

(No Model.)

3 Sheets—Sheet 1.

W. E. HILL.  
LOG UNLOADER.

No. 505,829.

Patented Oct. 3, 1893.

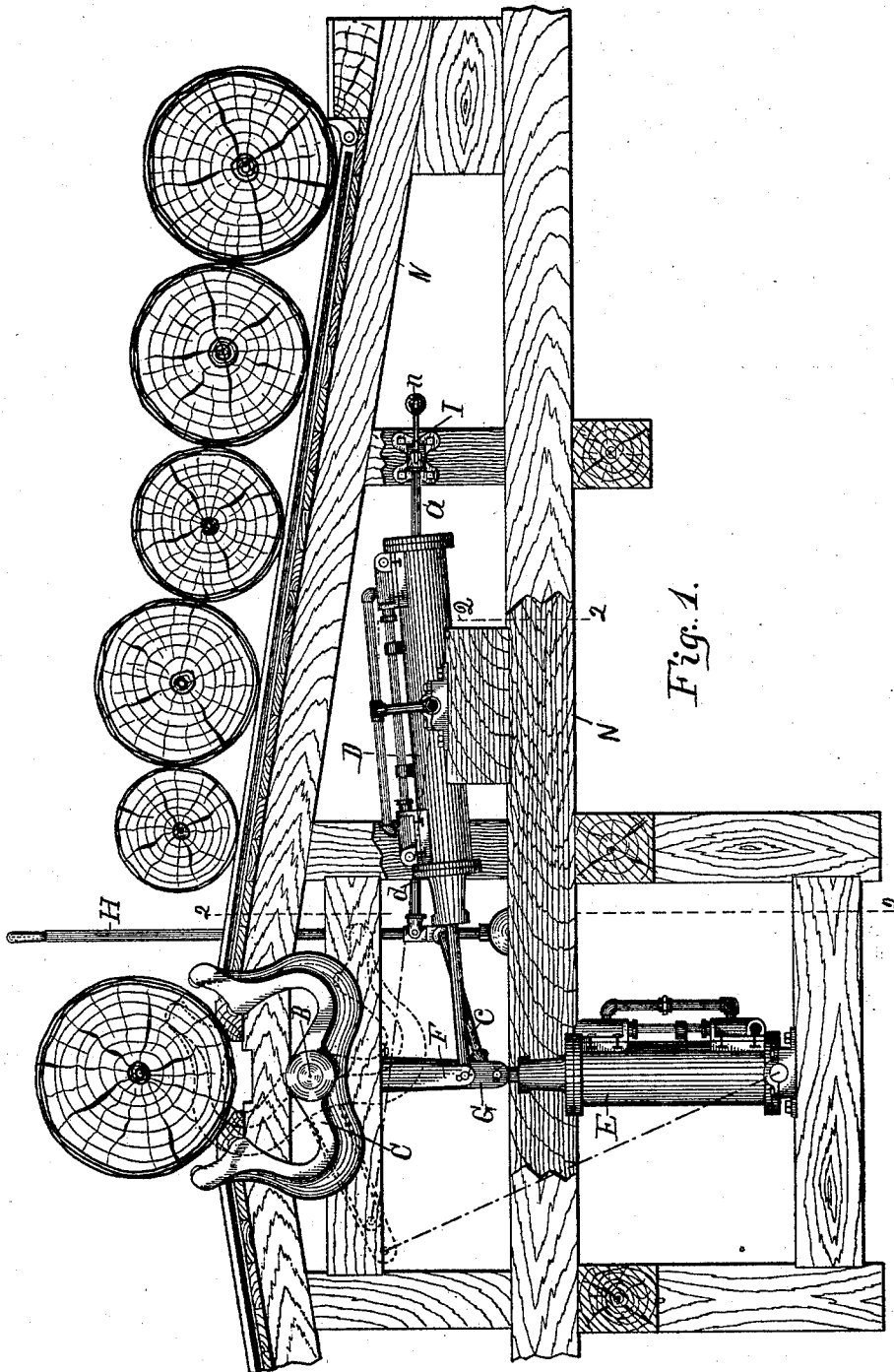


Fig. 1.

