C. J. WILLIAMSON.

APPARATUS FOR WASHING AND CLEANING EGGS.

APPLICATION FILED DEC. 27, 1920.

1,423,059.

Patented July 18, 1922.

5 SHEETS—SHEET 1.

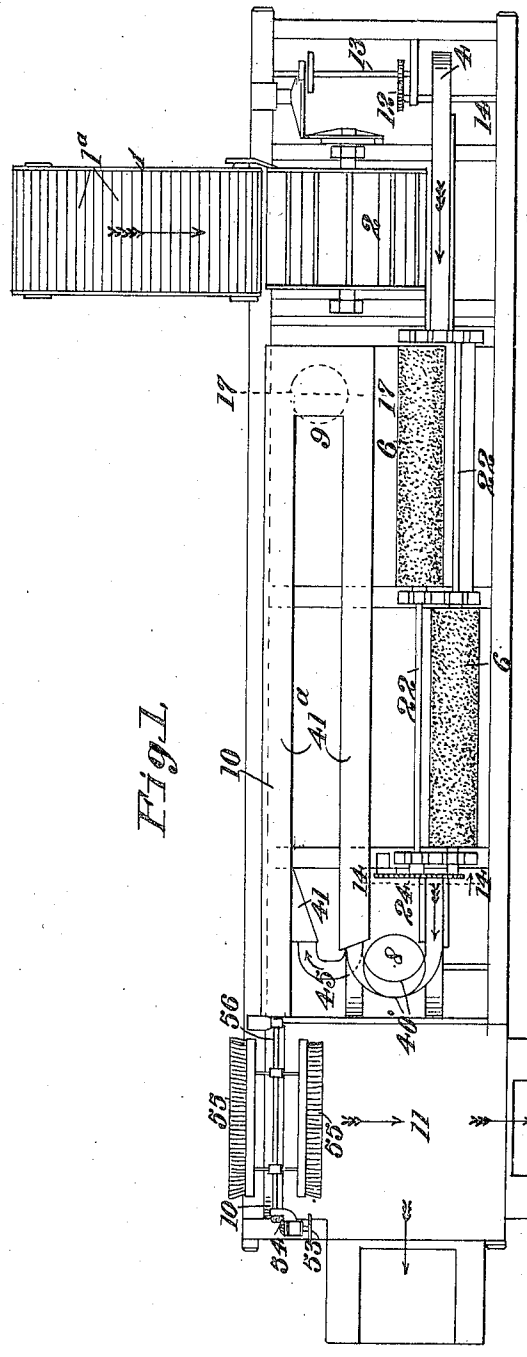


Fig. 1.

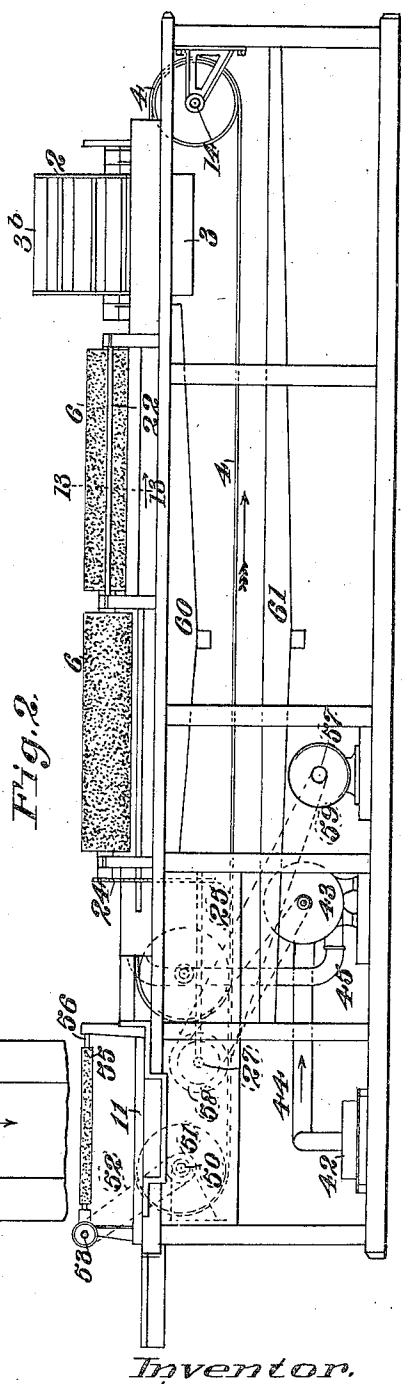


Fig. 2.

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5 SHEETS—SHEET 2.

Fig. 3.

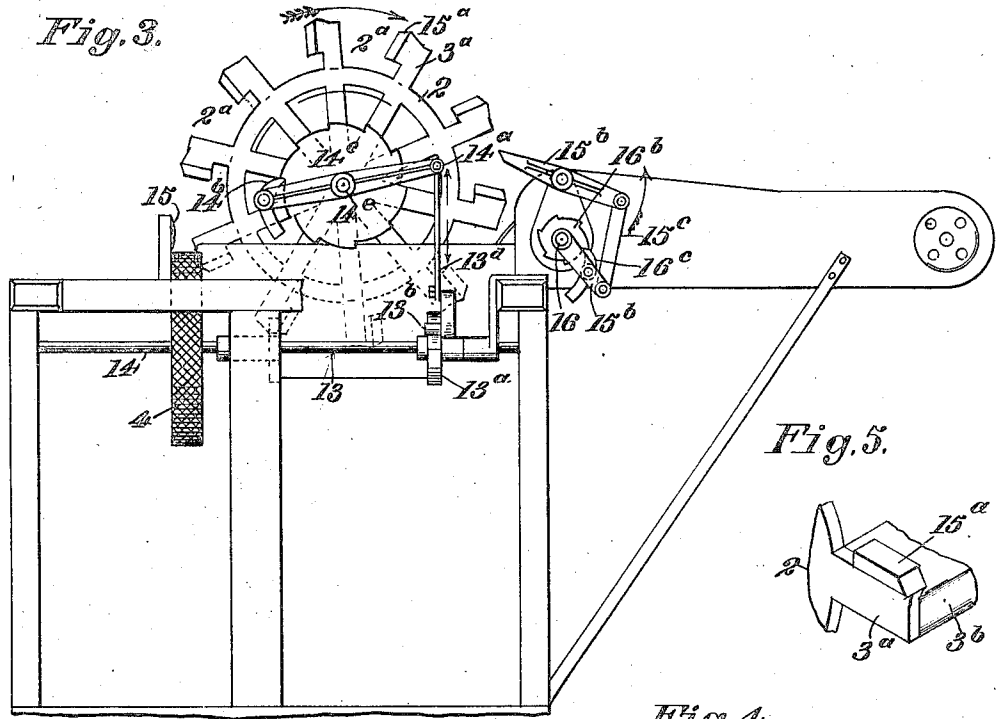


Fig. 5.

