A. L. GALUSHA.

EGG DRYING APPARATUS.

APPLICATION FILED OCT. 9, 1914.

1,158,477.

Patented Nov. 2, 1915.

6 SHEETS—SHEET 1.

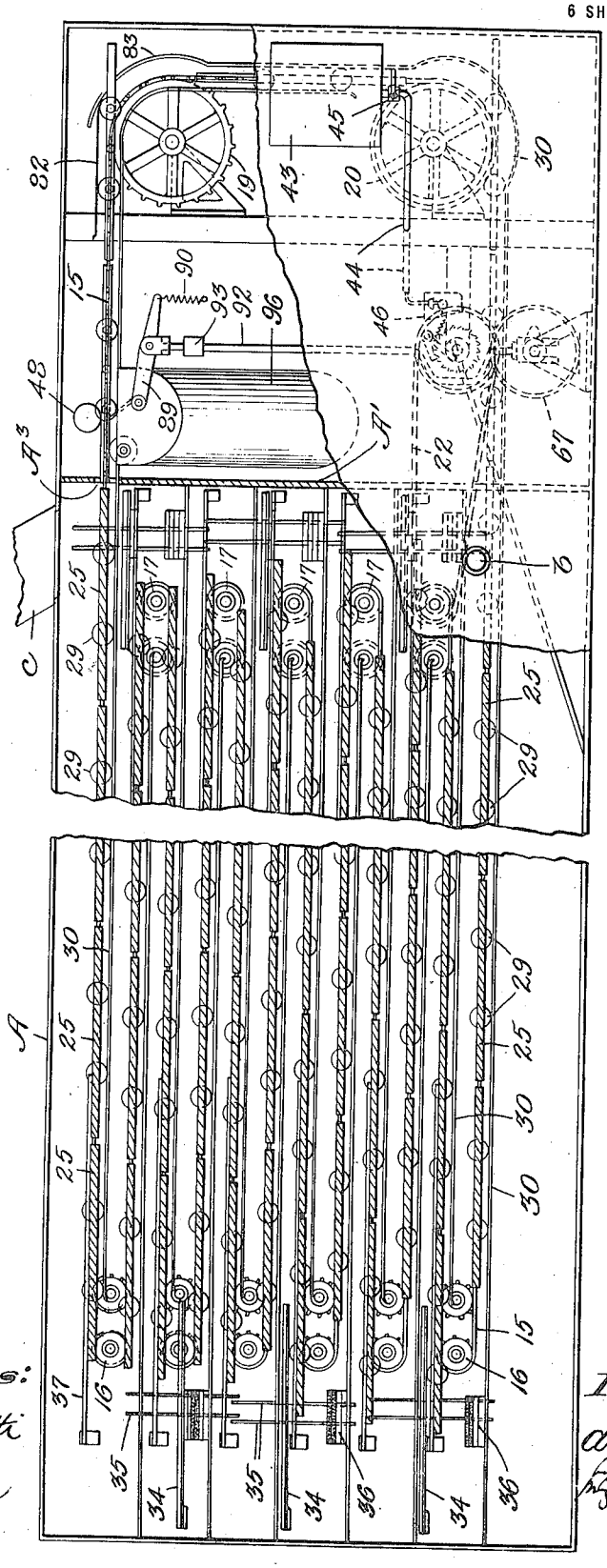


Fig. 1.

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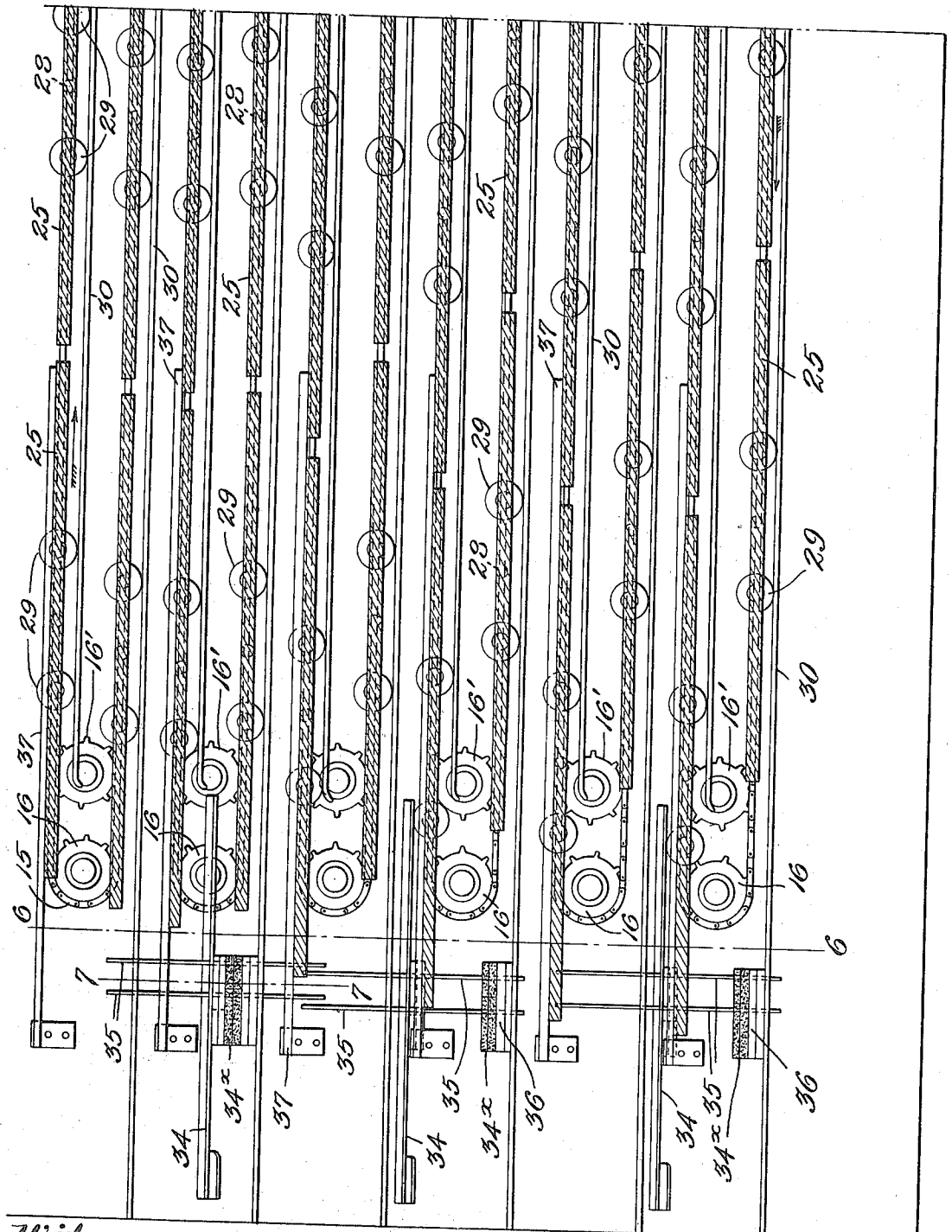
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6 SHEETS—SHEET 2.



