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PATENTED AUG. 29, 1905.

J. A. ODELL.
APPARATUS FOR DRYING TILE
APPLICATION FILED JULY 13, 1903

4 SHEETS—SHEET 1.

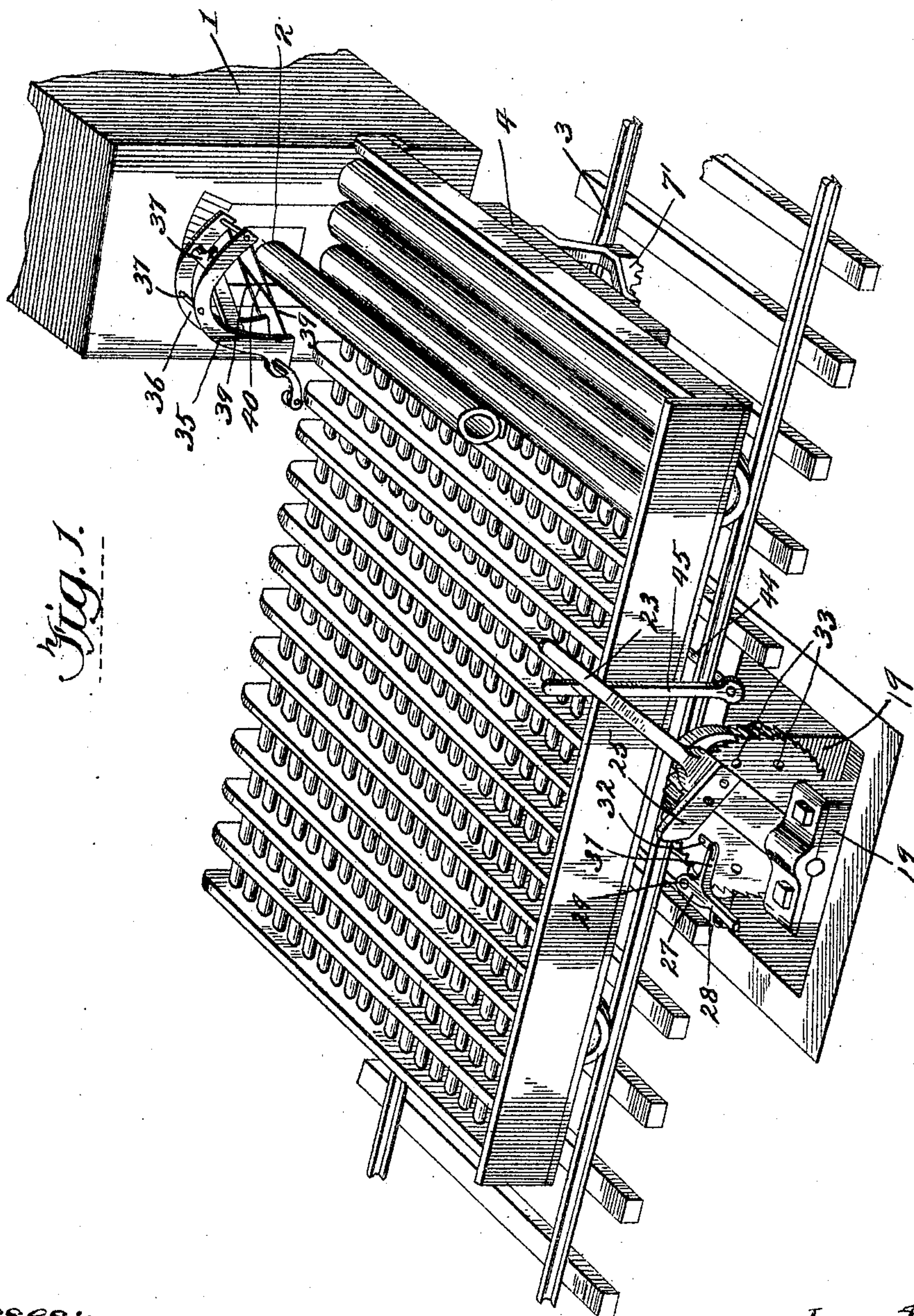


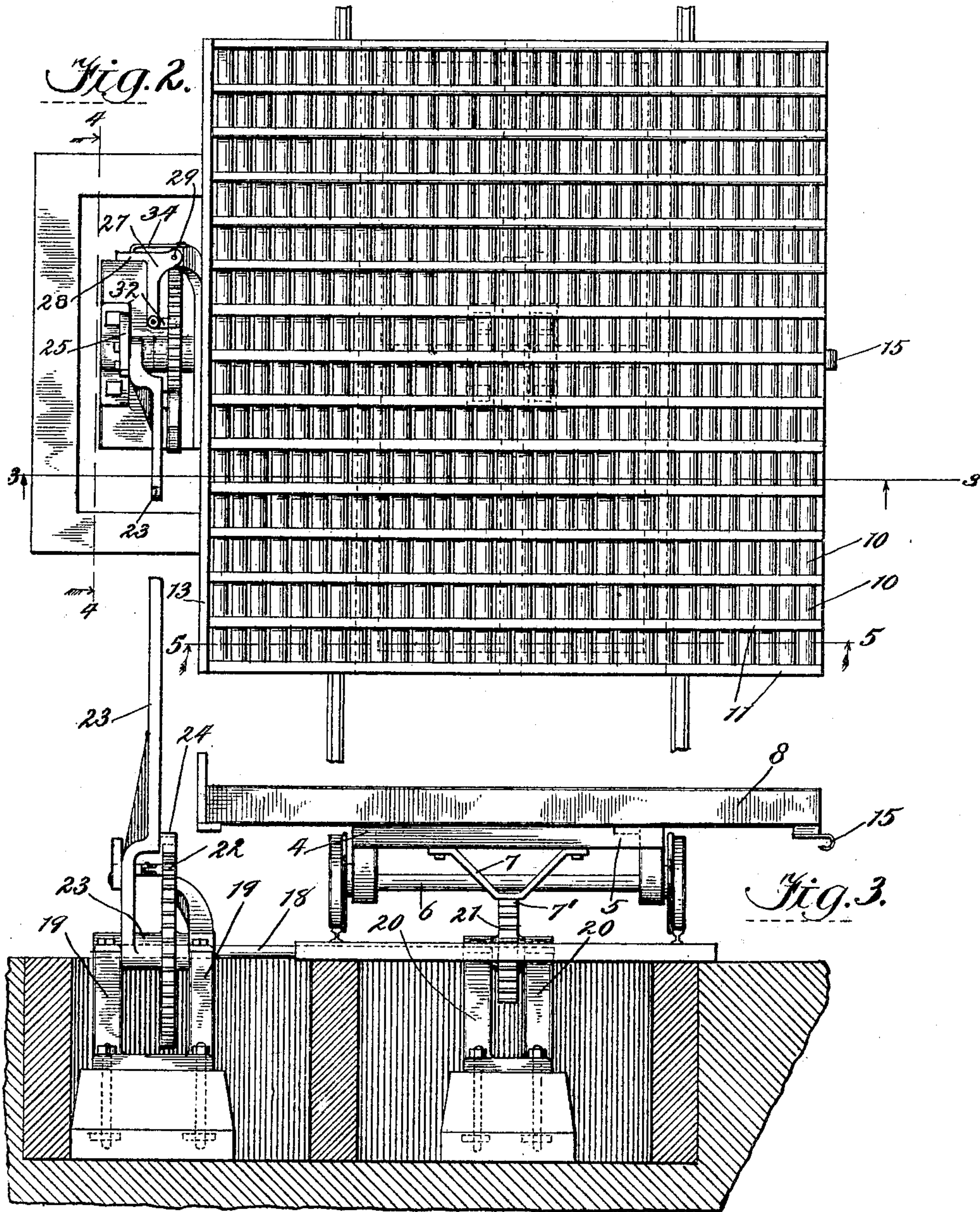
Fig. 1.

