

No. 691,722.

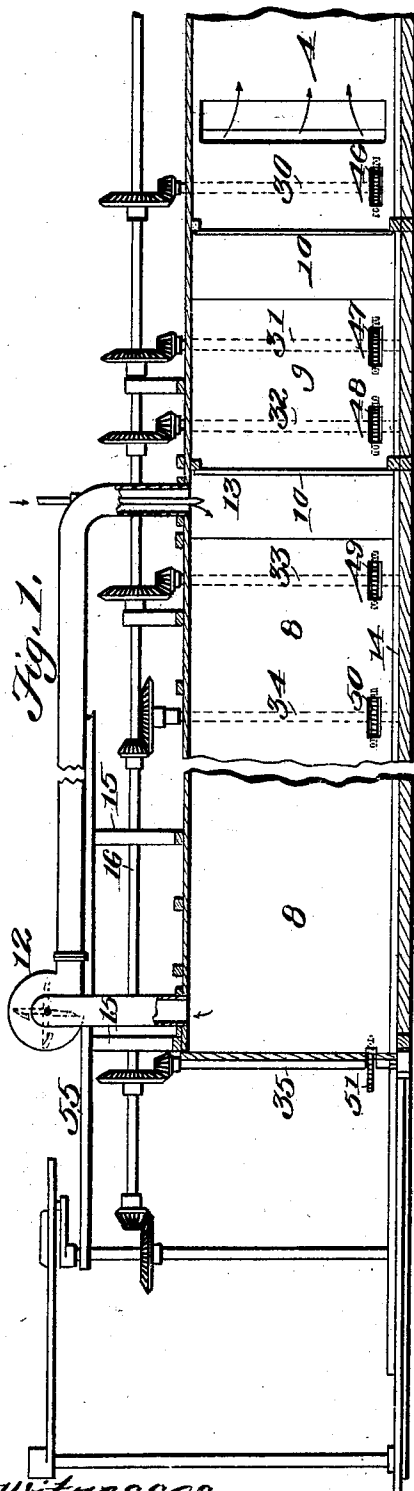
Patented Jan. 21, 1902.

W. E. MARTIN.
TOBACCO DRYING SYSTEM.

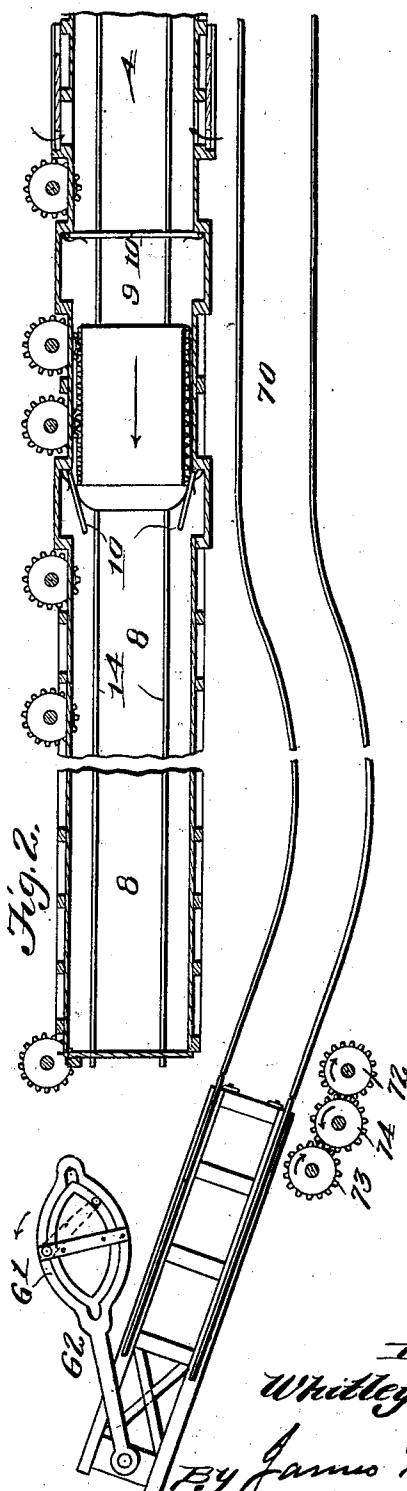
(Application filed July 17, 1900.)

(No Model.)

4 Sheets—Sheet I.



Witnesses
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Att

No. 691,722.

