

No. 666,859.

Patented Jan. 29, 1901.

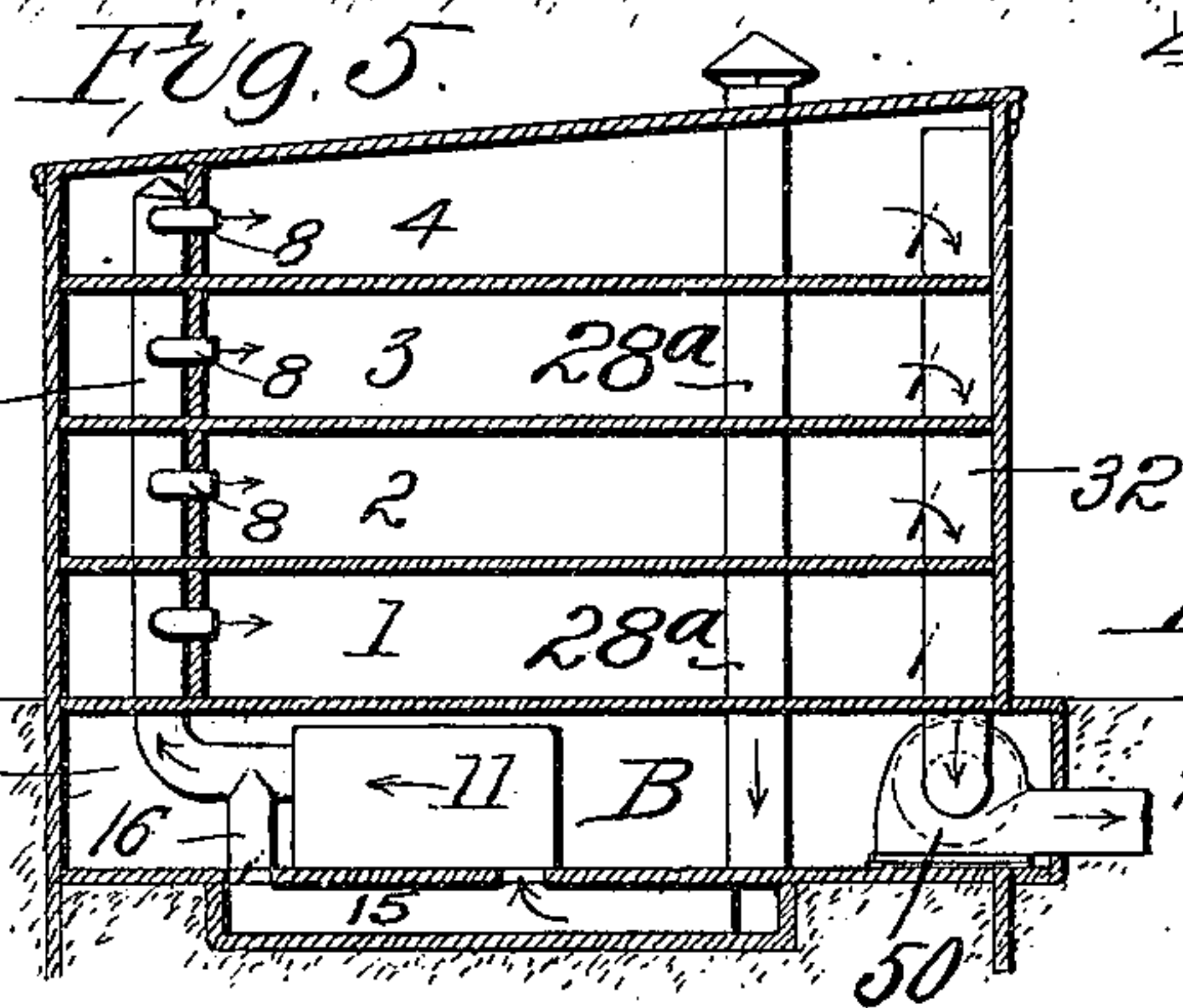
