

No. 684,779.

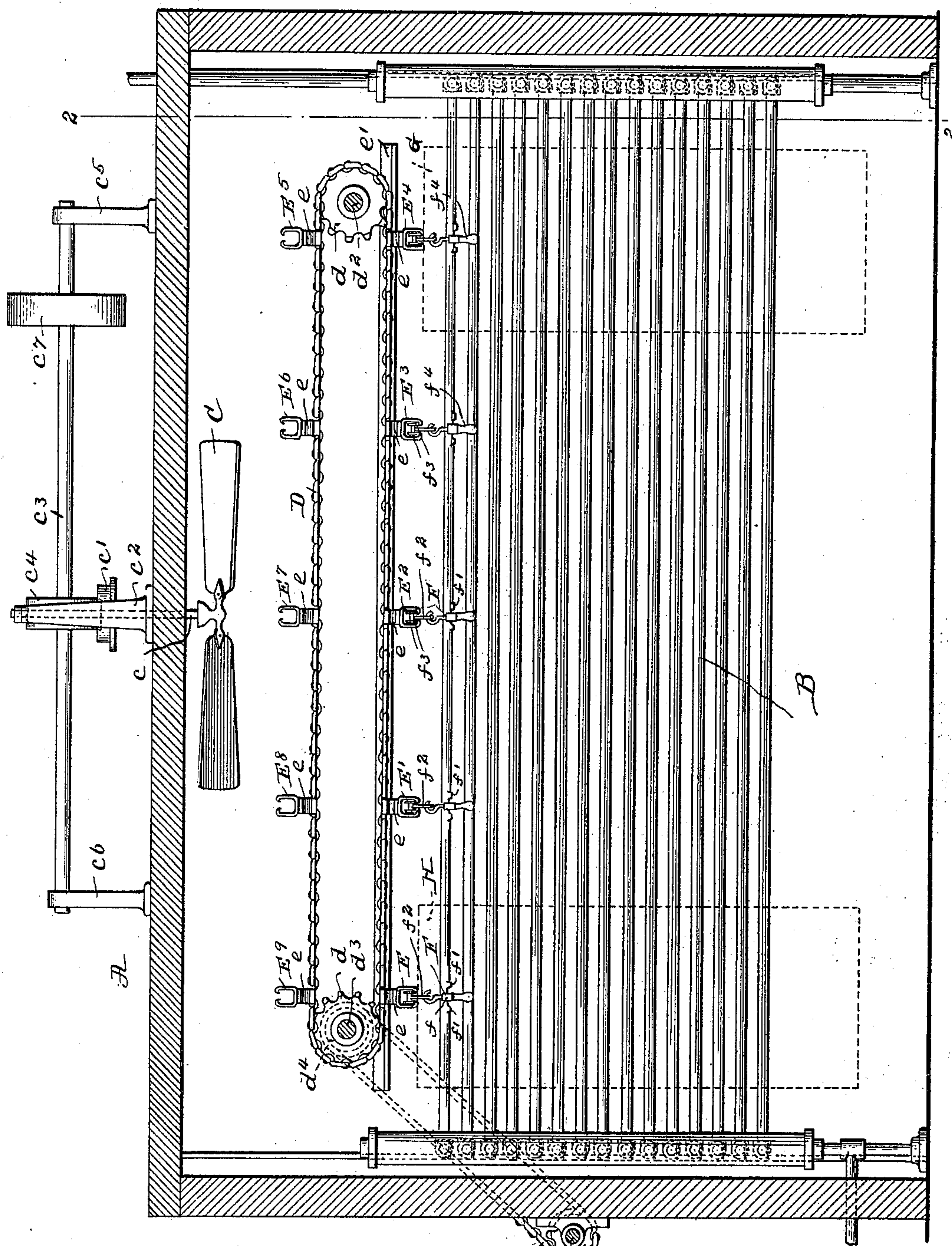
Patented Oct. 22, 1901.

