

No. 751,852.

PATENTED FEB. 9, 1904.

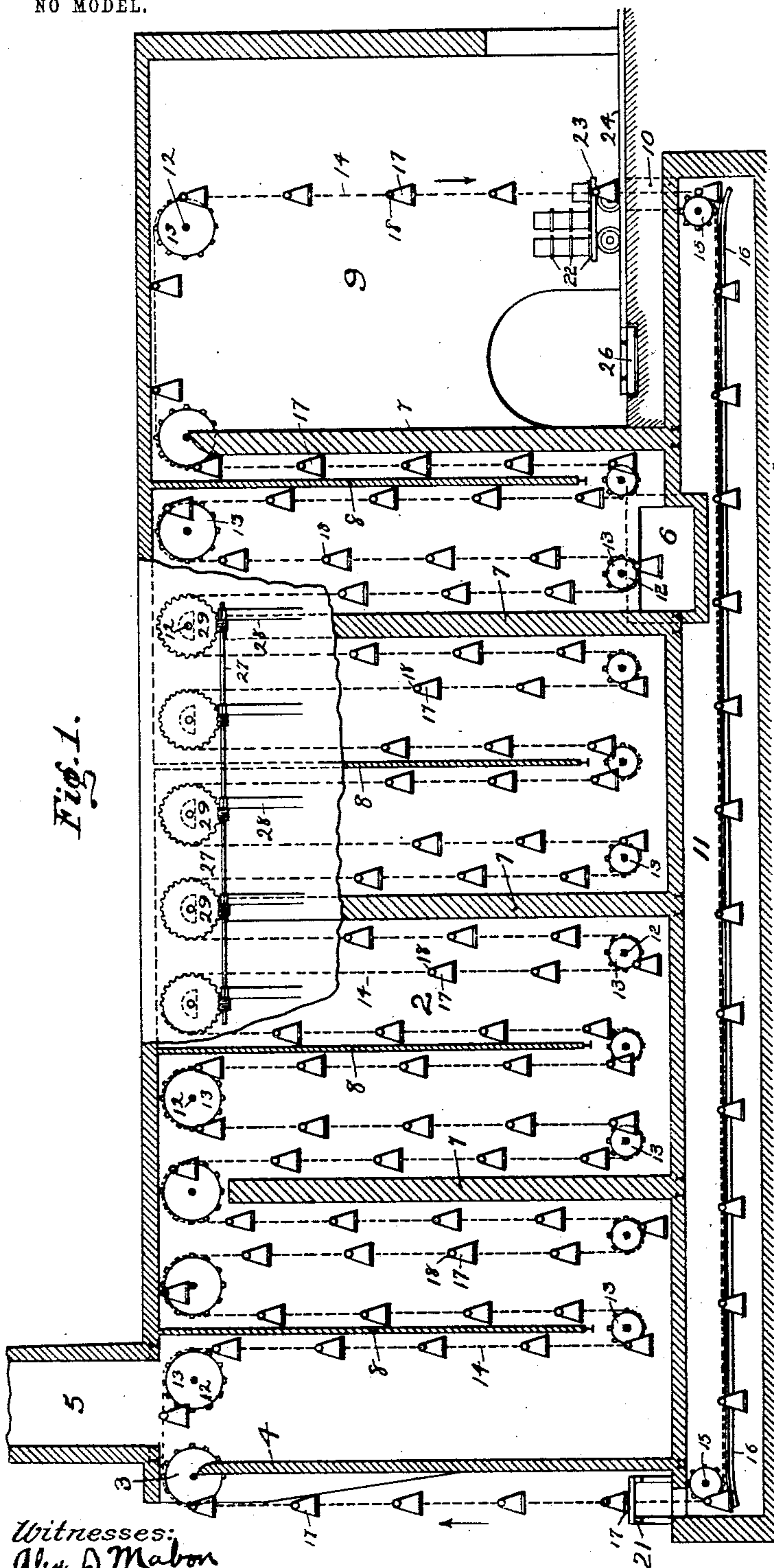
D. F. HENRY, JR.  
APPARATUS FOR DRYING TILE.

APPLICATION FILED APR. 28, 1903.

NO MODEL.

