

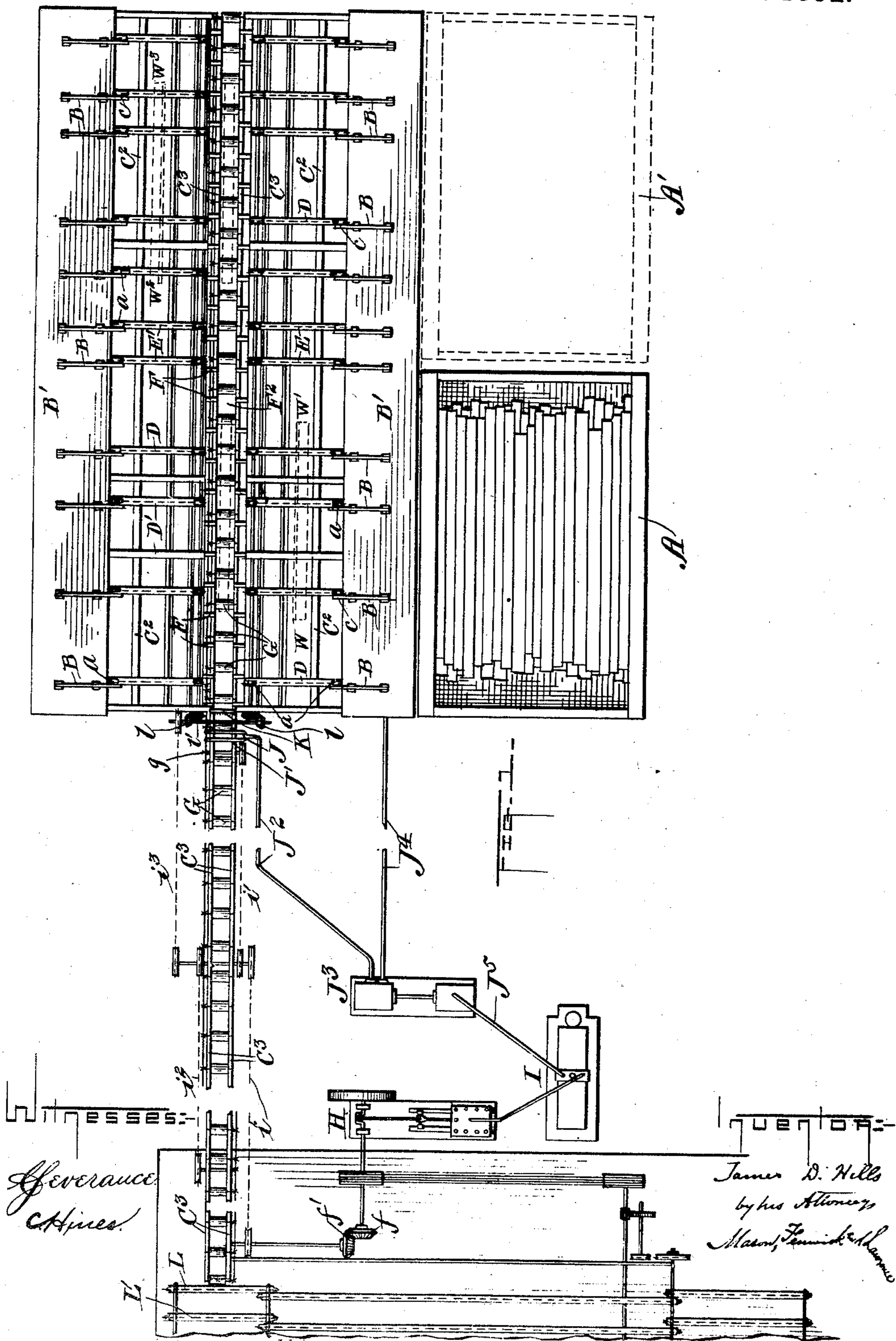
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4 Sheets—Sheet 1.

J. D. HILLS.
LUMBER PULLER AND WASHER.

No. 485,935.

Patented Nov. 8, 1892.