W. M. BARNES.
CLOTHES DRYING MACHINE.

(Application filed Feb. 21, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
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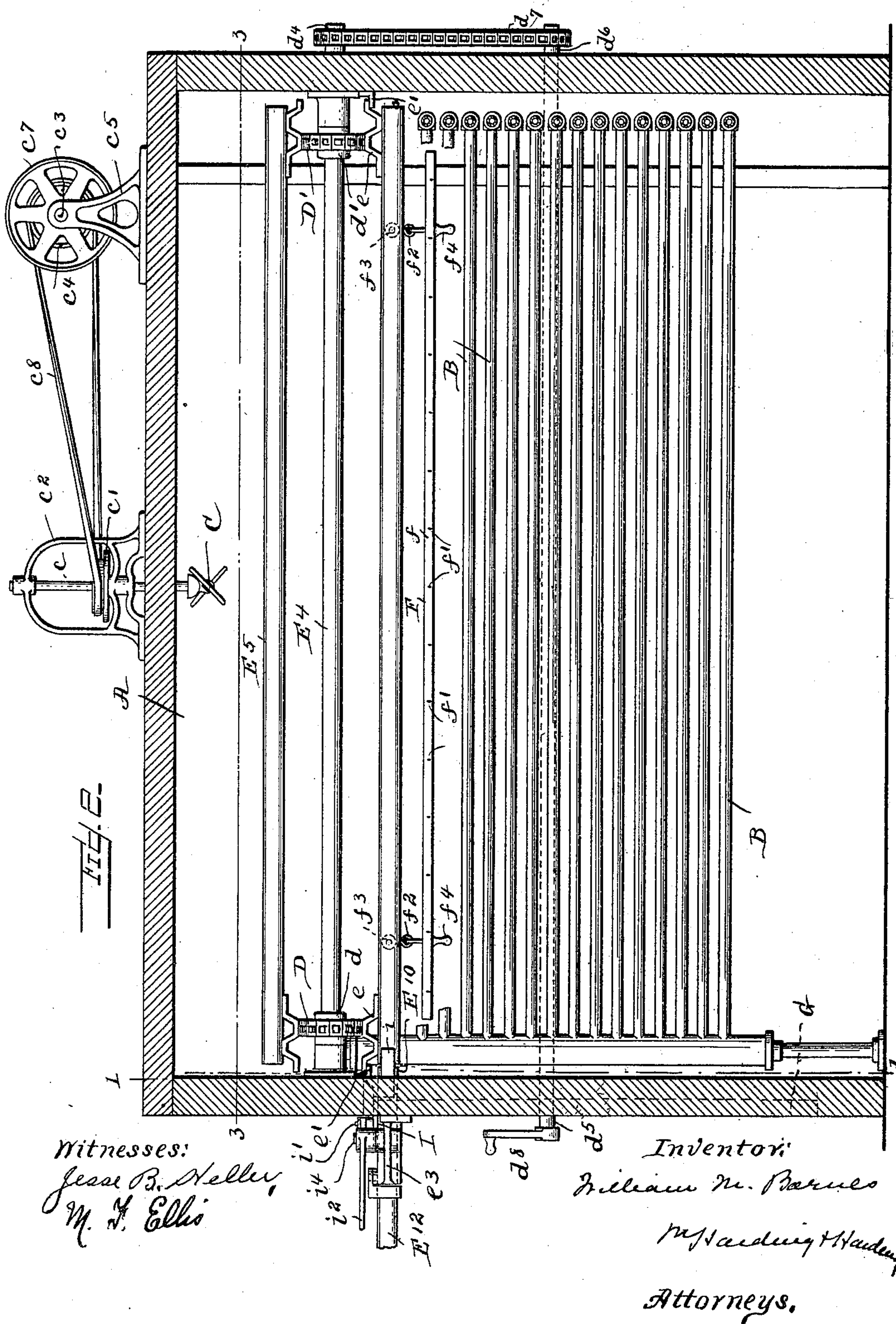
