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G. A. JACKSON

2,543,409

BEE SMOKER

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FIG. 2

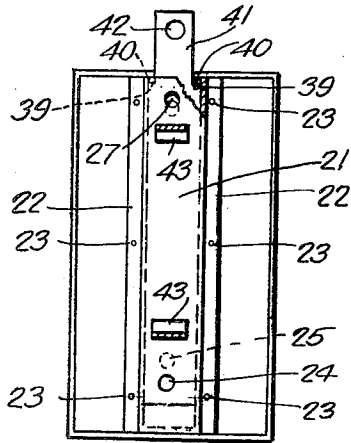


FIG. 3

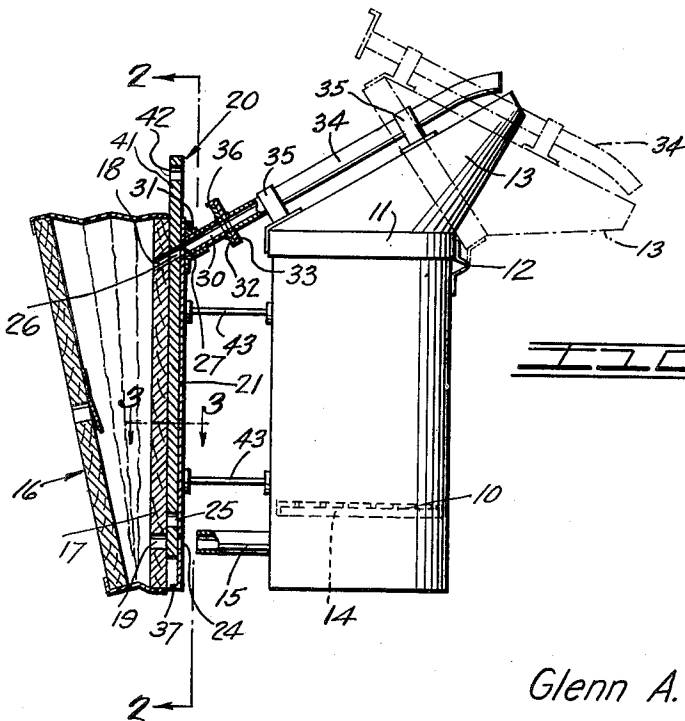
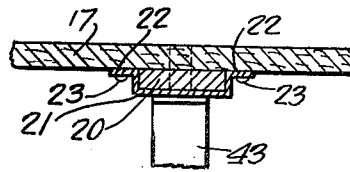


FIG. 1

Inventor

Glenn A. Jackson

By *H. B. Wilson & Co.*
Attorneys

UNITED STATES PATENT OFFICE

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BEE SMOKER

Glenn A. Jackson, Huntington, Ind.

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4 Claims. (Cl. 43—127)

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This invention relates to bee smokers of the type generally used by bee keepers and consists of an improved hand-operated draft bellows rigidly secured to a fire box or body in which smoke is produced by the slow burning or smoldering of a suitable fuel.

Honey bees are greatly irritated by hot smoke and it is desirable to have such devices produce a dense but cool blast. That is not always possible with the commonly used smoker, since when the bellows is collapsed the air blast from it enters below the fuel grate and, hence, the burning of the fuel is greatly stimulated and a hot smoke is discharged from the nozzle. It is, of course, necessary to vigorously operate the bellows after the fuel is ignited to get the fuel in a condition in which it will smolder and throw off smoke, but after the fuel is well ignited the bellows may be less vigorously operated. However, with the most commonly used smoker all of the air from the bellows is directed to the air inlet in the burner body below the fuel grate and whenever the bellows is operated the fire is stimulated and, hence, the discharging smoke is relatively hot.

It has been proposed to provide such smokers with an additional or second air inlet from the bellows into the body at a point above the fire grate, and to employ separate valves to control or cut off the two inlets. The manipulation of the two small and inconveniently placed valves is difficult and tedious, especially when the user is wearing gloves, but these valves must be properly set if the smoker is to produce smoke of the desired temperature.

The principal object of the present invention is to provide an improved double-valve device which is easily operated to simultaneously open one inlet and close the other, so that the smoker may be readily adjusted to throw all of the blast from the bellows below the grate to stimulate the fire or to throw all of it into the smoke that issues from the nozzle to make a relatively cool smoke blast.

Other objects and advantages will become apparent from the following detailed description of the preferred embodiment of the invention, in connection with the accompanying drawings, in which:

Figure 1 is a side elevation of a bee smoker with parts broken away and in section.

Fig. 2 is a vertical section on line 2—2 of Fig. 1 on a reduced scale.

Fig. 3 is a detail horizontal section on line 3—3 of Fig. 1.

Referring to Figs. 1, 2 and 3, the numeral 10

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denotes the furnace or fire box of the usual cylindrical form having an open top closed by a cover 11 suitably hinged at 12 and provided with an inclined smoke discharge nozzle 13. Within the box near its bottom is the usual fuel supporting grate 14 beneath which air is admitted through usual tube 15 from a collapsible bellows 16.