Witnesses:

*Walter S. Wood*  
*Newton G. Leslie*

Inventor.

*William E. Hill*  
By *Lucius C. West*  
Att'y.

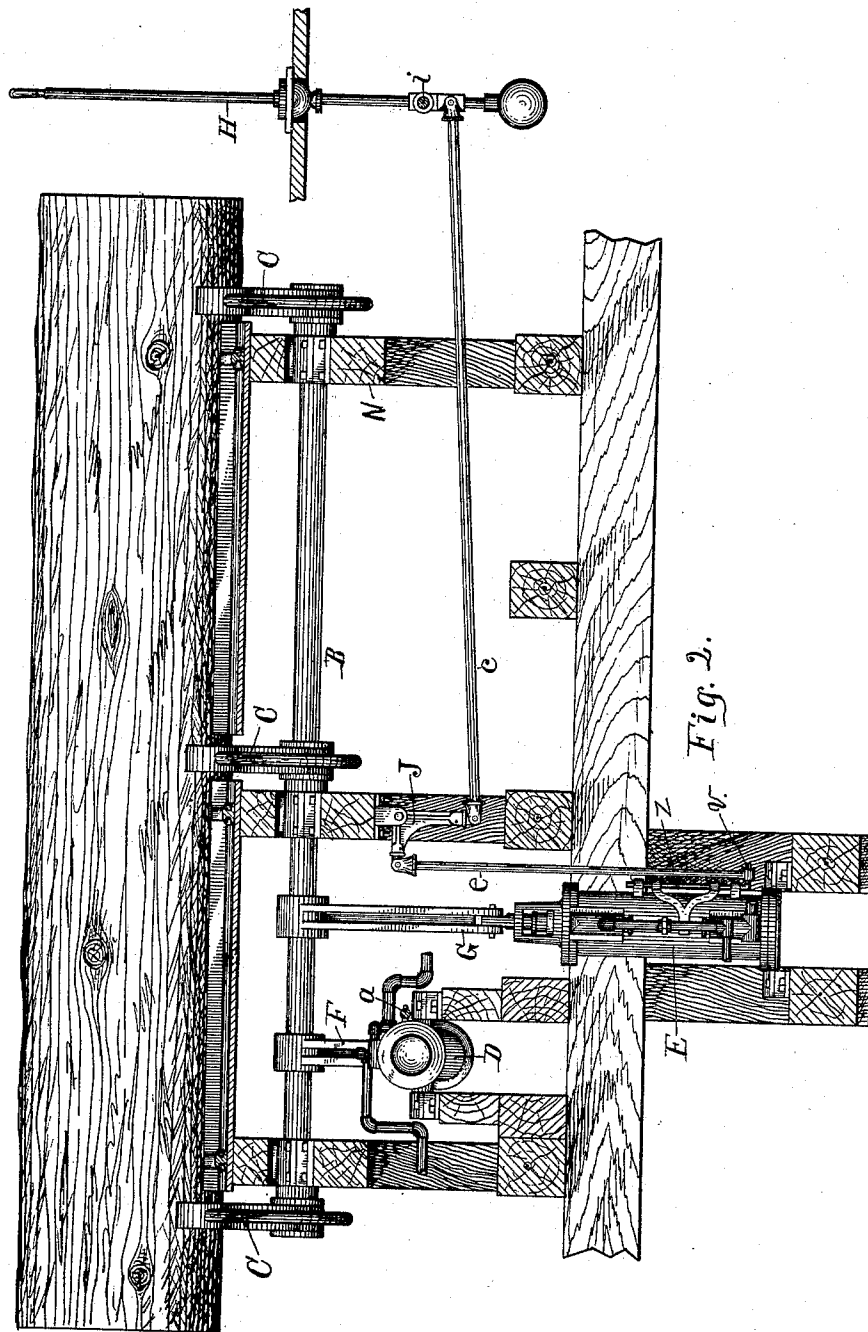
