F. J. FISHER.

AUTOMATIC SMUDGE POT.

APPLICATION FILED JULY 15, 1913.

1,095,496.

Patented May 5, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

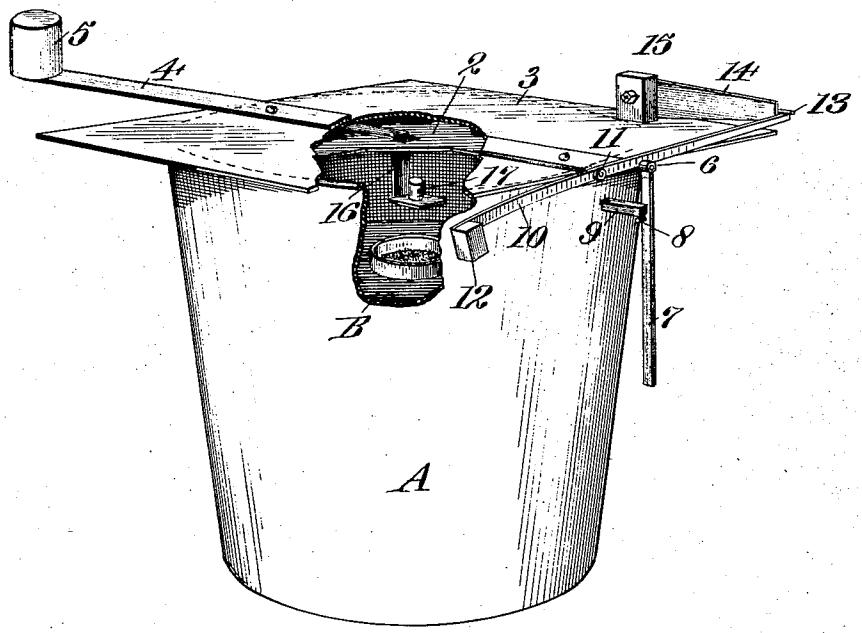
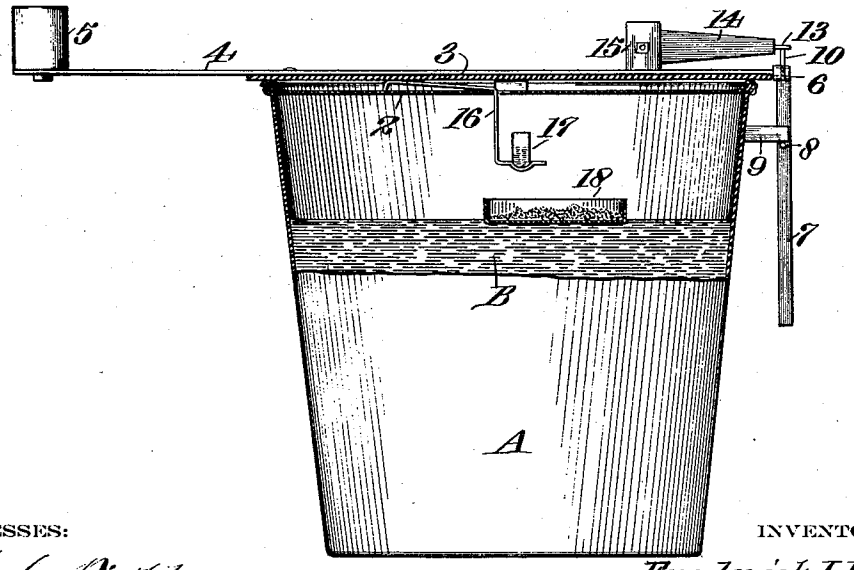