Fig. 4.

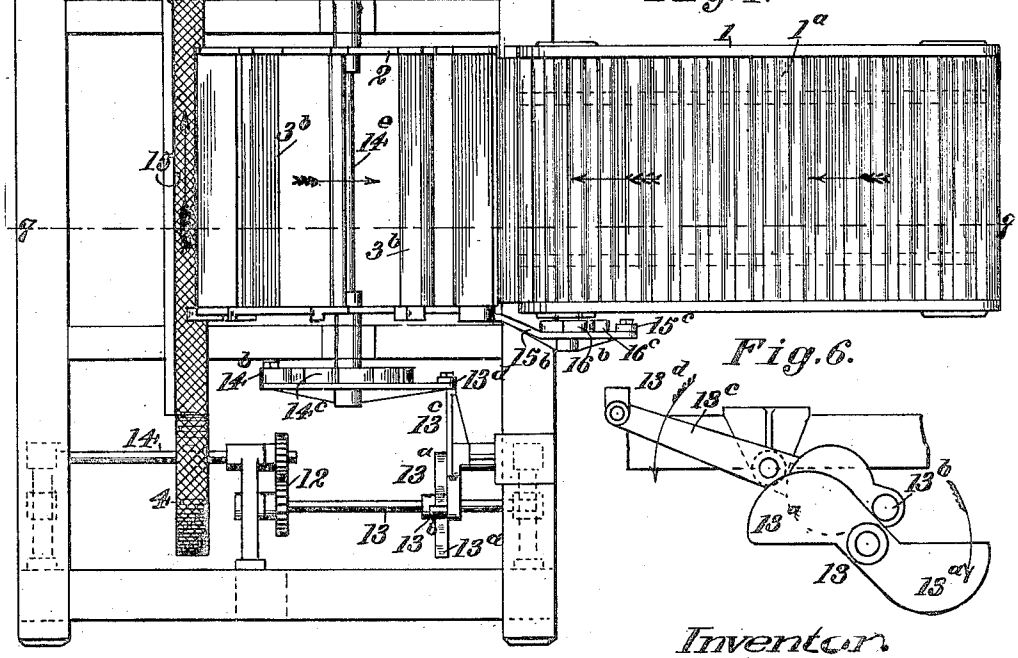


Fig. 6.

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5 SHEETS—SHEET 3.

Fig. 7.

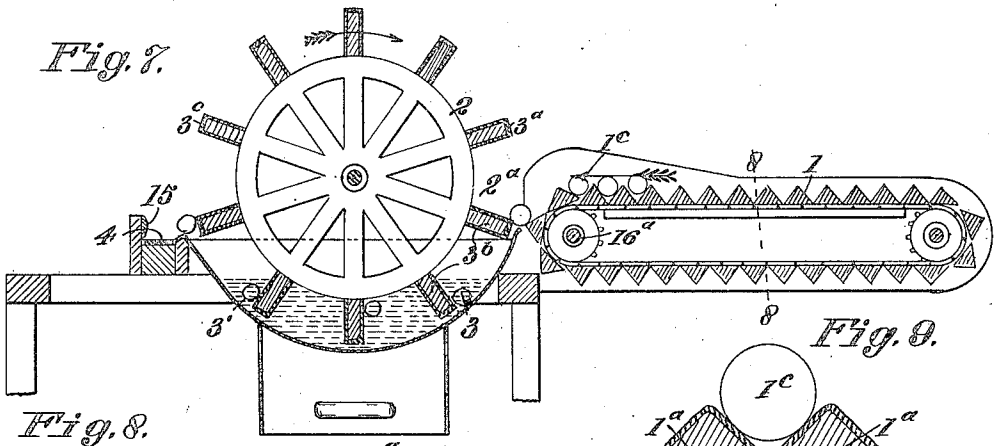


Fig. 9.

Fig. 8.

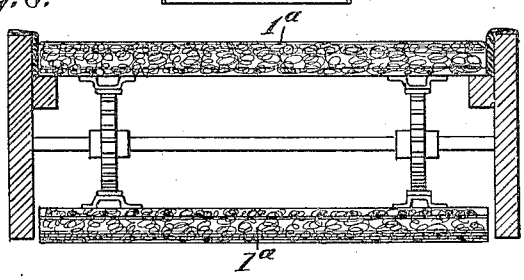


Fig. 10.

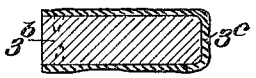


Fig. 11.

