

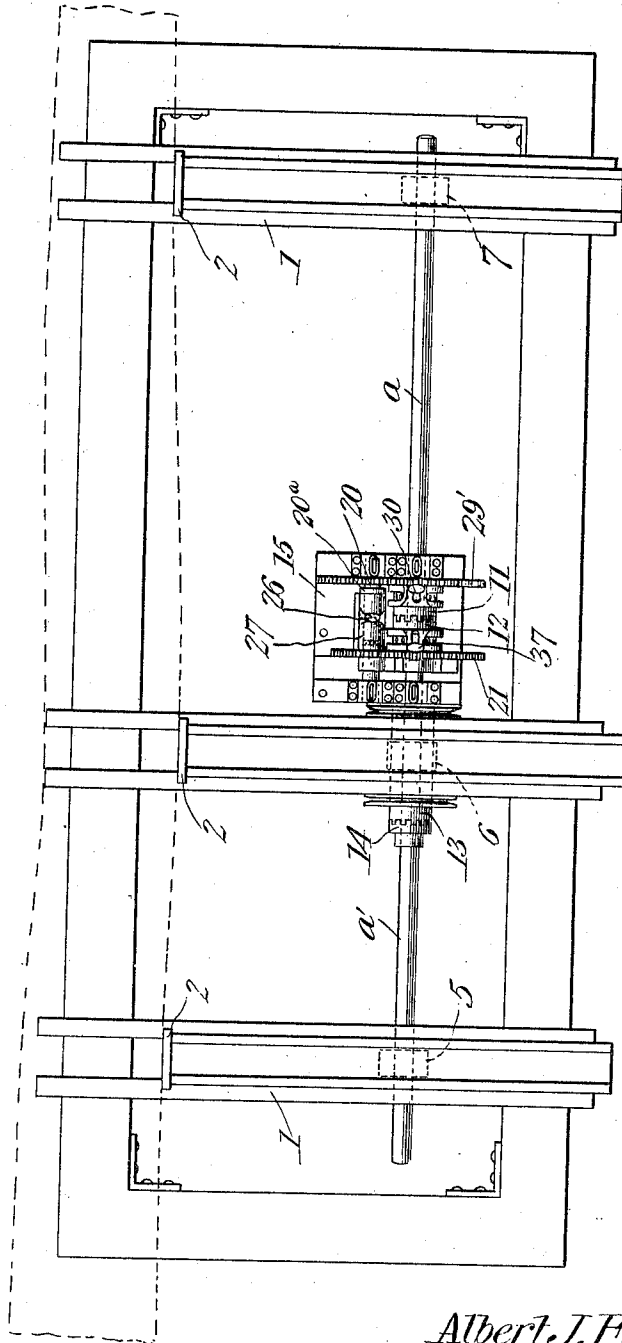
A. J. FARRELL.
SAWMILL KNEE ADJUSTING MECHANISM.
APPLICATION FILED JAN. 4, 1911.

1,036,986.

Patented Aug. 27, 1912.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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4 SHEETS—SHEET 2.

