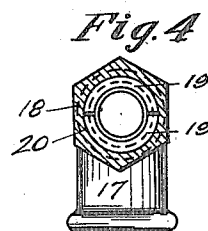
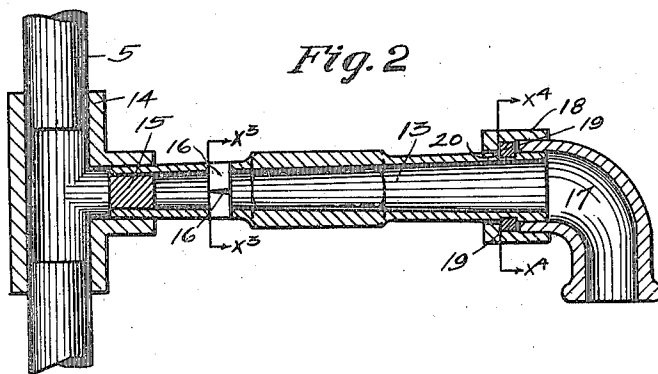
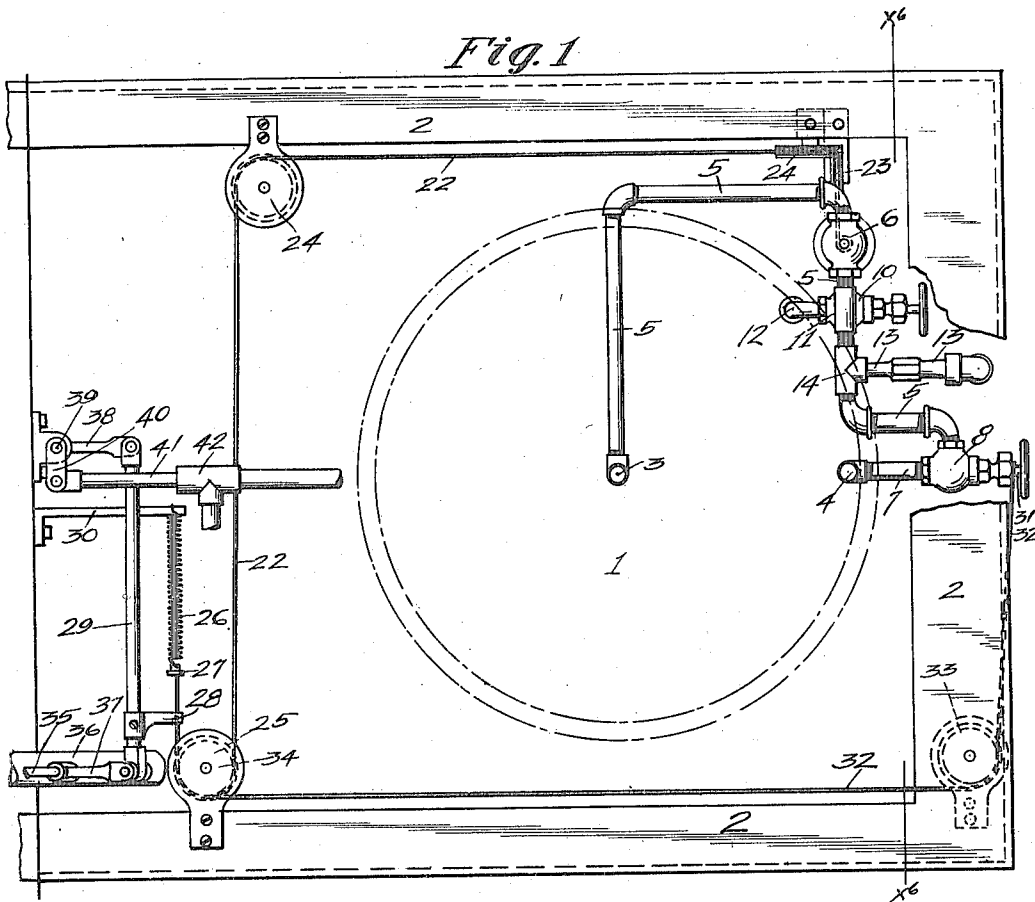


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FUSIBLE PLUG MECHANISM FOR STEAM MOTOR VEHICLES.
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2 SHEETS-SHEET 1.



