Sept. 9, 1941. C. F. GEDGE 2,255,036

INCUBATOR TRAY

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FIG. 1.

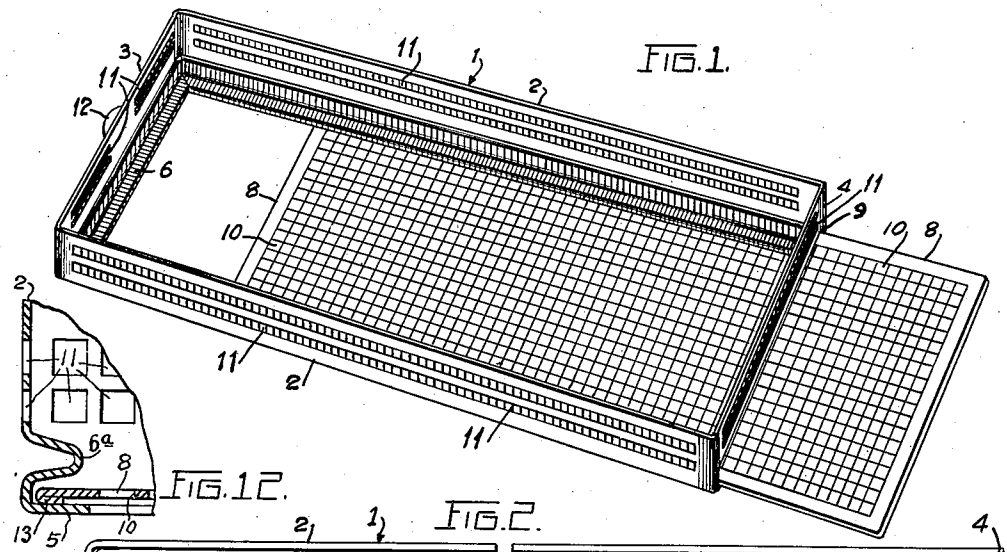


FIG. 12.

FIG. 2.

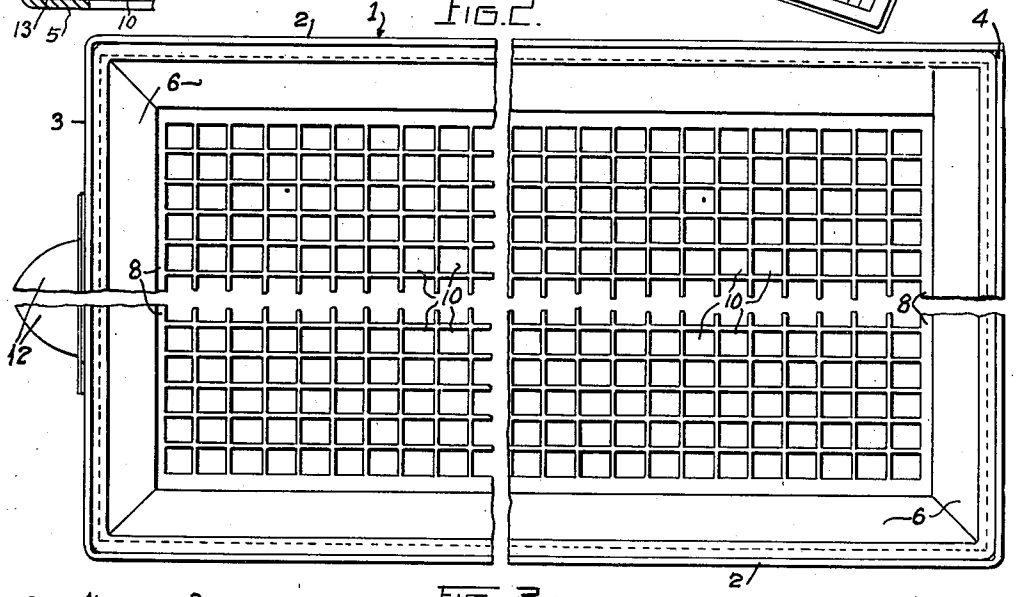
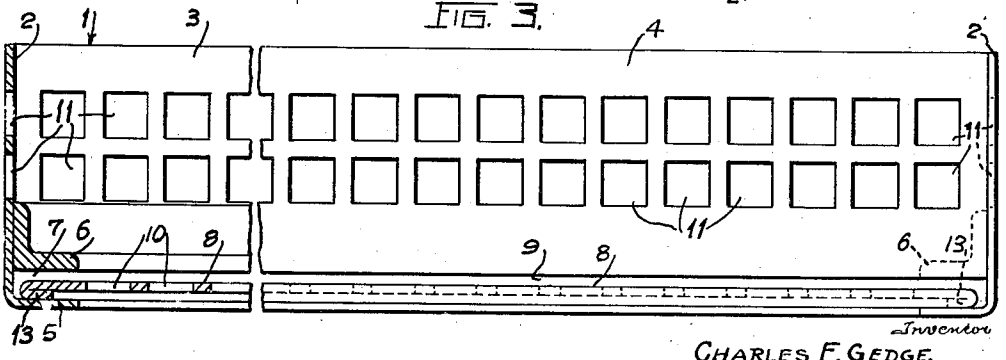