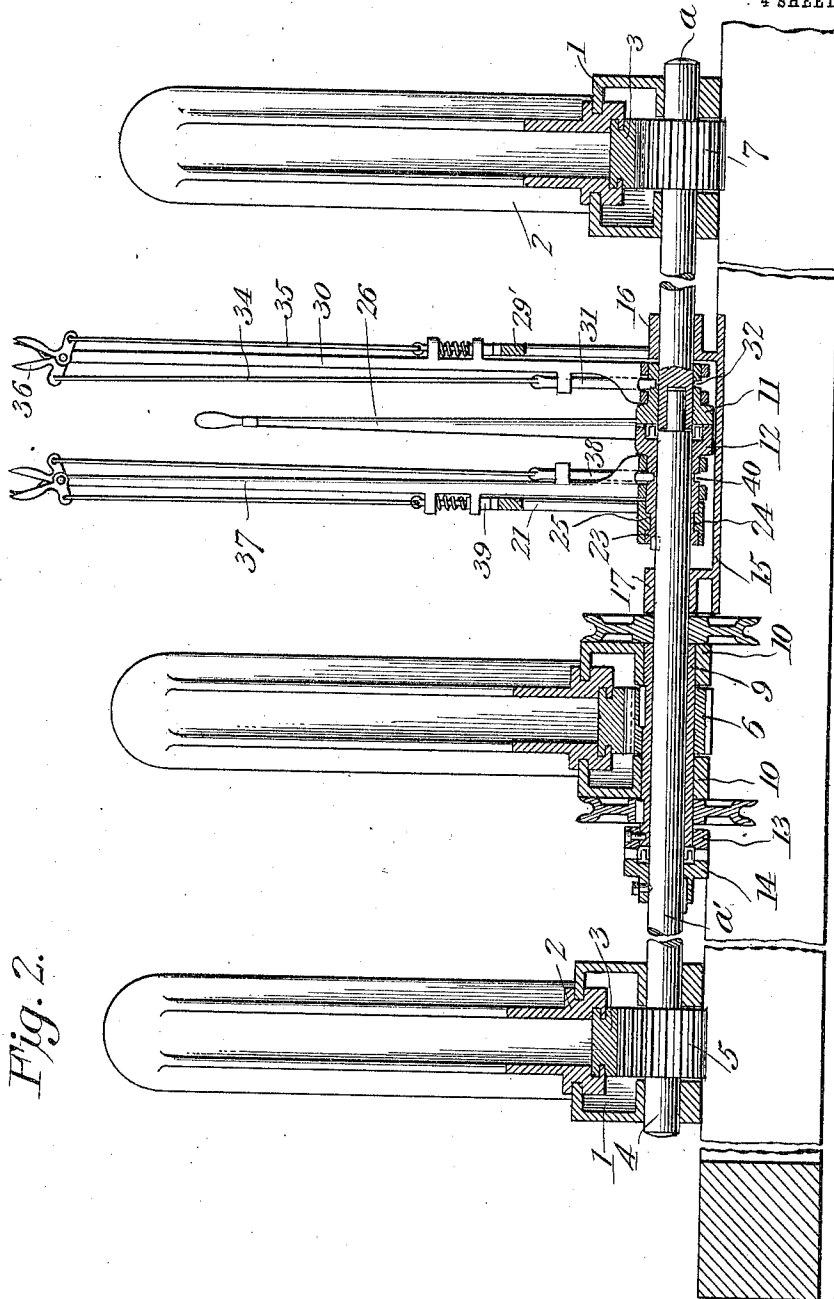


Fig. 2.

Witnesses

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4 SHEETS—SHEET 3.

