No. 752,440. PATENTED FEB. 16, 1904.

E. T. DAVIES.

OFF-BEARING MECHANISM FOR SAWMILLS.

APPLICATION FILED SEPT. 14, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

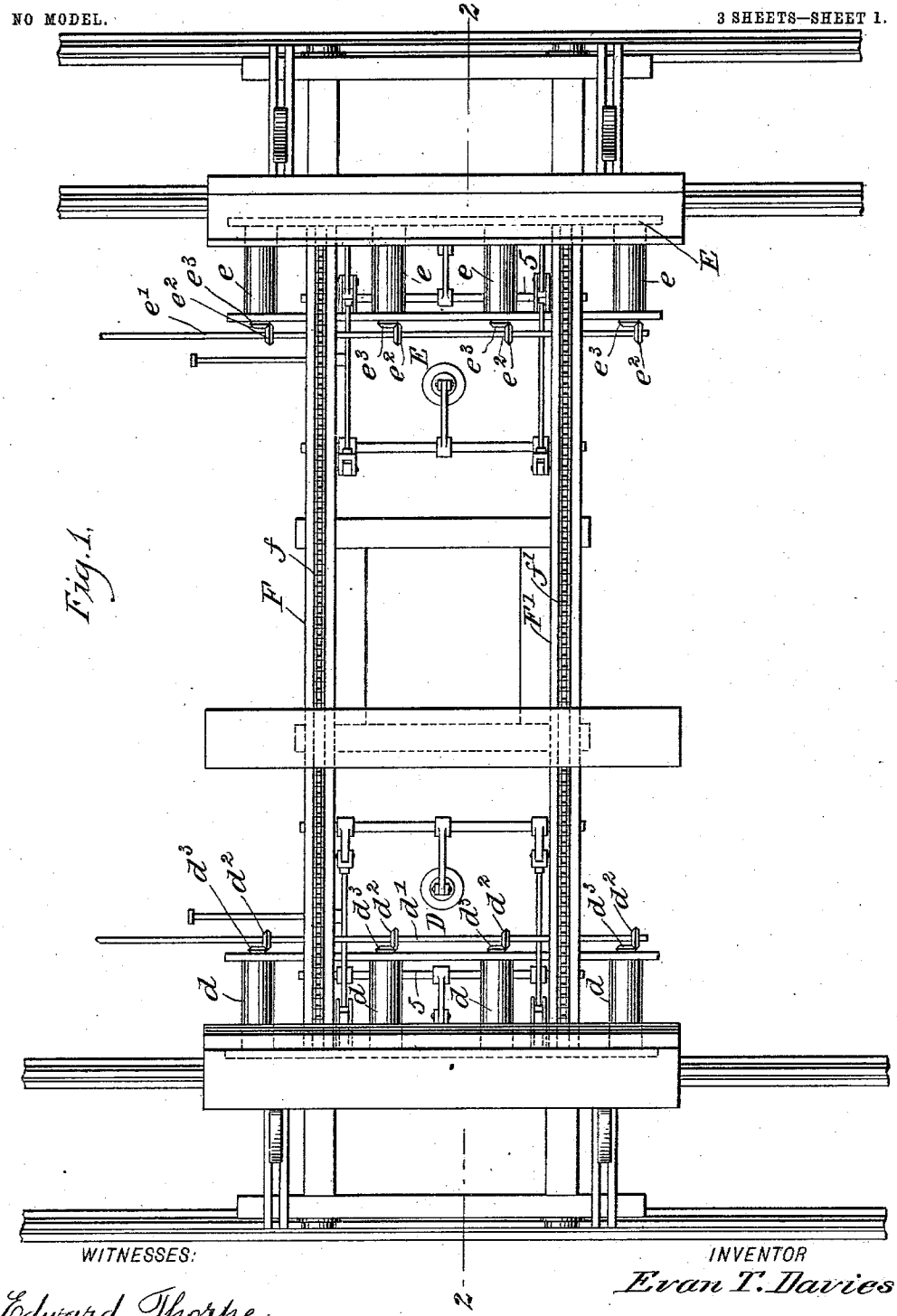


Fig. 1.

