No. 713,910. Patented Nov. 18, 1902.

M. P. McLAUGHLIN.

SAND VALVE MECHANISM.

(Application filed Aug. 26, 1902.)

(No Model.)

FIG. 1.

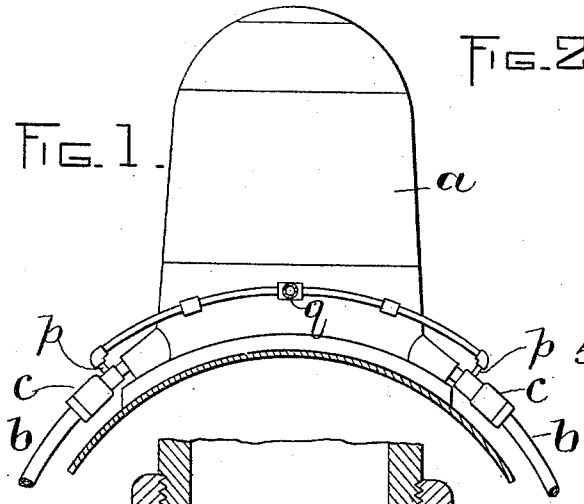


FIG. 2.

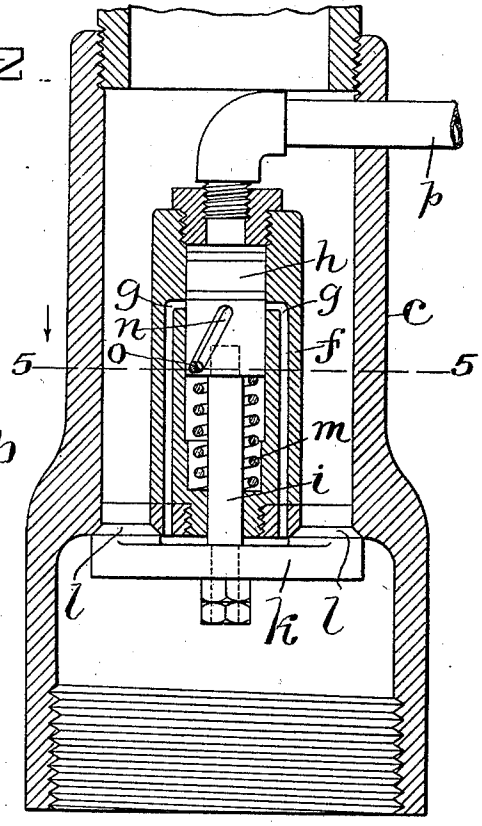


FIG. 3.

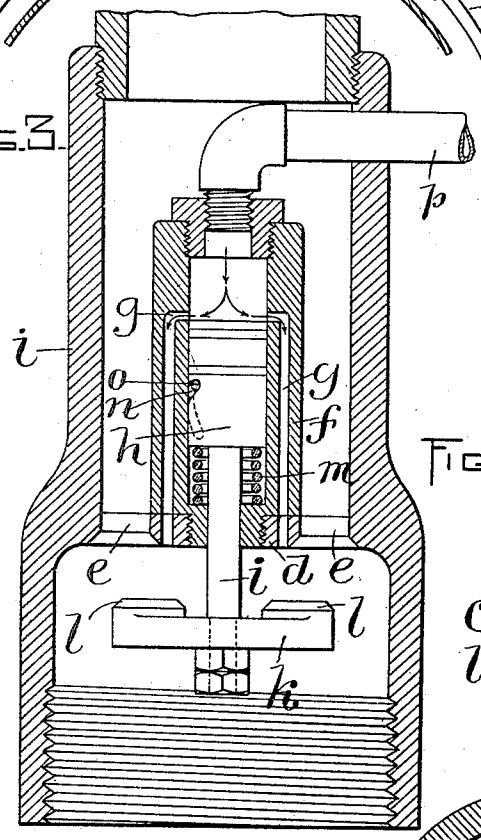


FIG. 4.

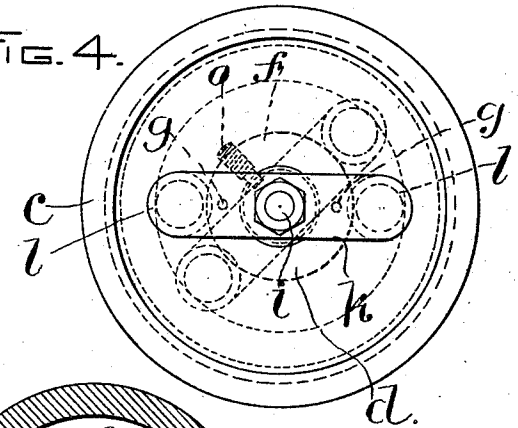
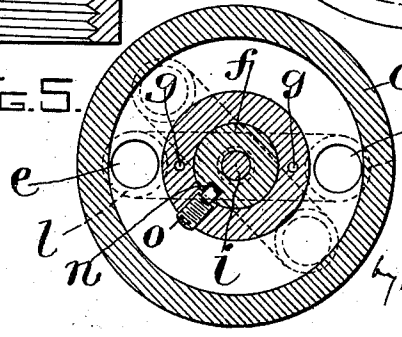


FIG. 5.