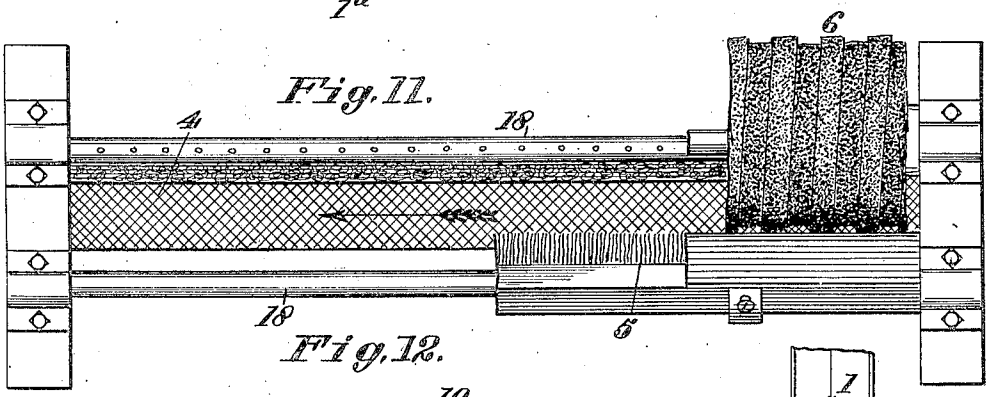
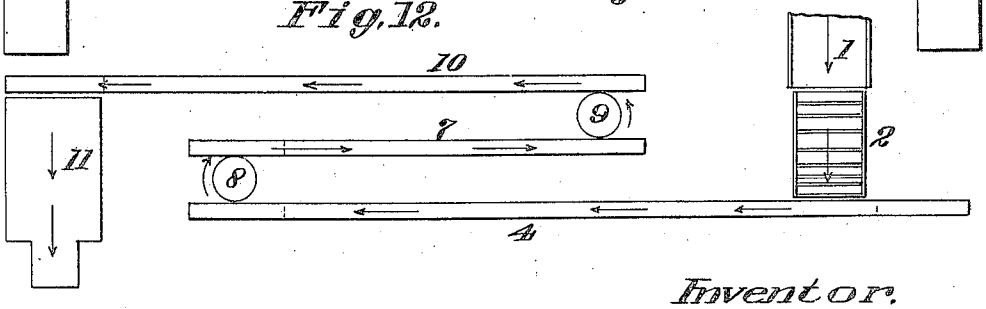


Fig. 12.



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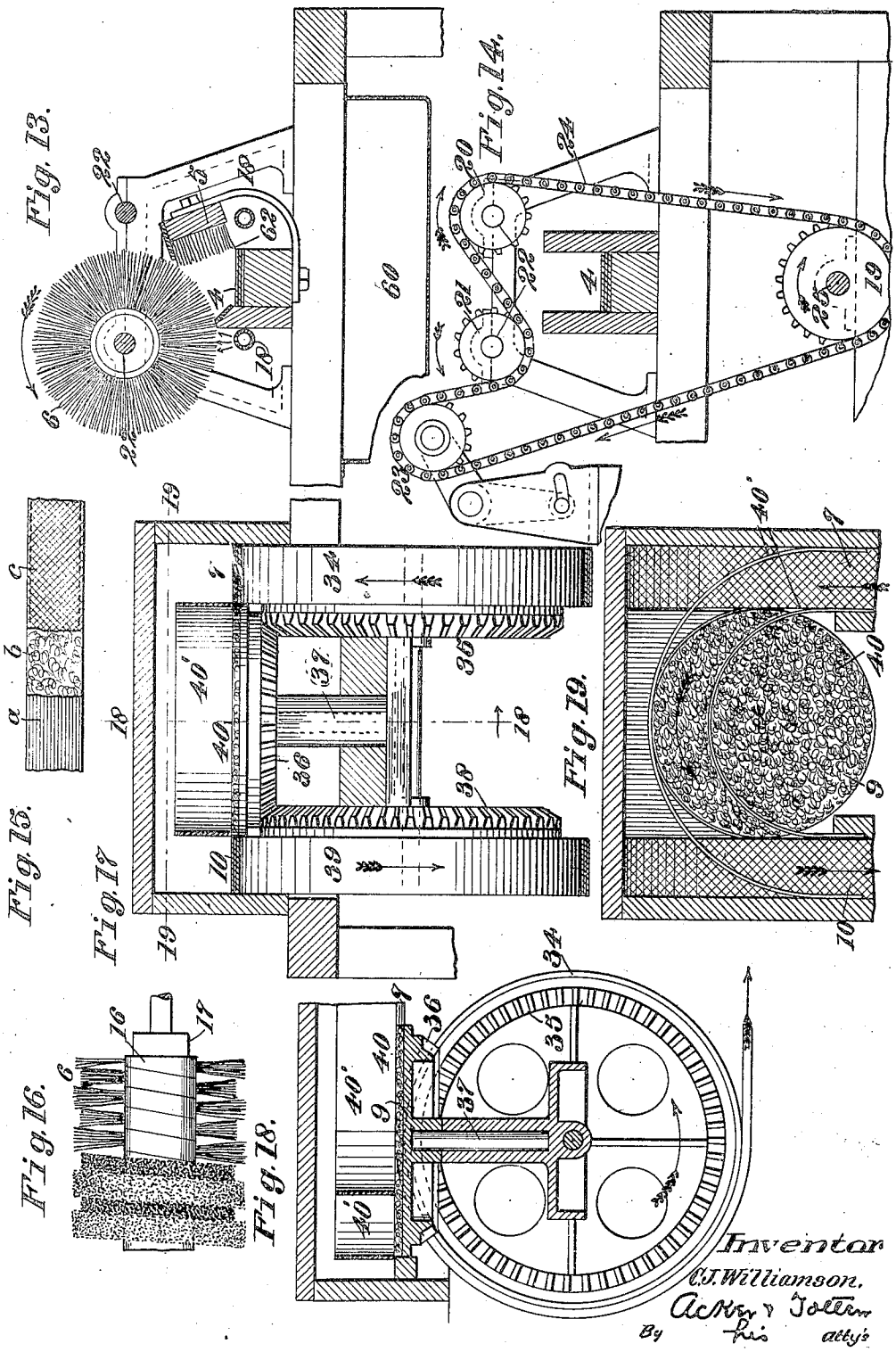
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

