

(No Model.)

2 Sheets—Sheet 1.

W. G. CURTIS & J. D. ISAACS.  
TIMBER PRESERVING APPARATUS.

No. 516,730.

Patented Mar. 20, 1894.

Fig. 1.

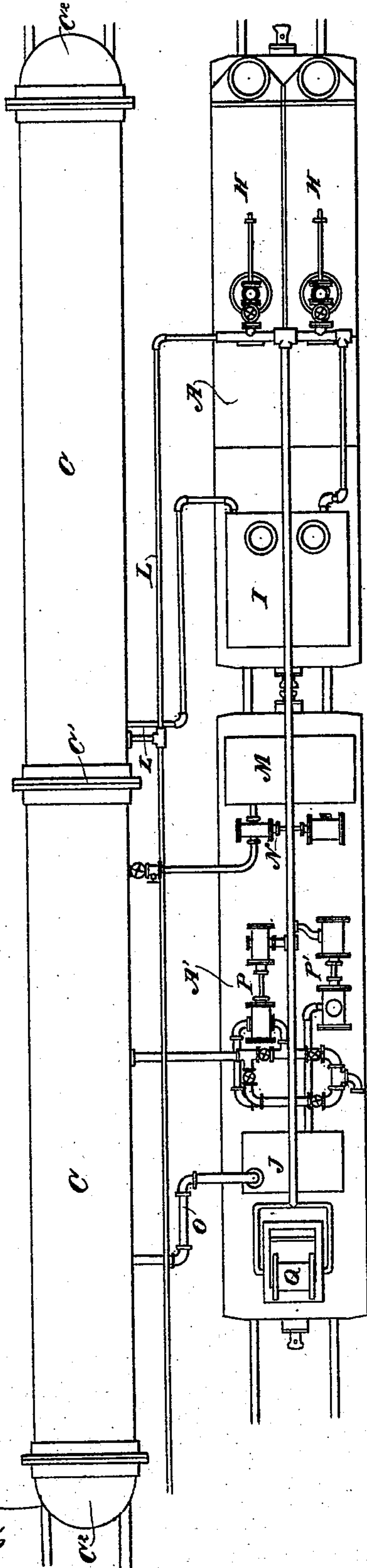
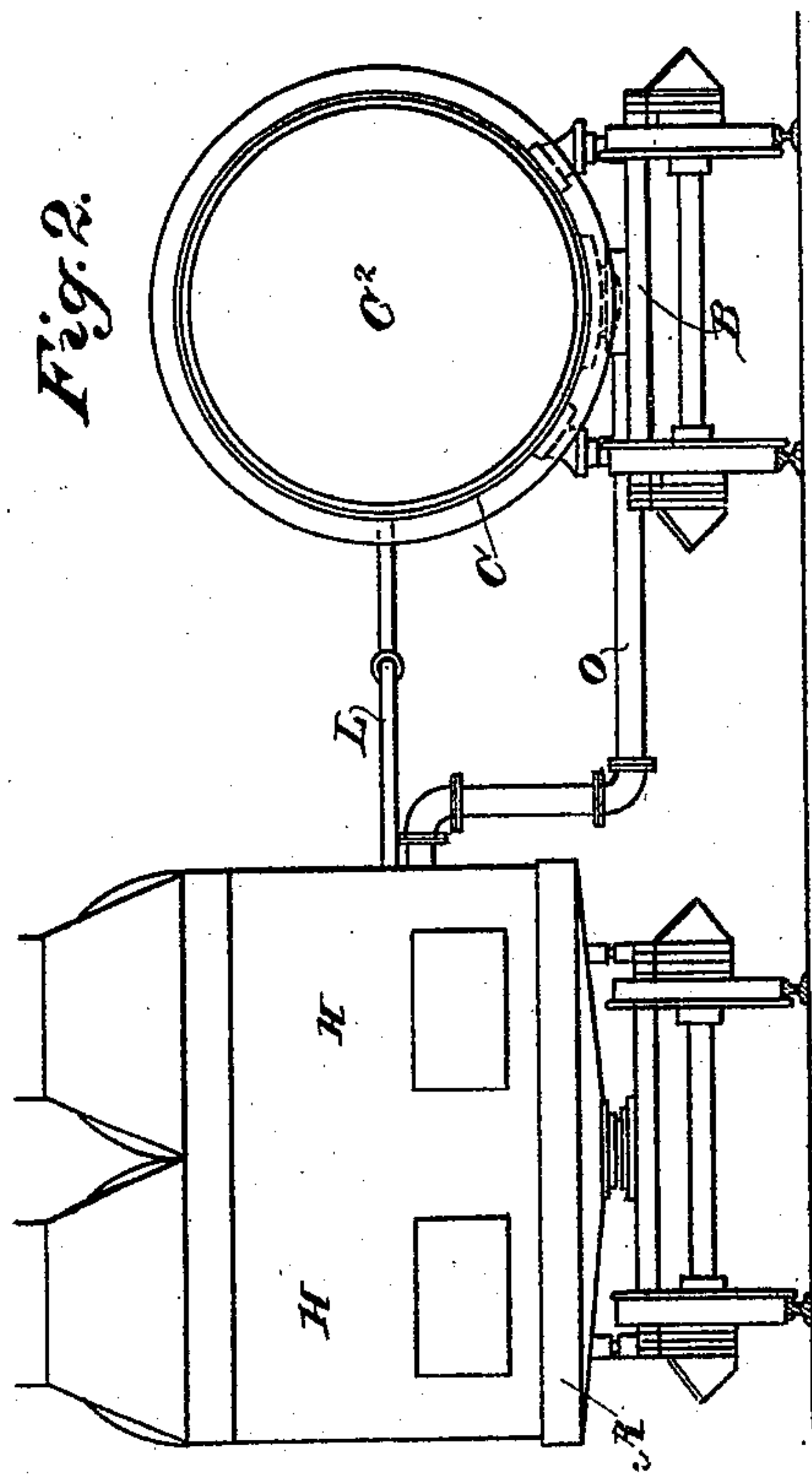