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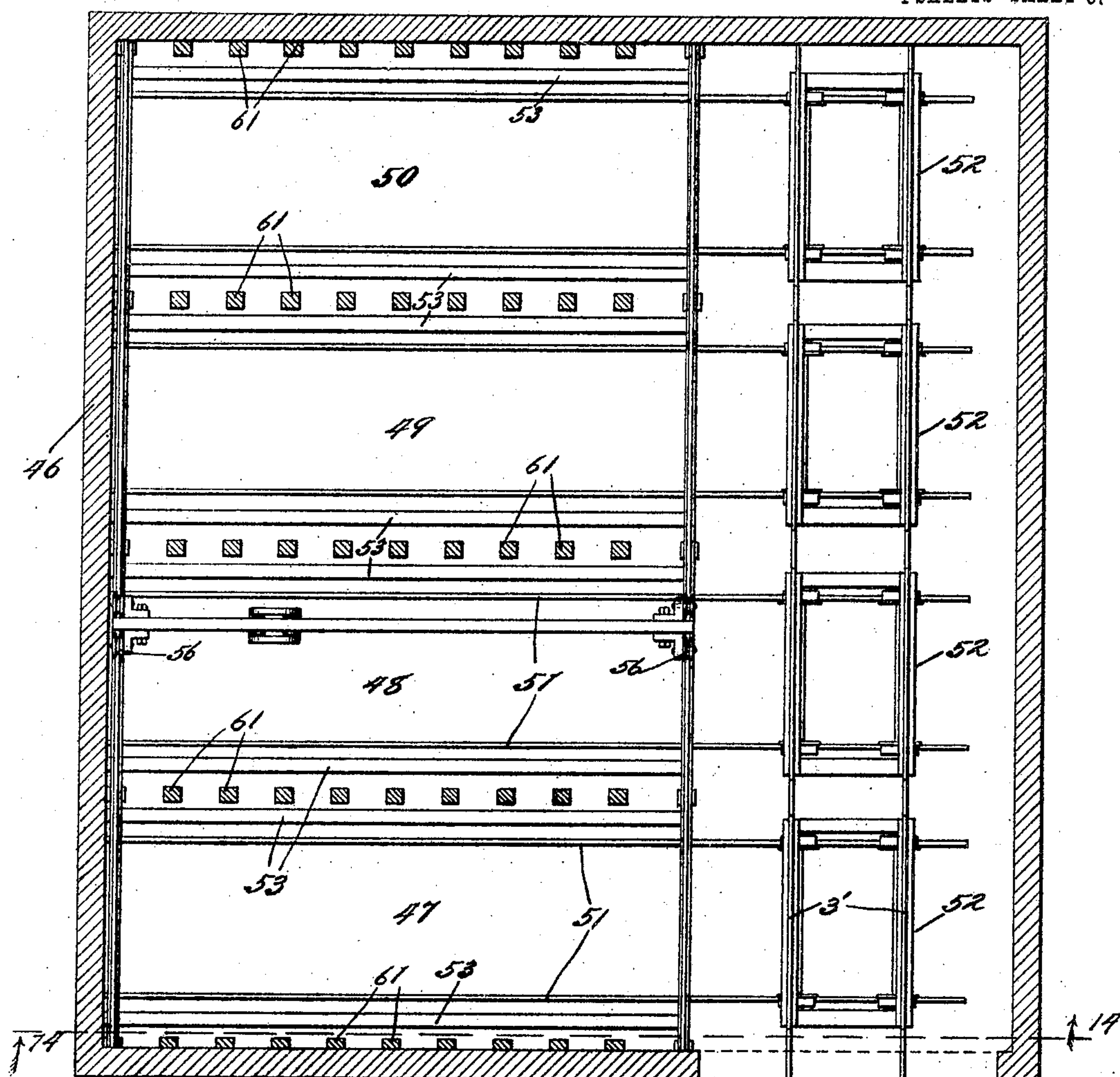
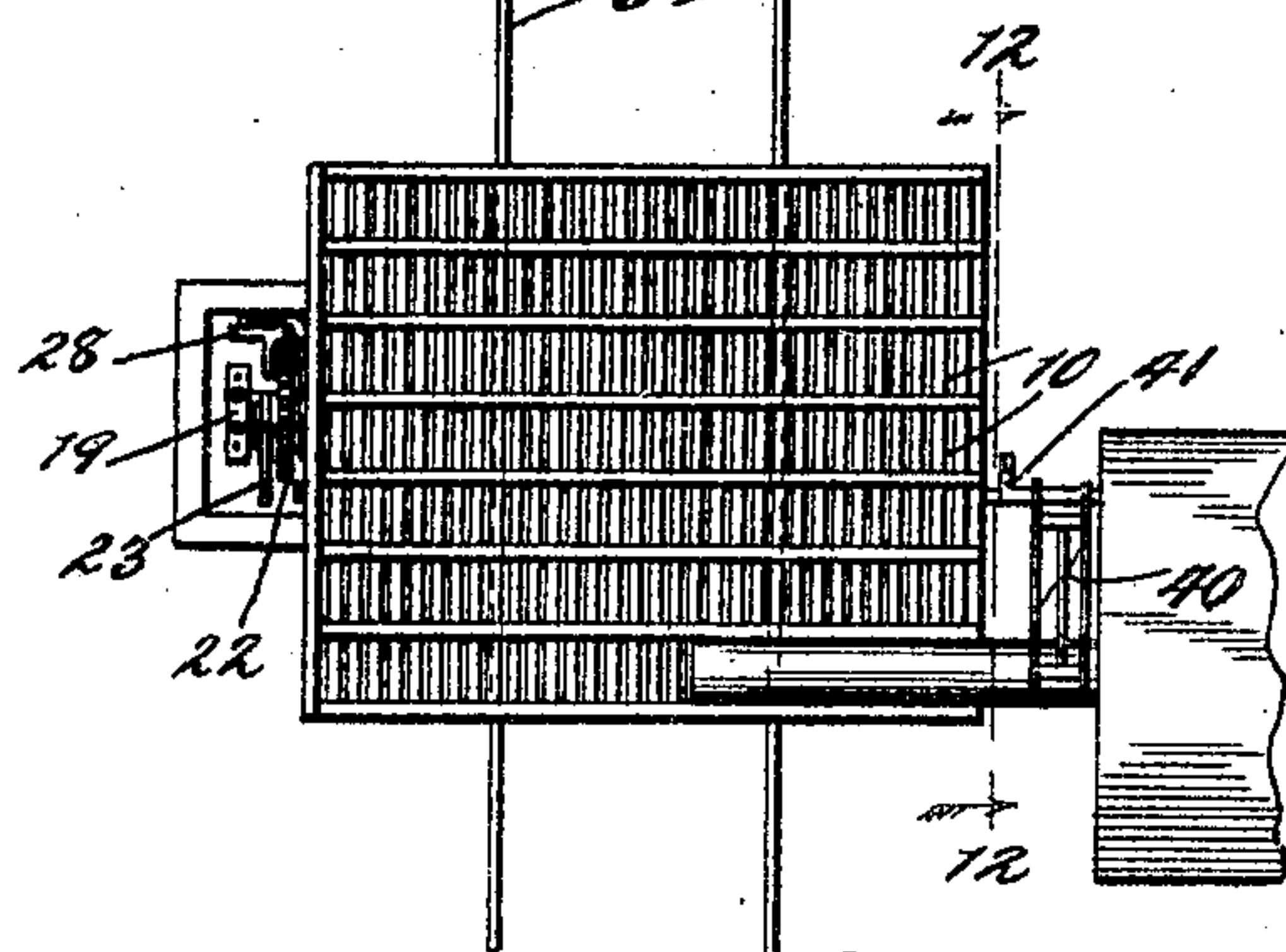


Fig. 7.

