

J. C. TALIAFERRO.

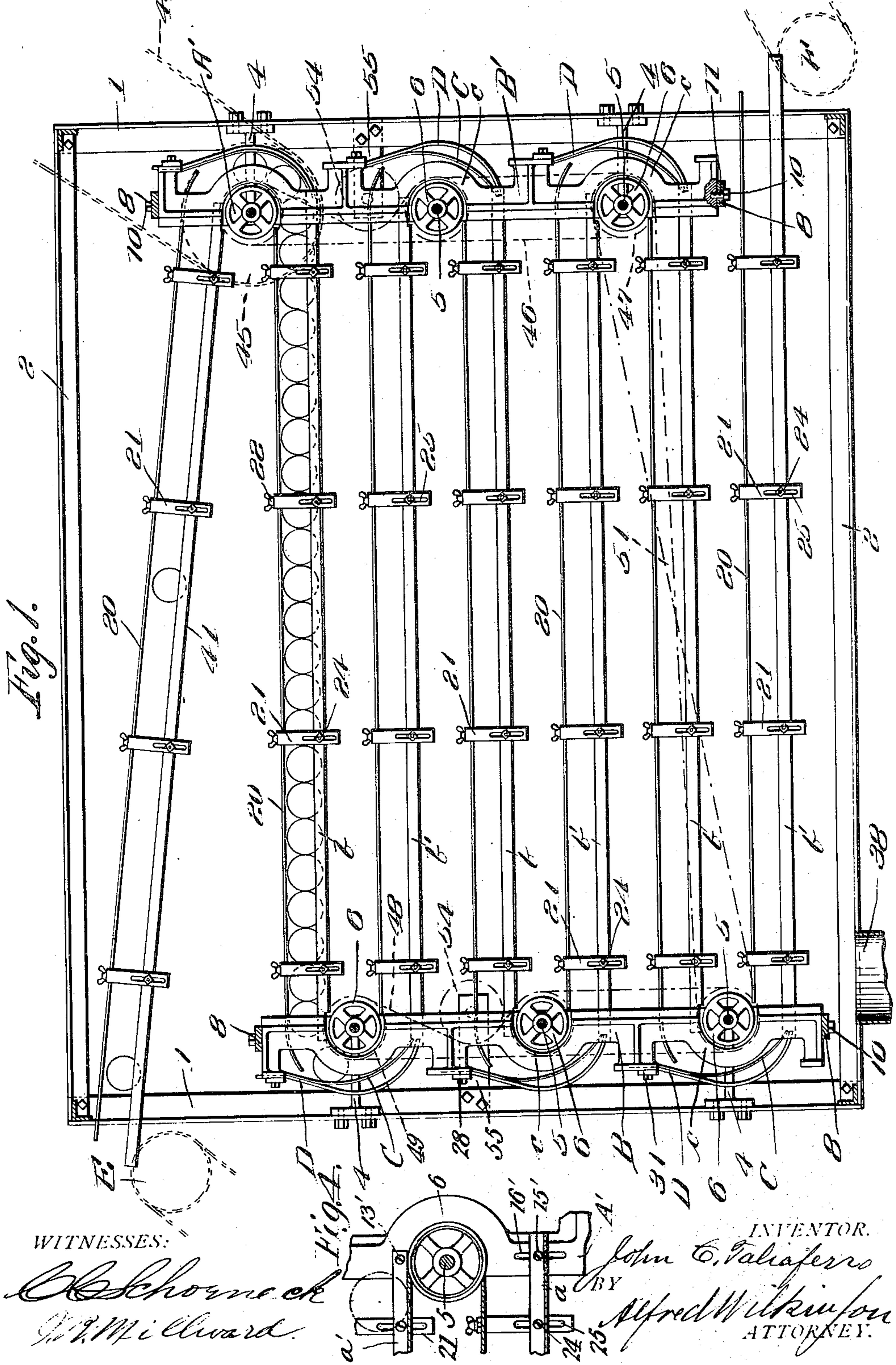
DRYING MACHINE.

