

June 16, 1931.

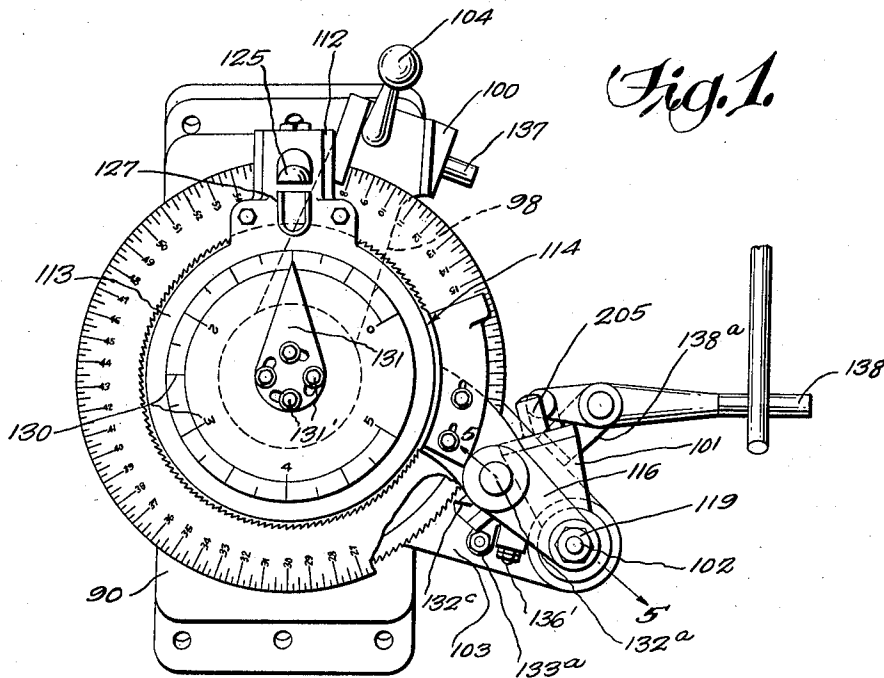
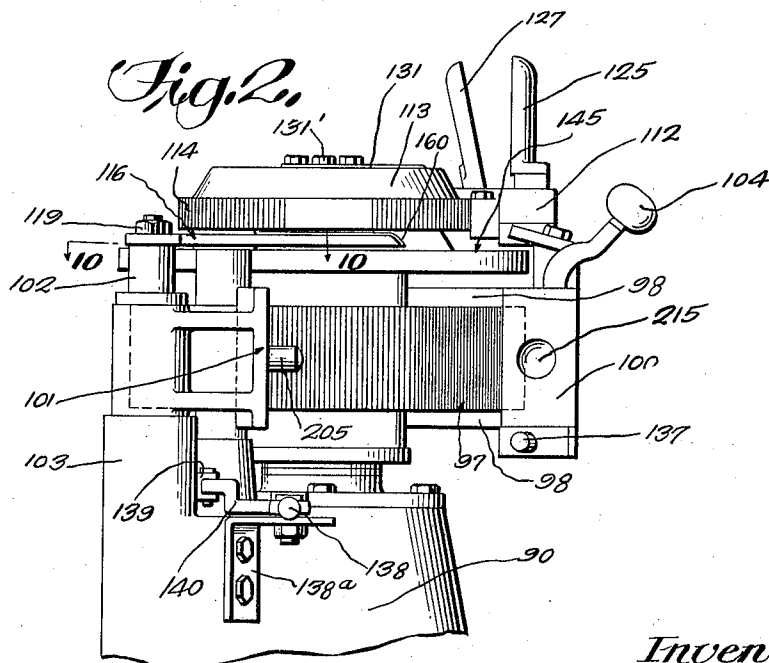
G. M. PELTON

1,810,029

SETWORKS

Original Filed July 2, 1928

3 Sheets-Sheet 1



Inventor
George M. Pelton
By
Bottum, Hadenast, Leckey, McManus & Michael
Attorneys

June 16, 1931.