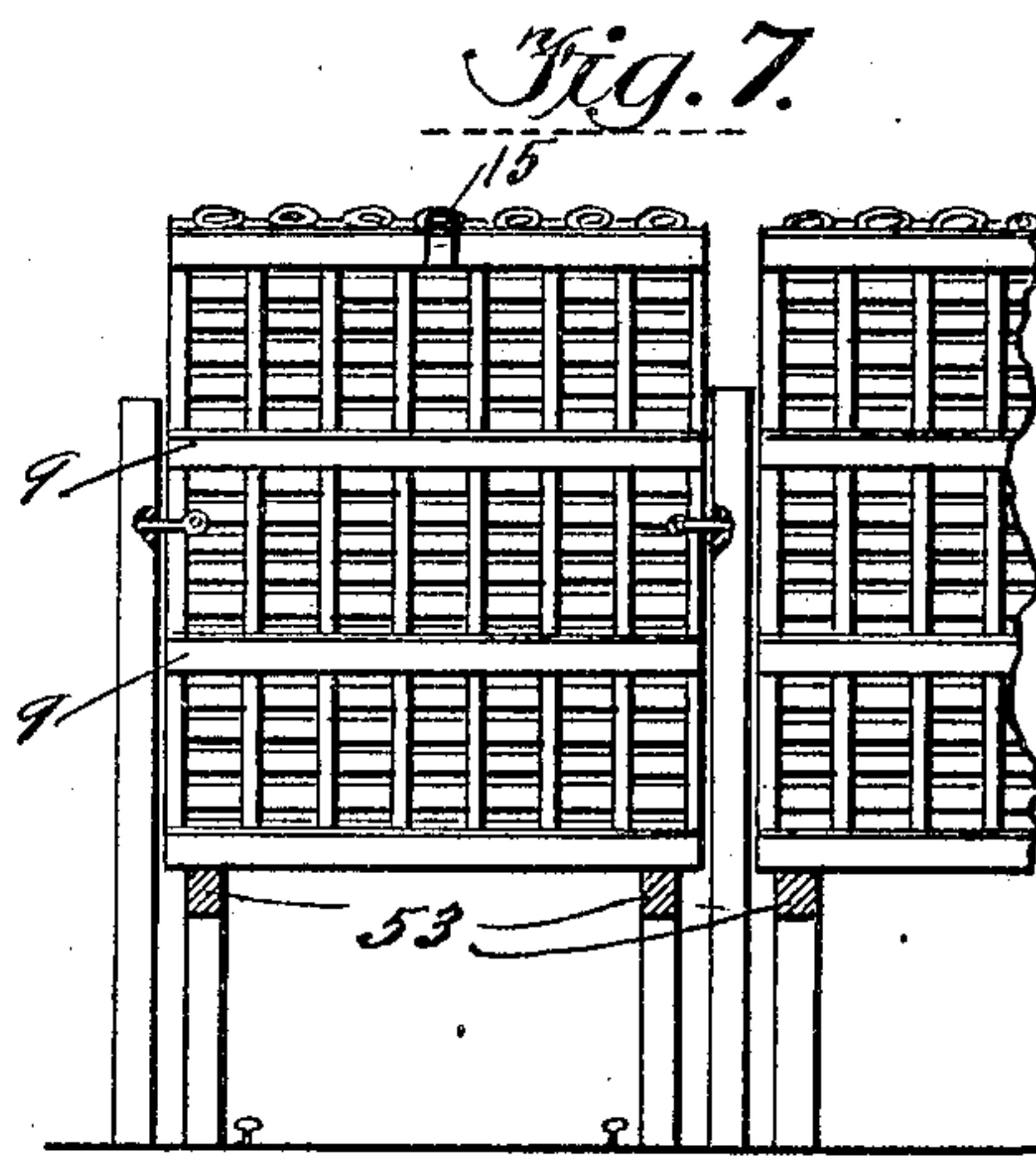
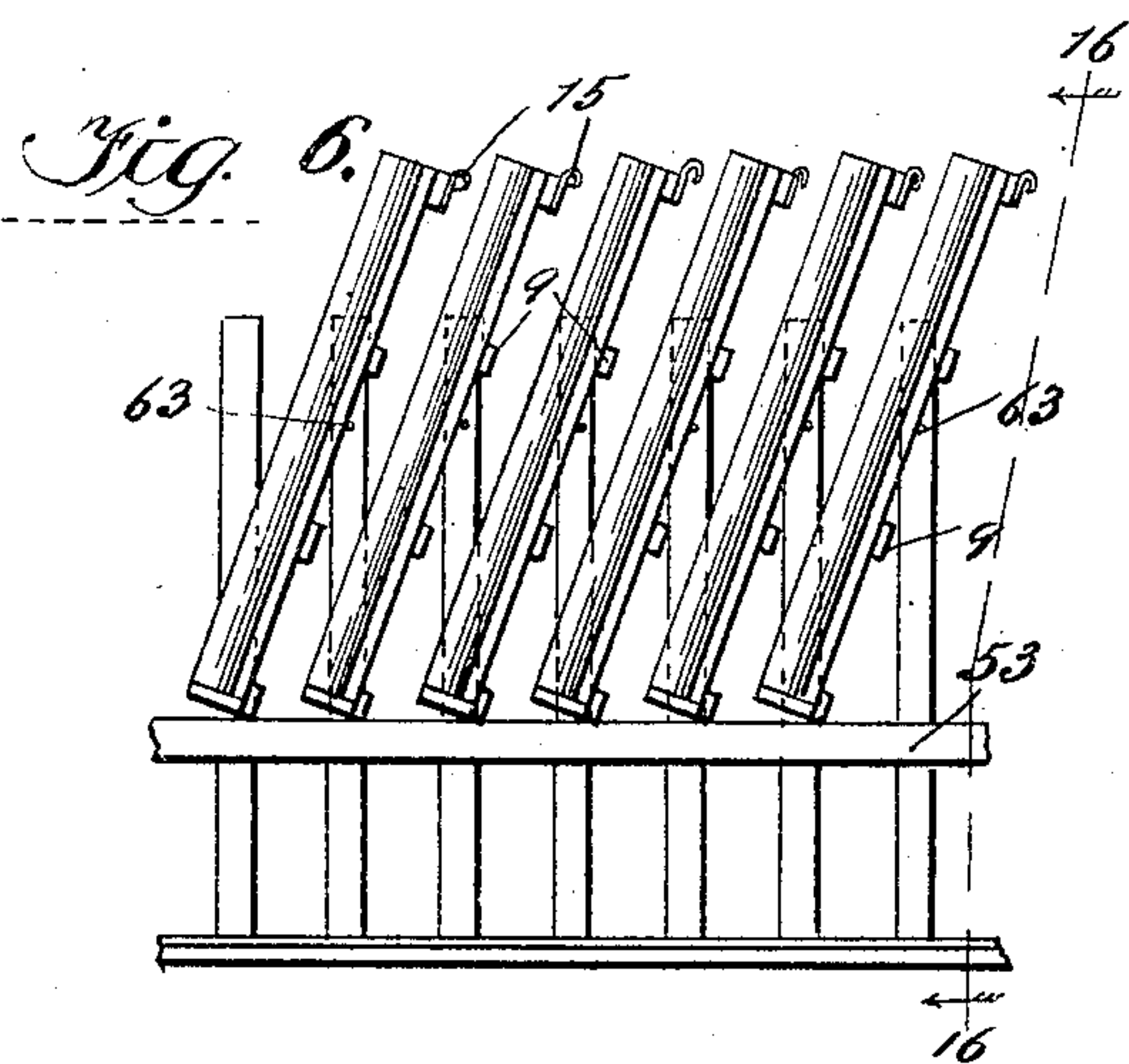