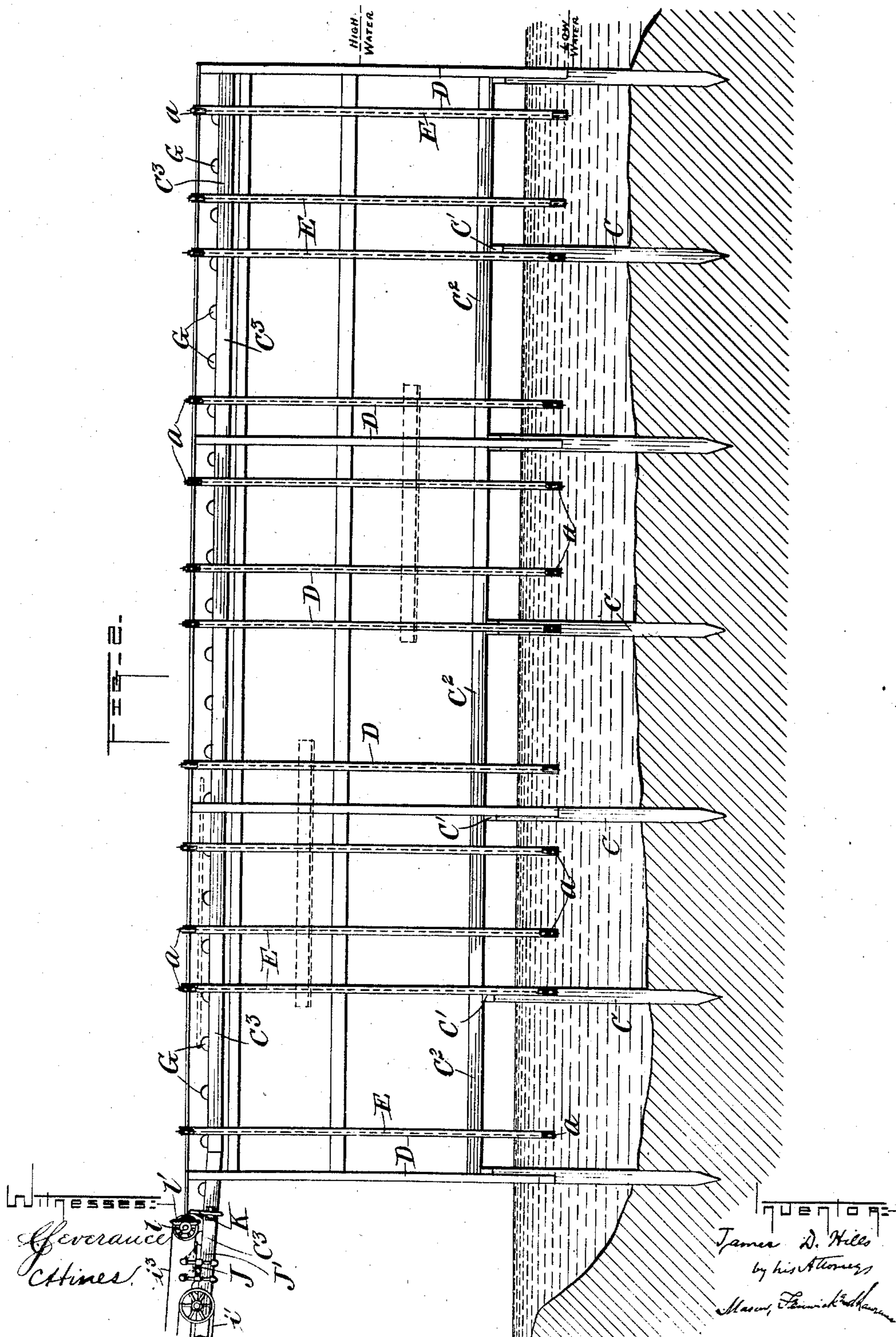
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