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2,624,333

INFANT INCUBATOR

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3 Sheets-Sheet 1

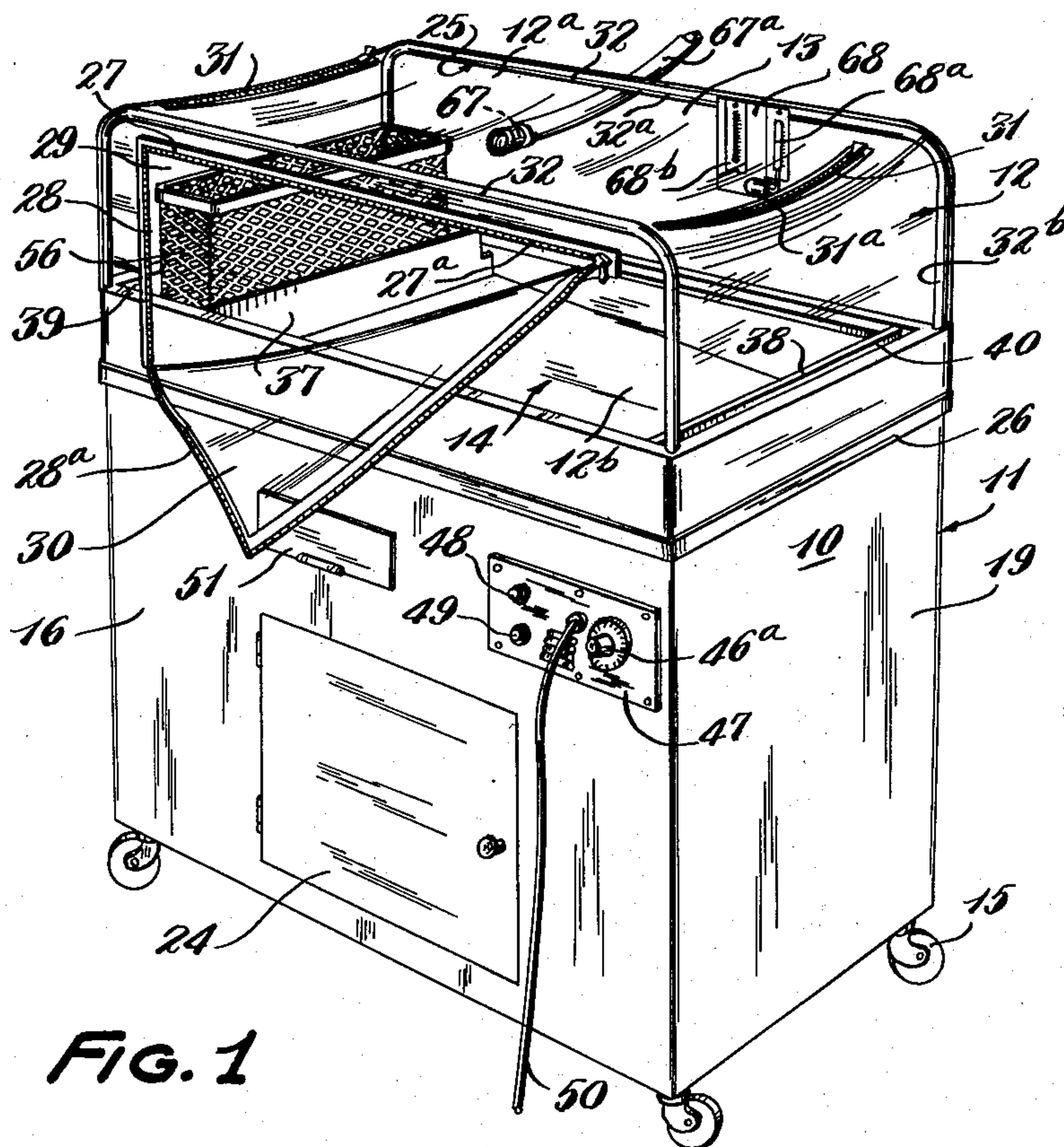


FIG. 1

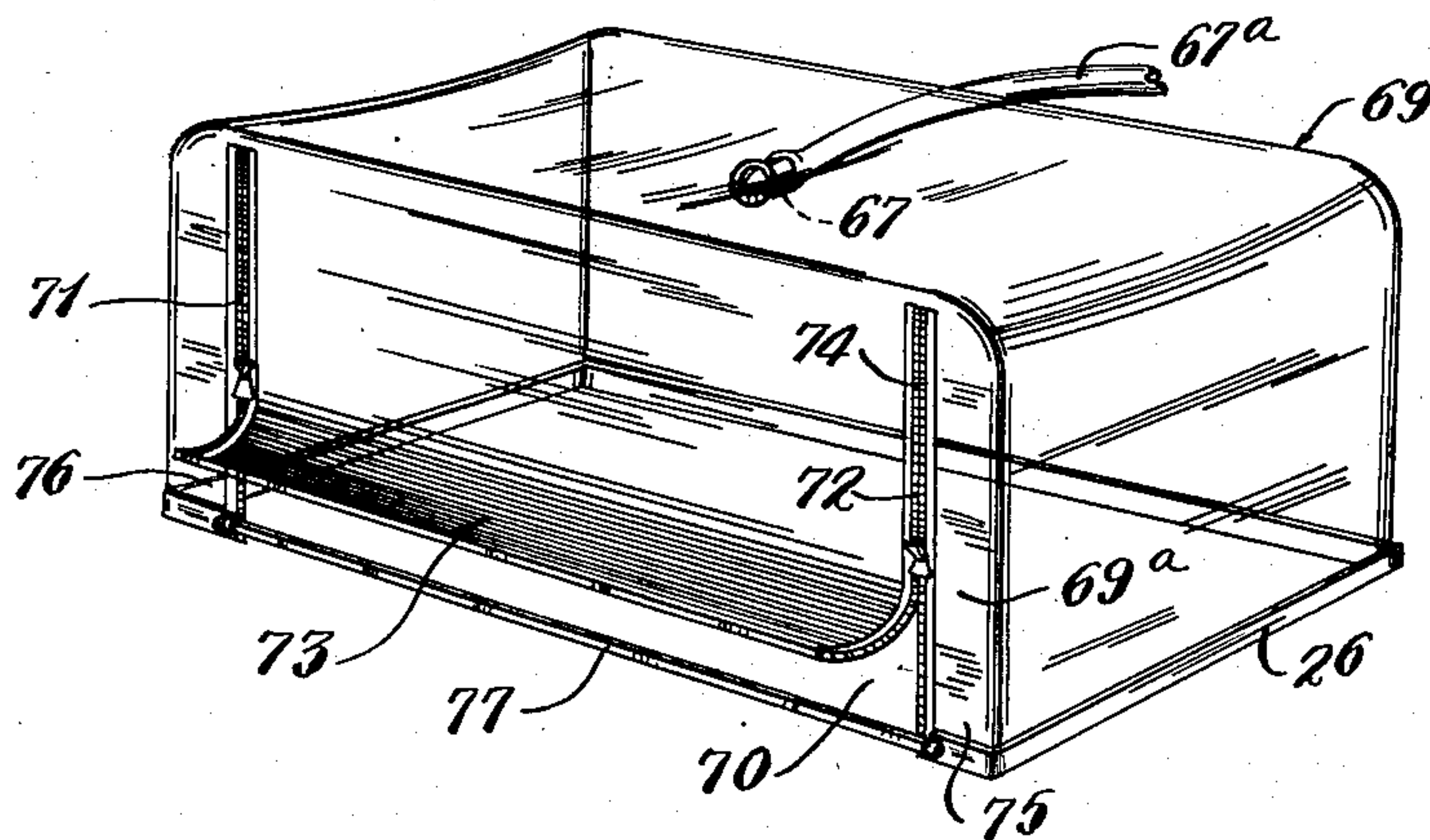


FIG. 6

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