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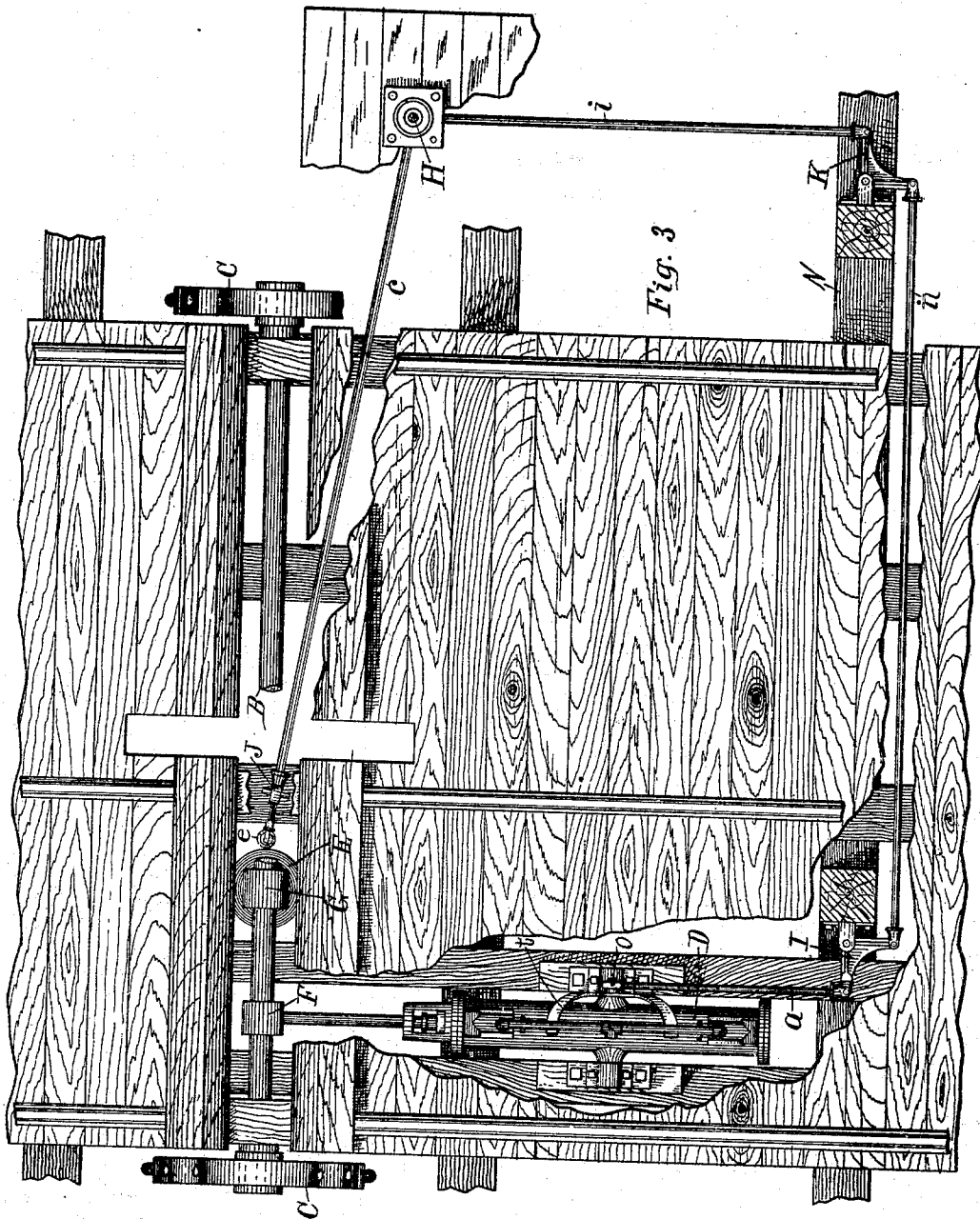
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3 Sheets—Sheet 3.