APPLICATION FILED OCT. 19, 1907.

Patented Nov. 10, 1908.

2 SHEETS—SHEET 1.

903,620.



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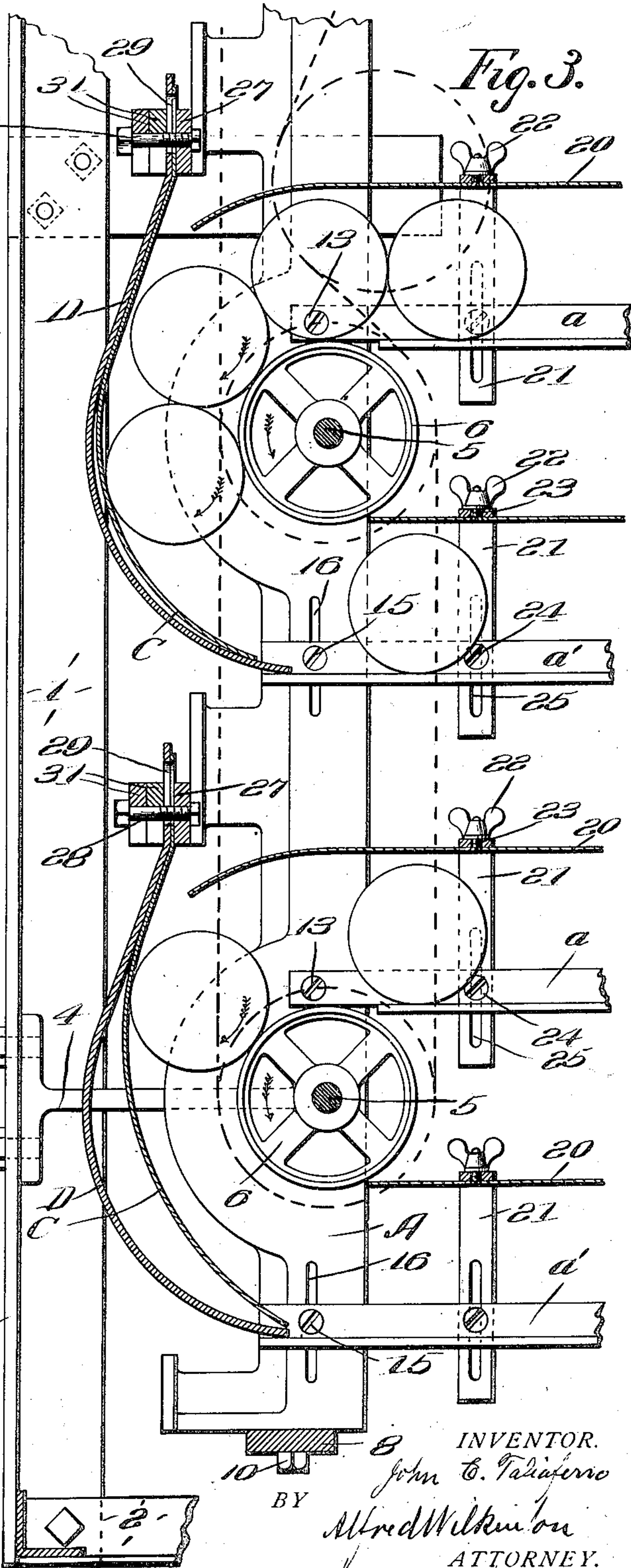
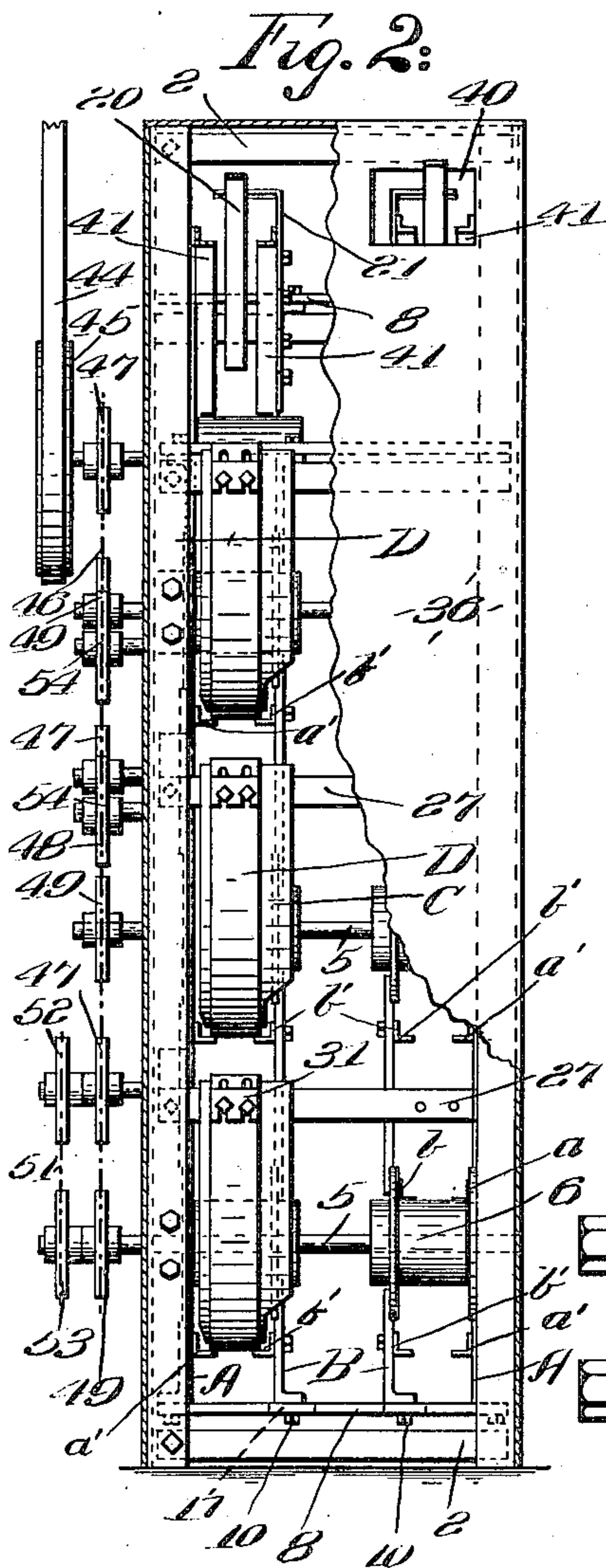
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2 SHEETS—SHEET 2.

