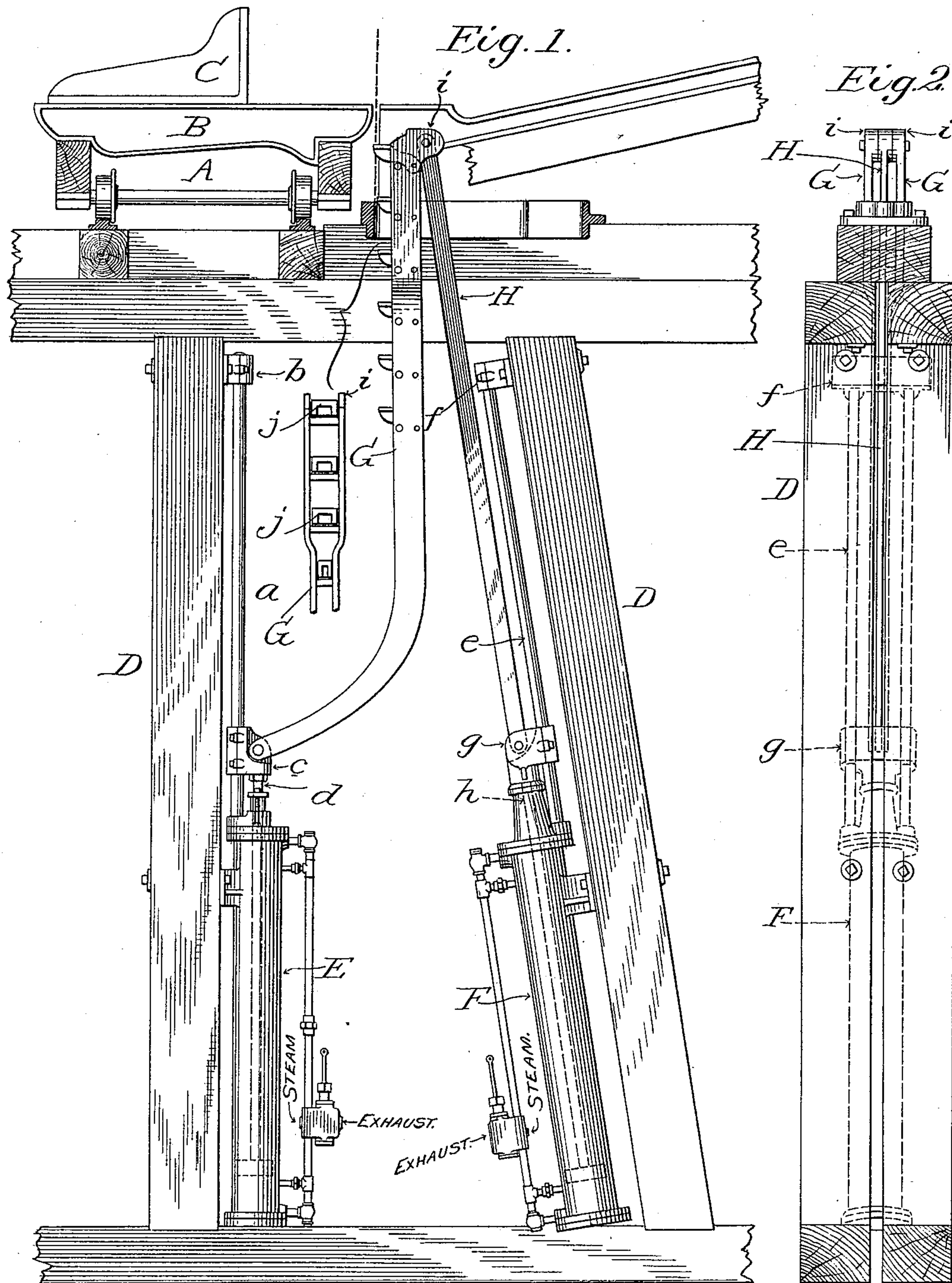


2 Sheets—Sheet 1.

No. 583,560.

Patented June 1, 1897.



