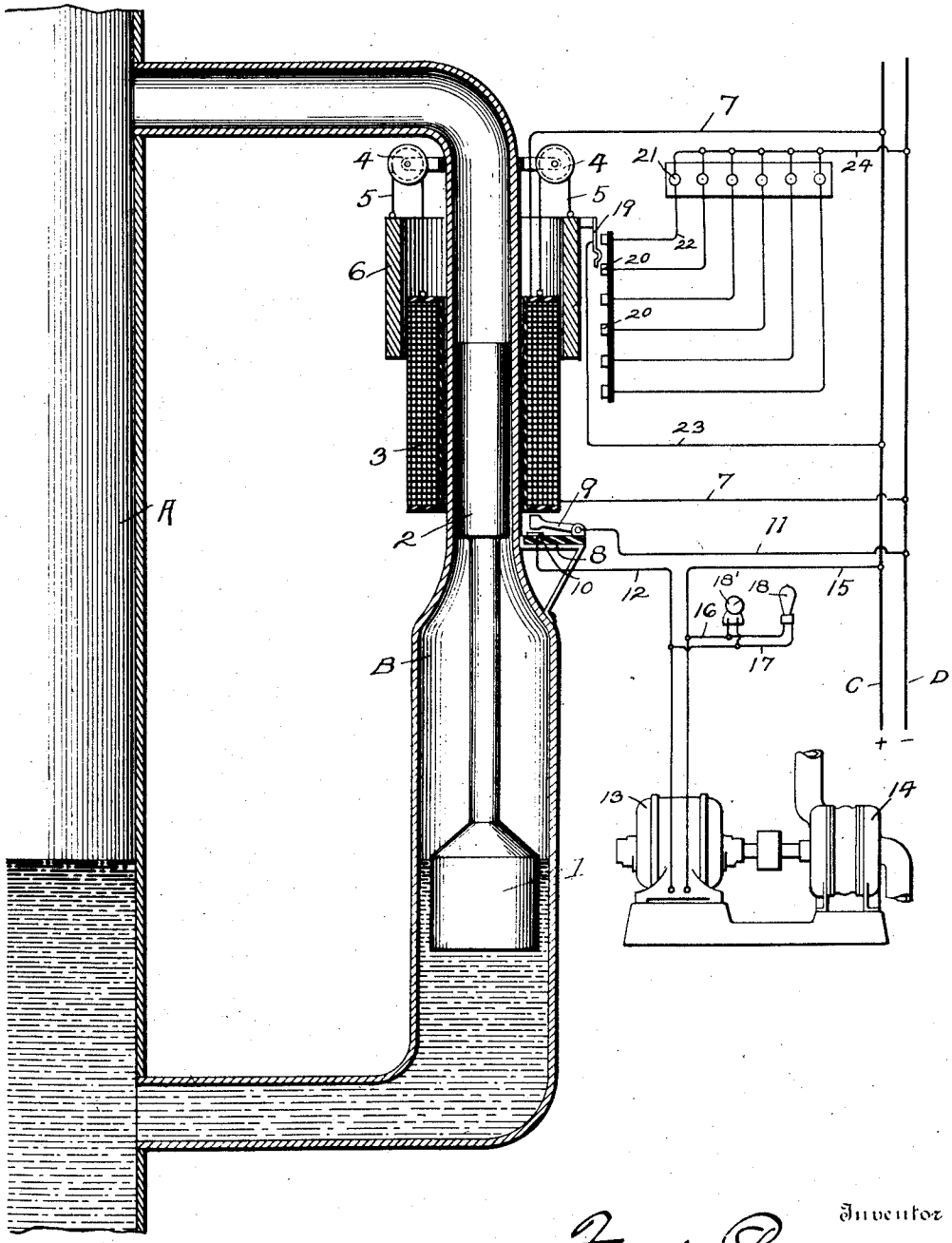
F. PEARSON.

LEVEL INDICATOR FOR BOILERS.

APPLICATION FILED NOV. 15, 1909.

986,210. Patented Mar. 7, 1911.



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UNITED STATES PATENT OFFICE.

FRANK PEARSON, OF MOUNT RAINIER, MARYLAND.

LEVEL-INDICATOR FOR BOILERS.

986,210. Specification of Letters Patent. Patented Mar. 7, 1911.

Application filed November 15, 1909. Serial No. 528,085.

To all whom it may concern:

Be it known that I, FRANK PEARSON, a citizen of the United States, residing at Mount Rainier, in the county of Prince Georges and State of Maryland, have invented certain new and useful Improvements in Level-Indicators for Boilers, of which the following is a specification.

My invention relates to an improvement in a water level indicator and feed water regulator for boilers, and the object is to provide means whereby an electrical impulse will be made for indicating the level of the water in the boiler, and another impulse which will cause the boiler to be filled with water when the water recedes below the proper level.

The invention consists of certain novel features of construction and combinations of parts which will be hereinafter described and pointed out in the claims.

In the accompanying drawing, the figure is a vertical sectional view showing my invention applied to a boiler.