FIG. 3.



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INCUBATOR TRAY

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FIG. 4.

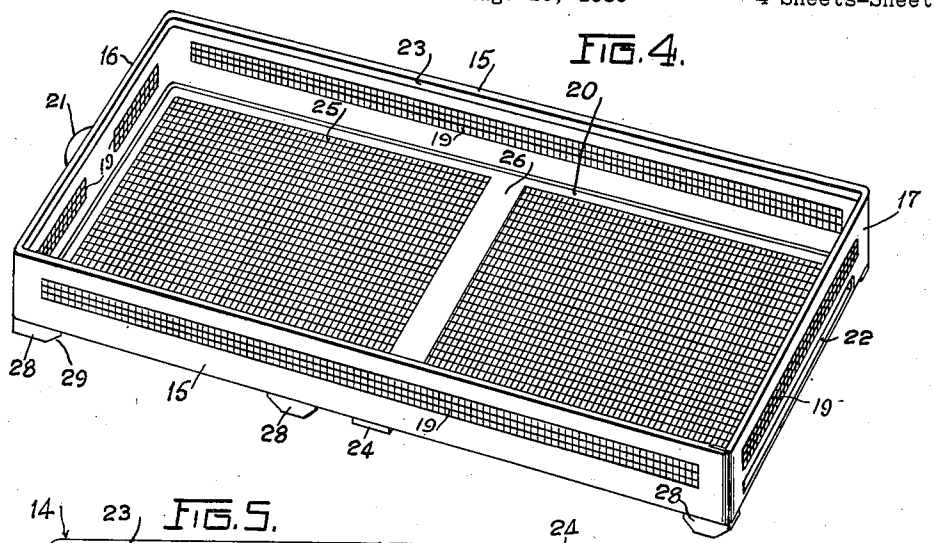


FIG. 5.

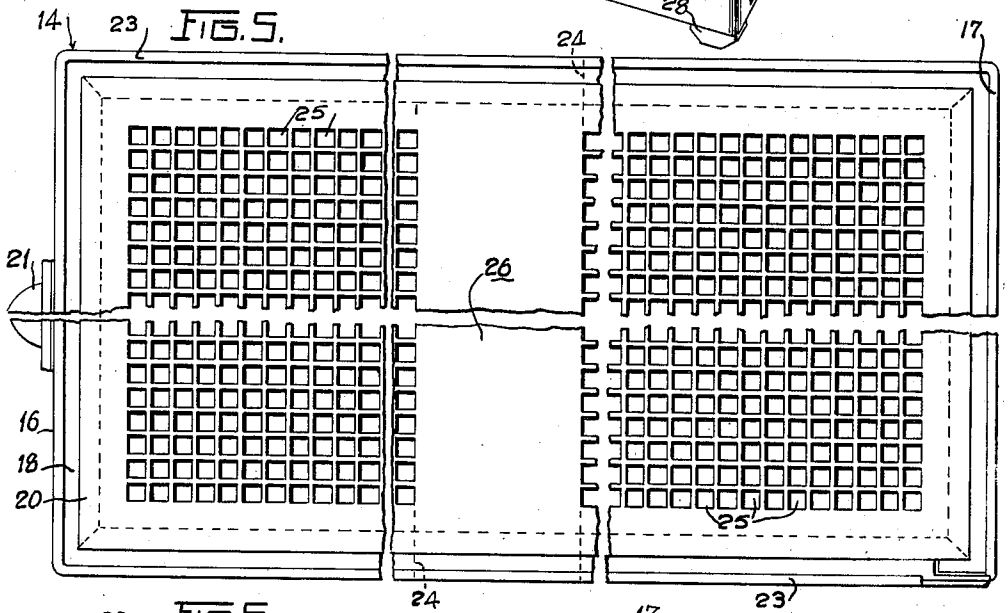
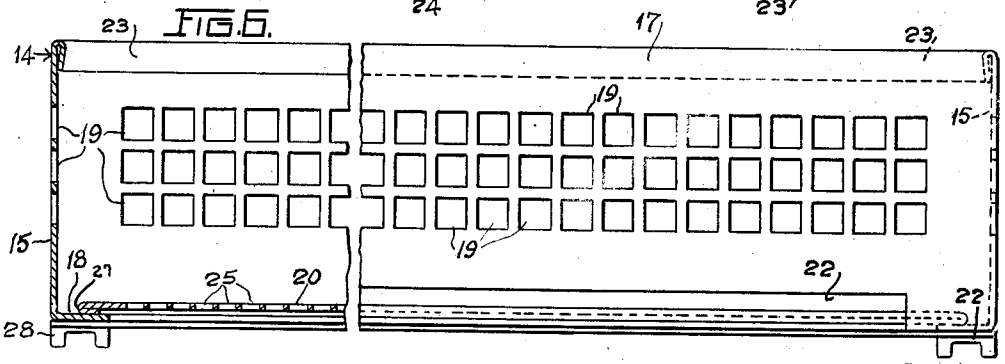