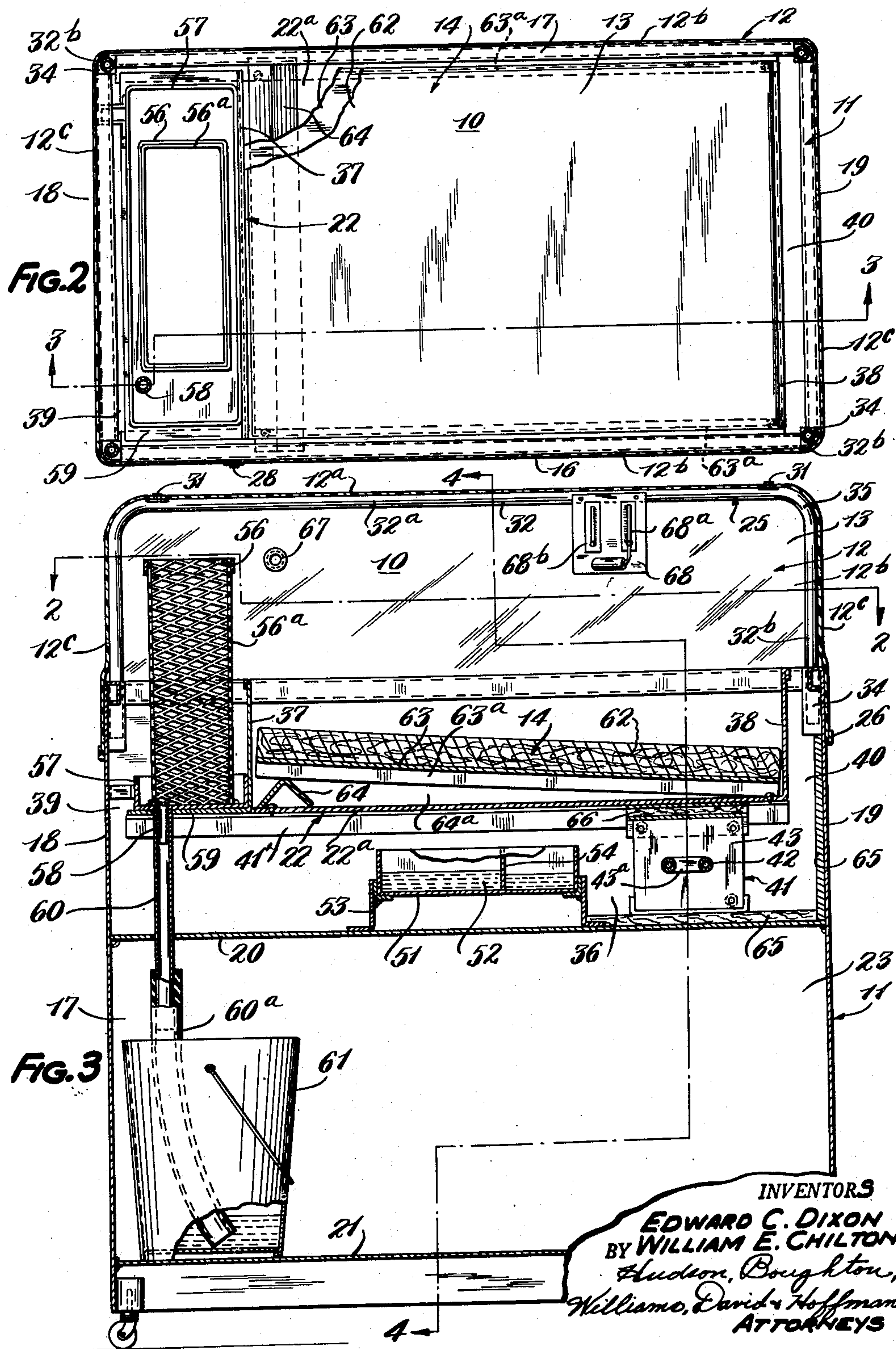
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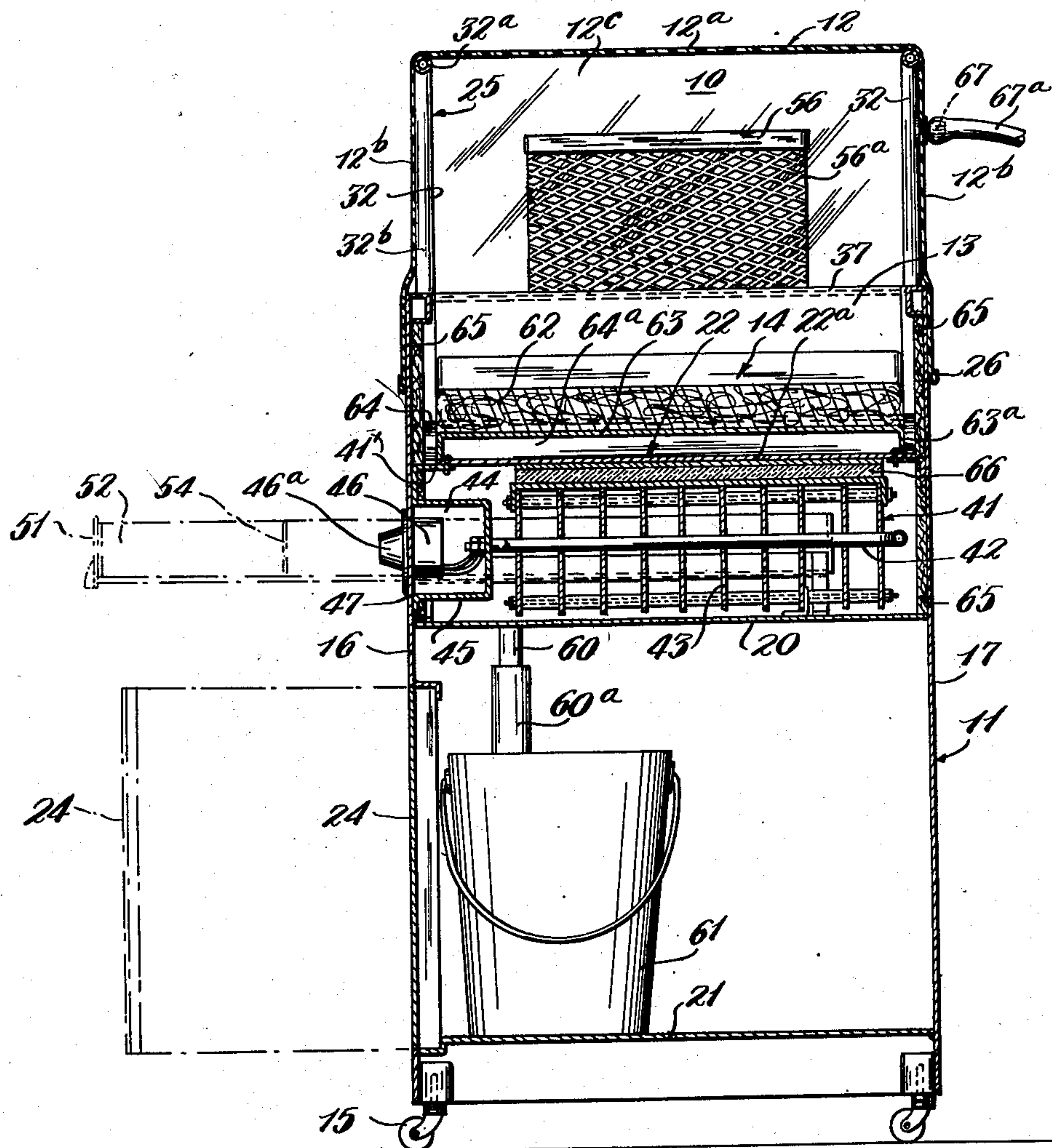


