

J. F. MACKAY.

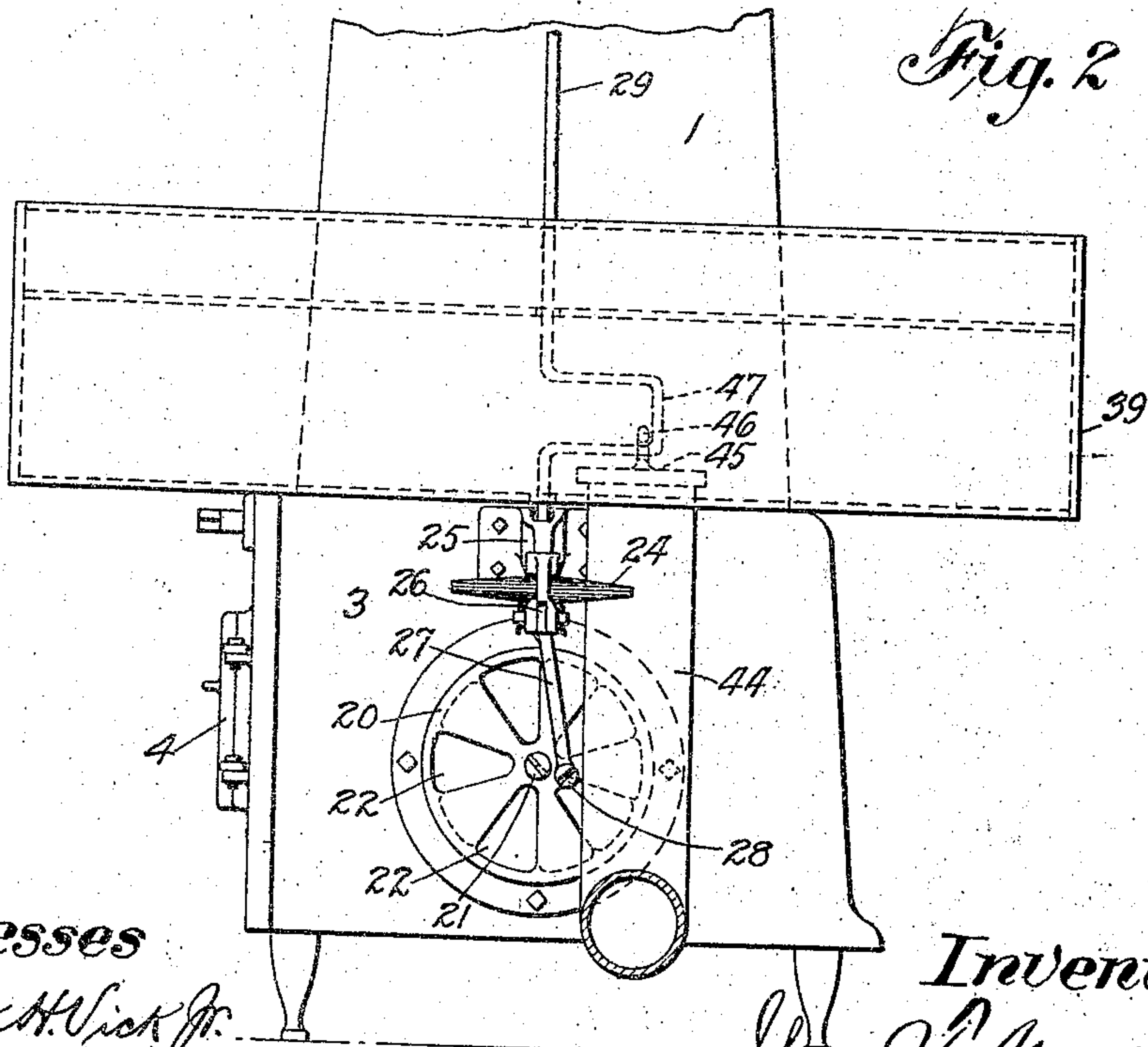