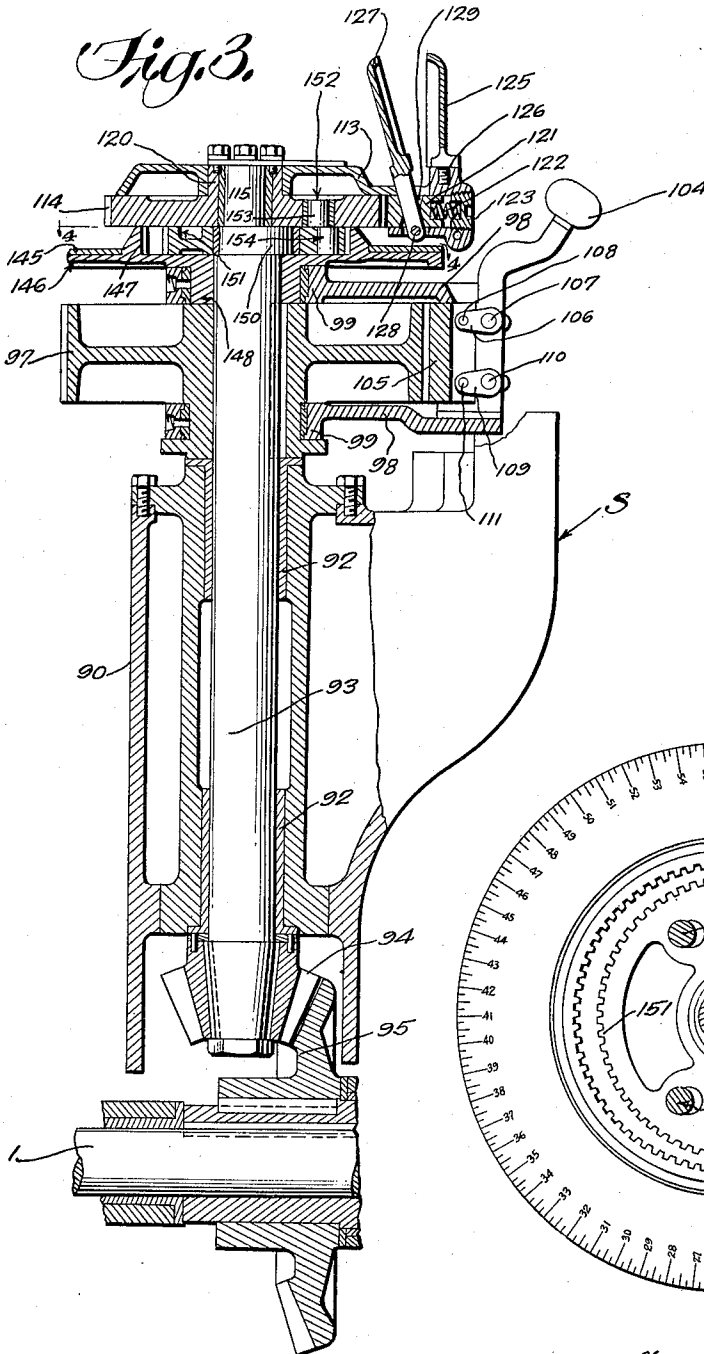
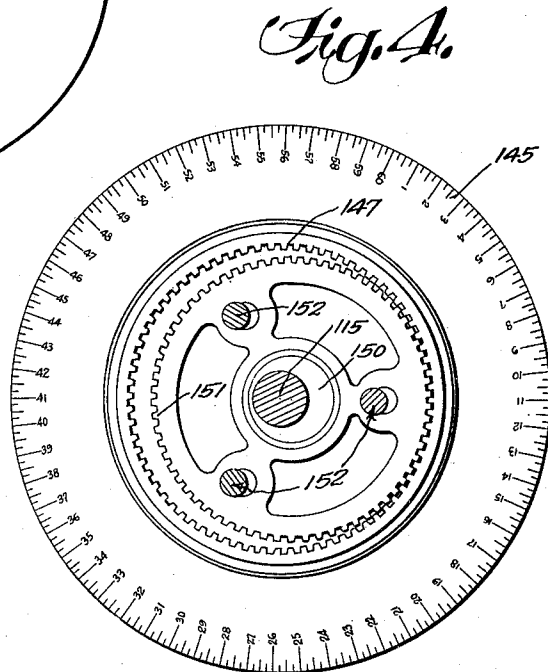
G. M. PELTON

1,810,029

NETWORKS

Original Filed July 2, 1928

3 Sheets-Sheet 2



George M. Pelton *Inventor*

By

Bottom, Hudson, Lecher, Kiehnemann and Michael
Attorneys

June 16, 1931.