FIG. 6.



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INCUBATOR TRAY

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FIG. 8.

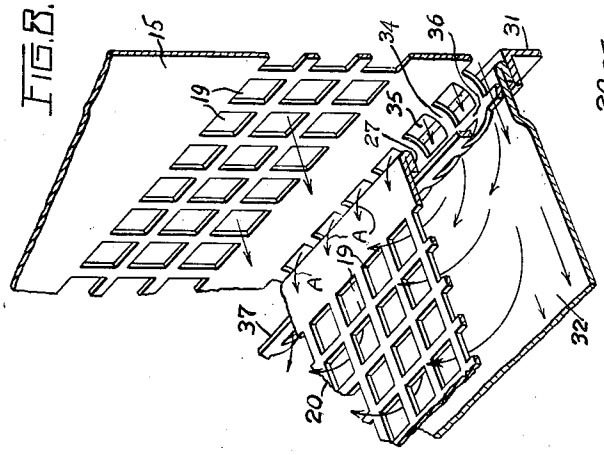


FIG. 10.

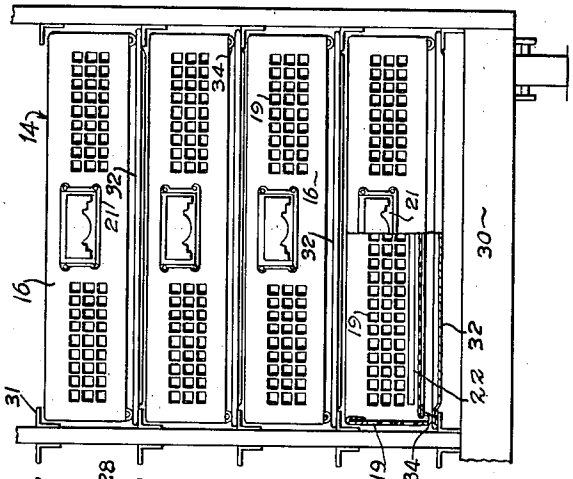


FIG. 9.

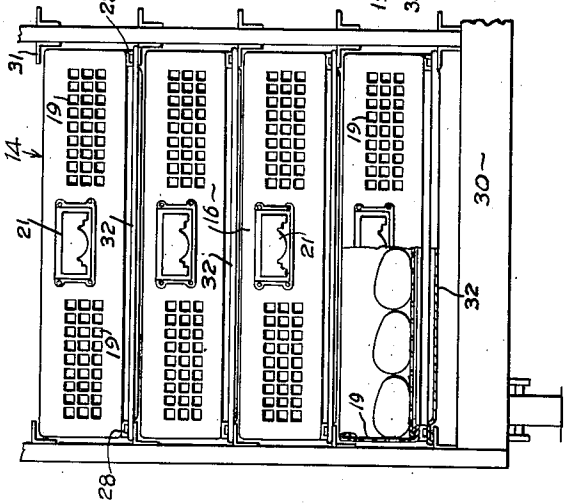


FIG. 11.