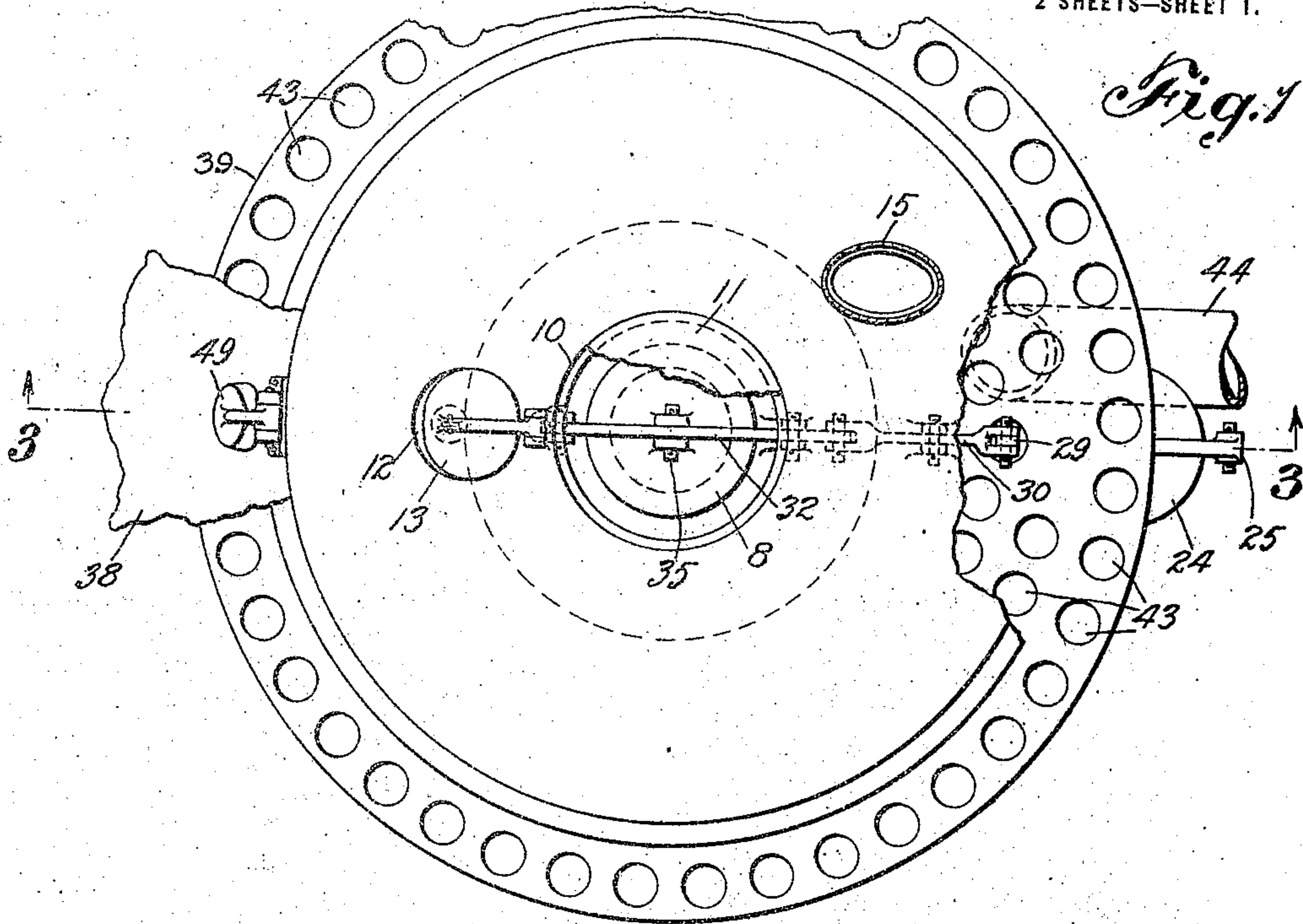
BROODER.