G. M. PELTON

1,810,029

SETWORKS

Original Filed July 2, 1928

3 Sheets-Sheet 3

Fig. 5.

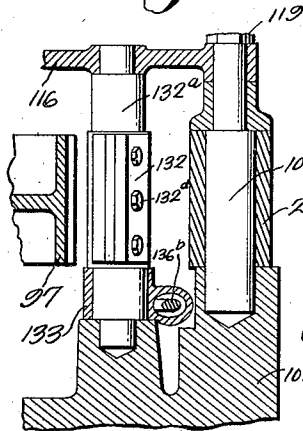


Fig. 10.

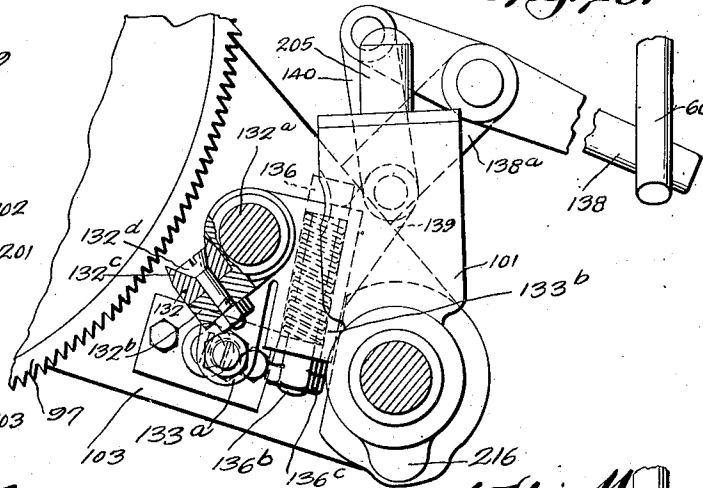


Fig. 7.

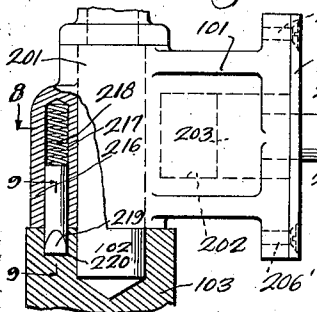


Fig. 11.

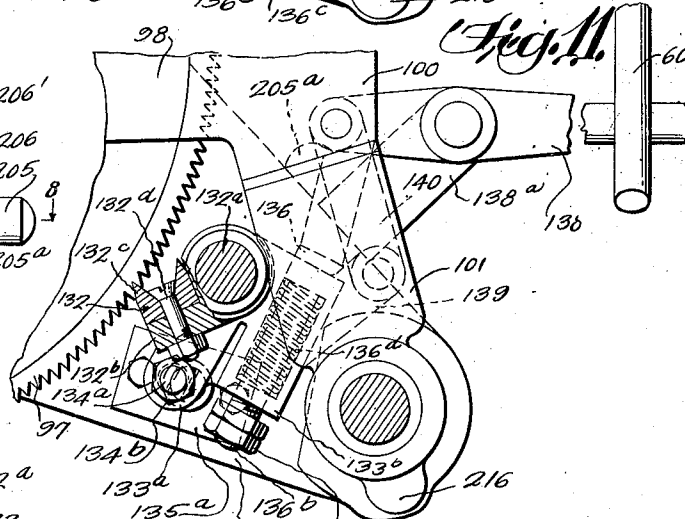


Fig. 6.