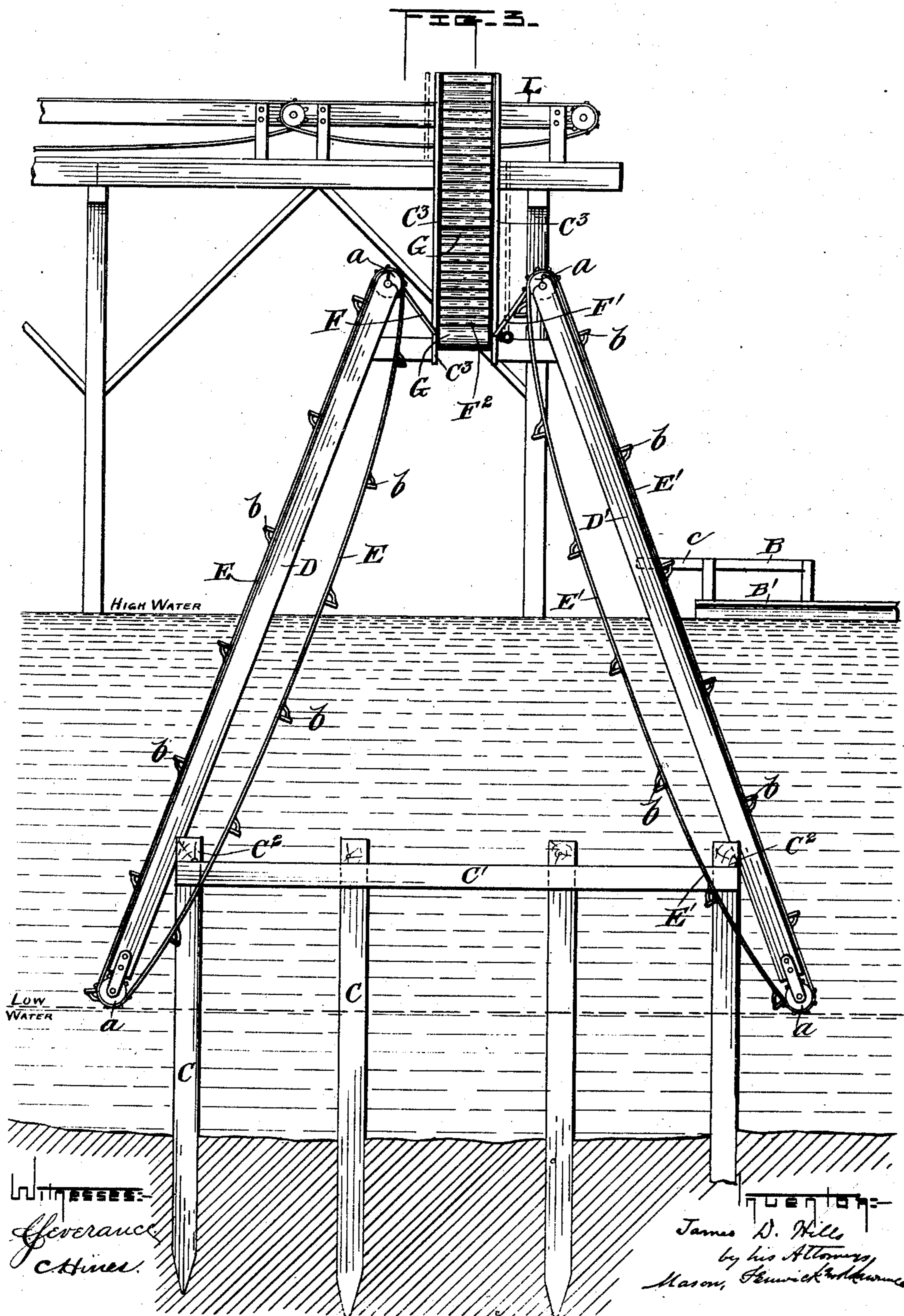
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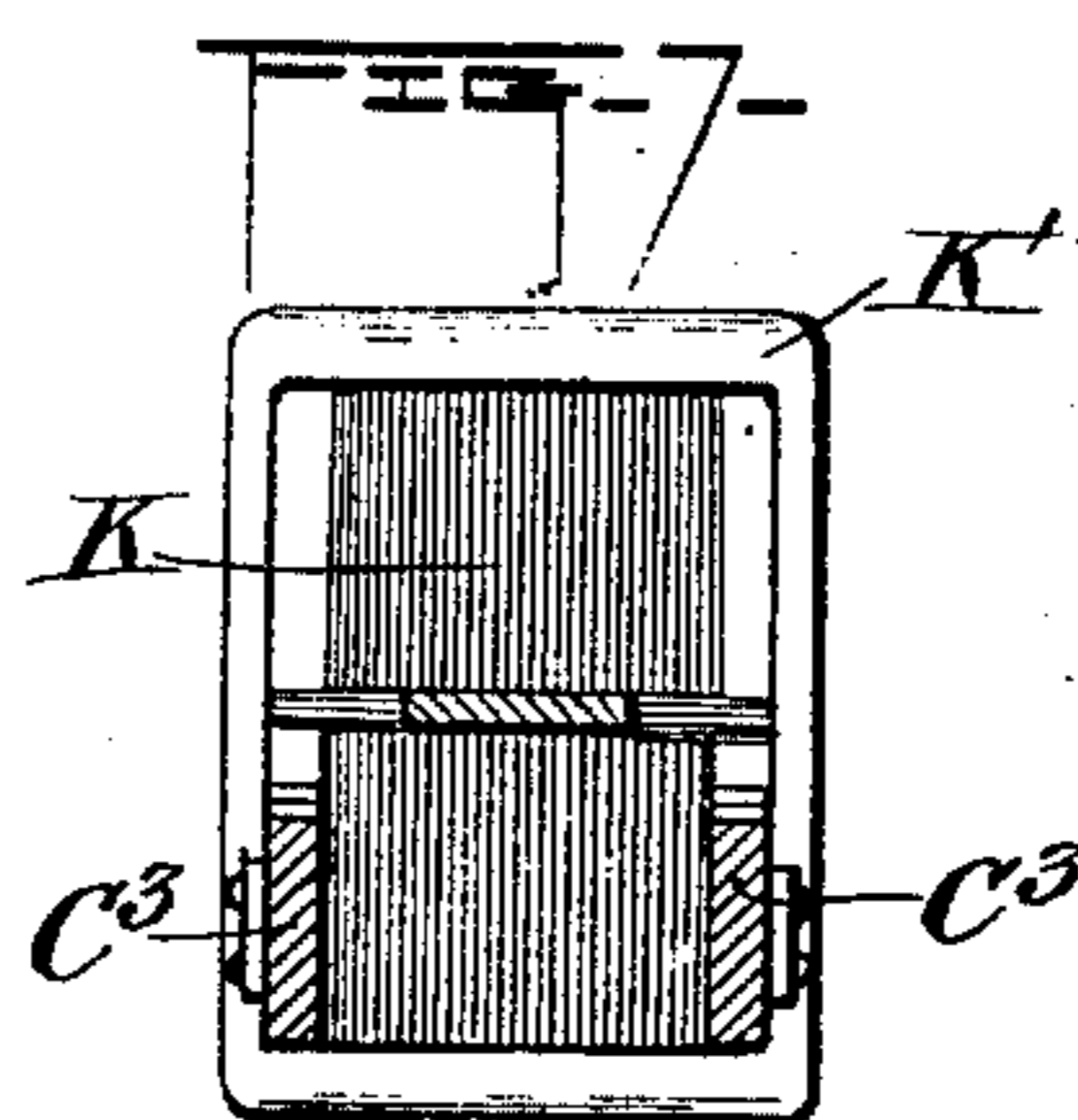
