

V. C. KOONS.
HEATING SYSTEM FOR CHICKEN CULTURE APPARATUS.
APPLICATION FILED MAY 15, 1907.

1,018,714.

Patented Feb. 27, 1912.

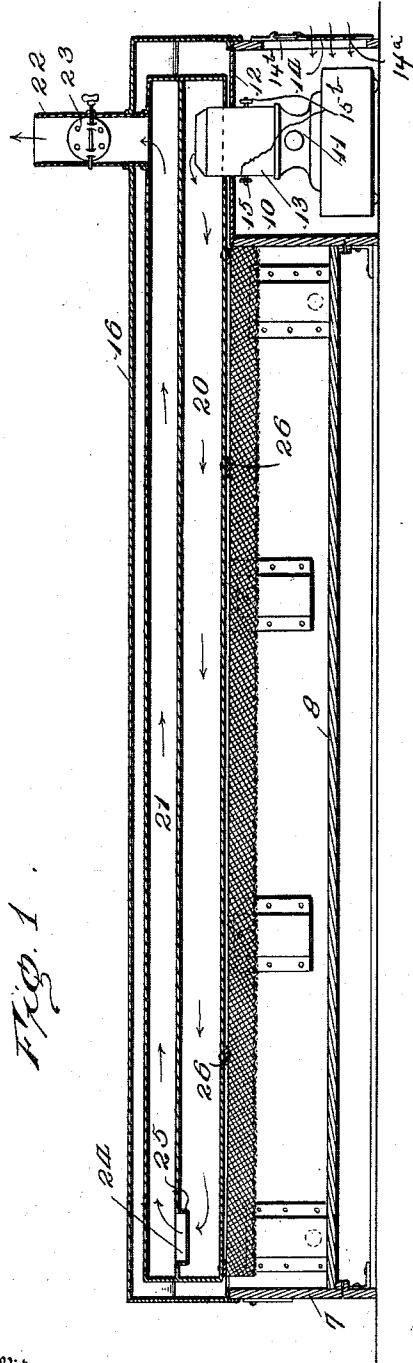


Fig. 1.

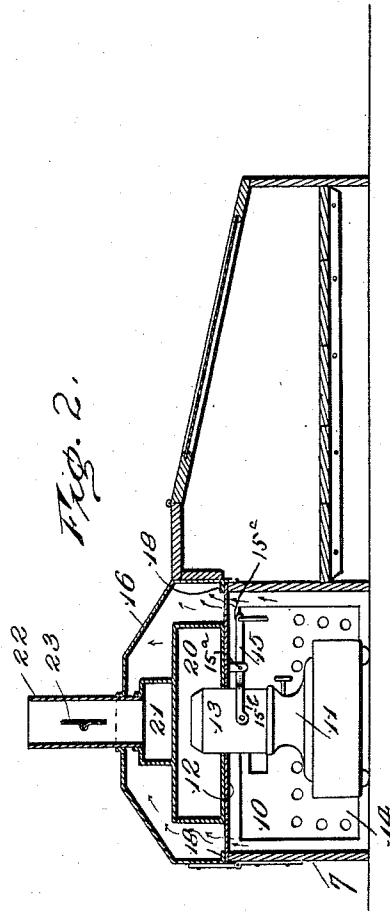


Fig. 2.

Witnesses
for Invention
Simon Messer

By

Inventor
Virgil C Koons
Hubert Dick

Attorney

UNITED STATES PATENT OFFICE.

VIRGIL C. KOONS, OF COLORADO SPRINGS, COLORADO, ASSIGNOR TO THE CONTINENTAL MANUFACTURING COMPANY, OF COLORADO SPRINGS, COLORADO, A CORPORATION OF COLORADO.

HEATING SYSTEM FOR CHICKEN-CULTURE APPARATUS.

1,018,714.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed May 15, 1907. Serial No. 373,822.

