E. E. ALLEN.

WEED BURNER FOR ROADWAYS.

APPLICATION FILED FEB. 9, 1912.

1,192,808.

Patented July 25, 1916.

2 SHEETS—SHEET 1.

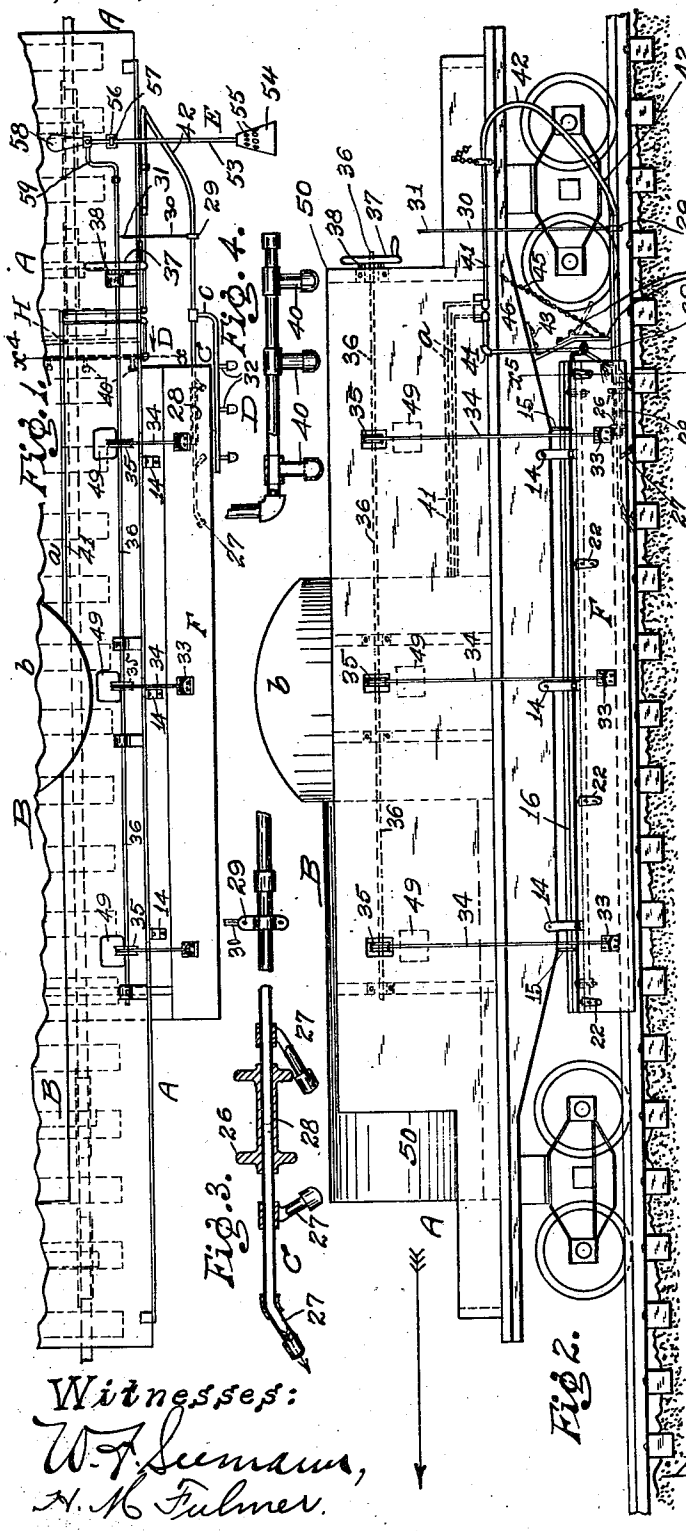


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

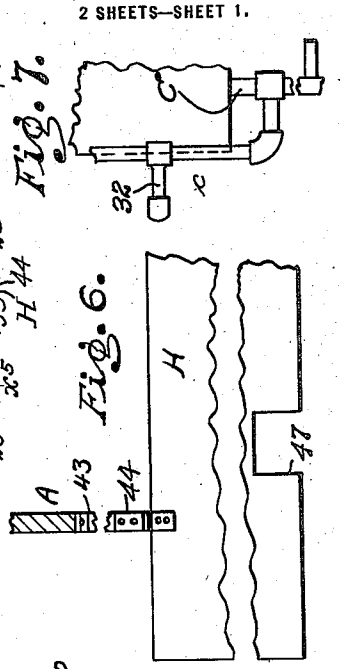


Fig. 5.

Fig. 6.

Fig. 7.

