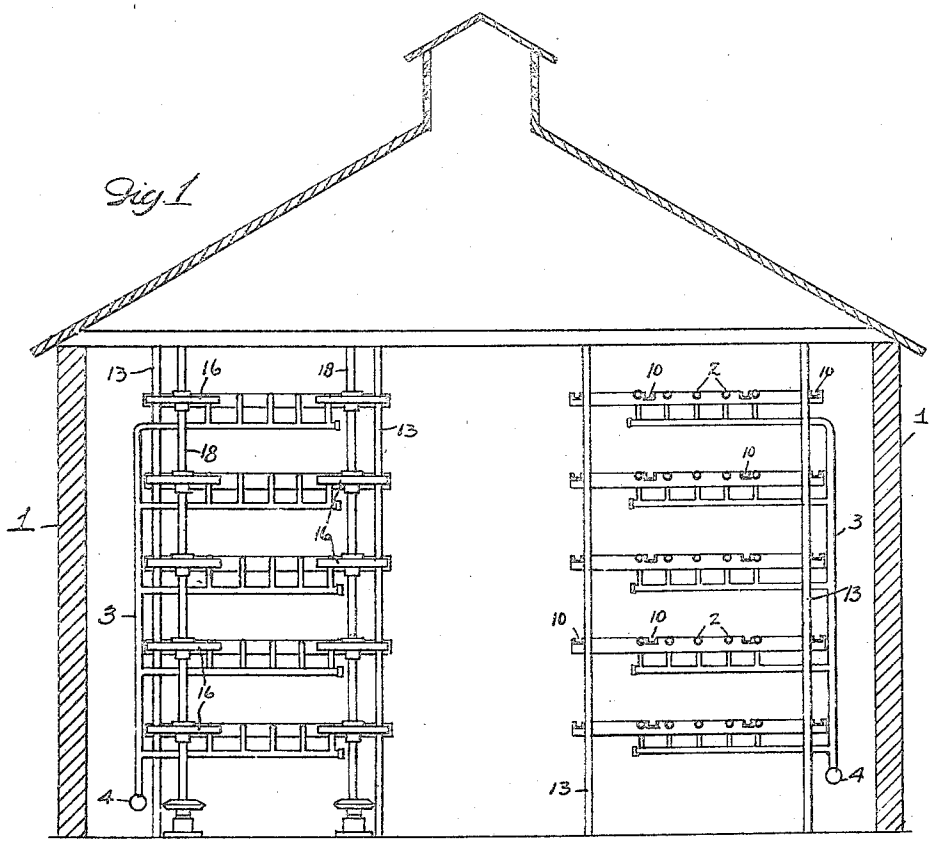
Jan. 9, 1923. 1,441,661.

C. S. CHURCH.

BRICK HANDLING MECHANISM.

FILED JAN. 11, 1922. 5 SHEETS—SHEET 1.

Fig. 1



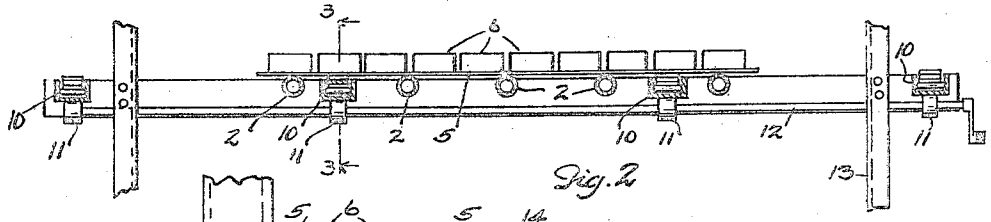


Fig. 2

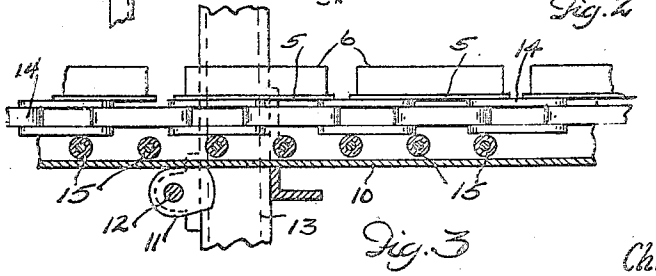


Fig. 3

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Jan. 9, 1923.

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5 SHEETS—SHEET 2.