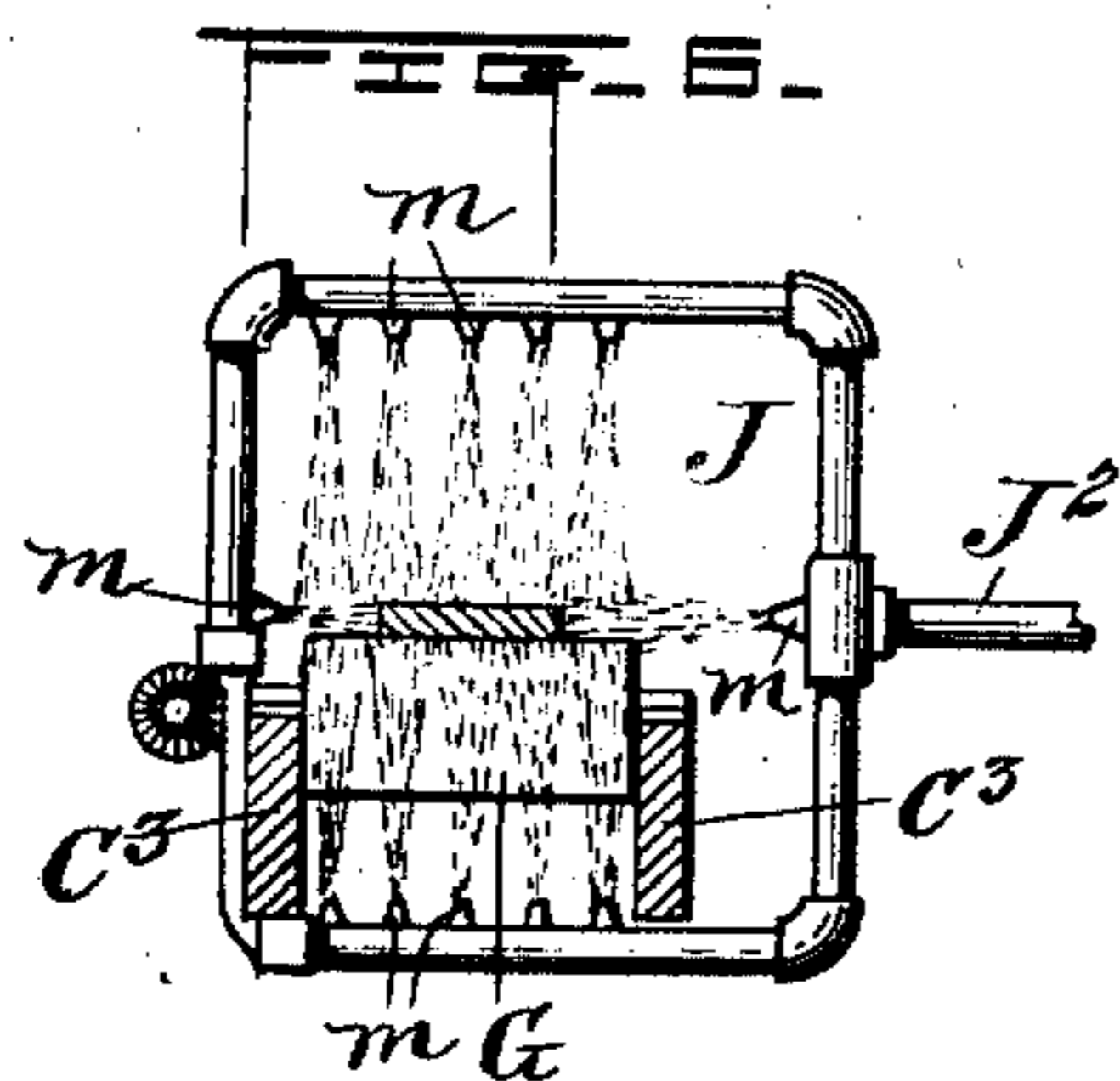
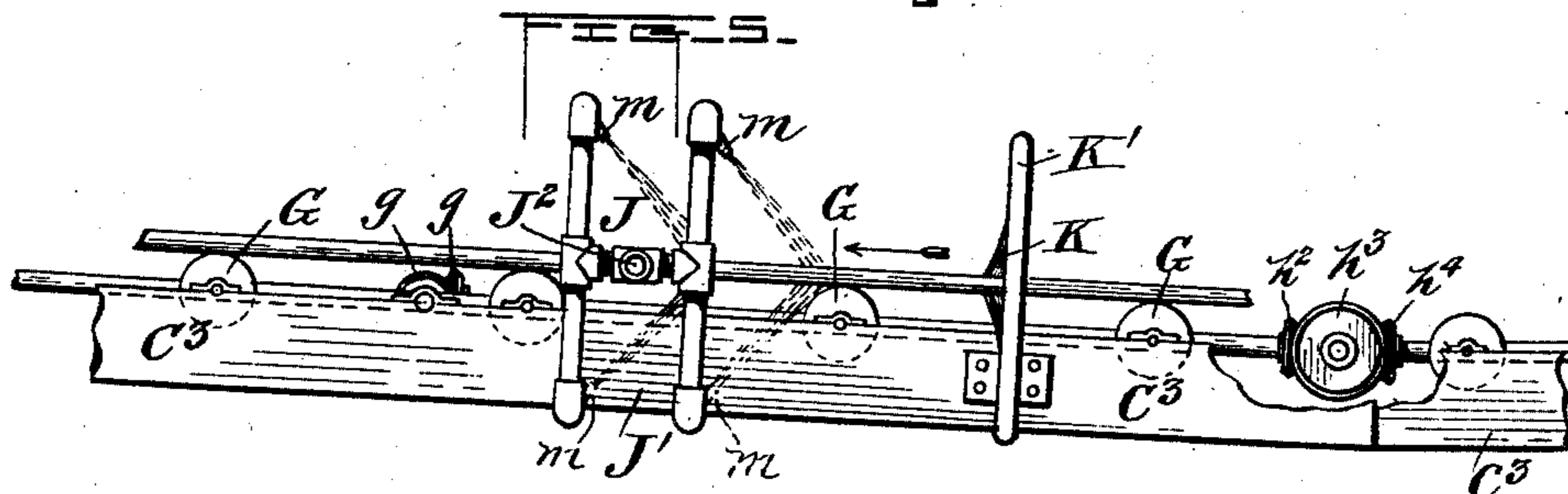