Witnesses:

W. F. Seemann,

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Inventor:

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WEED BURNER FOR ROADWAYS.

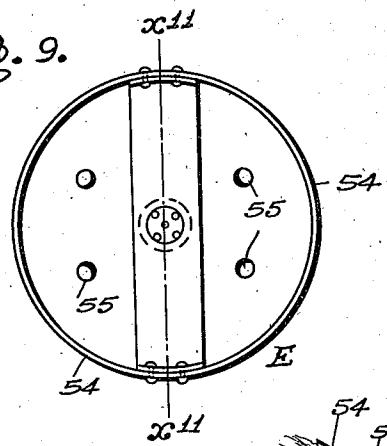
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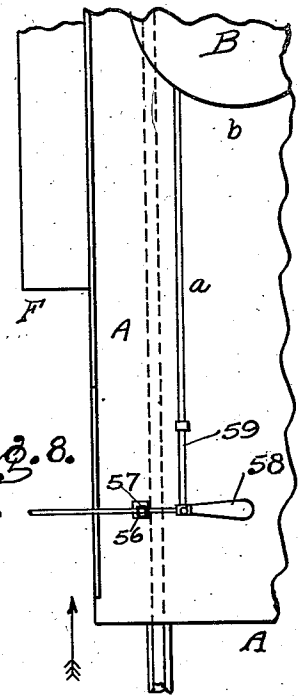
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2 SHEETS—SHEET 2.

Fig. 9.





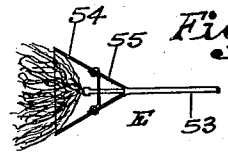


Fig. 8.

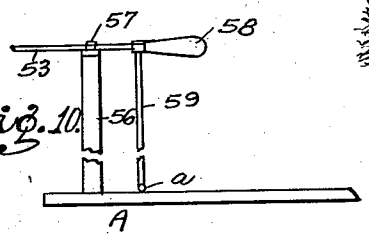


Fig. 10.

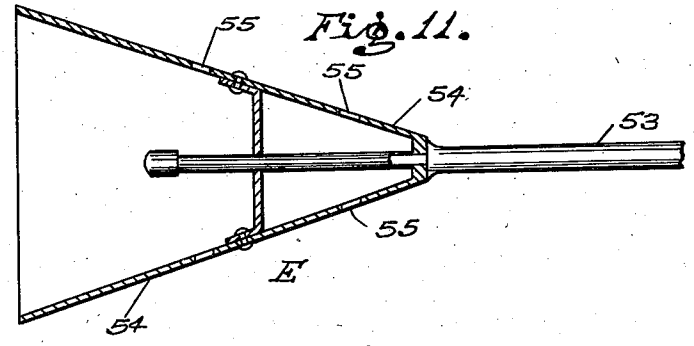


Fig. 11.

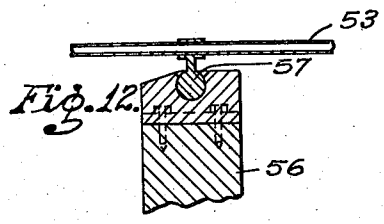


Fig. 12.

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UNITED STATES PATENT OFFICE.

EUGENE E. ALLEN, OF LOS ANGELES, CALIFORNIA.

WEED-BURNER FOR ROADWAYS.

1,192,808. Specification of Letters Patent. Patented July 25, 1916.

Application filed February 9, 1912. Serial No. 676,602.

To all whom it may concern:

Be it known that I, EUGENE E. ALLEN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Weed-Burners for Roadways, of which the following is a specification.

This invention relates to weed burners, or to that class of apparatus or mechanism utilized for destroying by combustion or incineration weeds and other obstructive growths such as commonly spring up along railway and other roadbeds. The nuisance resulting from such growths, which are profuse in places where sufficient rainfall occurs, constitutes a serious obstacle to proper traverse of roadways, especially railway roadbeds in which the wheels of the vehicles are confined to track-ways, allowing the growths to mature without material interference. In the lesser frequented public highways such weed growths frequently accumulate to a bothersome extent.

The present invention, therefore, while adapted for utilization in connection with maintaining free of weed obstruction roadways in general, is particularly adapted and useful for keeping down the encroachment of weeds upon the right-of-way of railways, adjacent to the rails. Exterior of the rails, at each side of the railway roadbed, longitudinally thereof, extends what is termed in railway parlance a "sod-line," varying in width from three to five feet. The proper maintenance of the roadbed requires that this sod-line be kept free from vegetable growths. To this end, it is standard practice for the railroads to employ large gangs of workmen to cut and remove weeds from the sod-lines. Often this practice extends to eliminating weeds for considerable extent laterally of the sod-lines.