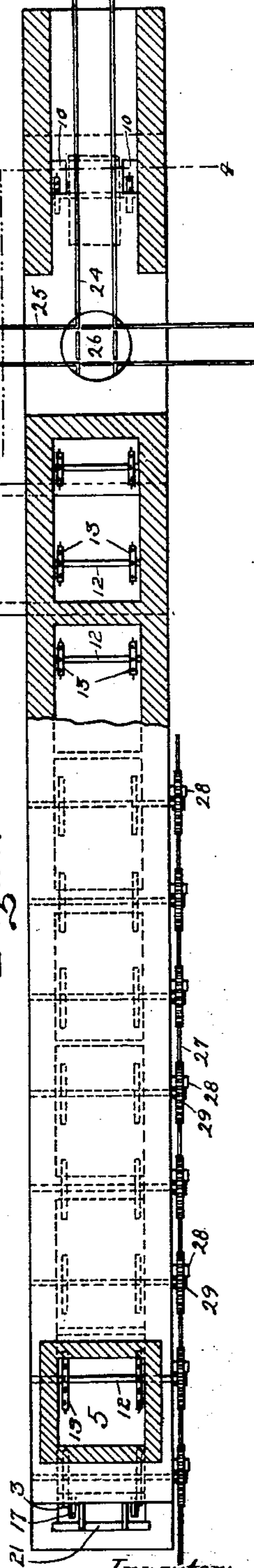
3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:  
Alex. D. Mabon  
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Fig. 2.



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By J. M. Herbst, Attorney.

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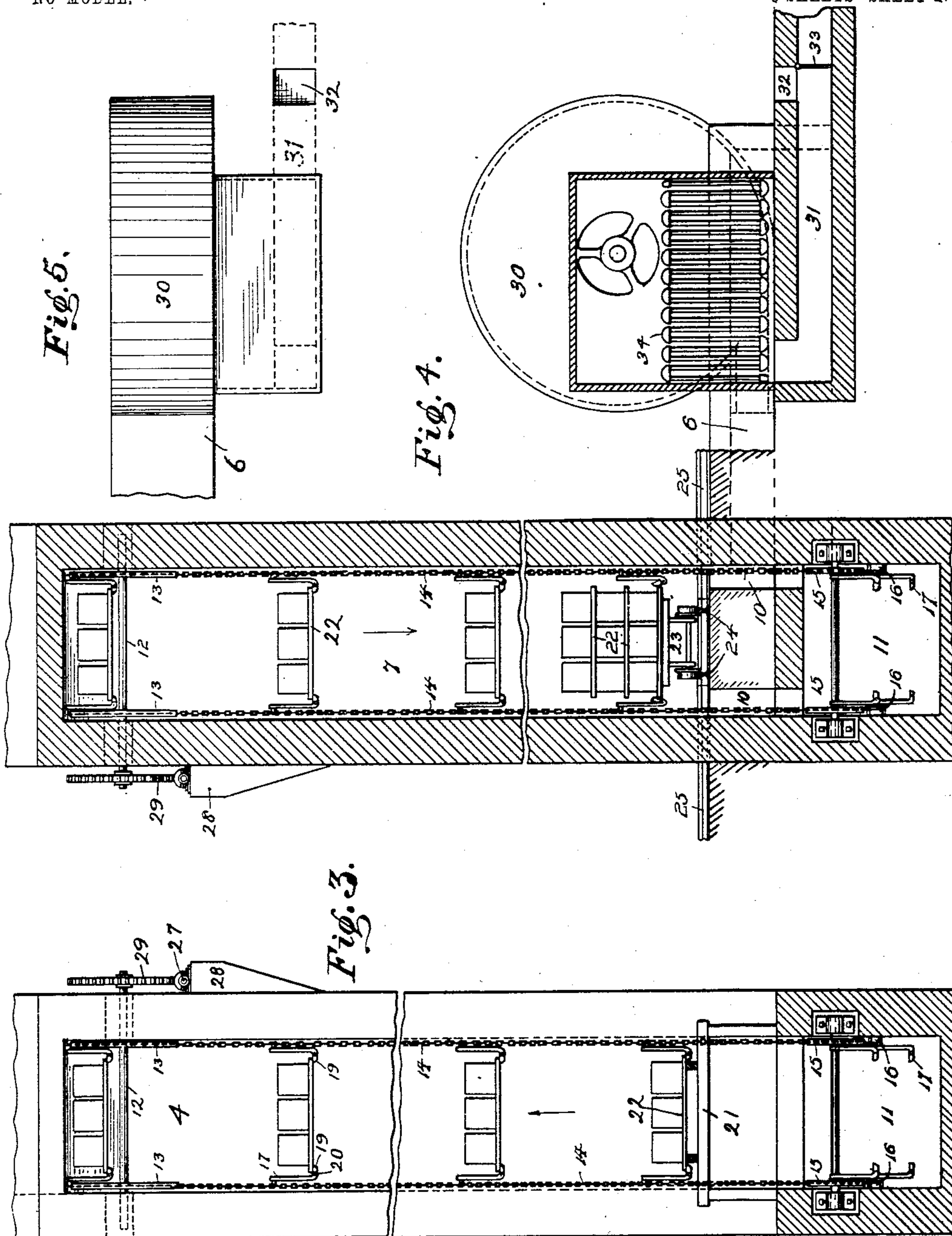
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3 SHEETS—SHEET 2.