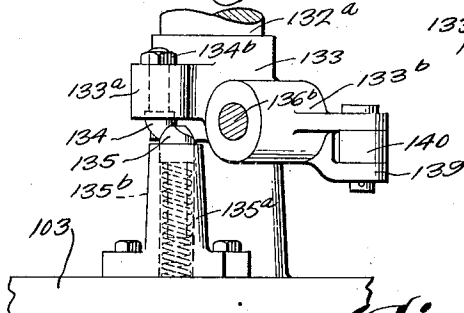


Fig. 8.

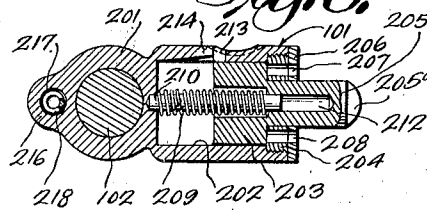
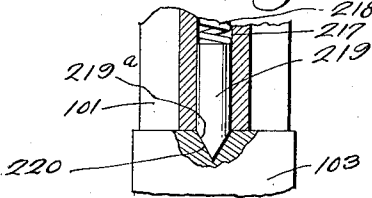


Fig. 9.



Inventor
George M. Pelton
By
Bottling Henderson, George M. Pelton, Attorneys

UNITED STATES PATENT OFFICE

GEORGE M. PELTON, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE FILER & STOWELL COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN

SETWORKS

Original application filed July 2, 1928, Serial No. 289,881. Divided and this application filed February 5, 1930. Serial No. 425,933.

This invention relates in general to power networks for controlling the positioning of the knees transversely of the sawmill carriage and more particularly to the setting head of such a networks, that is, to the means provided at the upper end of the column for accurately gauging the setting movement of the knees.

The present application is a division of my copending application for networks filed July 2, 1928, Serial No. 289,881.

One of the principal objects of the present invention is to provide a networks of this character in which the setting head has organized therewith indicating means under the full, direct and plain view of the operator or setter whereby the distance of each knee face from the sawline and the distance which the knees are advanced during each setting movement are plainly and accurately indicated at all times.

Another important object of the invention resides in the provision of a setting head of this character which is of simple and compact construction, smooth, easy and accurate in operation, readily and conveniently controlled and easy and comparatively inexpensive to manufacture.

A further object of the invention is to provide for the effective cushioning of the impact of the clash blocks or stops of the setting head and to coordinate this cushioning action with the prevention of rebound and all this without interfering with easy and accurate setting.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings, forming a part of this specification, and in which:

Figure 1 is a plan view of the setting head embodying the present invention;

Figure 2 is a fragmentary view thereof in side elevation;

Figure 3 is a view in central vertical longitudinal section taken through the setting

head, parts being shown in elevation for the sake of illustration;

Figure 4 is a view in horizontal section taken on line 4—4 of Figure 3;

Figure 5 is a fragmentary detail view partly in vertical section taken on line 5—5 of Figure 1, but showing the locking pawl in elevation;

Figure 6 is a fragmentary detail view showing the latching means for the locking pawl, parts being broken away and shown in section for the sake of illustration;

Figure 7 is a fragmentary view partly in section and partly in elevation showing the relatively fixed clash block and its spring pressed latching pin;

Figure 8 is a view in horizontal section taken on line 8—8 of Figure 7 and illustrating the shock absorber or cushioning means embodied in the relatively fixed clash block;

Figure 9 is a detail view in section taken on line 9—9 of Figure 7 and further illustrating the latching pin and its beveled seat or keeper;

Figure 10 is a fragmentary view in transverse horizontal section taken on line 10—10 of Figure 2, and also showing the locking pawl in section; and

Figure 11 is a view similar to Figure 10 but showing another position of the parts.

Referring to the drawings, it will be seen that the present invention proposes a setting head designated at S and including a column 90 having its base suitably secured in position. In bearings 92, provided in the column 90, a column shaft 93 is provided (see Figure 3) and is geared to a set shaft 1 by means of a beveled pinion 94 fixed to the lower end of the column shaft 93 and meshing with a beveled gear wheel 95 fixed to rotate with the set shaft 1. The shaft 93 projects above the upper end of the column and has a main setting drum or ratchet drum 97 keyed thereto and rotatable therewith. A bifurcated clash arm 98 is provided and has bearings 99 mounted for free rotation about the axis of the shaft 93. One of the bearings 99 is rotatably mounted on the extension of the hub of the ratchet drum 97. Both bearings 99 are sectional to permit of assembly and disas-