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# UNITED STATES PATENT OFFICE.

WILLIAM E. HILL, OF KALAMAZOO, MICHIGAN.

## LOG-UNLOADER.

SPECIFICATION forming part of Letters Patent No. 505,829, dated October 3, 1893.

Application filed November 26, 1892. Serial No. 453,265. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. HILL, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Log-Unloader, of which the following is a specification.

This invention relates to that class of saw mill apparatuses in which a double or U-shaped rocking arm is employed for rolling the logs out of a log trough on to a log deck.

The object of the invention is to more conveniently and successfully operate the rocking arms and especially to hold them equidistant from the log when in their normal state at rest, by a peculiar construction in connection with an upright and a horizontal trunnioned steam cylinder, all as more particularly described and claimed.

In the drawings forming a part of this specification, Figure 1 is an end elevation; Fig. 2 a vertical section on lines 2-2, 2-2, in Fig. 1, looking from a point at the right; and Fig. 3 is a plan view, a portion of the log deck being broken away, showing the construction beneath.

Referring to the lettered parts of the drawings, N is a framework supporting the log deck and also supporting the steam cylinders and other parts of the apparatus.

At E is a well known style of steam cylinder, having a piston rod extending out of the upper end thereof. This steam cylinder is mounted upon trunnions at its base, so as to tilt laterally from an upright position. Above this steam cylinder and beneath the log trough is a horizontal shaft, B, having suitable bearings in the framework, N, Fig. 2. Pendent from this shaft is an operating lever, G, the free end of which is pivotally attached to the free end of the piston rod of the steam cylinder E. Also attached to this shaft B are the double or U-shaped rocking arms, C, extending upward and terminating on each side of the lower periphery of the log, as in Fig. 1. This log referred to is in the log trough, supposed to have been brought there by an endless traveling carrier in said trough, in the ordinary manner of bringing logs from the water to the log deck. No traveling carrier is here shown, since for the purpose of this invention it does not matter

by what means the log is placed there. As many of these rocking arms, C, may be employed throughout the length of the log as desired, three being illustrated in Fig. 2, all mounted upon the shaft B, but for convenience of description I will confine myself to one of them, it being understood, of course, that the others are duplicates of the one described.

When the steam cylinder E is in the upright position shown in Fig. 1, the operating lever G and shaft B will be so held that the rocking arms, C, will be upright and equidistant from the lower periphery at each side of said log, and will remain in such normal state at rest until the operation takes place which will be described hereinafter.

Beneath the log deck, a little above and at one side of the steam cylinder E, is a horizontal steam cylinder, D, mounted upon trunnions between its two ends, as shown in Figs. 1 and 2. This steam cylinder also has a piston rod one end of which extends out of that end of the cylinder nearest to the steam cylinder E.

At F is a pendent operating lever, rigidly attached to the shaft B, the lower end of which is pivotally attached to the free end of the piston rod of the steam cylinder D, Fig. 1. Steam may be admitted into these cylinders by any suitable arrangement of levers and means connecting them with the throttle valves. The means I have here shown consist of a universal throttle lever, H, having a universal joint or bearings at S, Fig. 2, so that it may be tilted in any desired direction to admit steam into one cylinder or the other by individual movements, or into both cylinders at once by a single movement; said universal lever being connected with the throttle valve of the steam cylinder E by means of rods *c e* and bell-crank J, and with the throttle valve of the steam cylinder D by means of the rods *a, n, i* and bell-cranks I K, but so far as this construction is concerned, it is not new in this application, and hence no detailed description, aside from its function, is deemed necessary, but for a clearer understanding reference may be had to Letters Patent No. 413,721, granted to me October 29, 1889, for log loader. It should be mentioned, however, that the free end of the rod *e* is pivotally

connected at *v* to the shouldered end of the endwise playing rod *z*, said rod *z* bearing a yoke, the end of which yoke is attached to the throttle valve of the steam cylinder E, the object of which is to allow the cylinder to tilt on its trunnions without cramping the rod *e* or changing its angle.

