

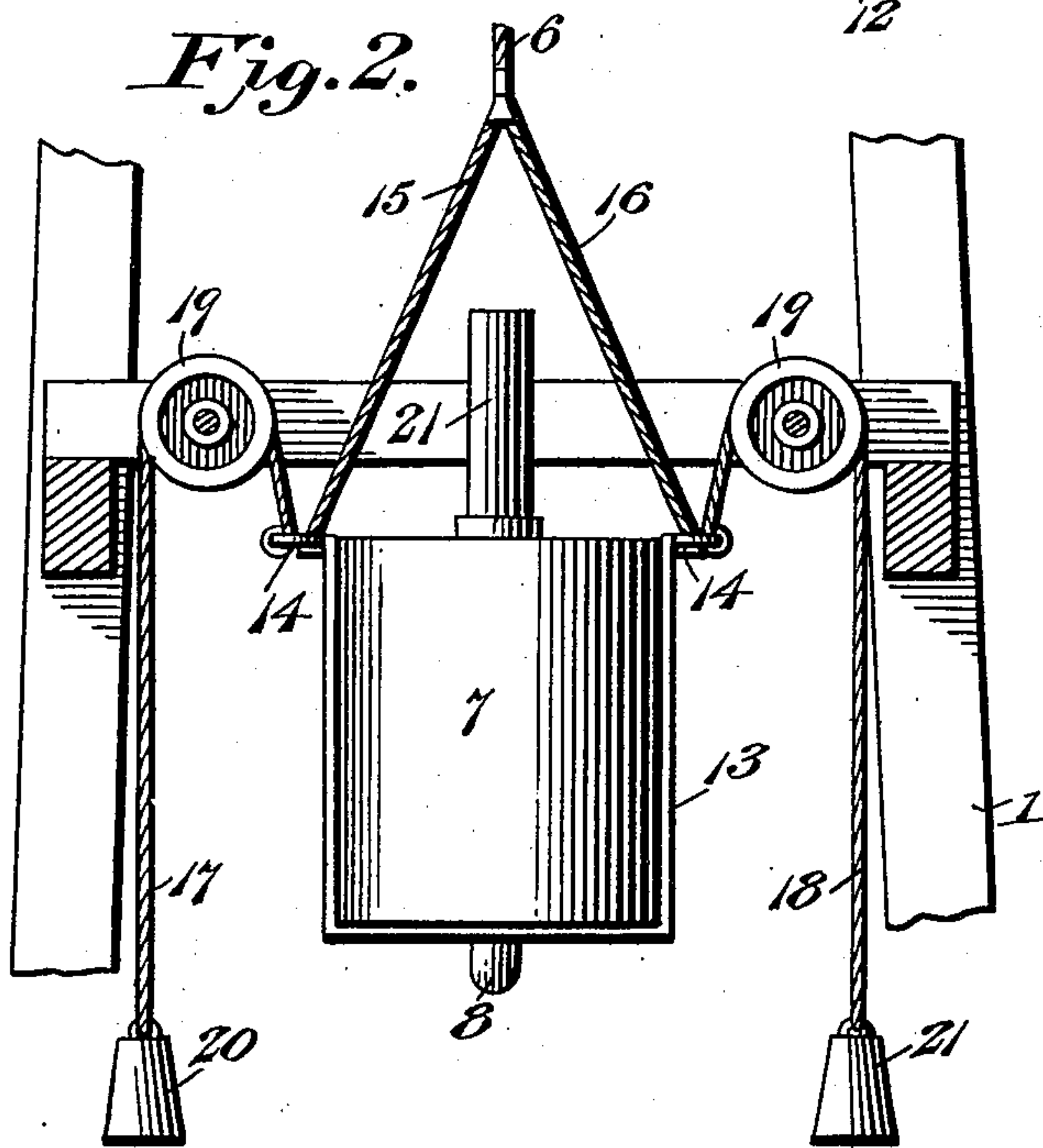
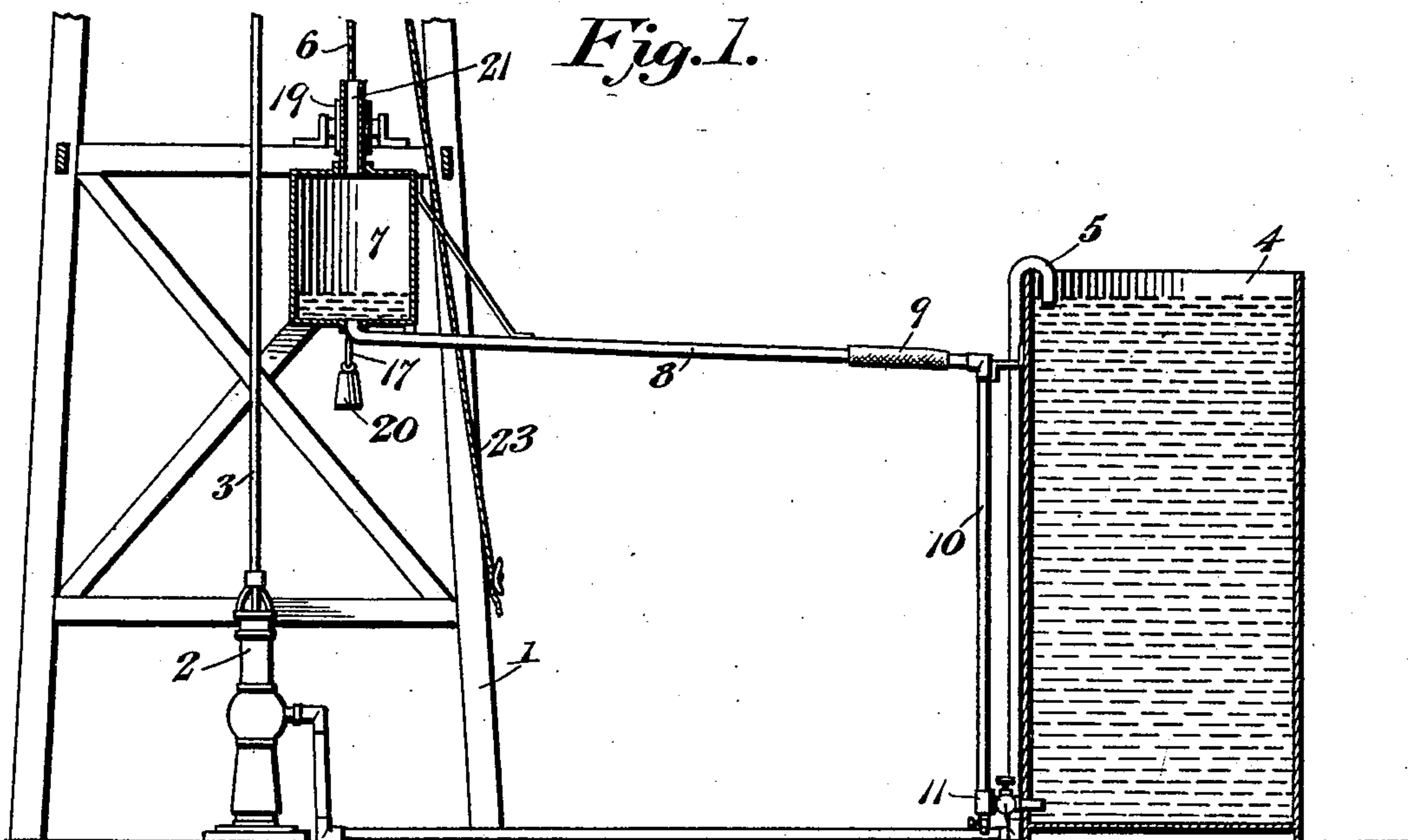
No. 669,403.