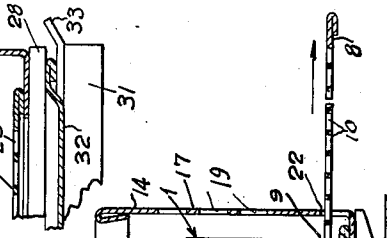
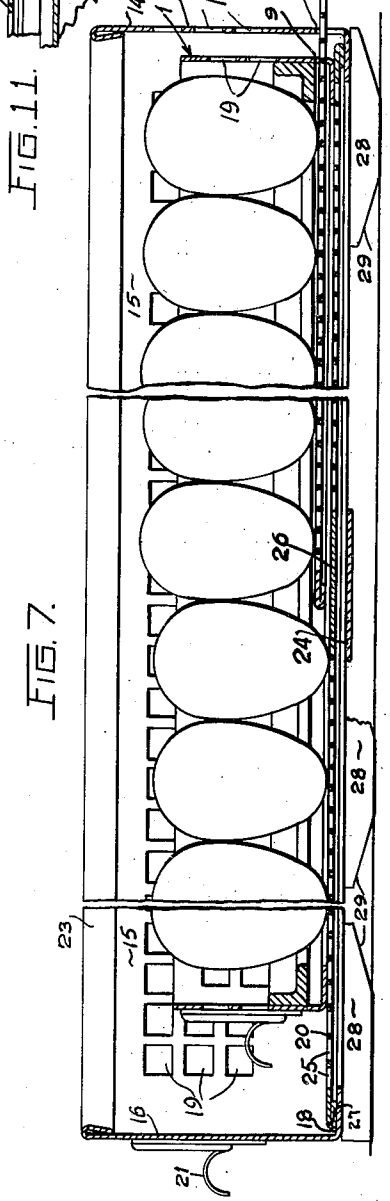


FIG. 7.



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INCUBATOR TRAY

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FIG. 13.

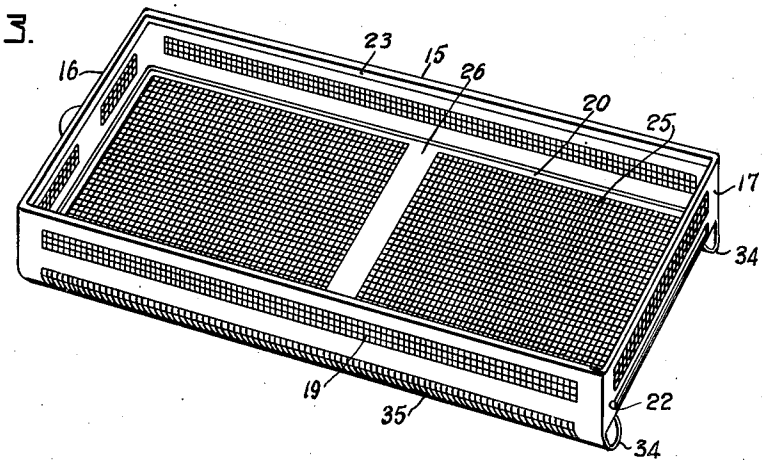


FIG. 14.

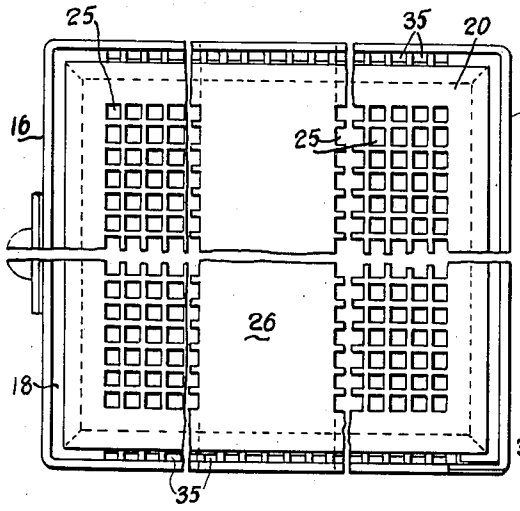


FIG. 15.