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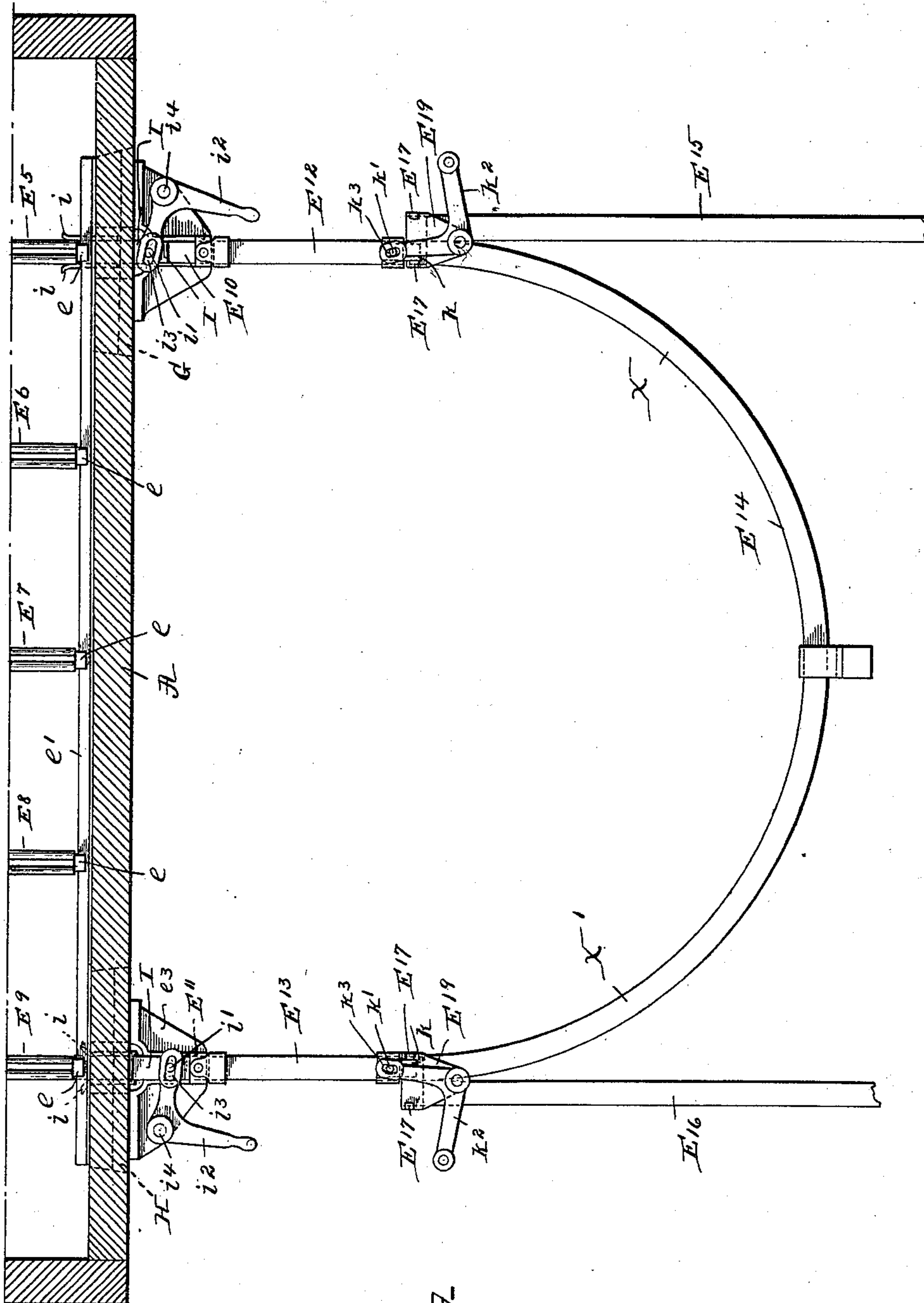
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3 Sheets—Sheet 3.