WITNESSES:

Edward Thorpe.

Richard B. Cavanagh.

INVENTOR

Evan T. Davies

BY Munn & Co.

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 752,440. PATENTED FEB. 16, 1904.

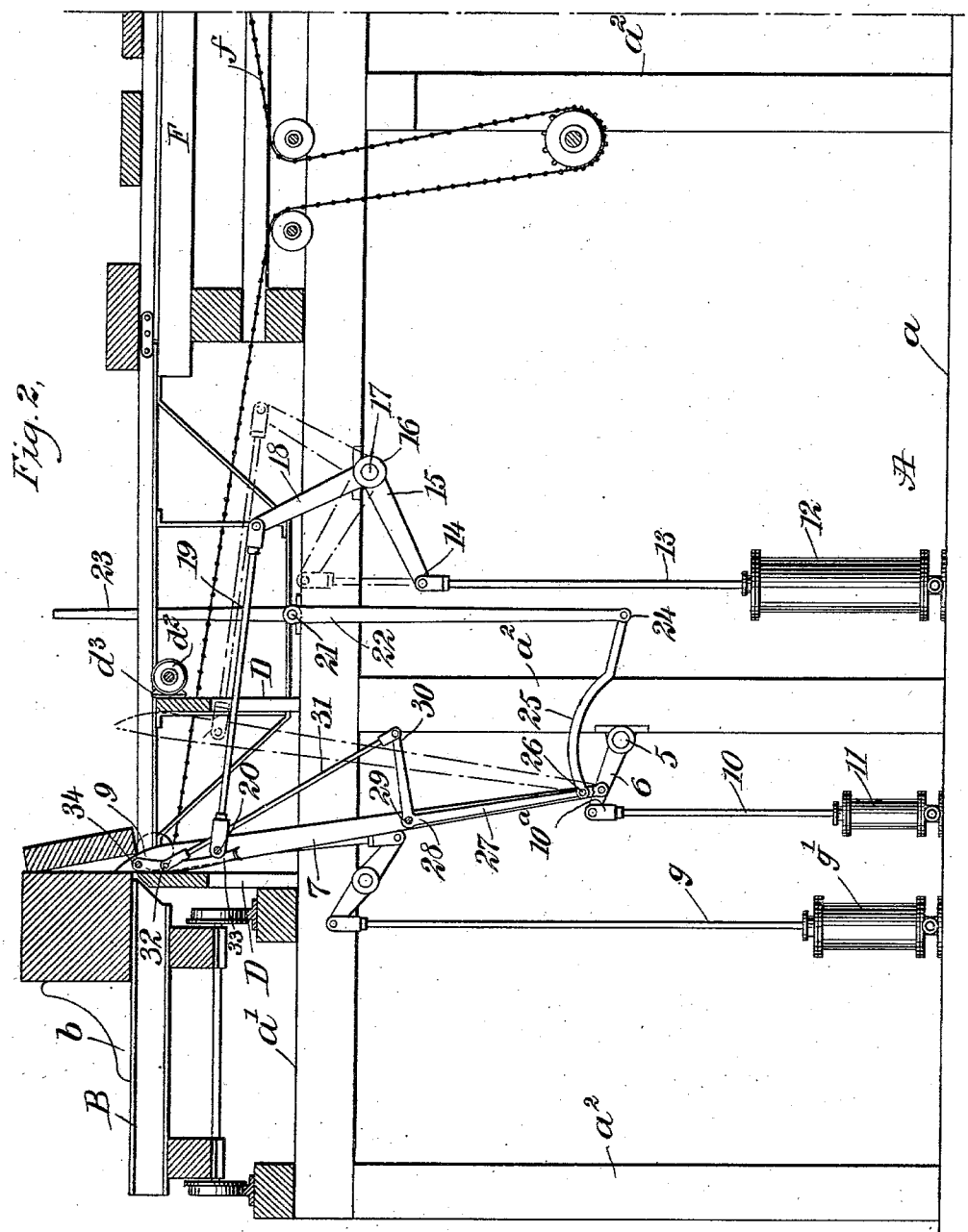
E. T. DAVIES.