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UNITED STATES PATENT OFFICE.

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FUSIBLE-PLUG MECHANISM FOR STEAM MOTOR-VEHICLES.

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Patented Jan. 5, 1915.

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To all whom it may concern:

Be it known that I, WILLIAM C. BLUNDELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Fusible-Plug Mechanism for Steam Motor-Vehicles, of which the following is a specification.

My invention relates to an improved fusible plug and clean out mechanism for boilers of steam motor vehicles and the objects of my invention are: to provide a mechanism which will facilitate the replacement of the fusible plug after a blow-out; economize in the time necessary for such replacement; has means for indicating the amount of the water in the boiler, for draining off the water and sediment therefrom and cleaning out the associated fittings; prevents the freezing of the water in the pipes adjacent to the plug, in cold weather; provides against the loss of steam when a plug has been blown out or withdrawn; provides a connection with the throttle valve of the boiler so that the vehicle is prevented from starting when the clean out and other valves are open; and provides for an improved form of fusible plug mounting.

Still other objects may appear in the following detailed description of my device as illustrated in the accompanying drawings, in which:

Figure 1 is a plan of my device as attached to a vehicle; Fig. 2 is a longitudinal sectional elevation of the fusible plug mounting; Fig. 3 is a section of Fig. 2 on the line x^3-x^3 ; Fig. 4 is a section of Fig. 2 on the line x^4-x^4 ; Fig. 5 is a side elevation of my device with the frame of the vehicle in section; Fig. 6 is a lateral sectional elevation on the line x^6-x^6 , Fig. 1.

Similar reference numerals indicate the same parts throughout the specification and the several views of the drawings.

The boiler 1, shown in dotted lines, is suitably mounted on the frame 2 of the vehicle, and is ordinarily provided with a pair of stand pipes 3 and 4, the pipe 3 being substantially longer than the pipe 4, and both

of them extending upwardly into the water chambers of the boiler. The longer pipe 3 is connected by the pipe 5 and suitable fittings with the vertically disposed valve 6 which closes the water and steam supply from the boiler; the shorter pipe 4 is connected by the pipe 7 and suitable fittings with the longitudinally disposed valve 8 for a similar purpose; the valve 8 is also connected with the pipe 5; and the pipe 5 is provided with a mud drum 9 extending downwardly therefrom and having a valve 10 at the bottom of the drum and a lateral branch 11 with a downwardly turned elbow 12 for draining off the sediment. The fusible plug mounting 13 is adapted to be screwed into a T. 14 on the pipe 5 which is positioned between the valves 8 and 10, and the mounting 13 is composed of a tube tapered toward the inner end and having a hexagonal portion near its center for turning it with a wrench. A fusible plug of lead or other metal 15 having a low melting point is adapted to be inserted in the inner end of the tube which is adapted to be melted and blown out of the tube by the force of the steam, when for any cause, such as low water in the boiler, the circulation through the pipe 5 may be stopped, and the fuse melted by the heat in the pipe. It is frequently the case that the lead when blown out of its seat in the inner end of the tube 13, will lodge against some part of the frame of the vehicle or other object which it may mar, and to provide against this occurrence I provide a pair of blades 16 adapted to be secured in the wall of the tube at right angles to each other and across the path of the lead plug, by means of which the plug will be split into a plurality of pieces so that it may not lodge in the tube; and the outer end of the tube is provided with an elbow 17 which is pivotally held on the tube by a collar 18 adapted to be screwed on the end of the elbow and held on the tube 13 by means of a pair of ring segments 19 adapted to seat in an annular groove 20 in the tube, the elbow being turned downward in order to direct the pieces of the plug toward the ground in its discharge

from the tube 13. The tube 13 is tapered to prevent the use of but one end for holding the plug, and the elbow by means of its pivotal connection with the tube will be caused to swing downwardly by gravity.