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WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## DRYING-MACHINE.

No. 903,620.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed October 19, 1907. Serial No. 398,201.

*To all whom it may concern:*

Be it known that I, JOHN C. TALIAFERRO, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented new and useful Improvements in Drying-Machines, of which the following is a specification.

My invention relates to a machine for drying cans and similar articles, after they have been finished and tested, and before they are stored or shipped.

The machine consists essentially of a frame of angle-irons, or other sufficiently stiff and strong bars, on which are supported a series of tracks, one above the other. These tracks are open at the ends, and are substantially parallel and horizontal. At the ends of the tracks, and alternately arranged at the ends of the machine are the curved springs, which maintain the cans, as they pass over the ends of the tracks in their passage through the machine in frictional contact with the friction-rollers. These rollers are arranged alternately at front and rear below the ends of the alternate tracks, and are rotated, the front rollers in one direction and the rear rollers in the reverse, to drive the entire series of cans forward through the drier, with a gentle pressure and a steady movement. The tracks and springs may be arranged adjustably for cans or other articles of different sizes.

Covering material, preferably non-conducting, is secured to the frame to form a box inclosing the aforesaid parts and the cans. Through the box is forced a warm or hot draft.

My invention is shown in the drawing herewith in which the reference numerals and letters of the description indicate the corresponding parts in all the figures.