APPLICATION FILED MAR. 31, 1914.

1,166,773.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.



Witnesses

Frank H. Vick Jr.  
Evelle M. Bryman.

Inventor

John F. Mackay,  
per Fred W. Baker, Atty.

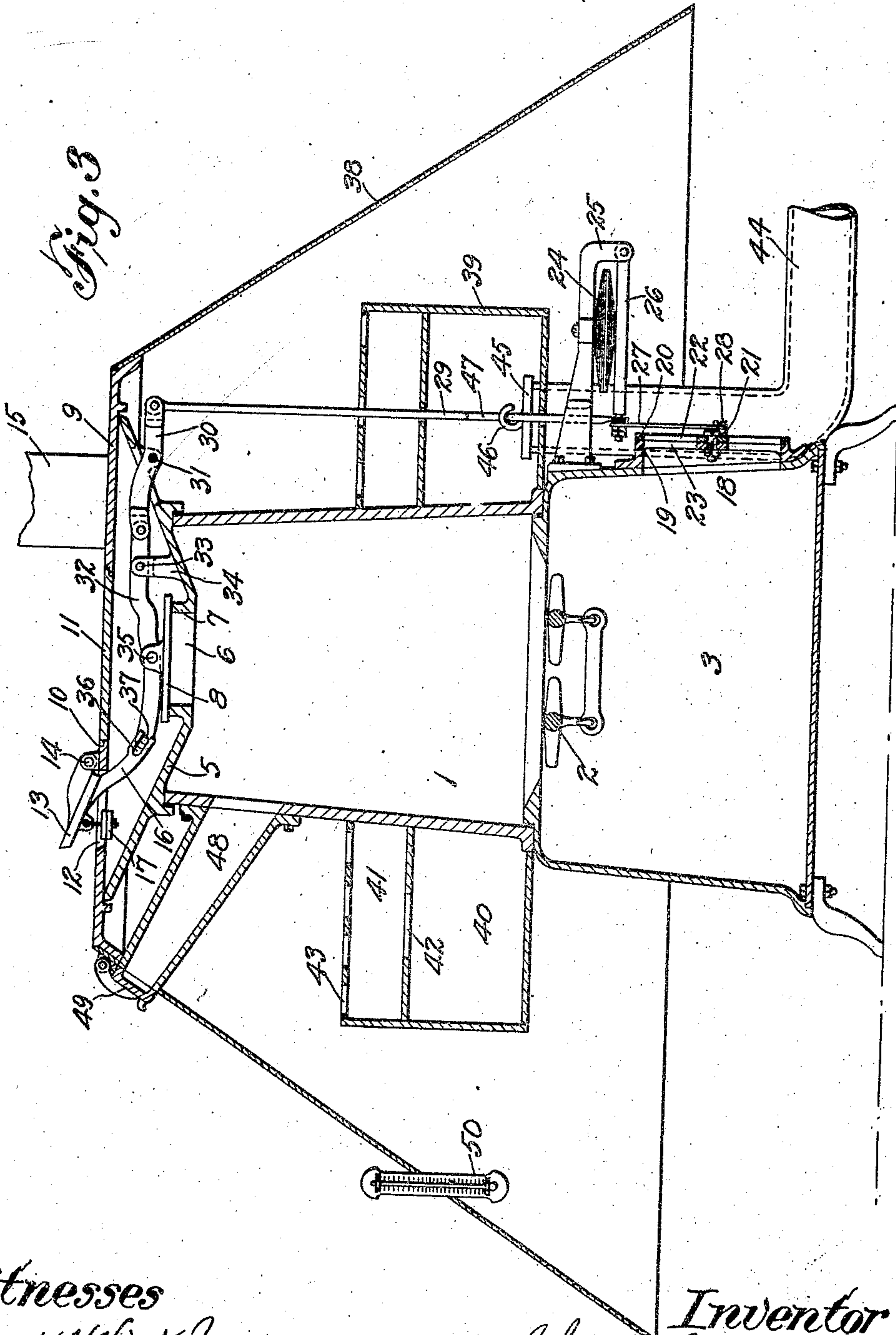
J. F. MacKAY.  
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2 SHEETS—SHEET 2.



Witnesses  
Frank H. Wick Jr.  
Estelle M. Bryman

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# UNITED STATES PATENT OFFICE.

JOHN F. MACKEY, OF BORDENTOWN, NEW JERSEY.

## BROODER.

1,166,773.

Specification of Letters Patent.

Patented Jan. 4, 1916.

Application filed March 31, 1914. Serial No. 828,518.