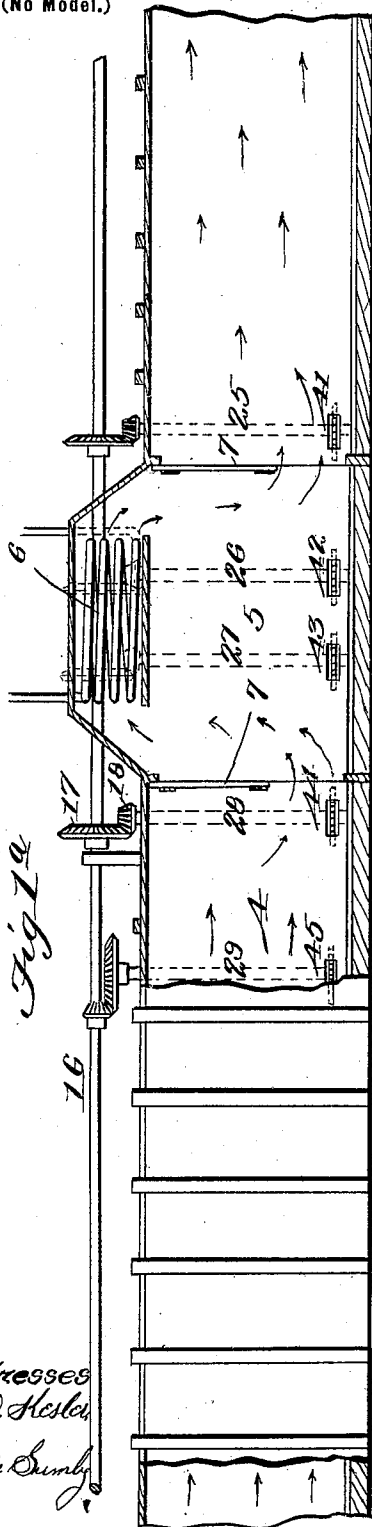
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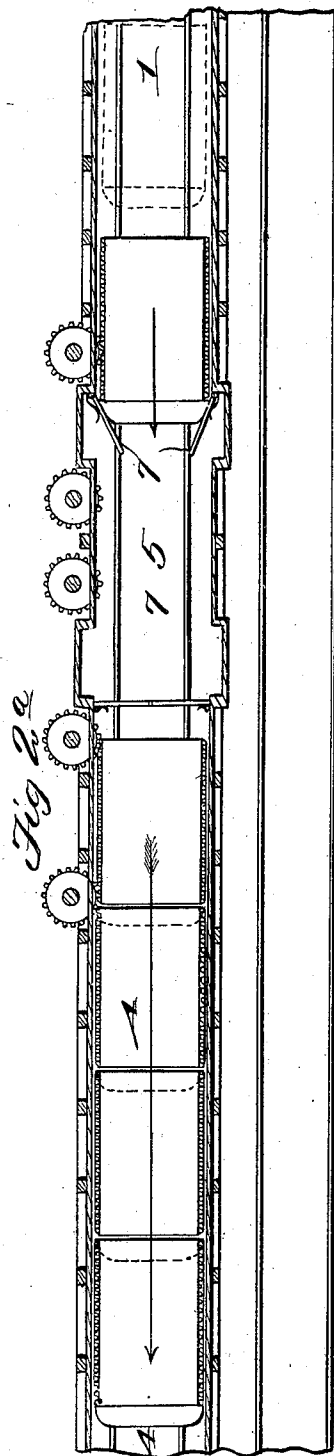
(Application filed July 17, 1900.)

(No Model.)

4 Sheets—Sheet 2.



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4 Sheets—Sheet 3.