Figure 1 is a vertical section between the two tracks. Fig. 2 is an end elevation with a portion of the end plate broken away, and one series of springs and guards removed. Fig. 3 is an enlarged, vertical, longitudinal section of the portion of the front of the drier, taken on a line between the rails of a track. Fig. 4 is an unenlarged section of a portion of the rear of the machine corresponding to Fig. 3 to show the arrangement of the rear ends of the rails with reference to the brackets.

In the figures 1 1 and 2 2 indicate respectively the vertical and horizontal angle-

irons or bars, forming the frame of the machine, on which are carried the tracks, operating rollers and friction springs. Two sets of tracks and rollers are here shown in one machine so that two series of cans may be moving through the machine simultaneously. More than two series of tracks and rollers may be arranged in one machine, thus increasing the capacity.

A indicates the front outer brackets bolted to the frame-bars by legs 4. A' indicate the rear outer brackets, which are only partially seen beyond the rollers at the right of Fig. 1. Brackets A and A' are the same in form and supported on legs 4, but arranged at different levels. In these brackets are journaled the shafts 5 5 carrying the friction rollers 6 6. Bolted to the outer brackets are the cross-bars 8 8 carrying the front and rear inner brackets B B', having curved flanges c c to fit around the rollers. The inner brackets are secured to the cross-bars by bolts 10 fitting slots 11, so that these brackets may be adjusted, toward, or from, the outer brackets to accommodate between them cans of different lengths. On the outer brackets are secured the angle-irons a a forming alternately the outer rails of the tracks and on the inner brackets the corresponding rails b b. The rails are all similar with their vertical flanges arranged outwardly to retain the cans in position, but they are arranged with the alternate ends vertically adjustable. As shown, the rails a and b have their front ends fixed to the brackets A and B by bolts 13, but their rear ends slightly vertically adjustable on the rear brackets A' and B' by means of bolts 15' and slots 16'; while the alternate sets of rails a' and b' have their front ends vertically adjustable on the front brackets A—B by means of bolts 15 and slots 16, while their rear ends are fixed to the rear brackets by bolts 13'. See Figs. 3 and 4. As shown, the ends of the rails adjacent to the tops of the rollers are fixed; the ends of the rails below the bottoms of the rollers are vertically adjustable. The special form of angle-iron tracks, here shown is economical and desirable, but may be modified.

To maintain the cans on the tracks, top-plates 20 are provided, carried above the tracks on supports 21, of any suitable construction. These supports and top-plates are preferably vertically adjustable, to ac-



commo-  
 5 date cans of different diameters, by  
 means of bolts 24 fitting slots 25 in the ver-  
 tical arms of the supports. The top-plates  
 are laterally adjustable on the upper arms  
 by means of thumb-screws 22 fitting slots 23,  
 to be centered on the tracks, whether the lat-  
 ter be made narrower or wider by the shift-  
 ing of the inner rails.

On the spring-bars 27 bolted to the outer  
 10 brackets are secured the flat friction springs  
 C, outwardly curved and having their lower  
 tips resting adjacent to the ends of the  
 tracks, or pairs of rails. The springs are  
 braced and held in operative position by  
 15 stiffer metallic guards D. The springs and  
 guards are secured to the spring-bars 27 by  
 bolts 28, fitting slots 29, so that they may be  
 vertically adjustable with reference to the  
 lower rails. The lower tips of the guards  
 20 should be arranged to rest on the rails, as  
 shown. The springs and the guards may be  
 adjusted at different distances from the roll-  
 ers to accommodate cans of different diame-  
 ters, by means of blocks 31, which may be  
 25 arranged between the upper ends of the  
 springs and the spring-bars, or outside the  
 upper ends of the guards as here shown.  
 The arrangement and function of these  
 springs is an important feature of my inven-  
 30 tion, that is to hold the cans against the roll-  
 ers with a yielding but sufficient pressure, so  
 that the rollers will exert sufficient friction  
 on the cans to drive the whole series for-  
 ward through the machine: Therefore I do  
 35 not limit myself to these springs or to  
 springs, as other yielding means might be  
 substituted to hold the cans against the  
 rollers.

