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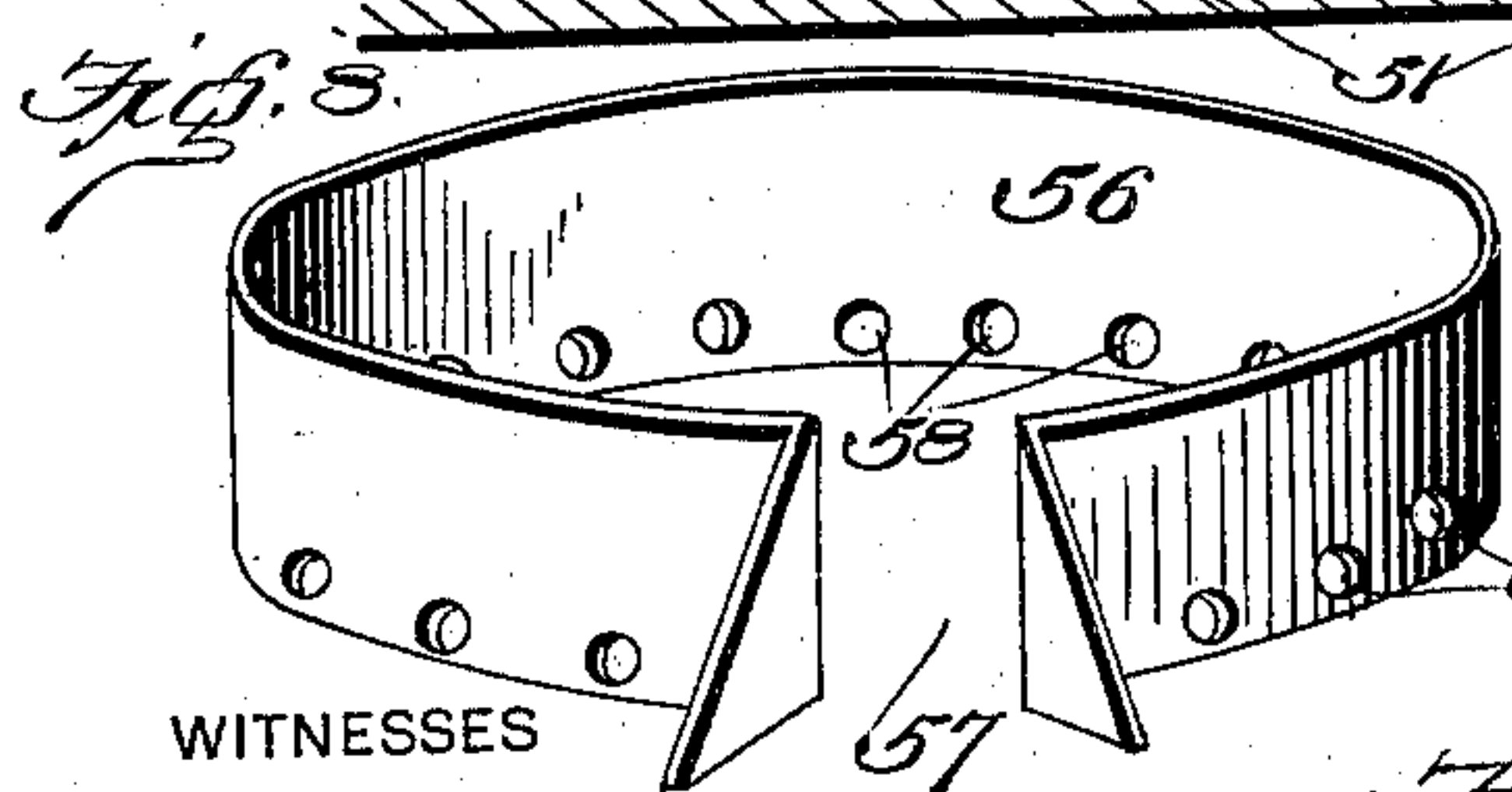