FIG. 4

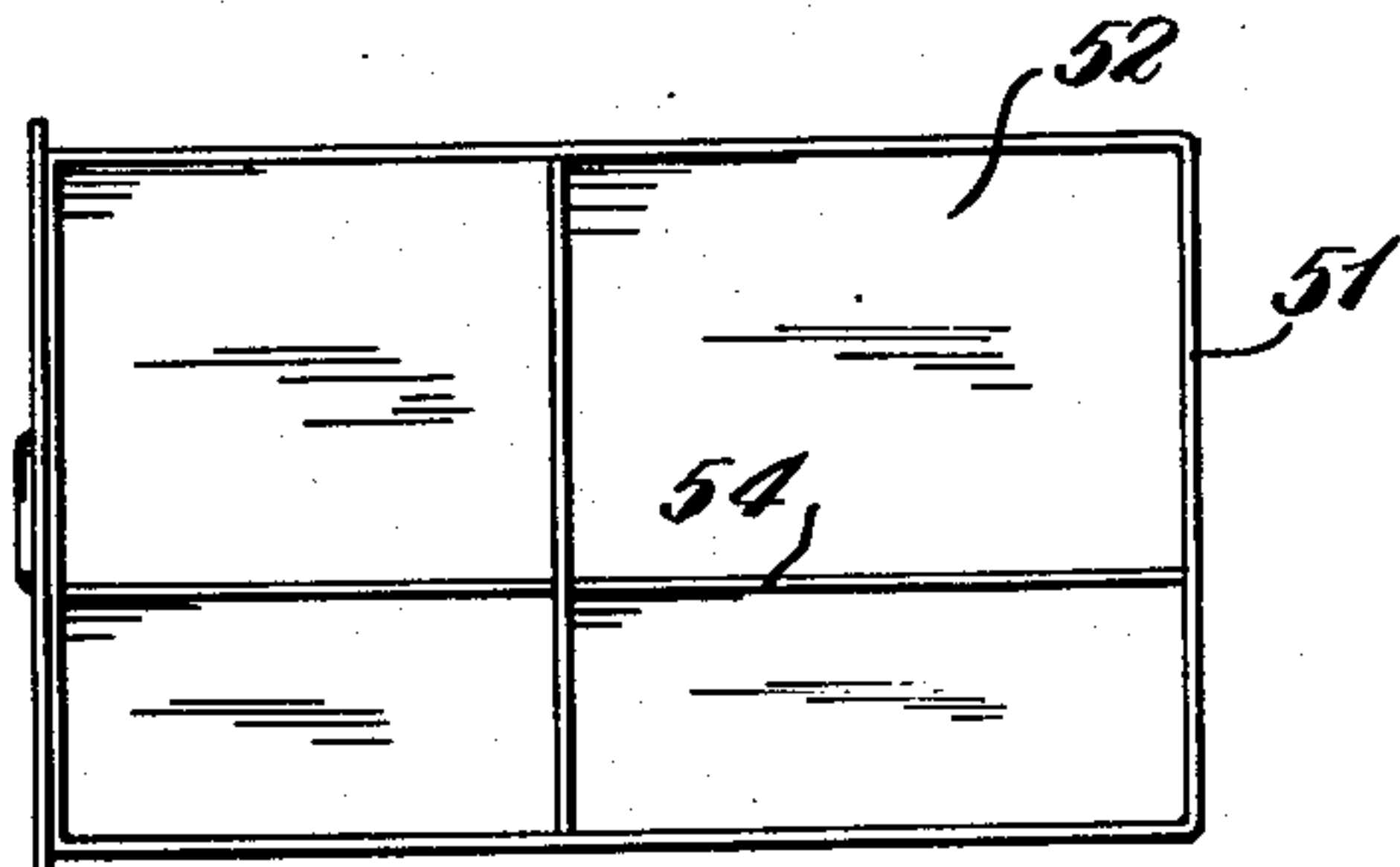


FIG. 5

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INFANT INCUBATOR

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8 Claims. (Cl. 128-1)

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This invention relates to incubators of the type used in caring for infants and, as one of its objects, aims to provide an improved construction which will enable a device of this kind to render much more varied and satisfactory service than has been available heretofore and which, nevertheless, is simple, attractive and inexpensive in character.

Another object is to provide an incubator which will serve very efficiently in caring for premature and full term infants by making a number of treating agents available as needed in the incubation chamber, namely, heating, cooling, humidification and oxygen gas, and which is particularly well suited and highly practical for treating an infant receiving post-operative care, or for isolating an infant against the spread of a contagious disease.

A further object is to provide an improved incubator of this character in which the incubation chamber is covered, and formed in part, by a canopy made of a flexible transparent sheet material which will effectively confine the agents intended to be retained in the incubation chamber while excluding others intended to be excluded, which will render the infant clearly visible at all times and from all sides, and which is inexpensive and disposable such that the canopy can be discarded after a period of treatment of an infant having a contagious disease.

Still another object is to provide an improved incubator of the character just mentioned in which frame means, preferably a detachable frame means, extending above an open-top housing supports the flexible transparent canopy in upwardly arched relation over the incubation chamber such that the side and top walls of the incubation chamber are formed, in part, by the canopy.

It is likewise an object of this invention to provide an improved infant incubator of the character above referred to in which heating, cooling and/or humidification are more effectively obtained.

An additional object is to provide an improved infant incubator having novel bed supporting means therein.

The invention can be further briefly summarized as consisting of certain novel combinations and arrangements of parts hereinafter described and particularly set out in the claims hereof.

In the accompany sheets of drawings,

Fig. 1 is a perspective view showing an infant incubator embodying the present invention;

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Fig. 2 is a horizontal section taken through the incubator substantially as indicated by section line 2-2 of Fig. 3;

Fig. 3 is a longitudinal vertical section taken through the incubator substantially as indicated by section line 3-3 of Fig. 2;

Fig. 4 is a transverse vertical section taken through the incubator substantially on section line 4-4 of Fig. 3;

Fig. 5 is a plan view of the humidifying pan showing the same in detached relation; and

Fig. 6 is a perspective view showing a modified form of the transparent flexible canopy.

As one practical embodiment of the invention the drawings show an incubator 10 comprising an upright open-top housing 11 and a transparent flexible canopy 12 extending above the housing and defining with the open-top thereof an incubation chamber 13 in which is located a bed 14 adapted to receive an infant thereon.

The housing 11 is here shown as being in the form of an upright cabinet having supporting casters 15 at the bottom thereof which will permit the incubator to be readily rolled along a floor from one station to another. The housing 11 comprises pairs of opposed upright side and end walls 16, 17 and 18, 19. The housing also includes transverse walls 20 and 21 forming upper and lower floors in the cabinet and a horizontal wall 22a forming a part of a bed support 22 upon which the bed 14 is supported. The upper floor 20 forms the bottom of the incubation chamber 13 and the lower floor 21 forms the bottom of a storage space 23 in which blankets or other paraphernalia may be placed. Access to the storage space 23 is afforded by a hinged door 24.

