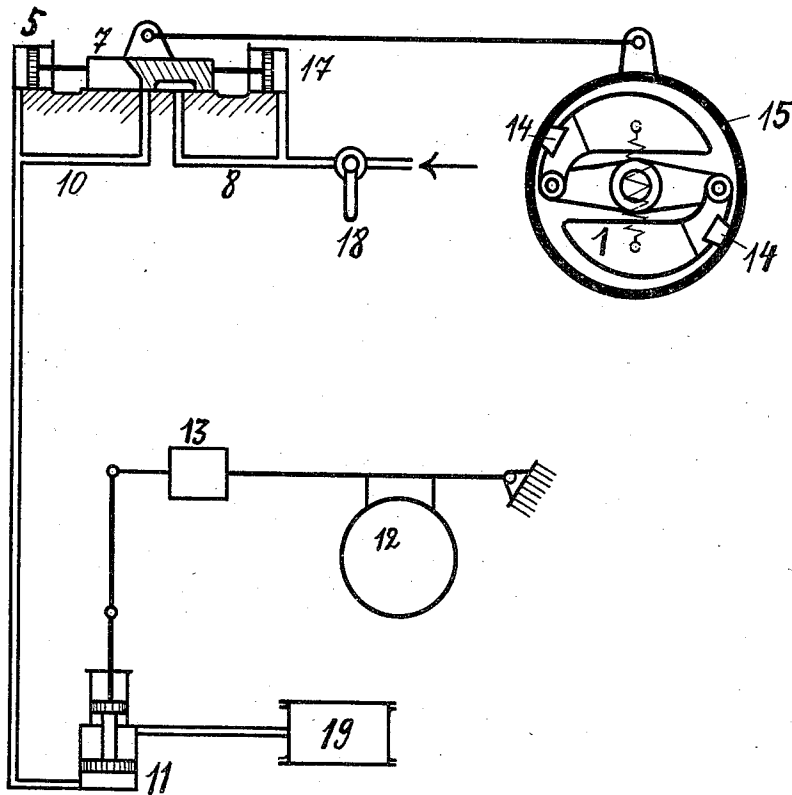


F. JORDAN & H. SAUVEUR.
 SPEED CONTROLLED BRAKE.
 APPLICATION FILED SEPT. 4, 1909.

1,043,437.

Patented Nov. 5, 1912.



Witnesses:

Karl Behrend
 T. Hennig

Inventors:

Franz Jordan
 Hans Sauveur

UNITED STATES PATENT OFFICE.

FRANZ JORDAN AND HARRY SAUVEUR, OF BERLIN-FRIEDENAU, GERMANY.

SPEED-CONTROLLED BRAKE.

1,043,437.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed September 4, 1909. Serial No. 516,196.

To all whom it may concern:

Be it known that we, FRANZ JORDAN and HARRY SAUVEUR, both subjects of the German Emperor, and residents of Berlin-Friedenau, Germany, have invented certain new and useful Improvements in Speed-Controlled Brakes, of which the following is a specification.

The braking power of the mechanical lowering brakes hitherto known, actuated by compressed air or some other pressure-medium, and automatically controlled by a speed-governor, cannot be adjusted to suit the fluctuating loads and gradients. The condition of equilibrium necessary for perfect service is therefore impossible. The control is quite unstable, as the pressure constantly fluctuates between zero and its maximum value, and the speed of operation oscillates about the speed set by the speed governor. In such cases, on the other hand, where the brake-pressure may be regulated by the hand of the operator, the former is absolutely dependent upon the skill and attention of the latter in observing the time of greatest speed, and in adjusting the most suitable brake-pressure. These drawbacks are removed by the present invention, which not only automatically controls the speed independently of the operator, but also automatically adjusts the braking-pressure to the static position of the load. This is done in a very simple manner by effecting the adjustment of a distributing organ for the pressure-medium of the brake-cylinder by means of a speed-governor together with the brake-pressure of the brake-cylinder.