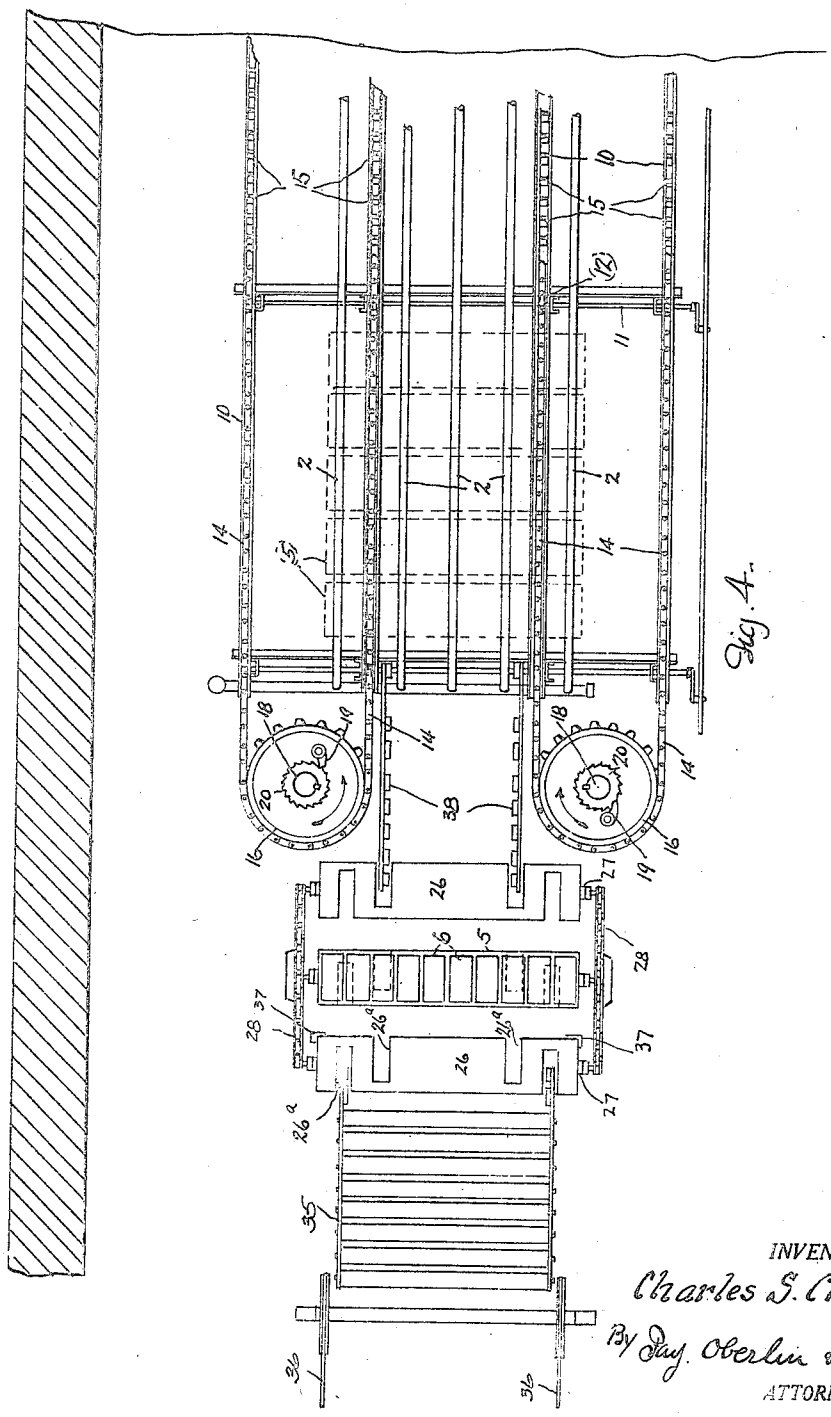


Fig. 4.

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Jan. 9, 1923.

1,441,661.

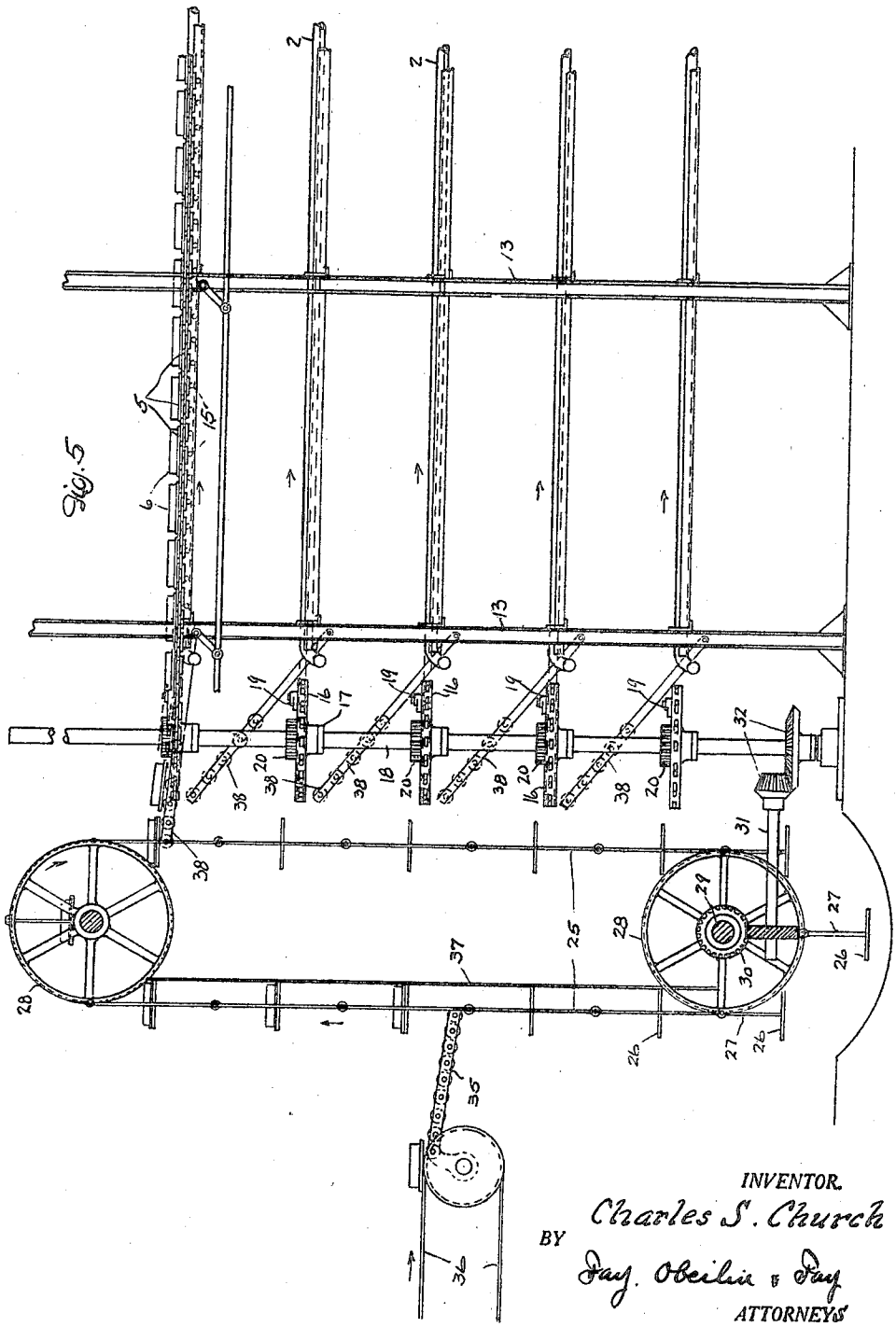
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BRICK HANDLING MECHANISM.