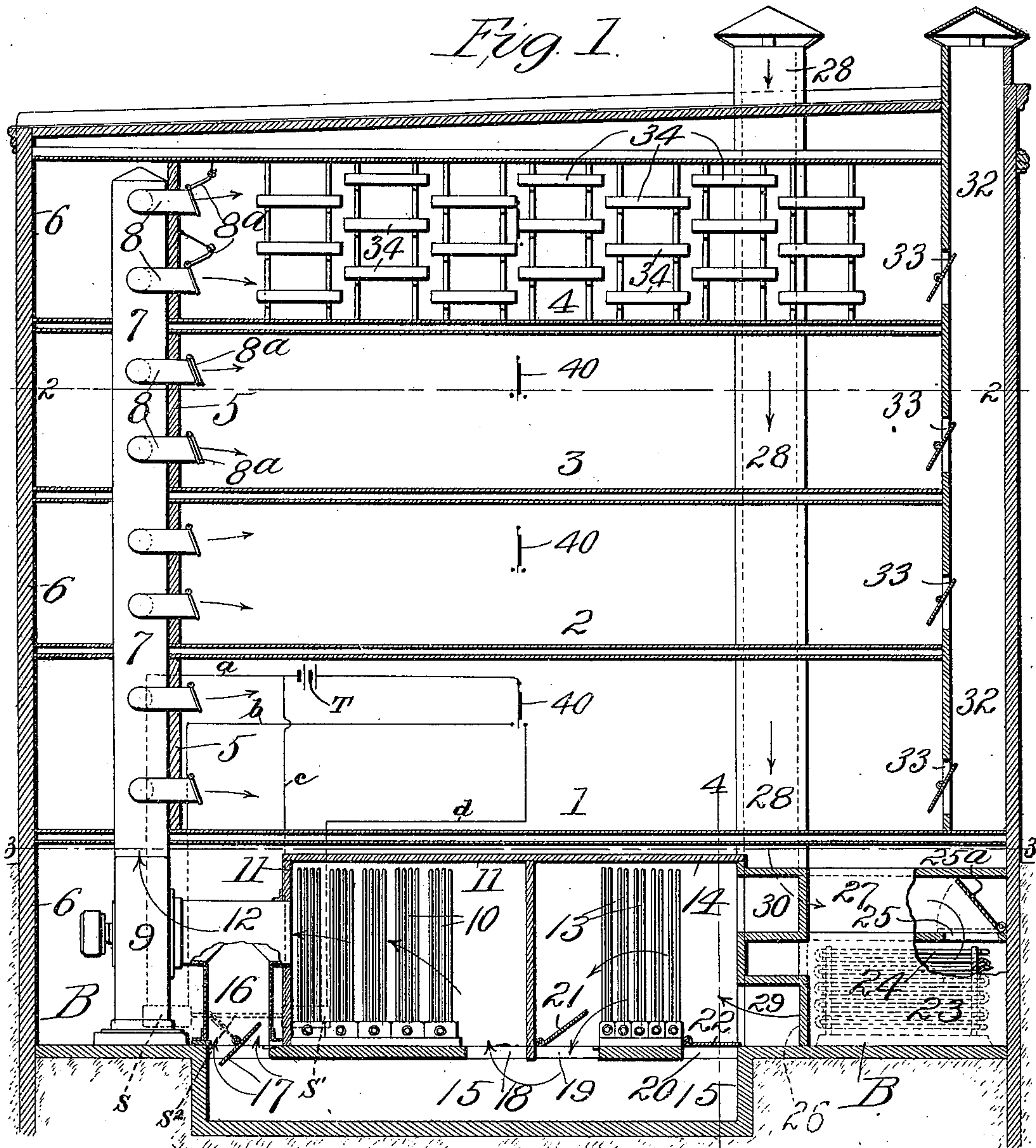
E. M. BOSLEY.

