No. 649,342. Patented May 8, 1900.

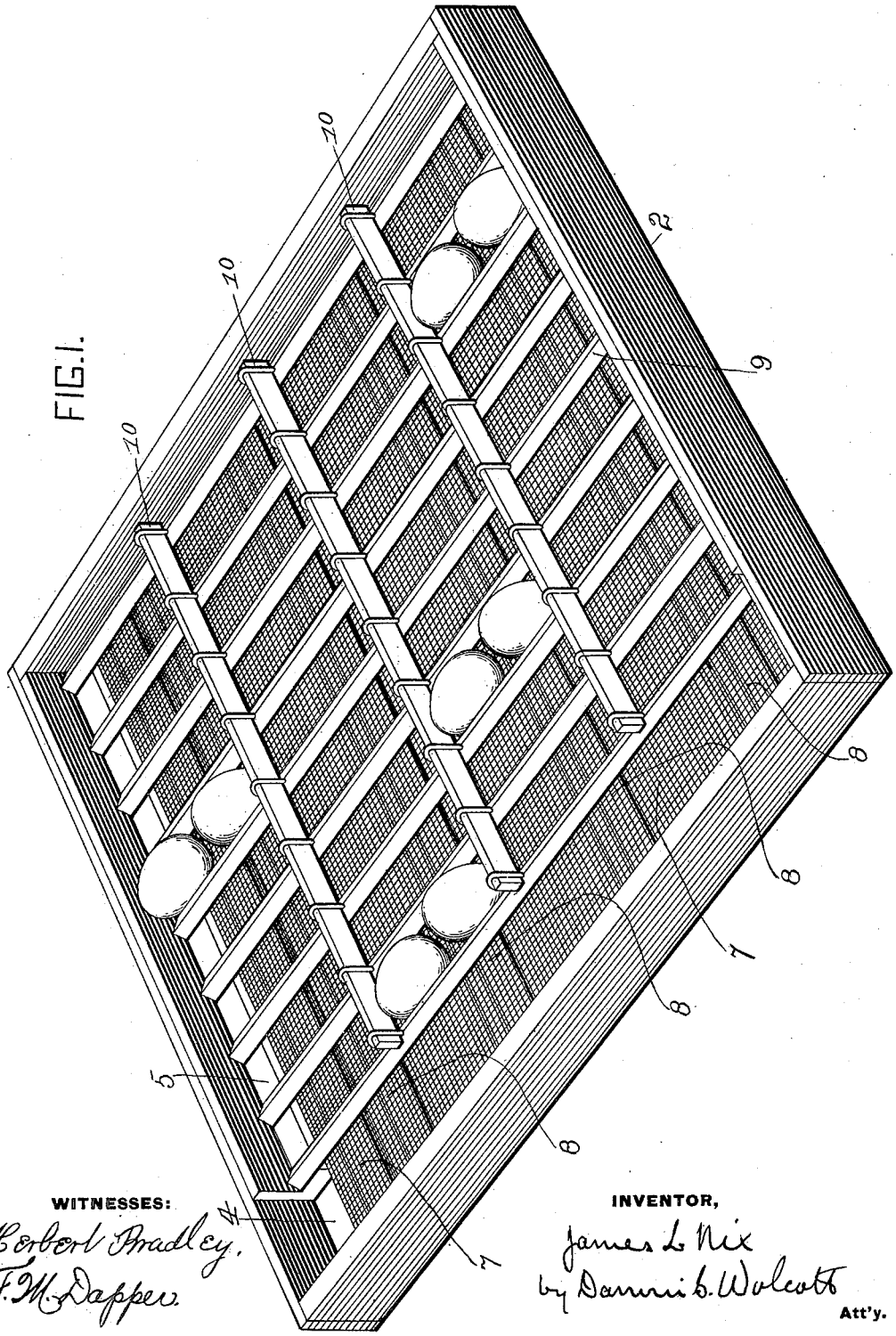
J. L. NIX.

