J. W. FREEMAN.

HOISTING ENGINE.

APPLICATION FILED NOV. 2, 1909.

973,028. Patented Oct. 18, 1910.

Fig. 1.

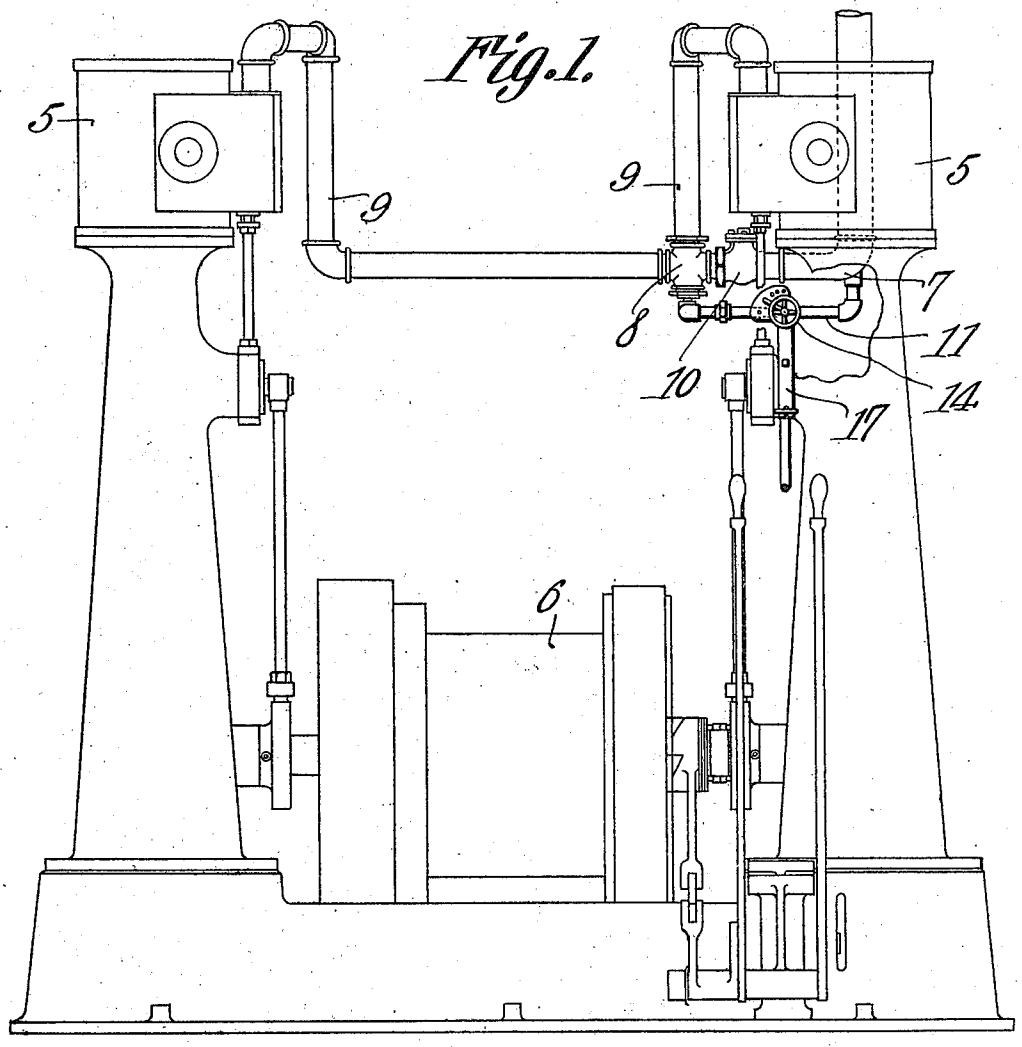
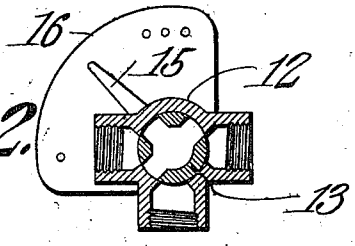


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN WELKER FREEMAN, OF JOPLIN, MISSOURI.

HOISTING-ENGINE.

973,028. Specification of Letters Patent. Patented Oct. 18, 1910.

Application filed November 2, 1909. Serial No. 525,916.

To all whom it may concern:

Be it known that I, JOHN W. FREEMAN, a citizen of the United States, residing at Joplin, in the county of Jasper and State of Missouri, have invented a new and useful Hoisting-Engine, of which the following is a specification.

