June 17, 1930. S. J. RAETZ ET AL 1,764,181

SAFETY VALVE FOR INJECTOR OVERFLOW

Filed May 2, 1927

Fig. 1

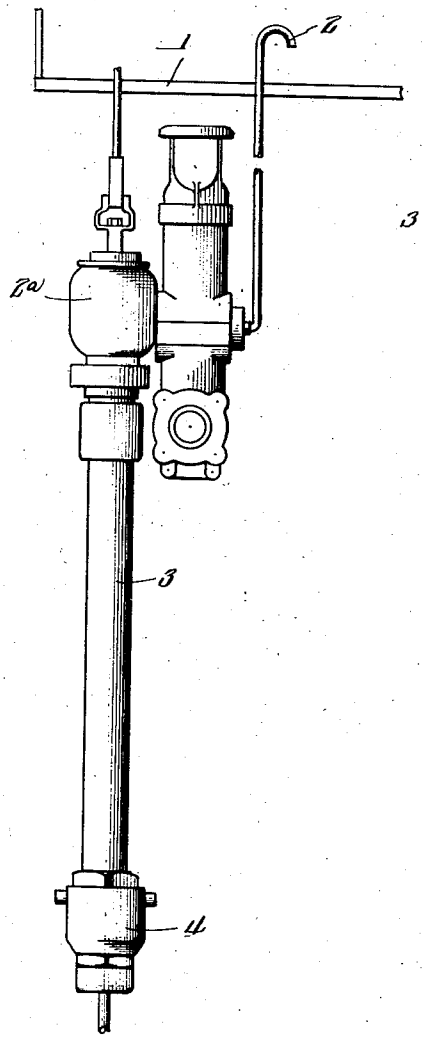


Fig. 2

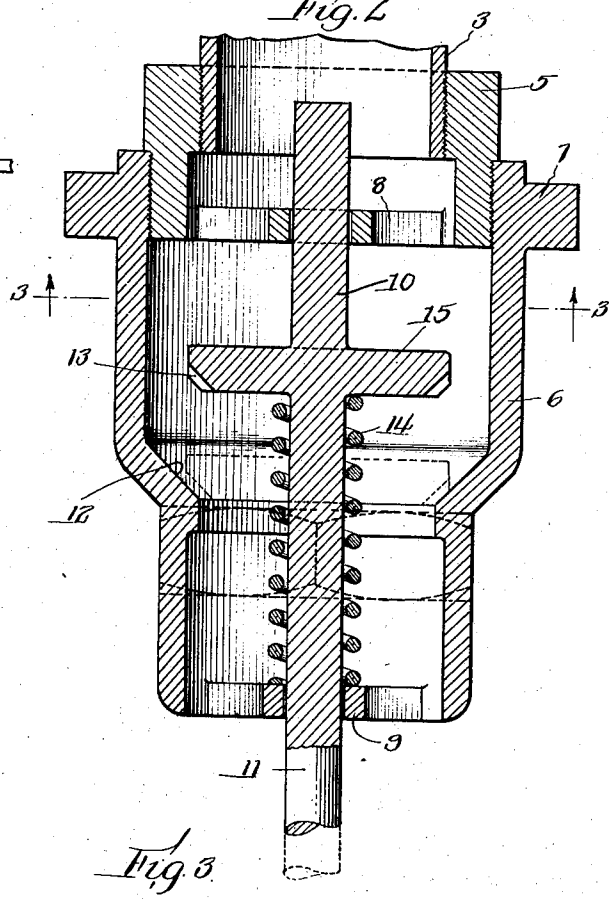
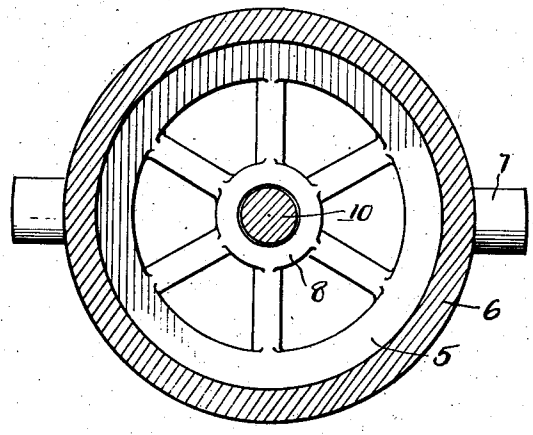


Fig. 3



Witness:
R. Burkhardt.

Inventors:
Stephen J. Raetz,
William J. Greene,
by D. Anthony Nissa atty.

Patented June 17, 1930 1,764,181

UNITED STATES PATENT OFFICE

STEPHEN J. RAETZ AND WILLIAM J. GREENE, OF PROCTOR, MINNESOTA

SAFETY VALVE FOR INJECTOR OVERFLOW

Application filed May 2, 1927. Serial No. 188,355.

This invention relates to a locomotive, and more particularly to overflow pipes from the injector for purposes to be later explained.

An object of this invention is to provide a means to dissipate the overflow from the injector to cut down the discharge pressure of any overflow so that loose sand, gravel, etc., along the right of way, will not be thrown against any persons causing injuries to said persons.

Another object is to provide an inexpensive valve of a character to be later described to break the overflow of any water or steam caused by any break in the injector while being primed.

A further object is to provide a device of a simple yet effective construction, inexpensive to manufacture and maintain, and with few parts for the purpose of checking any overflow, particularly that from the injector.

A still further object is to provide an overflow device operative under all weather conditions, which is automatic and self-cleaning.

With these and various other objects in view, the invention consists of certain novel features of construction and operation as will be more fully described and particularly pointed out in the specification, drawings and claims appended hereto.

