the connection between the float and the siphon serves to prevent the float from drawing up the siphon beyond its proper working position; and the connection for a portion of its length is composed of a chain or a flexible cord to afford a limited extent of free movement of the float up and down under the fluctuations in the water-level without affecting the siphon.

The device composed of the parts as above described can be applied readily to most of the wind-mills and tanks already in use at the present time, without materially changing the pumping mechanism or the connection between the wind-mill and the pump. It is capable of being regulated to shut off the supply of water to the tank and to turn it on again within any desired limitations in the extremes of high water and low water in the tank; and when once adjusted it will prevent waste of water by stopping the mill when the tank becomes full, and will set the pump in operation when the tank becomes empty, without requiring any attention.

An adjustable weight on the end of the lever opposite the bucket *d* is provided for regulating the point at which the weight of the bucket when being filled with water will act on the lever.

I claim:—

1. The combination with a water tank, of a controlling-lever, a receptacle on the end of the lever adapted to hold a body of water, an outlet in said receptacle, a siphon-tube therein, a float in the tank connected with the said siphon and adapted to set the siphon in operation by the descending motion of the float, an over-flow outlet, means for directing the over-flow into the receptacle on the lever, and means for connecting the lever with the mechanism to be controlled.

2. The combination with a storage-tank, of a controlling-lever having a counter-poise adapted to hold a body of water; a siphon-operated outlet in said counter-poise, a float

in the tank, means connecting the float with the siphon whereby the movement of the float under a reduction in the water-level in the tank will act to start the siphon; a pipe for directing the over-flow of the tank into the counter-poise, and means connecting the lever with the pumping apparatus through which the tank is supplied, for operation substantially as described.

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Witnesses:
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