

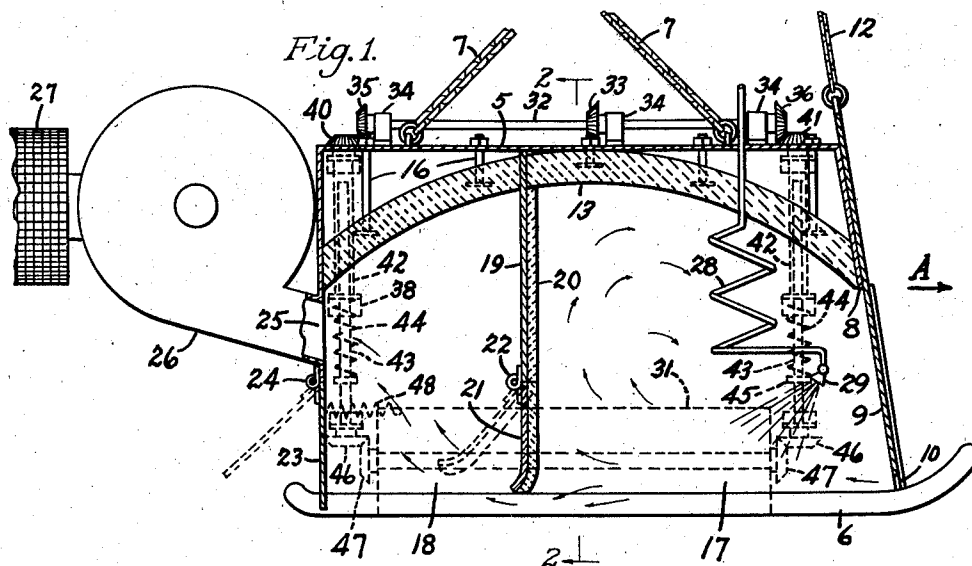
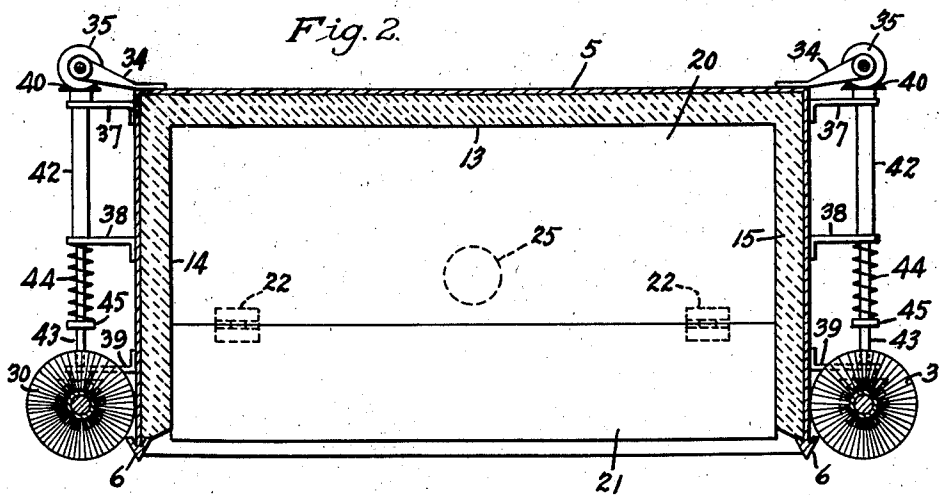
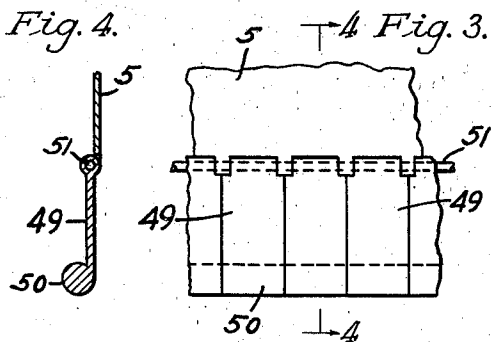
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WEED BURNER

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WEED BURNER

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10 Claims. (Cl. 126—271.2)

My invention relates to a burner for weeds, grass, small brush and similar combustible material. An important object of my invention is to provide a portable device that will burn a restricted area and at the same time control such burning to prevent the fire from spreading to adjacent areas.

Another object is to provide separate chambers in such a device, one for burning the combustible material in a prescribed area under a high temperature and another for extinguishing the flame in such area after the burning over.

Other objects include providing novel means for preventing the fire from spreading at the sides, front and rear of the device, and to afford means whereby the device may ride over obstacles without damage.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description.

In the drawing, like reference characters designate similar parts in the several views.

Figure 1 is a vertical section of an embodiment of my invention.

Figure 2 is a section taken on the line 2—2 of Figure 1.

Figure 3 is a broken elevation of a modification.

Figure 4 is a section taken on the line 4—4 of Figure 3.