A closed box to retain the hot blast is  
 40 formed by securing sheets of material 36  
 (preferably non-conducting material) to the  
 frame. The hot blast is introduced in any  
 suitable manner, preferably into the bottom  
 of the box as at 38.

45 The cans may be delivered to the drier by  
 any suitable carrier indicated at E. They  
 are delivered through openings 40 in the  
 metal sheathing to an inclined chute 41,  
 down which they roll to the first roller,  
 50 shown at the upper right hand corner Fig.  
 1. This chute is formed of laterally adjust-  
 able, angle-iron rails, like the tracks and is  
 also provided with a vertically and laterally  
 adjustable top-plate 20. This inclined chute  
 55 may be outside of the box. The dried cans  
 are delivered out of the drier at the lower  
 rear end, and may there be received by any  
 suitable carrier, indicated by F. The rollers  
 at each end all rotate in the same direction,  
 60 but the two sets of rollers rotate in reverse  
 directions, whereby the cans are forced for-  
 ward as they pass from the end of one track  
 to the beginning of the next, as will be easily  
 understood. See the arrows in Fig. 3. The  
 65 rollers may be rotated by any suitable means

for instance, as shown, by a belt 44 and pul-  
 ley 45 secured on the upper rear shaft, and  
 by chain 46 and sprockets 47 on the rear  
 shafts. 48 is a similar chain and 49 are the  
 sprockets on the front shafts. Motion is  
 70 communicated from the rear rollers to the  
 front rollers, by a chain 51 connecting a sup-  
 plementary sprocket 52 on the rear lower  
 shaft to a similar sprocket 53 on the front  
 lower shaft. 54 are sprockets on arms 55  
 75 bolted on the frame, to regulate the tension  
 of the chains. As shown the sprockets and  
 chains are preferably arranged outside of the  
 box. Evidently it is more convenient to in-  
 troduce the cans at the top and deliver them  
 80 out at the bottom, but this direction of move-  
 ment might be reversed, as it would take  
 practically no more power to run them  
 through from the bottom to the top.

While my machine is particularly de-  
 85 signed for drying tin cans, yet it may be  
 modified in form and arrangement of parts  
 and used for drying a variety of cylindrical  
 or round articles, made of metal or other  
 material. 90

Having thus described my invention, what  
 I claim is;—

1. In a drying machine, the combination  
 with a suitable supporting frame, of a series  
 of tracks on the frame arranged one above  
 95 the other, friction rollers journaled at the  
 end of each track, to engage with the arti-  
 cles to be dried as they pass over the end of  
 the tracks, said rollers being arranged at op-  
 posite ends of the alternate tracks, means to  
 100 maintain the articles as they pass from one  
 track to the next in frictional engagement  
 with the rollers, and means to rotate the roll-  
 ers to move the articles through the machine.

2. In a machine for drying cylindrical ar-  
 105 ticles the combination with a suitable sup-  
 porting frame, of a series of substantially  
 parallel tracks arranged thereon one above  
 the other, friction rollers journaled imme-  
 diately below one end of each track to en-  
 110 gage with the articles as they are delivered  
 from said track, said rollers being arranged  
 alternately at the front and rear of the ma-  
 chine below the alternate ends of the track,  
 resilient elements to maintain the articles  
 115 in frictional engagement with the rollers as  
 the articles descend from one track to the  
 track next below, and means to rotate the  
 rollers to move the articles, along the lower  
 tracks. 120

3. In a can drying machine, the combina-  
 tion with a suitable supporting frame, of a  
 series of tracks supported on the frame, said  
 tracks being arranged parallel and in a ver-  
 tical series, a friction roller journaled at one  
 125 end of each track to engage with the cans as  
 they pass from the track, said rollers being  
 arranged below opposite ends of the alter-  
 nate tracks and being spaced from the tracks  
 immediately below to permit the cans to pass 130



under the rollers to said lower tracks, and springs arranged beyond the ends of the tracks and adapted to maintain the cans passing from the upper to the lower tracks in frictional engagement with the rollers said springs being secured on the frame above the upper tracks and having their lower tips extending adjacent to the lower tracks.

