

(No Model.)

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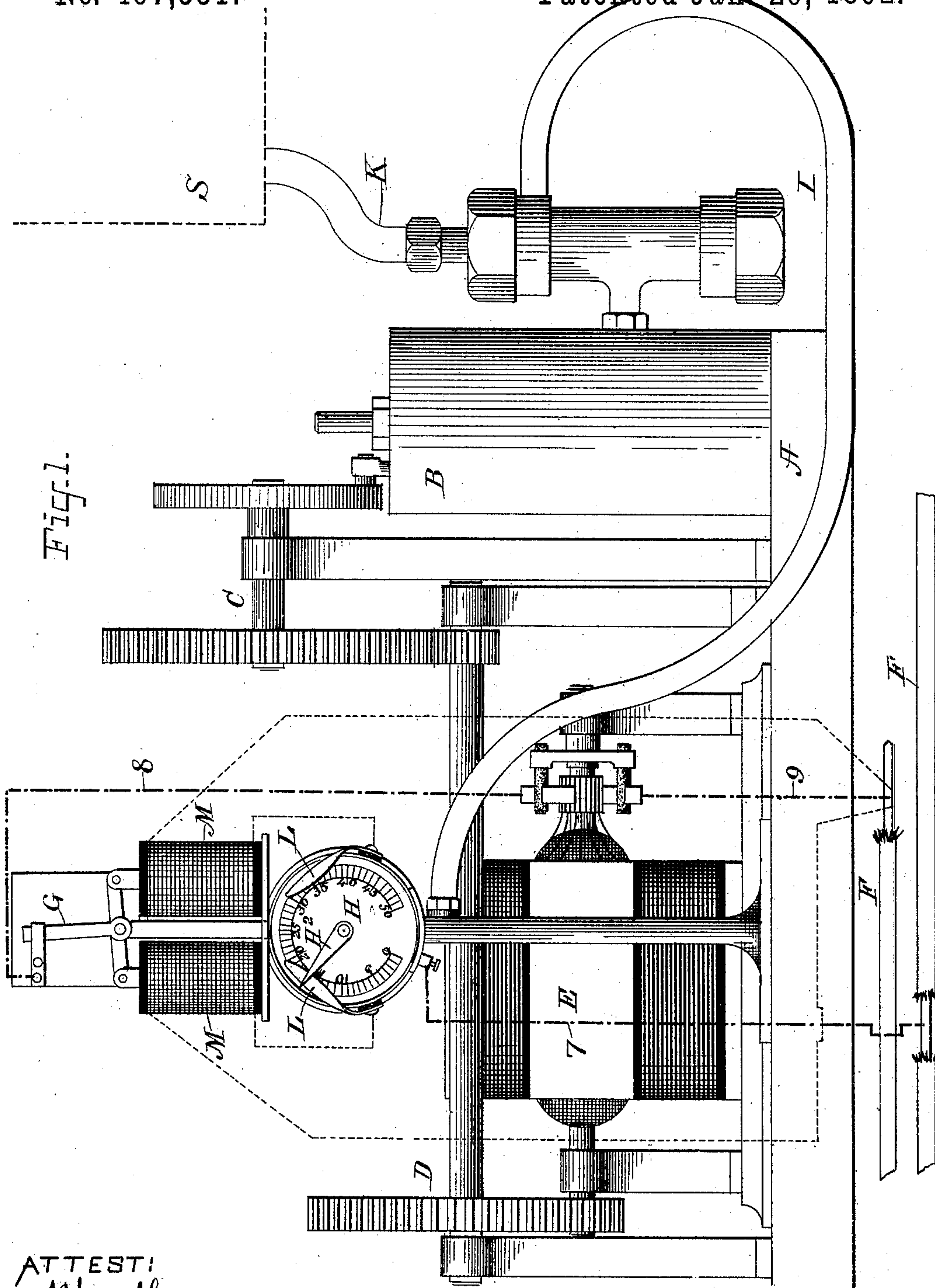
A. BERGMANN, Dec'd.

B. BERGMANN, Administratrix.

AUTOMATIC ELECTRIC CONTROLLER FOR AIR PUMPS.

No. 467,551.

Patented Jan. 26, 1892.



ATTEST:
J. A. Hurd
Wm. H. Cooper

INVENTOR
Adolph Bergmann
By H. C. Townsend
Attorney

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2 Sheets—Sheet 2.