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FIG. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM M. BARNES, OF PHILADELPHIA, PENNSYLVANIA.

CLOTHES-DRYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,779, dated October 22, 1901.

Application filed February 21, 1901. Serial No. 48,251. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. BARNES, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Clothes-Drying Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My improvement relates to drying-rooms, and particularly to that class of drying-rooms wherein the goods to be dried are arranged in rows therein and introduced and removed one row at a time.

The object of the invention is to permit the loading of all the goods for all the rows at one point and the unloading of all the goods for all the rows at another point; and to this end the invention consists of means whereby the rows of goods may be successively introduced at one side, fed toward the other side, and removed.

The invention also consists in certain more or less specific features of construction whereby the above object is obtained and in certain features of construction relating to the track and carrier therefor.

In the drawings, Figure 1 is a section of the drying-room on the line 1 1 of Fig. 2. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a sectional plan on the line 3 3 of Fig. 2 of a portion of the apparatus, showing the inlet and outlet and arrangement of tracks in front of and exterior to the room.

A is the drying-room; B, the heating-coils therein; C, the fan for circulating the air; D D', an endless conveyer; E E' E² E³ E⁴ E⁵ E⁶ E⁷ E⁸ E⁹, a series of tracks carried by the conveyer D; F F, &c., a series of goods-carriers running in and sustained by the tracks; G, the entrance to the drying-room; H, the exit therefrom; E¹⁰, a short section of track extending through entrance G; E¹¹, a short section of track extending through exit H; E¹² E¹³, short sections of track exterior to the drying-room, hinged, respectively, to sections E¹⁰ and E¹¹; E¹⁴, a section of track exterior to the drying-room, connecting tracks E¹² and E¹³; E¹⁵, a branch track adjacent to track E¹², and E¹⁶ a branch track adjacent to track E¹³.

The heating-coils B extend in a horizontal direction along the two side walls and the rear wall of the drying-room and are preferably located, as shown, nearer to the floor than to the ceiling.

The fan C is located at the top of the room and preferably centrally thereof, as shown. It is secured to the shaft c, which extends up through the top of the room and is supported outside thereof in bearings on a bracket c².

c' is a pulley on shaft c.

c⁴ is a pulley on driving-shaft c³, supported in bearings on brackets c⁵ and c⁶.

c⁷ is a driving-pulley for driving-shaft c³.

c⁸ is a belt connecting pulleys c⁴ and c'. Rotation is thereby imparted to the fan.

The heated air from the coils passes up along the sides to the top of the room and is then displaced toward the center, where the fan forces it down to the floor and displaces it toward the sides, where it is reheated. This insures a continuous circulation of the heated air throughout the whole room and maintains all parts of the room at a substantially uniform heat. A drying-room constructed on this principle is shown in my application, Serial No. 23,560, filed July 14, 1900.

The endless conveyer is composed of two sprocket-chains D and D', extending from side to side of the room and engaging, respectively, the sprocket-wheels d d' and d' d'. One pair of sprocket-wheels d d' is secured to shaft d², and the other pair secured to shaft d³. These shafts extend from front to rear of the room and rotate in bearings secured to the front and rear walls of the room. The shaft d³ extends through the rear wall of the room and has secured to it exterior to the room the sprocket-wheel d⁴.

d⁵ is a shaft rotating in bearings secured to the outside of one of the side walls.

d⁶ is a sprocket-wheel secured to the rear end of shaft d⁵.

d⁷ is a sprocket-chain connecting sprocket-wheels d⁴ and d⁶.

d⁸ is a crank secured to the front end of shaft d⁵. Thus by turning crank d⁸ the conveyer D may be operated.

e e, &c., are clips secured at intervals to the links of the sprocket-chain D. The tracks E to E⁹ are each secured to a pair of these

clips, one clip of the pair being on sprocket-chain D and the other clip on sprocket-chain D'.

e' e', &c., are angle-irons extending along and secured to the front and rear walls of the room. The ends of clips *e* rest on angle-irons *e'*, thereby relieving the chain of the weight of the tracks suspended beneath it.