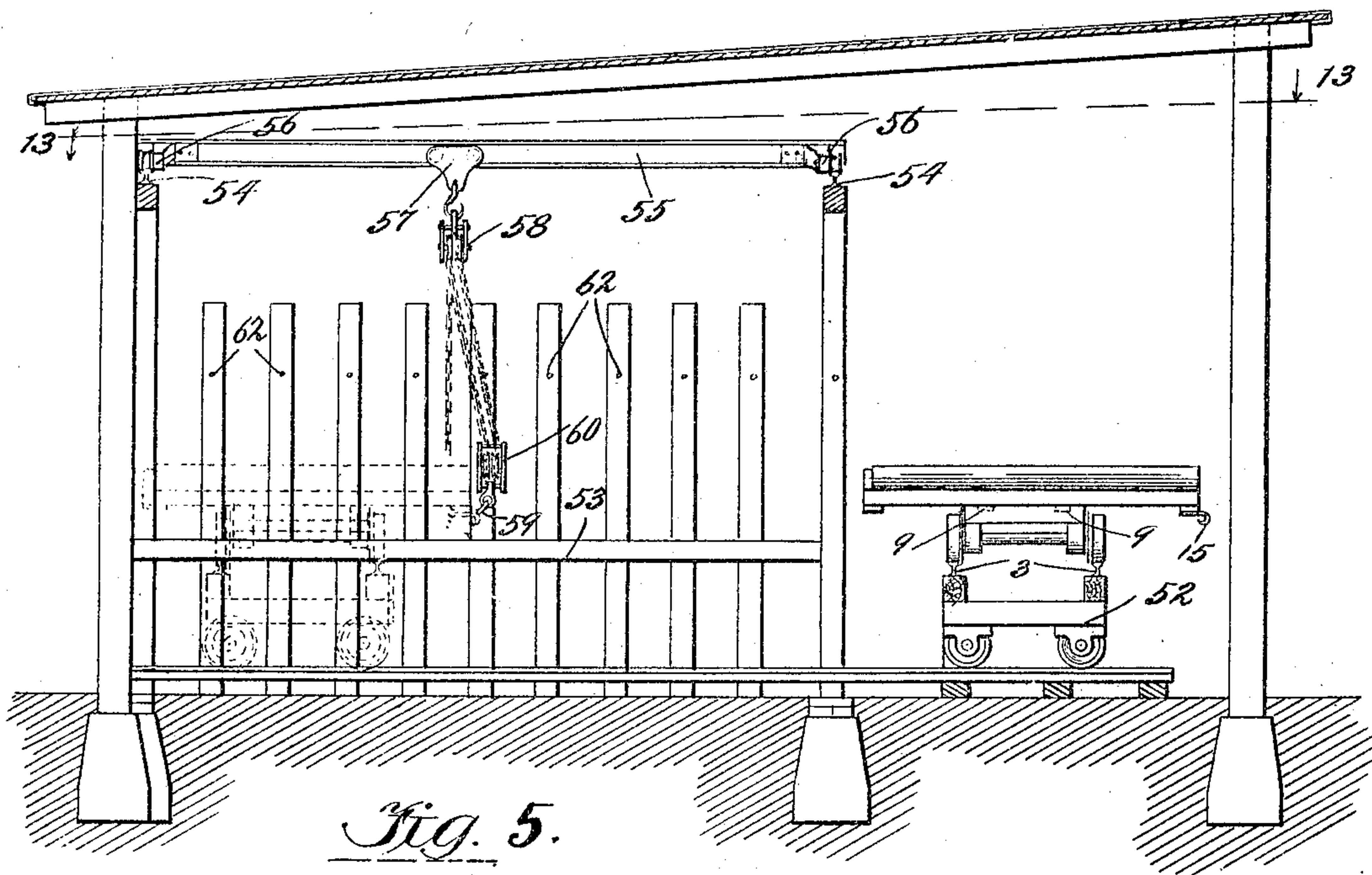