This invention relates to hoisting engines and more particularly to that class which are designed for hoisting ore from mines, and its object is to provide an improved and easily operated speed controlling device by which the engine may be slowed down to the proper speed required for lowering and raising the tub to get it ready for its descent into the shaft.

The invention also has for its object to provide improved means for controlling the engine while it is running backward to lower the men into the mine.

With these objects in view, the invention consists in the novel construction and arrangement of parts to be hereinafter described and claimed, reference being had to the drawing hereto annexed, in which,

Figure 1 is an elevation of a hoisting apparatus showing the application of the invention; Fig. 2 is a vertical sectional view of the valve to be hereinafter described.

In the drawing is shown a first motion double engine steam hoister of the vertical type, the cylinders of the engines being indicated at 5, and the drum at 6. A suitable clutch mechanism for throwing the drum into and out of gear, and a brake to check the rotation of the drum, are also provided. These parts operate in the ordinary manner and as nothing is claimed with respect thereto, a detailed description is thought to be unnecessary.

At 7 is indicated a pipe for supplying steam to the cylinders 5, said pipe leading to a cross 8 from which branches 9 lead to the respective cylinders. In the pipe 7 is a throttle valve 10, around which a by-pass 11 extends. The by-pass is a pipe of considerably less diameter than the pipe 7. One end of the by-pass pipe is connected to the pipe 7 in front of the throttle valve 10, and its other end is connected to the cross 8. The by-pass therefore communicates with the steam supply on opposite sides of the throttle valve, in view of which it will be evident that when the throttle valve is closed, steam will be supplied to the engine cylinders by the way of the by-pass. In the by-pass pipe is a three-way valve comprising a casing 12 containing a rotary plug 13 having three ports coöperating with three passages in the casing, as is usual in valves of this type. The ports of the plug are so located that in one position of the plug the three passages are closed. The stem of the valve plug 13 is fitted with a hand wheel 14 for rotating it, and it also carries a pointer 15 which indicates on a dial 16 provided with suitable marks to indicate the position of the valve plug. One of the passages of the valve casing is connected to an air line 17.

In Fig. 2 of the drawings, the by-pass valve is set so that all three passages are closed. Now, when the valve is turned to the right slightly, it will let steam in from the passage at the right and through to the passage at the left, from which the steam passes to the cross 8, and then to the two cylinders 5. The throttle valve 10 being closed, the by-pass valve may be set at a point which will keep the engine moving at a slow speed, such as is required while dumping and raising the tub to get it ready to descend the shaft. When the tub is let down to the bottom of the shaft, the engines are running forwardly slowly, steam being admitted to the cylinders through the by-pass. When another tub has been hooked on below, the hoisterman opens the throttle valve, and when the tub has been hoisted, the throttle valve is closed. The tub is then dumped and pulled back in proper position for descending, by the small amount of steam which flows through the by-pass to the cylinders. The hoisterman is therefore saved the time it would take to operate the throttle-valve in order to pull the tub back to proper position for its next trip. When the men are being let into the mine, the hoisterman closes the throttle valve and turns the by-pass valve in a position to shut off steam from the cylinders, and at the same time to open the air line 17 to the cylinders. The drum is thrown in gear with the engine, and the engine is permitted to run backward by the rotation of the drum, the men being thus lowered into the mine. By the by-pass valve, the speed at which the men are lowered into the mine is kept under the control of the hoisterman.

The by-pass system herein described, results in a saving of time, as well as in considerable increase in the speed of operation of the apparatus, and a single hoisterman can readily control the apparatus.

Having thus described my said invention, what I claim as new and desire to protect by Letters Patent is:—

1. In a steam engine, the combination with a steam supply pipe to the cylinder, and a throttle valve therein; of a by-pass around the throttle valve, a valve in the by-pass, and an air line connected to the by-pass valve, and controlled thereby.

2. In a steam engine, the combination with a steam supply pipe to the cylinder, a throttle valve therein, and an air line; of a by-pass around the throttle valve, a valve casing in the by-pass having passages in communication therewith, and a passage communicating with the air line, and a valve in the casing controlling said passages, said valve in one position establishing communication with the first mentioned passages, and in another position between the air line passage and the one of the first mentioned passages which leads to the cylinder.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN WELKER FREEMAN.

Witnesses:
H. C. Mills,
J. H. Dietz.