No. 896,774. PATENTED AUG. 25, 1908.

J. R. TOTMAN.

GRASS BURNING MACHINE.

APPLICATION FILED FEB. 11, 1908.

Fig. 3.

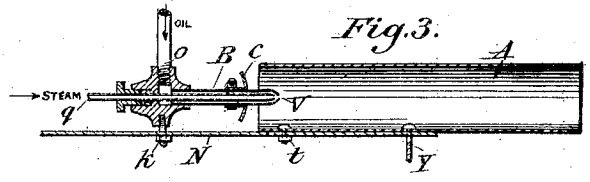
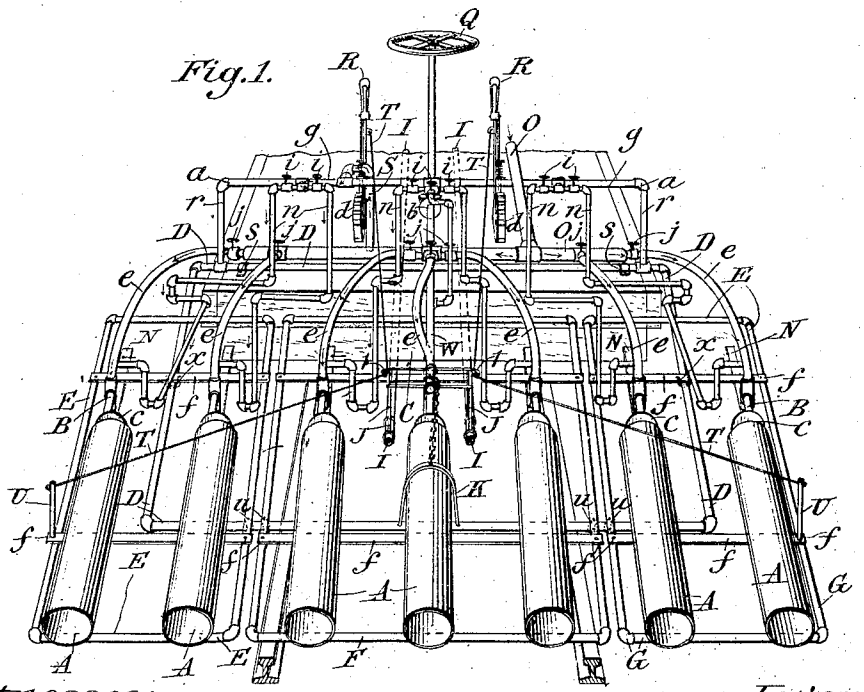


Fig. 2.

Fig. 1.



Witnesses:

Burr H. Mitchell.

F. M. Evans.

Inventor:

J. Russell Totman

by J. Fathrop, attorney.

MORRIS PETERS, INC., LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JEREMY RUSSELL TOTMAN, OF COLUSA, CALIFORNIA.

GRASS-BURNING MACHINE.

No. 896,774. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed February 11, 1908. Serial No. 415,326.

To all whom it may concern:

Be it known that I, JEREMY RUSSELL TOTMAN, a citizen of the United States, residing at Colusa, in the county of Colusa and State of California, have invented a new and useful Grass-Burning Machine, of which the following is a specification.

My invention relates to improvements in grass-burning machines in which crude oil is burned in short cylinders of small diameter, producing an intensely hot flame at the mouth of said cylinders; and the objects of my improvement are, first, to afford facilities for rapidly burning grass between the rails and along the sides of railroads; second, to provide for directing the flame onto the points where it will do the greatest service; third, to provide for raising the mechanism when not in use so as to allow of rapid transit, and also, when in use, to avoid obstacles; and, fourth, to use as many burners at one time as may be desired.

I attain these objects by the mechanism illustrated in the accompanying drawing, in which—

Figure 1 is a front perspective view of the machine with the fire shields H, and Z, Fig. 2, removed; Fig. 2, a side elevation; and Fig. 3, a sectional view of a single cylinder and burner on the dotted line 1 2, right hand cylinder and burner, Fig. 1.

Similar letters refer to similar parts throughout the several views.

The pipes I I, which are attached to the car C, underneath, constitute the supports of the outer end of the frame D D, and the frame D D, forms the support for the frames E E, F F, and G G, which, with the cross-bars *f f* etc., are the supports of the cylinders A A etc., and the burners B B etc.