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UNITED STATES PATENT OFFICE.

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APPARATUS FOR DRYING TILE.

No. 798,443.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed July 13, 1903. Serial No. 165,306.

To all whom it may concern:

Be it known that I, JAMES A. ODELL, a resident of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Drying Tile, of which the following is a specification.

This invention relates to improvements in apparatus for drying tile, and refers more specifically to improvements in apparatus for handling and drying tile-blanks preparatory to burning the same.

Among the salient objects of the invention are to provide an improved portable receiver upon which the tile is delivered from the press or forming-machine and whereon it remains until dried; to provide in a receiver of the character referred to means for preventing the tile from becoming cracked or distorted during the drying process notwithstanding the blank may be of very unusual length; to provide in a receiver of the character referred to means for supporting the tile in such manner as to preserve its form and nevertheless permit the endwise movement of portions thereof incident to shrinkage during drying; to provide in conjunction with a portable receiver a traveling car or truck upon which the receiver is mounted; to provide a system wherein a series of cars each equipped with a receiver are arranged to follow each other serially, so that the operation of the apparatus may be continuous; to provide a system of trackage and storage whereby the loaded cars may be successively transferred to a dry-house and the receivers there stored in a peculiar and compact manner and nevertheless readily accessible independently of the order in which they were originally placed, and in general to provide improvements in the details of construction and arrangement of the apparatus as a whole.

The invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of the delivery portion of a tile-machine and a car equipped with my improved portable receiver arranged in position to receive the tile from the machine. Fig. 2 is a plan view of the

car provided with a controlling mechanism. Fig. 3 is a transverse vertical sectional view taken on line 3 3 of Fig. 2 and looking in the direction of the arrows. Fig. 4 is a horizontal sectional view taken through the dry-house approximately on line 13 13 of Fig. 5 and looking downwardly, the tile-machine and one of the receiver-cars being shown outside of the dry-house in plan view. Fig. 5 is a transverse vertical sectional view taken on line 14 14 of Fig. 4, the car being, however, shown as loaded with a receiver. Fig. 6 is a fragmentary view of a portion of the interior of the dry-house, taken in a plane parallel with the plane of view of Fig. 5 and showing the positions of the receiver-frames as stored for drying. Fig. 7 is an elevation looking at the right-hand side of the parts shown in Fig. 6.

Referring to the drawings, 1 designates the delivery portion of a tile-machine, which may be of any usual or suitable construction, and in operation delivers the tile in tubular form through a die-opening 2 in the usual manner.

3 designates as a whole a tramway upon which is arranged to travel a series of cars (each designated as a whole 4) and each, as best seen in Figs. 1, 3, and 5, comprising a wheeled skeleton platform 5, suitably journaled on the axles 6 and provided upon its under side with depending brackets 7, upon which is mounted a straight rack 7', arranged to extend longitudinally and centrally the full length of the car.