To all whom it may concern:

Be it known that I, VIRGIL C. KOONS, a citizen of the United States, residing at Colorado Springs, El Paso county, Colorado, have invented certain new and useful Improvements in Heating Systems for Chicken-Culture Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in heating systems for chicken culture apparatus, and the like; and the objects and nature of my invention will be readily understood by those skilled in the art in the light of the following explanations of what I now consider my preferred embodiment illustrated by the accompanying drawings from among other arrangements and modifications within the spirit and scope of my invention.

The invention consists in certain novel features in construction and in combinations and arrangements of parts as more fully and particularly set forth hereinafter.

Referring to the accompanying drawings:—Figure 1, is a longitudinal vertical section of a brooder, embodying a heating device built in accordance with my invention. Fig. 2 is a vertical cross sectional view thereof.

The brooder comprises an inclosure 7, having chick floor 8. In one end of the inclosure I provide compartment 10, to receive the lamp 11, said compartment being closed at the top by a horizontal plate 12, having an aperture for the passage of the vertically movable metal lamp chimney 13. The end wall of the brooder frame which forms the outer wall of the lamp compartment, is formed with an opening through which the lamp can be inserted, removed, and adjusted, and this opening is normally closed by an outwardly swinging perforated usually metal door 14. Air for the lamp is supplied through the perforations 14^a, and if desired, the door can have a glass or mica covered peep opening 14^b to permit inspection of the lamp when the door is closed.

The chimney rests loosely on the lamp burner and normally closes the opening through the top plate of the lamp compart-

ment, and passes upwardly through said plate into the heating system above. The chimney is movable upwardly through said top plate to permit removal of the lamp from the lower end of the chimney. I provide suitable means for lifting said chimney and holding the same after the lamp has been removed. For instance, I show a horizontally disposed vertically swinging lever 15, arranged within the lamp compartment and intermediate its length suitably hung and fulcrumed therein at 15^a. The inner end of the lever is forked to partially embrace the chimney and the ends 15^b of the arms of the fork are loosely pivoted to the chimney. The outer or handle end of the lever can extend along the top plate 12 of the lamp compartment, so that the lamp chimney can be raised by depressing the handle end of the lever, permitting removal of the lamp or examination of the wick thereof. When the lamp is removed, the lever can be released and its handle end 15^c will swing up into engagement with said top plate, to limit swing of the lever, to hold the lamp chimney suspended or upheld when the lamp has been removed. However, I do not wish to limit all features of my invention to the employment of a lamp compartment within the brooder frame, nor to the employment of the lift lever support for the lamp chimney.

I arrange a heating drum or flue 20, longitudinally within a hood 16, closing the top of the brooder inclosure, said drum having its interior closed from communication with the interior of the hood. I usually form this drum comparatively shallow vertically but wide horizontally occupying almost the full width of the hood yet so as to leave air spaces between its top and edges and the side and top walls of the hood. However, I do not wish to limit myself to any particular dimensions or location of the drum with respect to the hood, yet I do wish to arrange the drum to permit free circulation of air around the same and within the hood and hover chamber so that the hover chamber will get the full benefit of the heat radiated from the drum and so that the hood will hold the heat down in the hover chamber.

I provide a return, discharge or draft pipe or flue 21, within the hood, preferably (al-

though not necessarily) arranged on the top surface of and extending throughout the length of the drum, and directly over the lamp or heat receiving end of the drum provided with a vertical offtake pipe or nozzle 22, extending up through and projecting above the top of the hood to discharge into the outer atmosphere. If so desired, I can provide a damper 23, in the portion of said discharge pipe above the hood, having an exterior handle so that the draft through the heating drum and draft pipe can be controlled by closing or setting the damper at any desired angle. The inner end of the drum is provided with a discharge opening 24, through its top wall into the inner end of said draft pipe, and if so desired a flange 25, can be provided surrounding said opening 24, and depending in the drum to retard the direct flow of the heated air from the top of the drum through said opening. The outer or opposite end of the drum is formed with a bottom opening directly below and in the vertical line of the vertical discharge pipe 22, and the lamp chimney projects upwardly through said opening and into the drum.

