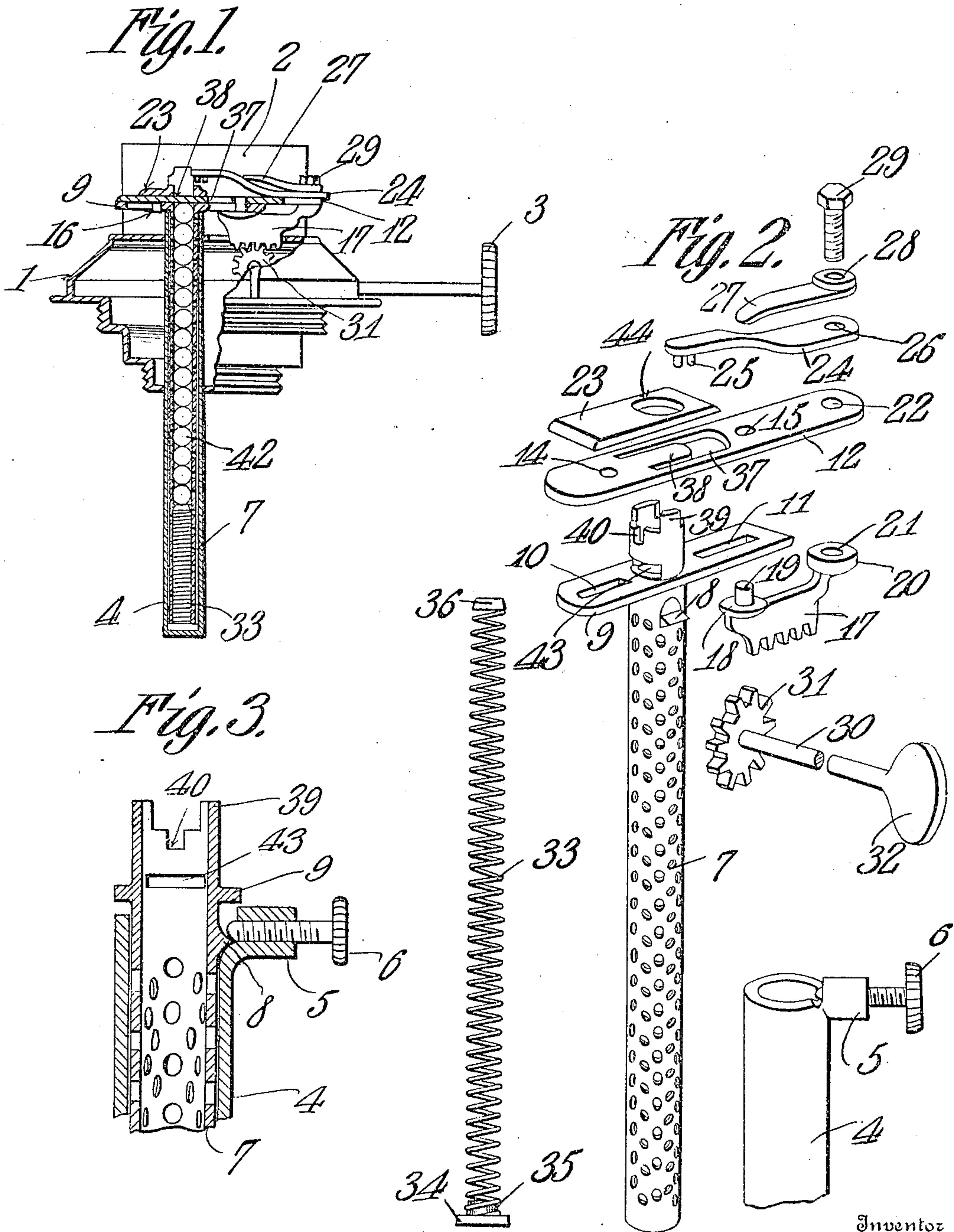


L. J. GRAHAM.
AUTOMATIC LAMPLIGHTER.
APPLICATION FILED MAY 27, 1909.

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Patented Dec. 21, 1909.