The bellows is fixedly spaced from the fire box and differs from the usual draft device in that its vertical rigid wall 17 is formed with an upper blast discharge opening 18 in addition to the lower one 19 located opposite the tube 15, and in that the air blasts from the two openings 18, 19 are controlled by a double-valve member generally indicated by the numeral 20. This member 20 is preferably in the form of a rectangular strip of wood or other suitable material mounted for vertical sliding movement in a sheet metal, channel-shaped guide 21 provided along its vertical edges with flanges 22 secured by nails or other fastenings 23 to the outer face of the wooden wall 17. In the lower portion of the guide 21 is an opening 24 aligned with the opening 19 and the tube 15. A lower valve opening 25 is formed in the lower portion of slide 20 to coact with the said openings 19 and 24, as seen in Fig. 1. An upper valve opening 26 is formed in the upper portion of slide 20 to similarly coact with the opening 18 and an opening 27 formed in the upper portion of the guide.

The blast discharged through these upper openings is directed into the smoke as it leaves the nozzle 13. As shown in Fig. 1, an upwardly inclined tube 30 is axially aligned with the openings 18 and 27 and is secured in a collar 31 attached to the valve guide. The free end of tube 30 carries a surrounding flange 32 adapted to be engaged by a similar flange 33 carried by the lower end of an inclined tube 34 secured by brackets 35 on the top of the nozzle. The flanges 32 and 33 are preferably in the form of flat circular plates or disks having openings which register with the bores of the tubes 30 and 34; and when the nozzle 13 is swung on the hinge 12 to its closed position said flanges come in face-to-face contact. To aid in aligning them I preferably form on the top of the disk 33 an angularly projecting lip 36 which engages the upper edge of the disk 32 as shown in Fig. 6. The discharge end of tube 34 terminates close to the end of the nozzle 13 and is slightly curved to direct the air from the bellows across the stream of smoke which is discharging from the nozzle. The blast from the tube 34 tends to suck or eject the smoke from the nozzle, and with this arrangement of

parts there can be no back pressure in the smoker body 10 as may be the case when the upper blast from the bellows is directed into the fire box or body. Another advantage of this arrangement is that there are no extra parts within the smoker body or its cover to become covered with a sooty deposit thus clogging the smoker parts other than the nozzle which can be easily cleaned. Further with this arrangement and the provision of the lower air inlet 15 which always remains open to the atmosphere even when the lower valve is closed, sufficient air may at all times enter beneath the grate to support slow combustion or smoldering of the fuel, and thus prevent extinguishment of the fire for lack of air when the smoker is in use or when it is not being used but is to be kept burning ready for immediate use.

In the smoker the valve openings 25 and 26 are so positioned relative to the discharge openings 19 and 18 in the bellows wall that when the opening 26 is aligned with the openings 18 and 27 to permit the discharge of the upper blast, the opening 25 is out of alignment with the openings 19 and 24 and, hence, the valve slide will prevent any blast entering the bottom of the fire box. When the slide is pushed down to the limit of its downward movement, its lower end strikes a stop flange 37 formed at the bottom of the guide. When in that lowered position opening 25 will be aligned with openings 19 and 24 to throw a blast beneath the grate while opening 26 will be out of alignment with openings 18 and 27 so that there will be no upper blast. To facilitate placing the slide in the first-mentioned position its upper portion may be provided with stop shoulders 39 to engage stop flanges or lips 40 formed at the top of the guide as seen in Fig. 2.

The upper end of the valve slide is extended above the top of the bellows to form a finger piece or handle 41 in which a finger opening 42 may be formed. Since the top of the bellows is about aligned with the top of the fire box, the finger piece 41 will be readily accessible and may be easily moved to either of its two extreme positions, even though the user may be wearing gloves.

The double-valve slide is held frictionally in position between the guide 21 and wall 17 and will remain in the position to which it may be moved. By simply pushing downwardly on the finger piece or pulling upwardly thereon to move the slide to the limit of either of its two extreme positions, the user either may cause the bellows to direct air beneath the grate to stimulate burning of the fuel, or cut off the lower blast and throw all of the air from the bellows into the smoke passing from the nozzle to cool the smoke.

The bellows and fire box may be connected by the usual upper and lower brackets but if desired, the brackets 43 may be fastened to the guide 21 as shown.

Minor variations in form and arrangement of parts are, of course, possible and are contemplated in the claims which follow.

I claim:

1. In a bee smoker having a fire box rigidly connected to a bellows, in spaced relation therewith, the bellows having valve-controlled, lower and upper air blast discharge openings and the fire box having a fuel grate above its bottom and a hinged cover with an upwardly and laterally directed smoke discharge nozzle, means for directing the blasts from the bellows comprising an air inlet tube opening into the fire box beneath its grate and having its outer end open to the atmosphere and arranged to receive the blast from the lower discharge opening of the bellows; an air discharge tube fixed to the bellows to receive the blast from the upper discharge opening of the bellows, and a coacting air discharge tube fixed upon the outer side of the laterally directed inclined nozzle and having its lower end in axial alignment with the bellows-carried tube when the cover is in closed position, the upper end of said coacting tube being arranged to direct the upper air blast across the smoke as it issues from the end of the nozzle.

2. The structure of claim 1 together with annular flanges on the adjacent ends of said coacting tubes, said flanges being in abutting contact when the cover is in closed position.

3. The structure of claim 2 together with an aligning projection on one of said flanges to engage the other flange when the cover is in closed position.

4. In a bee smoker, a fire box having a smoke discharge nozzle at its top, a bellows fixed to said fire box and having valve-controlled lower and upper, air blast discharge openings, a tube attached to the lower portion of said fire-box, the lower blast being discharged through said tube into said fire box beneath its grate, and an air discharge tube fixed upon the upper side of said nozzle and arranged to receive the upper blast, the outer end of said air discharge tube being arranged to direct the upper air blast across the smoke as it issues from the end of the nozzle.

GLENN A. JACKSON.

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