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SAND-VALVE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 713,910, dated November 18, 1902.

Application filed August 26, 1902. Serial No. 121,056. (No model.)

To all whom it may concern:

Be it known that I, MILTON P. McLAUGHLIN, of Wakefield, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Sand-Valve Mechanism, of which the following is a specification.

This invention relates to means for controlling the supply of sand to railroad-tracks and is designed for use in connection with steam, electric, and other motor cars or vehicles.

The object of the invention is to provide a structure of valve and the controlling mechanism therefor whereby the pressure of fluid, such as steam or air, may be employed to first open the sand-valve and instantly supply a current of fluid, whereby sand will be carried through the usual sand-pipes to the tracks.

A further object of the invention is to provide a device of this character in which the sand valve or valves will be automatically moved out of the path of the sand.

To these ends the invention consists in the construction and arrangement of parts substantially as hereinafter described and claimed.

Of the accompanying drawings, Figure 1 represents an elevation of an ordinary type of sand-box, the top of a locomotive-boiler being indicated in section, the pipes from the sand-box having my improved attachment connected therewith. Fig. 2 represents an enlarged section through one of the casings and the attachment shown in Fig. 1. Fig. 3 represents a section similar to Fig. 2, but with the internal parts in a different position. Fig. 4 represents an under plan view of Fig. 2. Fig. 5 represents a section on line 5 5 of Fig. 2.

The same reference characters indicate the same parts in all the figures.

A common type of sand-box is represented at *a*, while sand-pipes *b*, leading therefrom, are or may be of the usual type. Each sand-pipe adjacent to the sand-box has interposed therein, as a section of the length of said pipe, a casing *c*, formed with an internal cross web or partition *d*. The said web or partition *d* is provided with one or more sand-ports *e*, preferably two, as indicated in the drawings. Mounted upon said web or partition is a cylinder *f*, the drawings representing said cylinder as having a screw-threaded boss or lower end fitted to a central screw-threaded opening in the web or partition.

The walls of cylinder *f* are provided with ports *g*, connecting the upper end of the cylinder with the space below the web or partition *d*. Fitted to said cylinder is a piston *h*, having a rod *i* extending out through its lower end, said rod having secured thereto a cross head or arm *k*, each end of which is provided with a valve *l*, adapted to close the ports *e*. A spring *m* is interposed between the piston and the lower end of the cylinder and is adapted to normally hold said piston at the upper end of the cylinder, as represented in Fig. 2.

From the above description, in connection with the drawings, it will be obvious that upon the admission of fluid under pressure, such as steam or air, to the upper end of the cylinder the piston will be forced downward from the position shown in Fig. 2 to the position shown in Fig. 3, thus opening the valves and immediately thereafter opening the ports *g*.

In Fig. 1, *q* represents the main supply-pipe for steam or compressed air. From said pipe *q* branch pipes *t* lead, one to the upper end of each cylinder *f*. As the supply of fluid through the pipe *q* is under the control of the engineer, the simple operation of opening the valve for supplying steam or air to said pipe *q* will immediately open the sand-valves and then permit the supply of fluid to carry the sand through the pipes *b* to the rails.

To insure a lateral movement of the valves while opening, so that they will pass out of alinement with the sand-ports *e*, I preferably form an inclined groove *n* in the piston *h* and locate a dowel or guide pin *o* in the cylinder *f*, so that its inner end will extend into said groove *n*. This construction is clearly illustrated in Figs. 2, 3, and 5 and will readily demonstrate that the downward movement of the piston in the cylinder causes a spiral movement of the valves *l*, so that while opening they move laterally to the position shown by dotted lines in Fig. 5. By this construction

...es are removed from a p...
...uld be liable to be cut ...
...ing sand.

...—

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...mmunicating with said ca...
...-port, a cylinder, and a ...
... connected with said v...
...ing provided with a fluid...
...covered by the piston. ...
...device of the character d...
... a casing having a sand-...
...port, the said valve b...
... laterally as it moves a...
...d fluid-operated means ...
...e.

...vice of the character d...
... A casing having a p...
... sand-ports, a cylinder ...
...ing its walls formed wi...
...he upper ends of said p...
... the upper end of the c...
...id cylinder and havi...
...h valves adapted to c...
...nd a spring between the ...
...er end of the cylinder.