The tracks E to E⁹ are constructed substantially as shown in my application, Serial No. 23,560, filed July 14, 1900. Each track is of tubular form slotted longitudinally along its bottom. The carrier F may be of any suitable construction. I have shown it as consisting of a bar *f*, having projecting pins *f'*, on which the goods are suspended, and being hooked to upwardly-projecting hooks *f''*, extending through the slot of the track-way and carrying a bearing for the shaft of the rollers *f'''*. There is a pair of rollers on each shaft, and the rollers ride on the solid portion of the bottom of the track on either side of the slot. The bar *f* is provided with handles *f''''*, whereby the carrier may be manually slid back and forth on the track.

The tracks E¹⁰ and E¹¹ are secured to hangers *e''*, secured to the outside of the front wall of the drying-room.

The operation of the apparatus so far as it has been described is as follows: The carrier is moved around to, say, the point X, and the goods are there hung upon the carrier. The operator opens the door of passage G and moves the carrier over tracks E¹⁴, E¹³, and E¹⁰ to the particular track which abuts against track E¹⁰. By turning crank *d''* the endless conveyer may be operated to bring the several tracks carried by it successively into alinement with track E¹⁰, and all the movable tracks carried under the conveyer may be thus successively filled. Presuming that the movable tracks are in the position shown in the diagrams and that tracks E, E', E², and E³ are filled, the operation now proceeds as follows: The door of the passage H is opened and the carrier on track E, containing goods that have been thoroughly dried, is rolled out over tracks E¹¹ and E¹³ to track E¹⁴ to about the point X'. At the same time a carrier that has been previously loaded with a batch of wet goods is rolled over tracks E¹⁴, E¹², and E¹⁰ to track E⁴. The doors are now closed. The dried articles are now removed from the first-named carrier and the empty carrier swung around track E¹⁴ from point X' to point X. As soon as they are ready a batch of wet goods is suspended from this carrier, the crank *d''* is turned to bring track E' into alinement with track E¹¹, and track E⁵ into alinement with track E¹⁰. The same operation is then repeated, and so on successively, all the tracks depending from the conveyer but one being constantly filled when the apparatus is worked to its full capacity. Of course a suitable interval elapses between

the introduction and removal of successive batches of goods, so as to give each batch sufficient time to thoroughly dry.

It is sometimes difficult to bring the movable tracks into exact alinement with the fixed tracks E¹⁰ and E¹¹. I have provided the following means for insuring this: I is a shoe fitting over the tubular track E¹¹. A similar shoe is provided for track E¹⁰. Each shoe extends through the front wall of the drying-room, and its inner end is provided with projecting cam-wings *i i'*. On the top of that part of the shoe projecting outside the drying-room is a pin *i''*. *i'''* is a lever hinged at *i''''* to a bracket on the outside of the front wall of the drying-room and having a slot *i'''''* engaging the pin *i''*. The levers are duplicated for the two shoes. By turning the lever the shoe is moved inwardly until it abuts against the angle-iron *e'*. If the operator has been unable to bring one of the movable tracks into exact alinement with either track E¹⁰ or E¹¹, the inward movement of the corresponding shoe will cause one of the wings *i* thereof to engage the end of the movable track and move it into exact alinement with the adjacent track.

It is often desirable to load the wet goods on the carrier and unload the dried goods at a point far removed from the drying-room. To permit this, I have provided the tracks E¹⁵ E¹⁶, which are adapted to be put in line of tracks E¹² E¹³, respectively, by means of the following mechanism: *k* is a lug extending in front of and above the track E¹³. *k'* is a pin on the top of lug *k*. *k''* is a bell-crank lever pivoted on the bracket E¹⁹. One arm of the bell-crank lever is slotted at *k'''*, the slot engaging the pin *k'*. By turning lever *k''* track E¹³ is swung on its hinge out of line of track E¹⁴ and into line of track E¹⁷. Stops *k''''* are provided on tracks E¹⁶ and E¹⁴ to limit the movement of track E¹³ in each direction. Similar devices are provided to switch track E¹² into connection with either track E¹⁴ or E¹⁵. Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a drying apparatus, in combination, a drying-room, a series of carriers arranged in substantially parallel relation therein and extending toward the front and rear thereof, two openings into the front of the room at opposite sides thereof, and means for sustaining the carriers and moving them successively opposite the said openings, substantially as described.