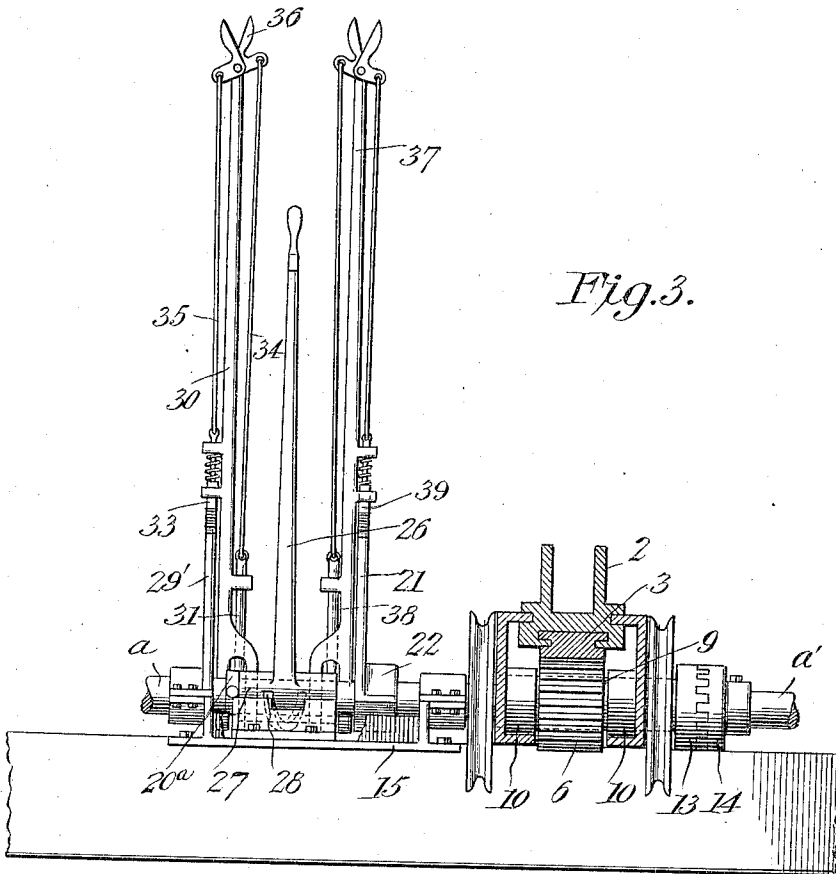


Fig. 3.

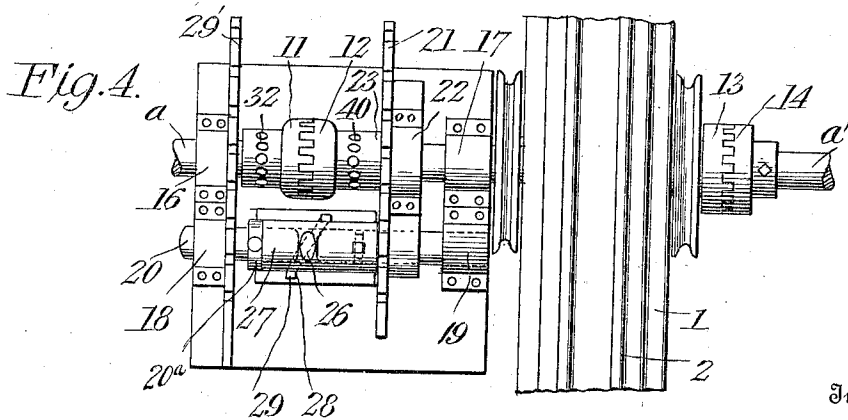


Fig. 4.

Witnesses
Hinton & Belt
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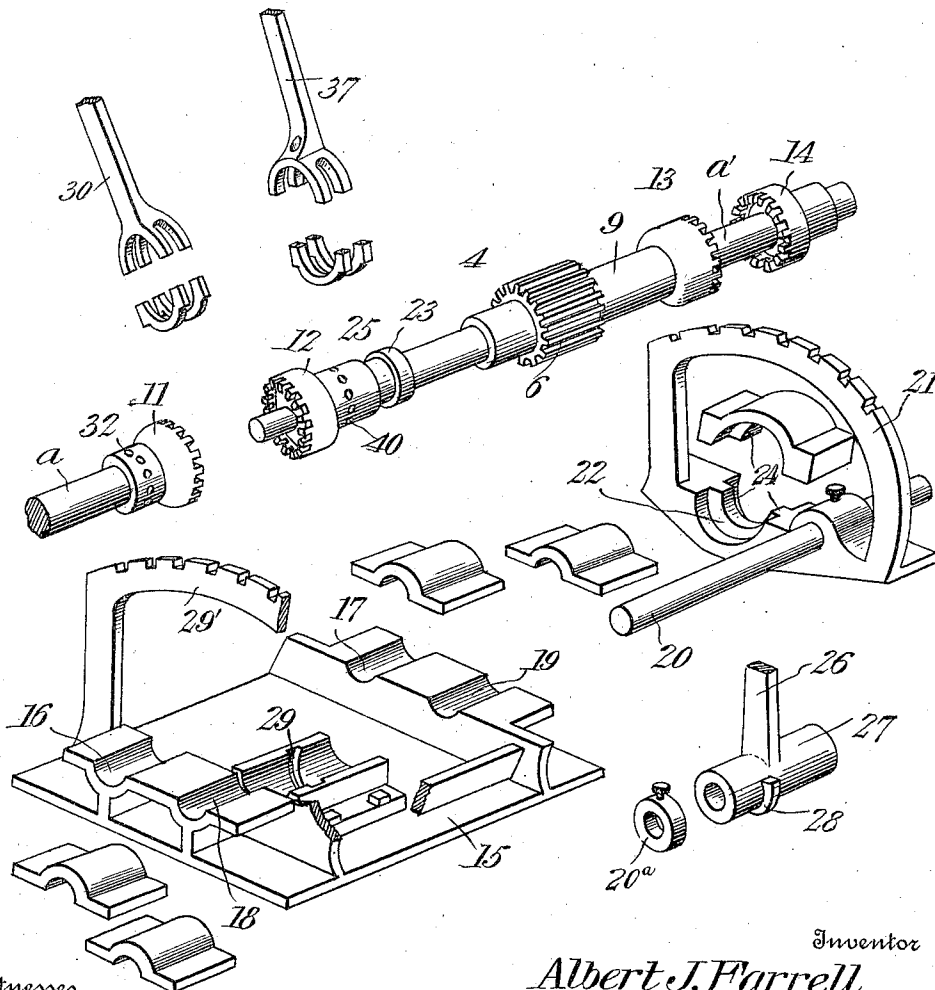
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4 SHEETS—SHEET 4.

Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

ALBERT J. FARRELL, OF HENSLEY, ARKANSAS.

SAWMILL-KNEE-ADJUSTING MECHANISM.

1,036,986.

Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed January 4, 1911. Serial No. 600,841.

To all whom it may concern:

Be it known that I, ALBERT J. FARRELL, a citizen of the United States, residing at Hensley, in the county of Saline and State of Arkansas, have invented new and useful Improvements in Sawmill-Knee-Adjusting Mechanism, of which the following is a specification.

This invention relates to saw mills, and more particularly to the setting mechanism for the knees thereof.

The invention has for one of its objects to improve and simplify the construction and operation of mechanism of this character so as to be comparatively simple and inexpensive to manufacture, reliable and efficient in use, and readily controlled for effecting the adjusting of the knees.

Another important object of the invention is the provision of a knee-adjusting mechanism whereby the knees can be adjusted to alining or non-alining position so that they can be set up against a straight, crooked or tapering log.

Another object of the invention is the provision of an operating means for the knees whereby a single attendant can adjust the knees independently according to the shape of the log on the mill carriage and when fluid-actuated or electrically-operated dogs are employed, the same attendant can control the dog-operating means to thus dispense with the use of more than one attendant.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 is a plan view of so much of a saw mill as is necessary to illustrate the invention. Fig. 2 is a longitudinal section taken in the plane of the knee-setting shaft. Fig. 3 is a rear view of the portion of the mechanism where the operating levers are located. Fig. 4 is a plan view of the same portion shown in Fig. 3 with the levers removed. Fig. 5 is a perspective view of the knee-adjusting mechanism with the parts disassembled.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawings, 1 designates the transversely-extending head blocks of the carriage on which knees 2 of the usual construction slide, the knees being provided with racks 3 that mesh with pinions on the setting shaft 4 journaled in the head blocks. In the present instance, the mill is shown as one of the three-knee type and hence three pinions 5, 6 and 7 are arranged thereon to mesh with the racks of the respective knees. The adjusting or setting means is so designed that the three knees can be simultaneously advanced or retracted or either end knee can be advanced or retracted so that all the knees can be brought into engagement with the log, irrespective of the shape thereof. In order to accomplish this, the shaft 4 is made into two sections *a* and *a'*, the section *a* being held against longitudinal movement, while the section *a'* is free to move longitudinally as well as to rotate. On the section *a'* is a sleeve 9 that carries the middle pinion 6 and the ends of the sleeve 9 are journaled in bearings 10 on the middle head block. On the meeting ends of the sections *a* and *a'* are clutch elements 11 and 12 and on one end of the sleeve 9 is a clutch element 13 that is adapted to mesh with the clutch element 14 fixed on the shaft section *a'*, so that when the shaft section *a'* is moved to the left, the clutches will be opened so that either or both end knees can be adjusted forwardly or backwardly as found necessary, means being provided for independently turning the sections *a* and *a'* of the shaft when the clutches are open. When the clutches are closed, the sections *a* and *a'* turn together as a solid shaft and the sleeve 9 turns with such shaft so that the three pinions 5, 6 and 7 will turn together for simultaneously moving the knees.