Witnesses:  
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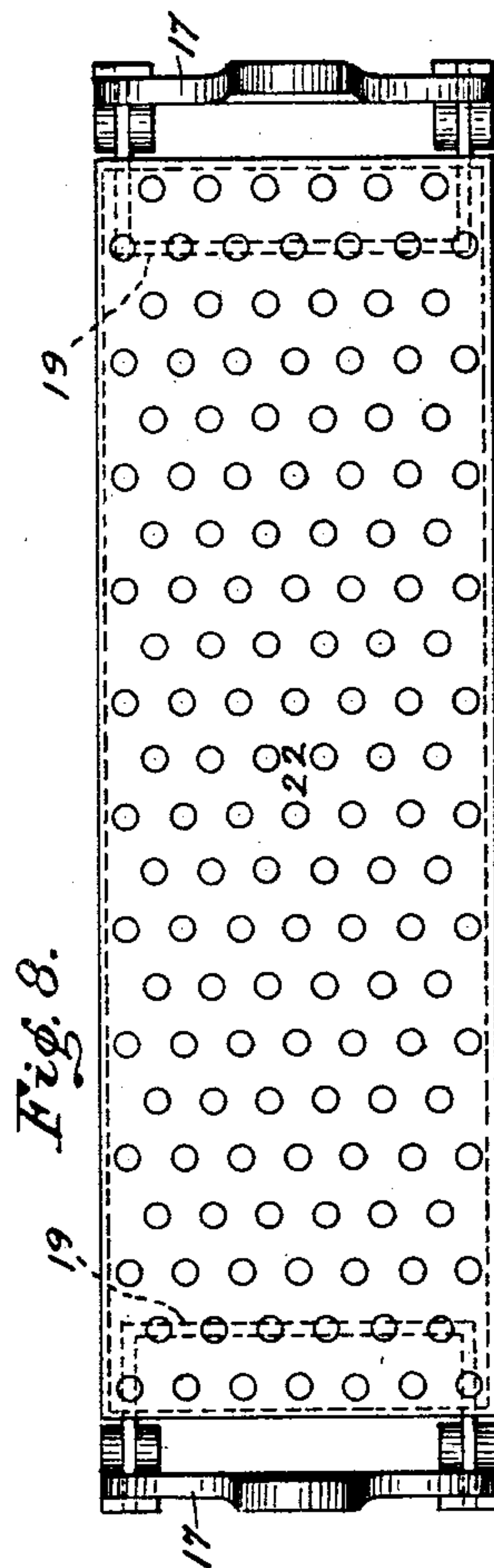
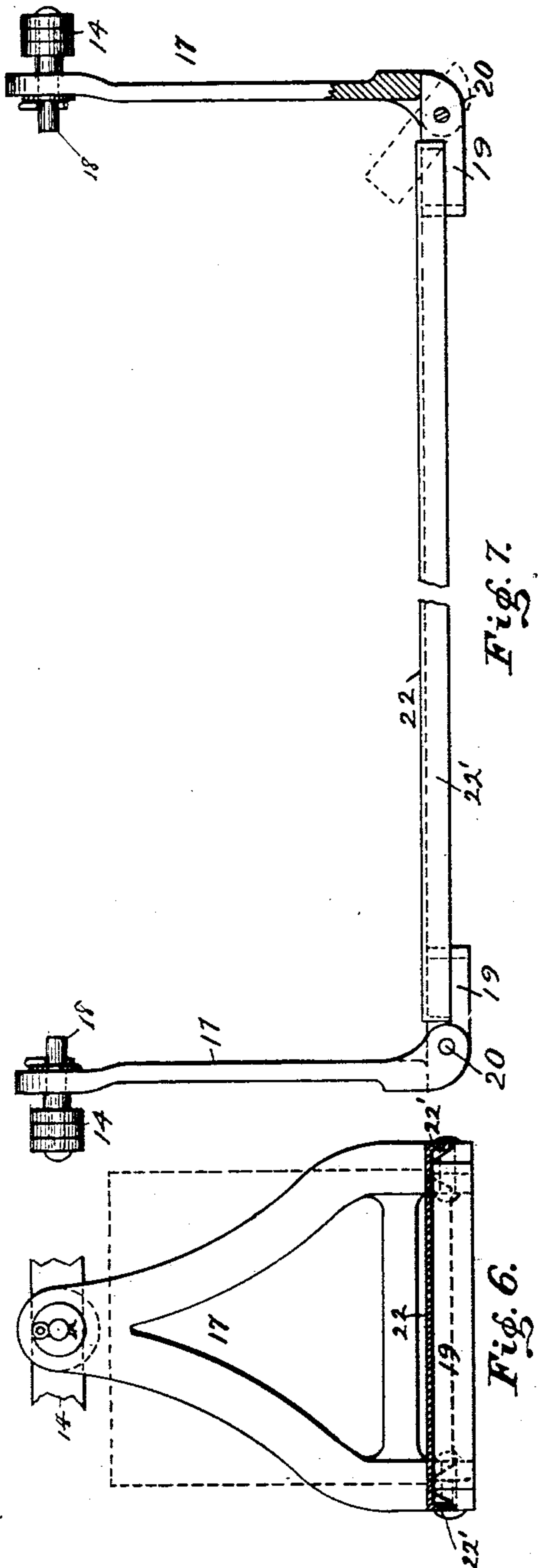
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NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