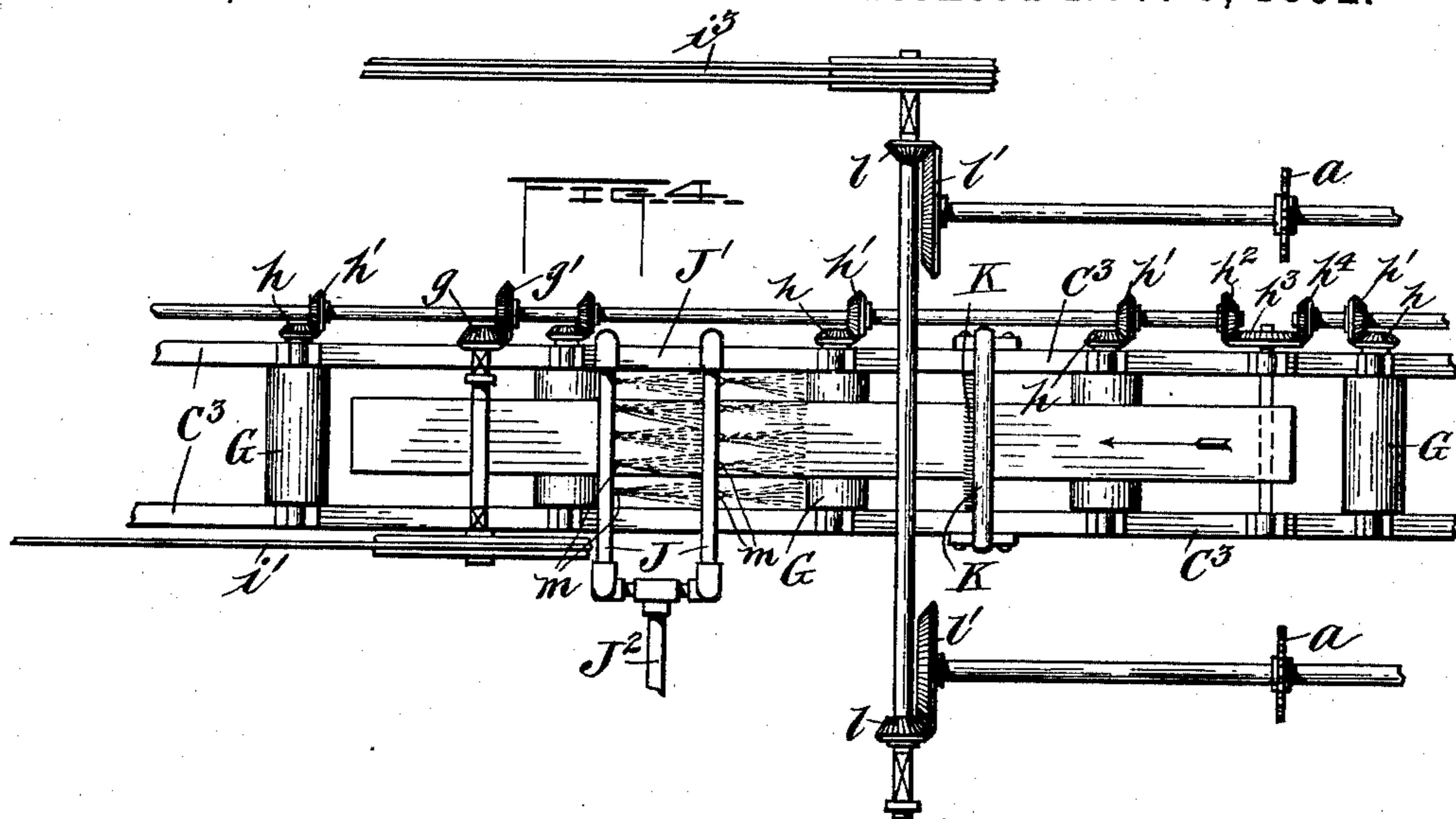
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Witnesses:
Gloverance
Chiles.