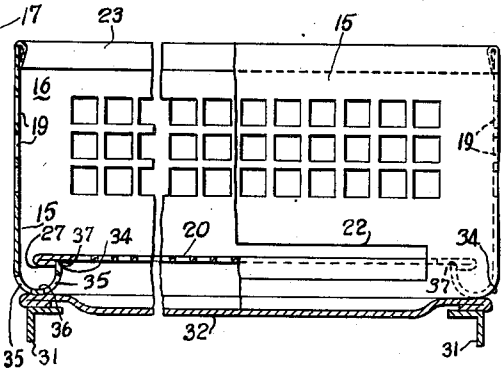
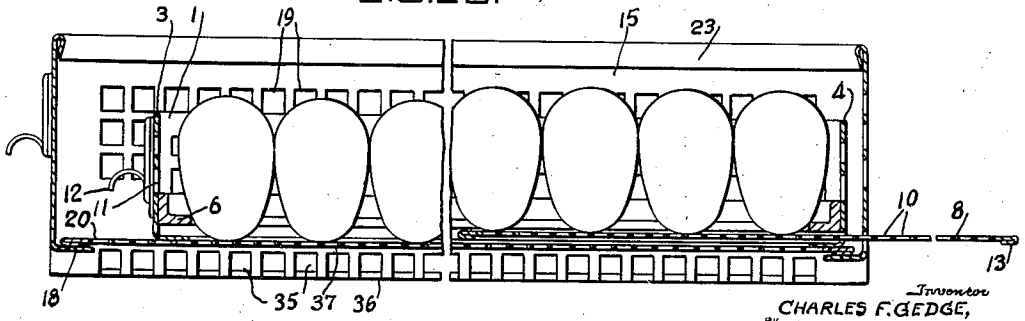


FIG. 16.



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UNITED STATES PATENT OFFICE

2,255,036

INCUBATOR TRAY

Charles F. Gedge, Springfield, Ohio, assignor to The Buckeye Incubator Company, Springfield, Ohio, a corporation of Ohio

Application August 15, 1939, Serial No. 290,271

6 Claims. (Cl. 119—43)

This invention relates to an improved incubator tray and in particular to improved setting and hatching incubator trays and to an improved method of transferring eggs from a setting tray to a hatching tray.

The principal object of this invention is to devise a setting tray which is adapted to facilitate the transfer of eggs therefrom to a hatching tray.

Another object is to devise an improved hatching tray which is adapted to receive eggs from the improved setting tray and to cooperate with said setting tray during the transfer of eggs.

Another object is to provide an incubator tray which provides better circulation of air therethrough thereby improving the hatching percentage.

Another object is to provide hatching and setting trays of sheet metal having perforated side walls for improved transverse air circulation. In a preferred embodiment the perforations are so disposed that maximum air circulation, coupled with adequate rigidity, is brought about.

Another object is to provide a hatching tray of the type described above with side runners which facilitate the insertion and removal of the hatching trays into and from the hatching rack which is usually wheeled into and out of the incubating hatcher.

Another object is to provide a hatching tray having an improved full length runner which is perforated so as to allow air to circulate from outside directly into the space within the hatching tray and indirectly thereinto by passing first into the space between the bottom of the hatching tray and the baffle plate therebelow and subsequently passing upwardly through the perforated hatching tray bottom into the hatching tray interior. In a preferred form this improved full length perforated runner is integral with the side walls of the hatching tray. The purpose of having the full length runner is to avoid injury to the toes of chickens projecting through the perforated hatching tray bottom during removal of hatching tray from the hatching tray rack or during subsequent sliding of the hatching tray relative to any surface or edge upon which it may be slid.

Another object is to devise an improved method for transferring eggs from a setting tray into a hatching tray. In accordance with previous practice it has been customary to place the setting tray full of eggs upon any suitable surface, to then invert the hatching tray thereover and to then rotate the combined hatching and setting trays until the hatching tray is right side up. The setting tray would then be removed upwardly leaving the eggs distributed on the surface of the larger hatching tray. This method of transfer is difficult for the uninitiated to perform and involves the danger of injury to the eggs.

Still other objects will more fully hereinafter appear.

Referring to the accompanying drawings:

Figure 1 is a perspective of a setting tray which embodies the principles of the present invention.

Figure 2 is a top plan view of the setting tray of Figure 1.

Figure 3 is a rear end elevation of the setting tray of Figure 1 with the left hand portion in section.

Figure 4 is a perspective of a hatching tray embodying the principles of the present invention.

Figure 5 is a top plan view thereof.

Figure 6 is a rear end elevation partly in section thereof.

Figure 7 is a longitudinal sectional view showing the setting and hatching trays in cooperative relation during the transfer of the eggs from the setting tray to the hatching tray.

Figure 8 is a perspective sectional view showing a modified form of hatching tray having an improved runner construction.

Figure 9 is a partial end elevation, partly in section, of a hatching rack with the hatching tray of Figures 4 to 7 tiered therein.