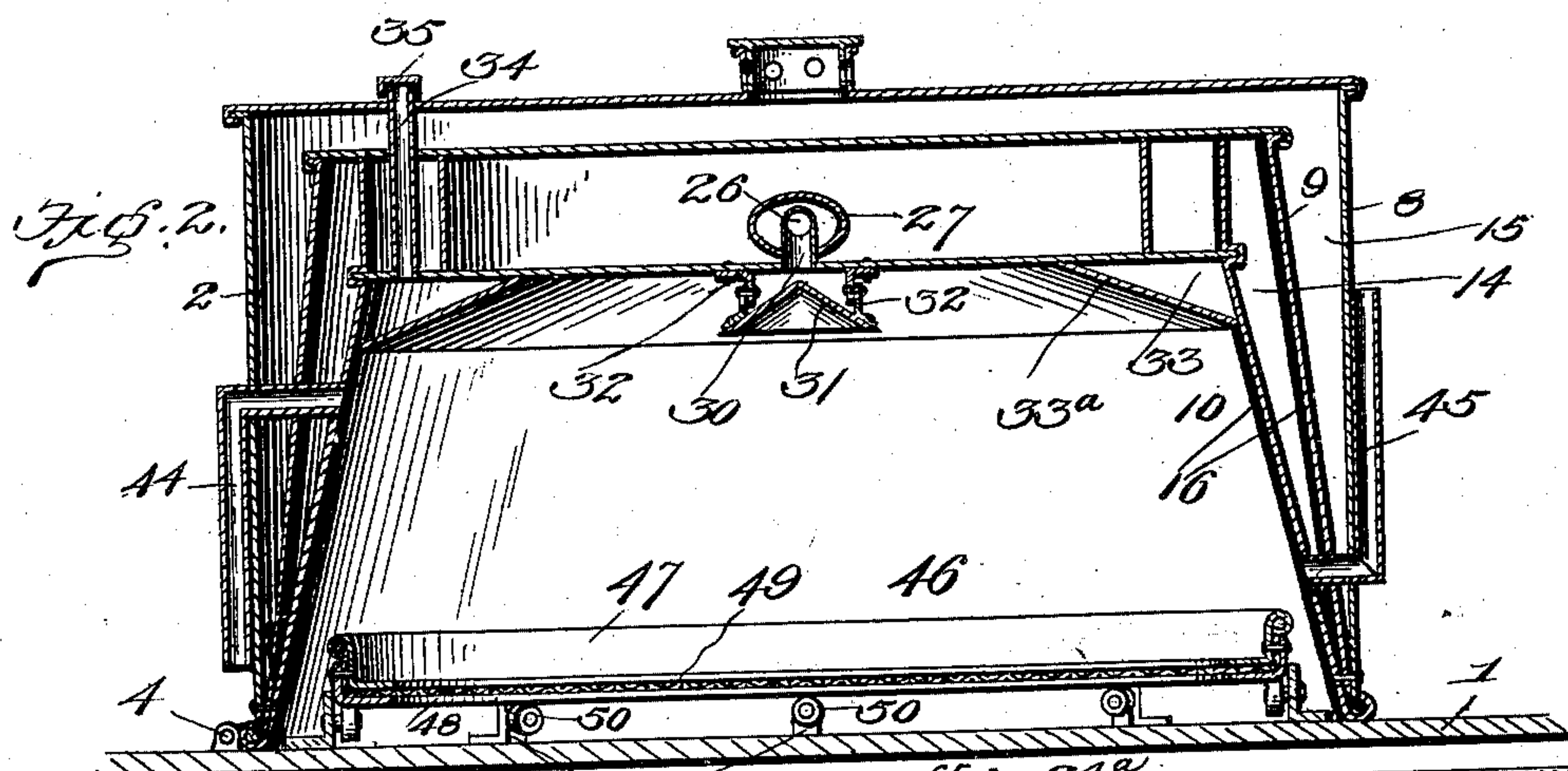
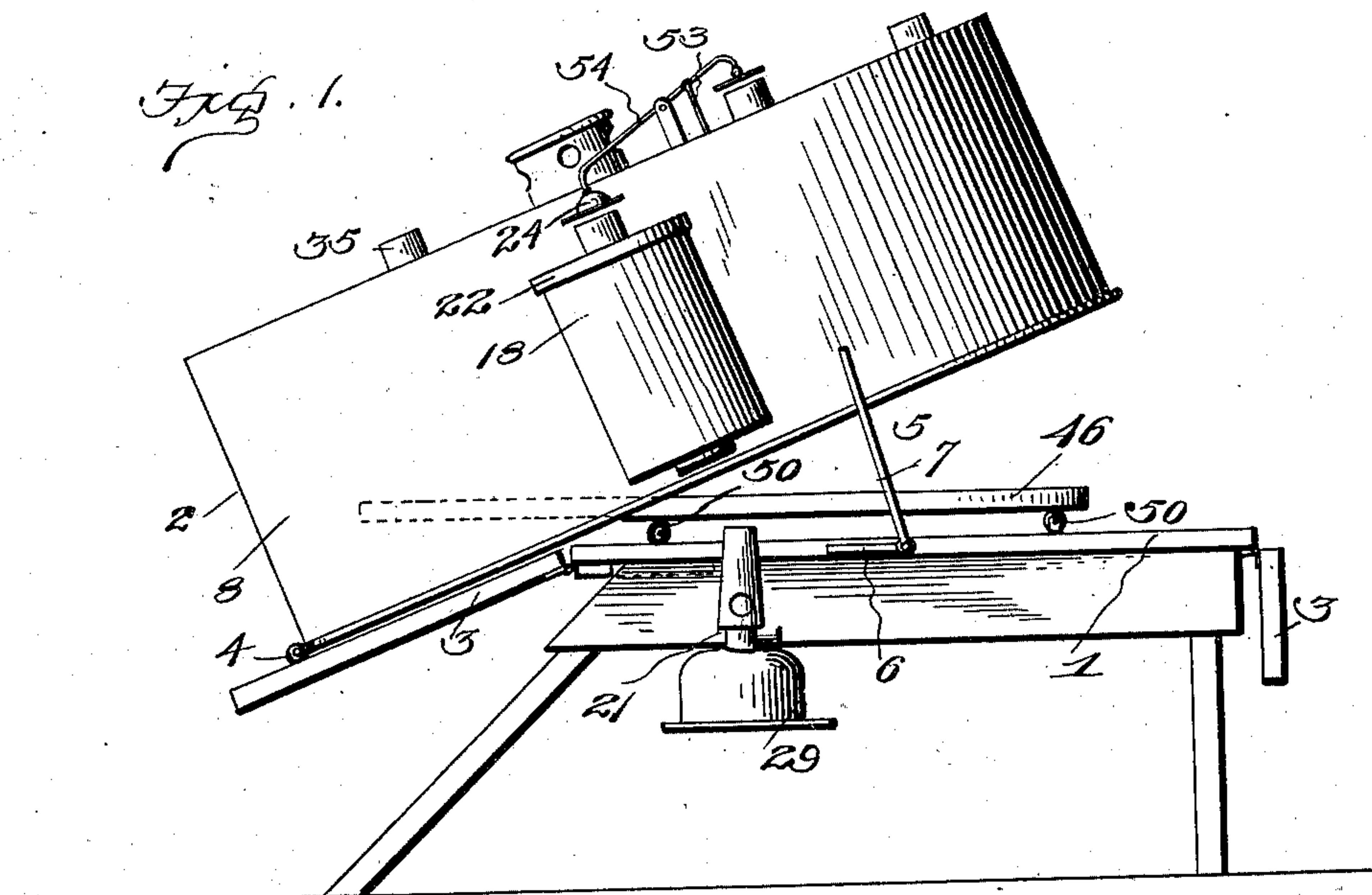
PATENTED JAN. 26, 1904.