INVENTOR:
James D. Hills
by his Attorney,
Mason, Fenwick and Lawrence

UNITED STATES PATENT OFFICE.

JAMES D. HILLS, OF MENOMONEE, WISCONSIN.

LUMBER PULLER AND WASHER.

SPECIFICATION forming part of Letters Patent No. 485,935, dated November 8, 1892.

Application filed January 12, 1892. Serial No. 417,838. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. HILLS, a citizen of the United States, residing at Menomonee, in the county of Dunn and State of Wisconsin, have invented certain new and useful Improvements in Lumber Pullers and Washers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to means which elevate, automatically wash, and convey separate pieces of lumber from the rafts on which it is carried on the rivers or streams to the wagons upon which it is deposited, or mills in which it is used, or yards or places where it is graded, sorted, and piled; and its object is to avoid much of the labor and expense after taking it by hand from the rafts of washing off the mud and dirt which collects upon it with pails of water carried in the hand and of conveying the washed lumber from the shore to the places desired.

My invention consists in a combination of a continuously feeding or conveying bed, inclined directors, lumber-supporting horses, endless continuously-operating puller, and elevating-chains arranged on one or both sides of a trough formed by the inclined directors and conveyer-bed, and an automatic washer-head connected with a water-forcing means which discharges the water with sufficient power to remove mud and extraneous matters from the lumber, whereby the lumber is taken from the rafts and directed and conveyed to and from an automatic lumber-washer cleanly washed.

It also consists in an automatic lumber-washer arranged in suitable proximity to the line of travel of the lumber which is elevated from the rafts and deposited upon the conveyer-bed or is otherwise brought in close relation to it, so that as the lumber passes along upon the said bed water shall be forcibly discharged upon it and such mud, sand, and grit as may have collected upon it washed therefrom, and is thus rendered ready for assorting, grading, and piling, or for being sawed or planed in the mill without undue wear from grit and dirt upon the planers or saws.

It also consists in the combination of scouring-brushes or other rubbing appliances with the water-discharging means, whereby the washing of the lumber is more thoroughly accomplished; and it also consists in certain other constructions, combinations, and arrangements of parts, as will be hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 is a plan view illustrating my invention. In this view an intermediate portion of that part of the roller-conveyer-bed beyond the lumber-washer or between the same and the point of delivery of the conveyer is broken away. A portion of the water conducting and discharging pipes of the pump also are shown broken away, and beyond the delivery end a portion of a steeple-chain conveyer is represented; but the same is not intended to be embraced as a part of this application for a patent. Fig. 2 is a side elevation of a portion of the mechanism shown in Fig. 1. In this view the floating lumber-horses are not shown. Fig. 3 is an end view, on an enlarged scale, showing a portion of the mechanism represented in Fig. 1. In this view the washer is omitted in order to expose other parts more distinctly. Fig. 4 is an enlarged broken plan view of the washer, driving-gearing, and other parts of the mechanism in close proximity to it. Fig. 5 is a broken side elevation of some of the parts shown in Fig. 4. Fig. 6 is a cross-sectional view of the conveyer roller-bed, showing the washer and part of the mechanism; and Fig. 7 is a similar view just in rear of the scouring-brushes.

A A' in the drawings designate rafts of lumber on a river or stream; B, lumber-supporting horses mounted on floating rafts B' and adapted to stand at different altitudes, accordingly as the water-line is higher or lower; C, piles connected by frame-pieces C' and forming a supporting-frame C² below the higher and above the lower water-line.

