

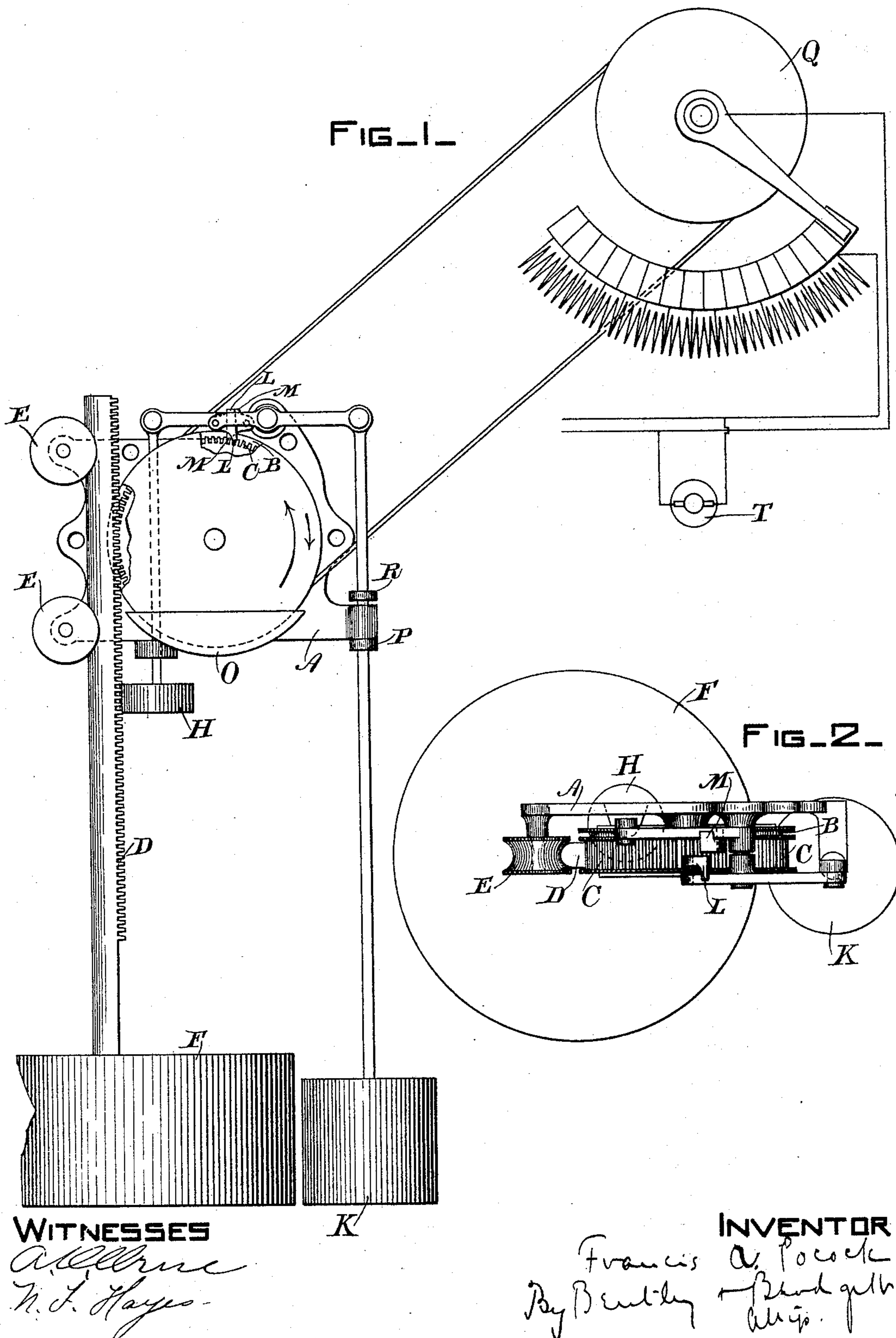
(No Model.)

F. A. POOCK.

AUTOMATIC GOVERNING DEVICE FOR ELECTRIC PUMPS.

No. 485,221.

Patented Nov. 1, 1892.



UNITED STATES PATENT OFFICE.

FRANCIS A. POCOCK, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE THOMSON
VAN DEPOELE ELECTRIC MINING COMPANY, OF MAINE.

AUTOMATIC GOVERNING DEVICE FOR ELECTRIC PUMPS.

SPECIFICATION forming part of Letters Patent No. 485,221, dated November 1, 1892.