Attest;  
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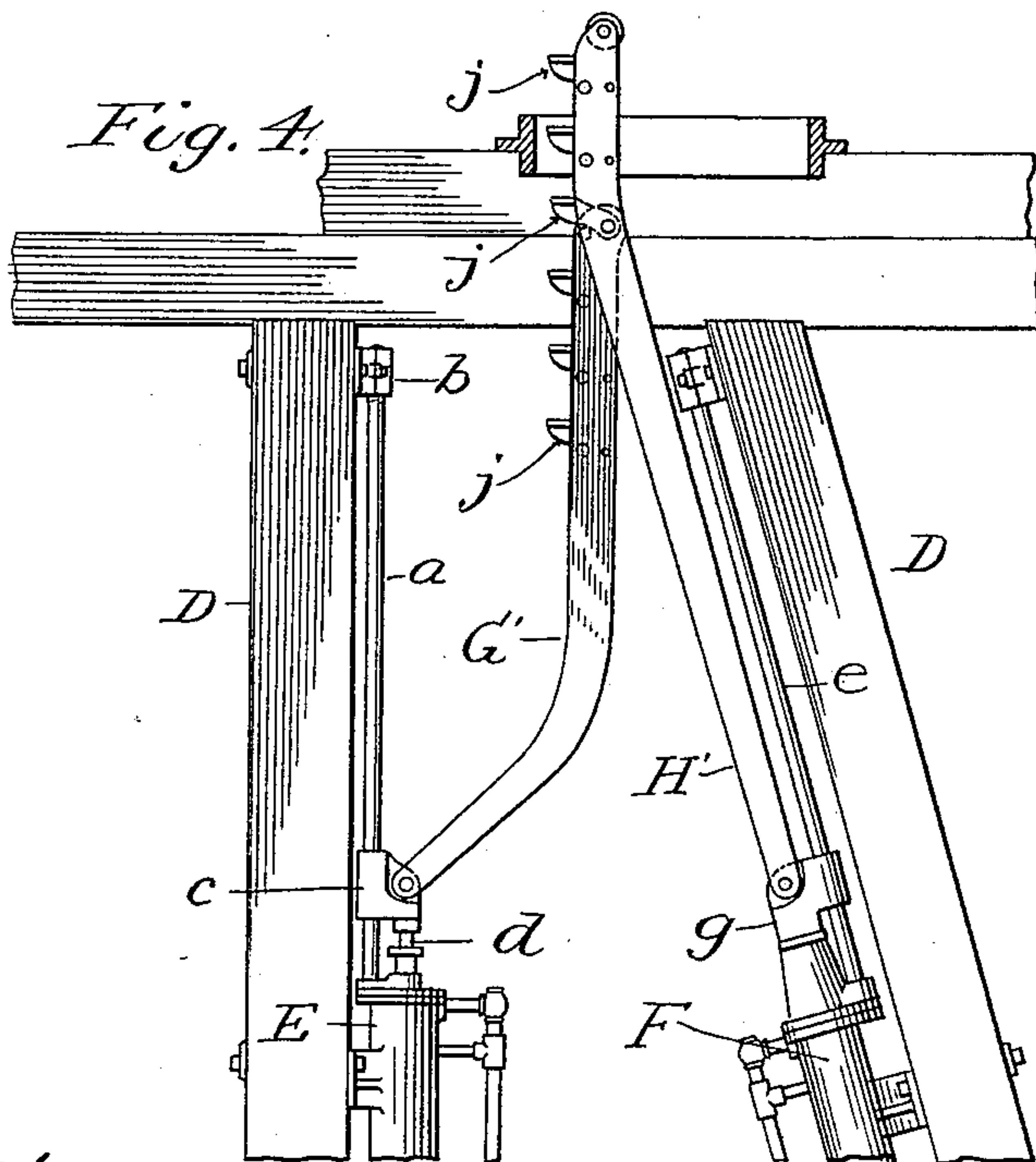
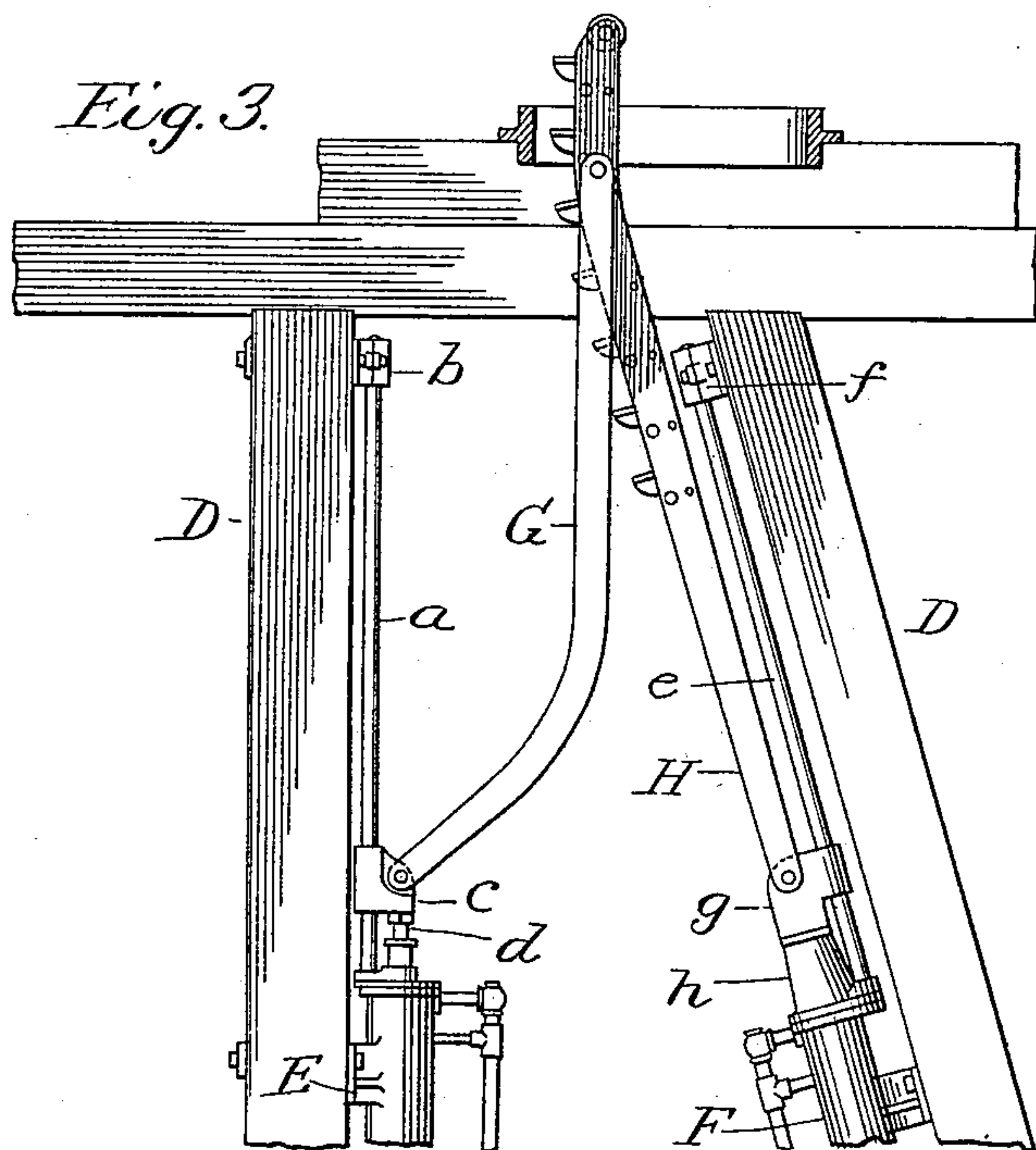