In the drawing, 1 represents a centrifugal governor of a lifting gear or vehicle. This is so constructed that the centrifugal force of the governor weights causes the sliding clutch 14 to press with a sufficiently great pressure against a rotatable slip-ring 15, mounted on the axle and when moving in the "lowering" direction, this clutch takes the slip-ring along with it when a certain speed, which may be accurately set beforehand, has been attained.

For the sake of clearness, the slip-ring is shown simply connected with the distribution slide-valve 7 by means of a rod 16. The pistons 5 and 17, the cylinders of which are connected with a passage 10, leading to the brake-cylinder and with the inlet-passage respectively, press against the distribution slide-valve in opposite directions.

The brake-cylinder 11 is represented in this case as a two-chamber brake-cylinder, with a reservoir 19 for the pressure-medium of the upper chamber. The brake is thrown into, and out of gear by means of the inlet-valve 18, which is situated in the supply conduit of the pressure-medium. This lowering-brake controller operates in the following manner:—On raising the brake the pressure-medium passes through the inlet-valve 18 into the cylinder 17, and moves the pistons of the two cylinders 5 and 17, the valve 7, and the slip-ring 15 on into the left end-position. The pressure-medium, in this case, say, compressed air, then enters the cylinder 5, from where it passes on to the lower chamber of the brake-cylinder 11, and through an overflow-vent into the reservoir 19. As the pistons 5 and 17 are of the same size, the pressure working in opposite directions is equalized, when the pressure-medium is of the same density on both sides of the distribution valve.

In order to reverse the movement of the valve, the centrifugal governor only has to overcome the slight frictional resistance of the control. If the regulating power of the centrifugal governor has, under the influence of the load or motor, become great enough, the light slip-ring is carried along by the rotating sliding-clutch and the slide-valve thus rapidly moves into the "outlet" position. As a result of this escape of the pressure-medium, the pressure in the brake-cylinder and cylinder 5 is reduced, and the brake applied in proportion to the reduction of pressure. The piston 17, however, now overcomes the piston 5 in similar proportion. As the regulating power of the centrifugal governor increases with the square of the lowering-speed, but with nothing near the rapidity of the decrease of pressure which accompanies the escape of the pressure-medium, the equilibrium of the forces acting upon the slide-valve is destroyed, and the slide-valve moves back in an opposite direction to the centrifugal governor into the closing position.

If the centrifugal governor is to overcome the increased resistance for the second movement, the speed of the load must still increase. When this moment arrives, the same action as before takes place and is repeated until the brake-power, which increases in conformity with the decrease of pressure in the lower chamber of the brake-

cylinder, has become so great that it equalizes the surplus driving-power of the load or motor. The brake-controller also tends to keep the slide-valve in the closed position during the descent of the load, by immediately equalizing all fluctuations caused by changes in the driving or brake power, by allowing air to pass in and out. In case of leakage and the resulting pressure fluctuations in the brake-cylinder, the brake-controller, independent of the centrifugal governor, regulates the pressure before any variation in the speed of the load takes place. Here, as in construction 1, the same relation exists between brake-power and speed, so that in their action, the two are exactly alike.

If, at the moment when the brake is thrown out of action by the slide-valve, the slide valve is in the intermediate position the piston 5 moves the slide-valve into the "outlet" position, the pressure-medium escapes out of the brake-cylinder, and the brake is applied with its full power. As, when lowering loads, the brake-blocks are always in touch with the brake-pulley, no time is lost when applying the brake, and as a result of the gradual increase of brake-

power, all disagreeable and dangerous brake-shocks are avoided.

What we claim as our invention and desire to secure by United States Letters Patent is:—

In a mechanical brake, a centrifugal governor, including a slip ring, a distributing slide-valve, the said distributing slide-valve and slip-ring being connected by a rod, a brake cylinder with piston, cylinders having pistons pressing in opposite directions against the distributing slide-valve, the said cylinders being connected with a pressure-medium passage leading to the brake-cylinder and with an inlet passage for the automatic lowering of loads, substantially as and for the purpose set forth.

In testimony whereof we have hereto set our hands in the presence of two subscribing witnesses.

Berlin-Friedenau, this 31 day of January 1910.

FRANZ JORDAN.
HARRY SAUVEUR.

Witnesses:

HANS GROECK,
JOSEF WALLICH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."