Adjacent the head block 1 for the middle knee is fastened a supporting plate 15 which has bearings 16 and 17 for the shaft 4 and this plate is also provided with bearings 18 and 19 for another shaft 20 disposed parallel with the shaft 4. On the shaft 20 is fixed a sector 21 which has a bearing 22 for receiving a peripherally grooved sleeve 23 fastened to the shaft section *a'* and which may be a part of the clutch element 12, the said

bearing having a rib 24 for entering the groove 25 of the sleeve 23 so that by longitudinal movement of the sector or frame 21, the shaft section a' will move longitudinally.

5 The shaft 20 slides in the bearings 18 and 19 but is prevented from turning. On the shaft 20 is mounted a shifting lever 26 that has a hub 27 that fits on the shaft and is free to turn thereon, the said hub having spiral
10 threads 28 which engage corresponding threads 29 on the plate 15. By this means, it is merely necessary to swing the lever 26 upwardly or downwardly in order to throw the clutches open or closed, since this move-
15 ment of the lever produces longitudinal movement of the frame 21 that is operatively connected with the shaft section a' to cause corresponding movement thereof. One end of the hub 27 of the lever 26 bears
20 on the frame or sector 21 and the other end bears on a collar 20^a fixed on the shaft or sliding rod 20, so that as the lever 26 is turned, the engaging threads 28 and 29 will cause the hub and lever to shift laterally
25 and carry the sector or frame 21 therewith. Fastened on the plate 15 is a fixed sector 29 and movable along the same is a knee-setting or adjusting lever 30 that swings on the clutch element 11 as a center, there being on
30 this lever a dog 31, that is adapted to enter openings 32 in the periphery of the clutch element 11 so that by swinging the lever 30, the shaft 4 can be rotated to simultaneously set the knees when the clutches are closed.
35 Also on the lever is a spring-pressed latch 33 that is adapted to engage the teeth of the sector 29. The dog and latch are operatively connected by rods 34 and 35 on the lever 30 and the rod 34 can be raised by
40 tilting the handle 36 on the lever while the rod 35 can be raised by compressing the parts of the handle together. Mounted on the sleeve or clutch element 12 is another lever 37 which moves along the sector 21,
45 and this lever is provided with a dog and latch 38 and 39, respectively, which are adapted to engage in openings 40 in the clutch element 12 and the teeth of the sector 21. When the clutches are open, the left
50 hand lever will serve to adjust the left hand knee while the right hand lever will serve to adjust the right hand knee, the middle knee being for the time being stationary since the pinion 6 does not turn with the shaft section
55 a' when the right hand clutch is open. It will thus be seen that the knees can be adjusted simultaneously or the end knees adjusted independently while the middle knee is stationary.

60 It will be noted that the three levers 26, 30 and 37 are located at one point so that one attendant can take care of the setting of all the knees and when the dogs of the knees are operated by compressed air, steam or
65 electricity, the controller for the motors that

operate the dogs can be located adjacent the adjusting levers mentioned so that one attendant can manage the knees and dogs.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the
70 invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made
75 when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:

1. The combination of a knee-operating
85 shaft composed of two alining sections shiftable longitudinally one with respect to the other, a knee operatively connected with each section of the shaft, a clutch between the adjacent ends of the sections, a
90 knee-operating sleeve surrounding the longitudinally movable portion of the shaft, a knee operatively connected with the sleeve, a clutch between such portion of the shaft and sleeve, one clutch being open while the
95 other is open, a pair of levers for turning the respective shaft sections, when the clutches are open, one lever serving to turn the shaft as a unit when the first-mentioned clutch is closed, a non-rotatable shaft dis-
100 posed parallel with the knee-operating shaft, a connection between said non-rotating shaft and the longitudinally movable section of the knee-operating shaft, and a shifting mechanism operating on the non-
105 rotatable shaft for moving the same to shift the movable section of the shaft and thereby open and close the clutches.

