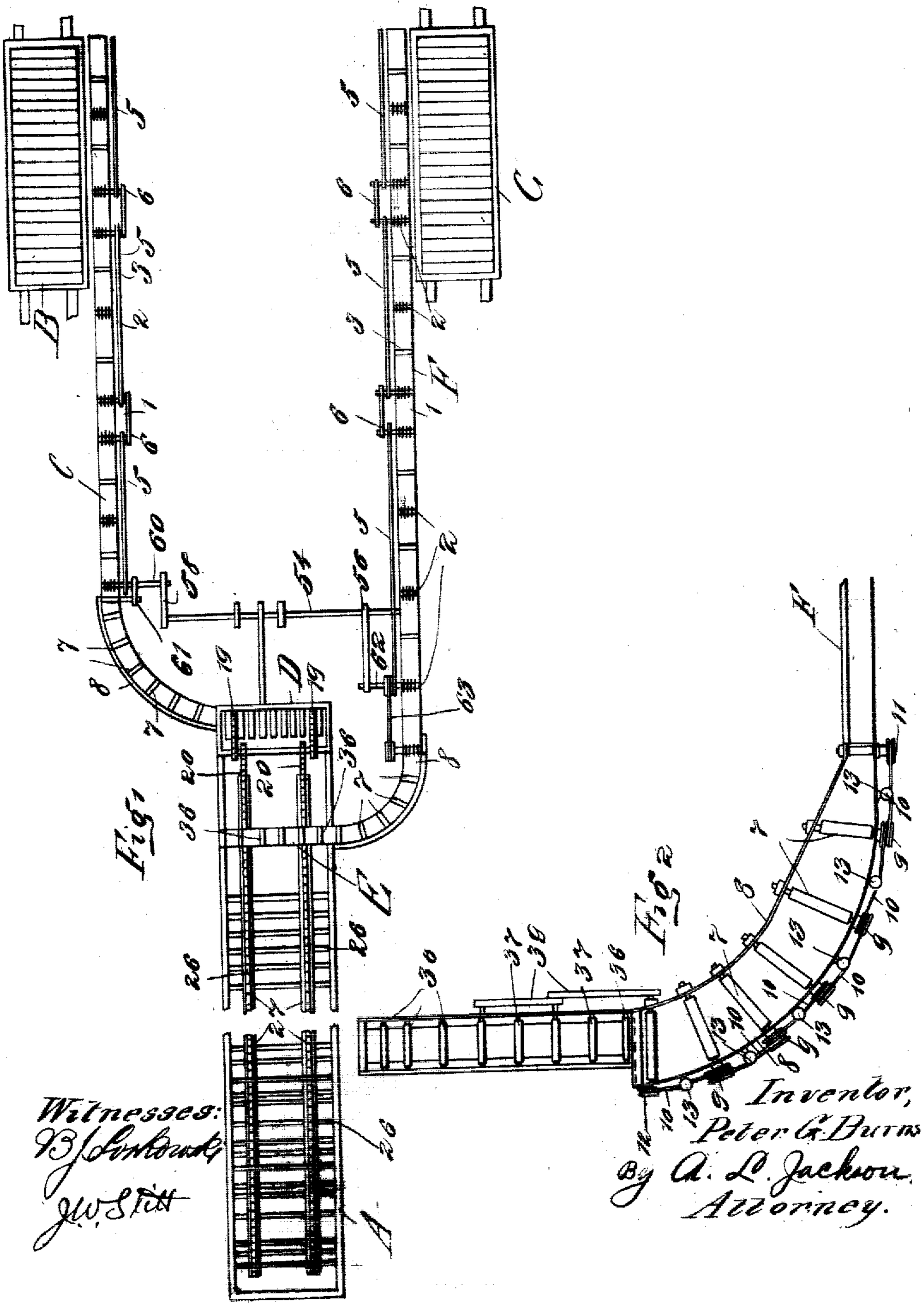
No. 864,092. PATENTED AUG. 20, 1907.

P. G. BURNS.

WOOD PRESERVING APPARATUS

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 1.



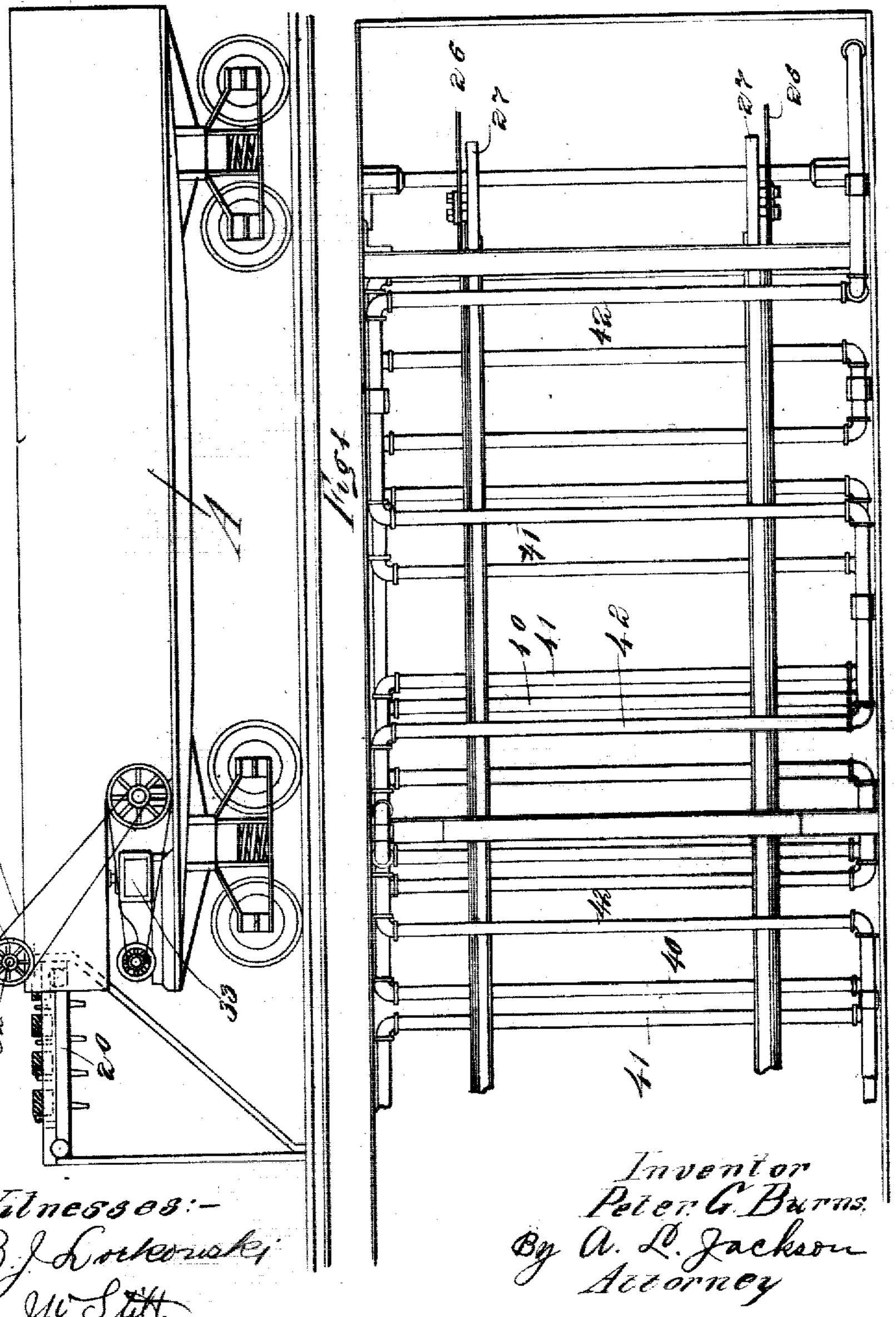
No. 864,092. PATENTED AUG. 20, 1907.