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UNITED STATES PATENT OFFICE.

LUTHER J. GRAHAM, OF RICHMOND, CALIFORNIA.

AUTOMATIC LAMP-LIGHTER.

943,873.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LUTHER J. GRAHAM, a citizen of the United States, residing at Richmond, in the county of Contra Costa and State of California, have invented a new and useful Automatic Lamp-Lighter, of which the following is a specification.

The objects of the invention are, generally, the provision in a merchantable form of a device of the class above described, which shall be inexpensive to manufacture, facile in operation, and devoid of complicated parts; specifically, in a burner, the provision of novel means for housing a series of ignition elements; the provision of means for segregating one of the ignition elements from the others of the series; the provision of means for striking the segregated ignition element; the provision of novel means for disposing of the non-combustible portions of the ignition element after the same has been burned; the provision of means for actuating the mechanism whereby the ignition element is struck; other and further objects being made manifest hereinafter as the description of the invention progresses.

The invention consists in the novel construction and arrangement of parts hereinafter described, delineated in the accompanying drawings, and particularly pointed out in that portion of this instrument wherein patentable novelty is claimed for certain distinctive and peculiar features of the device, it being understood, that within the scope of what hereinafter thus is claimed, divers changes in the form, proportions, size, and minor details of the structure may be made, without departing from the spirit or sacrificing any of the advantages of the invention.

Similar numerals of reference are employed to denote corresponding parts throughout the several figures of the drawing.

In the accompanying drawings,—Figure 1 is a side elevation of a burner of common construction, equipped with the improved device of my invention, parts being shown in section; Fig. 2 is a detail perspective of the device, the parts composing the same being disassociated. Fig. 3 is a fragmental longitudinal section.

In the accompanying drawings, the numeral 1 indicates a burner of the type commonly used upon lamps which burn kerosene

oil. The burner is also provided with the usual wick tube, and with the common means for raising and lowering the wick, consisting of a shaft bearing upon its end, a milled head 3. The foregoing constitutes no part of my invention, and the same is shown and described, merely to illustrate a construction with which my device is adapted to be assembled.

The burner 1 is vertically apertured, to receive the casing 4, imperforate, closed at the bottom, and in the form of a tube. The tube 4 is provided, adjacent its upper edge, and above the burner-top, with a laterally projecting bearing 5 in which is journaled for rotation, a set-screw 6. Mounted in the outer tube, or casing 4, is a foraminous tube 7 which, like the outer tube 4, is arranged to extend above the burner-top, the tube 7 being provided with a laterally projecting lug 8, adapted to be engaged, upon its upper face, by the extremity of the set-screw 6, whereby the foraminous tube 7 may be retained within the outer tube 4.

Rigidly assembled with the tube 7, adjacent its upper extremity, is a plate 9, which is substantially bisected, longitudinally, by the tube 7. The plate 9, adjacent one end, is provided with a longitudinally extending slot 10, which is duplicated adjacent the other end of the plate 9 by a slot 11. A slide 12 is shown, which is adapted to rest upon the plate 9 and to reciprocate thereon. The slide 12 is provided, intermediate its ends, with an aperture 37, of sufficient size to admit the passage of the upper extremity of the tube 7. This tube 7, immediately above the plate 9, is provided with a transverse aperture 43, adapted to receive a stop which projects from the plate 12 at one end of the aperture 37 therein. As the slide 12 reciprocates upon the plate 9, the stop 38, moving in the aperture 33 of the tube 7, alternately opens and closes the upper end of said tube.