APPARATUS FOR DESICCATING EGGS.

(Application filed July 27, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 2.

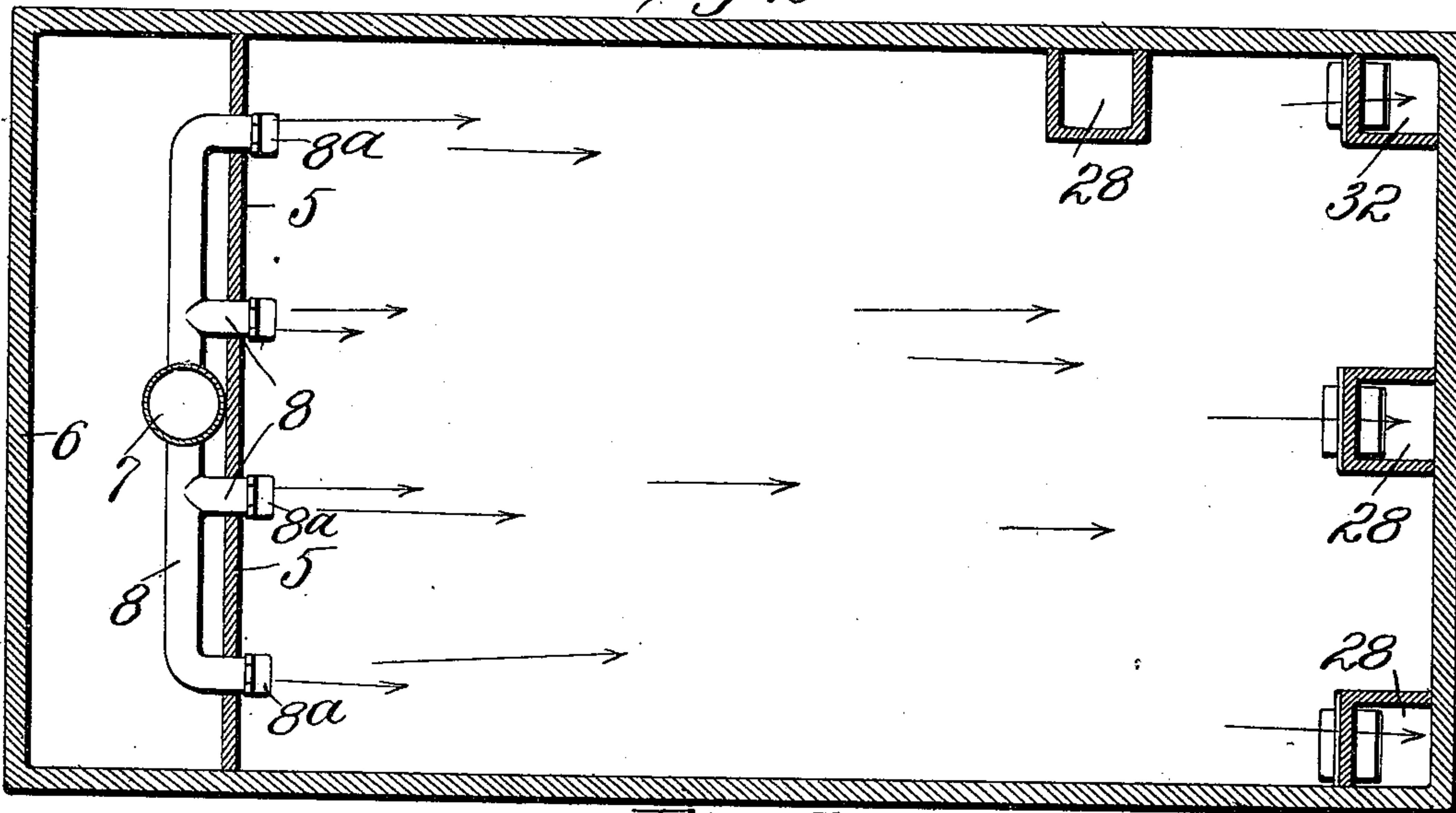


Fig. 3.