4. In a can drying machine, the combination with a suitable supporting frame, of a series of tracks supported on the frame, said tracks being arranged parallel and in a vertical series, a friction roller journaled at one end of each track to engage with the cans as they pass from the track, said rollers being arranged below opposite ends of the alternate tracks and being spaced from the tracks immediately below to permit the cans to pass under the rollers to said lower tracks, springs arranged beyond the ends of the tracks and adapted to maintain the cans passing from the upper to the lower tracks in frictional engagement with the rollers, said springs being secured on the frame above the upper tracks and having their lower tips extending adjacent to the lower tracks, means to adjust said springs vertically and longitudinally and means to rotate the rollers to move the cans forward through the machine.

5. In a can drying machine, the combination with a suitable supporting frame, of a series of tracks supported on the frame, said tracks being arranged parallel and in a vertical series, a friction roller journaled at one end of each track to engage with the cans as they pass from the track, said rollers being arranged below opposite ends of the alternate tracks and being spaced from the tracks immediately below to permit the cans to pass under the rollers to said lower tracks, outwardly curved, flat springs arranged beyond the ends of the tracks and adapted to maintain the cans passing from the upper to the lower tracks in frictional engagement with the rollers, said springs being secured on the frame above the upper tracks and having their lower tips extending adjacent to the lower tracks, corresponding curved guards for the springs arranged outwardly of the springs, said springs and guards being vertically and longitudinally adjustable, and means to rotate the rollers to move the cans forward in the machine from the upper tracks to the lower.

6. In a can drying machine the combination with a suitable frame, of vertical parallel brackets secured on the frame in pairs in front and rear, the corresponding brackets of each pair being laterally adjustable with reference to the other bracket, corresponding rails secured to the brackets forming a vertically arranged series of substantially horizontal tracks, said tracks being substantially of equal length and having open

ends, so that the cans can roll over the ends, two series of friction rollers arranged one series at each end, the rollers being arranged alternately at front and rear, immediately below the ends of the tracks above, and spaced above the ends of the track below, an upper rear roller arranged above the end of the upper rear track, an inclined chute extending from the front of the machine down to said upper rear roller, flat springs to maintain the cans, as they pass from one track to the next, in frictional engagement with the rollers and means to rotate the two series of rollers reversely and in a direction to move the cans forwardly and rearwardly along the alternate rails so that they will move continuously from the chute to a delivery opening in the lower part of the machine.

7. In a can drying machine the combination with a suitable frame, of vertical parallel brackets secured on the frame in pairs at front and rear, the corresponding brackets of each being laterally adjustable with reference to the other brackets of the pair, corresponding angle-irons secured to the brackets forming a vertically arranged series of substantially horizontal tracks, said tracks being substantially of equal length and having open ends, so that the cans can roll over the ends, two series of friction rollers arranged one series at each end, the rollers being arranged alternately at front and rear immediately below the ends of the tracks above, and spaced above the ends of the tracks below, and an upper rear roller arranged above the ends of the upper rear track, an inclined chute extending from the front of the machine down to said upper rear roller, outwardly curved flat springs to maintain the cans as they pass from one track to the next in frictional engagement with the rollers, said springs being slightly vertically adjustable, and means to rotate the two series of rollers reversely and in directions to move the cans forwardly and rearwardly along the alternate rails so that they will move continuously from the chute to a lower delivery opening.

