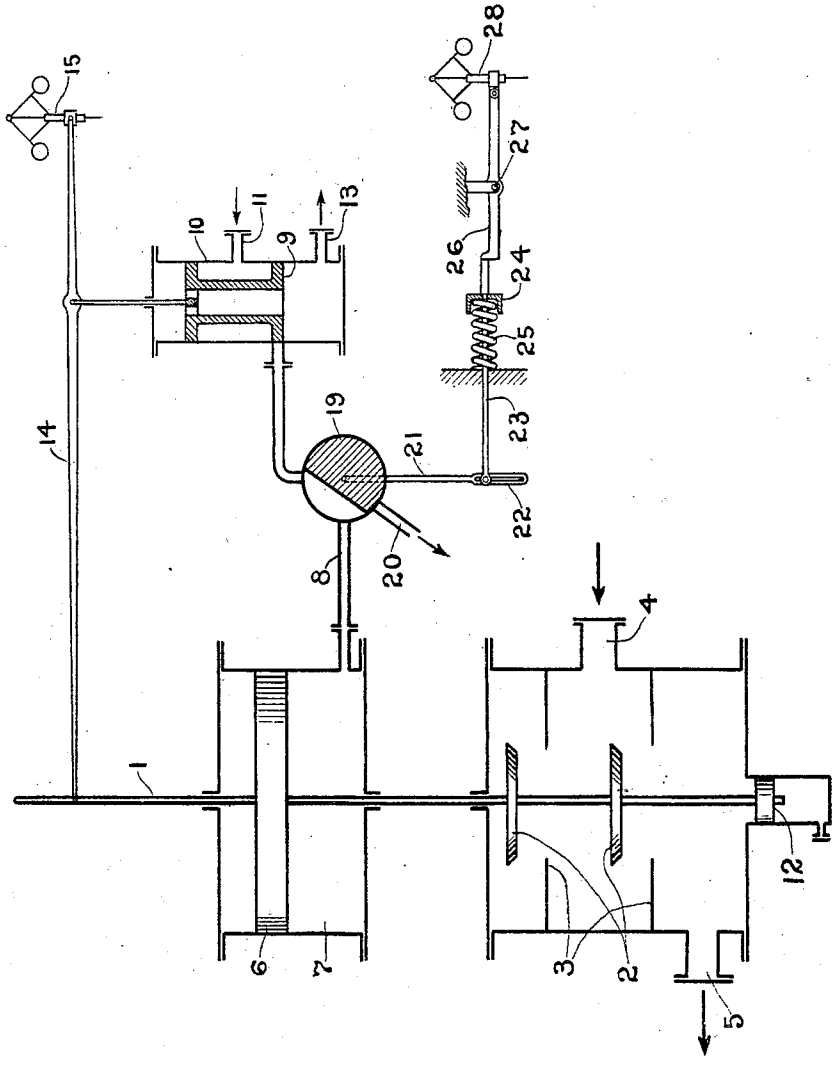
No. 863,197. PATENTED AUG. 13, 1907.

A. M. MATTICE.

SAFETY CONTROL DEVICE.

APPLICATION FILED FEB. 15, 1906.



WITNESSES

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ASA M. MATTICE, OF NEW YORK, N. Y., ASSIGNOR TO ALLIS-CHALMERS COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

SAFETY CONTROL DEVICE.

No. 863,197. Specification of Letters Patent. Patented Aug. 13, 1907.

Application filed February 15, 1906. Serial No. 301,147.

To all whom it may concern:

Be it known that I, ASA M. MATTICE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Safety Control Devices, of which the following is a specification.

This invention relates to a safety control device.

This invention has utility when applied to a valve controlling the flow of motive fluid to a prime mover, the speed of which it is desirable to confine within certain limits and stop should excessive speed be developed.

Referring to the drawing: The reciprocable element 1 carries the puppet valve 2, which in closed position engages the seats 3. This valve controls the flow of motive fluid from the inlet passage 4 to the outlet passage 5. The reciprocable element 1 carries the weighty piston 6 situated in the cylinder 7. The lower side of the piston is adapted to receive fluid to unseat the valve. In the instance shown, the fluid could be an oil entering the cylinder 7 from the passage 8. The flow of fluid through the passage 8 is automatically controlled. In this instance this control is effected by a relay governor. The flow of fluid through the passage 8 is controlled by the valve 9 situated in the chamber 10. The fluid under pressure enters the chamber 10 at the opening 11. Fluid exhausted from the chamber 7 may pass through the passage 8 and below the valve 9 to exhaust opening 13. A piston 12 is provided at the lower end of reciprocable element 1 and operates in a pocket formed in the casing of puppet valve 2. The pocket is open to atmosphere so that there is a steam pressure above the piston 12 tending to seat the reciprocable element 1 or valve 2 aside from the gravity effect due to weighty piston 6.

