(No Model.)

# F. J. HALL & J. H. ESPEY.

## AUTOMATIC LIGHTER FOR FIRE ENGINES.

No. 559,704. Patented May 5, 1896.

Fig. 1.

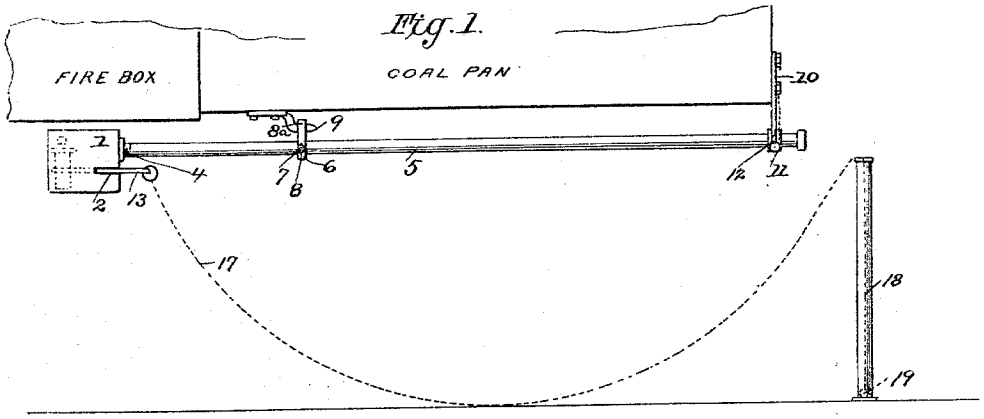



Fig. 2.

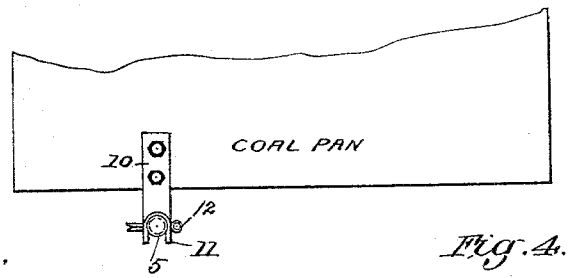



Fig. 3.

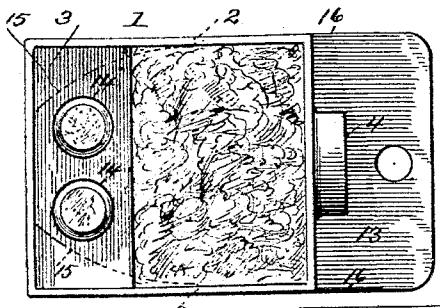



Fig. 4.

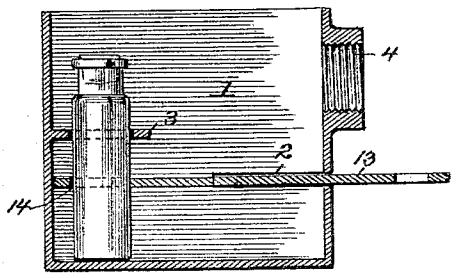



Fig. 5

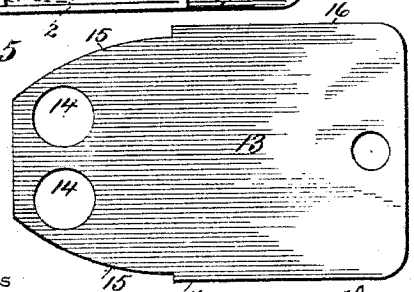
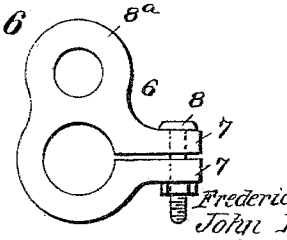



Fig. 6

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# UNITED STATES PATENT OFFICE.

FREDERICK J. HALL AND JOHN H. ESPEY, OF ELMIRA, NEW YORK.

## AUTOMATIC LIGHTER FOR FIRE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 559,704, dated May 5, 1896.

Application filed April 20, 1895. Serial No. 546,488. (No model.)

*To all whom it may concern:*

Be it known that we, FREDERICK J. HALL and JOHN H. ESPEY, citizens of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented a new and useful Automatic Lighter for Fire-Engines, of which the following is a specification.

This invention relates to an improvement in automatic lighters for fire-engines, &c.

The object of the present invention is to provide a simple, neat, and durable form of lighting device which shall be applicable to a fire-engine of any description or size and which shall operate automatically to ignite combustible material placed in the fire-box upon the grate thereof.

A further object of the invention is to construct said lighting device in such manner that it may be easily and quickly applied to or detached from the fire-engine for the purpose of enabling the same to be changed with greater facility and obviating the necessity of getting beneath the fire-box of the engine for the purpose mentioned.

In order to accomplish the above objects, the invention consists in a novel form of box for containing the igniting chemicals and breaker for smashing the vials containing said chemicals, in the means for supporting the same removably beneath the fire-box, in the particular means for automatically actuating the breaker and causing it to demolish the chemical-containing vials, and also in certain other novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a diagrammatic view showing the outline of the boiler and coal-pan of a fire-engine and illustrating the manner in which the improved lighting device is applied thereto. Fig. 2 is a similar view looking toward the rear of the engine, showing the arrangement of the supporting-rod for the lighting device upon one side of the center of the coal-pan, whereby the same will be out of the way of the dumping-grate. Fig. 3 is a plan view of the holding-box or metallic case which contains the chemical-holding bottles. Fig. 4 is a longitudinal vertical section through the same, showing the relative arrangement of the breaker, the perforated shelf within the box, and the chemical-containing bottle. Fig. 5 is a plan view of the breaker. Fig. 6 is a detail view of the adjustable clamp and eye, by means of which the one end of the supporting-rod is upheld.