sembly. At their outer ends the arms 98 have integrally formed therewith an adjustable clash block 100 which, at the end of the setting movement, strikes a relatively fixed clash block 101 mounted on a vertical shaft 102 carried by a lateral extension 103 of the column 90 (see Figures 1 to 3). The adjustable clash block 100 and the bearing arms 98 on which it is formed may be swung around the ratchet drum 97 and engaged therewith at any selected point depending upon the thickness of the boards to be cut. This movement of the adjustable clash block 100 is facilitated by virtue of the provision of a handle 104 which also controls a shiftable pawl 105 fitted in an opening (see Figure 3) provided therefor in the adjustable clash block 100 and operated from the handle 104 by means of a crank arm 106 fixed to the pivot axis 107 to which the handle 104 is also secured. The crank arm 106 is pivotally connected as at 108 to the pawl block 105. A parallel crank arm 109 is pivoted as at 110 to the clash block 100 and is also pivoted as at 111 to the lower end of the pawl 105. Thus, when the handle 104 is rocked about its pivot 107 it moves the pawl 105 toward or away from the ratchet drum 97. The pawl 105 has teeth designed to interfit with the teeth of the ratchet drum to lock the clash block thereto at any point around the ratchet drum.

To facilitate setting of the clash arm 98 and clash block 100, especially when cutting a number of boards of the same thickness, an adjustable abutment designated generally at 112 is provided for the clash block 100 and is integrally formed with and extends from a rotatable index plate 113.

As shown in Figure 3, the index plate 113 is rotatably mounted on the body and hub extension 120 of a fixed ratchet plate 114 having a central bearing loosely receiving a reduced extension 115 formed at the upper end of the vertical shaft 93. The ratchet plate 114 has an integral lateral mounting arm 116 (see Figures 1 and 2) which is formed adjacent its outer end with an opening fitted over and secured to the mounting shaft 102. A nut 119 is provided for holding the arm 116 on its shaft 102 and consequently on the shaft 93.

In a slot or guide way formed in the adjustable abutment 112, a sliding pawl or detent 121 is fitted and is urged toward and into engagement with the ratchet plate 114 by means of a compression coil spring 122 having one end abutting the detent 121 and having its other end abutting a plug or abutment 123 threadedly connected with and closing the outer end of the guideway which receives the detent 121. The positioning of the adjustable abutment and consequently of the index plate 113 and the manipulation of the sliding detent 121 is facilitated by means of a fixed handle 125 fastened as at 126 to the ad-

justable abutment and having a pivoted handle 127 cooperable therewith. The pivoted handle 127 is pivotally mounted as at 128 on the adjustable abutment and extends through a conically shaped cam slot 129 formed in the sliding detent 121. When the handles 125 and 127 are grasped and pulled together the detent 121 is retracted and disengaged from the ratchet plate 114 and with the handles so held they may be shifted angularly to properly position the adjustable abutment. The positioning of the adjustable abutment is readily and accurately gauged by virtue of the provision of a scale 130 on the index plate 113, a pointer 131 fixed to the upper end of the hub extension 120 of the fixed ratchet plate by screws 131' coacting with the scale of the index plate. The scale on the index plate 113 consists of scale markings and numerals and indicates in inches and fractions of inches the thicknesses of the boards which may be cut. If the adjustable abutment is so set that the pointer registers with the one inch marking then by successively bringing the clash arm into engagement with the abutment in between each advance of the knees the knees will be advanced a sufficient amount during each setting operation to cut boards of one inch thickness. After the clash block 100 of the clash arm 98 is engaged with the adjustable abutment 112 and locked to the main ratchet drum at such point by its pawl 105, the operator throws in the power drive which imparts advancing or setting movement to the set shaft. This also rotates the shaft 93 and the ratchet drum 97 and swings the clash arm 98 and its clash block 100 around until it strikes the fixed abutment or fixed clash block 101. This positively stops the advancing movement of the set shaft. The setter carefully watches this action and throws out the power drive upon engagement of the clash blocks, but if the setter is a little late no damage will result due to the slippage permitted by the drive under such circumstances as will be understood from the disclosure of my application referred to above.