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Fig. 2

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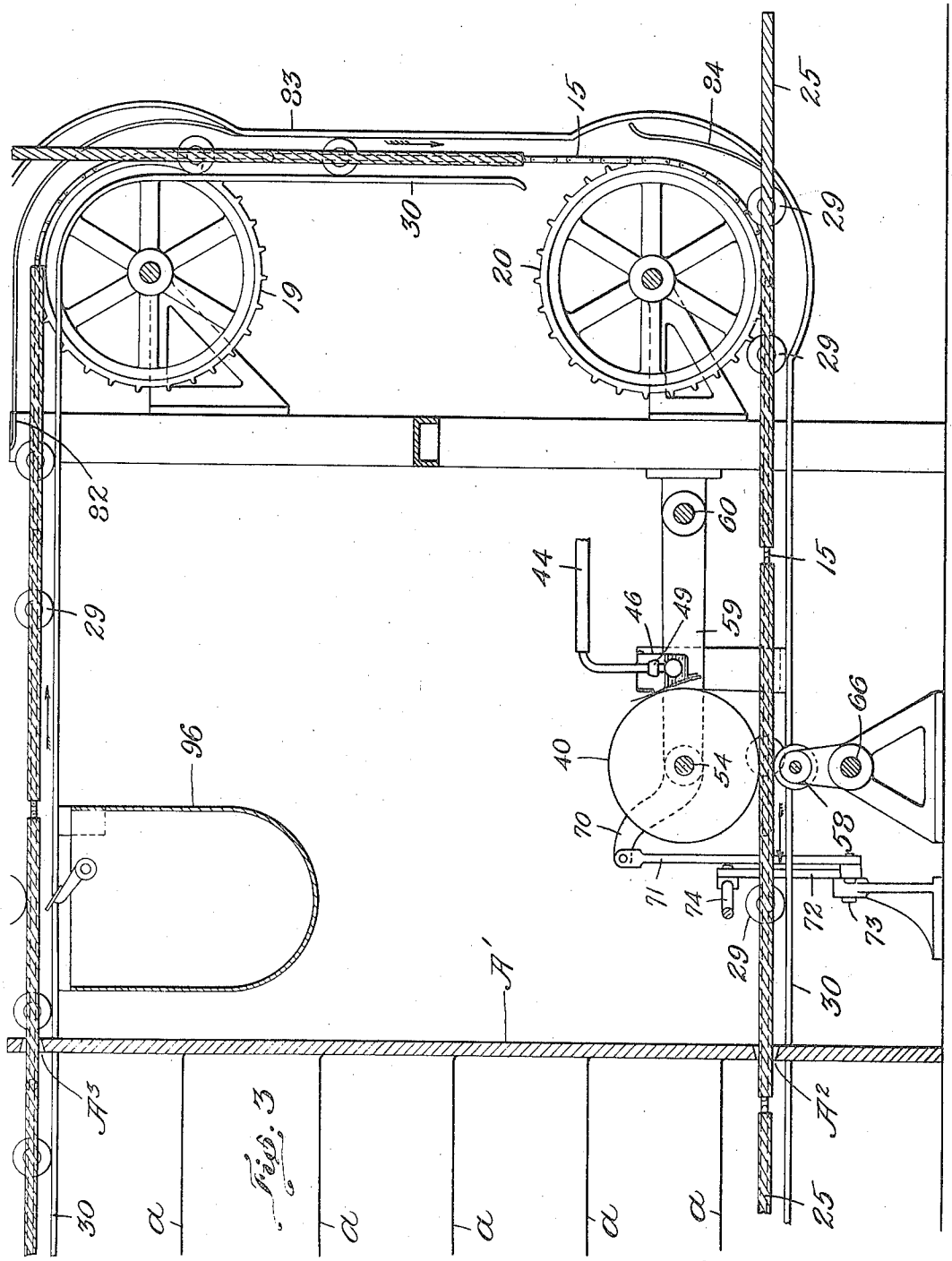