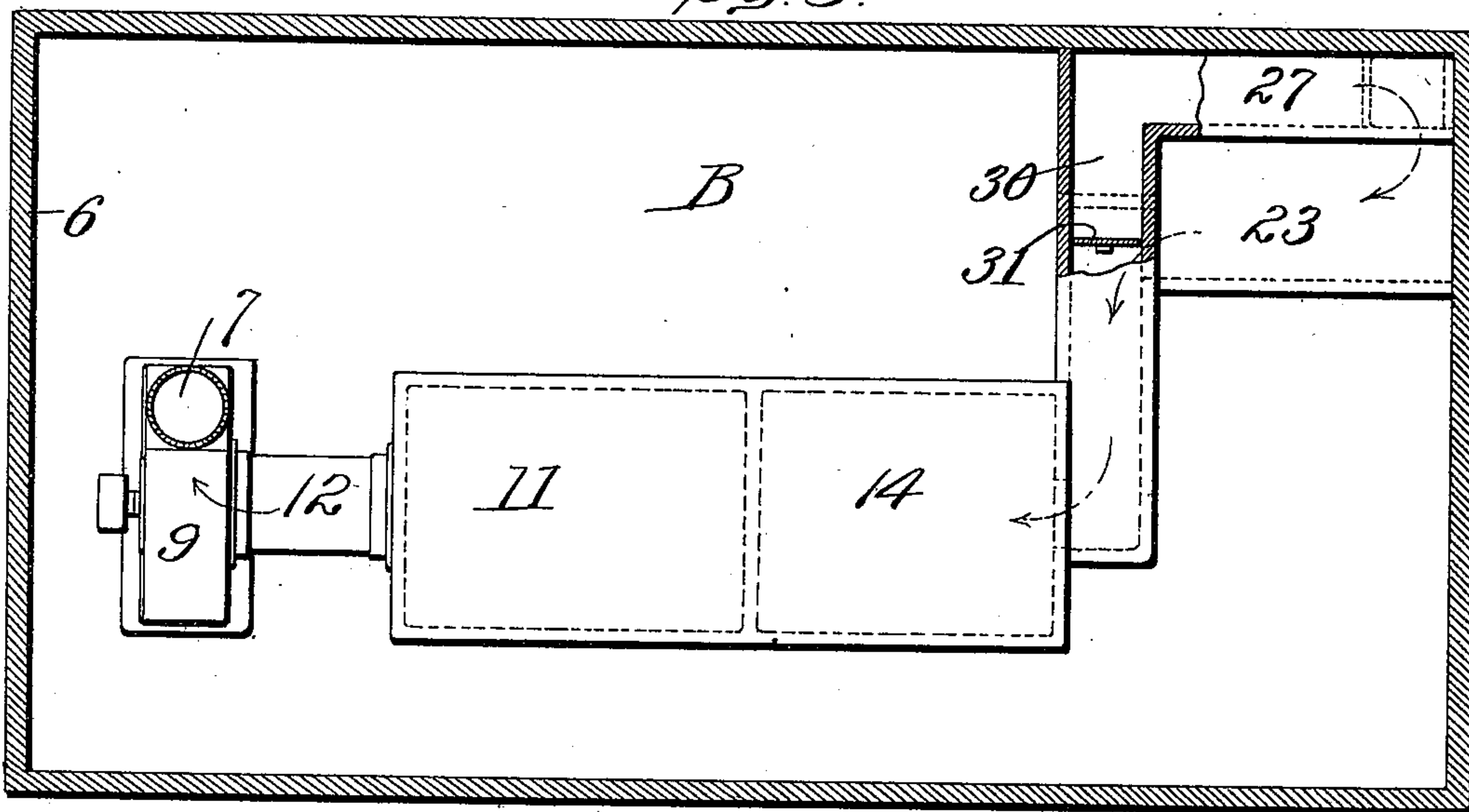
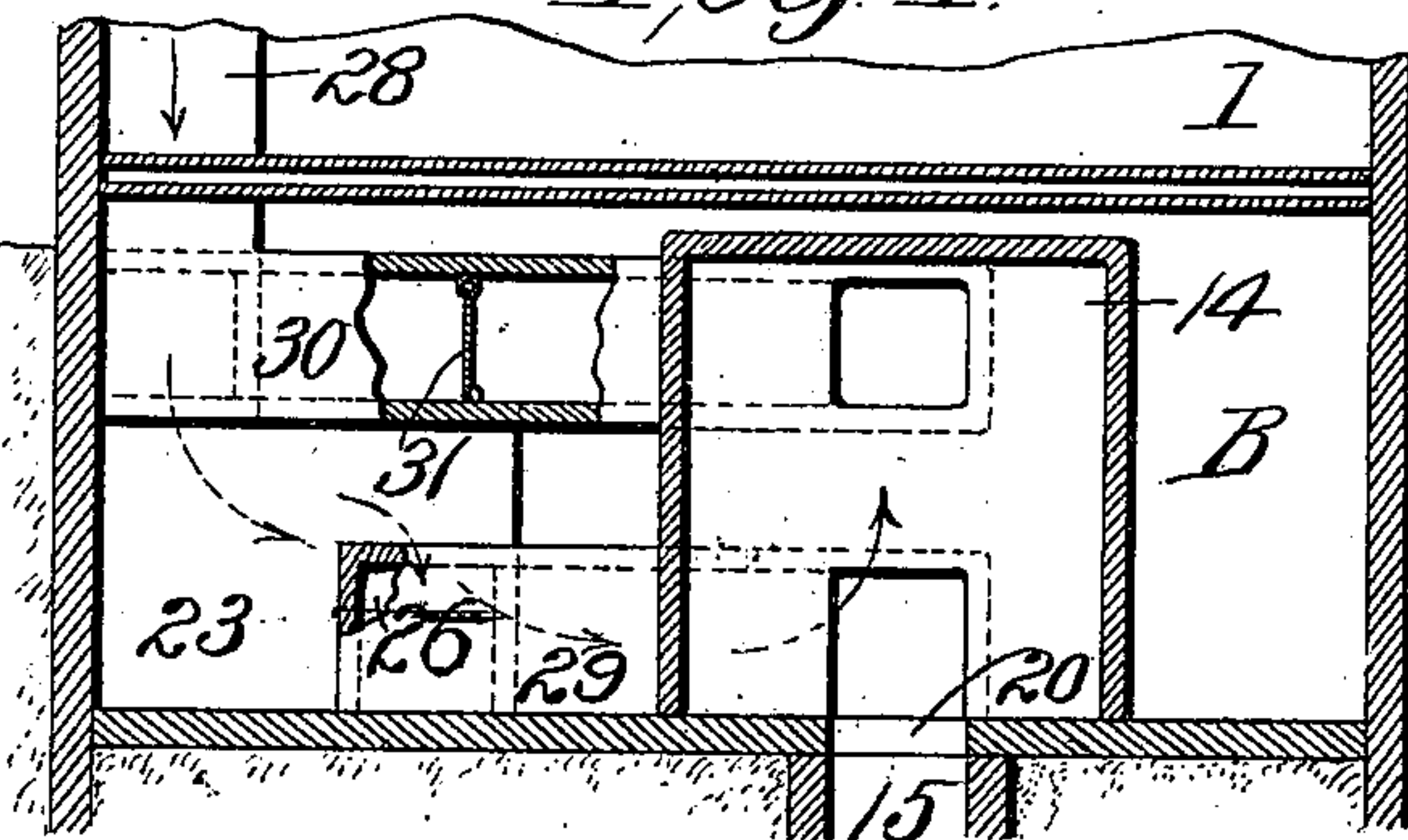