*To all whom it may concern:*

Be it known that I, JOHN F. MACKEY, a citizen of the United States, residing at Bordentown, in the county of Burlington and State of New Jersey, have invented certain new and useful Improvements in Brooders, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention refers to certain novel and useful improvements in brooders for chickens and other winged creatures, particularly chicks hatched artificially in incubators.

One object of the invention is to provide a simple and efficient brooder of the colony type which can be employed to hover a large number of little chicks in a room or colony house and will effectually protect the chicks from the injurious effects of cold, drafts, etc.

Another object is to devise successful simplified means for automatically regulating the heat and keeping the temperature even and proper.

With this and other objects in view, the invention may be said to consist essentially in the construction, arrangement and combination of all the various parts substantially as described and then more fully pointed out in the appended claims.

In the accompanying drawing illustrating a preferred embodiment of the invention,—Figure 1 is a top plan view of my improved brooder. Fig. 2 is a partial side elevation. Fig. 3 is a vertical section on the line 3, 3 of Fig. 1.

Similar characters of reference designate corresponding parts throughout the different figures of the drawing.

1 denotes the firebox or combustion chamber of a stove or furnace device or construction; 2 the grate; 3 the ash pit having a door 4. The firebox 1 is provided at its upper end with a chamber 5 having a central bottom draft opening 6, which is adapted to provide a flanged seat 7 for a horizontal valve or damper 8 which can be lifted vertically off its seat to permit a direct draft. Fuel is introduced into the firebox 1 through the lateral inclined fuel chute 48 having a hinged cover 49. This fuel chute projects through the flaring hood 38 and enables coal and other fuel to be introduced into the in-

terior of the firebox without disturbing or removing the hood, and without displacing the position of any of the draft dampers or other parts. The top of the chamber 5 consists of a horizontal plate 9 having a central opening 10 adapted to be closed by a lid 11 which is seated directly above and in line with the draft opening 6 of the chamber and the vertically movable valve or damper 8. The top plate 9 is further provided with an opening 12 at one side of the opening 10; and a valve or damper 13 is hinged at 14 on the top plate 9 adjacent to the opening 12 so that said damper 13 may cover or uncover the opening 12 and in so doing permit a communication to take place between the chamber and the atmosphere or cut off such connection. A flue 15 is mounted upon the top plate 9 and is adapted to carry off the products of combustion to the chimney; also it will be evident that the check damper 13 will let in outside air to the chamber 5, which air will pass around and out through the smoke flue 15. The damper 13 is provided with an inwardly projecting arm 16 and also with a weight 17, the purpose of the latter being to assist in closing the damper when the means for opening the same ceases to act. The ash pit 3 is also provided with a damper 18, the same consisting of a pair of inter-pivoted slotted disks; the inner one 19 and the outer one 20 being pivoted together with a central bolt 21, so that one of the disks, as the outer one, may be movable, while the other, as the inner one, is stationary. The slots or apertures 22 in the disk 20 coincide with the slots or apertures 23 in the disk 19 when said outer disk 20 is rotated on its pivot 21 far enough to permit an uncovering of the apertures. Thus the two disks together constitute a circular damper which can be opened to allow the draft to pass through the ash pit up into the firebox, or can be closed to shut off such draft.

24 denotes a thermostat which is supported on a bracket 25 extending from the body of the stove. The expansion of the thermostat actuates a hinged lever 26 located below it, one end of the lever being pivoted to the bracket 25, while the other is connected to the upper end of a short link 27 which is pivoted at 28 to the outer disk 20 of the