The heated air and products of combustion from the lamp are discharged through the chimney directly into the drum and pass slowly through the drum, barely sufficient draft being maintained through the opening 24, and the return flue and its discharge 22, to keep the lamp burning properly. The heated products are thus retarded or maintained in the drum so that said drum is approximately uniformly or evenly heated throughout its length to maintain a uniform or even heat throughout the length of the hover chamber, and to reduce to the minimum waste of heat.

The return flue 21, is exposed within the hood and hence heat radiated therefrom is utilized in maintaining the desired temperature within the hover chamber. The necessary draft is maintained in the heating system by locating the lamp immediately below the discharge opening from the return flue, which in the specific example illustrated consists of the vertical discharge pipe 22, so that the heat from the chimney impinging against the closed top wall of the drum just below said discharge, heats the air in the discharge end of the return flue, causing the same to rise through the discharge, thereby creating or maintaining a draft through the return flue and from the inner end of the drum. By this arrangement for maintaining a draft by creating a suction at the discharge end of the return flue, I am enabled to employ a comparatively large heating drum and retard or hold the heated products therein and thus fully utilize the heat thereof, and I am also enabled to use a heating drum of considerable

length, say six feet more or less, so that I can employ a long hover chamber heated thereby.

The heating drum and flue can be supported or secured in the hood in any suitable manner or by any desirable means. For instance, I show metal cross bars 26, on which the drum rests and is secured, projecting laterally beyond the drum and resting on and riveted to the horizontal flanges 18, of the depending side walls of the hood.

The heating system embodying the heating drum and a return flue having its discharge arranged over the lamp to take advantage of the heat therefrom to create an up draft at said discharge and thereby maintain a draft through the drum by the suction of such up draft, whether or not the return flue be of less cross sectional area than the drum or whether the return flue be arranged over the drum, or have its discharge directly over and in the vertical line of the lamp chimney, is not limited under my invention to use in brooders but can likewise be adapted to use in incubators. Also I do not wish to limit all features of my invention to the location of the lamp or other source of heat supply, in a compartment within the brooder frame, as the lamp might be otherwise located, although I economize heat by locating the lamp within the brooder frame and also protect the same from drafts.

It is evident that various changes and modifications might be resorted to, that parts might be added or omitted, without departing from the spirit and scope of my invention hence I do not wish to limit myself to the exact construction shown.

What I claim is:—

1. In chicken culture apparatus, a horizontally elongated drum provided with a horizontally elongated return flue of less cross sectional capacity than that of the drum, said drum at its inlet end adapted to receive heated fluid from a heater and at its discharge end discharging into the inlet end of said flue, said flue at its discharge end having a discharge outlet arranged closely adjacent to and subject to the heat of the inlet end of the drum, substantially as described.

2. In chicken culture apparatus, a heater consisting essentially of a heating drum elongated approximately horizontally for the passage of the heated products in one direction throughout the length thereof, means at the inlet end of the drum to discharge heated fluid thereinto and upwardly against the top wall thereof, and a return flue in cross sectional capacity less than that of said drum, said flue at its inlet end receiving the heated fluid from the discharge end of said drum and at its discharge end having a vertical discharge outlet closely adjacent to the inlet end of the drum and sub-

ject to the radiated heat therefrom to maintain circulation through and an even distribution of heat throughout the length of said drum.

- 5 3. In combination, in a heating system, a heating lamp, a vertically movable chimney for said lamp, a horizontal wall having a vertical opening receiving said chimney and in which it is vertically movable, a horizontally disposed vertically swingable chimney supporting and raising lever between its ends fulcrumed on a horizontal axis and at
- 10

one end straddling and pivotally joined to said chimney, the opposite end of said lever forming a stop to limit downward movement of the end of the lever carrying said chimney for supporting the same when the lamp is removed. 15

In testimony whereof I affix my signature, in presence of two witnesses.

VIRGIL C. KOONS.

Witnesses:

R. E. OSBORNE,
JOHN MOFFETT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