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR DESICCATING EGGS.

SPECIFICATION forming part of Letters Patent No. 666,859, dated January 29, 1901.

Application filed July 27, 1900. Serial No. 25,002. (No model.)

*To all whom it may concern:*

Be it known that I, ELIJAH M. BOSLEY, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Apparatus for Desiccating Eggs, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and useful apparatus for desiccating eggs, the object being to provide a simple, reliable, and effective device of that character which will effect the desiccation in a much shorter time than has been done by any means with which I am familiar.

By the use of my improved apparatus I am enabled to greatly increase the output of a plant of a given capacity and lessen the liability of the eggs spoiling or souring.

Other features of invention reside in the novel construction, arrangement, and combination of the several parts of my improved apparatus, all as will hereinafter be described and afterward pointed out in the claims.

I attain the above results by the apparatus illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view of my improved apparatus. Fig. 2 is a horizontal sectional view of the same on line 2 2, Fig. 1. Fig. 3 is a horizontal sectional view of the same on line 3 3, Fig. 1. Fig. 4 is a detail transverse sectional view on line 4 4, Fig. 1; and Fig. 5 is a conventional sectional view of a slightly-modified form of apparatus.

Similar characters designate similar parts throughout the several views.

In the drawings I have shown my improved apparatus applied to a building having four stories and a basement, although it is obvious that any number of stories may be employed.

B indicates the basement, and 1, 2, 3, and 4 the first, second, third, and fourth stories of the building, respectively.

5 indicates a transverse partition-wall arranged in each of the stories of the building, and arranged between said partition-wall 5

and the rear wall 6 of the building is a vertically-disposed duct or pipe 7, provided with auxiliary or branch pipes 8, which pass through the wall 5 and open into the various stories, said branch pipes being covered by gravity-closing lids or dampers 8<sup>a</sup>. One end of this duct or pipe 7, preferably the lower, leads to the discharge-opening of a blast-fan 9, preferably located in the basement of the building. The object in covering the ends of the branch pipes 8 with the gravity-closing lids or dampers 8<sup>a</sup> is to keep the same closed when not in use and at the same time relieve the pipe 7 and its branches from the pressure of air from fan 9 when all of the lids are closed—that is, if the fan is running and all of the lids are closed when the air-pressure in the pipes reaches a certain pressure the lids will open sufficiently to relieve said pipes of the pressure.