damper 18 at a point not far from the central pivot 21 of said damper. The lever 26 also is pivoted to the lower end of a vertical rod 29 which in turn is pivoted at its upper end to a lever 30 whose fulcrum is at 31 in the wall of the chamber 5. The inner end of the lever 31 inside of the chamber 5 is pivoted to a lever 32 which has a fulcrum at 33 on a short standard 34 within the chamber 5, and said lever 32 is pivotally attached at 35 to the central damper 8, while the opposite end of said lever 32 is pivotally connected to the arm 16 of the damper 13, such connection being preferably accomplished by slotting the end of the arm 16 at 36 and causing this slotted end to engage a pin 37 projecting laterally from the lever 32. It will thus be perceived that a downward movement on the arm 27, which moves the disk 20, will simultaneously cause a downward movement of the rod 29, and such downward movement will through the levers 30 and 32 cause a downward movement of the arm 16 of damper 13, and an opening of said damper, while at the same time it causes a placing of the valve 8 on its seat 7. Obviously when the draft is on, the damper 18 will be open, as shown in Fig. 2. When the heat rises to such a degree as to make it desirable to stop its further rise and the thermostat 24 in consequence of the increase of heat expands and moves the lever 26 downwardly, it is obvious that the arm 27 will act on the disk 20 of the damper 18 and close the damper, while at the same time the lever 30 will be shifted on its pivot 31 and the draft cut off at opening 6 by the closing of the damper 8, and also simultaneously with these operations the check damper 13 will open and allow the introduction of atmospheric air so as to still further carry on the cooling process. Obviously when the cooling has progressed far enough, the thermostat will be contracted and the draft dampers again opened and the check damper closed, so that with this construction it is possible to keep the temperature even and substantially constant at a predetermined degree.

I find it of great advantage to admit, when the stove is heating up and after it becomes hot while the drafts are on, a quantity of cold atmospheric air from without which can be heated by contact with the wall of the firebox and distributed around said box and underneath the flaring hood 38, which for convenience is suspended from the top of the device by being attached to the top plate 9, and which has its largest diameter at the bottom spreading out as it does beyond the firebox and serving as a cover or hover device within which the chicks may keep themselves warm and comfortable at all times, it being understood that they run to and fro between the interior of the colony house and

the warm hover. Around the firebox 1 and within the hood 38 is a drum 39 supported on the firebox 1 by being cast integral therewith or securely fastened thereto, said circular drum being made with two interior chambers, a lower one 40 and an upper one 41, which chambers communicate with each other through one or more passages 42, while the top chamber 41 is provided with perforations 43 through which the heated air can escape into the space below the hood 38. An air inlet pipe 44 serves to convey air to the interior of the drum 39 and enters the bottom of the chamber 40, as shown in Fig. 3, where it is provided with a closure or damper 45 having a hook 46 engaged by an offset 47 on the rod 29, so that as said rod 29 moves up and down it will carry with it the closure or damper 45 and thus cover or uncover the discharge end of the cold air pipe 44. This latter pipe leads from any suitable point in the outside atmosphere from which cold air may be taken. It will be observed that the air introduced into the drum 39 will first enter the chamber 40 and will become heated by the firebox 1 and will then pass into the distributing chamber 41 from which it will flow out through the openings 43 into the space under the hood and around the stove. When the draft dampers of the stove are open and the stove is heating up and getting hot and while it remains in a thoroughly heated condition but has not yet reached the point where the dampers are entirely closed, the valve 45 will be open and cold air will be flowing into the drum, but when the temperature has been reached where the expansion of the thermostat causes a closing of the draft dampers, it will be evident that the downward movement of the lever 26 which acts upon the damper rod 27 will pull down upon the rod 29 and the valve 45 will close at the same time that the dampers 18 and 8 are closed.

It is found convenient to employ a thermometer 50 by means of which the temperature within the hood can be ascertained at all times. A great number of changes in the precise details may be made within wide limits without seriously departing from the main lines of the invention, and I, therefore, reserve the liberty of making all such changes as may be found to be desirable in practice.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a brooder, the combination with a fire-box, of a downwardly-flaring hood surrounding the same to form a brooder chamber a circular drum surrounding the fire box inside of the hood and having openings communicating with the interior of the hood, means for introducing cold air into the interior of the drum, a valve therefor, a



vertically movable damper at the top of the fire box, and a thermostatic device under the hood for operating the cold air valve and the fire box damper.

5 2. In a brooder, the combination with a fire box, of a downwardly-flaring hood surrounding the same to form a brooder chamber, a drum surrounding the fire box inside of the hood and having communicating compartments, one of which is apertured to deliver heated air into the interior of the hood, a damper device for the fire box, an ash pit below the fire box, a damper device therefor, and a thermostatic device under the hood  
10 for operating the dampers automatically.