In order to cushion the impact occurring when the clash block 100 strikes the relatively fixed clash block 101, cushioning means is organized with these clash blocks and the relatively fixed clash block 101 has a slight lateral swinging movement on the shaft 102.

Referring now to Figures 5, 6 and 7 it will be seen that the clash block 101 has a bearing portion 201 in which the shaft 102 is fitted. The body of the clash block 101 is formed with a cylinder 202 in which a piston 203 has a working fit. The piston 203 is prevented from moving out through the outer end of the cylinder 202 by means of an apertured end plate 204 threaded into a countersunk outer end of the cylinder. A projection or pin 205 is integral with the piston and

projects exteriorly of the face of the clash block 101, this pin sliding through a central opening provided therefor in the end plate 204 and in the facing 206 of the clash block.

5 The facing 206 is secured in position by countersunk screws 206' and both it and the plate 204 have venting openings 207 and 208, respectively. The piston 203 is urged toward the outer end of its cylinder 202 (in which position its pin 205 projects beyond the face of the clash block) by means of a compression coil spring 209 having one end abutting the inner end wall of the cylinder 202 and having its other end abutting the piston 203.

10 The spring 209 is mounted on a guide rod 210 fixed in the inner end of a cylinder and sliding in an axial guide opening 212 formed in the pin or projection 205. When the piston 203 is positioned at the outer end of its cylinder 202 it partially uncovers an escape port 213 which communicates with an escape groove 214 provided in the inner face of the cylinder 202 and gradually decreasing in cross sectional area rearwardly of the cylinder.

15 The outer end of the projection 205 is rounded off as at 205^a and is designed to engage a similarly formed seat or recess 215 provided in the clash block 100 (see Figure 2). This recess or seat 215 may have its face hardened or may be constituted of a hard steel insert secured in the face of the clash block 100. The bearing portion 201 has a rearward extension or tail 216 formed with a vertical guide opening 217 receiving a compression coil spring 218 and a latching pin 219, the spring 218 projecting the pin 219 down through, the lower end of the opening 217 and into engagement with a seat 220 formed on the lateral extension 103 of the column (compare Figures 7 and 9). The lower end of the latching pin 219 is beveled as at 219^a and the seat 220 is similarly formed.

The latching pin 219, by virtue of its engagement with the seat 220 releasably holds the clash block 101 slightly angled with respect to its final stopping position and this positions the projection 205 of the cushioning means to engage the seat 215 of the clash block 100 when this clash block 100 swings toward the clash block 101 during a setting movement. When the projection 205 engages the seat 215 the piston 203 is displaced inwardly against the action of the spring 209 and against the resistance which the air in the cylinder 202 presents to the rearward movement of the piston 203 at this time. This resistance gradually increases as the escape of the air from the cylinder 202 becomes more and more restricted due to the covering of the port 213 and to the gradual covering of the groove 214. Just before the face of the clash block 100 strikes the facing 206 of the clash block 101 the piston 203 has completely covered the groove 214 and so the air confined between the piston 203 and the inner

wall of the cylinder 202 is compressed as it can escape only with great difficulty and very slowly past the piston and the cylinder wall. During this final phase of a setting movement the clash block 100, by virtue of the engagement of its seat 215 with the projection 205 swings the clash block 101 to its final stopping position and this movement of the clash block 101 causes the latch pin 219 to ride part way up the sloping wall of its seat 220 against the action of the spring 218.

When the adjustable clash block 100 is repositioned for the next setting movement its seat 215 is disengaged from the projection 205 and the spring 209 moves the piston to the outer end of the cylinder to project the pin 205 to the full extent. At the same time the clash block 101 is freed and the spring 218 acts through the pin 219 and its seat 220 to throw the clash block 101 back to its normal angled position.