Fig. 3

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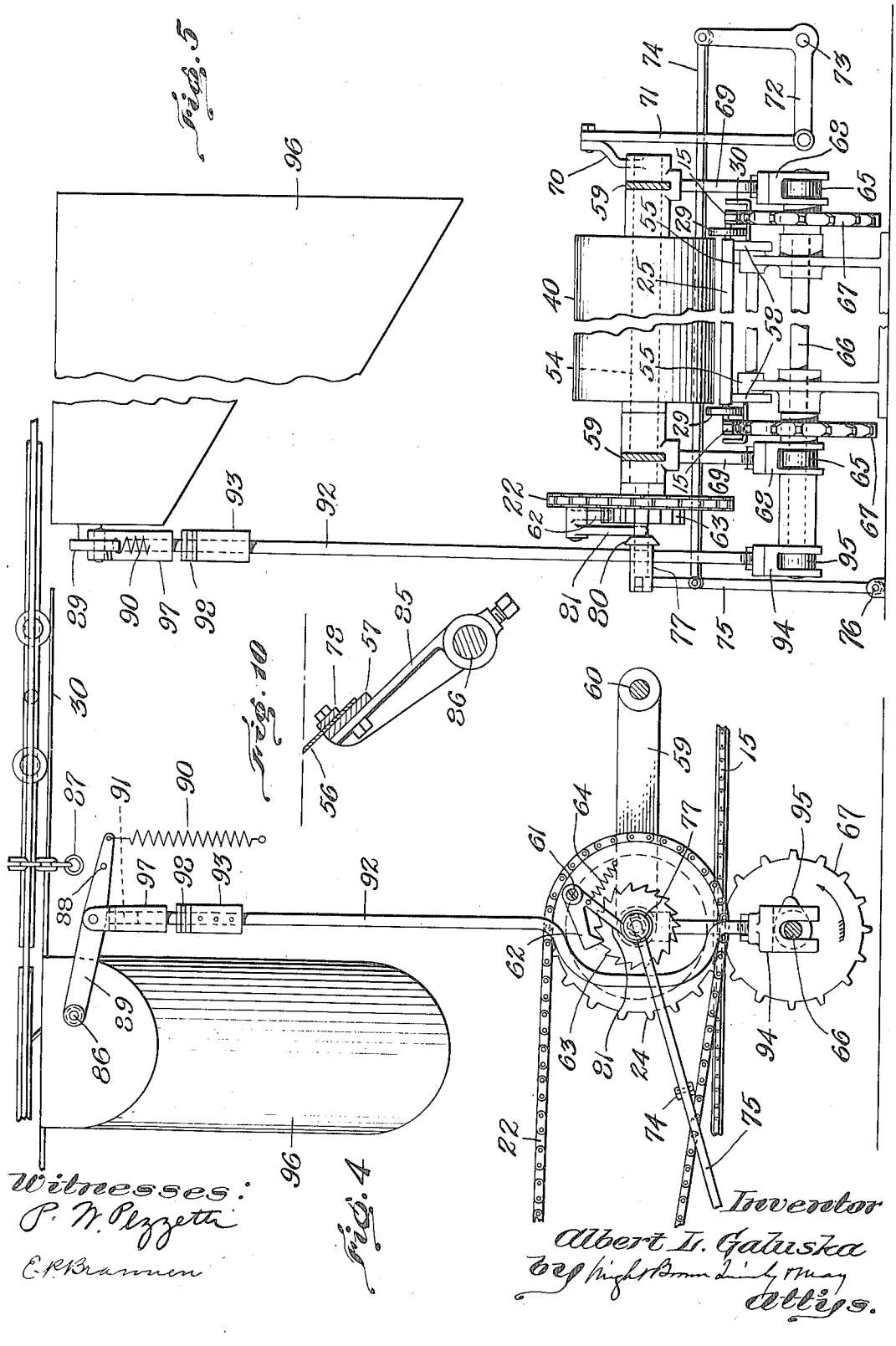
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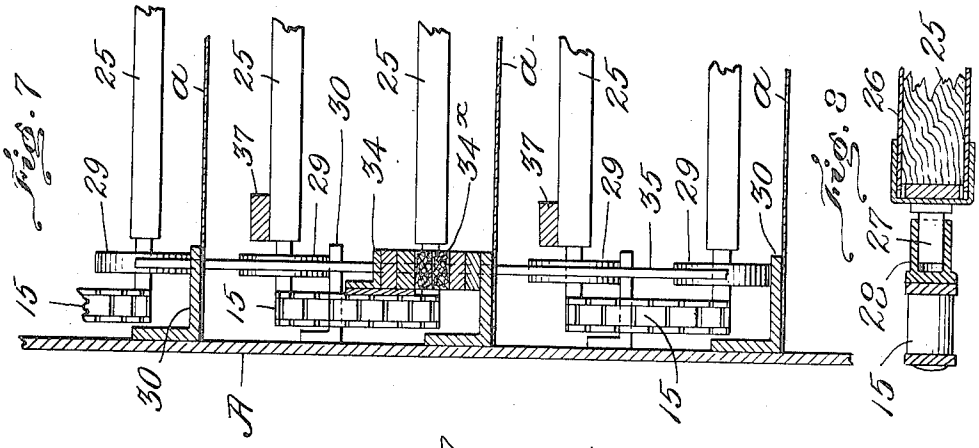