The slide 12 is provided with apertures 13 and 15 located upon opposite sides of the opening 37 into which the end of the tube 7 is inserted. Rigidly mounted in the aperture 14 of the slide 12, is a depending pintle 16, the lower extremity of which is adapted to reciprocate in the slot 10 of the plate 9. A rack 17 is shown, one end of which is arranged to be assembled with the slide 12 by means which will be described hereinafter. For the present, it will suffice to say, merely,

that the rack and the slide are rigidly united at one end of the rack, the other end thereof being provided with an upstanding boss 19, which, engaging the aperture 11 in the plate 9, from the under side of the plate, serves, in connection with the pintle 16, to regulate and to direct the movement of the slide 12 upon the plate 9.

The rack 17, which is disposed beneath the plate 9, is provided at its outer edge, with a head 20, provided with an aperture 21 arranged to be alined with an aperture 22 in one end of the slide 12. At its inner end, the rack 17 carries a head 18 which is arranged to bear upon the lower surface of the plate 9, upon either side of the aperture 11 therein.

Securely mounted upon the upper extremity of the tube 7 is a guide 23, provided with an aperture 24 adapted to receive the end of the tube 7 wherewith the guide is rigidly assembled. This guide plate 23, which is located above the slide 12, coöperates with the plate 9, in limiting the movement of the slide 12. The striker 24 is fashioned from resilient material, one end thereof being provided with an aperture 26 adapted to be alined with the aperture 22 of the slide 12, the other end being provided, upon its lower face, with depending teeth 25. An auxiliary leaf-spring 27 may be added to the device, and when this element is employed, it is provided adjacent one extremity with an opening 28. The other extremity of the auxiliary leaf-springs 27 is arranged to bear upon and reinforce the action of, the striker 24. A retaining element 29, in the present instance shown in the form of a screw-bolt, is passed through the opening 28 in the auxiliary spring 27, through the opening 26 in the striker 24, through the opening 22 in the slide 12, and finally mounted, terminally in the aperture 21 of the head 20 of the rack 17. By means of this member 29, the several elements may be assembled in the position shown in Fig. 1.

In its upper end, the foraminous tube 7 is notched to form guides 39, adapted to inclose laterally, the extremity of the striker 24, the said extremity being upbent, as clearly shown in the drawings, to permit it to clear the upper end of the tube 7. In order that the depending teeth 25 which are carried by the striker 24 may not engage the upper end of the tube 7, the same is notched, as denoted by the numeral 40, to permit the passage of the teeth, when the striker is moved to and fro with the slide 12.

Journalled for rotation in the burner 1, is a shaft 30, carrying upon its extremity, and held within the burner, a pinion 31 which is arranged to mesh with the teeth of the rack 17. This shaft 30 is provided upon its outer extremity, with a head 32 which is disposed in the plane of the axis of the shaft 30, in order that it, the said head 32, may be dis-

tinguished in the darkness, from the head 3 whereby the wick is raised and lowered.

Slidably mounted within the foraminous tube 7, is a compression spring 33, carrying at its lower end, a head 34, which is laterally extended to engage the lower extremity of the tube 7, and arranged to bear upon the closed bottom of the tube 4. Rising from the upper face of the head 34 is a stop 35, about which the lower extremity of the spring 33 may be wound. The upper extremity of the spring 33 carries a head 36 which is of a diameter to enable the said head to reciprocate freely within the tube 7. This spring 33 is adapted to feed upward, an ignition element which is located in the foraminous tube 7. This tube 7 is adapted to receive a considerable number of these ignition elements, which, in the present instance, are fashioned in the form of pellets 42. These pellets are adapted to be ignited frictionally, like the head of a match, and their construction is such, that, after they are consumed, but a slight residuum will remain.