T. P. ADAMS.  
INCUBATOR.

APPLICATION FILED MAY 25, 1903.

NO MODEL.

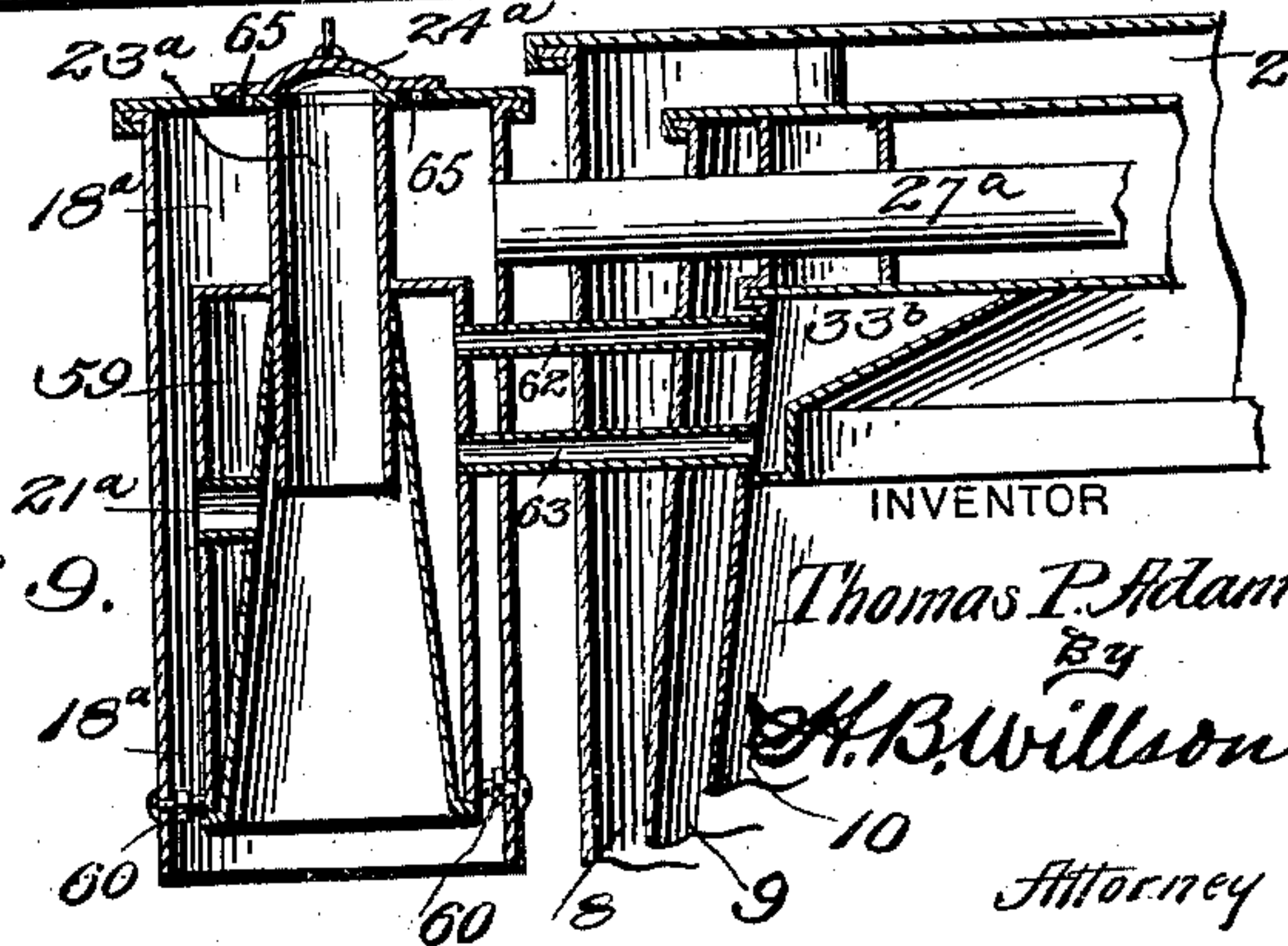
2 SHEETS—SHEET 1.