FILED JAN. 11, 1922.

5 SHEETS—SHEET 3.

Fig. 5



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BRICK HANDLING MECHANISM.

FILED JAN. 11, 1922.

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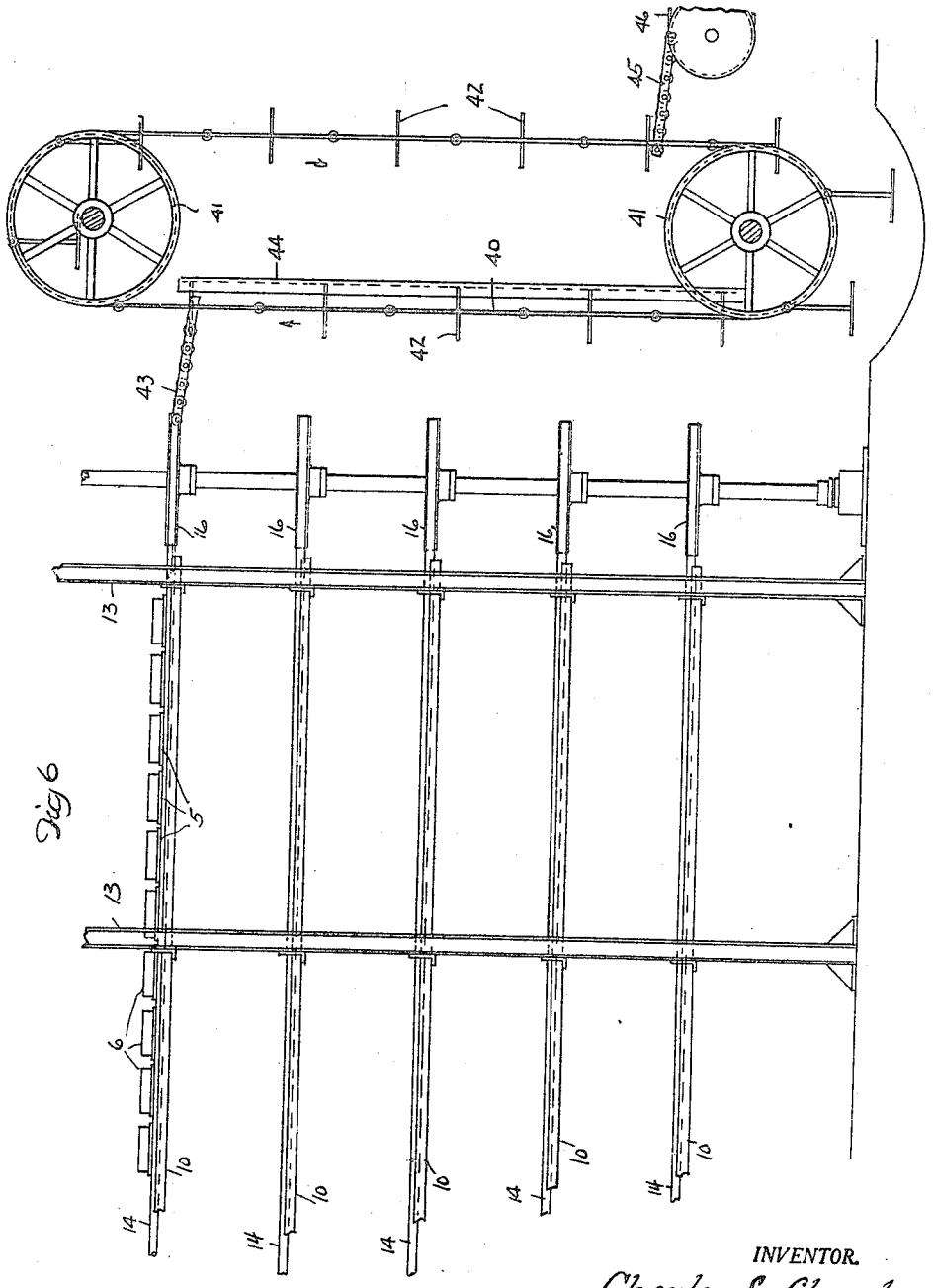


Fig 6

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Jan. 9, 1923.