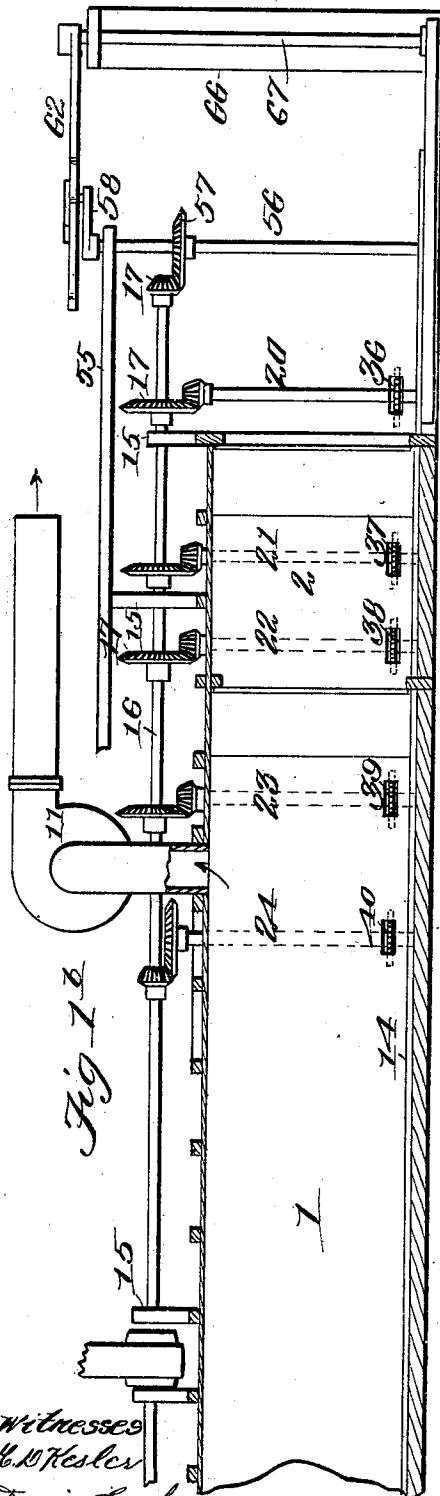


Fig. 1.

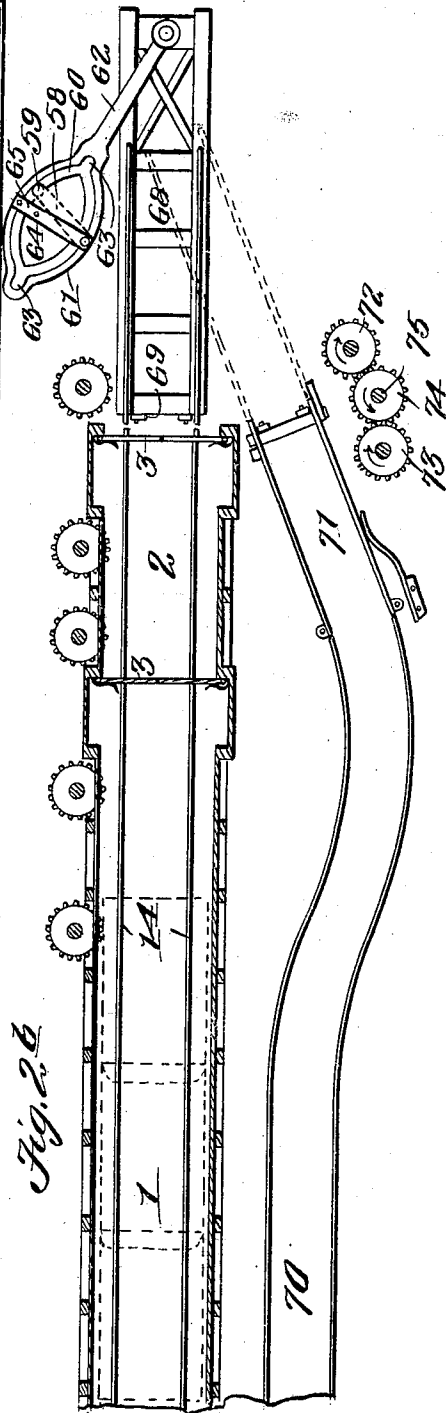


Fig. 2.

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(No Model.)

4 Sheets—Sheet 4.

Fig. 3.

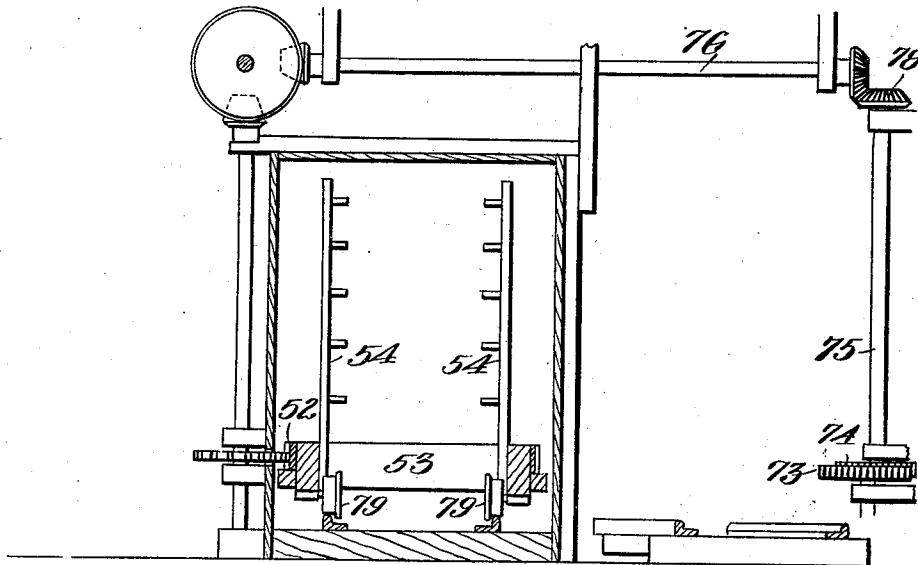


Fig. 4.