WITNESSES

*E. E. Hunt.*  
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*Fig. 9.*



INVENTOR

*Thomas P. Adams*

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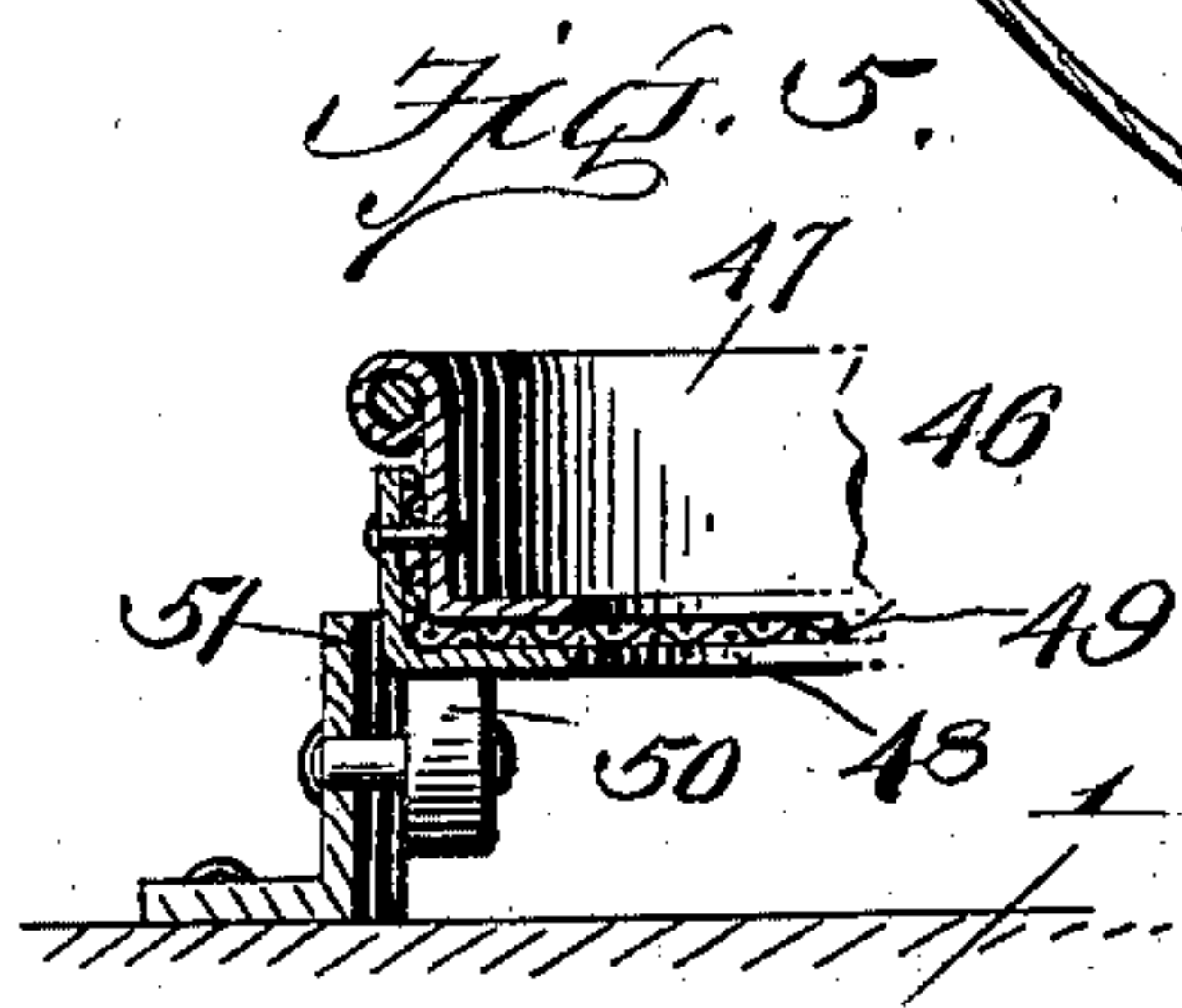