The valve stem 21 of the valve 6 which closes the long stand pipe 3 has a cable 22 secured to it which runs over the pulleys 23, 24, 24' and 25 secured to the frame 2 of the vehicle, is connected on the other end to a spring 26 by means of a collar 27, and between the collar 27 and the pulley 25 passes through an arm 28 on the link 29 of the throttle actuating mechanism, the other end of the spring 26 being suitably secured to a bracket 30 secured to the frame 2. The stem 31 of the valve 8, which closes the short stand pipe 4, has a cable 32 similarly connected to it which runs over the pulleys 33 and 34, passes through the arm 28 and is provided with one of the collars 27 on a spring in line with and similar to the spring 26 on the other cable 22. The main throttle lever 35 which is parallel with and mounted upon the steering wheel column 36, is connected with the link 29 by the arm 37, and the other end of the link 29 is connected, by means of the arm 38, the vertical shaft 39 and the arm 40, with the throttle valve stem 41 of the throttle valve 42. Thus, in the event that either one or both of the valves 6 and 8 were left closed, the springs 26 would be extended so that the collars 27 would contact with the arm 28 on the link 29 and prevent the opening of the throttle as long as either one of the valves were closed.

As long as the water in the boiler is above both of the stand pipes 3 and 4, the water will circulate through the pipe 5 and the fittings but when the water reaches a point below the top of the shorter stand pipe 4, it will cease to circulate, the pipe and fusible plug 15 will become heated and the latter blown out of the tube 13, the driver will be warned and the fire in the burners put out, thus preventing an explosion in and damage to the boiler.

The sediment from the boiler collects in the mud drum 9 and may be blown off and the drum and pipe fittings between the stand pipe 3 and the valve 10 cleaned out by closing valve 8 and opening valves 6 and 10. Likewise by closing valve 6 and opening valves 8 and 10 all of the fittings between the stand pipe 4 and the valve 10 may be cleaned out. As it is frequently the case that the sediment will collect in the pipes and fittings, and thus impede the circulation of the water therein, it is necessary to provide against such occurrences, and the mud drum 9 of my device is adapted to collect all of the sediment and obviate the frequent cleaning of the pipes. Should the sediment collect in the pipes and the circulation of the water be stopped, the fusible plug 15

would be blown out because of the overheating of the pipes and fittings. By closing valve 6 and opening the valves 8 and 10, it is possible to ascertain whether the water in the boiler is above the top of the short pipe 4; and by closing the valve 8 and opening the valves 6 and 10 whether the level of the water is above the long pipe 3.

Should the fusible plug 15 be blown from any cause whatever, a new plug may be inserted by closing the valves 6 and 8, removing the mounting 13 and placing a new plug therein; the valve 10 may be opened and the pipe cleaned out, and the valves restored to their normal state.

In order to prevent the freezing of the water in the pipes and fittings when the vehicle is not in use in cold weather, by opening the valves 6, 8 and 10, the water will drain out of the pipes and trouble of this nature averted. A loss of steam is prevented while a new plug is being placed in position, by closing the valves 6 and 8 and opening the valve 10.

In general, by the use of the plugs supplied commonly with steam vehicles, a great many difficulties have been encountered, as the stand pipes 3 and 4 have not been equipped with valves, and as a consequence, it has been impossible to replace a plug without a considerable amount of time being consumed. As my device is fully equipped to meet all conditions which may arise in the operation and use of a steam motor vehicle, it is possible to replace a plug without putting out the fire in the burners or cooling the boilers, and thereby, not only a great deal of time is saved, but labor as well.

Having thus described my invention, what I claim as new and desire Letters Patent for, is:

1. A fusible plug mechanism for boilers of steam motor vehicles having a pair of stand pipes of different length extending into the water chamber of said boiler and connected with the throttle valve of said boiler for preventing the opening thereof when either or both of said stand pipes are closed.

2. A fusible plug mechanism for boilers of steam motor vehicles having a pair of stand pipes of different length extending into the water chamber of said boiler and normally communicating with each other, and means for connecting said mechanism with the throttle valve on the boiler for preventing the opening thereof when communication between said stand pipes is closed.

3. A fusible plug mechanism for boilers of steam motor vehicles having a pair of stand pipes of different length extending into the water chamber of said boiler and normally communicating with each other by means of a pipe attached to the bottoms and extending out of said boiler, and means

in said pipe for independently opening and closing said stand pipes from communication with said connecting pipe.