Figure 10 is a similar view showing the modified hatching tray of Figure 8 arranged in tiers in a hatching rack.

Figure 11 is a longitudinal detailed section of a portion of a hatching rack with the hatching tray of Figures 4 to 7 therein and showing the turning upwardly of the outward end of the horizontal tray support so as to prevent the tray from sliding outwardly due to slight jars.

Figure 12 is a section through the side wall of a modified form of setting tray showing the formation of the intermediate bottom-retaining rim out of the side wall; this rim forms a guideway for the sliding bottom.

Figure 13 is a perspective elevational view of a hatching tray showing the runners integral with the side walls thereof.

Figure 14 is a plan view of the hatching tray of Figure 13.

Figure 15 is a rear elevational view of the hatching tray of Figure 14 but with a portion of the wall broken away to show a portion of the tray in cross-section.

Figure 16 is a longitudinal cross-sectional view of the hatching tray of Figure 13 shown in combination with a setting tray.

In the incubating of eggs it is customary to carry out the setting and the hatching in separate incubators, the eggs being allowed to remain in the setting trays in the setting incubator for eighteen days and then being transferred to hatching trays which are placed in a hatching incubator for the remaining three day period in which hatching occurs. In one aspect the present invention is particularly directed toward facilitating the transfer of the eggs from the setting to the hatching trays. The eggs are customarily packed vertically into the setting tray without opportunity for freedom of movement therein, and the hatching tray is made substantially larger so that when the eggs are transferred from the setting tray to the hatching tray they have sufficient room to lie flat and to allow the hatched chick a substantial amount of room. It has been customary to employ no baffles between the superimposed setting trays, and to pass the air vertically through tiers of setting trays, employing setting trays which have wire screen bottoms so as to allow the air to circulate vertically through adjacent setting trays. In the hatcher the trays are disposed a substantial distance apart from one another and impervious baffles are employed between vertically adjacent hatching trays to prevent the transfer of down, dust, etc., from one tray of hatching chicks downwardly into the next lower hatching tray, thereby adding to the sanitary condition of the hatching incubator and insuring the production of more healthy chicks. Accordingly it was impossible to circulate the air vertically through the tiers of hatching trays and reliance was hitherto placed upon the spacing of the trays apart from one another to provide circulation of air horizontally to the hatching eggs.

In accordance with the present invention the transfer from the setting to the hatching trays is considerably facilitated and at the same time trays are made available which are of greater strength and durability and which provide substantially improved air circulation to the setting and hatching eggs by means of perforations in the side walls of the trays.

Referring to the drawings in detail, and first to Figures 1 to 3, wherein a setting tray is portrayed, reference numeral 1 designates generally the setting tray having side walls 2 and having end walls 3 and 4. The tray, as shown, is made of sheet metal of substantial gauge and the various parts thereof are joined together in any suitable manner as by spot welding. The side and end walls are continued inwardly at their bottom to form a rim 5 which cooperates with an angle iron 6 to form a recess 7 for receiving the removable bottom 8. Bottom 8 is slidable outwardly from its normal position through a slot 9 provided in the end wall 4 adjacent its bottom. In Figure 1 bottom 8 is shown partially slid outwardly to illustrate this construction. The bottom 8 is of sheet steel or sheet iron of substantial gauge and is perforated throughout substantially its entire exposed area with square perforations 10 which are closely adjacent to one another. The perforating is carried out in such manner that substantially maximum strength is retained while at the same time providing substantially maximum air circulation through bottom 8.

The side and end walls of setting tray 1 are provided with a plurality of rows of similar perforations 11 which allow circulation of air transversely of the setting tray. End wall 3 is provided centrally with a label holder 12 which also acts as a pull for removing the setting tray from the setting tray rack. While the construction shown illustrates the slot 9 as being on the rear end of the setting tray, it will be apparent that if desired it may be placed on the front or forward end 3, although the latter construction is not as desirable as the construction shown because the pull 12 would require that the bottom 8 be slid outwardly too far before placing the setting tray in the hatching tray.