P. G. BURNS.

WOOD PRESERVING APPARATUS.

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 2.



Witnesses:—
B. J. Lockowski,
H. W. Stitt.

Inventor
Peter G. Burns.
By A. L. Jackson
Attorney

No. 864,092. PATENTED AUG. 20, 1907.

P. G. BURNS.

WOOD PRESERVING APPARATUS.

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 3.

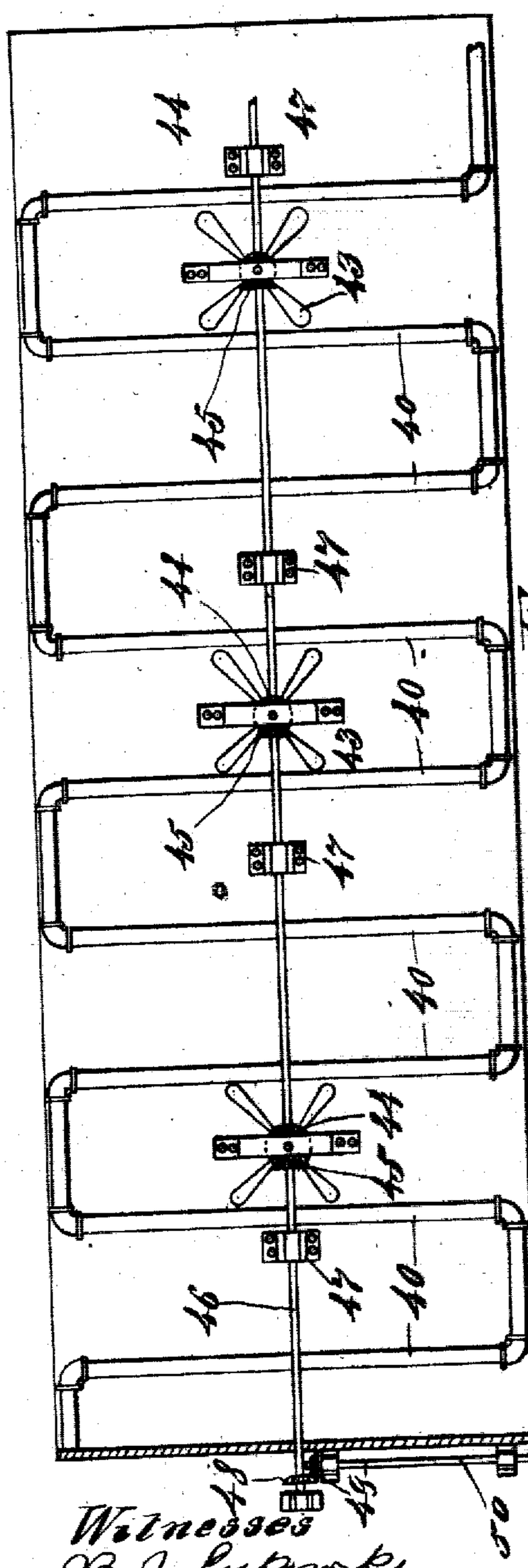


Fig. 5.

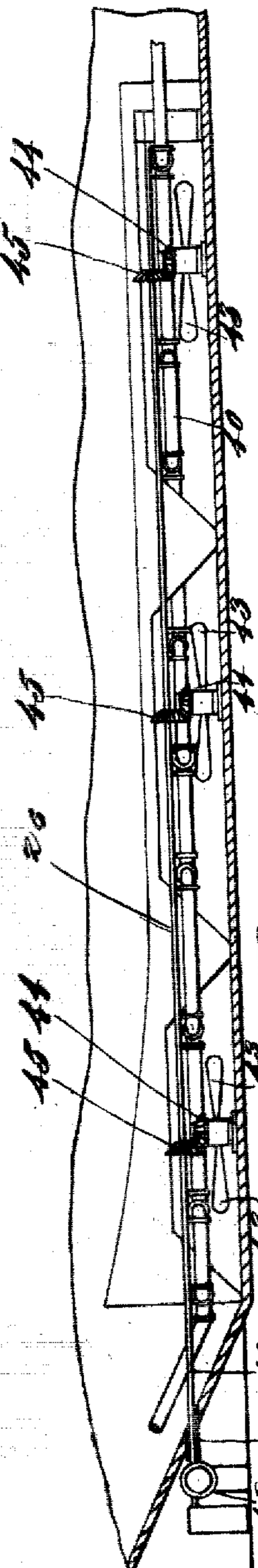


Fig. 6.

Witnesses
B. J. Lorkowski
J. W. Slatt.

Inventor,
Peter G. Burns,
By A. L. Jackson,
Attorney.

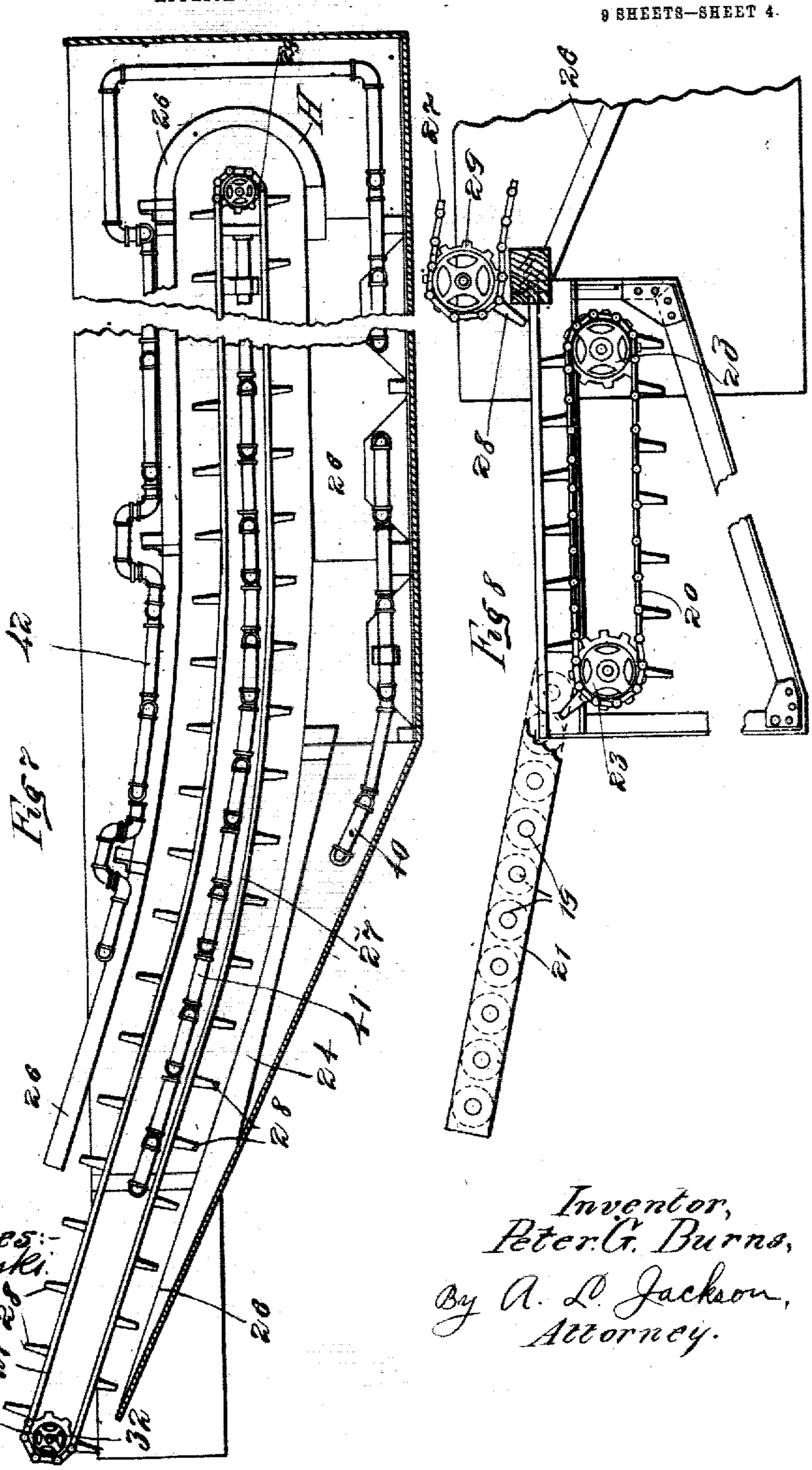
No. 864,092. PATENTED AUG. 20, 1907.