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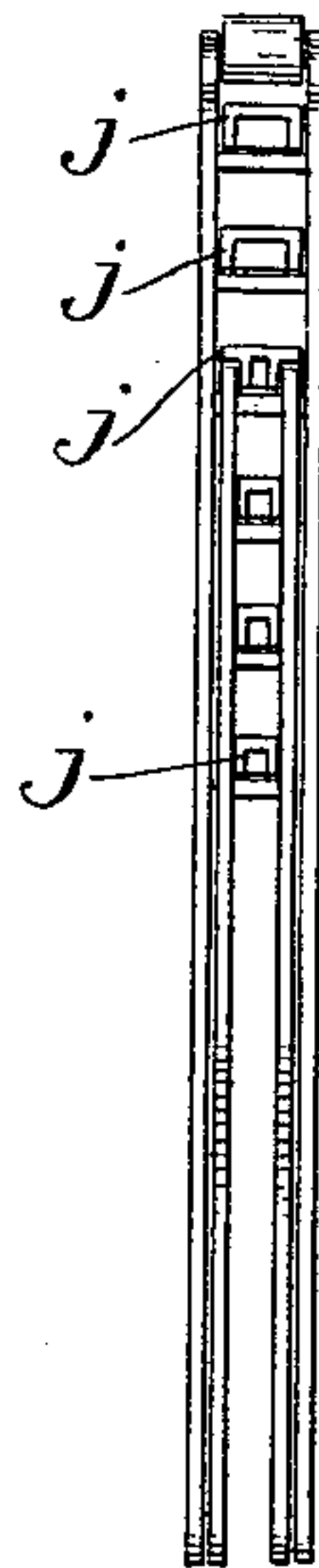
T. S. WILKIN.  
LOG LOADER AND TURNER.