INCUBATOR.

(Application filed July 20. 1899.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.



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(No Model.) 2 Sheets—Sheet 2.

FIG. 2.

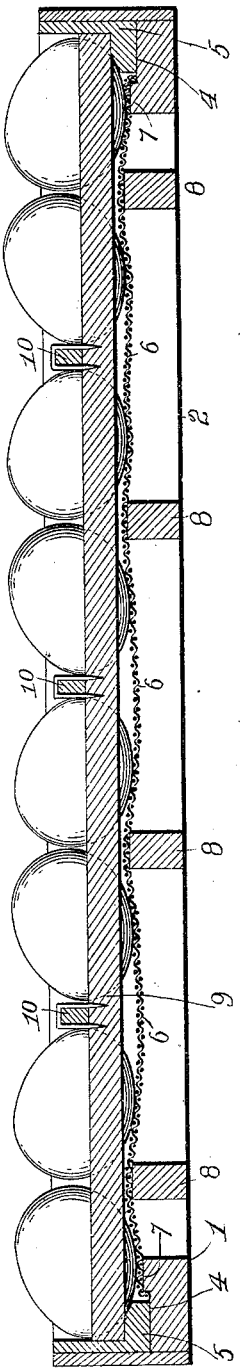
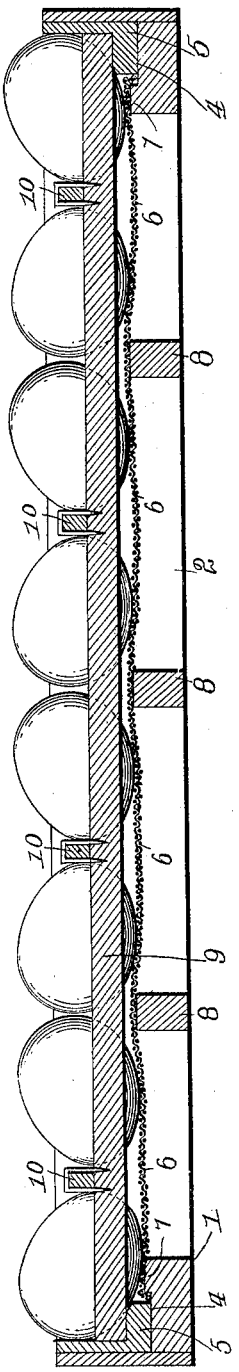


FIG. 3.



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UNITED STATES PATENT OFFICE.

JAMES L. NIX, OF HOMER CITY, PENNSYLVANIA.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 649,342, dated May 8, 1900.

Application filed July 20, 1899. Serial No. 724,497. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. NIX, a citizen of the United States, residing at Homer City, in the county of Indiana and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Egg-Trays for Incubators, of which improvements the following is a specification.

It is characteristic of an egg when placed on a level surface that it will tip longitudinally with its small end down. After three or four days of incubation this tipping is increased by the formation of a comparatively-large air-cell at its large end. It follows by reason of the position thus assumed by the egg that if it be rolled back and forth along its supporting-surface it will work or creep in the direction in which its small end points. This creeping movement renders that kind of turning devices consisting of two parallel bars between which the eggs are placed impracticable, as the eggs will work or creep toward one or the other end of the bars, the eggs crowding against each other, and at times one egg is turned end over end.

The object of the present invention is to provide for the turning of the eggs while maintaining them in the relative positions in which they are placed and also to insure that the egg shall at all times be held with its large end higher than the small end.

In the accompanying drawings, forming a part of this specification, Figure 1 is a perspective view of my improved tray and turner. Fig. 2 is a sectional elevation of the same; and Fig. 3 is a view similar to Fig. 2, illustrating a modification.