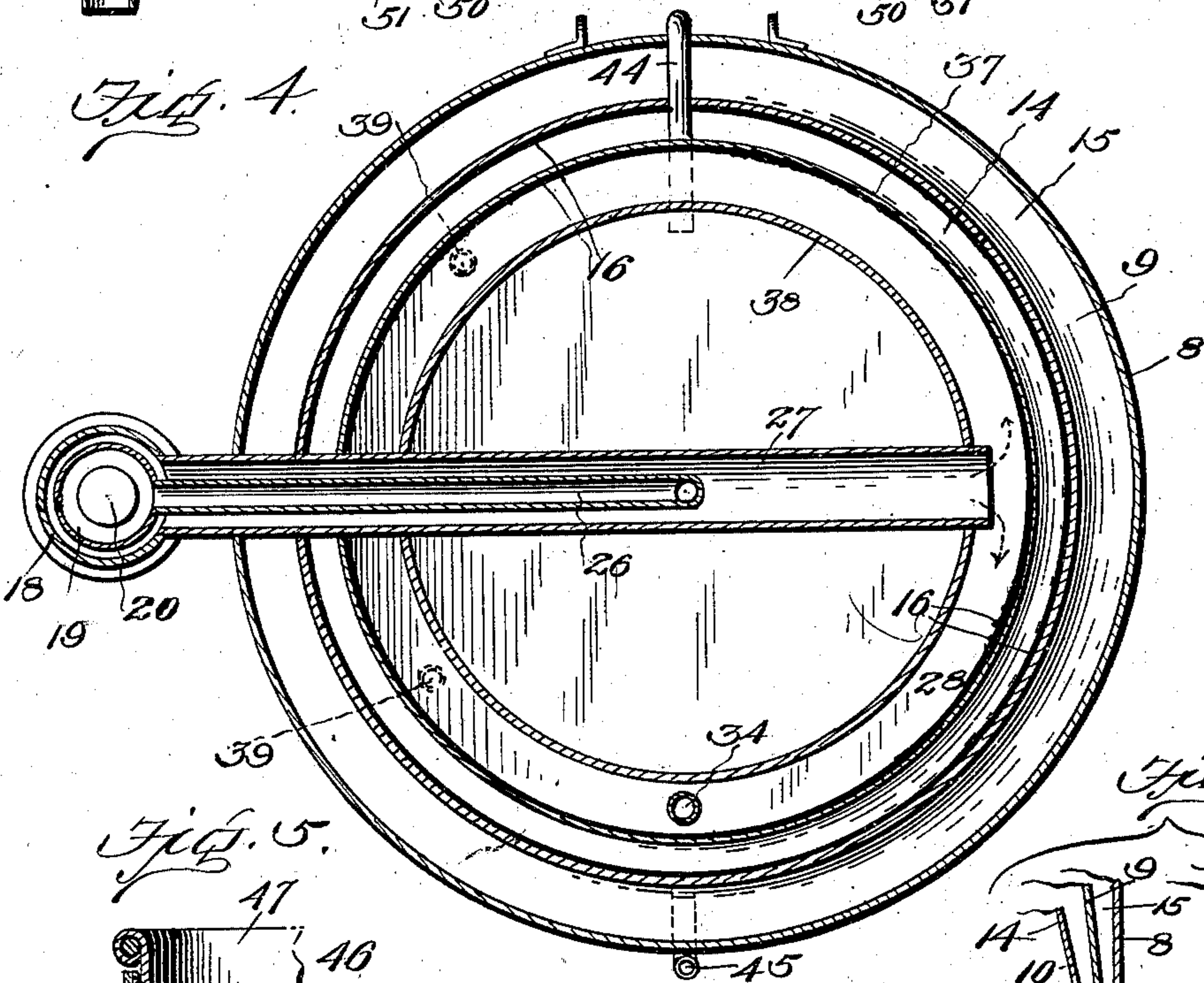
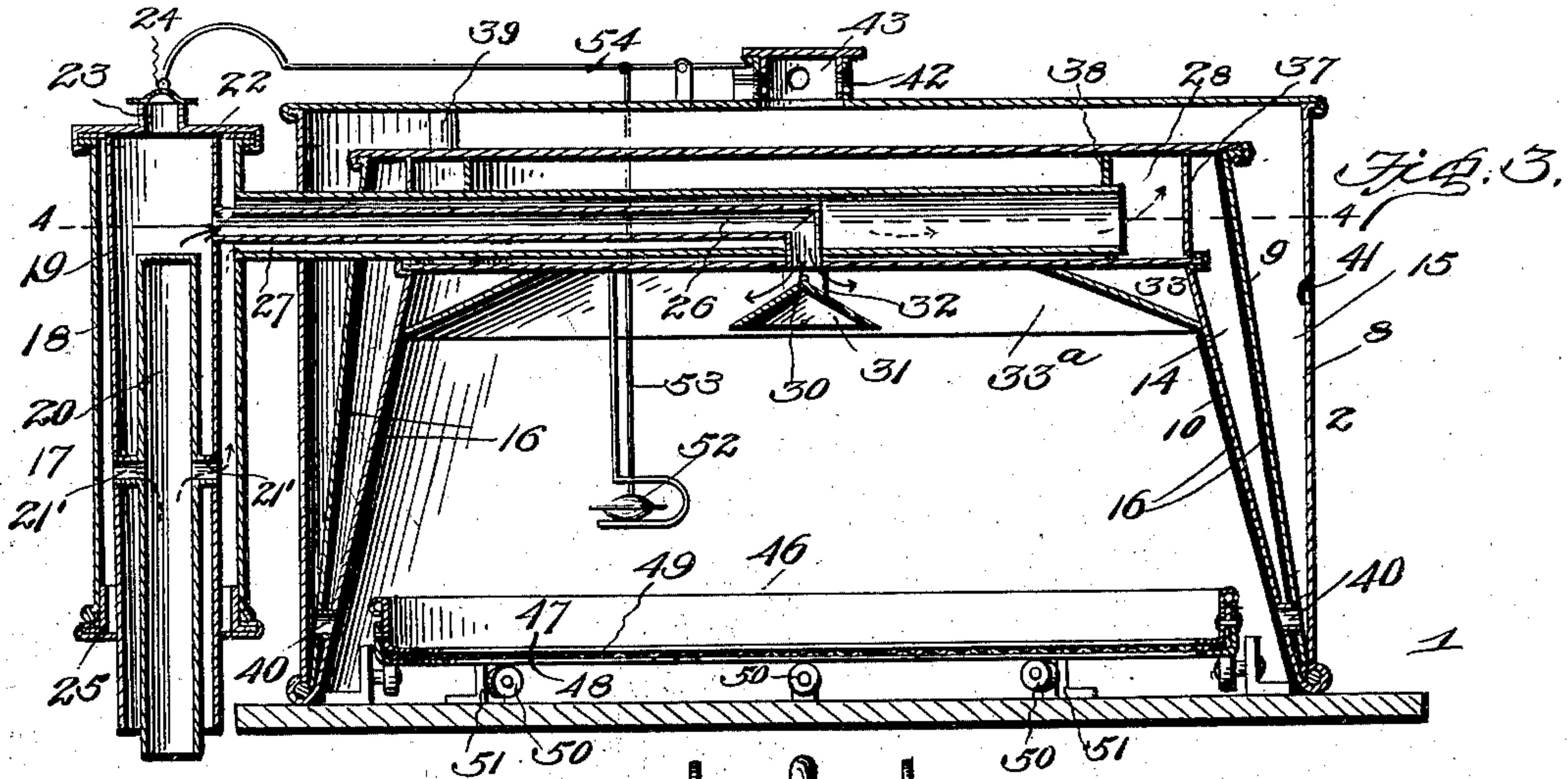
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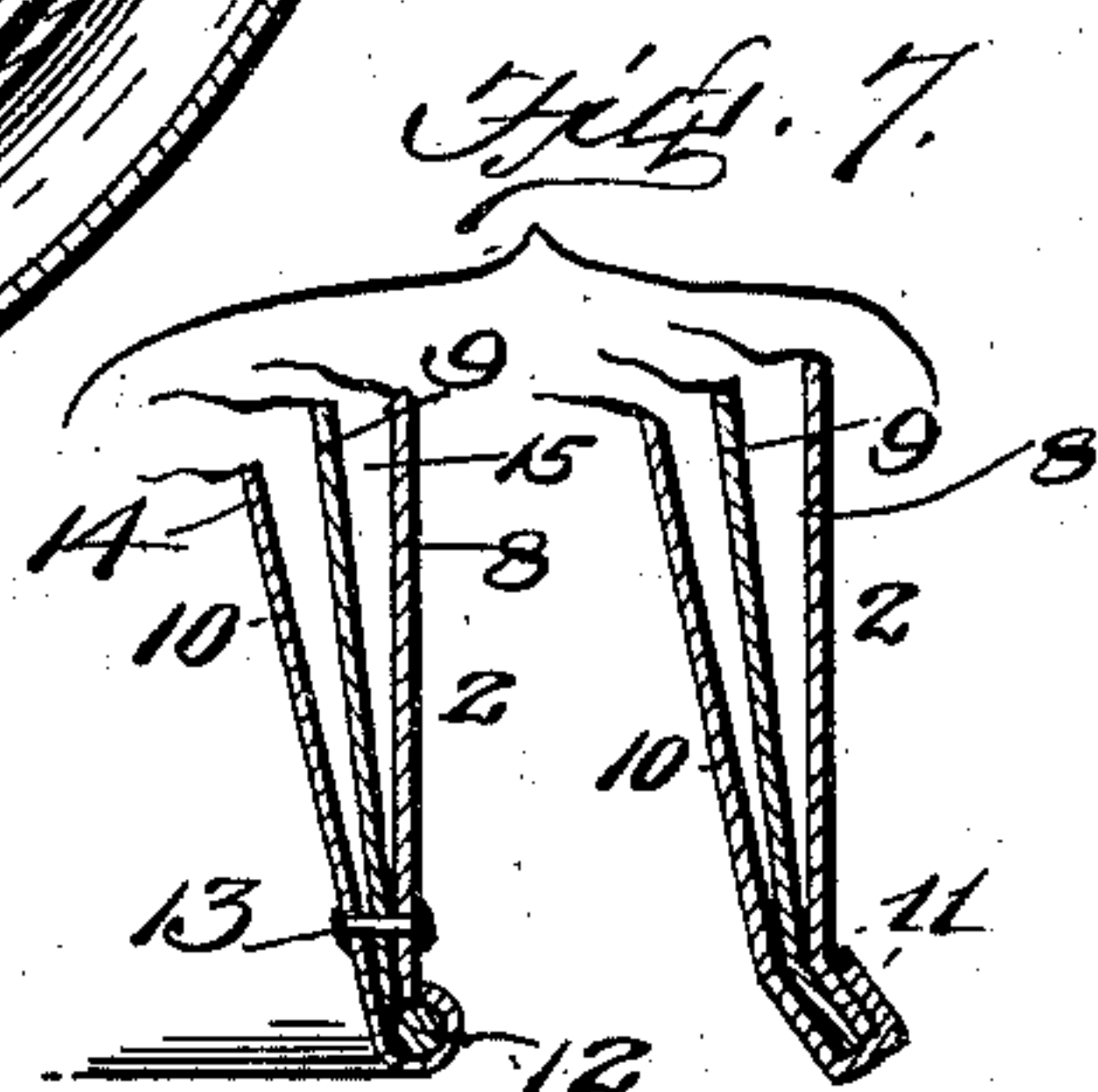
NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES

C. E. Hunt  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

THOMAS P. ADAMS, OF INDIANOLA, NEBRASKA.

## INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 750,333, dated January 26, 1904.

Application filed May 25, 1903. Serial No. 158,691. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS P. ADAMS, a citizen of the United States, residing at Indianola, in the county of Redwillow and State of Nebraska, have invented certain new and useful Improvements in Incubators; and I do 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 new and useful improvements in incubators.

The object of the invention is to improve and simplify the construction of this class of devices and render them more efficient in operation. Further objects are to provide an incubator which may also be used as a brooder and to provide means whereby the eggs may be readily aired and turned without removing them from the device.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of an incubator embodying the invention, showing the casing in its raised or opened position to ventilate the machine and to permit the eggs to be turned. Fig. 2 is a vertical front to rear sectional view through the casing and the upper portion of the table, showing the casing in its lowered position. Fig. 3 is a vertical sectional view through the casing and table, taken at right angles to Fig. 2. Fig. 4 is a horizontal sectional view taken on the line 4 4 of Fig. 3. Fig. 5 is a detail sectional view showing the construction of the egg-tray and the manner of mounting the same. Fig. 6 is a detail view of the bracket for supporting the drum. Fig. 7 shows two means by which the concentric drums of the casing may be secured together. Fig. 8 is a detail view of a guard-ring which is adapted to be placed around the egg-tray when the machine is used as a brooder. Fig. 9 is a detail sectional view through the upper portion of the casing and the heater, showing a modification of the invention.