P. G. BURNS.

WOOD PRESERVING APPARATUS.

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 4.



Witnesses:-
B. Jankowski.
Jno. Stitt

Inventor,
Peter G. Burns,
By A. L. Jackson,
Attorney.

No. 864,092. PATENTED AUG. 20, 1907.

P. G. BURNS.

WOOD PRESERVING APPARATUS.

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 6.

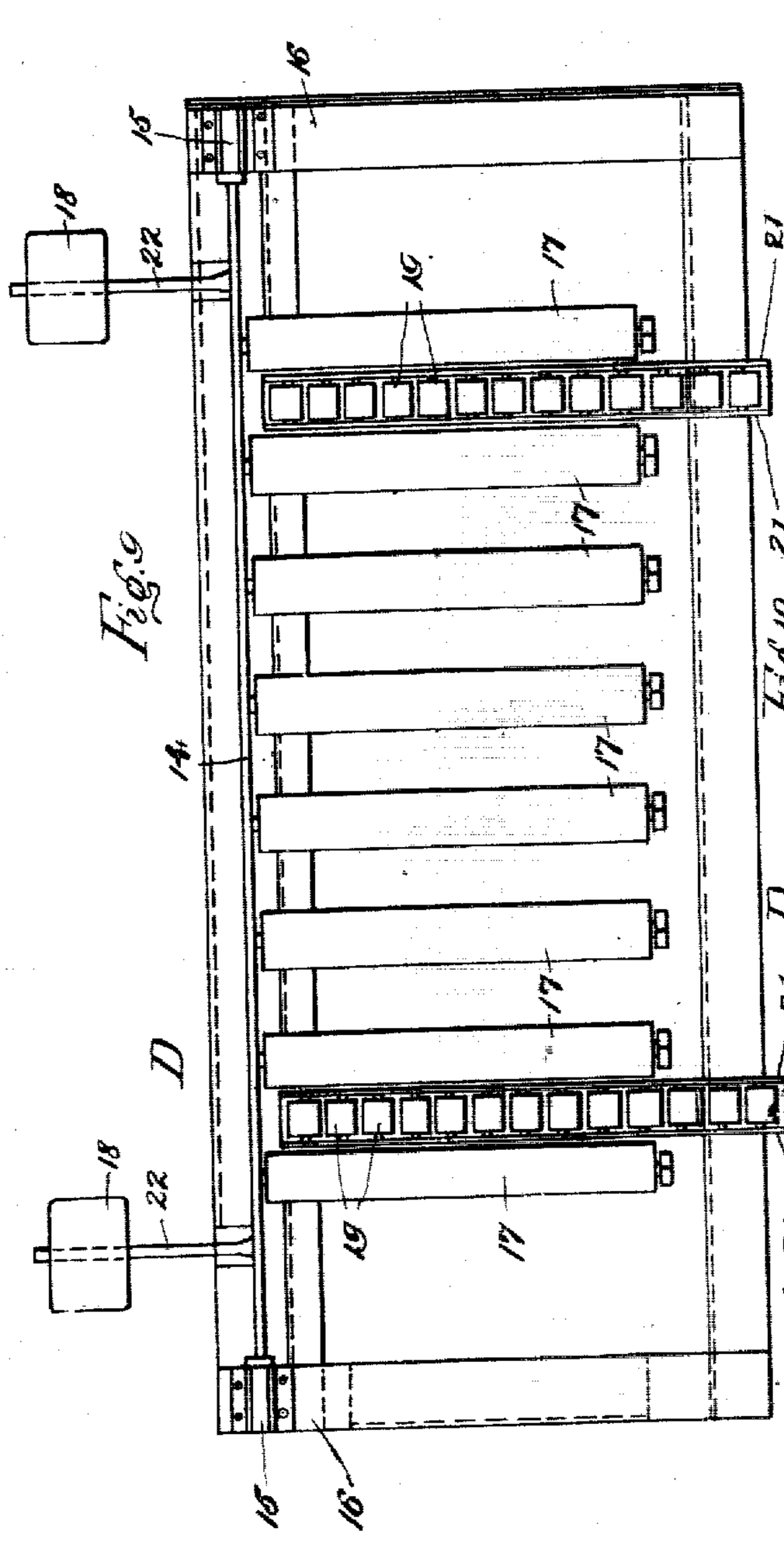


Fig. 9

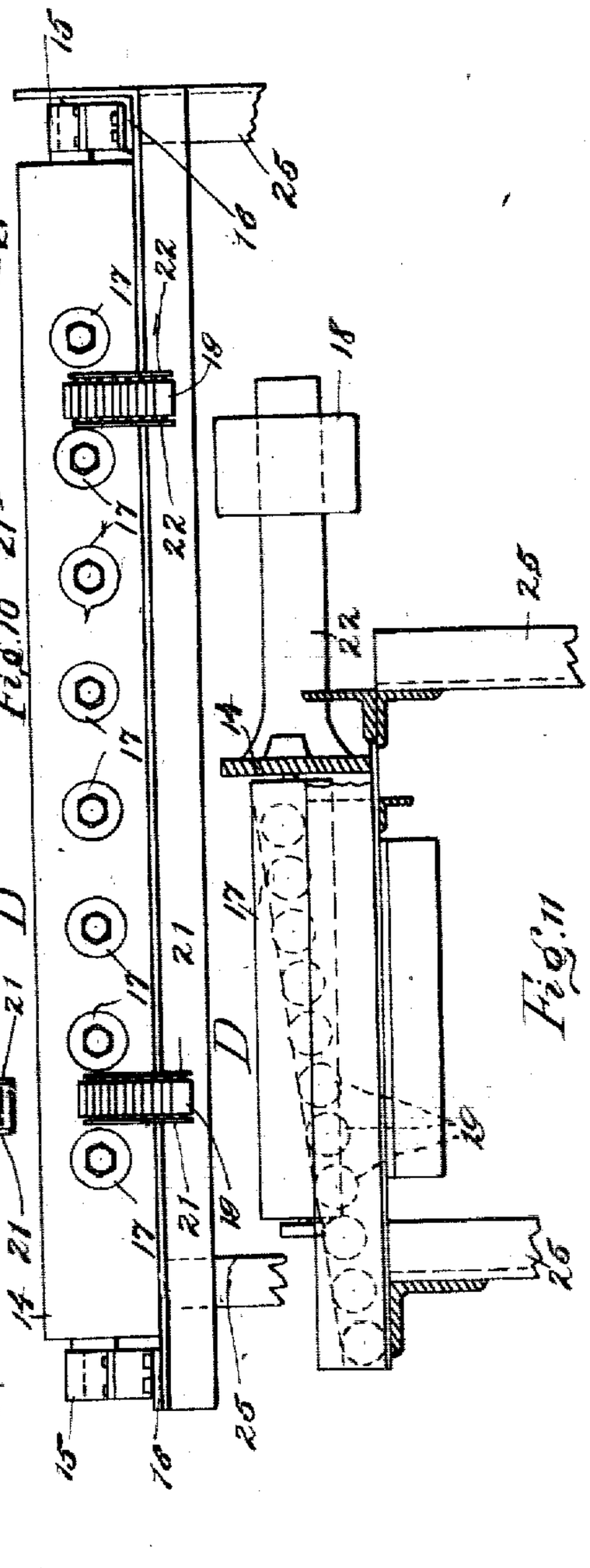