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

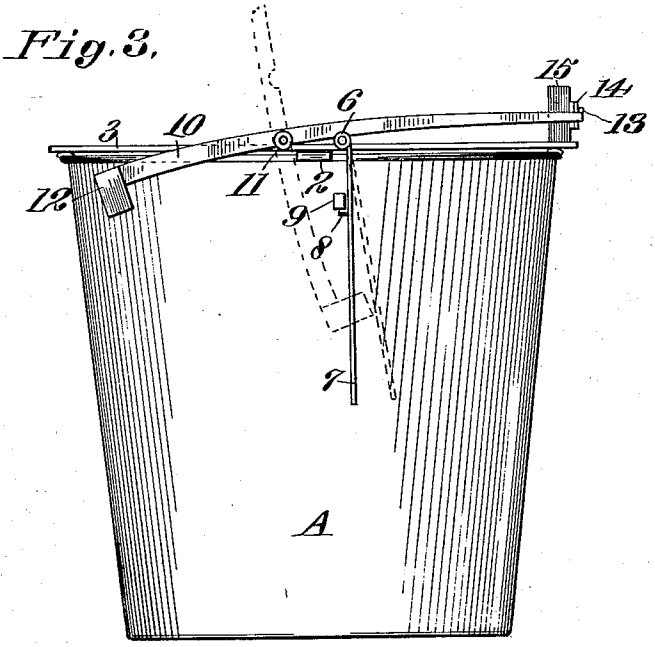
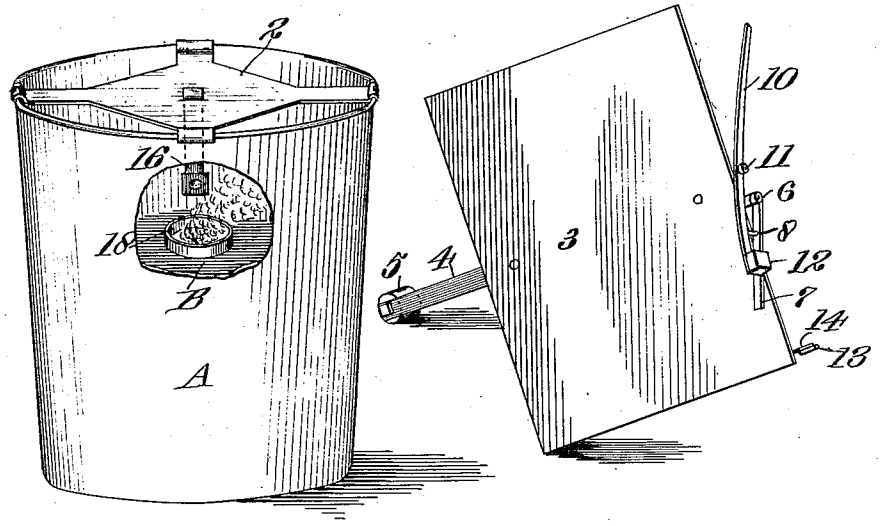


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 5.

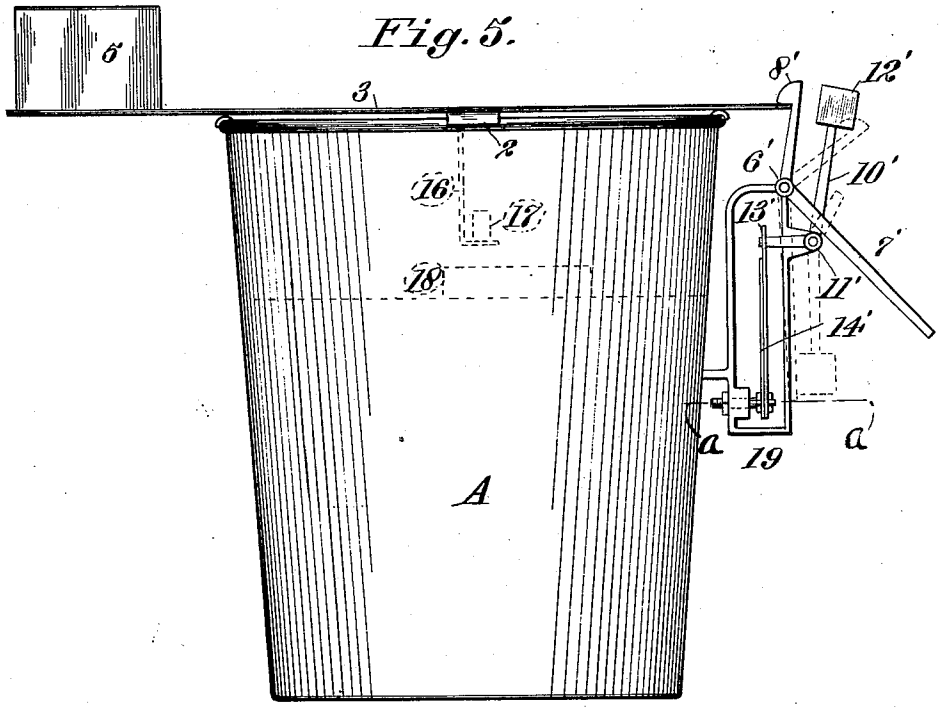
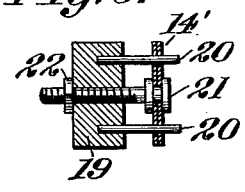


Fig. 6.



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UNITED STATES PATENT OFFICE.

FREDERICK J. FISHER, OF OAKLAND, CALIFORNIA.

AUTOMATIC SMUDGE-POT.

1,095,496. Specification of Letters Patent. Patented May 5, 1914.

Application filed July 15, 1913. Serial No. 779,123.