According to my invention I provide means for destroying the weeds under high temperatures, such means being mounted upon a suitable car or other rolling stock, which carries the fuel, preferably oil, for the heat-generating means.

The invention has for its object to provide improved means or apparatus or mechanism of the general nature stated, which will be relatively superior in point of simplicity and inexpensiveness of organization combined with serviceability, which will be positive in operation, and which will be capable of convenient control and utilization, and which will be generally superior in efficiency, serviceability and economy.

With the above and other objects in view, the invention consists in the provision, formation, construction, combination and relative arrangement of parts, members and features, all as hereinafter described, shown in the drawings, and finally pointed out in the claims.

In the drawings:—Figure 1 is a fragmentary top plan view of weed burning mechanism or apparatus constructed in accordance with the invention; Fig. 2 is a side elevation of the same with a complete showing of the rolling stock with which the features of the invention are combined; Fig. 3 is an enlarged fragmentary sectional view of a burner element constituting an important feature of the apparatus embodying the invention, the same being partially in elevation; Fig. 4 is a similar view of another burner element, the element shown in Fig. 3 being disposed as a longitudinal burner and that in Fig. 4 as a transverse burner; Fig. 5 is an enlarged transverse sectional view, partly in elevation, of a feature of the organization embodying the invention which will be referred to hereafter as an adjustable shield or deflector in connection with which the burner elements are mounted and operate; Fig. 6 is an enlarged fragmentary elevation, partly in section, of an auxiliary shield or deflector entering into the organization; Fig. 7 is a fragmentary, longitudinal sectional view of a feature of the burner construction shown in Figs. 1 and 5; Fig. 8 is a fragmentary top plan view of a part of the construction shown in Fig. 1 illustrating in detail the auxiliary burner element to be utilized in connection with weed growths upon or outside of the sod-line; Fig. 9 is an outer end view of the same upon an enlarged scale; Fig. 10 is an end elevation, fragmentary, of the construction shown in Fig. 8, looking in the direction of the appended arrow; Fig. 11 is a longitudinal central sectional view of the auxiliary burner element shown in Figs. 7 and 8, and taken upon the line X^{11}—X^{11},

Fig. 9, and, Fig. 12 is an enlarged fragmentary sectional view of a portion of the construction shown in Figs. 8 and 10.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring with particularity to the drawings, A designates a tank car, or like rolling stock, suitably organized for utilization in carrying the invention into effect, as will naturally follow from an understanding of the invention in accordance with the following description. This car is provided with fuel supply means B, such fuel ordinarily and preferably consisting of crude mineral oil, the fuel supply means including a mixer *b*, from which the fuel, suitably mixed with steam, issues to the several burner elements, through a main feed pipe *a*. I preferably employ the mixer invented by me and covered by U. S. Letters Patent No. 834,701 issued to me October 30, 1906, but may employ any mixer, or in fact any suitable fuel supply means in entirety, adapted for properly supplying the fuel to the burner elements through the supply pipe *a* or the equivalent, such pipe *a* leading to the longitudinal burner element C, to the transverse burner element D, and to the auxiliary burner element E. The burner elements C and D are utilized in connection with lateral shields or deflectors F, one of which is disposed adjustably at each side of the car A, although only one such element is illustrated in the drawings. Likewise, only one pair of burner elements C and D are illustrated in the drawings, it being understood that this organization is duplicated at the other side of the car with the other shield or deflector. Therefore, in further description of the invention, the construction and organization which is provided at one side of the car will only be dealt with, but such description will read with respect to the identical construction which it will be understood is provided at the other side of the car.

The longitudinal burner element C is provided with a branch burner *c* which extends exteriorly of the shield or deflector. The auxiliary burner element E is utilized irrespective of the shield or deflector. I further employ a wind shield G extending longitudinal of the car and disposed directly above the rails, or one over each rail, for the purpose of shielding the burners from strong transverse currents of air. Also I provide a transverse wind shield H which tends to break up currents of air moving longitudinally of the roadbed such as those caused by the movement of the car.