Valve 9 is actuated by the floating lever 14 which has one end connected with the fly ball governor 15 and the other end to the reciprocable element 1. The governor is actuated by the machine supplied with fluid delivered at outlet passage 5.

In the passage 8 intermediate the cylinder 7 and chamber 10 is interposed the valve 19 which by oscillation may connect the fluid below the piston 6 with the exhaust passage 20. This oscillatory valve 19 is actuated by means of arm 21. A slot 22 is formed in the outer end of arm 21 and serves as pin connection with sliding rod 23. A collar 24 is fixed upon rod 23 and is engaged by spring 25 reacting against any convenient means. Abutting the end of rod 23 is the end of a lever 26 having fulcrum 27. The other end of lever 26 is connected to the operating part of fly ball governor 28, also actuated by the machine supplied with fluid delivered at outlet passage 5.

Operation: Should the speed rise above the limit set, the balls of the governor 15 will fly outward and the lever 14 about the reciprocable element 1 as a fulcrum will force the valve 9 upward, thereby connecting the lower side of the piston 6 through the passage 8 with the exhaust opening 13, thereby permitting the heavy weighted reciprocable element 1 to move downward. This movement will, through the lever 14 with the fly ball governor 15 as a fulcrum depress the valve 9 back to closed position. Should the speed fall below the set limit, the balls of the governor 15 would move inward and the lever 14 about the reciprocable element 1 as a fulcrum would depress the valve 9, permitting fluid under pressure entering at 11 to pass through the passage 8 and lift the reciprocable element 1 and through the lever 14 acting about the fly ball governor 15 as a fulcrum, force the valve 9 up to closed position. It will be seen that by the means provided, if anything should happen to the supply of relay pressure, the puppet valve would go to safety, that is to say, would close by gravity and pressure on piston 12, either or both, and thus cut off the main supply.

The operations just described are those contemplated under normal conditions. However, if for any cause the relay should become inoperative, or excessive speed suddenly be acquired by the motor, an emergency device is provided to cut off the supply of motive fluid and thereby at once stop the prime mover. This emergency device controls a valve 19 intermediate the relay and the cylinder 7. This valve 19 is so set that in normal operation it permits the passage 8 to connect the cylinder 7 with the seat of the valve 9. Should sudden or excessive rise in speed develop, the fly ball governor 28, which is set to come into effective action at this excessive speed, will disengage the abutting ends of lever 26 and rod 23, thus allowing the spring 25 under compression against collar 24 to slide rod 23 so as to actuate arm 21, oscillate the valve 19 so that that portion of the passage 8 intermediate the valve 19 and the cylinder 7 is thrown into communication with the exhaust passage 20. This auxiliary or secondary exhaust connection automatically permits the weighted reciprocable element 1 to at once seat the valve.

The governor 28 instead of tripping a spring to open the valve 19, may obviously directly operate the valve 19. In this case it is not necessary to reset the device and it is ready to operate at any time. This direct connection, however, is objectionable as too much work is thrown upon the governor.

Obviously when the trip is used a gravity operating weight might be substituted for the spring.

What is claimed and it is desired to secure by Letters Patent, is:—

1. The combination with a fluid actuated reciprocable element, of a governor for controlling the flow of a fluid

to move said element, and a second governor adapted to cause said member to move independently of said first mentioned governor.

2. The combination with a reciprocable element of a cylinder, a valve for controlling the flow of a fluid to said cylinder, a governor adapted to operate said valve, and a second governor adapted to cause the exhaust of fluid from said cylinder.

3. The combination with a reciprocable element of a cylinder, a valve for controlling the flow of a fluid to or the exhaust of a fluid from said cylinder, a governor adapted to control said fluid, and a second governor adapted to cause the exhaust of fluid from said cylinder independently of said first mentioned governor.

4. The combination with valve mechanism, of a piston connected thereto, a cylinder within which said piston is adapted to move, a valve adapted to control the flow to and the exhaust of a fluid from said cylinder, a governor for controlling said valve, a second valve adapted to permit the exhaust of fluid from said cylinder, and a second governor adapted to actuate said second valve independently of said first mentioned governor.

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

ASA M. MATTICE.

Witnesses:
G. F. De Wein,
Max Rotter.