DAVID FORD HENRY, JR., OF PORT MURRY, NEW JERSEY.

## APPARATUS FOR DRYING TILE.

SPECIFICATION forming part of Letters Patent No. 751,852, dated February 9, 1904.

Application filed April 28, 1903. Serial No. 154,648. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID FORD HENRY, JR., a citizen of the United States, residing at Port Murry, in the county of Warren and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Drying Fireproofing-Tile, &c., of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to the drying of clay and other wares preparatory to burning, and has particular reference to improved apparatus for effecting a rapid, economic, and thorough drying of fireproofing-tile.

The invention consists in the novel structural features and arrangement of parts hereinafter fully described and claimed, and illustrated by the accompanying drawings, wherein—

Figure 1 is a vertical longitudinal sectional view of apparatus constructed in accordance with my invention. Fig. 2 is a top plan view of the same, partly in section. Fig. 3 is a front elevation. Fig. 4 is a sectional elevation of the discharging end of the apparatus, taken on line 4 4 of Fig. 2. Fig. 5 is a plan view of the air-inlet mechanism shown in Fig. 4. Figs. 6 and 7 are detail views of the pallet hangers or carriers. Fig. 8 is a similar view of the pallet.

Referring to the drawings, 2 designates the drying chamber or tunnel having ware-inlet opening 3 at the upper end of front end wall 4, and rising from said end is stack 5, while at the bottom of the chamber and near its discharge end is air-inlet 6. Extending from the floor nearly to the crown of the chamber are baffle walls or mantels 7, and alternating therewith are similar walls or mantels 8, depending from the chamber-crown nearly to the floor. A succession of compartments is thus formed which communicate alternately at the top and bottom, thus providing a circuitous or indirect passage for the ware, also for the air.