Fig. 7

Fig. 8

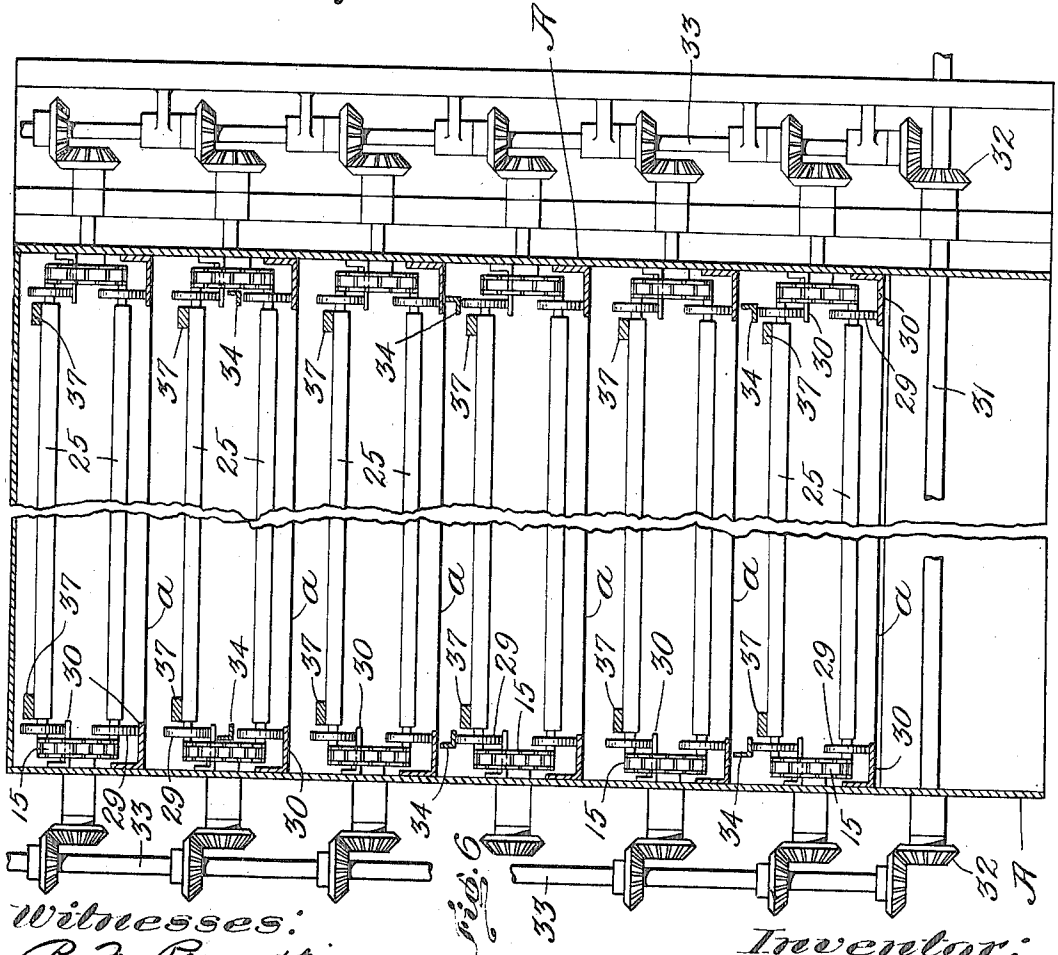


Fig. 6

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6 SHEETS—SHEET 6.

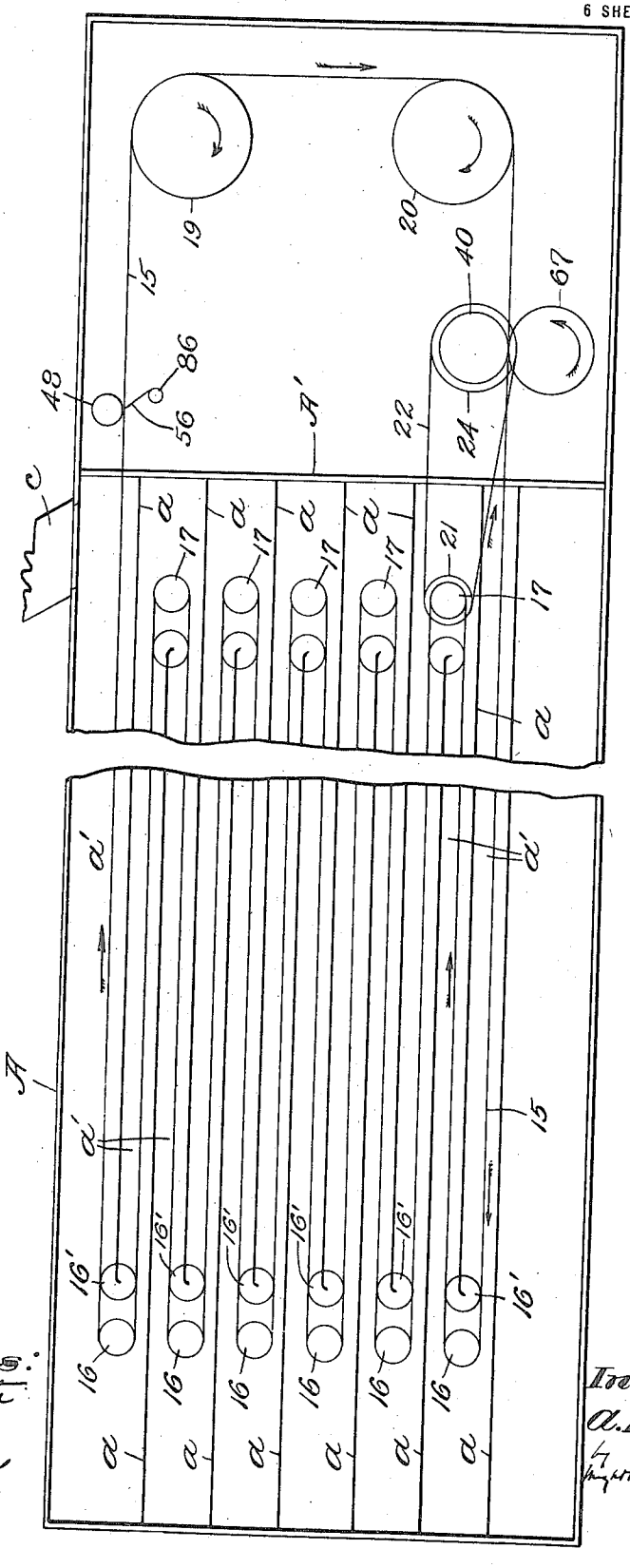


Fig. 9.

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UNITED STATES PATENT OFFICE.

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EGG-DRYING APPARATUS.

1,158,477. Specification of Letters Patent. Patented Nov. 2, 1915.

Application filed October 9, 1914. Serial No. 865,806.

To all whom it may concern:

Be it known that I, ALBERT L. GALUSHA, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Egg-Drying Apparatus, of which the following is a specification.

This invention relates to apparatus for desiccating eggs.