Referring with particularity to Figs. 1 to 7 of the drawings, more particularly to Figs. 1, 2 and 5, I employ a horizontal heat insulating shield 13 disposed under the flooring of the car A, such shield being suspended by means of the brackets 14 and the hanger rods 15 so that said shield 13 is disposed beneath the car flooring in a horizontal plane parallel to said flooring. For the suspension of the shield 14 I preferably employ a portion of an ordinary railroad rail 16 which is fastened as at 17 to the transverse tie-rods 18. This shield 13 may consist of an upper surface-plate 19 having disposed on the under side thereof a series of fire-brick 20 which are held in their proper relation to the surface-plate 19 by a series of transverse rods or wire fabric around which is massed an adhesive mixture of concrete, cement or other like substance as shown at 21. The shield or deflector F is disposed at the side of the car A as shown in Figs. 1, 2 and 5, and is hingedly connected with the shield 13 as shown at 22; said shield or deflector F consisting preferably of a metallic plate 23 having disposed on the under side thereof a concrete or cement adhesive mixture 24 similar to 21. The outer end of the shield or deflector F is bent over substantially as shown at 25, and on the inner side, and adjacent thereto is a bracket 26 utilized for holding the longitudinal burner element C in proper relation to the shield or deflector F; said burner element C constituting in detail a series of burners 27 projecting therefrom substantially as shown in Fig. 3 being arranged in pairs, the members of which converge. And in order that the proper adjustment of the burners 27 may be accomplished I employ a sleeve 28 loosely mounted on the burner element C and a clamp 29 fixed to the burner element C beyond the shield or deflector F, said clamp having a rod 30 extending upwardly to a point above the flooring of the car A as shown at 31, where it may be manipulated by the operator or attendant, thus facilitating proper adjustment of the burners 27 and the burner element C. The burner element C may be modified to embody the branch burner element *c*, and the same be disposed adjacent the outer side of the shield or deflector F permitting of a wider burning area; the branch burner element *c* comprising a series of burners 32 disposed in proper relation thereto, and the manipulation thereof is obtained by means of the rod 30. The degree of inclination and the elevation of the shield or deflector F may be varied from time to time in utilizing the invention, where the car A is being passed over a roadbed of comparative rough formation; and for this purpose I employ brackets 33 having attached thereto chains 34 extending upwardly to a point above the flooring of the car A and over the pulleys 35 which are attached to the shaft 36; the shaft 36 being disposed longitudinally of the car A and provided at one end thereof with a manual wheel 37 and locking means 38 for the proper adjustment of said

shield or deflector F, such as a dog and gear or segment thereof, and locking it in any desired position. The transverse burner element D is disposed adjacent to and directly under the edge of the horizontal shield 13 by means of the brackets 39 and said burner element may be provided with a series of burners 40 and utilized for elimination of any and all obstructive growths of weeds and the like between the ties of the roadbed. Both the burner elements C and D are provided with fuel supply pipes 41 which extend to the mixer *b;* but in order that the shield or deflector F and the longitudinal burner element C may from time to time be raised or lowered it is desirable to provide a hose or other flexible means 42 in connection with said supply pipes 41. The transverse wind shield H is disposed rearwardly of and adjacent to the transverse burner element D, the same being suspended from certain parts of the car body A as shown in Fig. 6 by means of the bracket 43 and in order that the same may be from time to time raised and lowered a hinge 44 is provided, and also a chain 45 which may be hooked in the desired position, as at 46, and a portion of said shield is cut away as shown at 47 thus permitting the wind shield H to be raised beyond a point where it would ordinarily contact with the wheels of the car A. Directly above the rail of the roadbed is suspended a longitudinal wind shield G which same is suspended from the shield 13 as at 48.

In order to facilitate the proper adjustment of the shield or deflector F, weights 49 are employed disposed at the ends of the chains 34, such weights being adapted to rise and lower above the car floor as the shaft 36 is turned by the operator.

A shield 50 which may be composed of any substance, but preferably of heat insulation qualities, is disposed at the side of the car A, forming a shield for the fuel supply means B, the mixer *b*, the necessary parts for the operation and utilization of the invention, and also forming a protective shield for the operator and attendants who may be on the car A.

It is found desirable to provide a fire-brick 51 substantially as shown in Fig. 5 disposed above and overlapping the joint necessitated in providing the adjustable shield or deflector F where the same extends adjacent to the shield 13; such fire-brick 51 being the means for preventing the flames of the burning fuel from lapping through such joint and burning away any part thereof.

The car or other type of rolling stock A is provided with the necessary fuel supply means B and mixing means *b* and can also be provided with a water supply tank or means not shown, and is adapted to be propelled along the right-of-way of a railroad or other roadways, in the direction of the appended arrow in Fig. 2, in facilitating the utilization of the invention. The adjustably mounted shield or deflector F is disposed at the side of the car A substantially as hereinbefore described and is adapted to be raised and lowered from time to time as it is found necessary through the medium of the elevating means, and the operator or attendant may at one and the same time manipulate both the shield or deflector elevating means and also the rod 30 to change the direction of the flame cast forth from the burner element C.