8. In a can drying machine, the combination with a suitable frame, of vertical parallel brackets secured on the frame in pairs at front and rear, the corresponding bracket of each pair being laterally adjustable with reference to the other of the pair, corresponding rails secured to the brackets forming a vertically arranged series of substantially horizontal tracks, said tracks being substantially of equal length and having open ends, so that the cans can roll over the ends, longitudinal top-plates supported above the tracks, said plates being vertically and laterally adjustable with reference to the tracks, two series of friction rollers arranged one series at each end, the rollers be-



ing arranged alternately at front and rear immediately below the ends of the tracks above and spaced above the ends of the tracks below, springs to maintain the cans, as they pass from one track to the next, in frictional engagement with the rollers, means to rotate the two series of rollers reversely and in directions to move the cans forwardly and rearwardly along the alternate rails so that they will move continuously from the chute to a lower delivery opening, suitable sheathing secured to the frame to form a closed box, inclosing the cans and the operative mechanism, said box having an upper opening for receiving the cans and a lower opening for the delivery of the dried cans, and means for introducing a hot blast into the box, substantially as described and shown.

20 9. In a can drying machine, the combination with a suitable frame composed of vertical and horizontal angle-irons securely bolted together, of suitable sheathing secured on the frame to form a substantially closed box, said box having upper openings at its front end to receive the cans and a lower opening at its rear end for the delivery of the cans, pairs of vertically arranged, parallel, outer brackets bolted to the frame at front and rear and adjacent to the ends of the machine, cross bars bolted to said brackets, above and below, at both ends, pairs of inner brackets arranged parallel to the outer brackets at both ends, bolts fitting slots in the cross-bars to secure the inner brackets in position parallel to the outer brackets and laterally adjustable in reference thereto for cans of different lengths, angle-irons forming track rails secured in pairs to the adjacent faces of the inner and outer brackets, forming two series of vertically arranged tracks, the two upper tracks extending outwardly through the front opening end being thence inclined downwardly to the rear of the machine forming a chute to receive the cans, the other tracks being arranged substantially horizontal and parallel and the lowest track extending outwardly through the lower rear opening, two series of shafts journaled in the outer brackets respectively at the front and rear of the machine, said shafts extending outwardly beyond the sheathing at one face of the machine, and being arranged alternately at the front and rear of the machine between the alternate tracks, friction rollers secured on the shafts and arranged to span the space between each outer and each inner bracket, said rollers extending at front and at rear beyond the ends of the tracks and

having the upper points of their peripheries arranged substantially at a level with the upper tracks and the lower portions of their peripheries spaced from the lower tracks to permit the cans to pass between the rollers and the ends of the lower tracks, said inner brackets being formed with curved recesses to fit around the rollers, said tracks being rigidly bolted to the brackets at the track-ends immediately above the rollers and being secured vertically adjustable at the track-ends spaced below the rollers by bolts fitting slots in the brackets, right-angle supports secured to the rails by bolts fitting slots in the vertical arms of the supports to be vertically adjustable on the rails, top-plates arranged longitudinally above the tracks, said top-plates being adjustably secured on the upper, horizontal arms of said supports by thumb-screws fitting slots in the supports to be centered on the tracks, spring cross-bars secured on the outer brackets above the upper tracks, outwardly curved flat springs arranged beyond the rollers at front and rear to maintain the cans in frictional engagement with the rollers, similarly formed metallic guards arranged outwardly of the springs, said springs and guards having upper straight ends vertically slotted and lower tips extending down to and resting on the lower horizontal flanges of the rails, bolts fitting the spring and guard-slots to secure the springs and guards on the spring cross-bars to be vertically adjustable with reference to the lower tracks, blocks fitted to said spring bolts to permit longitudinal adjustment of the springs and guards at varying distances from the rollers for cans of various diameters, sprockets on the outer ends of said shafts, a chain connecting the front sprockets, a chain connecting the rear sprockets, supplementary sprockets on one of the front shafts and one of the rear shafts, a chain connecting said supplementary sprockets, to communicate the rotation of one series of shafts and rollers reversely to the other series, means to rotate one shaft from a source of power and means to deliver a hot blast into the box through an opening in its lower portion, substantially as described and shown.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN C. TALIAFERRO.

Witnesses:

LOUIS C. KLERLEIN,  
G. FERDINAND VOGT.