As has already been indicated above in a general way, the transparent canopy 12 constitutes an important feature of the improved incubator 10 and will now be further described. The canopy 12, together with a supporting frame means 25, constitutes an upwardly arched cover for the incubation chamber 13 and since the canopy is transparent, an infant lying on the bed 14 will be clearly visible from all sides of the incubator and from all directions. The canopy itself comprises a bag-like structure having a generally horizontal top wall 12a and pairs of opposed side and end walls 12b and 12c. The canopy 12 has an opening at the bottom thereof of substantially the same size and quadrangular plan shape as the open-top of the housing 11 such that when the canopy is applied to the housing the lower edge portions of the canopy

will telescope over the upper portion of the housing, as shown in Fig. 1.

The canopy 12 is made of a flexible transparent sheet material and for this purpose any one of various transparent plastic sheet materials can be used, such as a polyvinyl of chloride resin sheet material. The canopy can be formed by sewing or welding together sheets or sections of the polyvinyl sheet material of appropriate size and shape. The canopy is preferably provided around the lower edge thereof with a suitable binding or hem 26 for reinforcement at this point and which will enable the canopy to be applied to the frame means 25 by grasping the lower edge portions and drawing the canopy downwardly in telescoping relation over the frame means.

The canopy 12 is provided with one or more openings which communicate with the incubation chamber 13. As shown in Fig. 1, the front side wall 12b of the canopy can be provided with an opening formed by two slits 27 and 28 which intersect at substantially right angles and define an opening 29 and a closing flap 30. The opening 29 is of a size to permit an infant to be moved into or out of the incubation chamber and also affords access to the incubation chamber for caring for an infant lying on the bed 14. The edge portions of the canopy at the location of the slits 27 and 28 are provided with fastening means 27a and 28a of the slide type which will permit the flap 30 to be secured in a position to partially or completely close the opening 29. Additional openings can be provided in the walls of the canopy 12 at other desired points, for example, the top wall 12a can be provided with openings in the form of slits 31 which are adapted to be closed partially or completely by slide type fasteners 31a. The openings 31 provide communication between the room atmosphere and the incubation chamber for ventilation of the latter. The left-hand opening 31 may also be used in refilling the ice container 56a which is located directly thereunder and described hereinafter.

The frame means 25 may comprise any suitable frame structure adapted to be supported on the housing 11 so as to extend thereabove and suitably support the canopy 12 in distended relation over the open-top of the housing. In this instance the frame means comprises a pair of upwardly bowed bars 32 having substantially horizontal top portions 32a extending longitudinally of the housing in parallel relation to each other and depending end portions 32b which may be detachably connected with the housing by being inserted into sockets 34 provided at the corners of the housing. The frame members 32 are preferably provided with rounded corner portions 35 at the junction of the top and end portions 32a and 32b thereof such as to facilitate the operation of drawing the canopy 12 downwardly in telescoping relation over the frame means 25. The rounded corners 35 also eliminate sharp projections which might otherwise tend to damage the canopy 12.

When the canopy 12 has been applied to the open-top housing 11 it extends thereover in upwardly arched relation, as shown in Fig. 1, so as to cooperate with such open-top in defining the incubation chamber 13. When the canopy is thus installed the edge portions extending around the bottom opening thereof telescope over the top portion of the housing such that the incubation chamber 13 will be substantially closed except for the access and ventilation openings 29 and 31 provided in the canopy. Since

the canopy is made from a transparent sheet material, the top, side and end walls thereof will be transparent and will afford a clear view of the infant in the incubation chamber from all sides of the incubator which will greatly facilitate the work of watching over and caring for the infant.

The sheet material of the canopy 12 is substantially impervious to air and moisture and therefore forms a closure for the incubation chamber which will effectively isolate the chamber from the atmosphere of the room in which the incubator is located and will effectively retain moisture and oxygen in the incubation chamber when these agents are supplied thereto. Because of this impervious characteristic of the canopy the incubator can be used effectively in isolating an infant against infection by a contagious disease and, conversely, when the incubator is used in treating a diseased infant the canopy will effectively isolate the diseased infant against the spread of the disease to other infants in the same hospital. The plastic sheet material of which the canopy 12 is constructed is a relatively inexpensive material and, hence, after the canopy has been in use for a period of time, such as for the treatment of a diseased infant, it can be burned or otherwise disposed of and a new canopy substituted in its place.

With the construction thus far described above, it will be seen that the canopy 12 can be easily and quickly applied to the housing 11, and can also be readily removed therefrom when the walls of the housing defining the lower portion of the incubation chamber are to be cleaned or when a new canopy is to be substituted. The frame means 25 is preferably detachable from the housing 11 and this can be readily accomplished by disengaging the ends 32b of the frame members 32 from the sockets 34. The removable characteristic of the canopy 12 and the frame means 25 will also permit the housing 11 to be used as a bassinet instead of an incubator whenever this is desirable.

To provide for desired ventilation and more effective heating, cooling and humidification of the incubation chamber 13, the housing 11 is constructed with the horizontal bed support 22 spaced above the upper floor 20 so as to define therebetween a horizontal air passage 36 and with the upright ends 37 and 38 of the bed support spaced inwardly from the upright end walls 18 and 19 of the housing so as to define upright air passages 39 and 40 which connect the ends of the horizontal air passage 36 with the portion of the incubation chamber which is located above the bed 14. In thus defining the air passages 36, 39 and 40, the horizontal and vertical walls 22a, 37 and 38 of the bed support extend laterally of the housing between the front and rear side walls 16 and 17 thereof. The horizontal wall 22a is suitably connected with the side walls of the housing as by means of longitudinally extending angle irons 41' which are welded or otherwise secured to such side walls. With the arrangement of air passages just described above, it will be seen that they provide a closed path for a circulation of air by connection through the incubation chamber 13 in which the direction of the air flow is downwardly through the air passage 39, laterally toward the right through the horizontal air passage 36, upwardly through the air passage 40 and then laterally toward the left through the upper portion of the incubation chamber.