The standards J J, are secured to the pipes I I, and rise high enough above them to receive the horizontal shaft W, which lays along the top of the car C, into boxing at *h h*, Fig. 2. The horizontal shaft W, extends back over the car C, to a point *b*, where it is provided with a bevel gear which fits into another bevel gear on the upright shaft P. When the upright shaft P, is turned by means of the wheel Q, it causes the horizontal shaft W, to turn and wind the chain M, at L, on its outer end. The chain M, being attached to the frame D D, by means of the bail K, when said chain M, is wound about the said shaft W, at L, Fig. 2, it raises the frame D D, which is hinged on the car C, at *s s*, and which in turn raises the frames E E, F F, and G G, thus raising the whole front end of the machine.

The frames E E, F F, and G G, are provided with hinges at *u u* etc., so that these frames may be tipped forward, thus changing the angle of the cylinders A A etc., and directing the flame onto the ground more nearly vertical. The frames E E, and G G, have hinges at *x x*, Fig. 1, and standards U U, fastened to said frames at the outer ends of lower cross-bars *f f*. Small wire cables T T, Figs. 1 and 2, run from the top of standards U U, through the pulleys *l l*, and on to the levers R R, which are held in any desired position by release levers that fit into the notches of the semi-circle *d d*. By moving the levers R R, forward the frames E E, and G G, are allowed to drop down on the outer edge, thus lowering the outer tubes A A, onto the sides of the roadbed and bringing the flame into closer contact with the grass growing thereon.

The shield H, (a piece of sheet iron extending the entire width of all the burners), protects the operator from the heat; and the shield Z, while also protecting the operator, confines the flame more directly to the ground. The shield Z, also extends the entire width of the burners and is fastened to the frame F F, by means of the iron bar X, at points *f f*, Fig. 1.

The steam pipe S, conducts the steam from the boiler of the locomotive or other boiler. This steam pipe (see dotted lines *m*, Fig. 2), is laid underneath the floor of the car C, until near the end of said car when it is raised about a foot above the floor and connected with the pipe *g g*, which extends the full width of the said car and is held up by the standards *r r*, attached to the frame D D, and plugged at its outer ends *a a*. Steam is admitted to the burners B B etc., through the pipes *n n* etc., the flow thereof being controlled by means of the cocks *i i* etc.

The oil pipe O, conducts the oil from the oil tank and distributes it to the burners B B etc., through the rubber tubes *e e* etc., the flow of oil being controlled by means of the cocks *j j* etc.

The cylinders A A etc., and the burners B B etc., (see Fig. 3.), are fastened to flat pieces of steel N, Fig. 3., at Y, *t*, and *k*. At Y, the bolt extends through the plate *f*, Figs. 1 and

2, thus providing a pivot on which said cylinders and burners may be turned sidewise and give more range to the flame.

The damper *c*, Figs. 2 and 3, is fastened by a friction clamp to the oil pipe of the burners B B etc., so that it may be moved back from an orifice in the back end of the cylinders A A etc., and admit the required amount of air.

The steam pipes *n n* etc., are jointed as shown in Figs. 1 and 2, at several places, so that, when the front end of the machine is raised or lowered, these joints will allow freedom of motion.

Steam enters the burners B B etc., (see Fig 3.), at *q*, and at the point V, it atomizes the oil which enters the outer pipe at *o*. When the oil is atomized it is set on fire and the cylinders A A etc., confine and direct the flame.

This machine may be used on either narrow or broad gage roads, and may have more or fewer than seven burners and cylinders.

I know of no contrivance other than mine for burning crude oil or for use in burning grass along railroads.

I claim:

1. A grass-burning machine, in which crude oil is used for fuel, consisting of a frame, one end of which is hinged on top of a car; said frame being wider than said car on which it is hinged, and the sides of said frame extending downward past the end of said car on an incline toward the track by which said car is supported; the lower end of said frame being held in place by means of a chain attached thereto, the upper end of said chain being fastened to a horizontal shaft extending over the top of the said car and into boxing just above where said chain is fastened to said frame; the aforesaid boxing being held in place by standards which are supported by horizontal pipes which are fastened underneath the top of said car and which extend therefrom to a position over where said chain is fastened to said frame; the winding or unwinding of said chain about said horizontal shaft being the means whereby the lower end of said frame is raised or lowered, all substantially as set forth.