In the practice of my invention the rails 1 are secured to two opposite sides of the frame 2. These rails are provided on their upper surfaces with guiding portions or grooves 4 for the reception of the slides 5. The eggs are supported by a sheet 6 of flexible material, preferably wire-netting, which will permit of the free circulation of heat. This sheet is secured at its edges to the ribs 7 of the rails and is supported at intermediate points by bars 8, which are arranged parallel with the rails 1.

Turning-bars 9 are secured at their ends to the slides 5, which are made of such a height relative to the ribs 7 that the turning-bars will slide easily over the supporting-sheet 6. These bars are made triangular in cross-section and are so secured to the slides that the distances between the apices of the bars will be approximately equal to the largest transverse diameter of an egg of the average size, so that when average-sized eggs are placed in adjacent spaces formed by the turning-bars the eggs will nearly touch. If an egg larger than the average is placed in one space, an egg correspondingly smaller will be placed alongside of it in the next space. The employment of turning-bars triangular in cross-section permits the bars to have a broad bearing on the eggs for turning the latter and permits of the eggs being arranged more closely together.

It will be observed that the slides carrying the turning-bars are removable from the trays, so that the latter can be entirely filled with eggs when incubation is commenced. After three or four days the eggs are tested and the non-fertile eggs removed. Experience has shown that if trays be entirely filled, as stated, at the beginning of incubation generally there will be sufficient numbers of fertile eggs to fill the spaces in the turner. After testing the eggs are placed in a tray having the turner in position and are arranged between the turning-bars with their large ends on or adjacent to the supporting-bars 8. The weight of the two rows of eggs between adjacent bars will cause the supporting-sheet to sag down, so that the eggs rest on inclined surfaces with their small ends down. As the centers of gravity of the eggs are near the small ends, this downward tipping of the small ends is accentuated.

As the two rows of eggs between adjacent supporting-bars rest on surfaces inclined toward each other, the eggs in one row would tend to slide down into contact with those in the other, and as the small ends of the eggs of one row are adjacent to those in the other and as the eggs when rotated tend to travel in the direction of the small ends, as before stated, the tendency of the eggs to move toward those in the next row will be increased. In order to prevent any such longitudinal travel of the eggs, spacing-bars 10 are secured on the turning-bars at points midway between the supporting-bars 8, so that the small

ends of the eggs will rest against said spacing-bars and be held against longitudinal creeping or sliding. By the arrangement of the supporting-bars 8 a distance apart approximately equal to twice the average length of eggs and locating the spacing-bars 10 intermediate of the supporting-bars, only half the number of spacing-bars are necessary while acting as efficiently in preventing the longitudinal movements of the eggs.

As shown in Fig. 2, the sagging of the netting will give the desired inclination to all the eggs except the two outer rows, and these can be given the desired inclination by making the rails 1 a little lower than the supporting-bars 8.

If desired, the trays may be constructed as shown in Fig. 3, in which construction the supporting-bars 8 are spaced a distance apart from each other and from the sides of the frame equal to twice the length of an egg of the average size. In this construction the inclination of the eggs is effected by the sagging of the supporting-sheet.

I claim herein as my invention—

1. A tray for incubators having in combination a frame, rails provided with guiding portions secured to opposite sides of the frame, a yielding supporting-sheet secured to the rails, intermediate stationary supports for the sheet, slides connected by cross-bars movably supported on the rails above the supporting-sheet and spacing-bars secured to the cross-bars a distance apart not less than twice the average length of an egg, substantially as set forth.

2. A tray for incubators having in combination a frame, rails provided with guide-grooves secured to opposite sides of the frame, a yielding supporting sheet secured to the rails, intermediate supports for the sheet, movable slides connected by triangular cross-bars and removably supported on the rails, a spacing-bar secured to the cross-bars in such manner as to be intermediate between the supports for the sheet, substantially as set forth.

In testimony whereof I have hereunto set my hand.

JAMES L. NIX.

Witnesses:
DARWIN S. WOLCOTT,
F. E. GAITHER.