For supplying heat to the incubator, a heat-exchanger 41 comprising a resistance type of

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electric heating element 42 is provided in the air passage 36 and extends substantially across this passage between the front and rear side walls 16 and 17. To facilitate the transfer of heat from the element 42 to the stream of air, the heat-exchanger 41 also comprises a plurality of radiation plates 43 disposed in spaced-apart substantially parallel relation, as shown in Fig. 4, and between which the air stream flows. The heating element 42 is here shown as being a substantially U-shaped member extending through aligned slots 43a of the radiation plates 43 and whose ends constitute terminals and are disposed in a control chamber 44. The heat exchanger 41 is preferably constructed as a preformed assembly unit which is adapted to be assembled into the housing 11 so as to occupy the position shown in Figs. 3 and 4 and described above.

The chamber 44 is defined by a sheet metal box 45 having substantially airtight connection with the front wall 16 of the main housing 11 so as to prevent oxygen-enriched air of the incubation chamber from coming in contact with exposed electrical parts. The supply of electric current to the heating element 42 is controlled by a combined switch and thermostat device 46 having an actuating knob 46a accessible at the front of the incubator. The housing 44 is closed at the front thereof by a sheet metal cover 47 which also forms a support for the combined switch and thermostat device 46. A pair of signal lamps 48 and 49 are also provided on the cover 47 and indicate the operating conditions of the electric heating element 42. A conductor cord extending into the housing 44 through the cover 47 supplies electric current to the heating element 42 and the signal lamps 48 and 49.

For humidifying the incubation chamber 13 an open-top humidifying pan 51 is disposed in the horizontal air passage 36 and contains a supply of water 52 having an exposed surface across which the air of this passage flows. The pan 51 is here shown as being in the form of a drawer supported in a pair of runways 53 and adapted to be withdrawn from the housing 11 through an opening in the front wall 16 thereof. The humidification of the incubation chamber 13 can be controlled, if desired, by constructing the pan 51 with a plurality of water compartments of different plan areas, as shown in Fig. 5. For this purpose the pan is provided with partition means 54 which divides the interior of the pan into a plurality of compartments of different sizes. Each compartment of the pan provides a different surface area of water for supplying moisture to the air stream and, by placing water in one or more of these compartments, a number of different surface values can be obtained for supplying correspondingly different amounts of humidification to the air being circulated.

Cooling of the air of the incubation chamber 13 is produced by providing a heat-exchanger 56 to which suitable cooling medium can be supplied. In this instance the heat-exchanger 56 comprises a container 56a adapted to hold a quantity of ice cubes, or the like, and over which the air of the incubation chamber flows and is cooled thereby, particularly during movement of the air toward and into the upright air passage 39.

The container 56a is here shown as being a basket-like structure of a perforated or foraminous character which will readily permit the air to contact the ice and will also permit free drainage of water out of the container as the ice melts.

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The container 56a shown in this instance is made of expanded sheet metal and includes a drip pan 57 which is secured to and extends around the lower end of the container. The drip pan 57 is provided with a drain spout 58 depending from the underside thereof.

The heat-exchanger 56 is located at one end of the bed 14, in this instance adjacent the upright end wall 37 of the bed support 22, and can be supported in this location by being received on shelf means constituting an extension 59 of the bed support. In this location the heat-exchanger 56 is in a position to be readily traversed by the air of the incubation chamber which flows laterally and downwardly into the air passage 39. The extension 59 of the bed support is provided with a depending drain pipe 60 which extends downwardly through the upper floor 20 of the housing 11 and discharges into a bucket or other suitable container 61 located in the storage compartment 23. The heat-exchanger 56, including the drip pan 57 and the drainage spout 58, is removable from the incubator for filling or cleaning and when this heat-exchanger has been charged with a quantity of ice it can be readily inserted into the incubator by placing the same on the shelf extension 59 with the drain spout 58 extending into the drain pipe 60. To prevent the escape of oxygen from the incubation chamber, the drain pipe 60 may have a hose extension 60a thereon whose delivery end is submerged in a quantity of water contained in the bucket 61.

The bed 14 upon which the infant is to lie comprises a pad or mattress 62 of any appropriate type and a plate 63 forming a substantially flat rigid support for the pad. The plate 63 preferably has downturned flanges 63a extending along the sides thereof which serve to stiffen the plate and also serve as feet adapted to rest on the horizontal wall 22a of the bed support.

Another novel feature of the improved incubator 10 provides for supporting the bed 14 in inclined relation to the horizontal wall 22a, as shown in Fig. 3. For supporting the bed in this relation a bar 64 comprising an angle bar of aluminum, or other suitable metal, extends transversely of the incubation chamber beneath the plate 63. The bar 64 has the free edges of its legs resting on the horizontal wall 22a and the edge of its heel portion uppermost so as to form a stable support of triangular cross-section for the plate 63. The bar 64 is preferably not secured to the horizontal wall 22a but is shiftable thereon to different locations between the upright end walls 37 and 38 of the bed support so as to vary the angle of inclination at which the plate 63 will be supported.

