Dec. 5, 1950 J. J. GLYNN 2,532,901

FUSEE LIGHTING AND LAUNCHING DEVICE

Filed Oct. 6, 1947

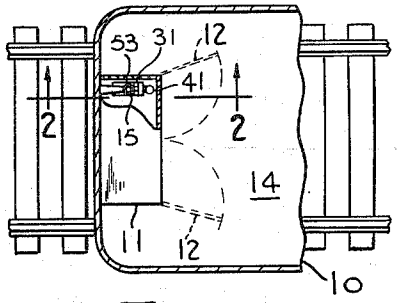


FIG. 1

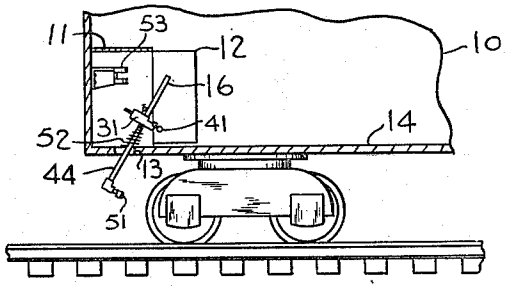


FIG. 2

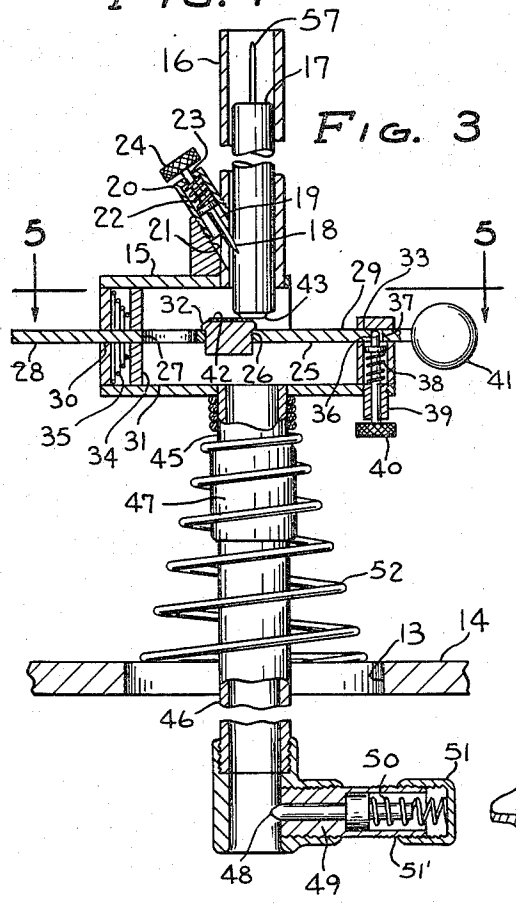


FIG. 3

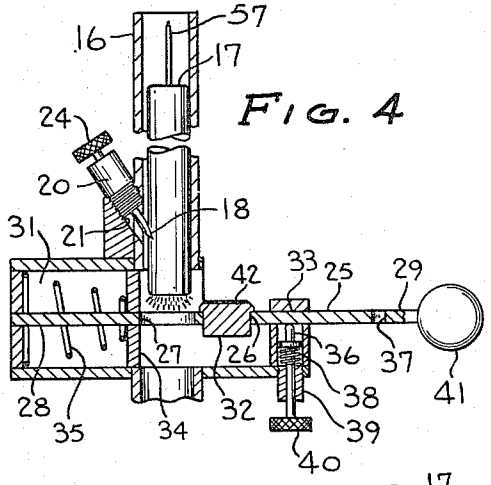


FIG. 4

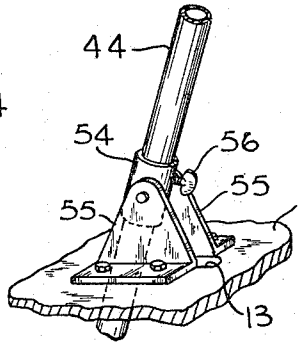


FIG. 6

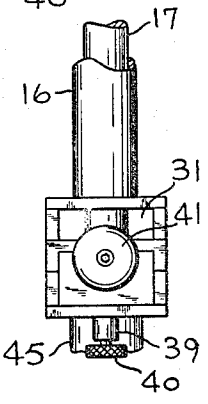


FIG. 7

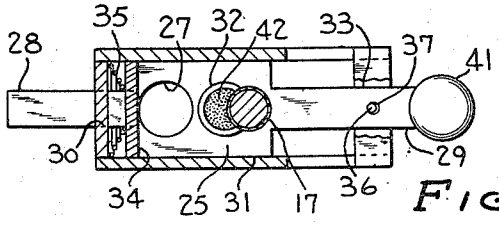


FIG. 5

INVENTOR.