The auxiliary burner element E is projected laterally from the car A, and comprises a fuel supply pipe 53 of suitable length, having adjacent its outer end a conical burner shield 54, said shield 54 being perforated as at 55 facilitating proper combustion of the fuel. A vertical post or the like 56 extending from the flooring of the car A is provided adjacent its upper end with a ball and socket joint 57 which supports the supply pipe 53. At the inner end and disposed above the car A is a counterbalancing element 58 permitting of the ready manipulation of the entirety. A hose or other flexible tubular element 59 is employed to connect the fuel supply means *a* with the fuel supply pipe 53.

The operation and utilization of the invention and the parts, members and features embodying the invention will be readily understood from the following statement taken in connection with the foregoing description and the drawings accompanying the same.

As hereinbefore described, the car or other rolling stock A is propelled along the roadbed or roadway in the direction of the appended arrow Fig. 2, and the transverse burner element D extending beneath the car is especially adapted to destroy any and all growths of weeds or the like that may from time to time spring up between the rails of a railroad, between the ties thereof or in the central portion of any roadway; the longitudinal burner element C with its branch burner element *c* is adjustably and detachably connected beneath and at the sides respectively of the shield or deflector F, and may from time to time be manipulated by the operator or attendant as is found necessary in raising and lowering the shield or deflector F in adapting the same to the varying conditions in bringing the invention into effect. The chain 34, weights 49, pulleys 35, shaft 36, manual wheel 37 and locking means 38 constitute the shield or deflector elevating means as hereinbefore set forth. The transverse wind shield H and the longitudinal wind shield G are respectively adapted to prevent any atmospheric

currents from blowing the flame cast forth by the burners out of the desired paths, thus facilitating the incineration of any and all obstructive growths of weeds or the like that grow within the boundaries of what is commonly termed in railroad parlance the "sod-lines."

In order to more readily bring the invention into effect I provide the auxiliary burner element E constructed substantially as hereinbefore set forth and projecting laterally from the car A to any predetermined distance to effectually reach and destroy any obstructive growths of weeds or the like which it is found desirable to destroy; and where the same is wholly beyond the reach of the flames of the longitudinal burner elements C; this auxiliary burner element E is pivotally mounted within easy reach of the operator so that he may at any and all times direct the flames cast off from the burner 53 at such growths hereinbefore mentioned which may be within the radius of the arc of travel of said auxiliary burner element E and its flames.

The burner element C with its branch burner element *c* may as hereinbefore stated be from time to time turned to suit the varying conditions as the same are encountered in the adaptation of the invention, by the operator or attendant. The transverse wind shield H, pivotally supported as at 44 from the car body A, may if it is desired be brought into a horizontal plane and held in such manner by means of the chain 45 and the hook 46 when it is desired not to shield the transverse burner element B from the currents of air created by the normal travel or progress of the moving car A, or otherwise present.

I do not desire to be understood as limiting myself to the specific provision, formation, construction, combination, association and relative arrangement of parts, members and features shown and described; but reserve the right to vary the same in adapting the invention to varying conditions of use, without departing from the spirit of the same and the scope and meaning of the following claims.

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

1. Weed burning apparatus for roadways, comprising a vehicle body, means at one side thereof for burning fuel, and a fixed wind shield depending beneath the vehicle body inwardly of the side thereof and ranging longitudinally thereof.

2. Weed burning apparatus for roadways, comprising a vehicle body, a deflector projecting laterally of the vehicle body, means for burning fuel adjacent to the deflector and the roadway, a shield extending over the under surface of the vehicle body, and a shield depending from the vehicle body and ranging longitudinally thereof and between the sides thereof.

3. Weed burning apparatus for roadways, comprising a vehicle body, a fuel burner projecting therefrom and ranging longitudinally thereof, and means for axially adjusting the burner.

4. Weed burning apparatus for roadways, comprising a vehicle body, a fuel burner projecting therefrom and ranging longitudinally thereof, and means for axially adjusting the burner; said burner being provided with a branch burner arranged laterally thereof.

5. In weed burning apparatus, means for burning fuel adjacent to the roadway comprising convergent burners whereby jets of burning fuel may be directed in common to a definite area of the roadway.

6. Weed burning apparatus for roadways, comprising a vehicle body provided with a deflector projecting therefrom over the roadway, and a burner disposed between the deflector and the roadway and provided with a branch burner projecting clear of the deflector.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

EUGENE E. ALLEN.

Witnesses:
C. P. WARDEN,
W. F. SEEMANN.