Fig. 2.



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2 Sheets—Sheet 2.

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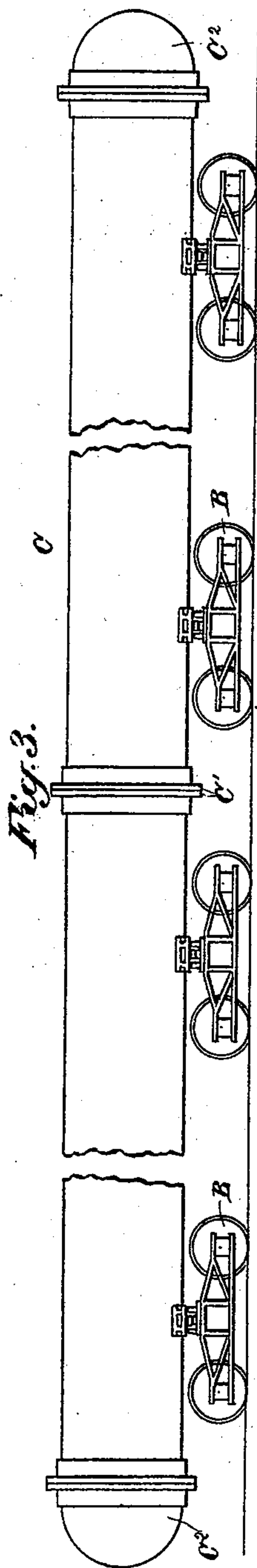


Fig. 3.