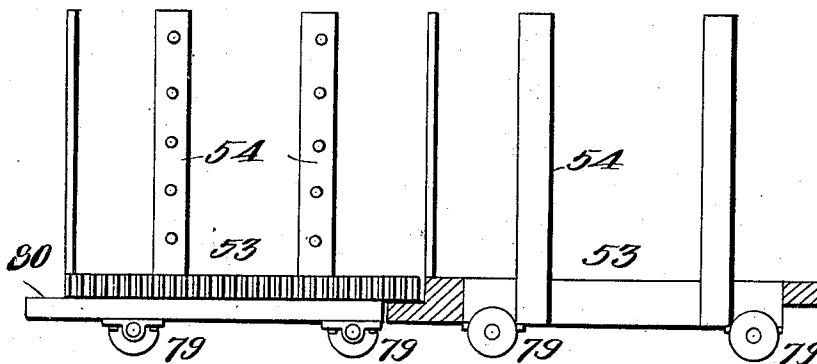
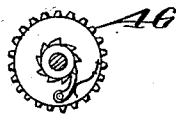


Fig. 5.



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UNITED STATES PATENT OFFICE.

WHITLEY E. MARTIN, OF WINSTON, NORTH CAROLINA, ASSIGNOR OF ONE-HALF TO SALEM IRON WORKS, OF SALEM, NORTH CAROLINA, A CORPORATION OF NORTH CAROLINA.

TOBACCO-DRYING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 691,722, dated January 21, 1902.

Application filed July 17, 1900. Serial No. 23,950. (No model.)

To all whom it may concern:

Be it known that I, WHITLEY E. MARTIN, a citizen of the United States, residing at Winston, in the county of Forsyth and State of North Carolina, have invented new and useful Improvements in Tobacco-Drying Systems, of which the following is a specification.

This invention relates to certain new and useful improvements in tobacco-drying systems, although the same is applicable for use in connection with the drying of sugar, pottery-ware, &c.

The invention aims to provide a drying system by which the tobacco or other objects to be dried may be effected more expeditiously and regularly than by the mode now in general use, the operation of the system being such that the workmen are not required to enter the drying, cooling, or ordering rooms, more particularly the drying-room, in which the heat is usually at a temperature of 160° Fahrenheit, making it positively unendurable.

The invention further aims to provide a drying system by which the tobacco or other objects to be dried may be effected in a thorough and complete manner; furthermore, so as to automatically control the movement of the cars carrying the tobacco or other objects while passing through the various rooms without entering the latter.

The invention further aims to provide a drying system in which each car carrying the tobacco or other object will remain in the drying, cooling, or ordering rooms the proper length of time, so that the operation of drying the contents of each car when leaving the dry-house will be thorough and complete.

The invention further aims to provide a suitable operating as well as switch mechanism for the cars, so that the latter, with the contents to be operated upon, will pass through and from the dry-house in the described manner, overcoming thereby the ordinary mode of pushing the cars.

The invention further aims to provide a drying system which shall be extremely simple in its construction, strong, durable, and efficient in its use, and comparatively inexpensive to manufacture.

In describing the system in detail reference is had to the accompanying drawings, wherein like numerals of reference indicate corresponding parts throughout the several views, and in which—

Figures 1, 1^a, and 1^b when taken together constitute a side elevation. Figs. 2, 2^a, and 2^b when taken together constitute a sectional plan. Fig. 3 is a transverse section. Fig. 4 is a section and side elevation of a pair of cars. Fig. 5 is a detail view of the pawl-and-ratchet connection.

Referring to the drawings by reference-numerals, 1 denotes a drying-chamber, having a vestibule 2 at one end, provided with a spring-actuated door 3 at each end thereof.

4 denotes the cooling-room, in alinement with the drying-room and having interposed between the same a vestibule 5, in which is arranged a steam-coil 6, and is closed by means of a pair of suitably-disposed spring-actuated doors 7. The latter are arranged a suitable distance above the floor of the vestibule to permit the passage of air between the floor and bottom of the door, or, in other words, so that the exhaust of air from the cooling-room will be at the bottom thereof and the supply of hot air to the drying-room will also be at the bottom thereof.

8 denotes the ordering-room, in alinement with the drying and cooling room, and interposed between the same and the cooling-room is a vestibule 9, provided with a pair of spring-actuated doors 10.