3. In a brooder, the combination with a combustion chamber, of a downwardly flaring hood supported thereon and surrounding the same to form a brooder chamber, a drum surrounding the combustion chamber within the hood and divided into inter-communicating compartments, the upper of said compartments being perforated to allow the exit of the air to the interior of the hood, an ash  
20 pit, below the combustion chamber, a damper therefor, a cold air inlet for introducing outside air into the lower of the compartments of the drum, a valve for said inlet, and a thermostat which automatically operates the damper and valve.  
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4. In a brooder, the combination with a stove device, of a downwardly-flaring hood supported thereon, a drum surrounding the stove device within the hood and having  
35 openings for the outlet of hot air into the interior of the hood, means for delivering fresh air into the said drum, a damper for said means, a top draft damper above the stove device, and a lower draft damper near  
40 the bottom, a check damper at the upper part of the stove device, a thermostat, and leverage means whereby the latter operates all four dampers.

5. In a brooder, the combination with a  
45 fire box, of a downwardly-flaring hood supported thereon and surrounding it so as to form a brooder chamber, a vertically movable damper operating in connection with an opening at the top of the fire box, lever  
50 devices for actuating said damper, an ash pit beneath the fire box, a circular damper therefor, a hot air drum surrounding the fire box and having perforations for allowing air to pass into the interior of the brooder  
55 chamber, a pipe for conveying cold air into said drum, a valve for said pipe consisting of a plate covering the end of the same, a thermostat together with connections between it and the ash pit damper, the cold air  
60 valve and the lever devices for actuating the damper at the top of the fire box.

6. In a brooder, the combination of a stove, a downwardly-flaring hood therefor, a circular drum supported thereon and consisting of two communicating compartments,  
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one of which delivers hot air through perforations into the interior of the hood, an inlet pipe for fresh air entering the lower compartment of the drum, a top draft damper on the stove, a lower draft damper consisting of inter-pivoted circular disks, a thermostat, and means whereby the expansion and contraction of the thermostat actuates the draft dampers and controls the supply of fresh atmospheric air. 75

7. In a brooder, the combination with a firebox, an ash pit, a downwardly-flaring hood supported on the firebox, of a heating drum surrounding the firebox, a vertical movable damper at the top of the firebox  
80 operating in connection with the central opening, a damper in the ash pit consisting of inter-pivoted circular disks, a valve controlling the supply of outside air to the drum, a thermostat device, a lever operated thereby, means whereby said lever controls the ash pit damper, means including a series of levers whereby the aforesaid thermostat lever controls the movement of the  
85 top damper, said latter means being connected to and operating the fresh air damper, all substantially as described. 90

8. In a brooder, the combination of a fire box, having a central upper opening and inclined walls at the side of said opening, a  
95 top plate supported on said inclined walls, a vertically movable damper arranged in connection with the fire box opening, a check damper pivoted adjacent to an opening in the top plate, lever devices for operating  
100 said dampers jointly, a downwardly-flaring hood supported by the top plate and surrounding the fire box to form a brooder chamber, a drum surrounding the fire box within the brooder chamber and having  
105 openings to allow air to pass therefrom into the brooder chamber, an ash pit beneath the fire box, a circular damper therefor, and a thermostat device for operating said circular damper together with connections between said thermostat and the lever devices  
110 for operating the top dampers.

9. In a brooder, the combination of a fire box having a top opening and flaring walls surrounding it to form a top chamber, a top  
115 plate covering said top chamber, a flat damper operable vertically with reference to the fire box opening, a check damper pivoted on the top plate, lever devices for actuating said top dampers, a hood supported on the  
120 top plate and surrounding the fire box to form a brooder chamber, a bottom circular damper, a lateral chute on the fire box projecting through the hood for introducing fuel into the interior of the fire box, and a  
125 thermostatic device.

10. In a brooder, the combination of a fire box, an ash pit and grate beneath it, a vertically movable top damper for the fire box, a circular damper for the ash pit, a  
130



hood surrounding the fire box and supported from the top thereof to form a brooder chamber, a drum supported by the fire box within the brooder chamber with  
5 which it communicates, said drum having inter-communicating compartments, a cold air flue entering one of these compartments, said flue having a damper, and means for

enabling the heat to automatically control the opening and closing of the dampers. 10

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

JOHN F. MACKAY.

Witnesses:

FRANK H. VICK, Jr.,  
ESTELLE M. BRYMAN.