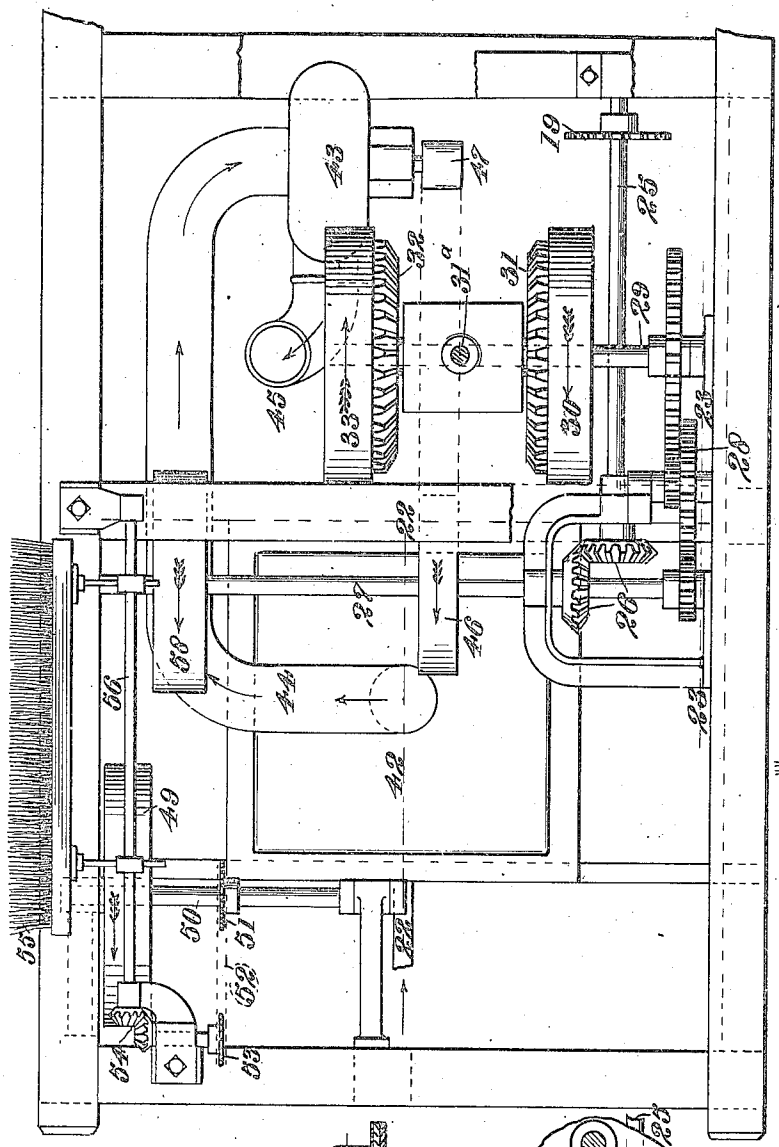


Fig. 21.

Fig. 20.

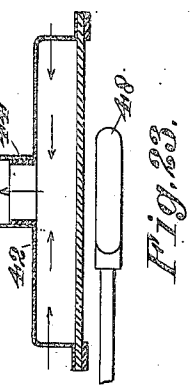


Fig. 22.

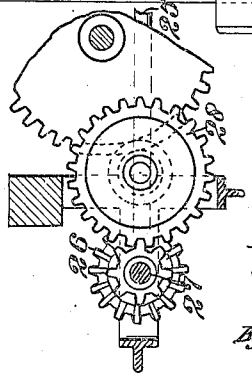


Fig. 23.

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UNITED STATES PATENT OFFICE.

COLONEL J. WILLIAMSON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO WILLIAMSON MACHINE COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

APPARATUS FOR WASHING AND CLEANING EGGS.

1,423,059. Specification of Letters Patent. **Patented July 18, 1922.**

Application filed December 27, 1920. Serial No. 433,528.

To all whom it may concern:

Be it known that I, COLONEL J. WILLIAMSON, citizen of the United States, residing at the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Apparatus for Washing and Cleaning Eggs, of which the following is a specification.

The hereinafter described invention relates to an apparatus for receiving and washing of eggs, and the drying thereof primarily to either packing the same for transportation or the processing thereof for storage purposes, and more particularly for the latter, and the invention resides in the association of interconnecting working instrumentalities for the receiving of eggs in large quantities, wetting the surface thereof in order to loosen dirt and foreign substances adhering to the eggs, and for receiving the eggs, primarily washing and scrubbing the eggs as advanced through the apparatus in order to remove dirt and foreign substances from the surface thereof and to clean the outer surface of the eggs, and finally to dry the eggs after being cleaned and scrubbed.

Where eggs are to be treated or processed for storage purposes, it is essential that the surface thereof be freed of dirt and foreign material adhering thereto, and equally so is such a desideratum where the eggs are packed for market, and the object of the present invention is to expeditiously, economically and efficiently, mechanically to clean the surface of the eggs. An apparatus for the carrying out of the invention in its present embodiment comprises a conveyer for intermittently feeding the eggs as received for treatment and in large quantities, with means associated therewith for receiving the eggs from said conveyer and subjecting the eggs so received to a wetting or preliminary washing; means for receiving the wetted or washed eggs and scrubbing the surface thereof to remove therefrom the softened dirt and foreign material adhering thereto, with means for receiving the eggs so cleaned and drying the same preliminarily to being delivered to mechanism for the further handling thereof for commercial purposes i. e., either for processing the eggs for storage purposes or for packing thereof for shipment for commercial uses. The particular type of machine herein illustrated and described is provided with a feed belt on which the eggs for treatment are to be placed; an egg receiving and delivery wheel by which the eggs are received from the said belt and moved thereby through a trough or tank containing water or other liquid; a travelling belt on which the eggs are delivered as they leave the said wheel and trough; fixed brushes which scrub the eggs as they move along with the said belt; rotating brushes which further scrub the said eggs imparting a rotation thereto and advance the eggs through the apparatus, said brushes having bristles arranged in spiral relation, whereby to assist the movement of the stream of eggs; means for causing a current of air to act upon the eggs for the drying thereof; means for warming or heating said air if so desired to increase its drying efficiency.

In order to comprehend the invention reference should be had to the accompanying sheets of drawings wherein:—

Figure 1 is a plan view disclosing a preferred embodiment of my invention.

Figure 2 is a side elevation of the apparatus disclosed by Figure 1 of the drawings.

Figure 3 is a end elevation disclosing the mechanism for receiving the eggs and subjecting the same to a preliminary wetting and the means associated for imparting intermittent or stepped movement thereto.

Figure 4 is a top plan view of the mechanism disclosed by Figure 3 of the drawings.

Figure 5 is a part broken perspective view illustrating a part of a vane of the egg wheel with the projection therefrom, also showing a cam plate attached thereto for operating to impart intermittent movement to the conveyer for the eggs.

Figure 6 is a detail side elevation illustrating the means for imparting intermittent rotation to the egg receiving and delivery wheel.

Figure 7 is a longitudinal sectional elevation taken on the line 7—7 Fig. 4 of the drawings.

Figure 8 is a cross sectional view taken on line 8—8 Fig. 7 of the drawings.

