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L. F. CHASE
HEAT DISTRIBUTOR

2,060,364

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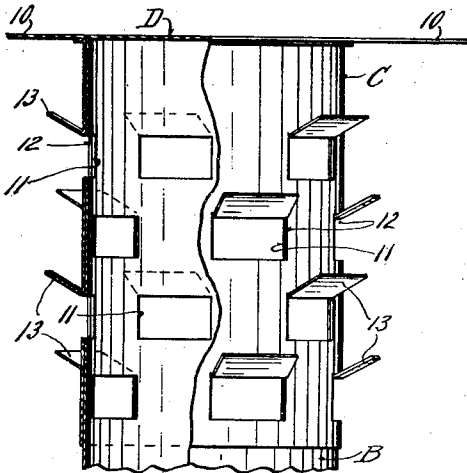


Fig. 3.

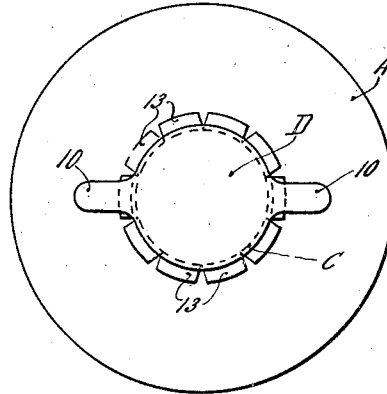


Fig. 2.

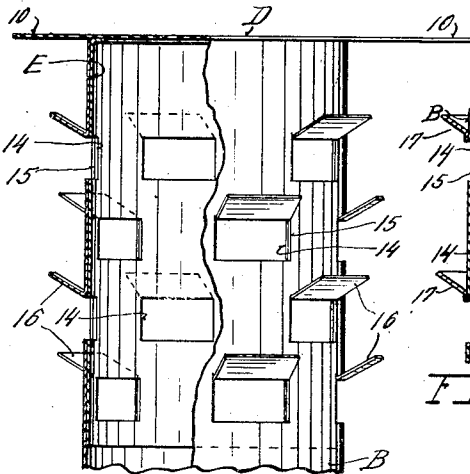


Fig. 4.

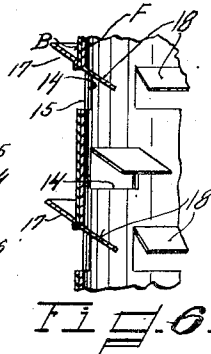


Fig. 6.

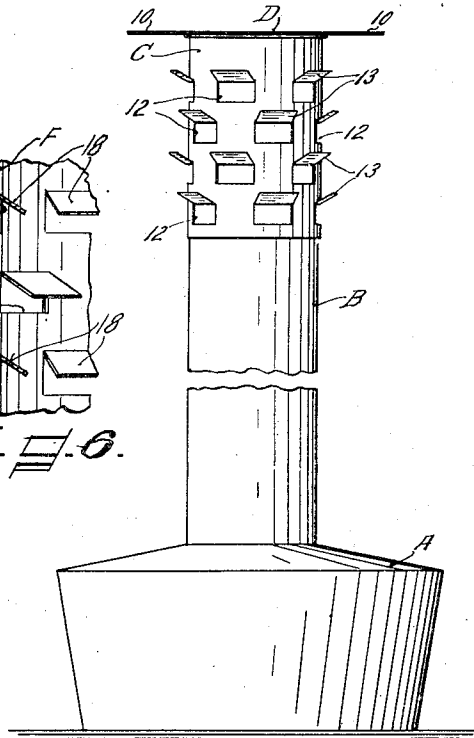


Fig. 1.

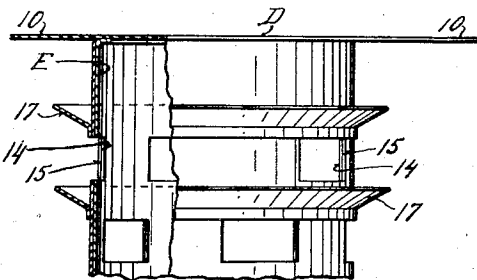


Fig. 5.