OFF-BEARING MECHANISM FOR SAWMILLS.

APPLICATION FILED SEPT. 14, 1903.

NO MODEL, 3 SHEETS—SHEET 2.

Fig. 2.



WITNESSES:

Edward Thorpe

Richard B. Cavanagh.

INVENTOR

Evan T. Davies

BY Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 752,440. PATENTED FEB. 16, 1904.

E. T. DAVIES.

OFF-BEARING MECHANISM FOR SAWMILLS.

APPLICATION FILED SEPT. 14, 1903.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 4.

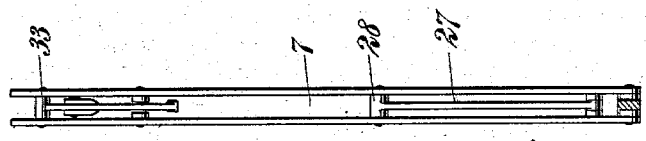
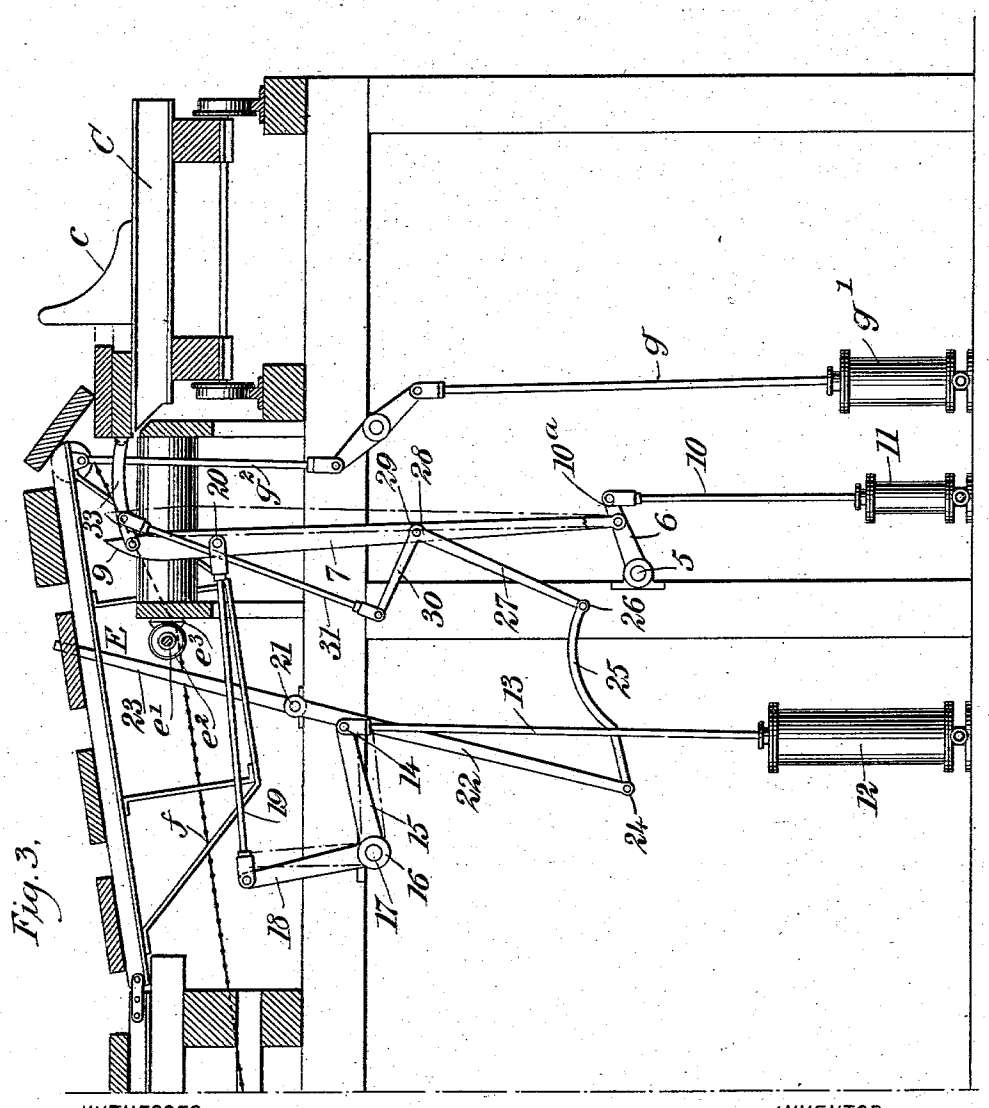