Referring more in detail to the drawing, the reference numeral 5 generally designates a housing for my device. Extending longitudinally along the sides are runners 6, upon which the device slides. The runners are preferably V-shaped in section and turned up at the ends. The device may be drawn or supported by any suitable means. Chains 7 have been indicated as supporting the device by means of a boom or other means (not shown). The chains 7 are fastened to the housing by suitable means.

The front end of housing 5 has an opening 8 which in operation is closed by a door 9 mounted to slide in grooves 10. A chain 12 also preferably supported by the boom or other means operates the door.

The top and side walls of the housing 5 are preferably lined with refractory material, as shown at 13, 14 and 15, respectively. The top lining 13 is arched from front to back, as shown in Figure 1. Bolts 16 embedded in the refractory material suspend the arched top lining from the top of the housing.

A vertical partition 19 divides the interior of

the housing 5 into two chambers 17 and 18. The side of the partition 19 facing the chamber 17 is also covered with refractory material 20. The lower portion of the partition provides a flap gate 21, hinged at 22 to the upper portion of the partition.

The rear of the housing 5 has a flap gate 23, hinged at 24, and a discharge outlet 25 connecting with a fan 26. The fan, which discharges into a screen trap 27, is driven by any suitable means.

The chamber 17 provides a retort for the decomposition by heat of combustible material. A coil 28 in the retort 17 provides means for pre-heating material to generate an inflammable gas. The material used may be a gas, e. g., rock gas, or may be a liquid, e. g., distillate. A burner 29 at the end of the coil projects downwardly at a rearwardly inclined angle. The coil is connected to any suitable source of material. It is to be understood without further illustration that a series of burners 29 may be employed.

To prevent the fire from spreading laterally, I provide wire brushes 30 and 31, that are rotated to sweep inwardly toward the housing and toward each other. Mechanism for rotating the brushes comprises a drive shaft 32 upon which is mounted a drive pinion 33. Suitable bearings 34 are provided for the shaft 32. Bevel gears 35 and 36 are disposed at opposite ends of the shaft 32.

Brackets 37, 38 and 39 are fastened to the sides of the housing 5. Bevel gears 40 and 41 mesh respectively with bevel gears 35 and 36. The bevel gears 40 and 41 are mounted upon driving sleeves 42, which in turn are rotatably supported in the brackets 37. Driving spindles 43 are splined in the driving sleeves 42. Springs 44 coiled around the spindles 43 abut against the brackets 38 and stops 45 on the spindles, urging the rotary brushes 30, 31 downwardly against the ground.

The spindles 43 are free to rotate in the bracket 39 and carry at their lower ends bevel gears 46, which mesh with bevel gears 47 on the rotary brushes.

The rear flap door 23 may be maintained closed normally by means of a helical spring 48, or the door 23 may be composed of a series of flaps 49, as shown in Figure 3. In the latter form, weights 50 may be used to maintain the flaps vertical normally, by gravity. A pin 51 permits swinging movements of the flaps 49 when obstructions are struck.

In the operation of my device, the front door

9 is lowered to a closed position. Material discharged from the nozzle 29 is ignited; pinion 33 is operatively connected with a source of power; and the blow fan in the housing 26 is started.

5 The apparatus is now advanced along the area to be burned, in the direction of the arrow A of Figure 1, by means of the chains 7 attached to a boom on a tractor, or other suitable means. As the apparatus advances, weeds, grass, small
10 brush, and other combustible material is bent down by the door 9. As the combustible material again rises, it is at substantially the same angle to the horizontal as the nozzle 29. The flame from the nozzle thus impinges directly upon such
15 material. Since the temperature in the retort chamber 17 is high (2700° F. or more), the combustible material is substantially decomposed by the heat by the time the housing has moved forward to a position in which the material, or
20 what is left of it is in the suction chamber 18.

The lining 13 at the top of the housing, interiorly, is relatively high above the ground, to provide a chamber of sufficient size to provide sufficient air to support combustion therein. The size
25 of the chamber 17, the curved top lining 13, the angle of the nozzle means 29 and the force of the gas from the nozzle together cause a swirling or turbulence of the air in the chamber 17, as shown by the curved arrows therein. This motion of the
30 air aids combustion and efficient distribution of the heat in the chamber.

The flap gates 21 and 23 permit the apparatus to pass over rocks, mounds of dirt, etc.

35 The fan 26 creates a partial vacuum in the chamber 18. The suction of the fan draws up all flames that may still be burning in chamber 18, thus snuffing out such flames and thereby preventing the apparatus from leaving burning material in its wake. Due to the partial vacuum in
40 the chamber 18, if the rear flap door 23 is raised, there will be an in-rush of air, thus preventing the spread of fire to the rear.

The wire brushes 30 and 31, by sweeping toward each other and toward the housing, quench and
45 prevent the spread of fire, laterally, in case an obstacle or uneven ground causes one or both of the runners to rise. The runners 6 otherwise maintain close contact with the ground.

50 The screen trap 27 catches burning material from the fan and prevents its discharge into the atmosphere until substantially reduced to ash. Gases of combustion of course escape through the screen.