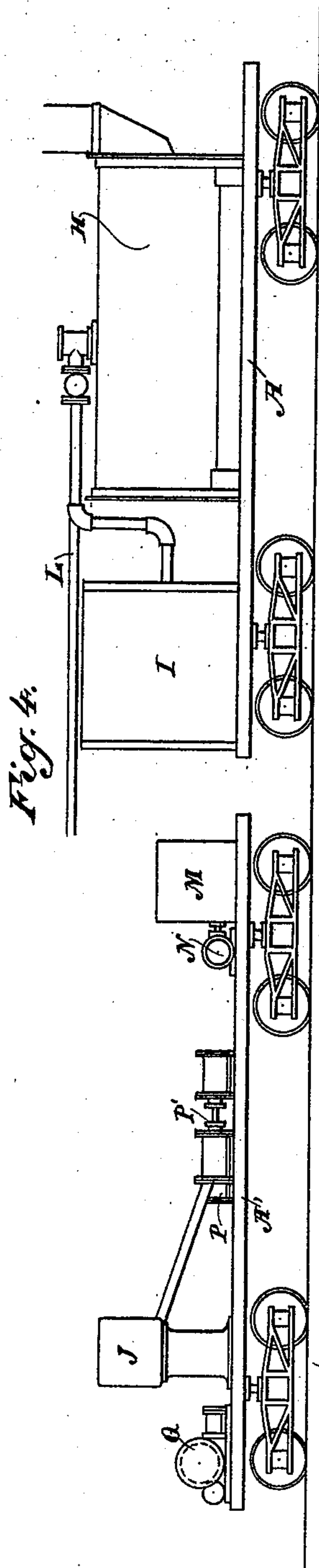


Fig. 4.

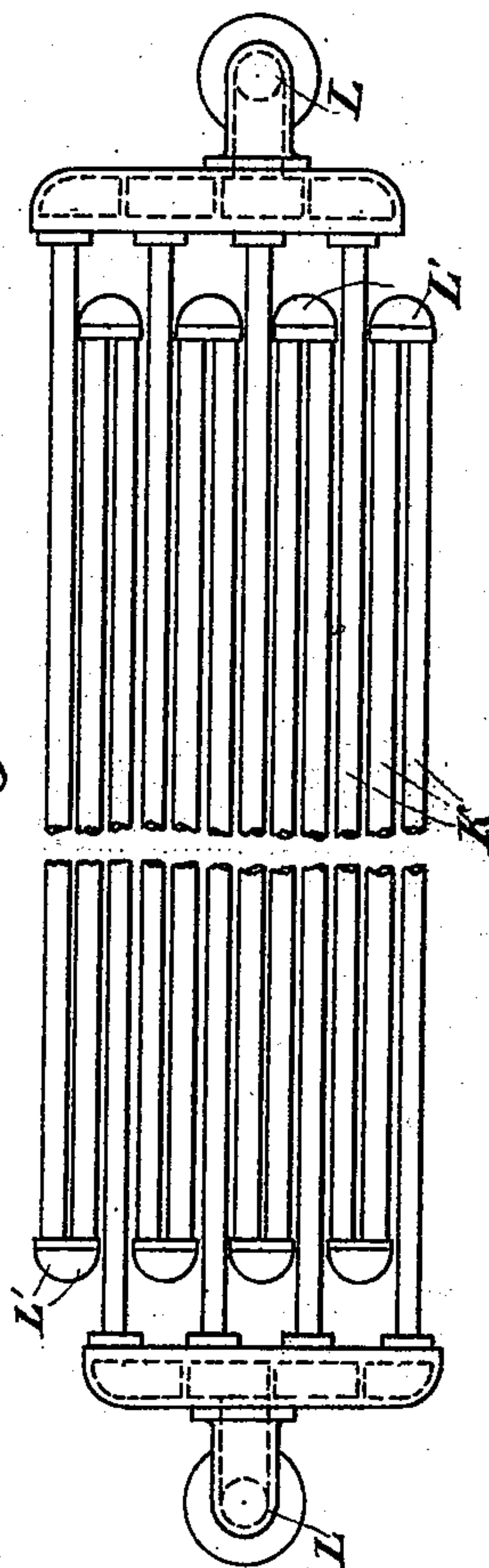


Fig. 6.