10 indicates a bank of preferably steam-heaters, which is located in the basement of the building and inclosed by a suitable housing 11. These heaters are arranged in juxtaposition to the blast-fan 9, and the interior of their inclosing housing is connected to the eye of said blast-fan by a pipe or duct 12.

13 indicates a second or auxiliary bank of heaters, which is, like the bank of heaters 10, preferably located in the basement of the building and inclosed by a housing 14.

15 indicates a duct, preferably located below the housings 11 and 14, one end of which is connected by a short length of pipe 16 to the pipe 12, which, as before stated, connects the interior of the housing 11 and the eye of the fan 9. The passage-way formed by the pipe 16 and the duct 15 is governed by a damper 17, the purpose of which will be hereinafter explained.

18 indicates an opening formed in the upper wall of duct 15 and by which communication is established between said duct and the interior of housing 11.

19 and 20 indicate openings controlled by dampers 21 and 22, respectively, which are formed in the upper wall of duct 15 and by which communication is established when the dampers are open between said duct 15 and the interior of housing 14. These openings and their respective dampers are arranged one on each side of the auxiliary bank of heat-



ers 13 and are intended to be operated independently in order to direct air either through the heaters or permit the air to pass directly into the duct 15, as desired.

- 5 23 indicates a condensing or cooling compartment in which is housed a coil or coils of pipe 24, which coil or coils of pipe are designed to carry or have caused to circulate through them a suitable agent, such as ammonia.
- 10 This compartment 23 is provided with two openings 25 and 26, the former of which is regulated by a damper 25<sup>a</sup> and communicates with a duct 27, which in turn connects with a duct 28, which preferably extends to the
- 15 top of the building and is then open to the atmosphere. The opening 26 communicates with a duct 29, which duct 29 opens into the housing 14.

- 20 30 indicates a duct one end of which opens into the duct 28, while its other end opens into the housing 14, said duct 30 being provided with a damper 31. (See Fig. 4.)

- 25 32 indicates one or more flues or ducts, preferably arranged at the opposite end of the building to that in which the branch pipes 8 of the blast-fan are arranged, said ducts preferably starting at the first floor of the building and rising vertically through the upper floors, finally opening to the atmosphere.
- 30 Each floor of the building communicates with these flues 32 through dampered openings 33 and through which openings the humid and heated air of the various floors escapes.

- 35 Each floor of the building is provided with racks designed to support trays 34, which contain the article to be desiccated—in this instance eggs—and are so arranged that the heated dry air will pass thereover.

- 40 In operation the eggs to be cured are first broken into a tub or vat and thoroughly mixed, so as to commingle the yolk with the white, care being taken to keep the froth down as much as possible. The eggs so beaten are placed on trays, (marked 34 in the
- 45 drawings,) the depth of the film or covering of eggs on said trays being about one-sixteenth of an inch. These trays are then placed on the racks, say, of the two upper floors 3 and 4, the floors 1 and 2 preferably not being used
- 50 when the plant is started in order that when the eggs of floors 3 and 4 are being cured the floors 1 and 2 are being made ready, and when the eggs of said floors 3 and 4 are cured the two lower floors are started and the upper
- 55 floors cleaned and made ready for another charge, and so on. By this method the plant can be continuously run, as is obvious. In ordinary weather—that is, not intensely cold
- 60 weather—the blast-fan, the banks of heaters 10 and 13, and the moisture-absorbing coils 24 are started. The dampers governing the openings 33 in the flues 32, the damper 25<sup>a</sup>, the damper 21, and the dampers or lids 8<sup>a</sup> of the two upper floors are opened, while the
- 65 lids or dampers 8<sup>a</sup> of the two lower floors, the dampers 17 and 22, and the damper 31 are closed. Fresh air is now sucked by the fan 9

down through the flue 28, through the duct 27 into the compartment 23, through the coils 24, where the greater portion of the moisture 70 of the air is absorbed, through the duct 29 into the housing 14, through the auxiliary heating-bank 13, where it is tempered or warmed, through the opening 19 into the duct 15, thence through the opening 18 into the 75 compartment or housing 11, through the main bank of heaters 10, and into and through the pipe 12, fan 9, main duct 7, and the branch pipes 8 into the floors 3 and 4, where it passes over the trays 34, which contain the eggs, 80 absorbing the moisture therefrom, and finally passing out through the flues 32 to the atmosphere. In cold weather, when the air is comparatively dry, I dispense with the use of the absorbing-coils 24 and close the damper 25<sup>a</sup>, 85 covering the opening 25, and open the damper 31 in the duct 30, in which event the air which is sucked down through flue 28 will pass through duct 30 into the compartment 14 direct, after which its passage to the various 90 floors of the building is as before described. In warm weather I may dispense with the use of the auxiliary bank of heaters 13, and by closing the damper 21 and opening the damper 22 the air from the duct 28, which 95 enters the housing 14 either through the coils 24 or directly through the duct 30, may pass directly into the duct 15 and through the system, as described.