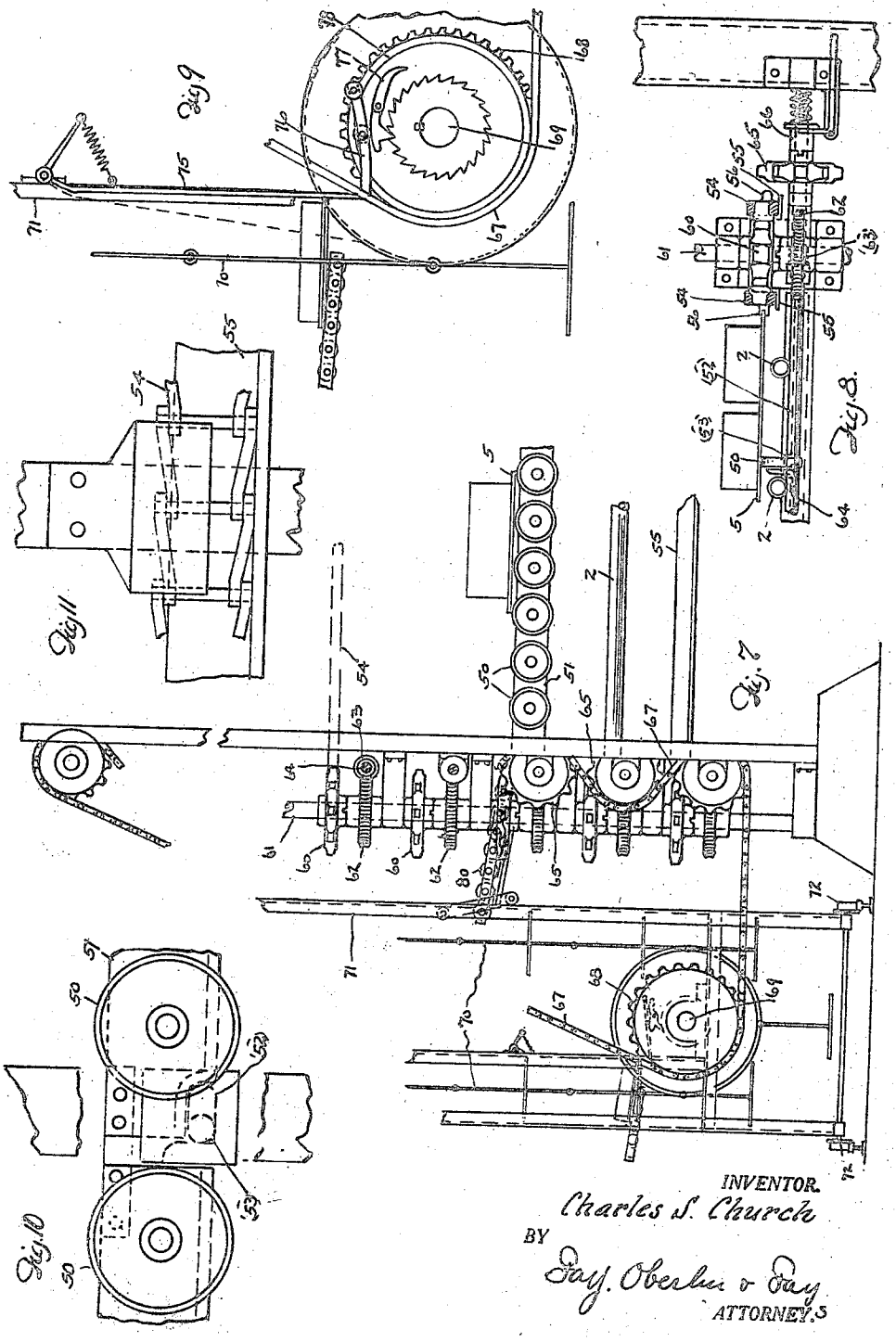
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FILED JAN. 11, 1922.

5 SHEETS—SHEET 5.



INVENTOR.

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Patented Jan. 9, 1923. 1,441,661

UNITED STATES PATENT OFFICE.

CHARLES S. CHURCH, OF WELLINGTON, OHIO, ASSIGNOR TO CHARLES M. ROSS, OF WELLINGTON, OHIO.

BRICK-HANDLING MECHANISM.

Application filed January 11, 1922. Serial No. 528,510.

To all whom it may concern:

Be it known that I, CHARLES S. CHURCH, a citizen of the United States, and a resident of Wellington, county of Lorain, and State of Ohio, have invented a new and useful Improvement in Brick-Handling Mechanism, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present improvements relate more particularly to mechanism of the class described that is designed to receive the brick as they come from the brick-making machine and convey the same into proper position on the series of racks provided in the drying plant. As need not be explained, the brick, as delivered from the press wherein they are molded, are deposited onto pallets by inverting the mold, whether manually or by suitable mechanical means makes no difference so far as the present invention is concerned. It will also be understood that the means employed for transporting the brick-laden pallets from the press to the drying plant, whether endless conveyors or other mechanism, constitute but an incidental feature of the present improvements; and the same is true of the drying racks themselves. The latter, as ordinarily constructed, consist of a series of vertically spaced longitudinally disposed sets of pipes, through which steam or other heating medium is passed, such sets of pipes forming shelves upon which the metal pallets with the bricks resting thereon are supported during the drying operation.

According to the current practice, the brick-laden pallets are transported to the drying house on suitable trucks and are then transferred by hand to the shelves, and the removal of the bricks when dried is accomplished by a reversal of the operation just described, both such operations involving heavy manual labor, and the height to which the racks may be carried is obviously limited.

One object of the present invention is to provide suitable mechanism partially or wholly automatic in character whereby successive pallets may be received at one end of a series of such drying racks, be carried lengthwise of such racks, and be thereon deposited in properly spaced relation. A further object is conversely to take up the brick-laden pallets from the racks, carry them to one end thereof and deposit them on suitable conveying mechanism whereon they may be carried to the kiln or elsewhere as desired.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims; the annexed drawings and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings.