The free end of the rod *a* is connected to the throttle valve of the steam cylinder D by pivotally attaching it at *o*, Fig. 3, to a yoke, *t*, which yoke is attached to the throttle valve of said steam cylinder, Fig. 1, for the purpose of allowing the cylinder to tilt upon its trunnions without cramping the said rod *a* or changing its angle; but the peculiar connection of the universal lever with the throttle valves of the steam cylinders may be a matter of choice.

In the operation, referring to Fig. 1, steam is admitted into the right hand end of the steam cylinder D, which action forces the operating lever F to the left, rocking the shaft B and breaking the joint at the point where the end of the operating lever G is pivoted to the piston rod of the steam cylinder E, thus swinging said steam cylinder E and operating lever G toward the left. Immediately at the time the steam cylinder E is thus thrown off its dead center, steam is admitted into the lower end of said steam cylinder E, which action forcibly throws the operating lever G upward, continuing the movement of the shaft B and throwing the rocking arms into the position shown by the dotted lines in Fig. 1, during which action the terminal end of the left hand rocking arm is contacted with the side of the log, throwing the same from the log trough down the incline of the log deck. By this it will be seen that the steam cylinder E remains upright until thrown off its dead center by the action of the piston rod of the steam cylinder D, and hence the rocking arms C are balanced and held equidistant from the log. Another important advantage is that the piston rod of the upright steam cylinder exerts its greatest power at the time when the piston rod of the horizontal steam cylinder exerts its least power, since the lever G and the piston rod of the upright steam cylinder are then at right angles to each other. It will appear obvious that the power of the piston rod of the horizontal steam cylinder is greatest when it throws the other steam cylinder off from its dead center and decreases as its stroke continues, while the power of the piston rod of the upright steam cylinder becomes greatest at the last end of its stroke; thus throwing the rocking arms farther over and with greater force, so as to force the log down the incline of the log deck, which is of great advantage in case of flat-sided logs or square timber. The parts may

be brought back to their normal position by admitting steam into the opposite end of either one or both of the steam cylinders.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a log unloading apparatus, the combination of a rock-shaft, one or more sets of rocking arms attached thereto beneath the log trough, two pendent operating levers rigidly attached to said rock-shaft, an upright trunnioned steam cylinder, having a piston rod the free end of which is pivotally attached to one of said operating levers, a horizontal trunnioned steam cylinder, having a piston rod the free end of which is pivotally attached to the other of said operating levers, and suitable means for operating the throttle valves of said steam cylinders; substantially as set forth.

2. In a log unloading apparatus, the combination of a rock shaft, one or more sets of rocking arms attached thereto beneath the log trough, two pendent operating levers rigidly attached to said rock-shaft, an upright trunnioned steam cylinder, having a piston rod the free end of which is pivotally attached to one of said operating levers, a horizontal trunnioned steam cylinder, having a piston rod the free end of which is pivotally attached to the other of said operating levers, a throttle lever having universal joint bearings, and suitable rods and bell cranks connecting said throttle lever with the throttle valves of the steam cylinders; substantially as set forth.

3. In a log unloading apparatus, the combination of a rock-shaft, one or more sets of rocking arms attached thereto beneath the log trough, two pendent operating levers rigidly attached to said rock-shaft, an upright trunnioned steam cylinder, having a piston rod the free end of which is pivotally attached to one of said operating levers, a horizontal trunnioned steam cylinder, having a piston rod the free end of which is pivotally attached to the other of said operating levers, a throttle lever having universal joint bearings, yokes attached to the throttle valves of the steam cylinders, and rods and bell cranks connecting said throttle valves with the throttle lever, the end of the rod which is indirectly attached to said throttle valves being pivotally attached to the yokes; substantially as set forth.

In testimony to the foregoing I have hereunto subscribed my name in the presence of two witnesses.

WM. E. HILL.

Witnesses:

FRED A. FULLER,  
HULBURT BROOKS.