In order to keep an even temperature in 100 the various floors, I have arranged in each a thermostat 40, which thermostat performs the double function of, first, operating the main valve, which controls both the main and auxiliary banks of heaters, whereby more or less 105 heated air will be blown into said floors, and, second, in controlling the damper 17, which is designed to admit cool air into the fan 9 and duct 7, as will be readily understood. Any suitable automatic means controlled by the 110 thermostat may be provided for operating the valve 17. In the drawings I have shown a double solenoid (indicated at S S') having a common armature S<sup>2</sup> connected to the valve 17. The solenoid S is provided with a con- 115 trolling electric circuit *ab*, completed through the battery T and the thermostat 40, and the solenoid S' is controlled by a shunt-circuit *cd*, completed through the battery T and the thermostat 40. It will be understood from 120 the drawings that both circuits *ab* and *cd* have terminals adjacent the thermostat 40, thereby permitting the thermostat, according to the direction of deflection, to close one circuit or the other, thereby moving the arma- 125 ture S<sup>2</sup> in one or the other direction, and thereby opening or closing the valve 17. This description of the thermostat and solenoid is believed to be sufficient to enable any one skilled in the art to construct an operative 130 connecting mechanism between the thermostat and the valve 17.

In Fig. 5 I have illustrated in conventional form a system wherein I employ an exhaust-



fan 50 for drawing the heated and humid air from the rooms, the cool air being drawn down through the flue 28<sup>a</sup> and through heaters and cooling-coils when desired by the rarefaction created in the various floors by said exhaust-fan.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my apparatus can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. In apparatus of the character described, the combination of a building having a drying-compartment provided with a suitable escape-port, a main heater and an auxiliary heater, a hot-air duct leading from the main heater and communicating with said drying-compartment, an intake-duct leading to said auxiliary heater, a duct connecting with both heaters, valves controlling the communication of said duct with the auxiliary heater whereby air passing through the main heater can be caused to pass through the auxiliary heater or directly from the intake-flue and around the auxiliary heater, and means for causing a circulation of air, substantially as described.

2. In apparatus of the character described, the combination of a building having a drying-compartment provided with a suitable escape-port, a main heater, an auxiliary heater, a hot-air duct leading from the main heater and communicating with said drying-compartment, a cooling-chamber, an intake-duct leading past said cooling-chamber to said auxiliary heater, valves adapted to establish communication from said intake-duct through or around said cooling-chamber, a duct connecting with both heaters, valves controlling the communication of said duct with the auxiliary heater whereby air passing through the main heater can be caused

to pass through the auxiliary heater, or directly from the intake-flue and around the auxiliary heater, and means for causing a circulation of air, substantially as described.

3. In apparatus of the character described, the combination of a building having a drying-compartment provided with a suitable escape-port, a main heater, an auxiliary heater, a hot-air duct leading from the main heater and communicating with said drying-compartment, an intake-duct leading to said auxiliary heater and duct 15 communicating with both heaters, valves controlling the communication of said duct with the auxiliary heater whereby air passing through the main heater can be caused to pass through the auxiliary heater or directly from the intake-flue and around the auxiliary heater, a duct 16 connecting the duct 15 directly with the hot-air duct, a valve controlling the communication between the duct 15 and the duct 16, and means for causing a circulation of air, substantially as described.

4. In apparatus of the character described, the combination of a building having a drying-compartment provided with a suitable escape-port, a heater, a hot-air duct leading from the heater and communicating with said drying-compartment, an intake-duct communicating with said heater, a duct connecting said intake-duct directly with the hot-air duct around the heater, a valve controlling the communication between said intake-duct and the hot-air duct, automatic means controlled by the temperature of said drying-compartment for operating said valve, whereby the temperature of the hot air can be governed, and means for causing a circulation of air, substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 24th day of July, 1900.

ELIJAH M. BOSLEY.

Witnesses:

WM. H. SCOTT,  
GEORGE BAKEWELL.