BY John J. Glynn

Charles & French

ATTORNEYS

Patented Dec. 5, 1950 2,532,901

UNITED STATES PATENT OFFICE

2,532,901

FUSEE LIGHTING AND LAUNCHING DEVICE

John J. Glynn, Chicago, Ill.

Application October 6, 1947, Serial No. 778,239

10 Claims. (Cl. 246—215)

1

The invention relates to railroads and more particularly to a fusee igniting and launching apparatus.

Normally fusees are ignited and launched from a moving train by a trainman by hand. The hand lighting of the fusee is objectionable because frequently burning particles of the fusee damage the gloves and clothes of the trainmen. The hand launching of the fusee in all kinds of weather is both dangerous and uncertain because the trainman may be in a position where he may be thrown off of the moving train and because his position on the train prevents his properly depositing the fusee on the roadbed. This is especially true of high speed streamliner trains now in use in which the back end of the rear car is closed and the trainmen must go to the front end of this car, open the trap door covering the step, light the fusee, and then holding onto one of the step rails with one hand lean out and launch the fusee with the other while the train is moving at ninety or more miles per hour. The objects of the present invention are to provide a mechanical means for igniting or lighting the fusee and to provide an arrangement for launching the lighted fusee from the rear end of the rear car through an opening in the floor of the car so that the trainmen is protected from the weather and so that the fusee may be launched from the train close to the roadbed so that its chances for staying lighted and displaying the desired signal will be greater than is possible with the hand method of launching.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a horizontal sectional view through a portion of the rear car of a train equipped with apparatus embodying the invention;

Fig. 2 is a detailed vertical sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a detailed vertical sectional view through an apparatus embodying the invention;

Fig. 4 is a view similar to Fig. 3 showing the parts in another position, parts being broken away;

Fig. 5 is a detailed horizontal sectional view taken on the line 5—5 of Fig. 3;

Fig. 6 is a detailed perspective view showing certain modifications;

Fig. 7 is an end view of the apparatus, parts being broken away.

2

Referring to the drawings, the numeral 10 designates the rear car of a railroad train of the type which are now used on modern high speed streamliner trains in which the rear end of the car is completely enclosed and entrance to the car is at its front end. Such cars are usually provided with a cabinet or compartment 11 having front swinging doors 12 and housing the emergency air valve and other operating equipment.

I preferably mount the apparatus embodying the present invention in the compartment 11 and provide an opening 13 through the base of this compartment and the floor 14 of the car through which the launching tube of the apparatus may project whereby the fusee may be ignited and launched from within the car 10.

Referring to Figs. 3 to 7, the apparatus includes a support or holder 15 having a tubular portion 16 adapted to receive a fusee 17 in an inverted position. For holding the fusee in any desired position within the receiving tube 16 I provide a manually operable means preferably in the form of a pointed end pin 18 which may embed itself in the usual paper covering of the fusee at one side and force it against the opposite wall of said tube. The pin 18 has a part 19 slidably mounted and guided in an apertured cylindrical cap 20 mounted in an opening 21 in the holder 15 and extending at an acute angle to the vertical axis of the tube 16. A spring 22 is interposed between the part 19 and the end of the cap 20 and normally urges the pin 18 downwardly. The upper end of the pin projects through the central opening 23 in the cap and is provided with a hand knob 24 for moving said pin to a release position.

For igniting or lighting the fusee, the holder 15 is provided with a cap carrying slide 25 formed by a metal plate having spaced openings 26 and 27 formed therein and reduced end portions 28 and 29. The portion 28 is slidably mounted in a slot 30 at one end of a box-like compartment 31 formed in the holder, the other end of which is cut away so that the usual or standard form of cap 32 may be readily inserted, face up, in the opening 26. The portion 29 of the slide 25 is slidably mounted in a slot 33 formed in the front end wall of the compartment 31. A spring seat plate 34 is mounted on the slide 25 and slidably movable therewith in the compartment 31. A conical compression spring 35 is interposed between the back end of the compartment 31 and the plate 34 and normally urges said plate toward the right as viewed in Fig. 3. In the ex-

treme inward or cocked position of the slide 25, the forward end of the cap 32 underlies a portion of the ignitable end of the fusee and may be held in this position by a detent 36 seating in a hole 37 in the slide 25 and normally urged upwardly by a spring 38, said detent being mounted in the front wall of the compartment 31 and extending through a guide sleeve 39 and carrying a hand knob 40. The end 29 of the slide 25 is also provided with a hand knob 41.