Application filed March 20, 1891. Serial No. 385,734. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS A. POCOCK, a citizen of Great Britain, residing at Lynn, in the county of Essex and State of Massachusetts, have invented a certain new and useful Improvement in Automatic Governing Devices for Electric Pumps, of which the following is a specification.

Reference is made to the accompanying drawings, in which—

Figure 1 is a side elevation, and Fig. 2 a plan, of my device.

My invention consists of a device for automatically stopping and starting an electric pump according to the level of the water or other liquid to be elevated. It is especially adapted for mining operations, where it is desired that the pump shall be automatically started when the water has reached a certain level and stopped when a certain lower level has been reached.

In general the device consists, first, of a float of such a size that when it has been immersed a certain distance it will tend to rise with sufficient force to operate a rack and pinion or similar intermediate device engaging with the controlling resistance of the motor; second, in two smaller floats, one for the high level and the other for the low level, between which the water may be allowed to accumulate and which are connected, respectively, to stops, which hold the operating device for the resistance in its two extreme positions, so that the motor may be fully stopped or fully started, according as the water may be at its low or at its high level.

Referring to the drawings, A represents a base-plate adapted to be secured in any suitable manner against the side wall of a mine or other place where water or other liquid accumulates. Pivoted to this base-plate is a pulley B and a concentric gear-wheel C.

D is a rack moving vertically on friction-rollers E and engaging with gear-wheel C. On the lower end of rack D is a float F. This float is of such a size that when the water has risen to a definite level above it it will, on being released, rise with sufficient force to drive gear-wheel C and pulley B, the latter being belted by the chain or cord G to a resistance

Q or other controlling devices for an electrically-driven pump or other mechanism, (shown conventionally at T.)

H and K are two smaller floats placed at points at high and low water, respectively, and connected each to a pawl, the two pawls L and M engaging oppositely with gear-wheel C. When both pawls are in engagement with the gear-wheel, it is held immovable; but it will be free to move in one direction or the other as one pawl or the other is lifted from engagement with it. Thus when pawl L is lifted it will be free to move only in the direction of the large arrow; but when the pawl M is lifted it will be free to move only in the direction of the small arrow.

The operation of the devices is as follows: Assuming that the water is at its lowest level with the pump out of action and the parts in the condition shown by the drawings, the water will then gradually accumulate, tending to lift the floats F and K. The former float, however, cannot rise because pawl M is in engagement with the gear-wheel and prevents its turning under the pressure of the float F. When, however, the water reaches its highest level near the float H, the latter will be lifted and thereby throw pawl M out of engagement with the gear-wheel. This will permit the large float F to rise with considerable force and operate the resistance, thereby starting the pump. As the pump continues to work the level of the water will fall; but the float F cannot fall with it, because gear-wheel C is locked by the pawl L. When, however, the water reaches its lower level, below the float K, the latter drops and lifts the pawl L out of engagement with the gear-wheel and permits float F to drop by its own weight, thereby again operating the resistance to stop the electric pump. These operations are continued automatically from time to time, the pump coming into operation when the water reaches its highest level and being thrown out of engagement when it reaches its lower level. The lower part of the gear-wheel C runs in a receptacle O, containing oil or other lubricating material, and stops P and R are provided for float K, between which limit it is free to move from time to time.

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

1. The combination of an electric pump or other mechanism with a starting and stopping mechanism therefor and a float connected with and serving as a motor to operate said mechanism, and controlling mechanism therefor, holding the float against movement until the liquid has reached predetermined higher and lower levels, at which, respectively, it is desired to have the mechanism stopped and started.

2. The combination, with an electric pump or similar mechanism, of a starting and stopping device therefor, a float connected with and serving to operate said starting and stopping mechanism, and locking devices controlled by a rising and falling liquid at a determined high and low level, respectively.

3. The combination, with an electric pump

or similar mechanism, of stopping and starting devices therefor, an actuating-float, high and low level floats, and locking devices controlled thereby to hold the actuating-float at its high or low position, respectively.

4. An automatic controlling device for an electric pump or similar mechanism, consisting of a wheel and an operating-float therefor, a connection from said wheel to the resistance or other motor-regulating device, a lock for the said float at its upper and lower levels, respectively, and high and low water floats connected with the said lock.

In testimony whereof I have hereto set my hand this 16th day of March, 1891.

FRANCIS A. POCOCK.

Witnesses:

EDWARD M. BENTLEY,
ARTHUR P. KNIGHT.