At the outlet end of the drier is compartment 9, and beneath the latter and open thereto at 10 is chamber or passage 11, which extends to the front of the drier, where it is open in front of end wall 4.

Extending across the drier adjacent its top and bottom are shafts 12, carrying sprocket-wheels 13, and passing over and around the sprockets are the endless conveyer-chains 14, which return from the discharge to the inlet end of the apparatus through chamber 11, sprockets 15 being provided therefor at the ends of said chamber, with horizontal guideways or slides 16 between the sprockets to sustain the chains and prevent sagging.

17 represents hangers pivoted in pairs at 18 to the inner sides of chains 14, with inwardly-disposed lifts 19, hinged at 20 to the lower ends thereof and adapted to turn upward thereon, the arrangement being such as to prevent the lifts from dropping below horizontal position.

At the front or inlet end of the drier and in the path of the conveyer is table or support 21, adapted to receive the ware-carrying pallets 22 and sustain them in position between chains 14, to be engaged at the ends and carried upward and forward by lifts 19 and hangers 18. The pallets are formed, preferably, of perforated sheet or plate metal strengthened by turning the edges thereof, as shown at 22'.

With the hangers loosely pivoted between the chains the pallets, if properly loaded, will remain in upright position throughout the entire course, passing upward and downward around the sprocket shafts and wheels and around mantels 7 and 8 until they finally emerge into the upper portion of compartment 9. In this compartment the chains and hangers descend on opposite sides of car or truck 23 and automatically deposit thereon the pallets of dried tile, the chains and hangers descending therefrom through openings into return-passage 11. The pallets may be deposited on the car in courses three or more high, and after depositing the pallets lifts 19 merely turn upward in descending past pallets previously placed. The car may be moved backward or forward between the chains, thus fully loaded automatically, necessitating no intermediate handling and avoid breakage incident thereto.

By arranging tracks 24 and 25 within compartment 9, intercepted by turn-table 26, the



empty cars may enter and the loaded cars emerge from either the end or side of the structure, as may be most convenient in passing to and from the kilns.

5 For actuating the conveyer a shaft 27 is supported on the exterior of the drier on brackets 28 and operatively connected to upper shafts 12 by worm-gearing 29.

Stack 5 is arranged at the ware-inlet end of the drier, and air-inlet 6 adjacent the ware-discharging end, so that the conveyer and air-currents move in reverse directions, thereby effecting a rapid and thorough drying of the ware. The dried tile approaching the discharge end of the drier are enveloped by the dry inflowing air, and as the latter flows forward toward stack 5 and becomes laden with moisture absorbed from the tile it comes in contact only with the greener tile in preliminary stages of drying.

Air may be supplied to inlet 6 by any suitable means, that here shown being a blower 30, arranged to draw its supply from a conduit 31, leading to kilns (not shown) in which the ware is burned, thus utilizing heat from burned or burning kilns which is usually wasted. When heated air from kilns is not available, the blower may draw its supply from the atmosphere through inlet 32, the double-acting valve or damper 33 serving to simultaneously open inlet 32 and to close the kiln-passage, and vice versa. Before entering the blower the air may be drawn through a nest of steam coils or pipes 34, and thus heated, the same being designed more especially for use where hot air from kilns is not available.

It will be understood that the number of mantels or baffle-walls may be increased or diminished as required and that the distance between adjacent hangers or pallet-carriers may be varied. Manifestly the apparatus may be variously embodied as regards structural details without departing from the spirit and scope of the invention.

I claim as my invention—

1. In drying apparatus, a drying-chamber, a succession of open vertical partitions forming a circuitous conveyer course therein, and a conveyer movable through said course.

2. In drying apparatus, a drying-chamber, a succession of open vertical partitions therein forming a circuitous conveyer course, a conveyer movable through said course, and means for causing air to flow through the circuitous conveyer course in direction reverse to that traveled by the conveyer.

3. In drying apparatus, a drying-chamber, vertical mantels or partitions dividing the same into a series of compartments, each alternate partition being open at its upper end and the intervening partitions open at their lower ends, a conveyer, and guides for passing the conveyer through the partition-openings and upward and downward in the compartments.