With the above arrangement when the slide 25 with the cap 32 is pushed inwardly to the cocked position, the fusee 17 in the tube 16 is positioned to contact the cap and held by the pin 18 as shown in Fig. 3. Then, when the detent 36 is pulled down or released, the spring 35 pushes the slide forwardly to the position shown in Fig. 4 wiping the igniting compound 42 on the cap across the face of the ignitable material 43 of the fusee and causing it to ignite as shown in Fig. 4. If the fusee should not ignite on this first movement of the slide, the operator may push the slide 25 inwardly again and then release it or he may insert a new cap and repeat the operation, it being noted that when the slide 25 is in its outer position, the opening 27 is alined with the tube 16 and of a size to permit the lighted fusee to drop through it on the release of the pin 18.

For launching the lighted fusee onto the roadbed, the holder is provided with a launching or discharge tube 44 which may be formed integral with or secured to the compartment 31. I have shown this tube as formed by a section 45 secured to the bottom of the compartment 31 and a section 46 secured by a detachable coupling 47 with the section 45.

On the release of the lighted fusee from the tube 16 it drops by gravity through the tube 44 and down onto the roadbed. Sometimes too great a shock of the fusee in striking the roadbed will extinguish it, and in order to reduce the speed of the fusee as it leaves the tube 44 it may in some instances be necessary to slow up its movement from the tube 44, and for this purpose I provide a braking means in the form of a yieldably mounted conically ended pin 48 slidably mounted in a sleeve 49 secured to the lower end of the tube 44 and extending at right angles thereto and yieldingly urged inwardly by a spring 50 whose tension may be adjusted by a manually operable screw cap 51 having an adjustable threaded connection 51' with the outer end of the sleeve 49. The pin 48 projects just far enough into the tube 44 so that it will engage the outer wall of the fusee as it passes by it and be pushed outwardly by said fusee as it leaves the tube 44, the spring 50 being set or tensioned so that the movement of the fusee will be slowed up enough to prevent its striking the roadbed at a speed which might cause it to be extinguished.

The apparatus above described may be mounted in the compartment 11 in various ways, but it should be so mounted that the tube 44 may be moved up or down relatively to the floor 14 of the car 10 so as to bring the lower end of the tube 44 to a height of about ten or twelve inches above the roadbed or material such as snow or ice that may be on it. It is also desirable to be able to swing the tube 44 vertically at an angle to the floor of the car as shown in Fig. 2. One form of mounting for apparatus is shown in Fig. 3 comprising a long conically coiled spring 52 which may be anchored at its upper end to the tube 44 and at its other end seat on the floor of the car over the elongated slot or opening 13 in said floor,

and with this type of mounting in order to hold the apparatus in an inoperative position a releaseable clip or clamp 53 mounted on the rear wall of the compartment 11 is adapted to engage the tube portion 16 of the device. Instead of the spring 52, the discharge tube may be slidably mounted in a collar 54 mounted for vertical tilting movement in suitable brackets 55 adjacent the opening 13 and be held in various positions of adjustment relative to the collar 54 by a thumb screw 56 and a spring similar to the spring 52 may be interposed between said collar and the box 31.

With the above arrangement the fusee 17 may be held by the pin 18 above the cap 32 until it is desired to light it, or it may be held in the position shown in Fig. 3 ready to be ignited on the release of the detent 36. Then when it becomes necessary to release a fusee, the trainman opens the doors 12 of the compartment 11, swings the upper end of the apparatus toward him, releases the detent 36 to light the fusee as above described, then moves the device downwardly to bring the tube 44 at the desired elevation above the track or roadbed and in the desired angular relation thereto, and then releases or moves back the pin 18 allowing the lighted fusee to drop down through the tubes 16 and 44 and the opening 27 onto the roadbed. In the descent of the fusee to the roadbed, it may turn itself over and strike on its pointed end 57 on a tie and assume an upright position, but its landing in this position is not essential since a fusee deposited on the roadbed in any other position will send up a flare which will be sufficient to warn an oncoming train that there is danger ahead. This apparatus will light the five minute as well as the ten minute fusee used by the railroads.

Those metal parts of the apparatus exposed to the weather may be made of suitable rustproof metallic material and the slide 25 of stainless steel.