Figure 9 is an enlarged detail cross sectional view of a portion of the endless conveyer for the eggs, said view illustrating

two of the corrugations of said conveyer with an egg resting therebetween.

Figure 10 is an enlarged detail sectional view of the end of one of the paddles or vanes of the egg receiving and delivery wheel.

Figure 11 is a part broken plan view illustrating a portion of the travelling belt, with the fixed and the rotating brushes associated therewith and contiguous parts.

Figure 12 is a diagrammatic view illustrating the path of travel of the stream of eggs through the apparatus.

Figure 13 is a cross sectional view illustrative of the position of the parts disclosed by Fig. 11 of the drawings.

Figure 14 is a detail end elevation, illustrating the drive mechanism for imparting rotation to the scrubbing or cleaning brushes of the apparatus.

Figure 15 is a broken plan view of a portion of the travelling belt for the eggs, illustrating its preferred construction as consisting of a three ply structure.

Figure 16 is a broken detail view illustrating the preferred structure of a rotating brush.

Figure 17 is a cross sectional view taken on line 17—17 Fig. 1 of the drawings and viewed in the direction of the arrow illustrating the parallel travelling belts, the turn table for diverting the stream of eggs from one of said belts on to the other and the gear mechanism for operating the same.

Figure 18 is a detail broken vertical sectional view taken on the line 18—18 Fig. 17 of the drawings and viewed in the direction of the arrow.

Figure 19 is a sectional plan view taken on the line 19—19 Figure 17 of the drawings.

Figure 20 is an enlarged detail plan view of the terminal portion of the apparatus, illustrating more particularly the mechanism for imparting motion to the various moving parts of the apparatus, the belt and delivery table at such portion of the apparatus being removed.

Figure 21 is a sectional view illustrating the brushes for ensuring the delivery of the eggs at the end of the stream on to the delivery table of the apparatus.

Figure 22 is a sectional elevation illustrating one form of a heater for the heating of the air utilized for the drying of the eggs.

Figure 23 is a detail view of the gear mechanism for the interdrive of the various moving parts of the apparatus.

In the drawings, and referring more particularly to Figure 12 thereof, which is a diagrammatic view, the eggs to be treated are first placed on to a primary feed belt or intermittently moving conveyer 1, which advances the same along and delivers them to the egg receiving and delivery wheel 2, which urges or passes them through a body of water or liquid 3 contained within a trough or tank 3′, seen best on Figure 7 of the drawings. The eggs, after being passed through said body of water 3 by the action of the egg receiving and delivery wheel 2, are delivered to the beginning of a sinuous path of travel, the first section of which comprises a straight endless travelling belt 4. The eggs are here cleaned by successively subjecting them to the action of fixed and rotating brushes, which clearly appear in Fig. 11 of the drawings, and which brushes are designated respectively by the numerals 5 and 6. This cleaning action to the eggs may be continued on to the next parallel section 7 of the sinuous path for the eggs, the eggs being delivered successively from the belt 4 on to the parallel belt 7 by means of the turn table 8, and from the belt or section 7 of the sinuous path, the eggs are delivered by another turn-table 9 to a belt or section 10 of the said sinuous pathway. The object of the sinuous path for the travel of the eggs is to reduce the length of the machine as much as possible and still give the eggs a sufficient distance of travel to secure the desired and complete cleansing and drying of the eggs during their path of travel through the apparatus. As the eggs are carried through the apparatus and on that portion 10 of the sinuous path of travel, and if found necessary also on some portion of the section 7 of said path, the eggs are subjected to the action of a flowing current of air, warm or otherwise, to ensure the drying thereof.

In the present instance, only two turns in the path of travel of the eggs are illustrated, but obviously any number of sinuosities may be employed, the said eggs, or rather stream of eggs at the end thereof is delivered to a receiving and disposing table 11 from which they are taken by operators for packing purposes or otherwise disposed of, said table being disclosed by Figure 1 of the drawings.

Referring now more particularly to Figure 7 of the drawings, it will be noted that the primary feed belt or conveyer 1 shown in longitudinal section, and a top plan view thereof being seen in Figure 4 of the drawings, and also in Figure 1, is provided on its upper surface with a series of spaced transversely disposed projecting ribs or corrugations 1^a, which provide transversely disposed seats 1^b for the reception and holding of the eggs 1^c to be treated. Within the channels or seats 1^b, the eggs are positioned with their longer axes preferably crosswise of the belt for the better delivery thereof to the egg receiving and delivery wheel 2 situated adjacent the discharge end of the conveyer 1. The egg receiving wheel 2 is provided with a series of circumferentially disposed egg receiving pockets 2^a, which are formed by the arms 3^a projecting radially from the hub of the wheel 2, and which are

united or joined by the transversely disposed vanes, blades or paddles 3^b, the surface thereof being protected by a cushion 3^c. The egg receiving and delivery wheel 2 is mounted for part rotation within the body of water or liquid 3 contained within the tank or trough 3^1, and intermittent or stepped rotation is imparted thereto from the driven shaft 13 through the action of a tappet cam 13^a thereon engaging with the cam roll 13^b secured to one end of the feed lever 13^c, Fig. 6 of the drawings. The lever 13^c is pivotally connected to the pitman 13^d which in turn is connected to one end of the pivoted lever 14^a, the said lever at its opposite end carrying a pawl 14^b which engages with a ratchet wheel 14^c, secured to the shaft 14^d for the egg receiving and delivery wheel 2, Figures 3 and 4 of the drawings. To one series of radial arms 3^a of the egg receiving and delivery wheel 2 is secured a cam 15^a which projects therefrom so as to lie within the path of the free end of the pivoted lever 15^b, which at its opposite end is connected by a link 15^c to an arm 15^d secured to the shaft 16^a for the forward roll over which works the endless travelling conveyer 1, and to this shaft is secured a ratchet wheel 16^b which is engaged by a pawl 16^c secured to the arm 15^d. Through this means, an intermittent motion is transmitted to the egg receiving and delivery wheel 2 from the driven shaft 13 and by means of the cams 15^a secured to and projecting from the arms 3^a of the said wheel, there is imparted an intermittent or stepped movement to the primary conveyer 1 through the action of the described lever 15^b and its associated parts, and the said primary conveyer and the egg receiving and delivery wheel 2 operate in timed relation, so that the eggs discharging from the primary conveyer 1 are delivered successively into the pockets 2^a of the egg receiving and delivery wheel. Inasmuch as the operation of the egg receiving and delivery wheel and the primary conveyer 1 are fully set forth, illustrated and described in another application of even date herewith, further detailed description thereof is deemed unnecessary in this application, it being understood that the shaft 13 is driven or receives its motion from the shaft 14 of the pulley of the travelling belt 4 through the medium of the intermeshing gears 12. The side wall of the egg path, at various points, and notably where the eggs are received from the wheel 2, like the paddles or vanes of the said wheel, is armed with a cushion 15, Figure 7 of the drawings, in order to temper the contact of the moving eggs therewith, and by so doing reducing to a minimum liability as to breakage of the eggs.