Patented Mar. 5, 1901.

J. STEIN.
WINDMILL REGULATOR.

(Application filed Sept. 12, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

JOHN STEIN, OF FREDERICKSBURG, TEXAS.

WINDMILL-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 669,403, dated March 5, 1901.

Application filed September 12, 1900. Serial No. 29,783. (No model.)

To all whom it may concern:

Be it known that I, JOHN STEIN, a citizen of the United States, residing at Fredericksburg, in the county of Gillespie and State of Texas, have invented a new and useful Windmill-Regulator, of which the following is a specification.

This invention relates to improvements in windmill-regulators of that class distinguished by the provision of a movable bucket connected to the regulating-cable of a windmill and communicating with the tank or reservoir supplied by the mill to cause the depression of the bucket for the purpose of throwing the mill out of gear or out of the wind, as the case may be, when the level of water in the tank has reached a predetermined point.

The object of the invention is to simplify the construction in a manner to render the apparatus more effective and to prevent the overflowing of the bucket when the latter is depressed.

Other and subordinate objects will herein-after more fully appear as the necessity for their accomplishment is developed in the succeeding description of the preferred form of the invention illustrated in the accompanying drawings and succinctly defined in the appended claims.

In said drawings, Figure 1 is a sectional elevation of my apparatus complete, the upper portion of the windmill being broken away. Fig. 2 is a sectional elevation, on a somewhat enlarged scale, showing the novel manner of supporting and counterbalancing the removable regulating chamber or bucket.