Fig. 10

Fig. 11

Witnesses:-
B. J. Lorkowski.
J. W. Stitt.

Inventor,
Peter G. Burns,
By A. L. Jackson.
Attorney.

No. 864,092. PATENTED AUG. 20, 1907.

P. G. BURNS.

WOOD PRESERVING APPARATUS.

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 6.

Fig 12

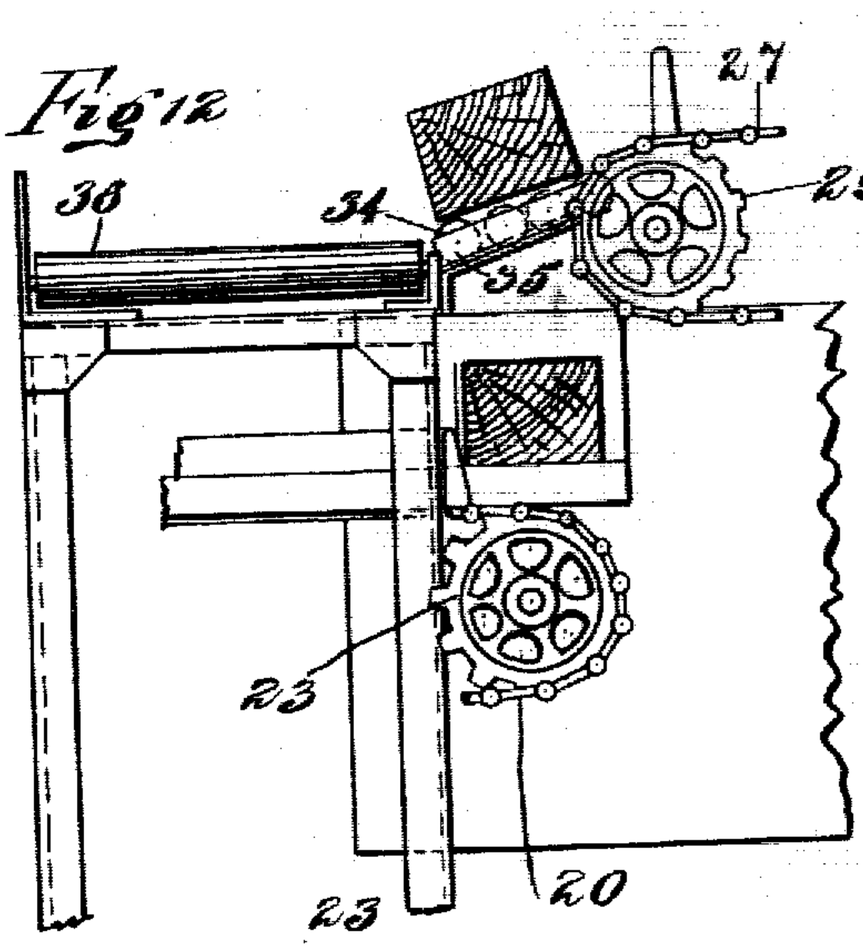


Fig 13

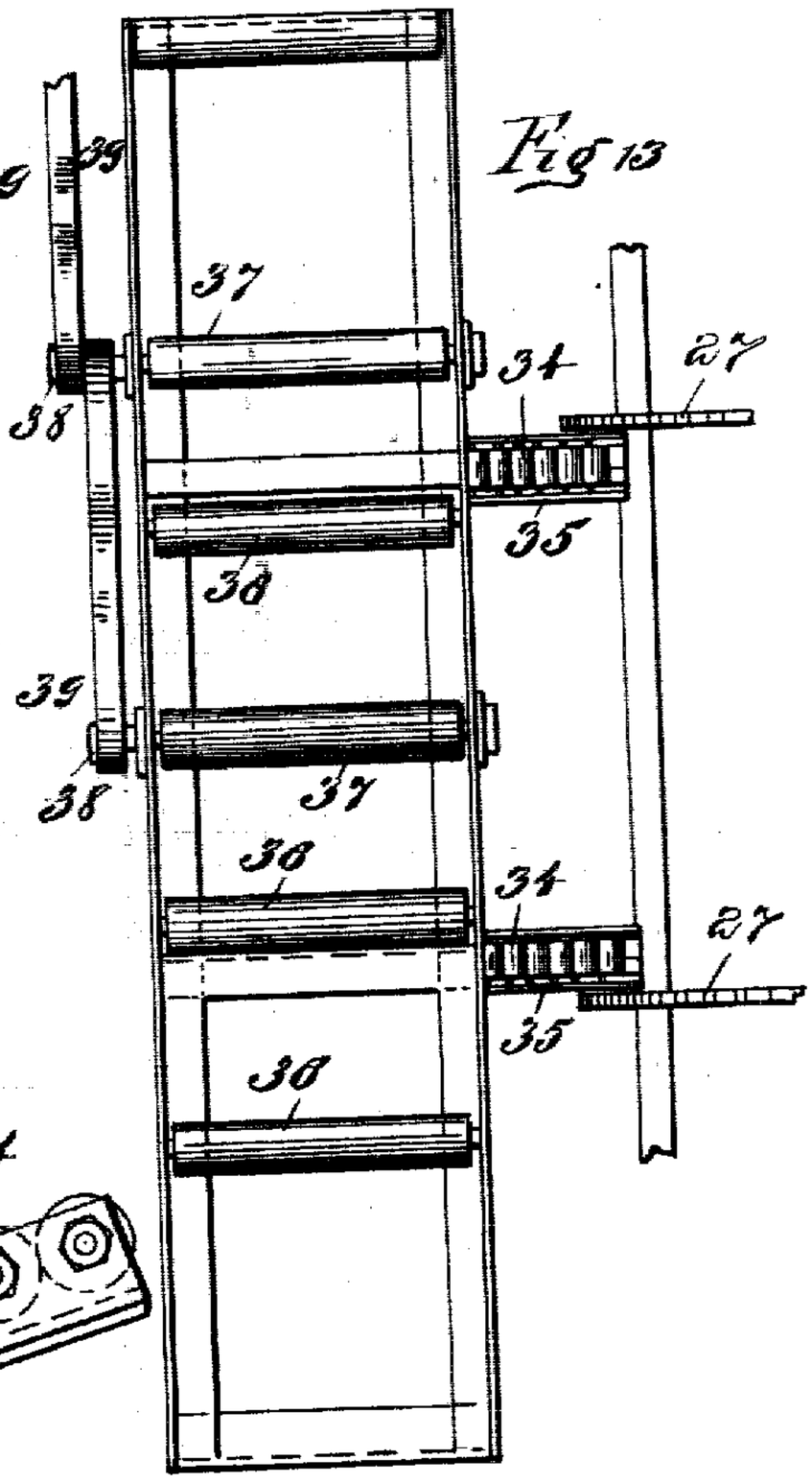
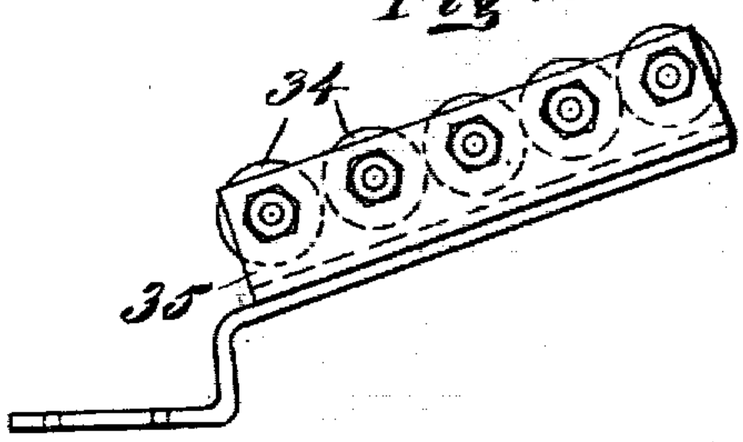