Passing now to the operation of the device, and supposing that none of the pellets 42 are mounted in the tube, the procedure to fill the device is as follows:—The set-screw 6 is rotated in the bearing 5, to withdraw the extremity of the set-screw from contact with the lug 8 which projects from the tube 7. The tube 7 may thus be raised within the tube 4, the spring 33 dropping to the bottom of the tube 4, and leaving the upper edge of the tube 7 empty. The striker 24 is then raised to elevate its free end above the guides 39, whereupon it may be swung laterally pivoting upon the member 29, and opening the upper end of the tube 7. The slide 12 is then moved to withdraw the stop 38 from the aperture 43 in the tube 7, and to dispose the opening 37 in the slide above the bore of the tube 7. This process opens completely the top of the tube 7, whereupon the desired number of the pellets 42 may be introduced therinto. When the desired number of pellets 42 have been introduced into the tube 7, the slide 12 is operated to cause the stop 38 to close the top of the tube. The striker 24 is then lifted at its free end, and rotated, being finally disposed in position between the guides 39. The tube 7 is then lowered into the tube 4, and this operation will compress the spring 33. After the end of the set-screw 6 has been made to engage the shoulder 8, the device is ready to exercise its function in lighting the lamp and this operation I will now describe.

Presupposing that the device is in the position shown in Fig. 1, the head 32 may be grasped and the shaft 30 rotated through a small arc, in an anticlockwise direction. This movement of the shaft 30, will cause the pinion 31 to engage the rack 17, causing

the slide 12 to move toward the left-hand side of Fig. 1, withdrawing the stop 38 from its position within the contour of the bore of the tube 7. As the stop 38 is withdrawn, the opening 37 will be positioned above the tube, and one of the pellets 42, under the action of the spring 33, will move upward through the opening 37 in the slide. As the slide moves as hereinbefore described, the free extremity of the striker 24 will be positioned above the tube 7 so that the pellet which is expelled, will not move entirely free from the device. If the shaft 30 now be rotated in an opposite, that is, in a clockwise direction, the stop 38 will again move within the contour of the bore of the tube 7, segregating one of the pellets 42 in the upper part of the tube 7. This movement of the slide 12, will cause the teeth 25 of the striker 24, to engage the pellet which is imprisoned above the stop 38 causing the pellet to light. The pellet, in its combustion, will ignite the wick of the burner automatically.

As hereinbefore pointed out, it is intended that the pellet 42 will burn clean, but, should any products of combustion remain upon the stop 38, the movement of the stop within the aperture 43 will cause any material which may remain upon it, to drop downward into the tube 7, from which it will find its way outward, dropping ultimately, between the tubes 4 and 7. Occasionally, the burner may be removed from the lamp, and the tube 7 and its appurtenances being removed inverted, so that the tube 4 may be freed from any waste material which may have collected therein.

The device, although simple in operation, and of few parts, furnishes a means whereby a lamp may be lighted at any time, without the use of a match, and is intended to be employed, not only for convenience, but as a safety device, adapted to be used by children and the weak-minded or aged, who cannot be trusted with matches.

Having thus described my invention what I claim as new and desire to protect by Letters Patent is:—

1. The combination with a burner, of a tube mounted therein; an ignition element disposed in the tube; resilient means for feeding the ignition element; a slide arranged to reciprocate at the top of the tube, to cover and to disclose, alternately, the ignition element; means carried by the slide for striking the ignition element when the same is disclosed and for limiting the movement of the ignition element under the action of the resilient means; and means for operating the slide.

2. The combination with a burner, of a tube mounted therein; a series of ignition elements disposed in the tube; resilient means for feeding the ignition elements; a

reciprocating member located at the top of the tube and arranged to permit the passage of a single ignition element to the top of the tube and to house it from the others of the series; means carried by the reciprocating member for striking the segregated ignition element and for limiting the movement of the same under the action of the resilient means; and means for operating the reciprocating member.

3. The combination with a burner, of an imperforate tube mounted therein; a foraminous tube located within the imperforate tube; an ignition element inclosed by the foraminous tube; resilient means located within the foraminous tube for feeding the ignition element; and means for striking the ignition element.