Fig. 1 is a transverse section through a typical drying house, showing drying racks of the type hereinbefore referred to, and in association therewith my present improved brick-handling mechanism; Fig. 2 is a transverse section on a somewhat larger scale of one such drying rack and mechanism associated therewith; Fig. 3 is a transverse section of such detail, the plane of the sections being indicated by the line 3—3, Fig. 2; Fig. 4 is a plan view showing one end of such series of drying racks and associated brick-handling mechanism; Fig. 5 is a side elevational view of the corresponding end of such racks and mechanism; Fig. 6 is a view similar to that of Fig. 5, but illustrating the arrangement at the opposite end of the series of drying racks; Fig. 7 is a view similar to Fig. 5, but illustrates a modified construction; Fig. 8 is a front elevation of such modified construction similar to that of Fig. 1; and Figs. 9, 10 and 11 are broken detail views of the same.

In the drying house 1, illustrated in cross-section in Fig. 1, two series of racks are shown for receiving and supporting the bricks during the drying stage, each series comprising five horizontally disposed sets of pipes 2. It has not been deemed necessary to illustrate such pipes 2 in detail in each rack since the construction and arrangement thereof is substantially identical and it will be understood of course that the number of racks thus provided in any series may be varied to suit conditions, and particularly the dimensions of the drying house 1, and that the number of series of such

racks will similarly vary. The pipes 2 are suitably connected by means of a header 3 with a steam supply line 4, and other connections (not shown) will be provided for collecting and carrying away the water of condensation.

The number of pipes 2 in each set thereof, whereby the individual shelves are composed, is shown as five, but may be varied in accordance with different ideas of operating practice, but the distance between the outermost pipes which determines the width of the individual rack or shelf will be approximately the same as that of the pallets 5 whereon the bricks 6 are carried.

Extending longitudinally of each rack, one located intermediately between the two outermost pipes 2 composing each rack or shelf, and another located wholly without the corresponding side of the rack, are four shallow troughs 10, as best shown in Figs. 2 and 4. These troughs are supported at intervals on cams 11, fixedly mounted on rock shafts 12 that are suitably journaled in the framework 13 whereby the pipes 2 and other mechanism associated therewith are supported. Said troughs form, in effect, grooves or guideways, in which rest the respective parallel portions of two belts 14 that are preferably of the linked construction shown, a plurality of rollers 15 in the several troughs serving to reduce the friction that would otherwise be encountered in moving the belts through such troughs. At their respective ends the belts 14 pass around horizontal sprocket wheels 16 normally rotatably supported by collars 17 on vertical shafts 18. Each such sprocket wheel, however, is provided with a pawl 19 on its upper face, adapted in one position to engage with a corresponding ratchet wheel 20, non-rotatably mounted on the shaft 18 whereby it will be seen that rotation of the latter may be made effective to rotate any selected sprocket wheel and thus drive the belt or chain 14 that passes therearound. As shown in Fig. 4 (note direction arrows on sprocket wheels 16), the disposition of the teeth on the respective ratchet wheels 20, associated with the pair of sprocket wheels 16 adjacent the end of each shelf of the drier, is such that the inner laps of the chains 14 that thus pass around said wheels 16 will travel in the same direction, i. e., to the right in the case of the figure in question. It will further be noted that the spacing of the shafts 18 and the disposition of the pawls 19 thereon is such as to allow the pallets 5 to pass freely therebetween while resting on the aforesaid inner laps of belts 14. In other words, the chains serve as an endless conveyor whereby successive pallets received thereon may be carried longitudinally of the corresponding rack or shelf of the drier.

When the belts 14 are required thus to function as a conveyor for the pallets, the troughs 10, wherein said belts are supported, are raised by simultaneously rocking the several shafts 12 so as to bring the upper edges of the belts just above the level of the pipes 2; while, on the contrary, when it is desired to have the pallets rest on said pipes, said rock shafts are turned to lower said troughs into the position shown in Figs. 2 and 3, where the upper edges of the belts are a trifle below the level of the pipes. The amount of vertical movement which it is required to impart to the belts or chains 14, in order thus to vary the relation of the pallets with respect to the pipes, is not very great, and will not interfere with, or require shifting of, the chains on the sprocket wheels 16 of the belts.

For the purpose of receiving and transferring the pallets onto any selected pair of conveyor belts 14, the mechanism shown at the left of Figs. 4 and 5 is provided, such mechanism consisting in effect of two endless conveyors or elevators 25, between which are pivotally hung a series of equidistantly spaced trays 26. Said trays preferably hang suspended from arms 27 thus pivotally attached to the elevator chains or cables 25 so as to always maintain a horizontal position, whether moving upwardly or downwardly in unison with the respective vertical portions of said cables or transversely incidental to the passing of the latter around the paired sprocket wheels or sheaves 28 that carry said cables. For the purpose of driving the latter the lowermost pair of sheaves 28 is mounted on a shaft 29, with which an engine or motor is connected, and inasmuch as it is desirable, as will presently appear, that the horizontal conveyor belts 14 should move in unison with the elevator 25, such shaft 29 is suitably intergeared with the vertical shafts 18, as by the worm drive 30, shaft 31 and bevel gears 32, shown in Fig. 5.