Referring to the numerals of reference employed to designate corresponding parts in both views, 1 indicates a portion of a windmill-tower, and 2 a pump of ordinary construction, designed to be operated by the pump-rod 3, operatively connected with the wind-wheel (not shown) for the purpose of supplying water to the tank or reservoir 4 through a supply-pipe 5, leading to the tank from the pump 2. It will be obvious that the operation of the windmill will effect the filling of the tank 4, and it is the purpose of the present invention to provide means for automatically discontinuing the operation of the windmill when the water in the tank has reached

the desired level. The means employed for this purpose comprehends the regulating-cable 6, connected to the regulating mechanism of the wind-wheel in a manner well understood in the art and connected at its lower end to the bucket or regulating-chamber 7, mounted in a manner to be described within the frame or tower of the mill. From the bottom of the bucket 7 is extended laterally a bucket-supply pipe 8, connected by means of a flexible coupling 9 with a stand-pipe 10, communicating at its lower end with the interior of the tank 4 adjacent to the bottom thereof. The bucket 7 is normally located in a horizontal plane adjacent to the plane of the upper end of the tank in order that the water from said tank will not enter the bucket until a comparatively elevated level has been reached. At the lower end of the stand-pipe 10 I provide a drip-cock 11, by means of which the pipes 8 and 10 and the bucket 7 may be drained to prevent freezing in winter, and between the drip-cock 11 and the tank I provide the pipe 10 with a controlling-valve 12, by means of which the bucket may be placed in effective communication with the tank when the automatic regulation of the windmill is desired or operatively disconnected when its use is unnecessary.

An essential feature of the invention resides in the peculiar mounting of the bucket 7 to prevent swinging thereof, which would tend to break or derange the parts, and also in the counterbalancing of the bucket to relieve the regulating-cable 6 of its weight under ordinary conditions, as well as to insure the return of the movable parts to their normal positions at the proper time. To effect these several ends, the bucket 7 is mounted in a suitable hanger or bucket-frame 13 of approximate U shape and provided with terminal loops 14 at diametrically opposite sides of the top of the bucket for the attachment of the branches 15 and 16 of the cable 6 and for the ends of a pair of cables 17 and 18, designed for the support of the bucket, passed over idlers or pulleys 19, suitably journaled in the frame of the windmill and supporting a pair of counterbalancing-weights 20 and 21, which counterbalance the bucket 7 to prevent the imposition of its weight upon the regulating-cable 6 and the gearing of the mill.

For the purpose of preventing overflow from the bucket 7 when the latter is lowered or depressed in a manner to be described I provide a bucket extension 21^a in the form of an open-
 5 ended pipe upstanding from the closed end of the bucket 7, as clearly shown in the drawings.

The operation of my device is as follows: Assuming the parts to be in the positions
 10 illustrated in Fig. 1, the rise of the water within the tank will cause it to flow through the pipes 10 and 8 to the interior of the bucket 7. As soon as the weight of the water within the bucket is sufficient to overcome the re-
 15 sistance opposed by the regulating mechanism of the mill the latter will be operated through the cable 6 by the dropping of the bucket, which movement is accommodated by the flexible coupling 9, the latter permit-
 20 ting the oscillation of the bucket-supply pipe 8 as the bucket descends. The utility of the bucket extension will now appear, since its upper end will be located in a horizontal plane above the top of the tank at all times to pre-
 25 vent the filling and overflowing of the bucket as the latter moves downwardly in the manner described. Obviously when the water in the tank 4 has been sufficiently exhausted the water will flow back into the tank from the
 30 bucket 7, and the latter will be returned to its normal position under the impulse of the counterweights 20 and 21 to renew the operation of the windmill for the purpose of refilling the tank, or, if desired, the regulation of
 35 the windmill may be effected manually by a pull upon the hand-cable 23.

From the foregoing it will be observed that I have produced a simple, inexpensive, and efficient apparatus for automatically regulat-
 40 ing the operation of windmills; but while the present embodiment of my invention appears at this time to be preferable I do not desire to limit myself to the structural details defined, as, on the contrary, I reserve the right
 45 to effect such changes, modifications, and variations as may fall properly within the scope of the protection prayed.

What I claim is—

1. The combination with a windmill, tank and pump, of a supply-pipe leading directly
 50 from the pump to the top of the tank, a stand, pipe communicating with the tank at its bottom and extending upon the exterior of the tank to a point adjacent to its top, an inflex-
 55 ible swinging pipe disposed horizontally and flexibly coupled to the upper end of the stand-pipe, a bucket supported at the outer end of the swinging pipe and disposed substantially in the plane of the top of the tank, a regulating-
 60 cable controlling the operation of the windmill and connected to the bucket, counterbalancing devices likewise connected to said bucket, a valve intermediate of the stand-pipe and tank, and a drip-cock at the lower end of the stand-pipe. 65

2. The combination with a windmill, pump, tank and a regulating-bucket capable of independent vertical movement and provided with means of communication with the tank, of a U-shaped hanger supporting the bucket,
 70 cables connected to said hanger and provided with counterweights, pulleys mounted upon the windmill-frame to guide said cables, and branches extending from the regulating-cable and likewise connected to the hanger at op-
 75 posite sides of the bucket.

3. The combination with a windmill, pump, tank and regulating-bucket capable of independent vertical movement and provided with means of communication with the tank,
 80 of a U-shaped hanger supporting the bucket, cables connected to said hanger and provided with counterweights, pulleys mounted upon the windmill-frame to guide said cables, and a regulating-cable connected to said
 85 hanger.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN STEIN.

Witnesses:

W. N. McILVAIN,
 W. W. REYNOLDS.