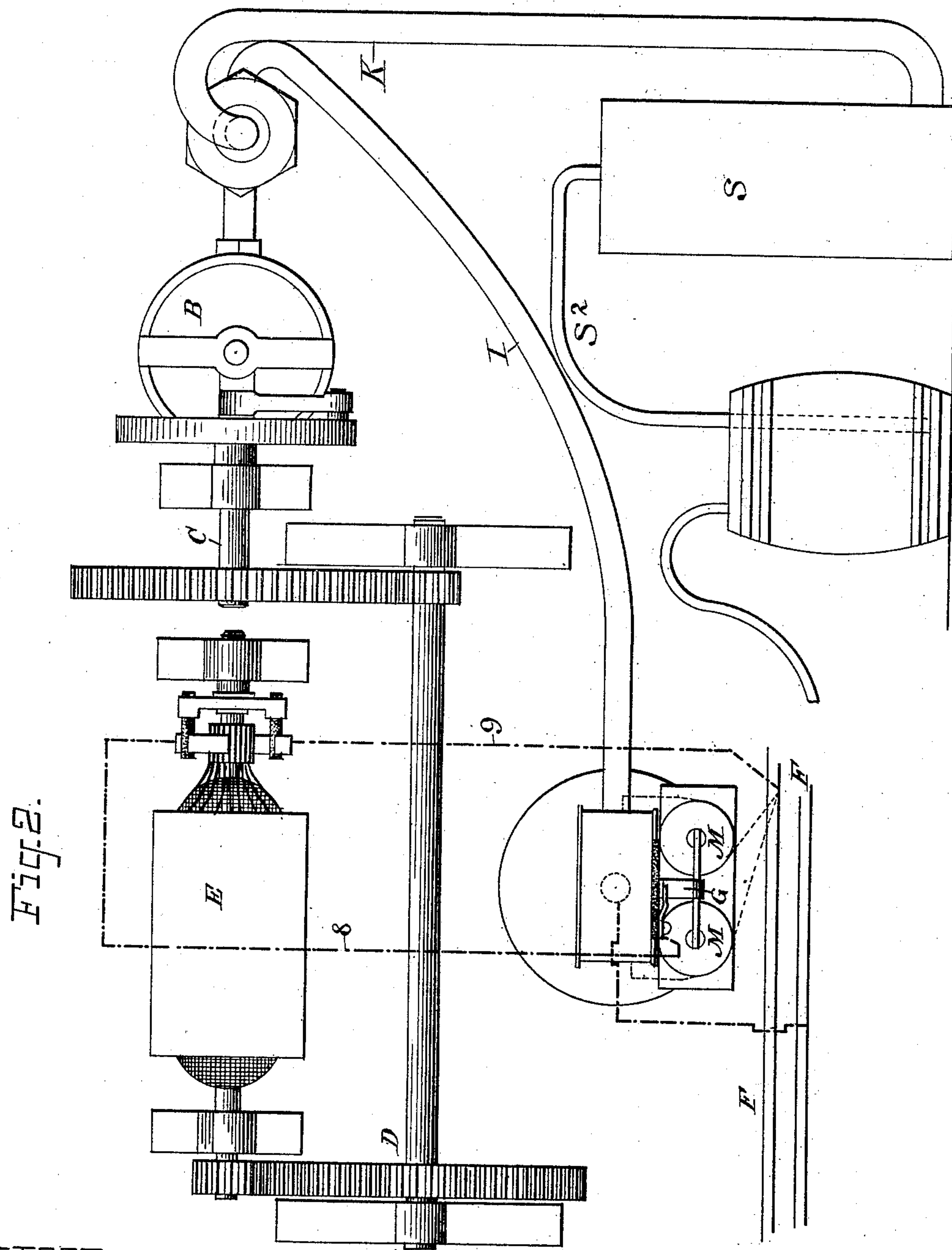
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UNITED STATES PATENT OFFICE.

ADOLPH BERGMANN, OF NEW YORK, N. Y.; BERTHA BERGMANN ADMINISTRATRIX OF SAID ADOLPH BERGMANN, DECEASED.

AUTOMATIC ELECTRIC CONTROLLER FOR AIR-PUMPS.

SPECIFICATION forming part of Letters Patent No. 467,551, dated January 26, 1892.

Application filed September 18, 1890. Serial No. 365,430. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH BERGMANN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Apparatus for Maintaining Pressure of Air or Gas in Dispensing Malt Liquors, of which the following is a specification.

My invention relates, generally, to means employed for maintaining pressure of air or gas in a tank or receptacle which is connected with casks or barrels containing beer or other malt liquor, the pressure of said air or gas being used to force the liquor from the faucet. Heretofore it has been usual to employ an air-pump to be operated by hand or else to use a water or other motor, which is brought into operation by hand when the pressure becomes insufficient.