Referring more particularly to Figure 11 of the drawings, the fixed brushes are arranged at one side of the egg path, bordering the same, and the eggs as conveyed through the apparatus are rubbed along the surface thereof by their forward movement. The rotary brushes 6 associated with and arranged above the fixed brushes 5 so as to lie slightly above the path for the eggs, Figure 13 of the drawings, tend to rotate the eggs and to propel the same forwardly and against the fixed brushes 5, and inasmuch as the rotary brushes 6 have preferably a spiral relation, the rotary motion thereof assists or controls the forward movement of the eggs in their path of travel and turns or rotates the same endwise; it being understood that the eggs are conveyed through the apparatus by the longitudinal travelling belts previously described, which belts cooperate with the rotary brushes. The bristles of the rotary brushes may be secured in any suitable manner, but as disclosed by Figure 16 of the drawings they are in the present case illustrated as being attached to tapes 16, which tapes are wound spirally upon the cylinder 17 of the brush, alternate windings being of short and long bristles, in order to give or produce the spiral disposition of the bristles. The endless belt 4 which receives the washed or wetted eggs from the receiving and delivery wheel 2 and advances the same through the apparatus in contact with the fixed and rotating, scrubbing and cleaning brushes, is preferably formed as a three ply belt, the under ply *a* being of rubber, the intermediate ply *b* consisting of felt and the upper ply *c* being formed of burlap, Figure 15 of the drawings. The felt layer *b* serves as a cushion for the conveyer belt, while the layer, or ply *c*, forms a rough surface to which the eggs adhere better than if a rubber surface were provided. However, the construction of the said endless travelling belt is immaterial. Situated beneath and associated with each rotary brush and extended along the pathway for the eggs is located a perforated spray pipe 18 to which water under pressure is supplied for spraying the said brushes so as to wet the same and assist the action thereof in freeing the surface of the eggs of the moistened dirt and foreign material adhering thereto.

It will be noted by reference to Figure 1 of the drawing that the fixed and rotary brushes are arranged alternately on one and the other side of the egg path, motion being imparted to the rotary brushes by the chain and sprocket wheels disclosed by Figure 14 of the drawings. Of these, 19 is the primary wheel of the train and 20 and 21 are the sprocket wheels on the brush arbors 22, and 23 is a tightening idler sprocket for the chain 24. The shaft 25 of the sprocket wheel 19 receives its rotation through the bevel gear

26, Figures 20 and 23 of the drawings, from the cross shaft 27, which shaft 27 also gives rotation to the train of spur gears 28 and the turn-table shaft 29, the latter of which imparts rotation to the pulley 30 of one of the endless travelling belts for the sinuous path of the eggs. The belt pulley 30 is provided on its inner periphery with a bevel gear 31, which meshes with a horizontal bevel gear, not shown, on the spindle 31ª of the turn-table 8, the said gear of the turn-table spindle intermeshing in turn with the bevel gear 32 on the belt pulley 33, Figure 20 of the drawings. Thus the belt 4, Figure 12 of the drawings, operates the turn table 8 and imparts movement to the parallel belt 7 through the action of the described mechanism; the construction of which intermeshing mechanism is best understood by reference to Figures 17, 18 and 19, in which the turn-table 9 is illustrated. The belt 7 drives the pulley 34, and thus through the bevel gear 35 on its face imparts rotation to the horizontal gear 36 on the spindle 37 of the turn-table 9, and the bevel gear 36 intermeshing with the gear 38 carried by the pulley 39 imparts travel to the belt 10. Like the endless travelling belt, the top surface of the turn-table is clothed with cushioned material 40 to temper the contact with the eggs moving thereover in order to reduce breakage to a minimum. The eggs as brought to the turn-table by the approaching belt as at 7, (see Figures 18 and 19) are swung around the curve by the turn-table, being guided in their path of movement by the curved wings or guards 40′, and are delivered successively on to the belt 10 to be forwarded to their destination. It will be understood that the two turn-tables 8 and 9 are exactly similar in their construction and operation. After the eggs have been primarily washed and then scrubbed and cleaned, it is preferable that the same be thoroughly dried prior to the discharge from the apparatus, and for the furtherance of the drying operation, a current of warm air meets the oncoming eggs in a boxed channel at any convenient point as at 41 (Fig. 1 of the drawings). This heated air is drawn from a heater 42 by means of a suction fan 43 through suitable piping 44, and discharged therefrom through the pipe 45 into the housing with which communicates the said pipe 45 at the entrance way of the boxed channel or housing through which the eggs travel, as moved toward the discharge end of the apparatus, and which point of connection is at 41. The pipe connections for the conveying of the heated air appears fully in connection with Figs. 1 and 20 of the drawings. The suction fan may be driven by any suitable form of drive mechanism, as for instance from a pulley 46, on the transverse shaft 27 and the fan pulley 47, the air in the furnace 42 being heated by the burner 48 Fig. 22 of the drawings.