The apparatus as illustrated comprises a series of flat boards or carriers upon which the egg batter is deposited in a thin layer or layers. The carriers are carried through a drying chamber by endless conveyers and are positioned so that their egg-receiving surfaces remain horizontal while passing through the drying chamber. The endless conveyers are caused to traverse zigzag courses through the drying chamber for the purpose of giving the egg batter a relatively great lineal travel in comparison to the size of the chamber, through which they travel, thus avoiding excessively bulky apparatus. The drying chamber as shown is provided with baffle plates arranged to cause the drying medium to traverse the same zigzag courses as those traversed by the carriers; but the apparatus gives excellent results without such baffle plates, provided the drying medium is forced through the drying chamber at a relatively rapid rate. The effect of the baffle plates is to cause the drying medium to remain in the chamber for a greater length of time and to become saturated to a greater degree than it would be if the baffle plates were omitted. The batter carriers enter the drying chamber near the bottom and leave said chamber near the top, passing back and forth through a plurality of zigzag courses in rising from the bottom to the top. The batter carriers are flat boards upon which the batter is fed in thin layers. The carriers, in traversing the several courses of the drying chamber, are maintained with one side uppermost in order to afford sufficient time for the batter to become solidified through evaporation before leaving the drying chamber, to enable the batter dried thereon to adhere. Each carrier, after leaving the drying chamber, is inverted with relation to the conveyers, so that upon passing the batter-feeding means fresh batter will be deposited upon the side which was lowermost during the last preceding passage of the carrier through the drying chamber. In this way each carrier is caused to receive batter first upon one side and then upon the other, the inverting of each carrier occurring at the end of each cycle of travel along the course of the endless conveyers. Each layer of batter is thus caused to pass twice through the drying chamber before being covered by a fresh layer. When a sufficient number of layers of batter have accumulated as aforesaid upon the two sides of each carrier, a scraper is brought into use to remove the batter from the carriers, and the carriers continue to repeat the operation of carrying fresh batter through the drying chamber and of accumulating another predetermined number of layers of batter before being again scraped.

Having stated in a general way the characteristic features of the apparatus, I will now refer more especially to the accompanying drawings and to the details illustrated thereby.

On the drawings: Figure 1 represents a view, partly in longitudinal section and partly in elevation, of the apparatus, an intermediate portion of which is broken out to admit both ends of the apparatus upon the sheet of drawing. Fig. 2 represents, on a larger scale, a longitudinal section of the left-hand end of the apparatus as shown by Fig. 1. Fig. 3 represents, on a scale the same as that of Fig. 2, a longitudinal section of that part of the apparatus shown at the right of Fig. 1. Fig. 4, on the same scale as Figs. 2 and 3, represents in elevation the mechanism by which the operation of the batter-feeding means is automatically interrupted whenever a gap between two adjacent carriers is in register with the feeding means. This figure also includes the mechanism by which the scraper is automatically retracted whenever a gap between two adjacent carriers is in register with the scraper. Fig. 5 represents an elevation of the mechanism shown by Fig. 4, as viewed from right to left of Fig. 4. Fig. 6 represents a vertical cross section of the structure intersected by line 6—6 of Fig. 2, the middle portion of the cross section being broken away to save space on the end of the drawing. Fig. 7 represents, on a scale

larger than that of Fig. 6, a vertical cross section of the structure intersected by line 7—7 of Fig. 2. Fig. 8 represents, on a still larger scale, a marginal portion of one of the carriers, in cross section, and the adjacent conveyer, together with the pivot connection between the carrier and the conveyer which enables the carrier to turn with relation to the conveyer and vice versa. Fig. 9 is a diagrammatic view resembling Fig. 1 and showing conventionally the drying chamber, the baffle plates whereby said chamber is divided into a series of zigzag courses, and the conveyer by which the batter carriers are caused to traverse said zigzag courses. Fig. 10 is a cross sectional view of the scraper which removes the dried batter from the carriers.

The same reference characters indicate the same parts wherever they occur.

It may be here stated that the baffle plates which divide the drying chamber into zigzag courses are very thin sheets of metal and that for this reason and for the additional reason that the scale of the drawings is very much reduced, it is impossible to clearly represent such baffle plates in cross section. It is partly for this reason that the drawing marked "Figure 9" is in conventional or diagrammatic form, such form facilitating the representation of this feature of the drying chamber. No attempt has been made to clearly indicate the baffle plates in any figure other than Figs. 3, 6, 7 and 9.

The drying chamber is formed by a casing A which is substantially rectangular, having a top, bottom, sides and ends. The walls of the chamber need not be specifically indicated, excepting that indicated at A′ and hereinafter referred to. The drying chamber as inclosed by the said casing is divided into zigzag courses by a series of horizontal baffle plates *a*, the courses defined by said plates being indicated at *a′*. The drying medium enters the chamber between the bottom plate *a* and the plate next above, the supply pipe therefor being indicated at *b* in Fig. 1. An outlet conduit is indicated at *c* in Figs. 1 and 9, said conduit being arranged to conduct the drying medium from the highest course *a′*. Still referring to Figs. 1 and 9, the drying medium upon entering the drying chamber travels first to the left, upwardly, around the left-hand end of the first baffle plate, thence from left to right, then upwardly around the right-hand end of the next baffle plate, and so on, until it leaves the drying chamber through the outlet conduit *c*. In consequence of providing the drying chamber with baffle plates in this manner, the drying medium may have relatively great lineal travel in a relatively small drying chamber. The batter is carried along the same zigzag courses as those traversed by the drying medium, the batter being carried in the same general direction as the drying medium but at a slower rate of speed. The conveyer mechanism comprises two endless chains 15, 15 arranged side by side and separated from each other to admit the batter boards or carriers between them. The chains 15, in passing through the drying chamber, pass over sprocket wheels 16 at one end of said chamber, and over sprocket wheels 17 at the opposite end, these two groups of sprocket wheels being so arranged that the several courses of the chains are horizontal. The chains also pass over sprocket wheels 19 and 20 outside the drying chamber, the latter sprocket wheels conducting the chains from the top course to the bottom course.