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*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

THEODORE S. WILKIN, OF MILWAUKEE, WISCONSIN.

## LOG LOADER OR TURNER.

SPECIFICATION forming part of Letters Patent No. 583,560, dated June 1, 1897.

Application filed August 21, 1896. Serial No. 603,531. (No model.)

*To all whom it may concern:*

Be it known that I, THEODORE S. WILKIN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Log Turners or Loaders, of which the following is a specification.

My invention pertains to log turners and loaders and is designed to insure an equal or substantially equal side pressure of the toothed bar against the log or cant throughout its upward movement or at any point in its travel.

The invention is preferably embodied in a steam-actuated log-turner or "nigger" and is so represented in the drawings; but if provision be made for securing like relative movement of the parts it is unimportant what the power employed or the details of construction as to other features may be. Any fluid under pressure may be used in lieu of steam with the apparatus in the forms shown.

Figure 1 is a side elevation of my improved log turner and loader with the toothed bar in its lowermost position, but indicating the elevated position by dotted lines; Fig. 2, a rear view of the same; Figs. 3 and 4, side elevations of modified forms of the apparatus; Fig. 5, a face view of the bar used with the construction shown in Fig. 4.

Practical use of existing log-turning appliances has developed the fact that in many, if not all, of them the lateral pressure producible by the toothed bar varies widely in different parts of its longitudinal travel. In some cases the sidewise pressure is greatest when the bar is at the lower part of its travel; in others when at the upper end of its path.

My invention aims to render the pressure practically constant and uniform or to enable the operator to control its variation at will. This result is accomplished by placing one actuating or controlling cylinder and piston in a vertical position and the other in an inclined position, and connecting the toothed bar to the piston-rod of one cylinder and the supporting links or braces to the other piston-rod and also to the upper part of the toothed bar.

The invention is susceptible of varied embodiment, as will be pointed out.

Referring first to Fig. 1, A indicates a log-carriage, B a head-block secured thereon, and C a knee carried by the head-block, as usual. D indicates a strong timber-framing beneath the mill-floor, to which framing are secured two cylinders E and F, the first in a vertical and the second in an inclined position. The cylinder E is provided with guide-rods *a*, parallel with its axis and carried upward to a suitable height, where it is sustained by a block or bracket *b*, made fast to the timbers. The guide-rods *a* serve to guide a sliding block or head *c*, directly attached to the rod *d* of the piston within cylinder E, as seen in Fig. 1. In like manner cylinder F is provided with guide-rods *e*, sustained at the upper end by a bracket or fitting *f* and serving to guide a sliding block or head *g*, attached directly to the rod *h* of the piston within cylinder F.

G indicates a toothed bar which under the plan illustrated in Fig. 1 is pivotally connected or jointed to sliding block *c* and curving outward therefrom continues upward in a substantially vertical direction to a point above the floor of the mill or to near the level of the logway. At or near the top of the toothed bar, which is composed of two parallel members, there is formed a pair of ears *i*, between which is received the upper end of a link or bar H, the lower end of which is pivotally connected to sliding block *g* of cylinder F.

From the arrangement thus set forth and shown it follows that if steam or other fluid-pressure be supplied to the cylinder E below its piston the toothed bar will be moved upward, and if fluid under pressure be simultaneously supplied to cylinder F beneath its piston the link or bar will also be elevated. While, however, the toothed bar and the link rise simultaneously and with whatever relative force the operator may determine by proper setting of the supply-valves, the link moves in a path oblique to and intersecting that of the toothed bar and consequently tends constantly to throw the upper end forward more and more as the two are carried upward. Obviously this action may be varied as desired by properly proportioning the supply of fluid to the two cylinders, and this



the attendant will do by the usual valve-controlling levers or devices.

It will be noted that the connection between the toothed bar and the link is made at their upper extremities and that this relation is constant. Hence the leverage remains the same throughout the travel of the bar, and the log can be set over with ease and certainty, the power being adjusted to the weight of the log and continuing to act uniformly until the log is turned and rolled to place.

In Fig. 3 I have shown a modified construction, the link taking the place and general form of the toothed bar of Fig. 1 and said bar taking the general form and the position of the link of said figure, though preferably curved at the upper end, as indicated. The action will remain substantially the same as before.