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UNITED STATES PATENT OFFICE

2,060,364

HEAT DISTRIBUTOR

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Application October 13, 1934, Serial No. 748,208

2 Claims. (Cl. 98-40)

This invention relates to appliances for diffusing heated gases and the products of combustion, and more particularly for outdoor use as in heating orchards and the like.

Among the objects are: The provision of a device which will receive gases and products of combustion flowing from a conduit or stack in one direction and deflect them laterally, and more particularly for diffusion of heat in out-of-doors areas, which device will serve also as a closure or roof of the conduit, thereby shielding the latter and any associated device from rain or moisture, and which also prevents the heated gases from passing out from the end of the conduit; to provide means for dispersing the gases laterally in prearranged directions for uniform distribution of heat over the area to be heated, to obtain this spread or dispersion of hot gases at a comparatively low elevation so that in orchards the heat will become diffused below the limbs of the trees, which device will not obstruct free flow of gases through and from the heating appliance to which it may be attached, and which is movable to close all draft through said conduit and thereby extinguish combustion in a heater to which the gas conducting conduit leads, and which arrangement may be easily attached to or removed from the conduits or stacks of existing heating devices. Additional objects are: to provide a form of heat diffuser which is simple, may be produced and sold at a low cost, and requires a minimum of work on an existing conduit for application of the diffuser thereto.

Other objects will appear as this description proceeds.

With the foregoing and other objects in view, the invention consists in the novel and useful formation, construction, interrelation and combination of parts, members and features, as well as mode and methods of use thereof and steps and performances taken and had, all as hereinafter described, shown in the drawing and finally pointed out in claims.

In the drawing:

Fig. 1 is a side elevation of one form of the present heater;

Fig. 2 is a plan of same;

Fig. 3 is a fragmentary side elevation, partly in section, showing the details of the Figs. 1 and 2 form of this device on an enlarged scale;

Fig. 4 is a view similar to Fig. 3 showing a modification of the device;

Fig. 5 is another view similar to Fig. 3 showing another modification of the device; and

Fig. 6 is a fragmentary sectional view showing another form of the device.

No special showing of the heating or combustion unit itself is made as this unit may be of any preferred type and does not form part of this invention.

In general, this heater with the diffusion device will spread hot gases and products of combustion over the area of an orchard and thereby raise the temperature of the area as uniformly as may be possible. Obviously the rapid upward flow of the heated gases provides only a few spaced hot spots in such an area and many devices have been tried to disperse this upward flow of the hot gases and to diffuse them over the entire area and spread them at an elevation sufficiently low to produce the general effect of gently upward-moving warmth covering the entire area, and which diffusion is produced before the elevation of the lower branches of trees is reached. The most of the diffusion devices hitherto produced possess certain defects which this invention is designed to correct.

In the figures: The conduit or stack B provides a draft for producing combustion and for giving an initial vertical impulse to the hot gases. At a predetermined height, a cover D is provided which prevents egress of the gases in the direction of that of the conduit, also ingress of rain or moisture. This cover D has extensions whereby it may be rotated relatively to conduit B. Attached to member D is a sleeve C which fits around conduit B. Holes of any preferred form, as 12, are formed in sleeve C and corresponding holes 11 formed in conduit B adapted to register with holes 12 in sleeve C. These paired holes are so located in the two members that by rotation of sleeve C they no longer register and no outlet for the gases through conduit B exists. That is to say, the holes 11 and 12 are arranged in circumferentially extending rows which are spaced apart longitudinally of the conduit B and the sleeve C, respectively; the holes of alternate rows are aligned with each other and are disaligned from the holes of the other rows longitudinally of the conduit and the sleeve, respectively; the closed areas between adjacent holes of each row are at least as long as the openings, and corresponding rows in the conduit and sleeve are disposed in common transverse planes for alinement and disalignment of the holes in the sleeve with and from the holes in the conduit simply by rotation of the sleeve relative to the conduit.

Since the gases may not pass out through the

top of conduit B, they are deflected transverse-ly through the registering holes 11, 12, and pass in a horizontal direction outward from conduit B, and at the same time tend to flow vertically upward as soon as they pass from the conduit. In order to distribute the gases as they tend to rise, deflectors 13 are formed which project diagonally upward from the top of each of the holes 12, and the gases striking against these are constrained to spread diagonally upward from conduit B, as is obvious.