The drying room or chamber 1 is in communication at front end with a suitable suction-fan 11 and takes its draft through sliding doors at rear end of cooling-room. The ordering-room 8 is in communication at one end with a suction-fan 12 and at its opposite end provided with a suitably-arranged steam-jet 13.

For causing a circulation of the steam through the tobacco the ordering, cooling, and drying rooms are of the ordinary construction adapted for use in connection with tobacco drying, and extending from end to end thereof is a suitable track 14.

Arranged at one side of the rooms 1, 4, and 8 are a series of vertical supporting-standards

15, in which is journaled a longitudinally-extending drive-shaft 16, carrying a series of bevel-gears 17 for driving a series of bevel-gears 18, carried by the vertically-arranged operating-shafts 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, and 35. The shafts are retained in position by suitable brackets or keepers and carry on their lower ends the drive-gears 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, and 51, respectively, which operate through the one side of the rooms 1, 4, and 8, a suitable opening being provided for that purpose, and are adapted to engage the tooth-rack 52, formed on one side of the body of the cars 53, for imparting movement to the latter. The cars are provided with a suitable rack or crate 54, upon which is mounted the tobacco or other object to be dried, &c.

Adapted to extend from end to end of the rooms 1, 4, and 8 and projecting from each end thereof is a supporting or strengthening brace 55, secured to the top of each of the standards 15 and connected at each end to a vertically-arranged rotating shaft 56, carrying a bevel-gear 57 at its upper end, an arm 58, provided with an upwardly-extending operating-lug 59, engaging into an elliptical-shaped opening 60 in the enlarged end 61 of the operating-lever 62. The apex at each end of the opening 60 is formed with a notch 63, in which is seated the lug 59 during its travel. The elliptical-shaped portion 64 of the enlarged end of the lever 62 is secured in position by means of the cross-rod 65, fastened to the lever 62 in any desirable manner. The bevel-gear 17 upon each end of the drive-shaft 16 is adapted to mesh with the bevel-gear 57 of the shafts 56 for operating the latter.

The reference-numeral 66 denotes a standard for supporting the vertically-arranged rock-shaft 67, rigidly connected at its upper end to the lever 62 and at its lower end with the switch-rail section 68, provided at one end with the antifriction-rollers 69. The ends of the track 14 project outwardly, so that the rails of the switch-section 68 will almost touch the former when they are in alinement therewith and will further permit of the operation of the antifriction-rollers.

Arranged at one side of the rooms 1, 4, and 8 is an auxiliary track 70, provided at one end with a spring-actuated yielding section 71, which is dispensed with at its opposite end. The switch-rail sections 68 are each adapted to be brought into suitable alinement with one end of the auxiliary track 70 and the switch-rails 71.

Mounted upon suitable bearing-studs at one side of one end of the auxiliary track 70 are the switch-rail sections 68, and at the side of the section 71 is a pair of gear-wheels 72 and 73, driven by an intermediate gear 74, carried upon a vertically-arranged shaft 75, suspended by a suitable hanger and operated by means of a transversely-extending shaft 76, driven by the shaft 16 and carrying a miter-

gear 77, meshing with a miter-gear 78, mounted upon the shaft 75.

The cars 53 are provided with the wheels 79 and at the front end thereof with a rounded offset 80 for opening the doors of the vestibules.

The gears 36, 37, 38, 39, 41, 42, 43, 44, 46, 47, 48, 49, 51, 72, 73, and 74 are of the same relative diameter and rotate at the same speed in such a manner as to drive the cars preferably fifteen feet per minute. The gears 40, 45, and 50 are of the same relative diameter and rotate at the same speed in such a manner as to drive the cars preferably five feet in three minutes. The gears and shafts are adapted to operate simultaneously by a suitable power connection with the drive-shaft 16 and cause thereby the suitable operation of the switch-rail sections 68.