To all whom it may concern:

Be it known that I, FREDERICK J. FISHER, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented new and useful Improvements in Automatic Smudge-Pots, of which the following is a specification.

This invention relates to an automatic ignition device for smudge-pots and the like.

It is the object of this invention to provide a self-operated device for igniting fuel in smudge-pots and the like when the temperature falls to a certain predetermined degree so as to render it unnecessary to light them by hand, and which will enable the lighting of a large number of smudge-pots at practically the same time.

A further object is to provide an automatic, self-lighting smudge-pot which is particularly adapted for use in the fruit-growing industries where it is necessary to create a smudge or blanket of smoke under fruit bearing trees to prevent injury to the trees and fruit by frost, and which is so constructed as to be mechanically operated by a self-contained mechanism when the temperature falls to a certain degree.

Another object is to provide a device of the above character which is simple and cheap in construction, efficient and reliable in operation, and not liable to be accidentally operated.

Other objects will appear hereinafter.

The invention primarily resides in a thermostatically controlled trip-lever and means adapted to be actuated by the trip-lever for igniting combustible materials in a smudge-pot, and simultaneously, automatically removing a cover and the thermostat from the smudge-pot.

The invention further consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the invention with parts broken away, showing it as set in readiness for operation. Fig. 2 is a side elevation partly in vertical section. Fig. 3 is a front elevation. Fig. 4 is a perspective view with parts broken away, showing the positions assumed by the movable elements of the device after being automatically operated. Fig. 5 is a side elevation of a modified form of the invention. Fig. 6 is an enlarged detail section on the line *a*—*a* of Fig. 5.

In the drawings A represents a smudge-pot which may be of any suitable construction and is adapted to contain a combustible liquid or other desired fuel, indicated at B. The open, upper end of the smudge-pot A is provided with a baffle-plate 2 which extends horizontally across the smudge-pot and is attached to the rim thereof. A cover consisting of a loose plate 3 is provided for the purpose of closing the smudge-pot and protecting its contents from rain and dew. Mounted on the cover plate 3, and extending rearwardly thereof, at its center, is a bar 4, on the outer end of which a weight 5 is supported. The weight 5 may be either rigidly attached to the bar 4 or loose thereon.

The form of the invention shown in Figs. 1 to 4, inclusive, is constructed as follows: Pivoted at 6 on the forward edge of the plate 3, is a depending latch arm 7, having a laterally-projecting pin 8 thereon, arranged to engage a stud 9, mounted on the smudge-pot A. The pin 8, when in engagement with the stud 9, serves to retain the cover plate 3 in position on the smudge-pot A in opposition to the weight 5. A vertically swinging trip-lever 10 is pivoted at 11 to the forward edge of the cover plate 3, and is provided with a weight 12 on one of its ends which weight serves as a striker and is designed to rock the trip-lever 10 from a horizontal to a vertical position and in so doing strike the arm 7 in such manner as to rock the latter and thereby move the pin 8 out of engagement with the stud 9 to release the cover plate 3, as will be later described. The trip-lever 10 is designed to be held in substantially a horizontal position in opposition to the weight 12 by means of a pin 13 on a thermostat blade 14, mounted on a block 15, carried by the cover-plate 3. The pin 13 normally extends over the upper edge of the outer end of the trip-lever 10 and is slidable thereon, so that the thermostat blade 14 may freely move inwardly and outwardly in relation to the trip-lever 10 by the action of changes of temperature on the thermostat blade 14. The thermostat blade 14 is constructed in the well-known manner common to thermostats of this character, and comprises parallel plates of different expansible and contractible properties so arranged that the blade will be bent inwardly at its outer end by a rise in temperature, and will be

bent outwardly by a fall in temperature; the blade being adjusted in such relation to the trip-lever 10 as to move outwardly a sufficient distance to release the trip-lever 10 when the temperature falls to a predetermined degree.

In the application and operation of the form of the invention just described, the cover-plate 3 is placed in position on the smudge-pot A and the pin 8 on the arm 7 is disposed in engagement with the under side of the stud 9. The trip-lever 10 is then disposed with its outer end beneath the pin 13 on the thermostat blade 14; the various parts being then positioned as shown in Figs. 1, 2 and 3. When the temperature falls sufficiently far to cause the thermostat plate 14 to move outwardly and carry the pin 13 out of engagement with the trip-lever 10, the latter will be rocked on its pivot 11 by the action of the weight 12. The weight 12 in falling strikes the arm 7 and rocks the latter on its pivot 6, as indicated in dotted lines in Fig. 3, thereby moving the pin 8 out of engagement with the stud 9. The weight 5 will then operate to rock the cover-plate 3 and cause the latter to fall clear of the smudge-pot A, as shown in Fig. 4. The cover 3 in falling from the smudge-pot A releases a swinging lever 16, supported on the baffle-plate 2 and previously held in place by means of the cover-plate 3. The lever 16 is designed to carry a loose capsule or cup 17 containing sulfuric acid, and when released by the removal of the cover 3 drops the capsule into a celluloid cup 18, supported on the fuel B, containing a small quantity of potassium. The acid on striking the potassium acts to produce a flame which ignites the celluloid cup 18 which in burning kindles the fuel B.