8 designates as a whole a receiver which in the preferred embodiment of the invention consists of a rectangular platform coincident in length with the length of the rack 7' of the car and considerably wider than the latter, so as to overhang at each side thereof, as shown clearly in Fig. 3. The receiver is provided on its under side with suitable cleats 9 or other means, whereby it is accurately confined in position upon the car, but is nevertheless free to be lifted therefrom, as will hereinafter appear. Said receiver is made up of a series of sections 10, arranged side by side in parallel relation to extend the full width of the receiver, each section having vertical parallel side strips 11, a series of rollers 12, journaled between said side strips, and an end piece or support 13, which in the preferred construction (shown in Figs. 1 and 2) extends the full length of the receiver at the side thereof re-

mote from the tile-machine or receiving side. The side strips 11 are made of a height or width sufficient to rise some distance above the upper surfaces of the rollers, desirably a distance approximately equal to or slightly less than one-half the diameter of the tile to be supported thereon, while the end piece or strip 13 is made of a width to rise above the rollers a distance substantially equal to the diameter of the tiles. The trough-like sections thus formed are left open at the receiving side of the receiver, and in order to support the ends of the partition-strips a cleat 14 is arranged to extend across the under side of said ends, as shown clearly in Fig. 3, for example, and upon this cleat, at a point midway of the length of the receiver, is mounted a downturned hook 15, which serves a purpose to be hereinafter explained. In the construction shown in Figs. 1, 2, and 3, wherein the several sections are integrally united to form a platform-like receiver, the journals for the several rollers may be in the form of rods 16, each arranged to extend the full length of the receiver. The rollers may be variously shaped to accommodate different forms of tile-blanks.

In the operation of the apparatus a car equipped with a receiver is moved along opposite the tile-machine step by step, pausing to receive a tile-blank in each trough-like section, the tile being ejected from the die-opening of the machine and the antifriction-rollers permitting the tile to be pushed into position extending entirely across the receiver without distorting the blank notwithstanding it may be of very considerable length—as, for example, long enough to form a fence-post.

Describing the mechanism for controlling the movement of the car step by step past the die-opening of the tile-machine and referring more particularly to Figs. 1 to 3, inclusive, 18 designates a shaft journaled in suitable bearings 19 and 20 to extend from a point outside of the tramway beneath the car and car-tracks to a point beneath the rack 7'. Upon the inner end of the shaft is rigidly mounted a spur-gear 21 of suitable diameter to intermesh with the rack 7', the lower half of the gear being accommodated in a recess between the bearings 20. Upon the outer end of the shaft between the bearings 19 is rigidly mounted a ratchet-wheel 22, and adjacent to said ratchet-wheel upon the shaft 18 is loosely journaled a hand-lever 23, provided in proper relation to the periphery of the ratchet-wheel with a push-pawl 24. Said lever is also provided with a rearwardly-projecting rigid arm 25, the end of which terminates in a cam-surface 26, adapted to engage one arm 28 of a bell-crank lever 27. Said bell-crank lever is pivoted at its angle, as indicated at 29, to a suitable supporting-bracket 30 and is provided upon its opposite arm 31 with a stud 32, which engages any one of a series of stop-apertures 33, formed in the ratchet-wheel, when the bell-

crank is oscillated in a direction opposite that in which it is moved by the engagement of the lever projection 25. The bell-crank lever is normally forced inwardly into engagement with the ratchet-wheel by means of a plate-spring 34, mounted upon the bracket 30 and engaging the arm 28.

It will be obvious from the foregoing description that if the lever 23 be first oscillated rearwardly or toward the left, as seen in Figs. 1 and 3, the stop-lever 27 will be retracted from the ratchet-wheel during the movement of retracting the push-pawl, and upon the reverse or forward movement of the hand-lever the car will be positively moved forward, the cam-arm 25 passing out of engagement with the stop-lever in time to permit the latter to snap into the next succeeding stop-aperture, and thus arrest the car after it has been moved forward one step. The stop-apertures 33 are so located as to arrest the car each time with one of the sections of the receiver in transverse alinement with the aperture of the tile-machine.

After a tile-blank has been fully fed out in position upon the receiver it is necessary to sever it, so that the car may be moved forward to receive the next blank, and in order that the operation may be continuous I provide a severing device which operates to cut out a short section of tile, so that the car may be stepped forward during the time the advance end of the succeeding blank is being fed out a distance equivalent to the section thus cut out. Describing said severing device and referring to Figs. 1 and 4, 35 and 36 designate two bow-shaped frame members rigidly united with each other by means of suitable space-bolts 37 at a distance apart equal to the length of the section of tile which is to be cut out. The two members are rigidly mounted upon a rock-shaft 38, conveniently journaled in a suitable bearing in the face of the tile-machine to extend at right angles thereto. The cutter-frame is so mounted that its inner member 36 moves in a plane parallel with and closely adjacent to the face of the die. 39 designates two cutting-wires stretched across the ends of the bow-shaped frame members, and 40 designates a third cutting-wire stretched diagonally across from one cutting-wire 39 to the other and serves to cut in two the piece cut-out, causing it to fall out of the way. Upon the rock-shaft 38 is rigidly mounted a crank-arm 41, the upper end of which is connected, by means of a link 42, with a second crank-arm 43, rigidly mounted upon a shaft 44. The shaft 44 is mounted in suitable bearings and arranged to extend horizontally beneath the car-tracks to a point near the hand-lever 23, at which point it is provided with an upstanding hand-lever 45. The same operator who controls the stepping forward of the car is therefore enabled to operate the cutter by oscillating the hand-lever 45.