The batter boards or carriers are indicated individually at 25. They are mounted upon the chains 15 so as to form an endless series. Each carrier is preferably covered with a suitable sheathing 26 (Fig. 8) such as sheet zinc, zinc being the most appropriate metal for the purpose because it is not affected chemically by the egg substance. Each carrier has two oppositely disposed studs or trunnions 27 which extend laterally into suitable sockets 28 carried by the chains 15. The two trunnions of each carrier are midway between the front and rear edges of the carrier, the carrier being thus balanced and adapted to occupy the same space, whether standing with one side uppermost or with the opposite side uppermost. Each carrier, while traversing the bottom course from right to left, receives a thin layer of egg batter from feeding means hereinafter explained, such batter being deposited upon the upper side of the carrier. Mechanism is provided for preventing tipping movement of each carrier throughout its entire passage through the drying chamber and until it passes over the sprocket wheel 19. Each carrier, in passing from the top stretch to the bottom stretch, is inverted so that the side which is at the bottom during one passage through the drying chamber will be uppermost at the next succeeding arrival at the batter-feeding means. The batter is fed to the carriers in the bottom course, between the sprocket wheel 20 and the end wall A′ of the drying chamber. Said wall has two shallow openings A^2 and A^3 (Fig. 3) through which the chains and carriers pass in entering and leaving the drying chamber.

The mechanism for driving the chains is shown by Fig. 6. A main drive shaft 31 transmits rotation through bevel gears 32 to vertical shafts 33 arranged outside the drying chamber. Through suitable gearing, clearly shown, the several sprocket wheels 16 are driven, the space between the sprocket wheels at one side of the chamber and those

at the other side being left free for the passage of the carriers. A sprocket wheel 21, fast to the lowermost sprocket wheels 17, drives a chain 22 which in turn drives a sprocket wheel 24, the latter being a part of the mechanism which intermittently drives the roll or cylinder 40 by which the egg batter is deposited upon the carriers.

For the purpose of preventing tipping movement of the carriers while they are passing through the drying chamber, each carrier is provided with four rolls 29, two of which are mounted at one side edge of the carrier and two of which are mounted at the opposite side edge, as shown best by Figs. 2, 5 and 6. These rolls roll upon horizontal tracks 30, said tracks being arranged in courses or sections corresponding in number and arrangement to the several horizontal courses of the conveyers. As each carrier passes from one horizontal course in the drying chamber to the horizontal course next above, its rolls 29 coact with a movable member 34, hereinafter termed a keeper, whose function is also to prevent tipping movement of the carriers. As each carrier reaches the end of one horizontal course it is lifted bodily while its trunnions pass around the sprocket wheels, its horizontal position being maintained at such time by one of the keepers 34. Each carrier, in traversing the lowest course, rolls upon the tracks 30 until the end of the horizontal course is reached; but before trunnions 27 reach the sprocket wheels 16, the rolls 29 at one side of the carrier pass under the first keeper 34. The carrier is lifted bodily in consequence of its trunnions passing around the sprocket wheels 16, and at such time the rolls 29 lift the keeper. The keeper is in the form of a track, and it is affixed to rods 35 which are arranged to slide vertically in suitable guides 36. The keeper normally rests in such position that its roll-engaging surface is in the horizontal plane which is tangential to the tops of the approaching rolls 29. When the trunnions 27 reach the top of the sprocket wheels 16, the bodily upward movement of the carrier ceases, and the keeper 34 remains stationary but continues to rest upon the tops of the rolls 29. The carrier then moves horizontally along the second course; and when the now foremost roll 29 passes beyond the end of the keeper 34, the weight of the keeper upon the rear roll 29 would tip the carrier about its trunnions 27 if some means were not provided for preventing such tipping. For this reason I have provided fixed horizontal guides 37 whose bottom surfaces are arranged to be engaged by the top surface of the carrier when the latter reaches the plane of the second course. The guides 37 are relatively narrow, as shown by Figs. 6 and 7, and they engage only the side marginal portions of the carrier beyond the area which is coated with batter. When the carrier begins to move from left to right along the second course, the top surface of the carrier slides along the bottom surfaces of the guides 37, and the carrier is thus maintained in a horizontal position. As the weight of the carrier is not immediately transferred to the tracks 30 of the second course, I have provided idle sprocket wheels 16′ which are close to the sprocket wheels 16 and which support the second course of the chains 15 until such time as both rolls 29 of the carrier rest upon the track 30 of the second course. The weight of the carrier thenceforward is supported by the tracks 30 of the second course until the carrier reaches the right-hand end of the second course. Here it finds another keeper 34 similar to the one that has been explained and by which the carrier is maintained in a horizontal position during the transfer from the second course to the third course. The arrangement of tracks, keeper, guides and idle sprockets, is duplicated at each point of transfer from one horizontal course to the next, and no further description will be necessary. It may be stated, however, that when each keeper 34 is freed by the removal of a carrier the keeper drops back to its initial position to coact with the next succeeding carrier. In order to avoid excessive noise due to the dropping of the keepers, I have provided cushioning material 34ˣ upon which the keepers drop.

The egg batter which is to be deposited on the carriers is contained in a reservoir 43. (See Fig. 1). This reservoir is outside the casing of the apparatus and may be replenished from time to time as necessary. The batter flows from the reservoir through the pipe 44 which has a stopcock 45. The pipe 44 extends into the casing through one of the side walls and discharges the batter into a trough 46. One wall of the trough touches the roll 40 and the batter overflows such wall, the discharge of batter from the pipe 44 being controlled automatically by a float valve 49.

The roll 40 is mounted upon a shaft 54 which is journaled in the free ends of arms 59. These arms are mounted upon a pivot rod 60 in such manner as to permit lifting the roll bodily whenever the gap between two adjacent carriers is in register with the roll, to the end that the feeding of batter to each carrier will end at a short distance from the rear edge of the carrier, and the feeding of batter will begin a short distance behind the front edge of the carrier, leaving the front and rear marginal portions of each carrier free from batter. Such lifting of the roll is performed by mechanism hereinafter described. Not only is the roll 40 lifted periodically, but its rotation is interrupted at such times so that so