2. A grass-burning machine, in which crude oil is used for fuel, consisting of a frame wider than a car on which it is hinged, the sides of said frame extending downward on an incline past the end of said car, toward the track by which said car is supported; the lower end of said frame being held in place by a chain fastened thereto and also to a horizontal shaft above; a second frame in three sections superimposed on said first mentioned frame, extending downward below the lower end thereof, and hinged thereto so that all three sections thereof may be tipped forward over the lower end of said first mentioned frame, and so that the two outer sections thereof may be tipped outward as well as forward, all substantially as described and for the purposes mentioned.

3. A grass-burning machine, in which crude oil is used for fuel, consisting of a frame wider than a car on the top of which it is hinged; the sides of said frame extending on an incline, downward past the end of said car toward the track by which said car is supported; the lower end of said frame being held in place by means of a chain fastened thereto and also to a shaft above; a second frame in three sections superimposed on said first mentioned frame and hinged thereto so that all three sections thereof may be tipped forward and downward over the lower end of said first mentioned frame, and so that the two side sections thereof may be tipped outward as well as forward; iron or steel cross-bars crossing independently the three sections of said second mentioned frame; a series of small tubes, preferably thirty to forty inches long, surmounted on the iron or steel cross-bars of said second mentioned or upper frame, the said tubes extending downwardly in the same general direction as the slant of said frame to a point just below the lower end thereof; said tubes being of small diameter, preferably from six to eight inches in diameter, and cylindrical in shape, being of the same diameter throughout, and having their lower ends open and of the same size and shape as the tubes or cylinders; said tubes or cylinders being provided at their upper or inlet ends with crude oil burners fastened to iron or steel plates to which said cylinders or tubes are also fastened; said crude oil burners being so arranged as to discharge a volume of flame into said cylinders or tubes, which are designed to control and direct said flame and emit it from the lower or outlet end thereof onto the desired point; said lower or outlet ends of said cylinders or tubes being entirely open and of the same size and shape as a cross section of said cylinders or tubes, substantially as described.

4. A grass-burning machine, in which crude oil is used for fuel, comprising a frame hinged to the top of a car; said frame being wider than said car and the sides thereof extending on an incline downwardly toward the track upon which said car is supported, and passing beyond the end of said car; the lower end of said frame being held in place by a chain attached thereto and also to a horizontal shaft above; a second frame in three sections superimposed on said first mentioned frame and hinged thereto so that all three sections thereof may be tipped forward and downward over the lower end of said first mentioned frame, and so that the two outer or side sections thereof may be tipped outward as well as forward and downward; two sets of iron or steel cross-bars extending, the one near the top and the other near the bottom, laterally across said upper or second

nentioned frame and attached to each of the hree sections thereof independently, the said sets of cross-bars acting as supports for the aforesaid series of tubes or cylinders; a series of cylinders, each cylinder fastened independently to an iron or steel plate; a series of crude oil burners, one fastened to the upper end of each of the aforesaid plates to which a tube or cylinder is fastened, and so arranged as to discharge a volume of flame into the upper or inlet end of said tube or cylinder; the upper ends of said plates to which said tubes or cylinders and burners are fastened being free to slide laterally on said upper cross-bar, the lower end thereof being fastened by a bolt to the lower cross-bar, said bolt acting as a pivot on which said plates may be swung sidewise, thus throwing the direction of said tubes or cylinders to the one side or the other; a damper fastened by a friction clamp to the oil pipe of said burners, so arranged near the upper or inlet end of said tubes or cylinders as to allow the required amount of air thereto; a fire shield consisting of a single piece of sheet iron extending horizontally the entire width of all the cylinders just above the outlet end thereof and fastened to plates extending horizontally forward from the middle section of the aforesaid second mentioned or upper frame; a second fire shield comprising a single piece of sheet iron, vertical but bent slightly forward at the top, extending the entire width of all the cylinders and fastened just above the middle part of the tubes or cylinders; a steam pipe conducting steam from the locomotive or other boiler and distributing it through individually controlled pipes to each of said crude oil burners; an oil pipe conducting crude oil from a tank or oil car and distributing said crude oil through individually controlled oil hose to each of said crude oil burners; wire cables extending from standards attached to each of the two outer sections of the aforesaid upper or second mentioned frame and passing through pulleys on to levers which are located on the car, all substantially as described and for the purposes mentioned.

J. RUSSELL TOTMAN.

Witnesses:
BURR H. MITCHELL.
F. M. EVANS.