4. A fusible plug mechanism for boilers of steam motor vehicles comprising a fusible plug and a pair of stand pipes of different length extending into the water chamber of the boiler having means for preventing the sediment from the boiler collecting in the pipes adjacent to said plug and causing the premature discharge of said plug.

5. A fusible plug mechanism for boilers of steam motor vehicles having a pipe with the two ends extending upwardly into the water chamber of said boiler a different height, a fusible plug secured in said pipe means for cleaning out the sediment from said pipe, and means for preventing the sediment from collecting in said pipe adjacent to said plug and causing the premature discharge of said plug.

6. In a device of the character described, the combination with a boiler and a pair of stand pipes of different length extending into the water chamber of said boiler, of a pipe connecting said stand pipes at the bottoms; a pair of valves in said pipes for independently opening and closing said stand pipes; a fusible plug in said pipe between said valves; and means for collecting the sediment from said boiler and said pipes and preventing its accumulation in the vicinity of said plug.

7. In a device of the character described, the combination with a boiler and a pair of stand pipes of different length extending into the water chamber of said boiler, of a pipe connecting said stand pipes at the bottoms; a pair of valves in said pipe for independently opening and closing said stand pipes; a fusible plug in said pipe between said valves; means for collecting the sediment from said boiler and said pipes and preventing its accumulation in the vicinity of said plug; and means for draining off the sediment from said pipes.

8. In a device of the character described, the combination with a boiler and a pair of stand pipes of different length extending into the water chamber of said boiler, of a pipe adapted to connect said stand pipes at the bottoms; a pair of valves in said pipe for independently opening and closing said stand pipes; a fusible plug in said pipe between said valves; a sediment drum connected with said pipe for collecting the sediment from said pipes; and a valve on said drum for draining the sediment therefrom.

9. In a device of the character described, the combination with a boiler and a pair of stand pipes of different length extending into the water chamber of said boiler, of a

pipe adapted to connect said stand pipes at the bottoms; a pair of valves in said pipe for independently opening and closing said stand pipes; a fusible plug in said pipe between said valves; a sediment drum connected with said pipe for collecting the sediment from said pipes; a valve on said drum for draining the sediment therefrom; and means for connecting said pair of valves with the throttle valve of said boiler for preventing the opening thereof when either of said valves are closed.

10. In a device of the character described, the combination with a boiler and a pair of stand pipes of different length extending into the water chamber of said boiler, of a pipe adapted to connect said stand pipes at the bottoms; a pair of valves in said pipe for independently opening and closing said stand pipes; a fusible plug in said pipe between said valves; means for collecting the sediment from said boiler and said pipes; means for draining the sediment therefrom; and means for locking the throttle valve lever of said boiler when either of said valves are closed.

11. In a device of the character described, the combination with a boiler, a pair of stand pipes connected at their bottoms and extending into the water chamber of said boiler a different height, and a plurality of valves between said stand pipes, of a fusible plug adapted to seat in a tube adapted to be secured in the pipe between said stand pipes, means in said tube for splitting said plug into a plurality of pieces in its discharge from said tube, and means on the outer end of said tube for directing the discharged plug toward the ground.

12. In a device of the character described, the combination of a boiler; a pair of stand pipes of different length extending into the water chamber of said boiler; a pipe connecting the lower ends of said stand pipes; a pair of valves in said pipe for opening and closing said stand pipes; a sediment drum in said pipe; a valve on said drum; a plug mounting secured to said pipe between said pair of valves; a fusible plug in the inner end of said mounting; a pair of blades secured in and arranged at right angles across said mounting at the rear of said plug; a pair of ring segments adapted to seat in an annular groove on the outer end of said mounting; a collar adapted to engage and be held pivotally on said mounting by said segments; an elbow adapted to be secured to the outer end of said collar and pivoted on said mounting; a pair of cables adapted to be connected at one end to said pair of valves and at the other to springs secured to a suitable bracket on the frame of the vehicle; collars on the ends of

said cables adjacent to said springs; pulleys
revolvably mounted on said frame upon
which said cables are adapted to run; and
an arm secured to the throttle valve lever,
5 having perforations through which said
cables are adapted to pass, said arms being
adapted to engage said collars on said

cables when said pair of valves are closed,
and thus prevent the opening of the throt-
tle valve.

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