In the drawings, wherein like reference characters are used to designate like parts,

Figure 1 is an elevation indicating the assemblage and location with respect to the locomotive cab of an injector, an overflow pipe and the safety valve which is the subject matter of the present invention;

Figure 2 is an elevation partly in section of the safety valve shown in Figure 1, the valve disc being shown in seated or closed position by dashed lines; and

Figure 3 is a plan in section taken substantially in the plane as indicated by the line 3—3 of Figure 2, looking in the direction of the arrows.

The locomotive cab floor 1 may be provided with the cab telltale 2 extending therethrough and leading to the non-lifting injector 2^a. The usual overflow pipe 3 connects the injector to the safety valve 4 and at its end may be tapped or screw-threaded for engagement with a similarly threaded reducer 5 of the safety valve. The body 6 of the safety valve may be conveniently threaded to the reducer in way of shoulders 7 provided on the body for tightly securing the body to the reducer. The reducer and body of the valve are provided with concentric guides 8 and 9 preferably spaced by a spider, which guides are adapted to carry or cooperate with valve stems 10 and 11, respectively, extending on either side of the valve disc 15 for guiding the operation of said disc. The body of the valve is conveniently formed with shoulders 12 which slope downwardly and inwardly toward the valve stem 11 and form a seat for the valve disc 15. This disc is provided with bleeders or grooves 13 disposed in way of the seat 12 for the purpose to be later described. Disposed between the valve disc 15 and the bottom guide 9, and preferably embracing the valve stem 11, is a spring 14 which normally keeps the valve disc in raised position with respect to the seat 12. It will be noticed that this safety valve is preferably wholly distinct from the injector and is provided at the bottom of the overflow pipe, but it is to be understood that said valve might be disposed directly under or formed integrally with the injector without departing from the spirit or scope of the invention.

In operation, if the injector should break, the force of the steam or water would be dissipated when it struck the top of the valve, but said pressure might be such as to cause the valve to seat which would then take the complete pressure of said steam or water. The bleeders 13 would allow the water or steam to slowly leak out of the bottom of the valve at right angles to the ground so this would make it impossible for anyone standing near the overflow pipe to receive injury from thrown sand, gravel, etc. As the pressure on the top of the valve diminishes, the spring 14 will raise the valve and allow any steam or water trapped in the body to slowly escape to the ground.

It is to be understood that we do not wish to be limited by the exact embodiment of the device shown, which is merely by way of

illustration and not limitation, as various and other forms of the device will of course readily occur to those skilled in the art.

We claim:

1. In a device of the character described, the combination of an injector having an overflow pipe associated therewith, a valve assembly associated with said pipe, said assembly including a valve seat, a normally unseated valve disc, and means for yieldingly maintaining said disc in unseated position.

2. In a device of the character described, the combination of an injector having an overflow pipe associated therewith, a valve assembly associated with said pipe, said assembly including a valve seating means, a normally unseated valve means, means provided on one of said means permitting leakage past said seating and valve means when said valve means is seated, and means for yieldingly maintaining said valve means in unseated position.

3. In a device of the character described, the combination of an injector having an overflow pipe associated therewith, a valve assembly associated with said pipe, said assembly including a valve housing having a seat, a normally unseated valve disc disposed in said housing and of less diameter than said housing to provide clearance therebetween, guiding means in said assembly for said valve, and resilient means for normally maintaining said disc in unseated position.

4. In a device of the character described, the combination of an injector, an overflow pipe, a valve assembly disposed in said pipe to dissipate the overflow from said pipe, said valve assembly including a housing having a seat, a valve disc having valve stems, guides for said valve stems in said housing, grooves provided in said valve disc disposed in way of the seat, and means adapted to open said valve.

5. In a device of the character described, the combination of an injector, an overflow pipe connected thereto, a valve assembly disposed in said pipe, said valve assembly including a housing having a seat, a valve disc having valve stems, guides for said valve stems in said housing, grooves provided in said valve disc in way of the seat, and resilient means cooperating with said disc adapted to be overcome by the overflow to said valve assembly to dissipate the overflow to said pipe.

6. In a device of the character described, the combination of an overflow pipe, and a valve assembly associated with said overflow pipe for dissipating the fluid flow therefrom, said assembly being constructed and arranged to permit overflow escapement when the valve occupies a closed position.

7. In a device of the character described, the combination of an overflow pipe, a valve assembly in said pipe for dissipating overflow through said pipe, said valve assembly including a reducer attached to the overflow pipe, a guide in said reducer, a body having a seat, a valve in said body adapted to be seated by the overflow, a guide in said body below the seat, grooves on said valve providing conduits past the seat, valve stems disposed in said guides, and resilient means for returning said valve to open position when the overflow pressure has been dissipated.

8. In a device of the character described, the combination of an injector having an overflow pipe associated therewith, a valve assembly associated with said pipe, said assembly including a valve housing having a seat, a normally unseated valve means disposed in said housing and of less diameter than said housing to provide clearance therebetween, said valve means having conduits providing access past said seat even when said valve means is seated, guiding means in said assembly for said valve, and resilient means for normally maintaining said valve means in unseated position but being adapted to permit seating of said valve means under action of overflow to said assembly.

9. In a device of the character described, the combination of an overflow pipe, a valve assembly associated therewith, said assembly including a housing portion providing a valve seating means, valve guides in said housing, normally unseated valve means having parts cooperating with said guides, bleeders disposed in at least one of said means, said valve means being adapted to be closed by overflow to the assembly, and means for returning said valve means to unseated position.

Signed at Proctor, Minnesota, this 12 day of April, 1927.

STEPHEN J. RAETZ.
WILLIAM J. GREENE.