The pulley 49, Fig. 20 of the drawings, and which constitutes the last pulley of the series that supports the travelling belts for the stream of eggs has on its shaft 50 a sprocket wheel 51, which said wheel through the medium of chain 52, imparts rotation to a sprocket wheel 53 on one end of the transverse shaft, the rotation of which through the meshing of the bevel gears 54 imparts rotation to the longitudinally disposed shaft 56. On this shaft is secured the delivery brushes 55, which brushes are so positioned that as the stream of eggs arrive opposite the delivery table 11, they are brushed off of the belt 10 on to the surface thereof, or, in other words, the eggs are brushed from the path of the belt 10 on to the table, which table has a cushioned surface thereon, and preferably the table is arranged at a slight incline in order that the eggs may roll freely over its surface in a convenient manner, for the next action, and which may be the packing thereof by operators stationed at the said table to remove the eggs therefrom and suitably pack the same, or the said table may deliver the eggs on to other mechanism for conveying the same to any suitable point of discharge.

Preferably the working parts of the apparatus are driven by an electric motor 57 from the main pulley 58, which is connected to the shaft of the motor 57 through the medium of the connecting belt 59.

It will be understood however that any suitable form of power mechanism may be employed for actuating the working parts of the apparatus.

By reference to Figure 13 of the drawings, it will be noted that the water spray from the pipes 18 as jet streams impinges on to the surface of the rotating brushes 6, and is carried by said brushes on to the egg path, the excess water flowing off on the opposite side of the said path as at 62, and flows into the receptacles 60 and 61 situated below the plane of the said brushes.

In operation, the eggs to be treated are placed onto the primary conveyer 1 and are gradually advanced thereby toward the egg receiving and delivery wheel 2, being discharged from the conveyer 1 into one of the pockets 2ª of the wheel positioned for the reception thereof. By the rotary movement of the said wheel, the eggs are moved downwardly into the body of liquid 3 and advanced therethrough and raised therefrom by the paddle of a succeeding pocket of the wheel and discharged thereby onto the endless travelling belt 4. The belt moves the eggs toward the turntable 8, during the course of such movement the wetted eggs are forced against the surface of the first

of the fixed brushes 5, and of the co-acting rotary brush 6, the action of the latter serving to maintain the eggs in rotation. These brushes tend to remove the dirt and foreign material from the eggs and which at such time is loosened by reason of the eggs having passed through the liquid bath 3. The eggs are then advanced between the second set of fixed and rotary brushes 5 and 6, oppositely arranged relative to the first of such brushes. As water is sprayed onto these brushes throughout the course of the eggs' movement toward the turntable 8, all dirt and foreign matter as removed from the eggs is carried away with the excess water into the receptacles 60 and 61. The washed and cleansed eggs as the end of the runway for the belt 4 is reached are successively deposited on to the turntable 8 and by the same delivered onto the endless travelling belt 7, which advances the same through one branch of the drier 14^a until the turntable 9 is reached, by means of which the eggs are transferred onto the oppositely moving endless belt 10 working within the opposing parallel branch of the said drier. As the washed and cleansed eggs are advanced through the drier they are subjected to the action of a current of preferably heated air circulated therethrough, and by means of which they are dried. The dried eggs, as discharged from the drier are deflected from the belt 10 by means of the rotating brushes 55, which deliver the same onto the surface of the delivery table 11 and from which they are preferably removed by operators situated at such point of the apparatus for the packing of the same.

I am well aware that changes may be made in the detailed construction of the interworking parts herein shown and described without creating a departure from the spirit of the present invention, and do not wish to be understood as restricting or confining the invention to said detailed described parts, but on the contrary wish to be understood as claiming the invention as broadly as the state of the art will warrant.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States is:—

1. An apparatus for the described purpose, the same comprising means for receiving and wetting the eggs to be cleaned, means for receiving and advancing the wet eggs as a stream through the apparatus, and means associated therewith for scrubbing the eggs as moved forward in their path of travel.

2. An apparatus for the described purpose, the same comprising mechanism for receiving wetted eggs and advancing the same as a stream through the apparatus, means associated therewith for cleansing the eggs so advanced, means for drying the cleansed eggs, and means for delivering the eggs from said stream.

3. An apparatus for the described purpose, the same comprising a longitudinally disposed endless traveling carrier for receiving and advancing singly eggs to be cleaned, of rotary scrubbing and fixed scrubbing means associated therewith in parallel relation and between which the endless carrier works, said scrubbing means adapted to impart rotary movement to the eggs and clean the surface thereof, as advanced by the endless carrier, and means for delivering wetted eggs to be treated onto the endless carrier in a predetermined order of arrangement.

4. An apparatus for the described purpose, the same comprising a longitudinally disposed endless traveling carrier for receiving and advancing eggs singly streamwise through the apparatus, a runway composed of parallel disposed rotary and fixed scrubbing brushes through which the carrier works and between which the eggs are advanced in contact therewith, the rotary brush coacting with the carrier and associated fixed brush for imparting rotary movement to the eggs, and means for imparting movement to the rotary brush travel to the endless carrier, and means for delivering wetted eggs to be treated onto the endless carrier in a predetermined order of arrangement.

5. An apparatus for the described purpose, the same comprising a feed belt and wheel adapted to receive and feed eggs through a body of liquid for wetting the same, a travelling belt adapted to receive said eggs from said wetting mechanism and forward them onward as a stream, brushes adapted to cleanse said eggs as they move with said belt, and mechanism adapted to receive said eggs from said stream.

6. An apparatus for the described purpose, the same comprising a feed belt and wheel adapted to receive and feed eggs to a wetting mechanism, a travelling belt adapted to receive said eggs from said wetting mechanism, rotary brushes adapted to rotate said eggs on said belt, and receiving means adapted to receive said eggs from said belt.

7. An apparatus for the described purpose, the same comprising a feed belt and wheel adapted to receive and feed eggs to wetting mechanism, a travelling belt adapted to receive said eggs from said wetting mechanism, rotary brushes having a spiral relation and adapted to forward said eggs along said belt.

8. An apparatus for the described purpose, the same comprising a wetting mechanism comprising a feed belt and wheel adapted to receive and wet eggs, a travelling belt adapted to receive said eggs from said wetting mechanism, brushes adapted to

cleanse said eggs, and means adapted to pass a current of air to said eggs.

9. An apparatus for the described purpose, the same comprising a wetting mechanism comprising a receiving belt and wheel adapted to receive and wet eggs, a travelling belt adapted to receive said wet eggs from said mechanism, brushes adapted to cleanse said eggs, means for passing a current of air to said eggs, and means adapted to warm said current of air.