Fig. 3.



WITNESSES:

Edward Thorpe.

Richard B. Cavanagh.

INVENTOR

Evan T. Davies

BY Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 752,440. Patented February 16, 1904.

UNITED STATES PATENT OFFICE.

EVAN THOMAS DAVIES, OF PORTLAND, OREGON.

OFF-BEARING MECHANISM FOR SAWMILLS.

SPECIFICATION forming part of Letters Patent No. 752,440, dated February 16, 1904.

Application filed September 14, 1903. Serial No. 173,099. (No model.)

To all whom it may concern:

Be it known that I, EVAN THOMAS DAVIES, a citizen of the United States, and a resident of Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Off-Bearing Mechanisms for Sawmills, of which the following is a full, clear, and exact description.

This invention relates to certain novel and useful improvements in attachments for sawmills, and has particular application to an improved mechanical off-bearer for transferring and loading lumber upon the conveying devices of the mill after the plank or board has been separated or sawed from the cant or stick of timber or sawlog.

In the present invention I have particularly in view as an object the provision of an improved mechanism which will engage with the stick or plank as fast as it is sawed by the sawing mechanism of the mill and will remove said plank from the main block of timber or the cant and deposit the same on the carrying or conveying device of the machine or sawmill.

Still another object of my invention is to provide means for piling the sawed sticks or planks upon the mill conveying-carriage.

A further object of the invention is to provide a device of the character specified which will be exceedingly simple in its construction, positive in its operation, capable of being applied to any of the well-known forms of sawing-mills now in use, and one which may be installed at comparatively little expense.

With these objects and others of a similar nature in view my invention consists in the construction, combination, and arrangement of parts as is described in this specification, delineated in the accompanying drawings, and set forth in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a top plan view of portions of a sawmill having my improvement applied thereto. Fig. 2 is a longitudinal vertical sectional view of the same, taken on the line 2 2 of Fig. 1. Fig. 3 is an enlarged detail view, partly in section and partly in elevation, showing clearly the manner of operation of my improved off-bearing device; and Fig. 4 is a face view, a part being in section, of a lever hereinafter more fully described.

Referring now to the accompanying drawings in detail, A designates the frame of the sawmill or machine, such frame comprising, essentially, the horizontal beams $a\,a'$ and the vertical posts or standards a^2. Mounted upon the upper horizontal beams a' of the frame is the mill-carriage B, designed to convey the cant or timber to the saw, which latter may be of any improved or desired type, such as a band-saw or a rotary saw, said carriage having a knee-block b. At the opposite end of the frame from that upon which the carriage B is supported is a similar carriage C, having thereon a knee-block c, similar to the knee-block b of the carriage B. Mounted at one end of the frame adjacent to the carriage B is a supporting-frame D, carrying the live rollers d, which rollers are actuated by any suitable means, such as the shaft d', carrying bevel gear-wheels d^2, intermeshing with similar bevel gear-wheels d^3, carried by said rollers, while a similar frame E, supporting rollers e, actuated by a shaft e', provided with bevel-gearing e^2, intermeshing with gearing e^3 on the rollers, is arranged at the opposite end of the machine or adjacent to the carriage C.

Between the track of the carriage B and the track upon which the carriage C travels extends a runway in the form of skids, said runway being composed of the side pieces or bars F F', longitudinally of which bars travel the skid-chains f and f', said chains extending over pulleys mounted in suitable positions upon the frame, the construction being such that the skid-chains travel so as to convey the flips or planks that have been severed from the main log from the carriage B to the carriage C, or vice versa.