In the modification shown in Figures 3 and 4,
55 by reason of having the rear gate in sections 49, an obstruction that does not extend from one side wall of the apparatus to the other will only lift up those sections 49 actually contacted. The spring 48 and/or weights 50 will cause the rear flap gate or sections thereof to return to a vertical position.

65 By reason of the splined driving sleeves 42 and the driving spindles 43, the springs 44 tend to maintain the brushes in contact with the ground at all times and at the same time rotate the brushes continuously, whether obstructions are encountered or not.

70 While I have illustrated and described what I now regard as the preferred embodiment of my invention, the construction is, of course, subject to modifications without departing from the spirit of my invention. I, therefore, do not wish to restrict myself to the particular form of construction illustrated and described, but desire to
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avail myself of all modifications which may fall within the scope of the appended claims.

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

1. A portable weed burner apparatus having a
5 housing open at its bottom and movable over the ground, a partition dividing the interior of the housing into two chambers, one of said chambers being ahead of the other with regard to the direction of operative movement of the apparatus
10 over the ground, at least a portion of the partition being hinged to swing rearwardly upon striking an obstruction, burner means in the forward chamber, and suction means connected to produce a partial vacuum in the rear chamber, to
15 snuff out the fire as the apparatus is moved over the ground.

2. A portable weed burner apparatus comprising two separate open bottom chambers movable over the ground, one of the chambers being ahead
20 of the other with regard to the direction of operative movement of the apparatus over the ground, a burner in the forward chamber disposed to project a flame downwardly and rearwardly, means on the apparatus ahead of the burner to
25 bend combustible material forward with regard to the direction of operative movement of the apparatus, and means to produce a partial vacuum in the rear chamber and to discharge gases from the rear chamber into the atmosphere.

3. A portable burner apparatus comprising a housing open at its bottom and movable endwise over the ground, burner means in the housing, non-combustible rotary brushes at the sides of
35 the housing, spring means tending to maintain the brushes in contact with the ground and driving means for rotating the brushes continuously to sweep toward the housing but permitting the housing to be raised relative to the brushes.

4. A portable burner apparatus comprising a
40 housing open at its bottom and movable endwise over the ground, burner means in the housing, non-combustible rotary brushes at the sides of the housing, vertical splined shafts arranged to rotate the brushes in directions to sweep material toward the housing, the vertical splined
45 shafts permitting the housing to be raised relative to the brushes, and spring means tending to maintain the brushes in contact with the ground at all times.

5. A portable burner apparatus comprising a housing open at its bottom and movable endwise over the ground, a partition dividing the housing interiorly into two separate chambers, one of the chambers being ahead of the other with regard to the direction of operative movement of the apparatus, the housing having closed side, front and rear walls, runners extending along both chambers at the bottoms of the side walls, burner means disposed in the chamber defined
60 by: the front wall of the housing, the forward portions of the side walls, the portions of the runners under the forward portions of the side walls, and the partition, and suction means to produce a partial vacuum in the chamber defined
65 by: the partition, the rear portions of the side walls, the portions of the runners under the rear portions of the side walls, and the rear wall of the housing.

6. A portable burner apparatus having a housing open at its bottom and movable over the ground, a partition dividing the interior of the housing into two chambers, one being ahead of the other, as the apparatus is moved, the partition extending down within close proximity to
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the ground, thereby providing a restricted passage under the partition, from one chamber to the other, burner means in the forward chamber, and suction means to produce a partial vacuum in the rear chamber.

5 7. A portable weed burner apparatus having a housing open at its bottom and movable over the ground, a partition dividing the interior of the housing into two chambers, one of the chambers 10 being ahead of the other chamber with regard to the direction of the operative movement of the apparatus over the ground, burner means in the forward chamber, the partition being arranged to pass over burning material, and suction 15 means having an intake connected to the rear chamber to produce a partial vacuum in the rear chamber and having a discharge opening into the atmosphere, to snuff out the fire as the apparatus is moved over the ground.

20 8. A portable weed burner apparatus having a housing open at its bottom, a partition dividing the housing interiorly into two separate chambers movable together over the ground, one of the chambers being ahead of the other chamber 25 with regard to the direction of operative move-

ment of the apparatus over the ground, burner means in the forward chamber, the rear chamber being at least one-third as wide as the forward chamber, and suction means having an intake 5 connected to the rear chamber to produce a partial vacuum in the rear chamber and having a discharge opening into the atmosphere for gases of combustion from the rear chamber.

9. A portable burner apparatus having a housing open at its bottom and movable over the 10 ground, a partition dividing the interior of the housing into two chambers, one being ahead of the other as the apparatus is moved, the apparatus having a restricted passage past the partition from one chamber to the other, burner means in 15 the forward chamber, and suction means to produce a partial vacuum in the rear chamber.

10. A burner apparatus comprising a housing open at its bottom, burner means in the housing for decomposing combustible material by heat, 20 non-combustible rotary brushes extending along the sides of the housing and means to cause the brushes to sweep inwardly toward the sides of the housing.

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