My invention provides a means whereby the pressure may be maintained automatically in the tank which is connected with the barrels or casks; and the invention consists in the combination, with the air or gas tank which is connected to the casks or barrels containing the malt liquor, of an air or gas pump supplying air under pressure to said tank, a suitable air or gas pressure gage connected with said tank or with the passages leading from the pump thereto, and means, as hereinafter described, controlled by said pressure-gage for starting and stopping the electric motor which runs the pump.

My invention consists, also, in a simple and compact organization of the apparatus, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of an apparatus combined and adapted to operate in accordance with my invention. Fig. 2 is a plan of the apparatus.

A indicates a suitable base-plate upon which the parts are mounted.

B is the air or gas pump, the cylinder of which is mounted in vertical position upon said plate A.

E is an electric motor, the driving-shaft of which is mounted horizontally in vertical standards upon said plate A, and D is a counter-shaft, also mounted upon said base-plate

in suitable bearings or standards and geared to the armature-shaft, as shown.

C is the crank-shaft for the pump. Said crank-shaft is mounted upon a standard on the base-plate, as shown, and carries at one end the crank connected to the cylinder on the pump and at the other end a gear which gears directly to the said counter-shaft D.

S is the air or gas tank or receptacle, into which the pump B forces the air or gas directly and maintains a supply of air or gas therein under pressure, as hereinafter described.

K is the pipe connecting the pump with the air or gas space in said tank, while I is a pipe which, by being connected with the pipe or passage K, leading from the pump to the air-space in tank S, communicates the pressure to a gage to be presently described.

S² is the pipe which connects the tank with the barrel, keg, or other receptacle containing the liquid which is to be forced out of such receptacle by the air or gas pressure delivered from the tank.

F F are electric mains from which current is taken for operating the motor in any ordinary or proper manner.

G is the starting and stopping switch, of any desired character, placed in the circuit of the motor and adapted when in one position to disconnect the motor from the mains F F and in the other to close the circuit from one main to the other through the said motor. The switch is shown in the position to close the circuit. The starting and stopping switch is controlled as to its position by means of the pressure-gage, which is connected with the air tank or receptacle by means of pipe K, as just stated.

H indicates the pressure-gage, which is mounted upon a standard fastened to the base-plate and is provided with a movable arm or pointer H², of conducting material, that moves under the variations of pressure in the tank, with whose air-space the pump is directly connected.

L L are conducting-springs mounted upon the case of the pressure-gage, but suitably insulated therefrom and placed in position so that the movable arm or pointer H² as it swings

backward and forward will rub over the face of said springs. One of these springs is placed so that the arm H^2 will close contact upon it when the pressure rises to a certain point, while the other is placed at a distance from the former and in position to close contact when the pressure falls to a certain determinate point. The springs are preferably so arranged that the movement of the arm H^2 may continue after it has closed contact.

The starting and stopping switch G is actuated by means of two electro-magnets M M, the cores of which are attached, respectively, to the opposite ends of the lever carrying said switch. When one of said magnets is excited, the switch is thrown to starting position, and when the other magnet is excited its position is reversed and the switch is opened. The two magnets are in circuits respectively leading from the contacts L L, as indicated.

The circuit of the motor may be made, as indicated, by a connection taken from one of the mains F through the case of the gage, which is in electrical connection with the frame supporting the switch G. From the fixed contact of the switch a connection is taken to one pole of the electric-motor circuit, the other pole being connected to the opposite main F. The electro-magnets M connect at one terminal to the latter main, their opposite terminals being connected to the contacts L L. The circuit for one or the other magnet will obviously be completed whenever the arm H^2 , which is in connection with the frame of the gage, comes into contact with the spring L.

The general operation of the apparatus is as follows: In the position of the parts shown the circuit for the motor is closed through the starting-switch from one main F by a connection 7 to the frame of the gage, and thence to the starting-switch G, from which the circuit is continued by wire 8 through the motor and from the motor by wire 9 to the opposite main F. A connection from one main to the other also exists by wire 7, pressure-gage arm H^2 , a contact L, and by one of the magnets M to the opposite main. Under this condition, the starting-circuit of the motor being complete, the motor will run and drive the pump, thus maintaining the pressure in the air-tank D so long as such pressure remains at the point where the arm H^2 will remain in contact with the spring L, as shown in the drawings. When the pressure rises sufficiently to carry the contact H^2 off the spring L, the circuit of the magnet M first closed will be opened; but the starting-switch will remain in the position indicated until the pressure rises sufficiently to operate the pressure-gage so as to close the circuit upon the other spring L, when the other magnet M will be excited and the starting-switch will be opened, so as to stop the electric motor and pump. The starting and stopping switch will maintain such circuit-opening position until the first magnet is again excited. As the pressure in the tank falls the gage-arm H^2