long as the roll is not in contact with a carrier it will not rotate. For this reason the sprocket wheel 24 hereinbefore mentioned is loosely mounted upon the shaft 54. The sprocket wheel carries a stud 61 upon which is mounted a driving pawl 62. This pawl coacts with a ratchet wheel 63 which is affixed to the shaft 54. The pawl is normally held in coöperative engagement with the ratchet wheel by a spring 64, but is automatically disengaged from the ratchet wheel simultaneously with the lifting of the roll. The roll is lifted by two cams 65 affixed to a shaft 66. The cams coact with shoes 68 which are connected by rods 69 with the arms 59. The shaft 66 is driven by the conveyer chains 15 through the medium of sprocket wheels 67. One of the arms 59 (Fig. 5) has an extension 70 which, through connections about to be described, lifts the pawl 62 away from the ratchet wheel. A link 71 connects the extension 70 with one arm of a bell-crank 72. The bell-crank is mounted upon a fulcrum 73 and its other arm is connected by a link 74 with a lever 75. The fulcrum of the lever 75 is indicated at 76. The free end of the lever engages a plunger 77 which has a bore arranged to slide upon the projecting end of the shaft 54. The plunger carries a frusto-conical member 80 which engages an arm 81 of the pawl 62 to lift the pawl as aforesaid. When the roll descends to feeding position the member 80 is retracted, permitting the driving pawl to be returned to engagement with the ratchet wheel by the spring 64. As shown by Figs. 3 and 5, rolls 58 are arranged to engage the under sides of the carriers to support the carriers independently of the support afforded by the tracks 30, the bearing supports 55 for the rolls 58 being adjustable to afford accuracy in the coaction of the carriers and feed roll. The peripheral speed of the feed roll is slower than the lineal speed of the carriers, and in consequence of the difference in the speed the film or layer of batter which is deposited upon the carriers is stretched and thinned and caused to assume substantially uniform thickness.

Each carrier in passing around the sprocket wheels 19 is tilted to a vertical position as shown by Figs. 1 and 3, and is tilted to its other horizontal position while passing around the sprocket wheels 20. For this purpose the upper tracks 30 are curved in the vicinity of the sprocket wheels 19 and extend downwardly therefrom in straight lines to guide the carriers vertically. The rolls 29, shortly before reaching the sprocket wheels 19, pass under flexible spring guides 82, said guides being arranged to engage the tops of the rolls. The purpose in providing the flexible spring guides at this point is to ease the change of direction and tipping movement of the carriers so that the batter will not be thrown from the carriers or loosened. As the carriers leave the sprocket wheels 19 their rolls 29 are guided on the one side by the vertical extensions of the tracks 30, and on the other side by vertical tracks 83. As the carriers approach the sprocket wheels 20 their rolls 29 engage other flexible spring guides, which are indicated at 84, whereby the carriers are gently tilted from vertical to horizontal position.

The carriers, having been coated first on one side and then on the opposite side, and having received a plurality of layers superimposed one upon another, each of which layers is sufficiently dried by passing twice through the drying chamber before being covered by a succeeding layer, are scraped by mechanism now about to be described. It may be explained, before describing the details of the scraping mechanism, that owing to variations in atmospheric conditions it cannot always be predetermined just how many layers of batter shall be superimposed one upon another before the accumulation is scraped from the carriers. For this reason the scraping mechanism is designed to be brought into use manually rather than automatically; but after having been adjusted to operate, it acts automatically to retract the scraper from scraping position whenever the space between two adjacent carriers is in register with the scraper. A scraper especially suited for this purpose is illustrated by Fig. 10. It comprises a strip or blade 56 of suitable flexible sheet material such as celluloid. This member is the scraping element which engages the carriers. The scraper is mounted upon a base plate 57 and is clamped thereto by a clamping strip 78. The base plate is mounted upon a plurality of arms 85 affixed to a rock shaft 86. Referring now to Figs. 1, 4, and 5, the rock shaft is provided with an arm 89 by which it is rocked. The free end of this arm is connected to a spring 90 which acts to press the scraper against the carriers. Any suitable means may be provided for holding the scraper out of contact with the carriers when it is desired to have the scraper remain idle. For this purpose I have shown a chain 87 hanging from a fixture (not shown) above the arm. The arm has a stud 88 arranged to enter one of the links of the chain when the scraper is retracted. When the chain is disengaged from such stud, the spring 90 presses the scraper against the carrier. For the purpose of periodically retracting the scraper from scraping position in keeping with the gaps between the carriers, the arm 89 is actuated by a cam 95 affixed to the shaft 66. This cam coacts with a shoe 94 which is affixed to the lower end of the rod 92. The rod is arranged to slide vertically in a socket 91 formed in a coupling member 97. The

coupling member is pivotally connected to the arm 89. A collar 93 is affixed to the rod 92, and, if necessary, washers 98 are placed thereon to engage the lower end of the coupling member when the rod is lifted by its cam, to lift the coupling member and so retract the scraper from scraping position. As shown by Figs. 1, 3 and 9, idle rolls 48 are arranged to engage the upper sides of the carriers near their side edges, to brace the carriers against the upward pressure of the scraper. The batter which is scraped from the carriers drops into a trough 96.

The following are some of the advantages which my apparatus has over other such apparatus in which the egg batter is deposited upon an endless band, although it is not to be understood that the advantages specifically pointed out are the only ones: The use of flat carriers avoids the tendency of the batter to become loosened before being scraped. When the batter is deposited upon an endless band, the flexing of the band in passing around the drums or rolls has a loosening effect upon the batter. Repeated flexing and straightening of a band conveyer causes the band to crack and break, so that new bands must be substituted from time to time. This objection is overcome by using flat carriers mounted upon chain conveyers. The stiff carriers of my apparatus, being invertible, are capable of being coated on both sides, whereas a flexible carrier of the band type can be coated only on one side, its other side being necessarily left uncoated because it engages the drums or rolls by which it is conducted. The egg-receiving surfaces of my carriers may be made of zinc or any other suitable material not chemically affected by the egg. Zinc would not be suitable for a band carrier, because it has not sufficient flexibility to be bent around drums or rolls without cracking. The relatively long traverse of my carriers through a drying chamber of relatively small cubic area, due to the zigzag path of the carriers, permits a relatively high speed and a correspondingly rapid removal of the egg from the feed trough, the egg being thereby removed from the trough and dried before it has sufficient time to deteriorate in quality. The speed of the carriers, being faster than the peripheral speed of the feeding cylinder, stretches the film of batter deposited upon the carriers, the thickness of the film being thereby reduced so that the film may be more quickly dried than would otherwise be the case. The egg is fed upon horizontal surfaces which because of their horizontal arrangement overcome the tendency of the egg to run or spread beyond the desired area. In apparatus which employs an endless band to receive the egg, it has been the practice hitherto to feed the egg to substantially vertical surfaces, and, so far as I am aware, I am the first to have combined the carrying means and the feeding means so as to feed the egg to horizontal surfaces.