In the form of the invention shown in Fig. 5 the thermostat blade and the mechanism controlled thereby are mounted independent of a cover-plate 3; the thermostat blade 14′ being adjustably mounted in a frame 19. The latch arm 7′ is in the form of a bent lever, pivoted at 6′ to the frame 19, and having a hooked outer end 8′ adapted to engage the forward edge of the cover-plate 3 to suspend the frame 19 and its connections. The trip-lever 10′ is pivoted at 11′ to the frame 19, and when the device is set in readiness for operation, as shown in full lines in Fig. 5, one arm of the lever 10′ is inserted in a slot 13′ in the thermostat blade 14′. When the hook 8′ is engaged with the cover-plate 3, as shown in Fig. 5, the weight of the frame 19 and its connections will oppose the weight 5, so as to retain the cover-plate 3 in position on the smudge-pot. In the operation of this form of the invention, the thermostat blade 14′ will move away from the trip-lever 10′ when acted upon by a fall in temperature, so as to release the trip-lever and cause its weighted outer end 12′ to fall and strike the lower portion of the arm 7′, thereby throwing the hooked portion 8′ out of engagement with the cover-plate 3, as indicated in dotted lines in Fig. 5. When this occurs, the frame 19 will fall to the ground and the weight 5 will act to rock the cover-plate 3 on the edge of the smudge-pot A and cause the cover 3 to fall clear of the smudge-pot; the cover 3 in moving from the smudge-pot operates the ignition device, as before described, so as to set fire to the fuel in the smudge-pot. The thermostat blade is mounted so as to be adjustable in relation to the trip-lever, so that it will operate to release the latter at any desired temperature. This mounting of the thermostat blade is particularly shown in Fig. 6, and consists of a pair of parallel pins 20 which pass through the thermostat blade, and on which the latter is slidable. A bolt 21, turnably secured to the thermostat blade, passes through and is threaded in the thermostat support, and has a binding nut 22 on its outer end. The bolt 21 may be screwed in and out of the thermostat support, so as to dispose the thermostat blade in any desired position.

It is manifest that any suitable form of ignition device may be employed in lieu of the one here shown, and that various modifications may be made in the trip mechanism and thermostat control.

From the foregoing it will be seen that I have provided a smudge-pot in which the fuel will be automatically ignited by a fall of temperature; thus rendering it unnecessary for a grower to keep watch during threatening weather and enabling the dispensing with attendants for lighting the smudge-pots by hand.

The automatic feature of this invention enables a grower to place a large number of the smudge-pots in an orchard or grove with the assurance that they will be ignited practically simultaneously when the temperature falls to a degree dangerous to the trees and fruit.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. The combination with a smudge-pot and a removable cover therefor, of a thermostat, means controlled by the thermostat for removing the cover, and an ignition device operated by the removal of the cover for igniting fuel in the smudge-pot.

2. In a smudge-pot, a loose cover, a weight for overbalancing and removing the cover, a catch for holding the cover in place in opposition to the weight, a thermostat, means controlled by the thermostat for releasing the catch, and an ignition device released by the removal of the cover for igniting fuel in the smudge-pot.

3. In a smudge-pot, a loose cover, a weight for overbalancing and removing the cover, a catch for holding the cover in place in opposition to the weight, a thermostat, a weighted trip-lever controlled by the thermostat and adapted to strike and actuate the catch to permit the weight to remove the cover, and an ignition device operable on the removal of the cover for igniting fuel in the smudge-pot.

4. The combination with a smudge pot, of a removable cover provided with a weight, a catch for holding said cover on the smudge pot, a thermostat supported by the pot for releasing said catch, and an ignition device released by the removal of the cover for igniting fuel in the pot.

5. The combination with a smudge pot, of a weighted removable cover, a catch for holding said cover in closed position, a trip for actuating said catch, a thermostatic device supported by the pot for controlling said trip, a supporting member beneath said cover, and an ignition device loosely carried by said supporting member adapted to be released by the removal of said cover for igniting the fuel in the smudge pot.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FREDERICK J. FISHER

Witnesses:
A. J. SCHULZE,
E. B. STEWARD.