10. An apparatus for the described purpose, the same comprising mechanism adapted to wet eggs, a sinuous path for the stream of eggs, means for cleansing said eggs whilst following said path, means for drying the cleansed eggs, and means for delivering the cleansed and dried eggs from said path.

11. In combination, a sinuous path for a stream of eggs undergoing treatment. said path having straight portions and turns, belts for conveying the eggs over the straight portions, mechanism for wetting the eggs prior to delivering to said sinuous path, turntables for conveying the eggs around the turns, and means for cleansing the eggs as moved through said sinuous path.

12. In combination, a sinuous path for a stream of eggs, said path comprising a series of comparatively straight portions, turntables positioned at the changes of direction in the path and adapted to swing the eggs around the turns, means adapted to feed the eggs onto said path, means for cleansing the eggs as advanced through the sinuous path, and means adapted to recover the eggs from said path.

13. An apparatus for the described purpose, the same comprising mechanism for wetting eggs, said mechanism comprising a belt, a wheel, and a trough of water, said belt adapted to receive eggs and deliver them to said wheel, and said wheel adapted to urge said eggs through said trough of water, a sinuous path positioned to receive eggs from said wetting mechanism, brushes adapted to cleanse the eggs in said sinuous path, means adapted to dry the eggs after the cleansing operation, and means for recovering said eggs from said path.

14. An apparatus for the described purpose, the same comprising wetting mechanism, adapted to receive and wet eggs, said mechanism operating intermittently, conveying mechanism adapted to receive eggs from said wetting mechanism, said conveying mechanism operating continuously, and cleansing mechanism adapted to operate on said eggs whilst on said conveying mechanism.

15. An apparatus for the described purpose, the same comprising an egg runway comprising a plurality of longitudinally disposed rotary scrubbing brushes and a plurality of fixed scrubbing brushes associated therewith, said brushes being arranged in pairs oppositely disposed, of means for advancing eggs singly between and in contact with said brushes, whereby the rotary brushes impart rotation to said eggs during their movement and the brushes clean the surface thereof, means associated with said brushes for applying water thereto during the operation of the apparatus, and mechanism for imparting movement to the rotary brushes and to the means for advancing the eggs between the scrubbing brushes.

16. An apparatus for the described purpose, the same comprising mechanism for receiving and preliminarily wetting eggs to be treated, associated means for receiving the wetted eggs and advancing the same through the apparatus in a to-and-fro course of travel, and cleaning means interposed within the path of travel of the eggs for the scrubbing and cleansing thereof.

17. An apparatus for the described purpose, the same comprising an intermittently operated conveyer for the eggs to be treated, a receiving wheel positioned at one end of the conveyer for receiving the eggs therefrom and passing the same through a liquid body for preliminary washing thereof, mechanism for actuating the wheel and conveyer in synchronous registry, endless travelling means for receiving the wetted eggs from said wheel and advancing them as a stream of eggs through the apparatus, and brushing means interposed within the travel of the stream of eggs for scrubbing and cleaning the surface thereof.

18. An apparatus for the described purpose, the same comprising endless travelling means for advancing eggs to be treated through the apparatus in a to-and-fro course of travel, means interposed within the path of travel of the eggs for scrubbing and cleaning the surface thereof, a delivery table for receiving the cleansed eggs, and rotary means for wiping the cleansed eggs from the conveying means on to the said table.

19. An apparatus for the described purpose, the same comprising a plurality of longitudinally disposed parallel conveyors for singly advancing eggs to be treated through the apparatus in a to-and-fro course of travel, devices for transferring the eggs from one conveyor onto an adjacent conveyor, means interposed within the path of travel of the eggs for subjecting the same to a scrubbing and cleaning action while maintaining the same in a condition of rotation, and means for applying water to the scrubbing and cleaning means.

20. An apparatus for the described purpose, the same comprising an endless traveling carrier for receiving and singly advancing eggs to be treated, means associated

therewith for scrubbing and cleaning the surfaces of eggs as advanced therebetween by the carrier and co-acting therewith to maintain the eggs in a condition of rotation, and means for delivering wetted eggs to be treated onto the endless carrier in a predetermined order of arrangement.

21. An apparatus for the described purpose, the same comprising a carrier for receiving and advancing eggs singly and streamwise through the apparatus, means for receiving, wetting, and delivering the eggs to said carrier, an egg runway consisting of a plurality of fixed scrubbing brushes and a plurality of rotary scrubbing brushes between which the carrier works for cleaning the eggs, said rotary brushes serving to impart rotation to the eggs as advanced by the carrier, and means for applying water to the said brushes during the operation of the apparatus.

22. In combination, a runway for a stream of eggs undergoing treatment, said runway having embodied therein straight portions and turns, parallel disposed belts for conveying the eggs singly and in stream formation over the straight portion of said runway, means for conveying the eggs around the turns of the runway and transferring the same from one belt onto another, and rotary and fixed scrubbing brushes between which the eggs are advanced and cleaned as propelled through the egg runway.

23. In an apparatus for the described purpose, the combination with a longitudinally disposed endless traveling carrier adapted to receive and singly advance eggs to be cleaned through the apparatus, parallel brushes interposed within the path of travel of said carrier for contacting with said eggs and cleaning the surface thereof, said brushes co-acting with the carrier to impart rotary movement to the eggs as advanced therebetween, and means for applying water to said brushes, and means for depositing the eggs to be cleaned streamwise onto the endless carrier.

24. In an apparatus for the described purpose, the same comprising an egg runway composed of parallel disposed rotary and fixed brushes, an endless traveling carrier for advancing eggs singly through the runway and in contact with the brushes, said brushes co-acting with the carrier for imparting rotary movement to the eggs and for cleaning the surface thereof, and means for depositing the eggs to be cleaned in a definite order of arrangement onto the said endless carrier.

25. In combination, means for receiving and wetting eggs to be cleaned and delivering the wetted eggs, an endless traveling carrier adapted to receive said wetted eggs and advance the same singly streamwise through the apparatus, and parallel disposed cleaning brushes associated with and interposed within the path of travel of said carrier and between which the eggs are advanced in contact therewith, said brushes embracing the eggs and co-acting with the carrier to impart rotation to the eggs as advanced between the same.

In testimony whereof I have signed my name to this specification.

COLONEL J. WILLIAMSON.