The bar 64 thus provides a very simple yet effective means for holding the bed 14 at a desired angle of inclination which is recommended by doctors for the treatment of infants in incubators. The use of the bar 64 also produces an insulating air space 64a under the plate 63 which will prevent excessive heating of the bed 14 such as might occur if the bed were in direct contact with the horizontal wall 22a. When it is desired to have the bed 14 occupy a horizontal position in the incubator, the bar 64 can be removed whereupon the plate 63 will be supported by its end flanges 63a which will hold the plate spaced above the horizontal wall 22a with a heat-insulating air space maintained therebetween.

The transfer of heat between the incubator and the room atmosphere is retarded by providing the housing 11 with a suitable heat-insulating lining

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65 on the side walls 16 and 17, on the end wall 19, and on the floor 20 for at least the portion thereof located beneath the heat-exchanger 41. A heat-insulating layer 66 of suitable material is also disposed in overlying relation to the plates 43 of the heat-exchanger 41 to prevent too much heat from being supplied to the portion of the horizontal wall 22a located directly thereabove.

To provide for the admission of oxygen or other gaseous treating medium to the incubation chamber 13, the canopy 12 is equipped with a nipple 67 which is here shown as being mounted on the rear side wall 12a and to which a hose 67a can be readily connected for supplying oxygen or other gas from a tank or other available source (not shown). The temperature of the air in the incubation chamber is determined or indicated by a thermometer device 68 located in the incubation chamber and suspended from one of the bars 32 of the frame means 25. In this instance the thermometer device comprises wet and dry bulb thermometers 68a and 68b which can be readily observed through the transparent canopy 12.

Fig. 6 of the drawings shows a canopy 69 of a modified form which is similar in construction to the canopy 12 above described and serves the same purpose. The modified canopy 69 differs from the canopy 12 only with respect to the character and location of the access opening 70. In the canopy 69 the access opening 70 is provided by constructing the front wall 69a with two laterally spaced substantially parallel upright slits 71 and 72 so as to define therebetween the access opening and a flap 73 adapted to close this opening. Edge portions of the slits 71 and 72 are provided with slide type fasteners 74 by which the flap 73 can be secured in wholly or partially closed relation. The corner portions 75 and 76 of the canopy are adapted to be held in close fitting engagement with the upper portion of the housing 11 as by means of an elastic strip 77 having its ends connected to these corner portions and spanning the opening 70 at the lower edge thereof.

From the foregoing description and the accompanying drawings it will now be readily understood that this invention provides an improved infant incubator of attractive appearance and of a very simple, compact, and practical character. It will also be understood that the improved construction provided by this invention makes such an incubator highly practical and satisfactory for use in treating or caring for premature or full term infants, as well as for treating or isolating infants receiving post-operative care or being treated for contagious disease. It will also be seen that the transparent canopy forming the cover for the incubation chamber permits the infant therein to be readily observed from all sides and directions and constitutes an inexpensive and disposable canopy which can be discarded after treatment of an infant having a contagious disease. Additionally, it will be seen that this invention provides an improved construction for such an incubator by which heating, cooling and humidification can be more satisfactorily obtained and in which a novel bed support permits inclination of the bed for more satisfactory treatment of the infant in accordance with recommended medical practice.

Although the improved infant incubator of this invention has been illustrated and described herein to a somewhat detailed extent, it will be understood, of course, that the invention is not to be regarded as being limited correspondingly in scope but includes all changes and modifica-

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tions coming within the terms of the claims hereof.

Having thus described our invention, we claim:

1. In an infant incubator, a housing having walls including upright side walls defining an open-top incubation chamber, upwardly arched frame means mounted on said side walls and extending above said incubation chamber, a canopy comprising transparent flexible sheet material and having top and side walls and a bottom opening, said canopy being telescoped over said frame means and removably supported thereby in distended relation over said incubation chamber and having its lower edge portions extending downwardly in overlapping relation to the side walls of said housing, and bed means in said incubation chamber for supporting an infant therein at an elevation such that the infant will be visible through the side walls of said canopy from at least three lateral directions.

2. In an infant incubator, a housing having walls including upright side walls defining an open-top incubation chamber of a substantially quadrangular plan shape, means defining sockets on said housing substantially at the corners of said incubation chamber, a pair of bowed frame members extending above said incubation chamber and along two parallel sides thereof, said frame members having depending end portions engaging in said sockets for mounting the frame members on said housing, a canopy having connected top and side walls made of transparent flexible sheet material and being open at the bottom thereof, said canopy being telescoped over said bowed frame members and removably supported thereby in distended relation over said incubation chamber and having the lower edge portions of its bottom opening extending downwardly in overlapping relation to the side walls of said housing and bed means in said incubation chamber for supporting an infant therein at an elevation such that the infant will be visible through the side walls of said canopy from at least three lateral directions.

3. In an infant incubator, a housing having pairs of opposed upright side and end walls and a transverse floor defining an open-top incubation chamber, frame means mounted on said housing and extending thereabove, a canopy removably supported by said frame means and forming an upwardly arched cover for said incubation chamber, bed means extending between and connected with the side walls of said housing and comprising a transverse bottom wall and a pair of upright end walls, said bed means having its bottom wall spaced above said floor and defining with the latter a longitudinal substantially horizontal air passage and with its end walls spaced inwardly from the end walls of said housing and defining therewith a pair of upright air passages connecting the ends of said horizontal air passage with the upper portion of the incubation chamber which is located above said bed means, said horizontal and upright air passages forming with said upper portion of the incubation chamber a closed-loop circuitous path for air recirculation, and heat-exchange means disposed in said horizontal passage and adapted to heat the air flowing therethrough, said canopy comprising transparent flexible sheet material and having top and side walls and a bottom opening and being distended over said frame means and said canopy also having the lower edge portion of its bottom opening extending downwardly in overlapping relation to the side and end walls of

said housing, said bed means being located in said incubation chamber for supporting an infant therein at an elevation such that the infant will be visible through the side walls of said canopy from at least three lateral directions.