Referring to the drawings by numerals, 1 denotes a table or support, upon the top of which the incubator casing or drum 2 is mounted. The top of this table is provided with the front and rear hinged portions or leaves 3, upon the latter of which the casing 2 is hinged, as shown at 4. By mounting the casing upon this hinged leaf it will be seen that the same may be tilted or raised, as shown in Fig. 1 of the drawings, to permit of the interior of the incubator being aired and ventilated and to permit of access to the eggs. The casing may be supported by means of the bracket 5, which is pivoted to the top of the table and which comprises the two arms 6 and 7. The arm 7 is formed with a series of teeth or projections which engage the bottom of the casing and permit the latter to be supported at different elevations. The rear legs of the table are disposed at an angle to prevent the table from tilting when the casing is raised.

The incubator-casing 2 may be of any desired shape, but is preferably circular, as shown, and comprises the three concentric drums 8, 9, and 10, which have their bottom edges united, as seen in Fig. 7. This may be effected by beading the bottom edge of the innermost drum 10 to receive the edges of the other two drums, as shown at 11, or to receive the wire rod 12 and then securing the bottom edges of the drums 8 and 9 by the bolts or rivets 13. The two inner drums are tapered or flared to form the space 14 between them and the space 15 between the drums 8 and 9. The space 14 is simply a dead-air space and may be filled with any material that is a non-conductor of heat. If desired, the inner surfaces of drums 9 and 10 may be covered with asbestos or other similar material 16.

Supported from one side of the casing is the heater 17, which, as illustrated in Fig. 3, comprises the three concentric drums 18, 19, and 20. The innermost drum 20 has its upper end closed and its lower end open to receive the upper end of the chimney of the lamp 21. This drum is supported within the intermediate drum 19, and the short pipes 21' afford communication between said drum 20 and the space between the outer drum 18 and drum 19. The drum 19 is supported within the



drum 18 by having its upper edge clamped between the turned edge of the cover or top 22 of said drums. This top 22 is provided with the opening 23, which is adapted to be closed by the damper 24, which is controlled by the thermostat within the casing. The lower end of the drum 18 is closed by the removable cover 25. The drum 18 is provided with the outlet-pipe 27, which is preferably oval in cross-section and which conducts the heat from the lamp direct to the space 28 in the casing between the upper ends of the drums 9 and 10. The heat from the lamp, as shown by the dotted-line arrows, passes from the chimney of the lamp into the drum 20, through the openings 21' into the space between the drums 18 and 19, and then out through the pipe 27. Pure cold air is adapted to be drawn in through the lower open end of the drum 19 between the drums 19 and 20 to be heated by contact with said drums and to be then discharged through the pipe 26, which is disposed within pipe 27, to the interior of the casing of the incubator, as shown by the full-line arrows. The lamp 21 is of any desired construction and is supported upon a bracket 29, secured to the table 1.

As shown in Fig. 3, the pure-air-discharge pipe 26 extends to the center of the innermost drum 10 and opens into the top of the same through the opening 30 directly above the cone-shaped deflector 31. This deflector is made adjustable toward and from said opening by suspending it by means of slotted hangers 32.

In the upper portion of the drum 10 is a water-space or compartment 33, which is formed by securing the frusto-conical ring 33<sup>a</sup> to the top and side of said drum. An inlet or filling tube 34, passing through the tops of the drums 8 and 9, communicates with said space and has its upper end closed by the screw-cap 35.

The heat from the lamp which passes through the pipe 27 is discharged by the open end of said pipe into the circular space or chamber 28, formed between the tops of the two drums 9 and 10 and two rings 37 and 38. The ring 37 forms a continuation of the side of the drum 10, and the ring 38 is disposed parallel to and within the same to direct or hold said hot air and products of combustion from the lamp down upon the top of the water-tank 33. As the same leaves the open end of the pipe 27, which it will be noted is slotted longitudinally to receive the downturned end of pipe 26, it passes to either side around said chamber or space 28, as shown by the dotted-line arrows in Fig. 4, until it reaches the discharge-tubes 39, which permit the hot air to escape to the atmosphere.

The heated air discharged into the drum 10 through the opening 30 is permitted to escape through the openings 40 into the space 15.

From the space 15 it is discharged to the atmosphere either through the openings 41 in the side of the outer drum 10 or through the discharge-tube 42 in the top of the drum 10. This tube 42 is provided with a series of openings or apertures and with a cover or cap 43, which has a depending flange which is similarly apertured, so that by turning the cover 43 the discharge-openings in the tube 42 may be opened or closed by said flange. The interior of the drum 10 may also be ventilated by providing the inlet-tube 44 and outlet-tube 45.

The egg-tray 46 is supported upon the table 1 beneath the drum 10 and consists of the two metallic rims 47 and 48, between which the upturned edge of the wire-screen bottom 49 is securely fastened by bolts or rivets. The tray is adapted to be revolvably supported above the top of the table upon the rollers 50, which are journaled upon the brackets 51, as clearly seen in Fig. 5. By this construction the eggs have thorough ventilation and may be turned without removing the tray.