will move back toward its first position; but the pump will remain at rest until the pressure falls so that the arm H^2 is restored to connection with the first contact L, corresponding in position to the lowest pressure which it is desired should be reached in the tank. When this occurs, the starting-switch will be thrown into position to start the motor and the pump will begin to act to keep up the pressure or increase it until the pressure-gage receives a pressure sufficient to stop the motor in the manner just explained. It is obvious that the variations of pressure permissible will depend upon the distance that the arm H^2 may travel in passing from contact with one spring L to contact with the other. This distance may be greater or less, as desired, but is preferably made small, so that the variations of pressure shall not be very great.

While I have indicated in the drawings one form of pressure-gage that may be used for carrying out my invention, I do not limit myself thereto and contemplate employing any device which will be responsive to variations of pressure, and which may be thereby moved so as to operate upon any starting and stopping device of the motor which drives the pump.

While I have shown the starting and stopping circuit for the motor as controlled indirectly by the gage through the intervention of the magnets M M, I do not wish to be understood as limiting myself to such arrangement, the essence of the invention as applied to an electric motor used for driving the pump consisting in controlling the starting-circuit by the variations of pressure in the tank; nor do I limit myself to any particular form of electric motor or construction of starting and stopping switch therefor.

What I claim as my invention is—

1. The combination, substantially as described, of an air or gas pump, an air tank or receptacle the air-space of which is connected directly with said pump and is supplied with air or gas under pressure thereby, a cask, barrel, or other receptacle from which malt liquors are dispensed, connected with said tank, a pressure-gage, also connected with said tank, an electric motor, an electro-magnetic starting and stopping switch for the latter, and a circuit-controller governed by the pressure-gage and connected to the magnet or magnets of the starting-switch, as and for the purpose described.

2. The combination, substantially as described, of the electric motor, the air-pump, the air-tank connected directly with said pump and supplied with air under pressure thereby, a pipe or passage connecting the tank with a receptacle for beer or other malt liquor, a pressure-gage connected with the tank or air-passage between the same and the pump, a swinging conducting-arm H^2 for said gage, two insulated contacts located in position to close circuit, respectively, when the conducting-pointer swings in one direction or the

other, electro-magnets connected to said contacts, respectively, and a starting and stopping switch actuated by said magnets.

3. The combination, substantially as described, of an air or gas tank, an air-pump B, which forces air directly into said tank, an electric motor driving said pump, a starting and stopping switch therefor, two electro-magnets having movable cores suspended at opposite ends of the lever carrying said switch, a pressure-gage connected with said air-tank, and a movable conducting contact-arm H², connected with said pressure-gage and movable over springs secured in position to be engaged by said arm, said springs being electrically connected with the electro-magnets.

4. The combination, substantially as described, of an air or gas tank S, a pipe S², connecting the same with a cask or receptacle containing beer or other malt liquors, a pump B, connected directly with the air-spaces in said tank, a pressure-gage H, a pipe I, connecting the tank and pressure-gage, an electric motor, a starting and stopping switch G therefor, electro-magnets M, contact-springs L L, and a movable pressure-gage arm H², as and for the purpose described.

5. The combination, substantially as described, in an apparatus for maintaining a

constant pressure of air or gas in a tank, of an air-pump B, connected with the air-space of said tank directly, an electric motor E, the counter-shaft D, mounted in standards on the base-plate for the motor, and the crank-shaft C for the air-pump, also mounted on said base-plate and gearing directly with said crank-shaft, as and for the purpose described.

6. In an apparatus for maintaining pressure of air or gas in a tank, the combination, substantially as described, of an air-pump B, having a vertical cylinder mounted on a suitable base-plate A, a driving electric motor having a horizontal armature-shaft, the counter-shaft D, mounted on said base-plate, a crank-shaft C, gearing with the counter-shaft and also mounted on the base-plate, and an air-gage carried by a standard fastened to said plate and controlling the circuits for electro-magnets which operate the starting and stopping switch for the motor.

Signed at New York, in the county of New York and State of New York, this 13th day of September, A. D. 1890.

ADOLPH BERGMANN.

Witnesses:

WM. H. CAPEL,
BARTON B. WARD.