D D' are inclined frame-pieces connected to the frames C² and to the frame-pieces of a roller-bed conveyer-frame C³ and provided with sprocket-wheels or pulleys *a*, one at top and the other at bottom.

E E' are endless pullers and elevating-chains arranged around the sprocket-wheels or pulleys *a* and provided with supporting

and carrying lugs *b*, which pass up between the timber extensions *c* of the horses and take the pieces of timber therefrom and elevate them to the top of the frame-pieces *D D'* and discharge them inwardly over the same.

F F' are inclined directors forming with the rollers an open trough *F²* for the pieces of lumber to fall into when they become freed from the pullers and elevating-chains.

G are rollers forming a long roller conveyer-bed, a portion of which may be inclined forward of the pullers and elevating-chains, as shown. These rollers are journaled in boxes of the frame *C³*, and they and the pullers and elevating-chains may be positively driven by gear-wheels *f f'*, *g g'*, *h h'*, and *h² h³ h⁴* and by pulleys having belts *i i'*, *i² i³* and gear and sprocket wheels *l l'*, said gearing being applied on journals of the rollers and on suitable shafts supported by the frames *C² C³* and pieces *D D'* and driven by an engine *H*, connected with a boiler *I*. Other system or arrangement of gearing, engine, and boiler may be adopted without departing from my invention.

J is a lumber-washer comprising, as one of many practical constructions that may be adopted, one or two rectangular frames formed of sections of tubing or piping connected by elbows and *T*'s, said sections being provided with angularly-set jet passages or nozzles *m*, which discharge water toward the puller and elevating-chains and against the top, bottom, and edges of the lumber or against any portion of the surface of the lumber, as deemed best. This washer is fastened upon the frame *C³* forward of the puller and elevating-chains and preferably occupies a position which incloses the bed within the sections of its tubing and brings its jets beneath, above, and on each side of the pieces of lumber passed over the roller conveyer-bed at the point *J'*, which I designate as the "washer-section." This washer is connected by a pipe *J²* with a forcing-pump *J³*, said pump being provided with a water-induction pipe *J⁴*, leading from the river or stream, and also being connected by pipe *J⁵* with the boiler *I*, which operates the steam-engine *H*. In rear of the washer is a brush-head *K*, with brushes *K'* placed in its rectangular frame, so as to brush off mud, sand, and grit from the top, bottom, and sides of the pieces of lumber as they pass to the washer, and thus the labor of washing off the mass of mud and dirt is lessened and the work of cleaning and washing the lumber is more readily and perfectly performed. Forward of the washer a system of steeple and other chains *L L'*, forming conveyers, may be arranged at right angles to the roller-bed conveyer for delivering the washed lumber either to cars or to other systems of machinery. These steeple and other chains and the machinery here incidentally mentioned are not included in this application for a patent, as the same are the subject-matter of another application for a patent, filed by me on the 20th day of

January, 1892, Serial No. 418,682. - If the lumber after being washed is not discharged upon steeple and other chains, it may be discharged from the roller-conveyer on slides to a platform.

In the drawings the puller and elevating-chains are represented on both sides of the roller-bed; but it is not always intended to use them on both sides, as in some localities they can only be used on one side, and it may also be necessary to construct the mechanism up and down stream instead of out in the river; but in all cases the lumber would pass through the washer and be taken therefrom in any manner found advantageous. When the puller and elevating-chains are constructed to take lumber from rafts on both sides of the roller-bed, the lugs *b* of the chains will be so arranged relatively that when lumber is dumped into the trough formed by the inclined directors at one end—say between the points *W* and *W'*—there will be lumber dumped into the same at the same time at the other end—say between the points *W² W³* on the opposite side—and thus the lumber does not lap one length on the other in the trough, but has time enough to run out of the trough before the next lumber comes up, the same coming up at opposite corners from where the first right and left side loads came up.

The scouring-brushes are preferably made of steel wire; but they may be made of other suitable durable material, and they may be either stationary or revolving. The conveyer-bed may be formed either of live rollers or chains or metallic cables. The washer may comprise one, two, or more washer-heads, and back of these, when the lumber is very muddy, as is often the case with that coming from the bottom of the rafts, one or two sets of brushes may be employed to loosen the mud from the lumber. The washer may be applied in logways leading to mills and the mud and dirt washed from the logs before they pass to the saws. This would effect a great saving, as the saws would not so rapidly be worn out nor quickly dulled. With my apparatus any lumber that is carried on rafts, including timber, can be passed through the washer.

It is a great advantage to wash lumber clean; but this has been found to be a very difficult operation under the old mode. When lumber is washed clean, the grading is done much quicker and better, as the grader can grade in a given time a greater quantity of clean lumber than dirty lumber. Furthermore, lumber washed in the old way has more or less grit and dirt remaining on it, and consequently in passing it through planers the knives soon get dull and have to be changed or sharpened; whereas lumber after passing through my washer is about as clean as when it comes from the saw; and therefore it is much better to work up in planing-mills, as well as to handle in grading.