The operation of my improved system for drying tobacco or other objects is as follows and will begin the same at the section 71, and as soon as the switch-rail section 68 is brought in alinement therewith (the car, with its contents, having been run upon the section 71) the gear 73 will engage the rack of the car and force the latter upon the switch-rail section 68, when it will be engaged by the gear 72 and the car carried the proper distance upon the switch-rail sections 68. At this time the operation of the lever 62 will swing the switch-rail section 68 in alinement with the track 14. The car when the switch-rail section 68 is in this position is engaged by the gear 36 and forced upon the track 14 toward the drying-room. This operation is repeated by the requisite number of cars until the latter have passed through the rooms 1, 4, and 8. Assuming that a requisite number of cars has been used, the last car engaged by the gear 36, the car will be moved on at the rate of fifteen feet per minute and will reach gear 37 at front end of car before the rear end of the car leaves gear 36, thence on to gear 38, the doors closing after it in two seconds after it reaches gear 38, thence on by 38 to 39, opening another pair of doors, and thence on to 40, the doors closing behind it. The car will then strike the cars ahead just six inches before it engages to center of 40. Now it can be readily seen by noticing gear 41 that the cars driven by gear 40 will lack about one foot of being to gear 41 when the bump by the back car takes place. Now it is to be noticed gear 40 makes five feet in three minutes, or the length of one car, whereas gears 36 37 38 39 72 73 are traveling fifteen feet per minute. Now it can be readily seen a car traveling fifteen feet a minute overtakes four other cars traveling five feet in three minutes and bump, as aforesaid, driving the head cars at the rate of fifteen feet per minute, pushed by the back car after bump. Now it can be seen that five cars are being pushed by gear 39, 40 being loose and provided with a suitable ratchet or clutch by which it cannot be turned the driving way; but a car com-

ing at a faster rate, driven by gear 39, higher speed than gear 40, which is engaged with car-rack, will turn faster by mechanism of the clutch, as can readily be seen, and allow the
 5 car to pass at that speed, so that the gear 41 will engage with the nearest car, and said gear 41 traveling at the same speed as gear 39 it can be easily seen that when the car-rack engages with gear 41 there will be no clash.
 10 Now it can be readily seen that gear 41 has the nearest car engaged and is traveling fifteen feet per minute, that gear 39 has discharged the last car in contact, and that gear 40 has engaged the car released by gear 39.
 15 Now at this very point it will be noticed that there are five cars in the dry-room and that four of these cars are driven by gear 40, it traveling five feet in three minutes and pushing three cars ahead of it. There are four
 20 cars ahead of it; but one of them is engaged with gear 41, and gear 41 is traveling nine times faster than gear 40. Therefore the car that is engaged with gear 41 is traveling nine to one of that which is engaged to gear 40.
 25 Hence gear 41 takes its car right away, bumps the door of the vestibule 5, opens the door by rounded piece on the car, thence on to gear 42, and thence on to gear 43. Now it can be seen
 30 that after the car is fully engaged with gear 43 the vestibule-doors close by means of a suitable spring-hinge. Now it can be seen that the car is engaged with gears 42 and 43, also shut up in vestibule at both ends, but is traveling at the rate of fifteen feet a minute and
 35 bumps the next doors of the vestibule, opens the doors back in the pockets or recesses made for the same, thence on to gear 44, thence on to gear 45 at the same speed until it has struck and passed 45, bumping the car in the
 40 cooling-room, the doors closing behind the car between the cooling-room and vestibule 5. The operation is repeated through the ordering-room until the car is engaged by the gear 51 and run upon the switch-rail section 68,
 45 which is moved at its proper time by the lever 62 to alinement with the auxiliary track 70 and the car run thereon by means of the gears 72 73 and the contents removed. The construction of the lever 62 is such that it
 50 will cause the switch-rail section 68 to swing at the proper time to alternately receive from the ordering-room a car and transfer the same to the auxiliary track 70, or vice versa. The air within the vestibule 5 will become heated
 55 by means of the steam-coil 6, and the doors being arranged above the bottom of the vestibule the hot air is drawn underneath the doors and through the drying-room by means of the fan 11.
 60 I provide the spring-actuated yielding section 71 with a suitable offset, which is engaged by the section 68 to throw the former in alinement with the latter, so that the car therein can be engaged by the gears 72 and
 65 73; otherwise the section 71 is always out of alinement with the switch-rail section 68.

It is thought the many advantages of my

improved system for drying tobacco or other objects can be readily understood from the foregoing description, taken in connection
 70 with the accompanying drawings, and it will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

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

1. In a drying system for tobacco or other material, the combination with a drying, cooling and ordering room provided with a main
 80 track extending therethrough, of an auxiliary track arranged at one side thereof, a switch-section at each end of said main track, a series of cars moving upon the said track and carrying the material to be operated upon,
 85 means for operating said switch-rail sections, and means for propelling the said cars at different rates of speed at different points within said drying, cooling and ordering rooms.

2. In a drying system for tobacco or other
 90 material, the combination with a drying, cooling and ordering room and a main track extending therethrough, of an auxiliary track arranged at one side thereof, a series of cars moving upon the said tracks and carrying the
 95 material to be operated upon, means for transferring said cars from the main to the auxiliary track, and means for propelling said cars at different rates of speed at different points within said drying, cooling and ordering
 100 rooms.