In order to remove the flip or plank after a kerf has been cut in the main timber and the plank severed entirely therefrom, I have devised the following mechanism, which is the important feature of my invention: Secured to the standards or posts a^2 are suitable bearing-brackets, each pair of brackets having a

shaft 5 journaled therein, which shaft carries levers 6, said levers having pivoted thereto a relatively long arm or stake 7, formed of two bars spaced apart, as will be seen in Fig. 4, while the opposite ends 9 of the double arm or stake 7 have their edge portions inclined or converging, so that they come to a relatively sharp point. Any number of these arms 7 may be employed, together with their operating and connecting devices; but for the sake of convenience I will describe the construction of but one of said bars and its operating devices, as it is to be understood that such description will be applicable to any number that may be found suitable or desirable. The levers 6 and the pointed arm 7 are placed upon a line with the cut or kerf made in the log and are capable of moving vertically, so as to lie in the kerf between the cant or log or the flip when the arm is moved vertically through the actuation of the levers 6, which actuation is accomplished through the medium of a piston-rod 10, reciprocating vertically in a cylinder 11 and connected with the shaft 5 at 10^a, which reciprocation of the rod may be accomplished by means of steam, compressed air, or otherwise. A second cylinder 12 is mounted adjacent to the cylinder 11, within which cylinder moves a piston, the rod 13 thereof being connected at one end 14 to one arm, 15, of a bell-crank lever, which arm is secured at 16 to a rock-shaft 17, journaled in the frame A, the other arm, 18, of said lever being pivoted to one end of a horizontally-disposed rod 19, which rod is at its opposite end connected at 20 to the pointed arm 7.

From the construction so far described as relating to the bar 7 and its operating devices it will be seen that when the levers 6 have an upward movement imparted thereto through the vertical movement of the piston-rod 10 the stake or bar 7 will also have a vertical movement imparted thereto, the bar being designed in such movement to force its way upward between the cant or log and the plank which has just been severed therefrom by the saw. When the piston is moved vertically in the cylinder 12, the rock-shaft 17 will be actuated through the arm 15 in such manner that the arm 18 will swing backward toward the center of the frame and away from the carriage carrying the log, such movement having a tendency to pull or move the bar 7 upon its pivot in toward the center of the machine and away from the log, the pointed end portion of the bar 7 forcing or pushing the severed plank away from the log and upon the skid-chains, by which it is carried to the pony-mill. If desired, the improved off-bearing mechanism can be arranged to trip the flip or plank down flat upon the rollers d and convey it to the edger or lumber-trimmer. (Not shown.) It will also be seen by reference to the drawings that the skids at each side of the apparatus may each be raised through the medium of a vertically-movable rod g of a piston working in a cylinder g', mounted on the frame and connected with a bar g^2.

In order to pile or place the lumber or planks upon the carriages, I employ the following mechanism, the parts of such mechanism being preferably duplicated—that is to say, the arrangement adjacent to the carriage B is the same as that adjacent to the carriage C, so that a description of one of the lumber-piling devices will be sufficient for both. Pivoted to a bracket 21, mounted upon the frame, is a relatively long lever 22, the upper portion 23 of which forms a handle, while the lower part is connected at its extremity 24 to a curved link member 25, bolted at 26 to the relatively long arm 27 of the angular lever 28, which lever is pivoted at 29 between the bars forming the arm or wedge 7, as is clearly seen in Fig. 4. To the short arm 30 of the lever 28 is pivoted a rod 31, said rod being also connected at 32 to a curved pusher-arm 33, pivotally connected at 34 to the upper end portion 9 of the arm 7, it being understood that such curved pusher-arm is pivotally hung between the duplicate bars forming the arm 7, as seen in Fig. 4.