Figs. 4 and 5 illustrate a further variation of the same idea, the teeth *j* being applied both to the bar and to the link or brace or the two constituting in effect a compound bar. Under this construction the bar *G'* and the link or brace *H'* are each formed of two parallel members, between which the gravitating teeth *j* are pivoted. As best seen in Fig. 5, the bar *G'* has its upper end inserted between the two members of the link or brace *H'*, the two being connected by a heavy bolt or pin which may constitute the pivot-pin of one of the dogs or teeth *j*. The brace or link *H'*, which rises above the top of bar *G'*, proceeds in a straight line to the top of said bar and thence continues upward in line with the body of the bar, or approximately so, and consequently acts upon a log or cant during the rise of the parts in essentially the same manner as does bar *G* of Fig. 1.

In the practical use of log-turners the upper teeth have the heavier work to do and the larger percentage of duty. Hence it is desirable that they be heavier than those below. This relation may be conveniently established under the construction illustrated in Figs. 4 and 5, because of the wider space between the two side members of the brace *H'* as compared with that between those of bar *G'*. The same result may, however, be attained with the constructions illustrated in Figs. 1, 2, and 3 by bending the side pieces of the toothed bar outward and then continuing them upward parallel with each other from such point, so as to widen the space between their upper ends, this being indicated in Fig. 1.

The guide-rods *a* and *e* are employed merely to relieve the piston-rods of undue lateral strain and to prevent cramping or binding, but if the rods be made sufficiently rigid the guides may be dispensed with, or other forms of guides may be used. The timber framing *D* may be replaced by a metallic framework, if desired.

Practical tests of the device have developed its marked superiority of action and have

shown that it is susceptible of perfect control and regulation to give a uniform lateral pressure at all points in the travel of the bar.

Under many prior constructions and owing to the constantly-varying leverage it was necessary to give an excess of lateral pressure during one part of the stroke in order to insure adequate pressure during another portion of the stroke. This excess of pressure not infrequently resulted in crowding the carriage off the track or in the breakage of the head-block, or both.

My present construction avoids the difficulties noted and insures adequate pressure without excess at any and all points in the stroke.

When the device is to be used only for rolling or loading logs, the teeth may be omitted.

A direct connection with the pistons would of course be the mere mechanical equivalent of connection with the piston-rods, as would also a connection with the piston-rods through intermediate devices.

The ordinary valve mechanism will be employed in connection with the cylinders.

A prominent feature of construction is the attachment or connection of the link or brace and the toothed bar at or near the upper end of the bar and the consequent bracing and staying of the bar at all points in its stroke. This effectually overcomes the liability to breakage incident to the employment of a bar supported only at its lower end.

Having thus described my invention, what I claim is—

1. In a log turning or loading device, the combination of two cylinders one occupying a vertical position and the other an oblique position; a piston in each cylinder; a toothed bar connected to the rod of one of said pistons, and a link or brace connected to the rod of the other of said pistons and permanently connected to the upper portion of the toothed bar.

2. In combination with an upright cylinder *E* provided with a piston; a toothed bar *G*, pivotally connected with the rod of said piston; a cylinder *F* having its upper end somewhat nearer cylinder *E* than its lower end; a piston within the cylinder *F*; and a link or brace pivotally connected with the rod of said piston and permanently connected with the upper end of bar *G*.

3. In combination with a toothed bar and means for moving the same vertically; a link or brace pivotally connected with the upper part of said bar; and means for moving said link or brace longitudinally in a line oblique to and intersecting that in which the toothed bar moves.

4. In a log turning or loading device, the combination of two cylinders, both occupying generally upright positions but nearer together at their upper than at their lower ends; pistons carried by said cylinders; a toothed bar and a link or brace pivotally connected



one to one piston and the other to the other piston; and a flexible joint or connection between the upper portions of the bar and the link or brace, in a plane passing between the  
5 two cylinders.

5. The herein-described log-turning apparatus, comprising, in combination, cylinder E provided with a piston, a sliding block as *c* and a guide as *a*; bar G, jointed to said block;  
10 cylinder F provided with a piston, a sliding block as *g* and a guide as *e*; and link or brace H permanently connecting the block *g* and the upper end of bar G.

6. In a log-turner, a toothed bar composed  
15 of two parallel members, with interposed teeth; said members being set wider apart in

their upper portions than in their lower portions to receive wider teeth.

7. In combination with the upright bar of a log-turning or loading device, and with means 20 for moving the same longitudinally; a brace or link permanently connected with said bar at or near the upper extremity of the bar, and means for moving said link or brace longitudinally substantially as set forth, whereby 25 the bar is firmly supported in all positions.

In witness whereof I hereunto set my hand in the presence of two witnesses.

THEODORE S. WILKIN.

Witnesses:

C. P. DIETZ,

GEO. A. BURTON.