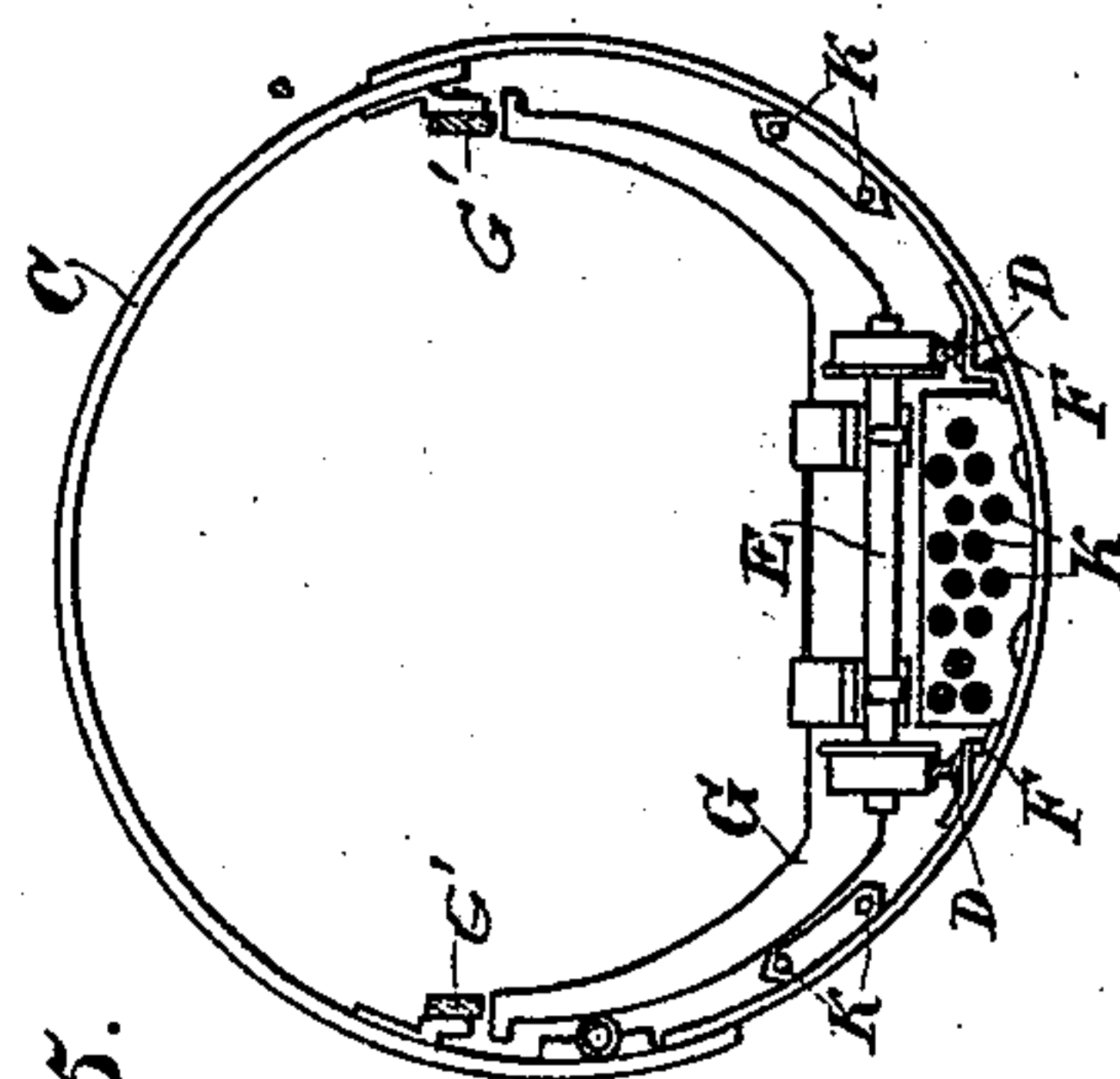


Fig. 5.