In operating the machinery herein de-

scribed the lumber is taken by hand from the raft, placed on the floating horses, carried by the pullers and elevating-chains to the inclined conductors of the roller conveyer-bed, deposited from one side—say between the points W W'—and from the other side—say between the points W² W³—upon the roller-bed conveyer, conveyed by said bed through the brushes and washer, brushed and washed and conveyed to the end of the roller-bed, and discharged upon slides to a platform, or it may pass on to the steeple-chains and from there taken to yards and piled or taken to the mill and used, or it may be graded and assorted, as deemed most desirable.

What I claim as my invention is—

1. The within-described combination of means for washing lumber in its transit from a river or stream to the point of discharge, the same comprising the mechanically-supported water-discharging device arranged in suitable relation to the conveyer of the lumber being washed and between the river or stream and the point where the washed lumber is discharged, the mechanical devices for supplying and discharging water under pressure through said discharging device upon lumber continuously moving past it, and the mechanical devices for continuously conveying the lumber lengthwise past the washing device, substantially as described.

2. A means for scouring and washing lumber in its transit from a raft on a river or stream to the point of discharge, comprising an automatic brush-head having brushes and an automatic water-discharging device supported by the lumber-conveyer, means connected with said device for forcibly discharging water through it upon the surface of the separate pieces of lumber in transit from a raft on a river or stream to their point of discharge, and means for receiving the pieces of lumber from the "handlers" at the raft and carrying them past the automatic brushes or scourers and the washer, substantially as described.

3. A means for receiving, supporting, pulling from their supports, and elevating separate pieces of lumber between rafts on rivers or streams and their points of discharge and washing them in their transit, the same comprising means for receiving the pieces of lumber from the handlers at the raft and supporting them between their ends, means for pulling them from their supports and elevating and conveying them to the point of discharge, an automatic water-discharging device, and means connected with said device for forcibly discharging water through it upon the surface of the pieces of lumber in their transit from the raft to their point of discharge, substantially as described.

4. In combination, means for receiving the pieces of lumber from the handlers at the raft and supporting them between their ends, means for pulling them from their supports

and elevating the pieces of lumber on opposite sides of a conveyer and depositing them one behind the other lengthwise of the conveyer, and means for conveying them successively and continuously to their points of discharge, and an automatic water-discharging device, and means connected with said device, supported upon the lumber-conveyer, for forcibly discharging water through it upon the surface of the pieces of lumber in their transit from the raft to their point of discharge, substantially as described.

5. In combination, an automatic water-discharging device constructed to surround and applied so as to have the pieces of lumber passed through it and connected with means for forcibly discharging water through it upon the surface of separate pieces of lumber in their transit from a raft on a river or stream to their points of discharge, and means for receiving the pieces of lumber from the handlers at the rafts and carrying them past the automatic washer, substantially as described.

6. In combination, means for scouring and washing lumber in its transit from a raft on a river or stream to the points of discharge, comprising an automatic brush-head and an automatic water-discharging device, both constructed and applied to surround the lumber in its passage through them, means connected with the water-discharging device for forcibly discharging water through it upon the surface of the separate pieces of lumber in its transit from a raft on a river or stream to their points of discharge, and means for receiving the pieces of lumber from the handlers at the rafts and carrying them through the automatic scourer and washer, substantially as described.

7. In an apparatus for elevating and conveying lumber, the combination of a brush-head, a washer-head provided with nozzles and connected with means for forcing water, and means for conveying lumber by the brush and washer heads, whereby the sides of the lumber are cleaned simultaneously.

8. In a lumber conveying and washing device, a continuously-feeding bed, a brush-head with brushes, an automatic washer having oppositely-inclined jet-passages, whereby the lumber is conveyed between the brushes and jet-passages, and water-forcing means connected with the washer-head.

9. In an apparatus for conveying and washing lumber, a continuous conveyer, a brush-head and washer-head, each surrounding said conveyer, and means for forcing water under pressure, connected with the washer-head, whereby all sides of the lumber are cleaned as it is being conveyed.

10. In a lumber conveying and washing apparatus, a roller conveying-bed for moving the lumber, a brush-head having brushes adapted to bear on all sides of the pieces of lumber, a washer-head provided with jet-pas-

sages directed toward all sides of the lumber, and water-forcing means connected with said washer-head.

11. In a lumber conveying and washing apparatus, a washer-head provided with nozzles, means for forcing water under pressure, connected with said washer-head, and means for elevating the lumber from rafts and feeding

it continuously, whereby all sides of the lumber are cleaned as it is being conveyed. 10

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

JAMES D. HILLS.

Witnesses:

DOROTHEA PARKER,
ELMER J. NEWSOM.