I claim:

1. A drying apparatus, comprising a carrier having a carrying surface, means for causing said carrier to traverse an endless path, and means arranged to keep said surface of said carrier substantially horizontal and uppermost throughout the major portion of each cycle of its traverse.

2. A drying apparatus, comprising a carrier, means for causing said carrier to traverse an endless path, means arranged to keep said carrier in one angular position throughout a portion of each cycle of its traverse, and means arranged to invert said carrier once only for each cycle of its traverse.

3. A drying apparatus comprising a carrier having two opposite carrying surfaces, means arranged to cause said carrier to traverse an endless path, said carrier being invertible with relation to said means, and means arranged to maintain first one and then the other of said surfaces uppermost during the traverse of the corresponding portions of successive cycles.

4. A drying apparatus, comprising a carrier, means for causing said carrier to traverse a path including a zigzag course in separate horizontal planes, and means arranged to keep one and the same side of said carrier uppermost throughout said zigzag course.

5. A drying apparatus comprising a carrier, means for causing said carrier to traverse an endless path including a zigzag course in separate horizontal planes, means arranged to keep one and the same side of said carrier uppermost throughout said zigzag course, and means arranged to invert said carrier once during each cycle of traverse.

6. A drying apparatus, comprising an endless conveyer consisting of two parallel endless bands, wheels coacting with said bands to conduct the same, a carrier arranged between and pivotally connected to said bands, means arranged to keep one side of said carrier uppermost throughout the major portion of its traverse, and means arranged to invert said carrier once for each cycle of traverse.

7. A drying apparatus, comprising an endless conveyer consisting of a pair of cooperative endless bands, a carrier arranged between and carried by said bands, wheels coacting with said bands to conduct the same, said wheels being arranged to cause said bands and carrier to traverse a zigzag course, and means arranged to keep one side of said carrier uppermost throughout the traverse of said zigzag course.

8. A drying apparatus comprising a car-

rier, means arranged to cause said carrier to traverse a zigzag course, means arranged to cause a current of air to traverse said zigzag course, and means arranged to keep said carrier in one angular position throughout said zigzag course.

9. A drying apparatus, comprising a carrier having a substantially horizontal carrying surface, a cylinder arranged above said surface and tangential thereto, means arranged to feed egg batter to the periphery of said cylinder, means arranged to move said carrier, and means arranged to rotate said cylinder.

10. A drying apparatus comprising a carrier, a drying chamber, means arranged to cause said carrier to traverse an endless course a portion of which is inside said drying chamber and the remainder of which is outside said drying chamber, means arranged to keep said carrier in one angular position throughout the drying-chamber portion of one cycle of its traverse and in another angular position throughout the drying-chamber portion of another cycle of its traverse, and means arranged to change the angular position of said carrier from cycle to cycle.

11. A drying apparatus, comprising a plurality of carriers movable in unison and arranged in sequence with spaces separating their front and rear ends, a scraper arranged to coact with said carriers, means arranged to keep said scraper pressed against each carrier until after the rear end of each carrier has passed beyond scraper-engaging position, and means arranged to retract said scraper from the path of the carriers while the front end of each carrier is in register with the carrier-engaging portion of said scraper.

12. A drying apparatus, comprising a drying chamber having baffle plates arranged one above another in overhanging relation and forming a zigzag course, a carrier, means arranged to cause said carrier to traverse said zigzag course, said baffle plates being spaced too closely to permit inversion of said carrier, and means arranged to keep said carrier in one predetermined angular position while traversing said course.

13. A drying apparatus, comprising a drying chamber having baffle plates arranged one above another in overhanging relation and forming a zigzag course, means arranged to cause said carrier to traverse an endless path including said zigzag course, said baffle plates being spaced too closely to permit inversion of said carrier, means arranged to keep said carrier in one predetermined angular position while traversing said zigzag course, and means arranged to give said carrier different angular positions for successive traverses of said course.

14. A drying apparatus comprising a carrier, means for causing said carrier to traverse an endless path, said carrier being capable of occupying different angular positions relatively to said means, means arranged to keep said carrier in one angular position throughout a portion of one cycle of its traverse and in another angular position throughout said portion of another cycle of its traverse, and means arranged to change the angular position of said carrier from cycle to cycle.

15. A drying apparatus, comprising a drying chamber, a carrier, means arranged to cause said carrier to traverse a zigzag course in said chamber, means arranged to keep the carrying surface of said carrier in one predetermined angular position while traversing said zigzag course, and baffle plates arranged in said chamber to cause a drying current to traverse said zigzag course, said baffle plates being spaced too closely to permit inversion of said carrier.

16. A drying apparatus, comprising a drying chamber, a carrier having a flat metallic egg-receiving surface, means arranged to conduct said carrier through said chamber, and means arranged to feed egg to said flat surface of said carrier.

17. A drying apparatus, comprising a drying chamber, a rigid carrier having a flat egg-receiving surface, means arranged to conduct said carrier through said chamber with said surface substantially horizontal, and means arranged to feed egg to said flat surface.

18. A drying apparatus, comprising a drying chamber, a series of rigid carriers each having two opposite flat egg-receiving surfaces, means arranged to conduct said carriers along an endless path in and out of said chamber, means arranged to feed egg to said carriers outside said chamber, means arranged to keep said carriers so that said surfaces remain horizontal while coacting with said feeding means and while passing through said chamber, and means arranged to invert said carriers successively to position first one side and then the opposite side in egg-receiving position relatively to said feeding means.

In testimony whereof I have affixed my signature, in presence of two witnesses.

ALBERT L. GALUSHA.

Witnesses:
WALTER P. ABELL,
P. W. PEZZETTI.