Fig 14



Witnesses:-
B. J. Lorkowski.
J. W. Stitt.

Inventor;
Peter G. Burns
By A. L. Jackson,
Attorney.

No. 864,092. PATENTED AUG. 20, 1907.

P. G. BURNS.

WOOD PRESERVING APPARATUS.

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 7.

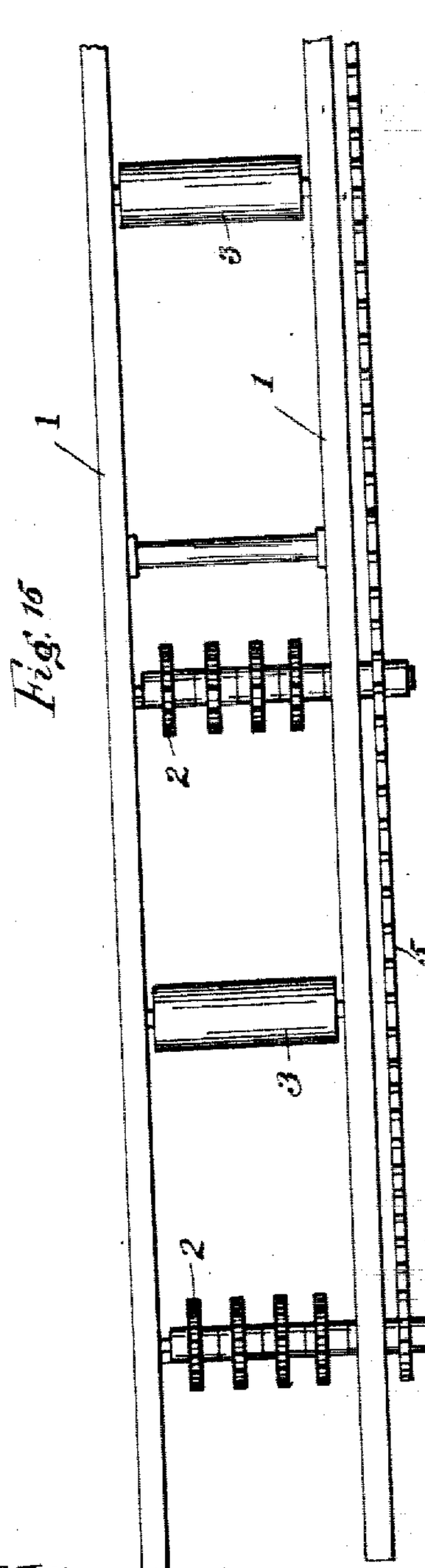


Fig. 15

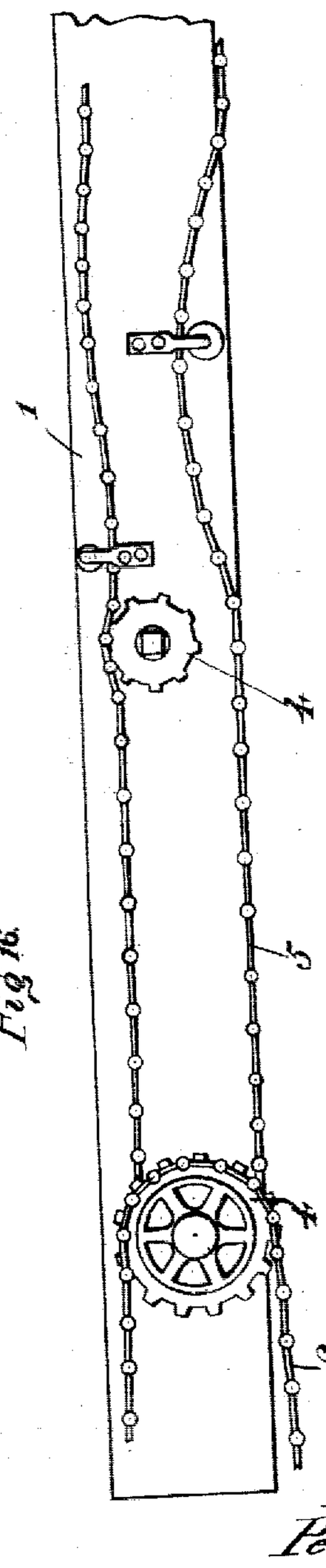


Fig. 16.

Witnesses:-
B. J. Sorkowski
J. W. Stitt.

Inventor,
Peter G. Burns,
By A. L. Jackson.
Attorney.

No. 864,092. PATENTED AUG. 20, 1907.

P. G. BURNS.

WOOD PRESERVING APPARATUS.

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 8.

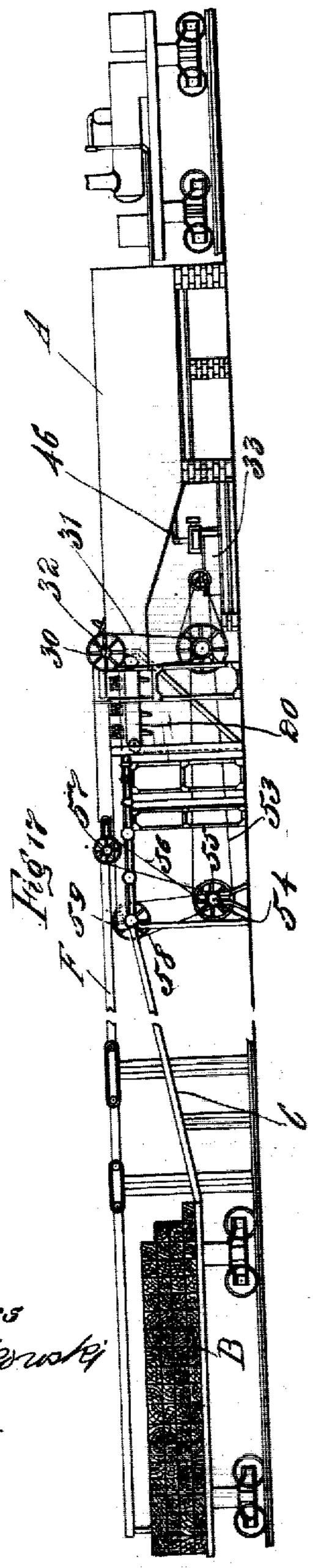


Fig. 1.