Similar numerals of reference indicate corresponding parts in the several figures of the drawings.

Referring to the drawings, 1 designates a metallic case or box, which may be of any size or material, and is shown, preferably, made in the shape of a square or rectangular box, which is provided in its rear wall with a slot extending entirely across the same, said slot being continued forwardly through the opposite side walls of said box, as indicated at 2. Arranged within the box at the advance end thereof is a shelf 3, preferably formed integrally with said box and provided with perforations for the reception of two or more bottles containing igniting chemicals. At the rear end the case or box is provided with a threaded socket or perforation 4, by means of which the device is attached to the forward threaded end of a longitudinally-extending supporting-bar 5, by the aid of which and other devices to be described the lighting device is upheld beneath the fire-box of the engine.

6 designates a clamping-loop which is provided at one side with a pair of perforated ears or lugs 7, adapted to receive a clamping-bolt 8, by means of which said loop is adapted to be clamped firmly to the supporting-rod 5 and to be adjusted lengthwise of said rod for the purpose of changing the position of the lighting device with relation to the fire-box, as desired. The clamping-loop 6 is formed with an upward extension $8^a$ in the form of an eye, which is adapted to engage a pin or hook 9, bolted or otherwise secured to the bottom of the coal-pan or other convenient point on the fire-engine, thus providing for the support of the front end of the rod 5. The rear end of said rod is upheld by means of a supporting-plate 10, bolted to the rear of the coal-pan and provided at its lower end with a yoke or U-shaped flange 11, perforated to receive a split-pin 12, which is adapted also to pass through a perforation in the rod 5,

this construction preventing the longitudinal movement and also the rotation of the supporting-rod.

13 indicates a flat metal plate which constitutes the breaker, the same being provided at its forward end with perforations 14, corresponding substantially in size and number to the perforations in the shelf 3 above described. The breaker 13 is rounded off upon its sides, as indicated at 15, and in rear of such rounded portions is increased in width to form laterally-projecting flanges 16, which are adapted to engage the slots 2 in the side walls of the case or box 1 for the purpose of guiding the movements of the breaker therein and for supporting said breaker in horizontal relation thereto. The breaker is further provided with a chain 17, secured to a perforation in the rear end thereof and extending thence rearwardly to a pedestal 18, which has a central bore, as indicated, through which said chain passes to an eye 19, secured to the floor or base of said pedestal.

In operation the breaker is inserted through the slot in the box or case 1, so as to bring the perforations 14 therein into line beneath the corresponding perforations in the shelf 3. Bottles of thin glass are now passed through said perforations, resting upon the bottom of said box. One of these bottles contains, for instance, sulfuric acid, while the other contains pulverized sugar, potassium chlorate, and sulfur. A quantity of oily waste is placed on the breaker, and the device, as a whole, then placed beneath the engine, as above described. The chain 17 being fastened to the fixed pedestal 18, when the engine is drawn forward by the horses said chain becomes taut, which operates the breaker and demolishes the chemical-containing bottle, after which the breaker falls to the floor. The contents of the bottles upon breaking come in contact with the oily waste, thereby igniting the same and setting fire to the shavings or other combustible material arranged upon the grate within the fire-box. By reason of the construction described the burning waste will be prevented from dropping upon the floor and endangering the building. By reason of the rounded or curved portions 15 of the breaker the binding of said breaker within the case or box will be prevented in the event of the chain pulling at an angle. When not in use, the chain 17 may be placed within the hollow pedestal 18, when it will be out of the way.

The lighting device described is very simple in construction, easily attached and detached, rendering it unnecessary for the attendant to get beneath the engine in order to charge said device, and the same is thoroughly reliable and efficient in practice.

It will be apparent that other chemicals than those named may be used and that other material may be substituted for the oily waste. It will also be apparent that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In an automatic lighter for fire-engines, a slotted box or case, a perforated shelf therein for engaging chemical-containing bottles and means for supporting said box beneath the grate of the fire-engine, in combination with a sliding and separable breaker provided with perforations for embracing and engaging said bottles and also provided with laterally-projecting flanges or edges resting in the slots in said box or case, and also provided with rounded corners, as described, and means for automatically withdrawing said breaker, for the purpose and substantially as specified.

2. In an automatic lighter for fire-engines, a slotted box or case adapted to receive a quantity of inflammable material, an internally-arranged shelf having an opening for holding a chemical-containing vial, a sliding breaker operating through the slot in said box or case and having an opening in alinement with the opening in the shelf whereby it is adapted to embrace the said vial, means for removably supporting said box or case beneath the engine-grate, and a flexible connection between said breaker and a fixed point whereby the breaker is withdrawn from said box or case in the forward movement of the engine, substantially as specified.

3. An automatic lighter for fire-engines comprising a box or case, a perforated shelf or rack therein for holding chemical-containing bottles, a sliding perforated breaker embracing said bottles, a chain connecting said breaker with a fixed support, and a horizontally-disposed rod for supporting said box or case, said rod carrying the box or case and being removably secured to the bottom of the engine, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

FREDERICK J. HALL.
JOHN H. ESPEY.

Witnesses:
G. C. WILDER,
CHAS. B. WESTBROOK.