For the purpose of automatically placing the pallets on successive trays 26, a gravity conveyor 35 of the roller type may be utilized, being disposed at the terminus of the endless conveyor 36, such as constitutes the customary means for carrying the brick-laden pallets away from the press. The pallet, upon being discharged from conveyor 36, will roll down said conveyor 35 until it strikes against a fixed vertical guide 37 disposed so as to lie adjacent the inner edges of the trays 26. Such guide will serve to hold the pallet until the next tray 26 comes along, when the latter will pick up such pallet, carry the same to the upper limit of the path of travel of elevator 25, thence move it transversely towards the end of the adjacent series of drier shelves, and then lower said pallet, all as indicated by direction lines on Fig. 5.

In order to transfer the pallets from suc-

cessive trays 26 onto a selected drier shelf, another gravity conveyor 38 is conveniently employed, one such conveyor being provided in conjunction with each shelf of the drier, being pivotally attached to the framework 13 and normally resting in the inoperative position shown in said Fig. 5. The conveyor 38 for the upper shelf, however, in the figure just referred to, is shown lowered into its operative position where it will be noted that its forward end projects into the path of the descending trays 26, and so serves to remove the pallets therefrom in succession.

For the purpose of discharging pallets from the drier shelves, an elevator 40, substantially identical in its construction and arrangement with elevator 25, is employed, as shown at the right of Fig. 6. Said elevator 40, in other words, is composed of two endless cables or chains that pass around sheaves 41 and carry a series of trays 42 adapted to receive successive pallets in the same fashion as trays 26 of said first described elevator 25. However, in the case of elevator 40, the direction in which the elevator moves with respect to the adjacent ends of the drier shelves is the reverse of that of elevator 25. In other words, as indicated by direction arrows in Fig. 6, the inner portion of the elevator moves upwardly and the outward portion downwardly. Accordingly, by interposing a suitable gravity conveyor 43, or equivalent device, to receive the pallets as they are discharged from belts 14 associated with any particular shelf of the drier, the outer end of such conveyor 43 projecting into the upward path of travel of trays 42, such pallets will roll against a guide or stop 44 and there be held in position to be taken up by the successive trays. A similar gravity conveyor 45, projecting into the downward path of travel of the trays 42 on the outside of the elevator 40, serves to remove such pallets from successive trays and discharge them onto another conveyor 46, or, of course, the pallets may be removed in any other suitable fashion.

In order that the trays 26, in the case of elevator 25 may intersect the delivery end of gravity conveyor 35 and the receiving end of gravity conveyor 38, said trays are formed on their respective sides with notches or recesses 26^a; and in the case of trays 42 carried by elevator 40, it will be understood that similar notches (not shown) are provided, such notches in each case rendering it possible for the conveyor to cooperate with the tray, either to deposit a pallet on the latter or remove a pallet therefrom.

The general mode of operation of my improved handling mechanism should be apparent from the foregoing description of the construction and mode of operation of its several component parts. The brick-laden pallets are received by elevator 25 from the conveyor that bears the same from the press, or such pallets may, for that matter, be placed manually on the successive trays of said elevator. Depending upon which of the several gravity conveyors 38 has been lowered into operative position with respect to said elevator 25, the pallets as they are lowered past the end of the series of drying racks or shelves will be discharged onto the corresponding shelf. The belts 14 associated with such shelf will previously have been set in movement by throwing in the pawls 19, whereby the corresponding sprocket wheels 16 are connected to their respective vertical drive shafts 18. The troughs 10, in which such belts travel, will furthermore be raised by suitably rocking shafts 12 so that the pallets as they are received on the inner laps of the belts will be carried lengthwise along the shelves without engaging with the pipes 2. When the proper number of pallets to fill the shelf in question has thus been transferred further movement of the belts 14 associated therewith is stopped by releasing pawls 16, and the transfer of the pallets to another shelf is begun by dropping into operating position the corresponding gravity conveyor 38. The pallets on the filled shelf or rack are then lowered into contact with the pipes 2 by reversely rocking shafts 12, as has hereinbefore been fully set forth.

In order to insure the close spacing of the pallets when thus placed on a shelf for drying, it is necessary in the first place that the ratio between the rate of movement of elevator 25 and that of belts 14 be correctly established by correctly proportioning the driving connections between shaft 29 and the two shafts 18, due regard being had to the diameter of sheaves 28 and that of sprocket wheels 16. In order, however, to guard against the contingency that pallets may not be regularly supplied by conveyor 36, or other means provided for this purpose, to the ascending trays of elevator 25, I may utilize the automatic stop mechanism shown in Figs. 7 and 9 wherein other modifications in construction are at the same time illustrated.

These further modifications comprise in the first place an alternative construction of means for moving a series of pallets longitudinally along the several shelves of the drier and depositing same thereon. As best shown in Figs. 8, 10 and 11, instead of carrying the pallets directly on the inner parallel portions of two link-belts 14, two series of rollers 50 are disposed longitudinally of each shelf, such rollers being carried by longitudinally extending bars 51 that are vertically movable through the medium of cranks 52 on oscillatory shafts 53 that engage therewith in the same fashion as cams

11 on shafts 12 engage with the troughs 10 of the previous described construction. The rollers 50 are spaced closely enough together so that a pallet 5 received thereon may be readily moved from one end to the other of the shelf, such movement being clear of the pipes 2 composing the shelf when the rollers are in elevated position. However, upon allowing the rollers to drop the pallets will be lowered into contact with said pipes. For the purpose of moving the pallets along the roller tracks thus provided, two endless link-belts 54 are employed corresponding with such previously described belts 14 in their general disposition, the respective parallel portions of such belts being supported on angle bars 55, or equivalent guides, which do not require to be vertically movable as in the case of troughs 10. At suitable intervals said belts are provided with outwardly projecting lugs 56, so disposed as to engage with successive pallets resting on said rollers 50 when the latter are in their elevated position. In order to retain the belt on the angle bars, clips 57, as shown in Fig. 11, are utilized.