4. The combination with a burner, of a tube mounted therein and closed at the bottom; a second tube located within the first and open at the bottom; an ignition element inclosed by the second tube; a compression spring for feeding the ignition element, mounted in the second tube and provided with a head to engage the end thereof and to bear upon the bottom of the first tube; and means for striking the ignition element.

5. The combination with a burner, of an imperforate tube mounted therein; a foraminous tube slidably mounted in the imperforate tube and provided with an open bottom; a spring slidably mounted in the foraminous tube and arranged to engage at its lower terminal, the bottom of the imperforate tube; an ignition element located in the foraminous tube and engageable by the spring; means for locking the tubes together; and means for striking the ignition element.

6. The combination with a burner, of a tube mounted therein and having a slot adjacent its end terminating within the contour of the tube; a plate assembled with the tube; a slide arranged to reciprocate upon the plate and to inclose the tube, the slide being provided with an opening to register with the bore of the tube and with a stop extending into the opening and arranged to register in the slot of the tube to open and to close the bore of the tube; an ignition element located within the tube; resilient means for feeding the ignition element when the bore of the tube is open; and means for striking the ignition element when the bore of the tube is closed.

7. The combination with a burner, of a tube mounted therein; a slide arranged to reciprocate at the mouth of the tube to open and to close the same; an ignition element located within the tube, and resilient means for feeding the ignition element when the tube is open; a striker mounted at one end upon the slide and arranged at the other

to strike the ignition element when the tube is closed and to limit the movement of the ignition element under the action of the resilient means; and means for reciprocating the slide.

8. The combination with a burner, of a tube mounted therein; a slide arranged to reciprocate at the mouth to open and to close the same; an ignition element located within the tube, and resilient means for feeding the ignition element when the tube is open; a resilient striker mounted at one end upon the slide and arranged at the other to strike the ignition element when the tube is closed; a rack assembled with the slide; a shaft journaled for rotation in the burner; a pinion carried by the shaft and in mesh with the rack.

9. The combination with a burner, of a tube mounted therein; a plate assembled with the tube and provided with a slot; a slide arranged to reciprocate upon the plate to open and to close the tube; a rack assembled at one end with the slide and arranged at the other to reciprocate in the slot of the plate to aline the slide in its movement; means engageable by the rack for reciprocating the slide; an ignition element located in the tube and arranged to be segregated by the slide; and means carried by the slide for striking the ignition element when segregated.

10. The combination with a burner, of a tube slotted at its top to form guides; a slide arranged to reciprocate adjacent the top of the tube; a resilient striker assembled at one end with the slide and arranged to reciprocate between the guides; a tooth depending from the striker, the tube being notched for the passage of the tooth; an ignition element located in the tube and engageable by the tooth; and means for reciprocating the slide.

11. The combination with a burner, of a

tube mounted therein, the tube being transversely slotted adjacent its end, and being notched at its top to form guides; a plate assembled with the tube; a slide arranged to reciprocate upon the plate and to inclose the tube, the slide being provided with a stop to register the transverse slot of the tube to open and to close the bore of the tube; an ignition element located within the tube; resilient means for feeding the ignition element when the bore of the tube is open; a resilient striker assembled at one end with the slide and arranged to reciprocate between the guides; a tooth depending from the striker and arranged to engage the ignition element when the tube is closed, the tube being notched in its upper edge for the passage of the tooth; and means for reciprocating the slide.

12. The combination with a burner, of a tube mounted therein and slotted adjacent its end; a plate assembled with the tube; a slide arranged to reciprocate upon the plate and to inclose the tube; the slide being provided with a stop to register in the slot in the tube to open and to close the bore of the tube; an ignition element located within the tube; resilient means for feeding the ignition element when the bore of the tube is open; means for striking the ignition element when the bore is closed; a rack assembled at one end with the slide and arranged at the other end to engage the plate to aline the slide in its movement; and means engageable by the rack for reciprocating the slide.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

LUTHER J. GRAHAM.

Witnesses:

OVID LEROY WRIGHT,
FRANK LUCAS.