4. In an infant incubator, a housing having pairs of opposed upright side and end walls and a transverse floor defining an open-top incubation chamber, frame means mounted on said housing and extending thereabove, a canopy removably supported by said frame means and forming an upwardly arched cover for said incubation chamber, bed means extending between and connected with the side walls of said housing and comprising a transverse bottom wall and a pair of upright end walls, said bed means having its bottom wall spaced above said floor and defining with the latter a longitudinal substantially horizontal air passage and with its end walls spaced inwardly from the end walls of said housing and defining therewith a pair of upright air passages connecting the ends of said horizontal air passage with the upper portion of the incubation chamber which is located above said bed means, said horizontal and upright air passages forming with said upper portion of the incubation chamber a closed-loop circuitous path for air recirculation, heat-exchange means disposed in said horizontal air passage and adapted to heat the air flowing therethrough, and an open-top humidifying pan disposed in said horizontal air passage and providing a reservoir adapted to supply moisture to air flowing thereacross, said canopy comprising transparent flexible sheet material and having top and side walls and a bottom opening and being distended over said frame means and said canopy also having the lower edge portion of its bottom opening extending downwardly in overlapping relation to the side and end walls of said housing, said bed means being located in said incubation chamber for supporting an infant therein at an elevation such that the infant will be visible through the side walls of said canopy from at least three lateral directions.

5. In an infant incubator, a housing having walls defining an incubation chamber, frame means supported by said housing and extending thereabove, a canopy cover for said incubation chamber comprising connected top and side walls formed of transparent flexible sheet material, said canopy cover having a bottom opening and being removably telescoped over said frame means and supported thereby in distended relation over said incubation chamber with edge portions of said bottom opening extending downwardly in overlapping relation to the upper portion of said housing, the front wall of said canopy cover having intersecting slits therein defining an opening affording access to said incubation chamber and also defining a flap portion of the canopy cover adapted to close such opening, and fastening means of the slide type adapted to connect edge portions of said canopy cover along said slits for releasably holding said flap in closed position.

6. In an infant incubator, a housing having walls defining an incubation chamber, frame means supported by said housing and extending thereabove, a canopy cover for said incubation chamber comprising connected top and side walls formed of transparent flexible sheet material, said canopy cover having a bottom opening and being removably telescoped over said frame means and supported by the latter in distended relation over said incubation chamber with edge

portions of said bottom opening extending downwardly in overlapping relation to the upper portion of said housing, the front wall of said canopy cover having spaced upright substantially parallel slits therein defining an opening affording access to said incubation chamber and also defining a flap portion of the canopy cover adapted to close such opening, and fastening means of the slide type adapted to connect edge portions of said canopy cover along said slits for releasably holding said flap in closed position.

7. In an infant incubator, a housing having pairs of opposed upright side and end walls and a transverse floor defining an open-top incubation chamber, frame means mounted on said housing and extending thereabove, a canopy removably supported by said frame means and forming an upwardly arched cover for said incubation chamber, bed means extending between and connected with the side walls of said housing and comprising a transverse bottom wall and a pair of upright end walls, said bed means being located in said incubation chamber with its bottom wall spaced above said floor and defining with the latter a longitudinal substantially horizontal air passage and with its end walls spaced inwardly from the end walls of said housing and defining therewith a pair of upright air passages connecting the ends of said horizontal air passage with the upper portion of the incubation chamber which is located above said bed means, said horizontal and upright air passages forming with said upper portion of the incubation chamber a closed-loop circuitous path for air recirculation, shelf means constituting an extension of said bed means and located in one of said upright air passages, and a heat exchanger supported on said shelf means and adapted to be supplied with cooling medium for cooling the air flowing through said one upright air passage, said canopy comprising transparent flexible sheet material and having top and side walls and a bottom opening and being distended over said frame means with the edge portions of said bottom opening extending downwardly in overlapping relation to the upper portion of said housing.

8. In an infant incubator, a housing having pairs of opposed upright side and end walls and a transverse floor defining an open-top incubation chamber, frame means mounted on said housing and extending thereabove, a canopy removably supported by said frame means and forming an upwardly arched cover for said incubation chamber, bed means extending between and connected with the side walls of said housing and comprising a transverse bottom wall and a pair of upright end walls, said bed means having its bottom wall spaced above said floor and defining with the latter a longitudinal substantially horizontal air passage and with its end walls spaced inwardly from the end walls of said housing and defining therewith a pair of upright air passages connecting the ends of said horizontal air passage with the upper portion of the incubation chamber which is located above said bed means, said horizontal and upright air passages forming with said upper portion of the incubation chamber a closed-loop circuitous path for air recirculation, shelf means constituting an extension of said bed means and located in one of said upright air passages, and a heat-exchanger supported on said shelf means and comprising an open-top container adapted to be supplied with ice for cooling the air flowing through said one upright passage, said canopy comprising transparent flexible sheet material and having

top and side walls and a bottom opening and being distended over said frame means with edge portions of said bottom opening overlapping the upper portion of said housing and said canopy also having an opening in one of its walls and located to permit ice to be supplied therethrough to said container, said bed means being located in said incubation chamber for supporting an infant therein at an elevation such that the infant will be visible through the side walls of said canopy from at least three lateral directions.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,155,209	Walker	Apr. 18, 1939
2,246,820	Taylor	June 24, 1941
2,288,538	Morrison	June 30, 1942
2,292,120	Hanby	Aug. 4, 1942