4. Conveying means for drying apparatus comprising a carrier, opposite supports pivoted thereto to hang constantly perpendicular, and disconnected lifts projecting laterally from the opposite supports.

5. Conveying means for drying apparatus comprising a carrier, supports pivoted thereto to hang constantly perpendicular, and laterally-projecting lifts hinged to the supports and adapted to swing vertically thereon.

6. Conveying means for drying apparatus comprising two parallel carrier members, supports pivoted thereto to hang constantly perpendicular, and laterally-projecting lifts hinged to swing vertically on the supports.

7. Conveying means for drying apparatus comprising two parallel conveyer members, supports pivoted thereto to hang constantly perpendicular, and inwardly-projecting lifts hinged to the supports and adapted to swing vertically thereon.

8. Conveying means for drying apparatus comprising an endless carrier, opposite supports pivoted thereto to hang constantly perpendicular, and disconnected upwardly-swinging lifts projecting inward from and hinged to the supports.

9. Improved drying apparatus comprising a drying-chamber, an endless conveyer movable therethrough, supports pivoted to hang perpendicular on the conveyer regardless of the position of the latter, and lifts hinged to swing vertically on the supports.

10. Improved drying apparatus comprising a drying-chamber, an endless conveyer movable therethrough consisting of parallel members having an upward course at the chamber-inlet, opposite supports pivoted to the conveyer members to hang vertically thereon regardless of the position of said members, and a support at the chamber-inlet.

11. Improved drying apparatus comprising a drying-chamber, an endless conveyer movable therethrough consisting of parallel members having a downward course at the chamber-discharge, opposite supports pivoted to the conveyer members to hang vertically thereon regardless of the position of said members, and a support at the chamber-discharge.

12. In drying apparatus, a drying-chamber, mantels or partitions therein, some of which extend from the top of the chamber nearly to the bottom and others from the bottom nearly to the top, thus forming a series of communicating compartments which constitute a circuitous passage, and a conveyer having a circuitous passage around the mantels and through the chamber.

13. In drying apparatus, a drying-chamber, mantels depending from the top thereof, mantels extending upward from the floor thereof, sprocket-wheels operatively mounted in the upper and lower portions of the chamber with some of said wheels beyond and in axial line with the mantels, and ware-carrying conveyer-



chains extending through the chamber and around the sprockets.

14. In drying apparatus, a drying-chamber, vertical mantels therein extending alternately  
5 from the chamber top and bottom, a ware-conveyer movable through the chamber around the mantels, and guides for the conveyer at the ends of the mantels.

15. In drying apparatus, a drying-chamber,  
10 vertical mantels therein extending alternately from the chamber top and bottom, a ware-conveyer movable through the chamber around the mantels, and means for causing air to flow through the chamber around the mantels in  
15 direction reverse to that traveled by the conveyer.

16. Improved drying apparatus comprising a drying-chamber, an endless conveyer movable therethrough consisting of parallel chains  
20 having an upward course at the chamber-inlet opposite pallet-lifts pivoted to the chains, and a pallet-support at the chamber-inlet between the chains.

17. In drying apparatus, a drying-chamber,  
25 an endless conveyer movable therethrough consisting of parallel chains having a down-

ward course at the chamber-discharge, opposite pallet-lifts pivoted to the chains, and a pallet-support at the chamber-discharge between the chains.

18. In drying apparatus, a drying-chamber, an endless conveyer movable therethrough consisting of parallel chains having a downward course at the chamber-discharge, opposite  
30 pallet-lifts pivoted to the chains and hinged to turn upward, and a pallet-support at the chamber-discharge between the chains.

19. In drying apparatus, a drying-chamber having a circuitous passage, an endless conveyer consisting of parallel chains movable  
40 therethrough having an upward course at the chamber-inlet and a downward course at the chamber-discharge, opposite pallet-lifts pivoted to the chains and hinged to turn upward thereon, and pallet-supports between the  
45 chains at the chamber inlet and discharge.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID FORD HENRY, JR.

Witnesses:•

JAMES DEWITT GROFF,  
JEANNETTE GULICK.