3. In a drying system for tobacco or other material, a main and auxiliary track, a series of cars adapted to be propelled over the said tracks and provided on each side thereof with
 105 a toothed rack, means engaging in the said racks and adapted to propel the said cars at different rates of speed at different points of their travel, and means for transferring the said cars from one track to the other.

4. In a drying system for tobacco or other material, the combination with a main and auxiliary track, of a series of cars operating upon the said tracks and provided in each
 110 side thereof with a toothed rack, and means engaging in the said racks for propelling the said cars at different rates of speed at different points of their travel.

5. In a drying system for tobacco or other material, the combination with a main and
 120 auxiliary track, of a series of cars operating upon the said tracks and provided on each side thereof with a toothed rack, means engaging in the said racks for propelling the said cars at different rates of speed at different
 125 points of their travel, and means for transferring the said cars from one track to the other.

6. In a system for drying tobacco or other material, a main track arranged in a drying,
 130 cooling and ordering room, an auxiliary track, a series of cars operating upon the said track, a switch-section arranged at each end of said track for transferring said cars from one track

to the other, operating means for propelling said cars and varying the speed thereof at different points of their travel, and operating means for the said switch-section.

5 7. In a system for drying tobacco or other material, the combination with a drying, cooling and ordering room, of a main track extending through the said rooms, an auxiliary track arranged at one side of the said rooms, a series
10 of vertically-extending shafts arranged at the opposite side of the said rooms, a suitable gear carried by each of the said shafts, operating means for the said shafts, a series of cars operating upon the said tracks and adapted
15 to be propelled by the said gears, and means for transferring the said cars from one track to the other.

8. In a system for drying tobacco or other material, the combination with a drying, cooling and ordering room, of a main track extending through the said rooms, an auxiliary track
20 arranged at one side of the said rooms, a series of vertically-extending shafts arranged at the opposite side of the said rooms, a suitable gear carried by each of the said shafts, operating means for the said shafts, a series of cars operating upon the said tracks and adapted to be propelled by the said gears, a switch-rail section arranged at each end of
25 said tracks and adapted to transfer the cars from one track to the other, and means for operating said switch-rail sections.

9. In a system for drying tobacco or other material, the combination with a suitable drying, cooling and ordering room, of a main track
35 extending through the said rooms, an auxiliary track arranged at one side of the said rooms, a series of vertically-extending shafts arranged at the opposite side of said rooms, a suitable gear carried by each of the said shafts and adapted to operate within the said rooms, a drive-shaft, connections between said
40 drive and vertically-extending shafts for operating the latter, a series of cars operating upon the said tracks and adapted to be propelled by the said gears, and means for transferring the said cars from one track to the other.

10. In a system for drying tobacco or other material, the combination with a suitable drying, cooling and ordering room, of a main track extending through the said rooms, an auxiliary track arranged at one side of the
50 said rooms, a series of vertically-extending shafts arranged at the opposite side of said rooms, a suitable gear carried by each of the said shafts and adapted to operate within the said rooms, a drive-shaft, connections between said drive and vertically-extending shafts for
55 operating the latter, a series of cars operating upon the said tracks and adapted to be propelled by the said gears, a switch-rail section arranged at each end of said tracks for transferring said cars from one track to the other, and suitable connections between said
60 drive-shaft and switch-rail sections for operation of the latter.

11. In a system for drying tobacco or other material, the combination with a suitable drying, cooling and ordering room, of a main
70 track extending through the said rooms, an auxiliary track arranged at one side of the said rooms, a series of vertically-extending shafts arranged at the opposite side of said rooms, a suitable gear carried by each of the
75 said shafts and adapted to operate within the said rooms, a drive-shaft, connections between said drive and vertically-extending shafts for operating the latter, a series of cars operating upon the said tracks and adapted to be
80 propelled by the said gears, a switch-rail section arranged at each end of said tracks for transferring said cars from one track to the other, a rock-shaft connected to each of the said sections, and connections between the
85 said drive and rock shafts for operating the latter.

12. In a system for drying tobacco or other material, the combination with a suitable drying, cooling and ordering room, of a main
90 track extending through the said rooms, an auxiliary track arranged at one side of the said rooms, a series of vertically-extending shafts arranged at the opposite side of said rooms, a suitable gear carried by each of the
95 said shafts and adapted to operate within the said rooms, a drive-shaft, connections between said drive and vertically-extending shafts for operating the latter, a series of cars operating upon the said tracks and adapted to be
100 propelled by the said gears, a switch-rail section arranged at each end of said tracks for transferring said cars from one track to the other, a rock-shaft connected to each of the said sections, a lever connected to each of the
105 said rock-shafts for operating the same, and connections between said drive-shaft and said lever for operating the latter.