Witnesses
B. J. Lyskowski
J. W. Stitt.

Inventor,
Peter G. Burns,
By A. L. Jackson.
Attorney.

No. 864,092. PATENTED AUG. 20, 1907.

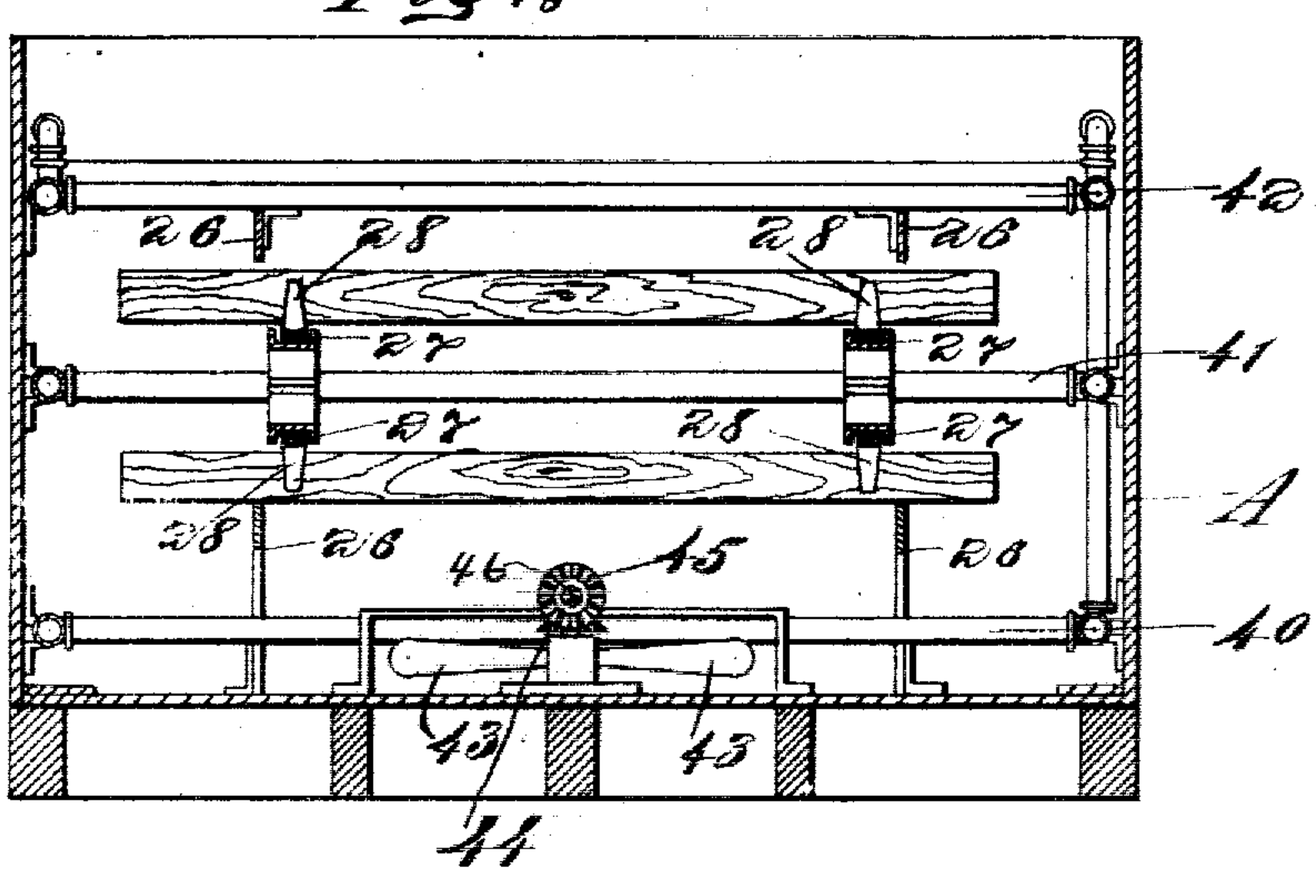
P. G. BURNS.

WOOD PRESERVING APPARATUS.

APPLICATION FILED SEPT. 11, 1906.

9 SHEETS—SHEET 9

Fig 18



Witnesses:-
B. J. Lockowski.
J. W. Slitt.

Inventor,
Peter G Burns,
By A. D. Jackson,
Attorney.

UNITED STATES PATENT OFFICE.

PETER GRANT BURNS, OF ST. LOUIS, MISSOURI.

WOOD-PRESERVING APPARATUS.

No. 864,092. Specification of Letters Patent. Patented Aug. 20, 1907.

Application filed September 11, 1906. Serial No. 334,142.

To all whom it may concern:

Be it known that I, PETER GRANT BURNS, a citizen of the United States, residing at St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Wood-Preserving Apparatus, for which the following is a specification.

This invention relates to wood preservation and more particularly to apparatus for treating timber with a liquid preservative, and the object is to provide apparatus by which railway cross-ties and other timbers can be transported to a vat or tank containing a liquid preservative and submerged in the liquid and made to traverse, making a circuit under the surface of the liquid preservative for a considerable period of time and then transported to suitable places to be dumped on cars. Provision is made for heating the liquid in the tank or vat and provision is made for stirring the liquid in the tank or vat.

One of the objects of this invention is to prepare or provide a portable wood preserving plant which can be transported from one lumber yard to another and transported any reasonable distance.

One of the advantages of this invention is that the handling of the ties or other timber from the time they are placed on the tramways until they have been treated with the liquid preservative until they are ready to be dumped on cars again is accomplished entirely by mechanical means, the ties or timber never stopping from the time they are placed on the tramways until they have made the circuit through the vat or tank and have moved to the cars on which they are to be dumped.

Other objects and advantages will be fully understood from the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application and specification.

Figure 1 is a broken plan view on a small scale of the wood preserving plant. Fig. 2 is a plan detail view of the rollers for turning the curves in the tramways. Fig. 3 is a side elevation of a portable wood preserving plant. Fig. 4 is a broken plan view of the vat on an enlarged scale. Fig. 5 is a broken plan view, illustrating the apparatus for stirring the liquid in the vat. Fig. 6 is a broken vertical section of the tank or vat illustrating the stirring mechanism. Fig. 7 is a vertical section of the tank or vat, illustrating the means for heating the liquid in the tank or vat, and the means for transporting the timber into and out of the tank or vat. Fig. 8 is a broken detail view, illustrating the means for starting the timber into the tank or vat. Fig. 9 is a plan view of the receiving table which delivers the timber to the conveying devices shown in Fig. 8. Fig. 10 is a side elevation of the table shown in Fig. 9, Fig. 10 illustrating the free ends of the rollers. Fig. 11 is a vertical section of the table shown in Figs. 9 and 10. Fig. 12 is a broken detail view of the discharging mechanism, being a side elevation. Fig. 13 is a plan view of the discharging rollers. Fig. 14 is a detail view illustrating the manner of mounting the rollers which receive the timber from the vat conveyer chain. Fig. 15 is plan view of a section of a tramway. Fig. 16 is a side elevation, illustrating the manner of driving the rollers of the tramway. Fig. 17 is a side elevation of the plant as shown in Fig. 1. Fig. 18 is a vertical cross-section of the vat or tank.