In Fig. 2 the arm 33 is shown in its normally inoperative position, the arm 7 being shown in use for piling or bearing the plank from the carriage to the conveyer, while in Fig. 3 I have shown my lumber-piling device in use. When it is desired to employ this lumber-piling device, which is presumed to be in the position shown in Fig. 2, the handle 23 is pushed forward toward the carriage, as shown in Fig. 3, and the lower end of the lever 22, pulling upon the link 25, actuates the rod 31 through the medium of the lever 28, which rod being thrust upward toward the carriage swings the pusher-arm 33 upon its pivot and causes the same to swing upward into engagement with the planks dropping upon the carriage and push such planks up against the knee-block, as clearly shown in Fig. 3.

It will be observed that the mechanism for piling the lumber is extremely simple and one which is of great assistance in guiding and directing the arrangement of the planks, so that the operation of the mill will be continuous without requiring that attention should be paid to the path of travel or to the loading of the planks upon the carriages. The chain-skids elevate to any convenient height to properly deliver the planks or cants upon the sawmill-carriage.

As hereinbefore stated, any suitable number of arms, lever-arms, connections, and pistons for actuating the same may be employed on the sawmill; and it is to be further understood that for each off-bearing arm employed there is also provided an arm mounted on the rock-shaft, means for operating the arm, and

connections between the arm and the off-bearing arm. The many advantages incident to a construction of this character will be readily appreciated by those familiar with the art to which it appertains, as it will be apparent that long heavy pieces of lumber may be easily removed and loaded onto the skid after having been severed from the main log, and, if desired, the lumber may be even loaded back upon the carriage by causing the arms to engage with the outer edges of said plank to force the latter back upon such carriage upon the flat side.

While I have shown and described one embodiment of my invention, it will of course be understood that I do not confine myself to the precise details of construction set forth, as there may be modifications and variations in some respects without departing from the spirit of the invention or sacrificing any of the advantages thereof.

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

1. In an off-bearing device for sawmills, the combination of a pivoted arm, means for imparting lateral and vertical movements to the arm, and a device for piling material cut in the mill, said device comprising a pusher pivoted at the upper portion of said arm and designed to be moved into engagement with material coming from the mill, and manually-operated means mounted on the frame for actuating the pusher.

2. A device of the class described comprising a main frame, a lever pivoted thereto, an arm pivotally connected with said lever, a cylinder and piston-rod for moving said lever to impart vertical movement to the arm, a rock-shaft journaled in the frame, a second arm pivoted to the rock-shaft, connections between the second arm and the first-mentioned arm, means for moving the rock-shaft and its arm to cause the first-mentioned arm to swing laterally relatively to the frame, a pusher-arm pivotally connected to the first-named arm, and means connected to the pusher-arm and under the control of the operator, for moving said pusher-arm into engagement with planks or the like.

3. The combination of an off-bearing device including a vertical and laterally-movable tapered arm, a device for piling material cut by the saw of a sawmill, said device including a curved arm pivoted to the tapered arm near the free end thereof, a lever pivoted to the frame of the mill, and a movable connection between the curved pusher-arm and the lever, the construction being such that when the lever is moved, motion will be imparted to the pusher-arm.

4. The combination of an off-bearing device comprising an arm, means including a cylinder, piston-rod and connections between the piston-rod and the arm for imparting vertical movement to the arm, means including a cylinder, piston-rod and bell-crank lever and connections between the lever and arm for moving said arm laterally, a pusher-arm secured to the first-mentioned arm, and means connected with the pusher-arm for moving said pusher-arm into engagement with planks or the like.

5. The combination with a sawmill mechanism, of an off-bearing device carried thereby, said off-bearing device including a vertically-movable arm pivotally secured to the frame of the sawmill mechanism, said arm being formed of a plurality of bars, and means for piling the planks or lumber cut in the mill, said means comprising a pusher-arm pivoted to the vertical movable arm, a lever connected to the frame of the mechanism, a second lever pivoted to the vertically-movable arm, a link connecting the two levers, and a connection between the second-mentioned lever and the pusher-arm, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EVAN THOMAS DAVIES.

Witnesses:
FRANK KIERNAN,
THOMAS H. WARD.