In the form shown in Figs. 3 and 4, these deflectors are produced by cutting out the rectangular holes on three sides and bending the metal upward to take the diagonal position shown.

Obviously, the sleeve, having holes 14 to co-operate with similar holes 15 in conduit B, may be formed to slip inside of B instead of surrounding it, and this modification is shown in Fig. 4, in which sleeve E is formed to fit inside conduit B, the sleeve being attached to cover D having projecting portions or handles 10 for rotation. In this form the deflectors 16 are formed in the body of conduit B itself, the inner sleeve E having the metal, cut from the holes 14 therein, entirely removed. This form of construction is obvious from that previously described and shown in Fig. 3.

A modification of either of the before-described structures shown in Figs. 3 and 4 is that shown in Fig. 5, which differs from those before described in that the deflecting means for the gases are produced by thin metal rings having the form of short truncated cones with the larger diameter placed upward. These rings are shown at 17 and are either welded to or forced on the outer member, whether it be the conduit B or the outer sleeve C. In the figure showing these ring distributors, the outer of the two coacting and relatively rotatable members is B, the sleeve being the inner member indicated at E. In this construction the holes 14 in the sleeve E and 15 in conduit B are formed by punching out all of the metal as indicated.

Another modification of this general form, as shown in Fig. 6, is obvious from the drawing and the prior descriptions. Conduit B surrounds inner sleeve E, holes 15 in conduit B being punched clear while holes 14 in inner sleeve E are cut on three sides only and the metal bent inward toward the axis of the conduit B to form deflectors 18, which deflectors extend inward, as shown, to guide the upwardly flowing gases laterally outward from the holes. These deflectors may provide a sufficient lateral impulse to cause complete distribution outwardly around conduit B, or outer distributors as rings 17 may also be used, as shown in Fig. 6. In any of these forms shown, or modifications thereof, the relation between the holes in the two relatively rotatable members is such that if the sleeve be turned to some predetermined position, all exits for the gases are closed, the draft there- by stopped and combustion in the heating unit ceases. The ease with which combustion may be almost immediately stopped by merely rotat-

ing a sleeve through a few degrees provides a desirable and important feature.

In large orchards where a considerable number of such heaters are used, they may all be extinguished within a comparatively short time without need of any considerable number of workers. Such devices are used only at sporadic intervals and the time of their need cannot be predicted, so that the quick assembly of any large number of operators for such special occasions is difficult. Hence, the ability to manipulate and control a large number of heaters with the aid of but few persons is both desirable and advantageous.

Having described my invention in connection with illustrative embodiments, forms, proportions and arrangements of parts, it will be understood that many variants thereof are possible to those skilled in the art, and my invention, in its broader aspects, is not limited to the specific construction herein described and shown, as changes in the sizes, proportions, configurations, arrangements, assemblage, interaction, juxtaposition and mechanical relations, as well as additions, omissions, substitutions, combinations and alterations of forms, parts, members and features may be made without departing from the broad spirit of this invention.

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

1. An air or gas distributing device comprising a pair of interfitting relatively rotatable tubular elements, means closing corresponding ends of said elements, each element having a plurality of circumferentially extending rows of air or gas outlet openings, said rows of openings being spaced apart longitudinally of said elements, the openings of the respective rows being relatively staggered so that air or gas may flow in substantially all radial directions from the device, the closed area between each two adjacent openings of each row being at least as long as the openings, corresponding rows of openings of the respective elements being disposed for alignment and dis-alignment by relative rotation of the elements, deflector plates extending into the innermost tubular element from the outer ends of the openings in said innermost tubular element as regards the direction of flow of air or gas through said innermost tubular element, and other deflector plates extending outwardly from the outer ends of the openings in the outermost tubular element.

2. An air or gas distributing device comprising a pair of interfitting relatively rotatable tubular elements, means closing corresponding ends of said elements, each element having openings therein arranged to be aligned with and disaligned from the openings in the other element by relative rotation of said elements, deflector plates extending into the innermost tubular element from the outer ends of the openings in said innermost tubular element as regards the direction of flow of air or gas through said innermost tubular element, and other deflector plates extending outwardly from the outer ends of the openings in the outermost tubular element.

LUCIUS FOSTER CHASE.