Similar characters of reference are used to indicate the same parts throughout the several views.

The invention herein described may consist of a portable plant for treating wood, as shown more particularly in Fig. 3 of the drawings.

In Fig. 1 is shown a plan of the entire plant as nearly complete as can be shown on one sheet of drawings.

A indicates the tank or vat in which is placed the preserving liquid.

B represents a car load of timber to be treated.

C represents a tramway for conveying the timber from the car B to the vat A.

D represents the receiving apparatus or table on which the timber is received from the tramway C to be started into the vat.

E represents the discharge carrier rollers which receive the timber after it has been treated in the vat and starts the timber on the tramway F which delivers the same to a car G.

The tramways C and F are constructed of side frame pieces 1 with driven toothed rollers 2 and idlers 3 journaled in the frame pieces 1. The toothed rollers 2 are driven by sprocket wheels 4 and chains 5 and 6, and the sprocket chains 5 and 6 may be driven by any suitable power. Both tramways are curved towards the vat A. The tramways are provided at the curved portions with driven rollers. See Fig. 2. The rollers 7 are driven rollers and are journaled in the curved frame pieces 8. The rollers 7 are provided with pulley wheels 9 which are double grooved pulleys and also with single grooved pulleys 11 and 12. The pulley 11 is mounted on the shaft of the last driven pulley in tramway 7. The rollers 7 are all driven by the power derived from the last toothed roller 2 by means of the pulleys 11 and 12, and by the cables 10. Idlers 13 hold the cables 10 in operative relation. From the rollers 7 the timber is received on a table D. The rollers 7 turn the timber so that it is in position to enter the vat cross-wise. The table D is provided with a rocking frame 14 which is journaled in bearings 15. The bearings 15 are attached to suitable supporting frame pieces 16. Idlers 17 are journaled in the rocking frame 14 only, the outer ends of these conveyer rollers being free or without bearings. Counter weights 18 are attached to the rocking frame 14 for holding the frame and the rollers in their normal position to receive the timber from the turn-table rollers

7. The timber may be shoved on the rollers 17 by hand. When the timber is received on the rollers 17, it is in position to be delivered to the vat. The timber is taken from the rollers 17 by means of dumping rollers 19. The timber lying on the rollers 17, the weights 18 are raised and the rollers 17 will be tilted down so the timber will be received on the rollers 19 and carried to traveling sprocket chains 20. The frame pieces 21 in which the rollers 19 are journaled are inclined as shown so that the timber will descend by gravity to the chains 20.

It is apparent that the weights 18 may be varied in size and adjusted on the beams 22 so that an operator can easily tilt or rock the frame. The sprocket chains 20 are driven by sprocket wheels 23. When the timber reaches the chains 20 it is carried and dumped on the tracks 26. In Figs. 10 and 11 the upright frame pieces 25 are broken away for convenience in grouping the drawings.

The vat or tank A may be of any suitable shape. The vat shown is a rectangular trough-like structure which may be shallow at the receiving end. The timber is received on tracks 26 mounted on the bottom of the vat. The timber is moved along in the vat by two sprocket chains 27 which have outwardly projecting teeth 28 which project close enough to the tracks 26 to move the timber. The pieces of timber will probably float up next to the sprocket chains 27. These chains run under the surface of the liquid preservative. The tracks 26 extend the entire length of the vat below the sprocket chain and curve upward and back through the vat above the sprocket chains 27, as clearly shown in Fig. 7. The tracks are submerged in the liquid except at the receiving and discharge ends. The sprocket chains 27 are driven by sprocket wheels 29. The timber will rise up at the end H of the vat and follow the tracks 26, but the teeth of the sprocket chain would force the timber up to follow the tracks. Above the sprocket chains, the timber would probably float up against the tracks 26 instead of resting on the sprocket chains. In either case the teeth of the sprocket chains will force the timber along. The time of travel from the receiving end of the vat through the vat and back to the discharge may be made in any desired length. The sprocket wheel 29 at the receiving end of the vat may be driven by a pulley 30 mounted on the shaft 32 with the sprocket wheels 29 and by a belt 31 which is driven by the engine 33.

The sprocket chains 27 dump the timber on discharge rollers shown in detail in Figs. 12 to 14 inclusive. The timber is first dumped on rollers 34 which are journaled in an inclined frame 35, the rollers 34 being transverse the vat. The rollers 34 may be called the dumping rollers. The rollers 34 deliver the timber to discharge rollers 36 and 37. The rollers 37 may be driven by pulleys 38 and belts 39 which are driven from the rollers 7 of the discharge turn-table. The rollers 36 and 37 deliver the timber to the turn-table rollers 7 and the rollers 7 deliver the timber to the tramway F.

Means are provided for heating the liquid in the vat A by steam. Steam pipes circulate horizontally in the vat. One layer 40 of the circulating pipe is arranged near the bottom of the tank. One layer 41 is horizontally arranged between the sides of the sprocket chains 27. And one layer 42 is arranged near the top of the tank, but is disposed beneath the surface of the liquid preservative. The pipe is of ordinary construction and may be connected to a boiler to carry steam from the boiler. It is apparent that hot air or a hot liquid could be used for heating the pipes. These pipes run back and forth from side to side in the vat so that the liquid preservative will be heated at all parts of the vat.

Means are provided for stirring the liquid in the vat. Rotary stirrers 43 are mounted on upstanding shafts or spindles which are mounted on the bottom of the vat. These stirrers are driven by bevel gearing, one gear wheel 44 being rigid with the stirrers 43 and the coöperating gear wheel 45 being mounted on the shaft 46. Bearings 47 for the shaft 46 are mounted on the bottom of the vat A. The shaft 46 projects out of the vat through a stuffing box 52 and a gear wheel 48 is mounted thereon. Gear wheel 48 is driven by a gear wheel 49. A shaft 50 drives the gear wheel 49 and this shaft is provided with a pulley 51 by which the shaft is driven.

The plant may be a portable plant with the vat A mounted on a flat car, as shown in Fig. 3, or the plant may be stationary, as illustrated in Fig. 17. The engine 33 furnishes power for driving the rollers of the tramways C and F. A band 53 driven by the engine 33 drives a shaft 54 through the large pulley 55. A band 56 driven from shaft 54 drives the pulley 57. A band 58 driven from the shaft 54 drives a pulley 59. Pulley 59 drives shaft 60, which shaft furnishes power for driving the rollers of tramway C and a band 61 transmits power for driving rollers 7 of the turntable. The band 56 drives a shaft 62 which furnishes power for driving the rollers of tramway F. A band 63 transmits power for driving the rollers of the discharge turntable.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is,—

1. A wood preserving plant comprising a feeding tramway, a vat containing a preserving liquid, means for shifting timber from said tramway to said vat, means for submerging the timber in the liquid in said vat, a track for supporting the submerged timber to make a circuit within said vat from one end of the same to the other and for holding down the timber in the movement back to the receiving end, a discharge tramway and means for shifting the timber from said vat to said discharge tramway.