Next describing that part of the system which pertains to the conveying away and drying of the tile-blanks and referring more particularly to Figs. 4, &c., 46 designates as a whole a dry-house into and along one side of which extends the tramway 3, upon which the cars 4 travel. The interior of the dry-house is divided into a plurality of transversely-extending compartments, as 47, 48, 49, and 50, each of which is of a width somewhat greater than the extreme length of one of the receivers 8. Within each compartment is arranged to extend a tramway, (designated as a whole 51,) which tramways are located on a lower level than the tramway 3, as shown clearly in Fig. 5. Upon each tramway 51 is arranged to travel a truck or car 52, each carrying track-sections 3'. The tramway 3 is interrupted opposite each tramway 51, and the length of the sections 3', mounted upon the cars 4, correspond to the interruptions in the tramway 3, so that when one of the cars 4 is in position to bring its track-section 3' in alinement with the track 3 the latter is thereby made practically continuous. It follows that any one of the cars 4 may be moved into any part of the dry-house, the loaded car being first moved into position upon one of the track-sections carried by a truck or car 52 and the latter thereafter drawn back into the corresponding compartment of the dry-house.

An important feature of the present invention is the unloading of the receivers bodily from the several cars without disturbing the tile-blanks and supporting such receivers during the drying period in such inclined position that the weight of each tile-blank cooperates with its shrinkage during drying and insures an endwise movement of the contracting portions of the tile-blank without creating a dangerous breaking stress thereon. To this end mechanism for unloading the receivers and supporting them in upwardly-inclined position is provided as follows: 53 designates pairs of supporting-timbers arranged to extend longitudinally in each of the compartments 47, &c., these supporting-timbers being spaced apart at a distance slightly less than the length of the receivers 8, so that when the latter are wheeled into position within the compartments their ends will overlie a pair of the timbers 53. The supporting-timbers 53, as best shown in Fig. 5, are located somewhat below the bottom sides of the receivers when in position upon the supporting-cars, so that when tilted upwardly at one side the opposite side will be lowered into engagement with and rest upon the supporting-timbers, and a further lifting movement will raise the receiver free from the car. In order to thus lift up the receivers, an overhead traveling crane is conveniently provided, comprising parallel supporting-tracks 54, suitably supported in the upper

part of the dry-house. A crane-beam 55, provided with carriers at each end 56, is arranged to traverse the track-rails 54 and a carriage 57 arranged to traverse the crane-beam longitudinally and supporting a block and tackle, (designated as a whole 58.) The construction of the crane mechanism is a common one and need not, therefore, be more fully detailed, it being obvious that by the construction described the crane mechanism is available for use in either of the compartments of the dry-house shown and that the carriage may be shifted along the crane-beam, so as to be available for lifting the receivers located in any part of the compartment. In unloading a receiver a hook 59, carried by the lower pulley-block 60 of the block and tackle, is hooked into the hook 15 of the receiver and the latter thereby tilted up, as hereinbefore described. In order to support the receiver in upwardly-inclined position, a series of supporting-posts 61 is provided to extend along each side of each compartment, these posts 61 being spaced apart at suitable distances to support the receivers in nested arrangement, but spaced away from each other, as clearly indicated in Fig. 6. Each supporting-post is provided with apertures 62 to receive supporting-pegs 63, against which the receivers rest in an inclined position, as clearly illustrated in Fig. 6.

The use and operation of the above-described apparatus will be readily understood from the foregoing description and need not, therefore, be again recited.

While I have herein shown and described a preferred embodiment of my invention, yet it will be obvious that the details of construction may be modified without departing from the spirit of the invention, and I do not, therefore, limit myself to these details except to the extent that they are made the subject of specific claims.

I claim as my invention—

1. In an apparatus for drying tile, the combination of a tram-car, a platform removably mounted upon said tram-car and provided with a series of antifriction-rollers adapted to receive thereupon direct from a molding-machine a plurality of tiles, a butt-board at one side of said removable frame upon which the ends of the tile rest when said frame is removed and lifted to an inclined position, a drying-house into which said cars are run, and means for raising said platform and tile from said tram-car and means for holding it in an inclined position during the drying of said tile.

2. An apparatus for drying tile, comprising in combination a tram-car, a platform removably mounted upon said tram-car, said platform comprising a series of parallel strips, a series of rollers journaled between said strips with their upper peripheries in the same plane and adapted to receive there-

upon a number of tiles direct from a molding-machine, an upstanding butt-board at one side of said platform upon which the ends of said tile rest when said platform is removed
5 and lifted to an inclined position, a drying-house and tramway leading thereinto, and means within said drying-house for hoisting said platform and tiles from said tram-car and means for holding it in an inclined position, for the purpose described.
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3. An apparatus for drying tile, comprising in combination a tram-car, a platform removably mounted upon said car and provided with a series of antifriction supporting-rollers adapted to receive thereupon a plurality
15 of tiles, a butt-board mounted upon one side

of said platform upon which the ends of said tiles rest when said platform is in an inclined position, a drying-house, a tramway into said drying-house, a plurality of upstanding posts
20 within said drying-house adjacent each side of said tramway, said posts being arranged directly opposite each other and provided with means at their upper ends for holding said
platforms in an inclined position, and means
25 for lifting said platforms loaded with tiles from said tram-cars into an inclined position, substantially as and for the purpose described.

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