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# UNITED STATES PATENT OFFICE.

WILLIAM G. CURTIS AND JOHN D. ISAACS, OF SAN FRANCISCO, CALIFORNIA.

## TIMBER-PRESERVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 516,730, dated March 20, 1894.

Application filed August 30, 1893. Serial No. 484,399. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM G. CURTIS and JOHN D. ISAACS, citizens of the United States, residing in the city and county of San Francisco, State of California; have invented an Improvement in Timber-Preserving Apparatus; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to a portable plant or apparatus for impregnating timber with preservative substances.

It consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a plan view of our apparatus. Fig. 2 is an end view. Figs. 3 and 4 are side elevations of the cars with the machinery, and of the retort. Fig. 5 is a cross section through the retort showing its interior construction. Fig. 6 is a plan view of the heating device in the retort.

In carrying out our invention we employ cars or trucks A and B adapted to run upon the tracks of any ordinary railroad and suitably coupled. These cars are of any suitable or desired length, and upon one or more of them is placed the retort C for the reception of the timber. For short timber, the retort may be carried upon two trucks, but for piles or other long timbers, the retort is made in sections, each of which is mounted upon two trucks with the usual bearing wheels. Suitable frame-work or supports are fixed to the trucks, and the retort sections are fitted to these supports so as to practically form a part of the car. When two or more sections are necessary to make the full length of the retort, the open, adjacent ends are brought together by moving the trucks along the track until the retort sections abut. These abutting ends are provided with coupling flanges C' and suitable packing to make tight joints and any desired number of sections may be united to produce the required length. They are again separated for transportation, as the entire retort would be too long for this purpose. This retort is thus made of a length sufficient to receive long timber, and has in the interior, rails D upon which the wheeled trucks E are adapted to travel, leaving a space between the rails and beneath the trucks for the heating apparatus to be hereinafter de-

scribed. The rails are here shown as supported upon angle iron plates F bolted to the interior of the retort and so shaped as to provide a suitable supporting surface for the rails. Cradles G are mounted upon the trucks and adapted to receive the timber which is placed in these cradles, and the truck then run into the retort which is closed by suitable closing caps C<sup>2</sup> at the ends. These cradles are formed with arms which curve upwardly along the inside of the retort and terminate at or about the transverse center of the same, and secured to the inner walls of the retort contiguous to the upper free ends of said arms, are suitable stops G' to prevent the cradles from tilting laterally.

Upon the car A, which is placed by the side of the car carrying retort, are mounted the boilers H for the production of steam for carrying out our process. These boilers are provided with a super-heater I, in which a portion of the steam is super-heated for use as will be hereinafter described.

Upon the second car A' in line with the car A and parallel with the retort, are mounted the main and circulating pumps P and P', the first serving to charge the retort with the preservative liquid, and the other being connected with the condenser to circulate water in the usual manner.

Q is a winch for handling heavy timbers and other purposes, and M is a gaging tank, the object of which is to measure the exact amount of the preservative which is forced into the timber so that the amount used for this purpose may be accurately known. This is independent of, and additional to the amount which fills the retort originally, and which is heated and employed to drive the moisture out of the timber before the preservative is forced into it.

N is a force pump to be used in conjunction with the retort, to charge the timber after the water has been expelled therefrom.

The timber being placed in the retort, the main pump is set in operation, and creosote or other suitable material which we use in our preservative process is pumped into the retort until the timber therein is submerged, the timber being retained in its cradles by means of chains passing around it and securing it in place. The preservative is then heated, as hereinafter described, to a temper-



ature sufficient to expel the moisture from the timber without the aid of any vacuum or pressure at this stage of the operation, this being an important feature of our process, because it enables us to expel the moisture and impregnate the timber without a great waste of the preservative material, such as would occur if a vacuum were employed.