2. In a drying apparatus, in combination, a drying-room, a series of carriers arranged in substantially parallel relation therein and extending toward the front and rear thereof, two openings into the front of the room at opposite sides thereof, and means for sustaining the carriers and moving all of them simultaneously, whereby two of the carriers

may be simultaneously brought respectively opposite the two openings, substantially as described.

3. In a drying apparatus, in combination, 5 a drying-room, a series of movable carriers arranged in substantially parallel relation therein and extending toward the front and rear thereof, an opening into the front of the drying-room, a conveyer extending transversely 10 of the carriers, means for moving the conveyer, and means enabling the conveyer to move the carriers in the direction of its movement to bring them successively opposite said opening and permitting the carriers to be 15 moved at substantially right angles to the direction of the movement to withdraw them from the room through said opening, substantially as described.

4. In a drying apparatus, in combination, 20 a drying-room, a series of movable tracks therein, carriers adapted to travel on said tracks, a conveyer from which all the tracks are suspended, said conveyer extending transversely of the tracks, and means for moving 25 the conveyer, substantially as described.

5. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, carriers adapted to travel on said tracks, 30 an endless conveyer from which all the tracks are suspended, said conveyer extending transversely of the tracks, and means for moving the conveyer, substantially as described.

6. In a drying apparatus, in combination, 35 a drying-room, heating-coils arranged along the walls thereof, a circulating-fan arranged near the top thereof, a series of movable tracks therein, carriers adapted to travel on said tracks, a conveyer from which all the 40 tracks are suspended, said conveyer extending transversely of the tracks, and means for moving said conveyer, substantially as described.

7. In a drying apparatus, in combination, 45 a drying-room, heating-coils arranged along the walls thereof, a circulating-fan arranged near the top thereof, a series of movable tracks arranged in substantially parallel relation therein, carriers adapted to travel on said 50 tracks, an endless conveyer from which all the tracks are suspended, said conveyer extending transversely of the tracks, and means for moving said conveyer, substantially as described.

55 8. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, carriers adapted to travel on the tracks, an opening into the drying-room, means for 60 moving the tracks in one direction in one horizontal plane to successively bring the several movable tracks opposite said opening, and means to move the tracks in the opposite direction in a different horizontal plane, 65 substantially as described.

9. In a drying apparatus, in combination, a drying-room, a series of movable tracks ar-

ranged in substantially parallel relation therein, carriers adapted to travel on the tracks, two openings into the front of the drying- 70 room at opposite sides thereof, and means for successively bringing the several movable tracks opposite said openings, substantially as described.

10. In a drying apparatus, in combination, 75 a drying-room, a series of movable tracks therein, carriers adapted to travel on the tracks, two openings into the drying-room, means for successively bringing the several movable tracks opposite said openings, a con- 80 necting-track exterior to the drying-room extending from a point opposite one opening to a point opposite the other opening, and means whereby the carriers may be shifted from the connecting-track to the movable track oppo- 85 site one opening and from the movable track opposite the other opening to the connecting-track, substantially as described.

11. In a drying apparatus, in combination, a drying-room, a series of movable tracks 90 therein, carriers adapted to travel on the tracks, two openings into the drying-room, means for moving all the tracks simultaneously whereby two movable tracks may be simultaneously brought respectively opposite 95 the two openings, a connecting-track exterior to the drying-room extending from a point opposite one opening to a point opposite the other opening, and means whereby the carriers may be shifted from the connecting- 100 track to the movable track opposite one opening and from the movable track opposite the other opening to the connecting-track, substantially as described.