At their respective ends belts 54 pass around horizontally disposed sprocket wheels 60 journaled on vertically disposed shafts 61. Connected with each sprocket wheel 60 is a worm gear 62 adapted to be driven by a worm 63 on a horizontal shaft 64. Such worms are fixedly secured to their respective shafts, and adjacent each is a sprocket wheel 65 that is normally freely rotatable upon the corresponding shaft, but is adapted to be non-rotatably locked thereto by a clutch 66. The worms and worm gears on each shaft 64 for driving the respective belts 54 are arranged to thus drive the same in opposite directions so that their inner parallel portions will always travel in the same direction. For driving sprocket wheels 65 a sprocket chain 67 is passed around the same in series, as shown in Fig. 7, such sprocket chain also passing around a driving sprocket wheel 68 on the lower shaft 69 of the elevator 70.

The elevator in the present case corresponds in general with elevator 25, as shown in Fig. 5, except that it is carried in a tower-like structure 71 movably mounted on wheels 72 so that the same elevator may be shifted into operative position with any number of tiers of drying shelves, it being understood that sprocket chain 67 will be thrown off or on sprocket wheel 68, as occasion may demand, incidentally to shifting the position of said conveyor 70.

It will be understood of course that conveyor 36, as well as gravity conveyor 35, may be readily shiftably supported; in fact, they are generally thus supported in a brick-making plant so as to enable the product to be delivered at various points as required.

In connection with the shiftable tower-type conveyor just described, as previously indicated, an automatic stop mechanism for controlling the operation of the elevator is incorporated, such stop mechanism consisting of a depending trip arm 75 pivotally attached to the tower 71 adjacent the ascending portion of the elevator and in position to be engaged by a brick-laden pallet as delivered by said conveyor 35. The lower end of trip arm 75 is connected with a throw-out 76 that is adapted in one position, i. e., that corresponding with the freely hanging position of the arm, to engage and throw out driving pawls 77 on a disk 78, whereby the elevator sheaves are adapted to be driven from shaft 69. Whenever a pallet is resting against said trip arm, said throw-out device is rendered inoperative so that the movement of the elevator will be uninterrupted, but should a pallet fail to be delivered for each ascending tray of the conveyor the latter will be automatically stopped and held inoperative until one is delivered. The number of pawls or equivalent connections between the driving disk and elevator sheave will of course depend upon the relation between the space between successive trays and the diameter of said sheave.

I also show in connection with such tower-type elevator a modified form of conveyor for transferring pallets from the descending portion of the elevator to a selected shelf of the drier. In other words, instead of providing a series of gravity conveyors 38, as shown in Fig. 5, one for each such shelf, which may be thrown into operative or inoperative position with respect to the elevator, as desired, I provide a single such gravity conveyor that is movable up or down the elevator tower 71 into co-operative relation with any selected shelf. The operation of such conveyor 80, as well as of the elevator in general, and of the modified construction of conveyor belts whereby the trays are moved along the several shelves and deposited thereon, is substantially the same as that of the first described construction of my improved mechanism, and will not require to be again set forth in detail.

In place of employing a separate elevator 40 to discharge the pallets from the drier shelves, the same elevator 25 may obviously be employed for this purpose as is used for delivering the pallets to such shelves. In such case it will merely be necessary to provide for a reversal in the direction of movement of the elevator and in the direction of movement of the belts 14, and for the substitution of outwardly inclined gravity conveyors similar to conveyors 43 for the inwardly inclined conveyors 38. As a matter of fact, the latter will most conveniently be made so that the direction of their inclination can be reversed when the pallets are to be discharged.

The particular point at which the ascending portion of elevator 25 receives the brick-laden pallets, or the point at which the descending portion of elevator 40 discharges such pallets, may of course be varied, to suit the particular occasion, anywhere within the limits of the height of such elevator. It is also a matter of choice whether a separate elevator mounted permanently in front of each series or tier of drying shelves is utilized as first described above, or a single elevator mounted on a movable truck or carriage which may be brought into operative relation with such series or tier of shelves when required for use in connection therewith, as shown in Fig. 7. The latter arrangement will of course simplify the amount of machinery involved and correspondingly decrease the cost of equipping a plant.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. The combination with a drying shelf, of means adapted to move a series of pallets longitudinally along said shelf and deposit same thereon, and means adapted to deliver such pallets to said first-named means at one end of said shelf.

2. The combination with a tier of drying shelves, of means adapted to move a series of pallets longitudinally along each shelf and deposit same thereon, and means adapted to deliver such pallets individually to said first-named means at the end of any selected shelf.

3. The combination with a drying shelf, of means adapted to move a series of pallets longitudinally along each shelf and deposit same thereon, means adapted to deliver such pallets individually to said first-named means at one end of any selected shelf, and other means adapted to receive and discharge such pallets from said first-named means at the other end of said shelf.

4. The combination with a tier of drying shelves, of means adapted to move a series of pallets longitudinally along each shelf and deposit same thereon, means adapted to deliver such pallets individually to said first-named means at the end of any selected shelf, and other means adapted to receive and discharge such pallets from the other end of any selected shelf.

5. The combination with a drying shelf, of a conveyor movable longitudinally thereof and adapted to receive and support a series of pallets, and means adapted to depress or elevate said conveyor relatively to said shelf, so as to deposit such pallets thereon or carry same clear thereof as desired.