Timber, in its ordinary condition, contains an average of fourteen pounds of water to the foot, and this is expelled to a point where it shows about one half a pound of water to the foot, when the timber is sufficiently clear of water to be properly impregnated by the preservative. The water as it is expelled from the timber, passes to the condenser J which is so constructed as to indicate the amount of water expelled from the timber.

O is a pipe leading from the retort to the condenser.

In order to heat the contents of the retort to the proper temperature, we have shown a series of pipes K arranged in the space between the rails D of the retort and beneath the trucks upon which the timber is mounted. Steam is introduced into these pipes by means of pipes L connecting with the boiler, and in order to properly economize the heat, and to provide for the free expansion and contraction of the pipes K, we have shown these pipes as made in sections of three parts returning upon each other, and having the extreme ends connected with what are known as manifolds or steam chests situated at the ends and at intermediate points within the retort. The intermediate return bends L' are supported independently of the manifolds or end connections and are allowed free movement to allow for expansion and contraction of the pipes. By this construction, great economy in heating is obtained, and proper expansion of the pipes is allowed without straining the manifold connections, while the short independent sections through which the steam is to pass, prevents the accumulation of condensed water within the pipe. The temperature within the retort is maintained until the indicator of the condenser shows a sufficient amount of moisture has been expelled from the timber, when additional preservative material is pumped from the gaging tank M by means of the force pump N, and is forced into the retort under pressure of from one hundred to one hundred and fifteen pounds per square inch. The amount of additional preservative thus forced into the retort is shown by a gage upon the gaging tank, the tank being so constructed as to hold a certain amount of preservative for every inch of depth, and the surplus preservative thus forced into the retort already full under ordinary pressure, is injected into the timber which is thus filled with the preservative compound.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for impregnating and pre-

serving timber, comprising a train of portable and connected retort sections having rails along their inner surfaces, wheeled trucks adapted to travel on said rails, cradles carried by the trucks and having arms curving upwardly and terminating short of the top of the sections, stops on the inner sides of the sections contiguous to each free end of the cradle arms, a portable car parallel with the retort sections provided with boilers and connections to the sections, and a second car in line with the car carrying the boilers, and provided with devices for applying the preservative under pressure to the timber in the retort sections, substantially as herein described.

2. In an apparatus for impregnating and preserving timber, the retort having the rails along its inner surface, wheeled trucks adapted to travel on said rails, the cradles carried by the trucks and having their arms curving upwardly and terminating short of the top of the retort, and stops on the inside of the retort contiguous to each free end of the cradle arms, substantially as herein described.

3. In an apparatus for impregnating and preserving timber the retort having rails disposed along its inside, a truck mounted to travel on said rails and having arms curving upwardly to a point below the upper side thereof and forming a semi-circular cradle, stops located on the inner sides of the retort contiguous to the upper free ends of the cradles, and steam pipes located in the space between the rails and beneath the trucks, said steam pipes being made in sections returning upon each other, and steam chests or manifolds at the ends and at intermediate points within the retort, and connected with said pipes.

4. An apparatus for impregnating and preserving timber, comprising a retort provided with rails on its inside, devices for applying heat and preservative to the timber, in said retort, a wheeled truck within the retort provided with curved arms extending upwardly along the inner sides of the retort to points below the upper side and forming a semi-circular cradle for the timber, stops contiguous to the free ends of the arms, and a steam pipe located in the retort between the tracks and below the truck, made in sections returning upon each other, and having their ends connected with manifolds or steam chests situated at the end and at intermediate points within the retort, said intermediate manifolds being supported independently of the end manifolds whereby they are allowed a free movement for expansion and contraction, substantially as herein described.

In witness whereof we have hereunto set our hands.

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Witnesses:

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J. A. BAYLESS.