13. In a system for drying tobacco or other material, the combination with a suitable drying, cooling and ordering room, of a main
110 track extending through the said rooms, an auxiliary track arranged at one side of the said rooms, a series of vertically-extending shafts arranged at the opposite side of the
115 said rooms, a suitable gear carried by each of the said shafts and adapted to operate within the said rooms, a drive-shaft, connections between said drive and vertically-extending shafts for operating the latter, a series of cars
120 operating upon the said tracks and adapted to be propelled by the said gears, a switch-rail section arranged at each end of said tracks for transferring said cars from one track to the other, a rock-shaft connected to each of
125 the said sections, a lever connected to each of the said rock-shafts for operating the same, a pin engaging in said lever for operating the same, an arm connected to said pin, and connections between said arm and said drive-
130 shaft for operating the former.

14. In a drying system for tobacco or other material, a main and auxiliary track, a series of cars operating thereon and provided on

each side thereof with a toothed rack, means engaging in said racks for propelling said cars at different rates of speed at different points within said drying, cooling and ordering rooms, a switch-rail section arranged at each end of said tracks and adapted to transfer the cars from one track to the other, a lever suitably connected to each of the sections for operating the same and provided with an elliptical-shaped opening, a drive-shaft, and connections between said drive-shaft and said elliptical-shaped opening for operating said lever.

15. In a drying system for tobacco or other material, the combination with suitable drying, cooling and ordering rooms having vestibules connected thereto with suitable doors, of a main track, an auxiliary track, a series of cars operating upon the said tracks, operating means for the said cars, a spring-actuated yielding section arranged at one end of said auxiliary track, a switch-rail section arranged at each end of the said tracks, and operating means for the switch-rail sections.

16. In a drying system for tobacco or other material the combination with suitable drying, cooling and ordering rooms having vestibules connected thereto with suitable doors, of a main track, an auxiliary track, a series of cars operating upon the said tracks, operating means for propelling said cars and varying the speed thereof at different points of their travel, a spring-actuated yielding section arranged at one end of said auxiliary track, a switch-rail section arranged at each end of the said tracks, and means connected to said operating means for said cars and operating simultaneously therewith for operating said switch-rail sections.

17. In a drying system for tobacco or other material, the combination with a drying, cooling and ordering room and a main track extending therethrough, of an auxiliary track arranged at one side thereof, a series of continuously-moving cars upon the said tracks, and means for propelling said cars at different rates of speed at different points during their travel.

18. In a drying system for tobacco or other material the combination with a drying, cooling and ordering room and a main and auxiliary track, of a series of continuously-moving cars upon the said tracks, means for propelling said cars at different rates of speed at different points during their travel, and means for transferring said cars from the main to the auxiliary track.

19. In a drying system for tobacco or other material, the combination with a drying, cooling and ordering room and a main and aux-

iliary track, of a series of continuously forwardly moving cars upon the said track, means engaging the said cars for propelling the same at different rates of speed at different points during their travel and means for transferring said cars from one track to the other.

20. In a drying system for tobacco or other material, the combination with a drying, cooling and ordering room and a main and auxiliary track, of a series of continuously forwardly moving cars upon the said tracks, and means engaging the said cars for propelling the same at different rates of speed at different points during their travel without the stopping thereof.

21. In a system for drying tobacco, the combination with a drying, cooling and ordering room, each provided with suitable doors, of a main and auxiliary track, a series of cars operating upon said track and provided on each side thereof with a toothed rack and a suitable offset at the forward end for opening said doors, and means engaging in said racks for propelling said cars at different rates of speed at different points of their travel.

22. In a system for drying tobacco, the combination with a drying, cooling and ordering room, each provided with suitable doors, of a main and auxiliary track, a series of cars operating upon said tracks and provided on each side thereof with a toothed rack and an offset at the forward end thereof for opening said doors, means engaging in said rack for propelling said cars, and means for transferring the said cars from one track to the other.

23. In a system for drying tobacco, a series of cars and means located at intervals throughout the drying, cooling and ordering rooms for propelling said cars at different rates of speed at different points of their travel.

24. In a system for drying tobacco, a series of continuously-moving cars operating upon a main and auxiliary track, means for transferring said cars from one track to the other, and means located at intervals throughout the drying, cooling and ordering rooms and engaging said cars for propelling the same and varying the speed thereof at different points of their travel.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WHITLEY E. MARTIN.

Witnesses:

G. A. FOLLIN,
H. J. THOMAS.