2. The combination of a knee-operating means including a pair of clutches, a knee
110 operated by each clutch when the latter is closed, the shiftable element of one clutch being connected with the shiftable element of the other clutch and so related that one clutch is closed while the other is closed,
115 and a mechanism for shifting the shiftable clutch elements, said mechanism including a longitudinally movable non-rotatable shaft disposed parallel with and operatively connected with the shiftable clutch elements,
120 an operating lever mounted on the shaft to swing thereon as an axis, and operatively connected with the shaft to move the same longitudinally, and means including a fixed part engaging a part on the lever for caus-
125 ing the lever to move laterally simultaneously with its swinging movement.

3. The combination of a shaft composed of two sections, a knee connected with each section, a clutch between the sections, a
130

sleeve on one of the sections, a knee connected with the sleeve, a clutch between such section and sleeve, a bearing for the sleeve-carrying section, means for laterally shifting the bearing and moving the sleeve-carrying portion of the shaft to open the clutches, means for shifting the shaft sections independently to move the knees connected therewith when the clutches are open.

4. The combination of a shaft composed of two sections, knees connected with the respective sections, a clutch between the sections, a sleeve on one of the sections, a knee connected with the sleeve, a clutch between such section and sleeve, a sector frame laterally movable and including a bearing for the sleeve-carrying portion of the shaft to longitudinally shift the same, means operatively connected with the sector frame for shifting the same, an operating lever for turning the shaft, and means on the lever for engaging the sector frame to lock the lever with respect thereto.

5. The combination of sector frames shiftable laterally one with respect to the other, a shaft having alining sections, knees connected with the respective sections of the shaft, a clutch for connecting the sections together, means for connecting one section of the shaft with the movable sector frame for opening and closing the clutch, operating levers connected with the respective sections of the shaft associated with the respective sector frames, means for locking the levers to the sector frames, and a clutch controlling lever movable parallel with and between the first-mentioned levers for shifting the movable sector frames.

6. The combination of a plurality of knees, a shaft composed of separable parts disposed in alinement and relatively slidable longitudinally, a clutch for connecting the meeting ends of the parts of the shaft, a shifting lever operatively connected with

one of the parts to open the clutch, and levers located at opposite sides of the shifting lever operatively connected with the respective parts of the shaft for turning the same independently for separate adjustment of the knees, one of the last-mentioned levers serving to turn both parts of the shaft together when the clutch is closed to simultaneously adjust the knees, said three levers being movable in separate planes parallel to each other.

7. The combination of three knees, a setting shaft operatively connected with the knees, said shaft being composed of separate parts, a clutch for connecting the parts together, a clutch for connecting the middle knee with the shaft, means for opening both clutches by shifting one part of the shaft, a device for turning one part of the shaft to adjust one end knee when the first clutch is open and to turn both parts of the shaft when the first clutch is closed for simultaneous adjustment of all the knees, and means for turning the other part of the shaft when the clutches are open for adjusting the end knee connected with such part.

8. The combination of a shaft composed of separable parts, a clutch for connecting the parts together, end knees operatively connected with the respective parts, a middle knee, a clutch for operatively connecting the middle knee with one of the parts, a lever operatively connected with one of the parts to longitudinally move the same for simultaneously opening or closing the clutches, and adjusting levers operatively connected with the respective parts of the shaft.

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

ALBERT J. FARRELL.

Witnesses:

L. B. FARRELL,
O. M. FARRELL.