The bottom 8 of setting tray 1 is reinforced and supported at its edges by an inwardly turned lower rim 13 which extends around its periphery. Rim 13 further acts as a sliding runner during insertion or removal of bottom 8. Angle iron 6 adds greatly to the strength of the setting tray because it is spot welded thereto and because it is of more substantial gauge than the setting tray walls. As is seen in Figure 3, the upper edge of this angle iron 6 terminates just below the lowermost row of holes 11 in the side and end walls of the setting tray. Referring now to Figures 4 to 6 in particular, there is illustrated one form of hatching tray embodying the principles of the present invention. This tray is designated generally as 14 and has side walls 15 of sheet metal and end walls 16 and 17. The side and end walls are provided with three rows of perforations 19 which are similar to those described in connection with the setting tray 1. The side and end walls are also provided with an inwardly extending integral rim 18 at their bottom which serves to support the upwardly removable tray bottom 20. Bottom 20 is perforated with perforations 25 over substantially its entire area in a manner similar to the bottom 8 of the setting tray. Front end wall 16 is provided with a label holder and pull 21. Rear end wall 17 is provided with a transverse slot 22 which extends upwardly to a height sufficient to receive the outwardly slid setting tray bottom 8 when the setting tray 1 is placed within hatching tray 14 upon bottom 20.

The upper edges of the side and end walls of hatching tray 14 are inwardly turned to form a reinforcing rim 23. Hatching tray 14 is further provided with a transverse reinforcing strap 24 which connects its side walls 15 at their bottom and which is attached thereto as by spot welding. This member 24 also provides a hand hold when removing or inserting the hatching tray in the hatching rack. Bottom 20 is provided with an unperforated transverse reinforcing section 26 which is disposed in alignment with reinforcing strap 24 when the hatching tray bottom 20 is in its normal position inside the hatching tray. Bottom 20 is also provided with a peripheral inturned rim 27 which serves as a reinforcement and which elevates the bottom slightly in the hatching tray so as to give improved circulation of air. By having reinforcing strip 26 above reinforcing strap 24 a firm hand hold is provided for removal or insertion of the hatching tray and sagging of the bottom 20 is prevented.

In order to facilitate sliding of hatching tray 14 on a given surface such as during the insertion or removal in the hatching rack the bottom side portions thereof are provided with spot welded channel runners 28. These runners are disposed longitudinally as is clearly shown in the drawings. Where necessary these runners are beveled upwardly as at 29 in order to facilitate sliding.

These runners are preferably only three in number and are spaced substantially apart from one another thereby providing a free space therebetween through which air may circulate between the tray bottom and the baffle. These runners 28 support the tray with its bottom 20 substantially elevated so that circulation of air is obtained.

Figure 7 illustrates the cooperative relationship between the setting tray 1 and hatching tray 14 during a transfer of eggs from the setting tray to the hatching tray. In this figure, the setting tray 1 has been placed right side up upon the bottom 20 of the hatching tray, setting tray bottom 8 having first been pulled outwardly slightly, and tray 1 having been lowered and moved rearwardly to cause the initially projecting portion of bottom 8 to project through slot 22 of the hatching tray. After the described initial positioning has been effected, the operator grasps that portion of setting tray bottom 8 which projects through slot 22 and pulls it outwardly in the direction of the arrow of Figure 7. This causes the eggs which formerly rested upon setting tray bottom 8 to move downwardly into a position of rest upon hatching tray bottom 20. After setting tray bottom 8 has been completely removed out of the hatching tray slot 22, the setting tray frame is removed upwardly leaving the eggs on the hatching tray bottom 20. The eggs may then be evenly distributed over the larger area of the hatching tray, and they are then substantially horizontal, as indicated in Figure 9. The hatching tray 14 is then slid into a wheeled hatching tray rack designated generally as 30 (see Figures 9 and 10) being supported therein by horizontal angle bars 31. Impervious baffles 32 are placed between the hatching trays and angle bars 31, these baffles 32 serving in the usual manner to prevent dust, down, etc. from being transferred downwardly from one tray to another.

In Figure 11 there is shown a modified form of hatching tray rack construction wherein the angle iron 31 is provided at its forward end with an upturned portion 33. In this figure the baffle 32 is shown lying between the upper face of angle bar 31 and the lower face of the forward channel runner 28 of the hatching tray 14. This construction with the upturned ends of angle bars 31 prevents the hatching trays from sliding outwardly, it being necessary to lift the hatching tray in order to have it clear upturned lip 33 during the insertion or removal of hatching tray 14.