A represents the boiler, and B represents a tube which is preferably made of brass. This tube is so connected with the boiler that the water from the boiler will enter the pipe or tube and will be at the same height in the tube as in the boiler. In other words, the height of water in the tube will indicate the level of the water in the boiler. Mounted in the tube is a float 1, to which is connected an armature 2, which may be of iron. Mounted upon the tube is a solenoid 3, which is capable of vertical movement upon the tube. Pulleys 4, 4, are mounted upon the tube and passing over the pulleys are ropes 5, 5, which are connected to the solenoid and to an annular sleeve 6 which acts as a counterweight for the solenoid, the solenoid being preferably connected to the main wires C and D by wires 7. Mounted upon the tube is a plate 8, to which is pivotally mounted a contact arm 9. A contact point 10 is mounted upon the plate which the arm is adapted to engage to create a circuit. A wire 11, leading from the negative wire D, is connected to the contact arm 9, and a wire 12 leads from the contact point 10 to a motor 13, to which pump 14 is connected and caused to operate upon the operation of the motor. Leading from the positive wire C, is a wire 15, which also leads to the motor 13. Wires 16 and 17 lead from the wires 15 and 12, respectively, and connected to the wires is a bell 18′ and a colored light 18.

The pump 14 is adapted to be connected to any suitable supply, and deliver the water to the boiler. As the water is admitted to the boiler, the float 1 will be caused to move upwardly in the tube B, forcing the armature 2 upward. The attraction between the armature and solenoid will cause the solenoid to be moved upward, thereby breaking the electrical connection between the solenoid and the contact arm 9, which causes the pump to be stopped. The lowering of water in the boiler will cause the float to be lowered, which will draw the armature downward, causing the solenoid to be drawn downward, and as the solenoid comes into contact with the contact arm 9, the arm will be brought into engagement with the contact point 10, whereby a circuit is created, causing the signal to be given and the pump to be operated for pumping water to replenish the boiler. The counter-weight 6 will cause an even movement of the solenoid during its movement either upwardly or downwardly.

A contact arm 19 is connected to the counter-weight 6 which is adapted to engage contact points 20, 20, which are arranged at different intervals. These contact points are each connected to a light 21 for indicating the level of the water in the boiler. The contacts 20 and the lights 21 are connected by wires 22, 22. A wire 23 connects the positive wire C with the contact arm 19, and a wire 24 connects the negative wire D to the lights 21. When the contact arm 19 comes in contact with any of the contacts 20, the light which is connected thereto will be lighted, indicating the level of the water in the boiler. If the contact arm 19 should come in contact with the uppermost contact point, the light which is connected to the uppermost contact 20 would be lighted, denoting that the water was very low or at the lowest level, and then it would be necessary to replenish the boiler, but if the contact arm 19 should come in contact with the lowermost contact point 20, the light which is connected to this contact point would be lighted and it would indicate that the water was at its proper level and that a sufficient amount of water was in the boiler. The lights 21 are all regulated by the movement of the counter-weight 6. As the counter-

weight 6 moves upward or downward, the lights will be lighted as the contact arm comes in contact with the different contact points 20. The lights 21 can be placed in the office, or at any convenient point so that the engineer can tell at once the level of the water in the boiler by examining the lights, without the necessity of examining the usual water gage upon the boiler.

In the disclosure which has been made as to the operation of the pump or signals, I do not care to be restricted, as some other device could be used indicating the level of the water, such as a recorder, indicator, or an alarm sounded.

From the foregoing, it will be seen that I have provided means whereby some indication can be made of the contents of a boiler which will be positive in its operation in causing a pump to be operated for replenishing a boiler or for sounding an alarm.

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

1. A level indicator for boilers comprising a tube, a solenoid slidably mounted on the tube, a float received in the tube having an armature, said armature attracting and moving the solenoid upon the movement of the float, an electrical circuit, and means operated upon the movement of the solenoid for making or breaking the circuit.

2. A level indicator for boilers, comprising a tube, a solenoid slidably mounted upon the tube, a float received within the tube having an armature said armature attracting and moving the solenoid upon the movement of the float, an electrical alarm circuit, and a contact arm adapted to be engaged by the solenoid for making or breaking the circuit.

3. A level indicator for boilers, comprising a tube, a solenoid slidably mounted upon the tube, means for supporting the solenoid upon the tube, a float received in the tube, an armature in the tube, said armature attracting and moving the solenoid upon the movement of the float, an electrical alarm circuit, and a contact arm adapted to be engaged by the solenoid for making or breaking the circuit.

4. A level indicator for boilers comprising a tube, a solenoid movably mounted upon the tube, a counterweight connected to the solenoid, an electrical circuit, a float received within the tube having an armature, said armature adapted to attract and reciprocate the solenoid, and means adapted to be operated upon the movement of the solenoid for making or breaking the circuit.

In testimony whereof I affix my signature, in the presence of two witnesses.

FRANK PEARSON.

Witnesses:
C. A. NEALE,
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