The temperature within the egg-chamber—that is, the drum 10—is controlled by means of the thermostatic regulator 52, which may be of any desired construction. The vertical rod 53 from said thermostat passes through openings in the tops of the drums and is connected to the pivoted lever 54 upon the top of the casing, to one end of which the damper 24 is attached. The operation of this thermostat will raise or lower the damper, as will be readily understood, to permit the pure heated air to pass to the interior of the casing through the pipe 26 or to pass directly out of the top of the heater through the opening 23.

The operation of the invention is as follows: When the parts are properly assembled, as shown in the drawings, the heat from the lamp will pass up through the drums 20 and 18 of the heater, through pipe 27 into the space 28 of the casing, and then pass out of the same through the openings 39. The pure fresh air which is drawn into the drum 19 will be thoroughly heated by contact with the sides of the same and with the drum 20 and will pass through the pipe 26 into the egg-chamber or drum 10 of the casing. After being distributed by the deflector 31 and circulating about the eggs it will pass through the openings 40 into the space 15, and from thence it will be discharged through the openings 41 or the outlet 42. The thermostatic regulator 52 will control the temperature of the egg-chamber, as previously explained. By simply raising or tilting the casing, as seen in Fig. 1, the hinged leaf 3 will swing downwardly, and the casing may be thus easily opened to permit all gases to escape from the machine and to thoroughly air the eggs. By constructing and mounting the egg-tray as previously described the eggs will have thorough ventilation and may be reached and turned.



When the device is used as a brooder, the hinged leaf 3, to which the casing is attached, is secured in a horizontal position by the usual arm or plate 55, pivoted to the under side of the top of the table. The casing 2 is then swung up or tilted upon its hinge 4 and supported by means of the bracket 5. The guard-ring 56 (shown in Fig. 8) is placed about the egg-tray with its opening 57 to the front. This ring is formed with a series of apertures 58, which permit a free circulation of the heated air under the egg-tray. The front leaf of the table is also raised, and a temporary fence or rail is provided around the top of the table to prevent the chicks from falling off.

In the modification shown in Fig. 9 of the drawings, the heater comprises the outer drum 18<sup>a</sup>, in which a cylindrical water tank or drum 59 is secured by means of the bolts or other fastenings 60. The heat from the lamp passes up through the center of this water-tank and then either directly out to the atmosphere through the opening 23<sup>a</sup>, which is controlled by the damper 24<sup>a</sup>, or out through the short pipe 21<sup>a</sup> into the drum 18<sup>a</sup>. After circulating about the water-tank the lamp heat passes through the discharge-pipe 27<sup>a</sup> into the casing, as in the other form of the invention previously described. At the upper end of the water-tank 59 is a discharge-pipe 62, which leads to the water-tank 33<sup>b</sup> within the casing of the incubator. At the lower end of the tank 59 is a similar pipe 63, which also communicates with the tank 33<sup>b</sup> and permits the return of the water to the heating-tank 59. It is thus seen that the hot-water heat in this form of the invention is substituted for the hot-air heat in the other form. The heat from the lamp when the damper 24<sup>a</sup> is open will pass directly out of the opening 23<sup>a</sup> and the openings 65, which are also controlled by the damper, and when the latter is lowered the heat will circulate upon both sides of the water-tank and thoroughly heat its contents before passing out through the pipe 27<sup>a</sup>.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In an incubator, the combination of a suitable supporting-table, a heating drum or casing pivotally mounted upon said table so as to

tilt and means for supporting said drum in an elevated position, substantially as described.

2. In an incubator, the combination of a suitable supporting-table having a hinged portion or leaf, a heating drum or casing mounted upon said hinged leaf and adapted to be tilted by the movement of the same, and a pivoted bracket for supporting said drum in an elevated position, substantially as described.

3. In an incubator, the combination of a suitable supporting-table, heating drum or casing pivotally mounted thereon so as to tilt and forming an egg-chamber, an egg-tray mounted upon said table beneath said drum and adapted to be exposed by the tilting of the drum, substantially as described.

4. In an incubator, the combination of a suitable supporting-table, a tilting heating drum or casing mounted upon said table and forming an egg-chamber, and an egg-tray revolvably mounted upon said table beneath the drum, whereby any portion of said tray may be exposed when the drum is tilted, substantially as described.

5. In an incubator, the combination of a suitable supporting-table, a casing mounted thereon and having an egg-chamber, a hot-air-discharge space and an intermediate dead-air space, a heater carried by said casing, a pipe or connection for discharging the heat from said heater into said egg-chamber, outlet-pipes between said egg-chamber and hot-air-discharge space, and an adjustable discharge-tube for said hot-air-discharge space, substantially as described.

6. In an incubator, the combination of a suitable supporting-table, a casing mounted thereon and forming an egg-chamber, a water-compartment in said casing, a heater carried by said casing, a pipe establishing communication between said heater and casing above said water-compartment, and outlet-pipes leading from said casing above the water-compartment, substantially as described.

7. In an incubator, the combination of a suitable supporting-table, a casing mounted thereon and forming an egg-chamber, a heater carried by said casing, and comprising an inner and an outer hot-air space, an intermediate cold-air space, concentric discharge-pipes connecting said casing with said outer hot-air and said inner cold-air spaces, and a controlling-damper for said cold-air space, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

THOMAS P. ADAMS.

Witnesses:

GEORGE W. SHORT,  
MILO S. OUGH.