It is to be noted that by dropping the fusee through the floor and not throwing it, all shock from throwing the fusee is eliminated and also the possible chance of striking parts of train on its descent and the speed of descent may be readily controlled to prevent shock. Shock puts out more fusees than anything else.

Though the fusee is lighted from inside of the car, no bad odor or falling parts of fusee interfere with the comfort of the passengers, because it all shoots down the tube and onto the roadbed. It does not come in contact with the body or contact the clothing of the trainman.

When the train has made an emergency stop, it takes less than ten seconds to place a lighted fusee on the track. If for any reason the trainman should be in the forward part of the rear end, when an emergency stop was made, anyone can operate this device.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the claims.

What I claim as my invention is:

1. The combination with a rail car having an opening in its floor, of a fusee holder mounted within said rail car, manually controlled means for holding a fusee in said holder, means associated with the holder for igniting the fusee while positioned in said holder in said rail car, and a discharge tube for gravity discharge of the fusee from said holder extending from said holder through said opening for directing the lighted

fusee, on the release of said holding means after the operation of said igniting means, down onto the roadbed, said igniting means being formed to provide a clearance space for the fusee alined with said discharge tube on the launching of said fusee through said tube.

2. The combination with a railcar having an opening in its floor, of a fusee holder mounted within said railcar, manually controlled means for holding a fusee in said holder, means for igniting the fusee while so positioned in said holder in said rail car, a discharge tube for gravity discharge of said fusee from said holder on the release of said fusee from said holding means after the operation of said igniting means and extending from said holder through said opening, said igniting means being formed to provide a clearance space for the fusee alined with said discharge tube on the launching of said fusee through said tube and adjustable braking means on said discharge tube to control the discharge rate of the lighted fusee therefrom.

3. The combination with a railcar having an opening in its floor, of a fusee holder including a tube mounted in said railcar, manually controlled means for releasably holding the fusee in said tube, means for positioning a standard fusee cap in said holder and moving it relative to said fusee while held in said holder to ignite the same while positioned in said tube in said railcar, and a discharge tube aligned with said holder for gravity discharge of the fusee from said holder and extending down from said holder through said opening for directing the lighted fusee, on the release of said holding means and after the ignition of said fusee by said cap, down onto the roadbed, said cap positioning and moving means being formed to provide a clearance space for the fusee alined with said discharge tube on the launching of said fusee through said tube.

4. In an apparatus of the character described, the combination of a holder including a substantially vertically disposed tube, means for releasably holding a fusee in said tube, a fusee cap carrying slide mounted in said holder, a spring to move said slide to bring the cap into lighting engagement with said fusee, a releasable detent engageable with said slide to hold the same against movement by said spring, and a discharge tube for gravity discharge of the fusee from said holder and extending from said holder for directing the lighted fusee down onto the roadbed, said slide formed to provide a clearance space for the fusee alined with said discharge tube on the launching of said fusee through said tube.

5. The structure as defined in claim 1 wherein the holder and the discharge tube are movable relative to the opening in said railcar.

6. The structure as defined in claim 1 wherein the holder and discharge tube are mounted for vertical movement of the discharge tube relative to the floor of the railcar.

7. The structure as defined in claim 1 wherein the discharge tube is mounted for lengthwise and swinging movements relative to the floor of the railcar.

8. The structure as defined in claim 1 wherein the holder and discharge tube are held in an elevated position relative to the floor of said railcar by a spring which permits universal movement and lengthwise movement of said discharge tube.

9. The structure as defined in claim 1 wherein the discharge tube is mounted in a tiltable guide and movable lengthwise relative thereto.

10. The combination with a railcar having an opening in its floor, of a fusee lighting device mounted in said railcar comprising a movable element for carrying a fusee igniter, a holder for holding the ignitable end of a fusee in position for ignition by said igniter and holding it in such position during ignition, said holder including means for releasing the fusee after the operation of the ignition of the fusee by said igniter, and means for guiding the lighted fusee from said ignition means after its ignition through the opening in said railcar and under the action of gravity toward the roadbed over which the railcar is moving, said movable element carrying said fusee igniter being formed to provide a clearance for the fusee on its launching through said guide means after its ignition.

JOHN J. GLYNN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
785,836	Jackson	Mar. 28, 1905
1,132,631	Still	Mar. 23, 1915
2,462,922	Temple	Mar. 1, 1949

FOREIGN PATENTS

Number	Country	Date
1,890	Great Britain	July 29, 1861