12. In a drying apparatus, in combination, 105 a drying-room, a series of movable tracks therein, two openings into the drying-room, a relatively-fixed track extending through each opening, means for successively bringing the several movable tracks opposite the 110 fixed tracks, a track exterior to the drying-room connecting the outer ends of the fixed tracks, and carriers adapted to travel on the tracks, substantially as described.

13. In a drying apparatus, in combination, 115 a drying-room, a series of movable tracks therein, two openings into the drying-room, a relatively-fixed track extending through each opening, means for moving all the movable tracks simultaneously whereby two mov- 120 able tracks may be simultaneously brought respectively opposite the two fixed tracks, a track exterior to the drying-room connecting the outer ends of the fixed tracks, and carriers adapted to travel on the tracks, substan- 125 tially as described.

14. In a drying apparatus, in combination, a drying-room, a series of movable tracks therein, two openings into the drying-room, means for successively bringing the several 130 movable tracks opposite said openings, a connecting-track exterior to the drying-room extending from a point opposite one opening to a point opposite the other opening, a branch

track which terminates at a point opposite one opening, carriers adapted to travel on said tracks, and means whereby the carriers may be shifted from the movable track opposite the last-named opening to either the connecting-track or branch track, or vice versa, substantially as described.

15. In a drying apparatus, in combination, a drying-room, a series of movable tracks therein, two openings into the drying-room, means for successively bringing the several movable tracks opposite said openings, a connecting-track exterior to the drying-room extending from a point opposite one opening to a point opposite the other opening, two branch tracks which terminate respectively at a point opposite the two openings, carriers adapted to travel on said tracks, and means whereby the carriers may be shifted from the movable track opposite each opening to either the connecting-track or branch track or vice versa, substantially as described.

16. In a drying apparatus, in combination, a drying-room, a series of movable tracks therein, two openings into the drying-room, means for moving all the tracks simultaneously whereby two movable tracks may be simultaneously brought respectively opposite the two openings, a connecting-track exterior to the drying-room extending from a point opposite one opening to a point opposite the other opening, two branch tracks which terminate respectively at a point opposite the two openings, carriers adapted to travel on said tracks, and means whereby the carriers may be shifted from the movable track opposite each opening to either the connecting-track or branch track or vice versa, substantially as described.

17. In a drying apparatus, in combination, a drying-room, a series of movable tracks therein, two openings into the drying-room, a relatively-fixed track extending through each opening, two track-sections exterior to the drying-room in line respectively with the two fixed tracks, a connecting-track extending from a point in front of one track-section to a point in front of the other track-section, two branch tracks terminating respectively in front of the two track-sections, means whereby a track-section may be moved into line with the corresponding branch track or the adjacent end of the connecting-track, and carriers adapted to travel on said tracks, substantially as described.

18. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, an opening into the drying-room, a relatively-fixed track extending therethrough, carriers adapted to travel on the tracks, means for successively bringing the several movable tracks opposite the fixed track, and a device for bringing the fixed track and the movable track opposite thereto into exact alinement, substantially as described.

19. In a drying apparatus, in combination,

a drying-room, a series of movable tracks therein, an opening into the drying-room, a relatively-fixed track extending therethrough, carriers adapted to travel on the tracks, means for successively bringing the several movable tracks opposite the fixed track, a shoe slidable on the fixed track having two cam-wings adapted to engage the sides of the movable track opposite the fixed track, and means for sliding said shoe upon the fixed track, substantially as described.

20. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, carriers adapted to travel on the tracks, and sprocket-chains extending transversely of said tracks and from which said tracks are suspended, and means for moving said sprocket-chains.

21. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, a conveyer extending transversely of said tracks, clips secured to the conveyer, the tracks being secured to and supported from said clips, and means for moving said conveyer, substantially as described.

22. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, a conveyer extending transversely of said tracks, clips secured to the conveyer, the tracks being secured to and supported from said clips, supports on the side walls of the drying-room extending parallel to the conveyer and engaged by said clips, and means for moving said conveyer, substantially as described.

23. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, carriers adapted to travel on the tracks, endless sprocket-chains extending transversely and supporting said tracks, sprocket-wheels about which said sprocket-chains extend, two shafts each of which has secured thereto one of the sprocket-wheels for each sprocket-chain, and means for turning said shaft, substantially as described.

24. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, carriers adapted to travel on the tracks, endless sprocket-chains extending transversely of and supporting said tracks, clips secured at intervals to links of the sprocket-chains, the tracks being secured to and supported from said clips, and means for moving the sprocket-chains, substantially as described.

25. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, carriers adapted to travel on the tracks, endless sprocket-chains extending transversely of and supporting said tracks, clips secured at intervals to links of the sprocket-

chains, the tracks being secured to and supported from said clips, supports on the side walls of the drying-room extending parallel to the sprocket-chains and engaged by said clips, and means for moving said sprocket-chains, substantially as described.

26. In a drying apparatus, in combination, a drying-room, heating-coils arranged along the walls thereof, a circulating-fan arranged near the top thereof, a series of movable tracks therein, two openings in said drying-room, a track exterior to the drying-room extending from a point in front of one opening to a point in front of the other opening, a conveyer from which all the tracks are suspended, said conveyer extending transversely of the tracks, means for moving said conveyer, and carriers adapted to travel on said tracks, substantially as described.

27. In a drying apparatus, in combination, a drying-room, heating-coils arranged along the walls thereof, a circulating-fan arranged near the top thereof, a series of movable tracks therein, two openings in said drying-room, a track exterior to the drying-room extending from a point in front of one opening to a point in front of the other opening, a conveyer extending transversely of the tracks, clips secured at intervals to the conveyer, supports extending along the walls of the room parallel to the conveyer and engaged by said clips, the movable tracks being suspended from said clips, means for moving said conveyer so as to bring two movable tracks of the series opposite the respective ends of the connecting-track, and carriers adapted to travel on said tracks, substantially as described.

28. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in parallel relation therein, carriers adapted to travel on the tracks, and a plurality of endless conveyers, upon which the movable tracks are sustained, each conveyer traveling in one vertical plane, substantially as described.

29. In a drying apparatus, in combination, a series of carriers arranged in substantially parallel relation therein, and extending toward the front and rear thereof, an opening in the front of the room, and a plurality of endless conveyers, upon which the movable

tracks are sustained, each conveyer moving in one vertical plane, and bringing the movable tracks successively opposite the said opening, substantially as described.

30. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, and extending toward the front and rear thereof, corresponding ends of all the tracks being in substantially the same vertical plane, an opening in the front of the drying-room, a relatively-fixed track extending through said opening, carriers adapted to travel on the tracks, and means for successively bringing the several movable tracks opposite the fixed track, substantially as described.

31. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, and extending toward the front and rear thereof, two openings in the drying-room, a relatively-fixed track extending through each opening, carriers adapted to travel on the tracks, and means for moving the movable tracks successively toward one side of the room in one horizontal plane and toward the other side of the room in a different horizontal plane, and for successively bringing them opposite the fixed tracks, substantially as described.

32. In a drying apparatus, in combination, a drying-room, a series of movable tracks arranged in substantially parallel relation therein, and the ends of all the tracks being in substantially the same vertical plane, two openings in the drying-room, a relatively-fixed track extending through each opening, carriers adapted to travel on the tracks, and means for moving each movable track successively in opposite directions and all the movable tracks simultaneously, whereby two movable tracks may be simultaneously brought respectively opposite the two fixed tracks, substantially as described.

In testimony of which invention I have hereunto set my hand, at Philadelphia, this 13th day of February, 1901.

WILLIAM M. BARNES.

Witnesses:

M. F. ELLIS,
M. M. HAMILTON.