In Figures 8 and 13 to 16 inclusive there is illustrated a form of hatching tray wherein a full length runner 34 is provided on each side of the hatching tray. This runner is a semi-circular extension of the sides 15 of the hatching tray and is integral therewith. The runner 34 is provided with two rows of square perforations 35. These perforations 35 are similar to those used on the sides, ends and bottom of the hatching tray and setting tray. These perforations 35 are disposed opposite to one another so that free circulation of air is provided from the outside directly inwardly into the space between baffle 32 and tray bottom 20. The lowermost portion of runner 34 is a continuous strip 36 which serves as the runner proper, slidably engaging with the upper surface of baffle 32 or with any other surface or edge upon which the hatching tray may be slid or placed. This portion 36 constitutes the strip of metal left between the two rows of upwardly curved perforations. The tray bottom 20 is supported on the upper inward edge 37 of runner 34, with the inturned rim 27 disposed outwardly and below edge 37.

The setting and hatching trays described herein result in better hatching percentages by allowing air to enter the trays transversely through the side and end wall perforations. The improved circulation thus brought about is particularly advantageous in the hatching tray where poor circulation has hitherto been common. The arrows in Figure 8 indicate how air enters the hatching tray interior through the side wall perforations, directly through the outer row of runner perforations 35, and through both rows of perforations 35 into the space between baffle 32 and tray bottom 20 and thence upwardly through perforations 19 into the tray interior. When employing the hatching tray of Figures 4 to 7 and 9 air enters through the side and end walls in the manner just described and enters into the space between the baffle 32 and the tray bottom 20 through the long free spaces between runners 28 but does not enter in a manner corresponding to that shown by the arrows A in Figure 8.

The form of the hatching tray of Figures 8 and 13 to 16 inclusive is advantageous because the runner 34 is a full length runner supporting the tray over its entire bottom above any surface or edge upon which it may be placed or slid, thereby preventing injury to the toes of chicks projecting through the perforations in the bottom 20. As will be apparent, the form of hatching tray of Figures 4 to 6 is apt to cause injury to the chicks in this manner unless the operator exerts special care to hold the tray in such a manner that bottom 20 does not slide against or close to any surface. In addition, the full length runners provide a better sliding action when the unit is inserted or removed from the hatching rack.

In Figure 12 a modified form of setting tray is shown in which a rim 6a for holding the sliding bottom 8 in place is formed integral with the side wall 2, thereby simplifying the construction and making a lighter weight tray while retaining all of the advantages of the setting tray previously described.

I wish it to be understood that I intend to include as within my invention such modifications and adaptations thereto as fall within the spirit of the terms of the appended claims.

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

1. A hatching tray having sides and a perforated bottom, said sides extending below said bottom and being provided with an inwardly directed arcuate flange to provide runner means extending continuously along said sides, said runner means being perforated to allow access of air transversely to said bottom and thence to the interior of said tray.

2. A hatching tray having side walls and runner means along the bottom of the sides for supporting a bottom of said tray and for facilitating sliding of the tray upon a supporting surface, a perforated tray bottom supported by said runner means at a distance above a supporting surface, said runner means extending continuously the length of the tray and being perforated in a manner to allow access of air to the space below said bottom and thus to the interior of the tray and providing a continuous runner.

3. A hatching tray having side walls, runner means integral with said side walls and extending continuously throughout the length thereof in-

cluding an inwardly and upwardly curved arcuate extension of the bottom thereof which engages the supporting surface for the tray, a perforated bottom in said tray resting upon the upper inner edge of said runner means, said runner means having perforations in the arcuate portions adjacent the portion which engages the supporting surface for the tray for permitting circulation of air transversely from outside said tray to the space below said bottom and thence to the interior of said tray.

4. A hatching tray having side walls, continuous runner means on the lower portion of said side walls constituting an integral extension thereto which is turned inwardly and upwardly, and a tray bottom supported by said runner means with its edges spaced inwardly from said side walls, said runner means being perforated to allow air to circulate through the perforations directly between the interior of the tray and the exterior thereof.

5. A hatching tray having said walls, continuous runner means on the lower portion of said side walls constituting an integral extension thereto which is turned inwardly and upwardly, a tray bottom supported by said runner means with its edges spaced inwardly from said side walls, and means for establishing the spaced relationship of the tray bottom edges with respect the side walls, said runner means being perforated to allow air to circulate through the perforations directly between the interior of the tray and the exterior thereof.

6. A hatching tray having side walls, continuous runner means on the lower portion of said side walls constituting an integral extension thereto which is turned inwardly and upwardly, and a tray bottom supported by said runner means with its edges spaced inwardly from said side walls, said bottom having means to retain the same in proper spaced relationship with respect said walls, said runner means being perforated to allow air to circulate through the perforations directly between the interior of the tray and the exterior thereof.

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