6. The combination with a drying shelf, of a conveyor movable longitudinally thereof and adapted to receive and support a series of pallets, said conveyor comprising two longitudinally disposed belts having portions disposed adjacent said shelf and extending longitudinally thereof, means adapted to drive said belts in unison with such portions thereof moving in the same direction, and means adapted to depress or elevate such portions relatively to said shelf, so as to deposit such pallets thereon or carry same clear thereof as desired.

7. The combination with a drying shelf, of a conveyor movable longitudinally thereof and adapted to receive and support a series of pallets, said conveyor comprising two longitudinally disposed belts having portions disposed adjacent said shelf and extending longitudinally thereof, means adapted to drive said belts in unison with such portions thereof moving in the same direction, troughs wherein such portions travel, and means adapted to vary the elevation of said troughs relatively to said shelf, so as to support said conveyor below or above the level of the latter as desired.

8. The combination with a drying shelf, of a conveyor movable longitudinally thereof and adapted to receive and support a series of pallets, said conveyor comprising two longitudinally disposed belts having portions disposed adjacent said shelf and extending longitudinally thereof, means adapted to drive said belts in unison with such portions thereof moving in the same direction, troughs wherein such portions travel, rollers in the bottoms of said troughs, and means adapted to vary the elevation of said troughs relatively to said shelf, so as to support said conveyor below or above the level of the bottom of the latter as desired.

9. The combination with a drying shelf, of a conveyor movable longitudinally thereof and adapted to receive and support a series of pallets, said conveyor comprising two longitudinally disposed belts having portions disposed adjacent said shelf and extending longitudinally thereof, means adapted to drive said belts in unison with such portions thereof moving in the same direction, troughs wherein such portions travel, rollers in the bottoms of said troughs, rocker shafts disposed transversely of said troughs, and cams on said shafts engaging said troughs whereby rocking of said shafts serves to vary the elevation of said troughs relatively to said shelf, so as to support said conveyor below or above the level of the latter as desired.

10. The combination with a tier of drying shelves, of a conveyor movable longitudi-

nally of each of said shelves and adapted to receive and support a series of pallets, means adapted to depress or elevate each conveyor relatively to the corresponding shelf, so as to deposit such pallets thereon or carry same clear thereof as desired, an elevator located adjacent to one end of said tier of shelves adapted to receive individual pallets and carry same past said shelves, and means adapted to transfer pallets from said elevator to the conveyor of any selected shelf.

11. The combination with a tier of drying shelves, of a conveyor movable longitudinally of each of said shelves and adapted to receive and support a series of pallets, means adapted to depress or elevate each conveyor relatively to the corresponding shelf, so as to deposit such pallets thereon or carry same clear thereof as desired, an elevator located adjacent to one end of said tier of shelves adapted to receive individual pallets and carry same past said shelves, and means adapted to transfer pallets from said elevator to the conveyor of any selected shelf, said elevator and conveyors being intergeared so as to move at predetermined relative speeds.

12. The combination with a tier of drying shelves, of a conveyor movable longitudinally of each of said shelves and adapted to receive and support a series of pallets, means adapted to depress or elevate each conveyor relatively to the corresponding shelf, so as to deposit such pallets thereon or carry same clear thereof as desired, an elevator located adjacent to one end of said tier of shelves adapted to receive individual pallets and carry same past said shelves, means adapted to transfer pallets from said elevator to the conveyor of any selected shelf, and means adapted to intergear said elevator with said conveyors individually.

13. The combination with a tier of drying shelves, of a conveyor movable longitudinally of each of said shelves and adapted to receive and support a series of pallets, means adapted to depress or elevate each conveyor relatively to the corresponding shelf, so as to deposit such pallets thereon or carry same clear thereof as desired, an elevator located adjacent to one end of said tier of shelves adapted to receive individual pallets and carry same past said shelves, and means adapted to transfer pallets from the conveyor to any selected shelf and transfer same to said elevator.

14. The combination with a tier of drying shelves, of a conveyor movable longitudinally of each of said shelves and adapted to receive and support a series of pallets, means adapted to depress or elevate each conveyor relatively to the corresponding shelf, so as to deposit such pallets thereon or carry same clear thereof as desired, an elevator located adjacent to one end of said tier of shelves adapted to receive individual pallets and carry same past said shelves, means adapted to transfer pallets from said elevator to the conveyor of any selected shelf, and other means adapted to remove and discharge said pallets from said elevator.

15. The combination with a tier of drying shelves, of means associated with each of said shelves adapted to move a series of pallets along and deposit same on said shelf, an elevator located adjacent one end of said tier of shelves and adapted to receive individual pallets and carry same past said shelves, means adapted to transfer pallets from said elevator to said first-named means associated with any selected shelf, and other means adapted to deliver pallets to said elevator, said last-named means being interconnected with said elevator to render same inoperative except upon delivery of a pallet thereto.

16. The combination with a tier of drying shelves, of means associated with each of said shelves adapted to move a series of pallets along and deposit same on said shelf, an elevator located adjacent one end of said tier of shelves and adapted to receive individual pallets and carry same past said shelves, means adapted to transfer pallets from said elevator to said first-named means associated with any selected shelf, and other means adapted to deliver pallets to said elevator, said last-named means being interconnected with said elevator to render same inoperative except upon delivery of a pallet thereto and said first-named means being interconnected with said elevator so as to operate at a predetermined speed relatively thereto.

Signed by me, this 2nd day of January, 1922.

CHARLES S. CHURCH.