2. A wood preserving plant comprising a feeding tramway, a vat containing a preserving liquid, means for shifting timber from said tramway to said vat, tracks extending under the surface of the liquid the full length of the vat for supporting timber and extending upward and backward to the starting point for holding down timber, means for forcing timber along said tracks, a discharge tramway, and means for shifting the timber from said tracks to said discharge tramway.

3. A wood preserving plant comprising a feeding tramway, a vat containing liquid, means for shifting timber from said tramway to said vat, submerged tracks extending the full length of said vat to support timber and upward and backward to the starting point to hold timber down, driven sprocket chains for moving timber along upon the lower part of said tracks and under the upper part of said tracks, a discharge tramway, and means for shifting timber from said tracks to said discharge tramway.

4. A wood preserving plant comprising a delivery tramway, a vat containing a preserving liquid, means for shifting timber from said tramway to said vat, means for submerging timber in said vat and moving the same to make a continuous circuit from the receiving end of said vat to the other end and back to the receiving end of the vat while submerged, means for heating the liquid in said vat during operation, and means for discharging the timber from said vat.

5. A wood preserving plant comprising a vat containing a preservative liquid, continuous tracks and driving means for delivering timber to said vat, means for submerging the timber in the liquid and forcing the submerged timber from the receiving end to the other end and back to the receiving end while submerged, said tracks supporting the timber in the forward movement and holding the timber down in the backward movement, and means for discharging the timber from said vat.

6. A wood preserving plant comprising a vat containing a preserving liquid, means for delivering timber to said vat, means for submerging the timber in the liquid and forcing the timber from the receiving end of said vat to the other end and upward and backward to the receiving end while submerged, tracks for supporting the timber in the forward movement and guiding the timber in the upward movement and for holding the timber down in the backward movement, and means for discharging the timber from said vat.

7. A wood preserving plant comprising a vat containing a preserving liquid, means for feeding timber to said vat, means for submerging the timber in the liquid and forcing the timber to make a circuit from the receiving end to the other end of said vat and back to the receiving end while submerged, means for stirring the liquid in said vat during operation, and means for discharging the timber from said vat.

8. A wood preserving plant comprising a feeding tramway, a vat containing a preserving liquid, means for shifting timber from said tram way to said vat consisting of a turning-way coöperating with said tramway, a receiving and dumping table coöperating with said turning-way, and chains receiving timber from said receiving and dumping table and delivering the same to said vat, means for submerging the timber in said liquid and causing the same to make a circuit from the receiving end of said vat to the other end of the vat and back to the receiving end while submerged, and means for discharging the timber from said vat.

9. A wood preserving plant comprising a feeding tramway, a vat containing a preserving liquid, means for shifting timber from said tramway to said vat, means for submerging the timber in the liquid and causing the same to make a circuit from the receiving end of the vat to the other end and back to the receiving end while submerged, a discharge tramway, a discharge table, dumping rollers for delivering timber from said vat to said discharge table, and a turning-way for delivering timber from said delivery table to said discharge tramway.

10. A wood preserving plant having a vat containing a preserving liquid, traveling sprocket chains mounted in said vat and submerged in the liquid therein, tracks spaced apart from said chains and extending beneath said chains from the receiving end of the vat and making a circuit with said chains and extending above said chains back to the receiving end of the vat, and teeth carried by said chains for forcing timber along said tracks.

11. A wood preserving plant having a vat containing a preserving liquid, traveling sprocket chains mounted in said vat and submerged in the liquid therein, tracks spaced apart from said chains and extending below and about and above said chains to support timber below said chains and to hold down timber above said chains, said tracks being submerged in the liquid in said vat, and heating pipes circulating in said vat below said tracks, between the moving sides of said chains, and above said chains and tracks.

12. A wood preserving plant having a vat containing a preserving liquid, carrying sprocket chains mounted in said vat and submerged in the liquid therein, tracks submerged in the liquid in said vat and spaced apart from said chains and forming a path for supporting timber to move below said chains and for holding down timber to move above said chains, and rotary stirrers mounted in said vat below said tracks for agitating the liquid in said tank.

13. A wood preserving plant having a vat containing a preserving liquid, carrying sprocket chains mounted in said vat and submerged in the liquid therein, tracks for supporting timber below and for holding down timber above said chains, said tracks being submerged in the liquid in said vat, heating pipes circulated above and below said tracks and between said chains, and rotary stirrers mounted below said tracks for agitating the liquid in said vat.

14. A wood preserving plant having a vat containing a preserving liquid, means for feeding timber to said vat consisting of a tramway, a tilting frame carrying receiving rollers, a turntable provided with driven rollers for delivering timber from said tramway and changing the timber from a longitudinal position to a transverse position on said receiving rollers, idler rollers, means for lowering said receiving rollers below said idler rollers, and carrying chains receiving timber from said gravity rollers and delivering the same to said vat.

15. A wood preserving plant comprising a feeding tramway terminating with a turning-way, a vat containing a preserving liquid, means for shifting timber from said tramway consisting of a tilting table provided with rollers and traveling sprocket chains receiving timber from said tilting table, means for submerging the timber in the liquid in said vat and for forcing the timber from the receiving end to the opposite end and back to the receiving end while submerged, a discharge tramway, and means for shifting the timber from said vat to said discharge tramway.

16. A wood preserving plant comprising a feeding tramway terminating with a turning-way, a vat containing a preserving liquid, means for shifting timber from said tramway consisting of a tilting table provided with rollers, weights for increasing or decreasing the weight of said table, and traveling sprocket chains for delivering timber from said table to said vat, means for submerging timber in the liquid in said vat and forcing the same from the receiving to the opposite end and back to the receiving end while submerged, a discharge tramway, and means for shifting the timber from said vat to said discharge tramway.

17. A wood preserving plant comprising a feeding tramway terminating with a turning-way, a vat containing a preserving liquid, means for shifting timber from said turning-way to said vat, means for submerging the timber in said vat and forcing the same from the receiving end to the opposite end and back to the receiving end while submerged, a discharge tramway commencing with a turning-way, and means for shifting timber from said vat, to said discharge tramway consisting of an inclined way provided with rollers, and driven rollers receiving timber from said inclined way and delivering the same to the turning-way of said discharge tramway.

18. A wood preserving plant comprising a vat containing a preserving fluid, a submerged sprocket chain running in said liquid, a track below and above said chain and continuous from the position below to the position above said chain, means for feeding timber to said vat and placing the same on said track below said sprocket chain, discharging devices receiving timber from the upper part of said chain, and means carried by said sprocket chain for forcing timber along said track, said track being submerged in the fluid.

19. A wood preserving plant comprising a vat containing a preserving fluid, a submerged sprocket chain running in said vat, a tramway terminating with a turning way and shifting devices coöperating with said tramway and its turning way to feed timber below said sprocket chain, discharging devices above said shifting devices, means for forcing timber along under said chain and upwards with said chain and along above said chain to said discharging devices in continuous motion, and a tramway coöperating with said discharging devices.

In testimony whereof, I set my hand in the presence of two witnesses, this 29th day of August, 1906.

PETER GRANT BURNS.

Witnesses:
M. L. BILLINGSLEY,
F. W. BOBBITT.