For the purpose of preventing rebound of the ratchet drum, means is provided which automatically engages the ratchet drum 97 to hold it against retrograde movement when the clash blocks 100 and 101 are engaged. As shown in Figures 5, 10 and 11, this means for preventing retrograde movement of the main ratchet drum and consequently of the set shaft and knees consists of a pawl designated generally at 132 and having a shaft or axis 132^a pivotally supported at its ends in the arm 116 and in the lateral extension of the column. The shaft 132^a is formed with a lateral extension or seat 132^b to which a reversible double tooth 132^c is secured by screws and nuts 132^d. Only one prong of the double tooth 132^c is used at a time but when one prong becomes worn the tooth may be reversed to bring the other prong into play. The active prong of the double tooth 132^c is engageable with the teeth of the ratchet drum 97 as shown in Figure 10, and these parts are so shaped and so arranged that the pawl 132 when engaged with the drum 97 tends to lock the latter positively against retrograde movement but when the drum 97 is moved for setting it automatically kicks out the pawl 132. The tooth 132^c has substantially the same extent as the ratchet drum 97 but its shaft 132^a is considerably longer, as shown in Figure 11. On this shaft 132^a, below the tooth 132^c, a trip or control collar 133 is keyed or otherwise suitably fixed and has integrally formed therewith an apertured lug 133^a and a tubular extension 133^b. The lug 133^a carries a beveled latch head 134 (see Figure 6), the head 134 having its shank 134^a extending through the aperture of the lug and fastened in position by a nut 134^b. The latching head 134 is designed to snap to one side or the other of a sliding latching bolt 135 correspondingly beveled and mounted in a tubular bracket 135^a bolted to the lateral extension 103 of the column. A spring 135^b

projects the sliding latch 135 and maintains it in engagement with the latch head 134. This latching arrangement made up of the latching head 134 and the sliding latch 135 operates to releasably hold the pawl 132 engaged with or disengaged from the ratchet drum 97.

Means is provided for automatically shifting the pawl 132 to cause it to engage the ratchet drum 97 when the clash block 100 and 101 engage and this means includes a yieldable trip 136 slidably mounted in the tubular extension 133^b of the collar 133. The trip 136 has a reduced extension or shank 136^b which is slidably fitted in the tubular extension 133^b and which has nuts 136^c threaded on its rearward end engageable with the rearward end of the tubular extension 133^b to limit the extent to which the head of the trip is projected forwardly of the tubular extension 133^b under the influence of a compression coil spring 136^a which encircles the shank or stem 136^b of the trip and abuts the head of the trip at one end and a shoulder on the tubular extension 133^b at its other end. When the pawl 132 is disengaged from the ratchet drum 97 the head of the trip 136 lies in the path of a trip pin or lug 137 integral with or rigidly connected to the movable clash block 100 (compare Figures 1 and 10). This trip pin or lug 137 is located on the lower portion of the clash block 100 and passes freely beneath the clash block 101 to engage the head 136^a of the trip 136 and swing the trip 136, tubular extension 133^b, and shaft 132^a of the locking pawl as a unit thereby moving the active prong of the tooth 132^c from the position shown in Figure 10 to the position shown in Figure 11, wherein it intermeshes or interfits with the teeth of the ratchet drum 97. This occurs just at the time the clash blocks engage and if there is any tendency to rebound it is positively prevented. From a consideration of Figure 11 it will be apparent that if the setting head and its ratchet drum 97 tend to rebound the ratchet drum will tend to move in a counter-clockwise direction, as viewed in Figure 11, which tends to swing the pawl 132 more firmly into engagement with the ratchet drum and consequently prevents any rebound. When the ratchet drum partakes of a setting movement it moves in a clockwise direction as viewed in Figure 11, and consequently its setting motion tends to and does throw the pawl 132 out of engagement therewith.

For the purpose of automatically disengaging the pawl 132 from the ratchet drum 97 when the control lever 60 of the power drive is swung to a position to cause receding movement, a release lever 138 is fulcrumed on a bracket 138^a bolted to the extension 103 of the column and is connected by a link 140 with a lug 139 provided on the collar 133. The release lever 138 is located

in the path of movement of the lever 60 and when the lever 60 is pushed in the direction to cause the power drive to effect receding movement of the set shaft and knees this lever 60 engages the release lever 138 and automatically kicks out the pawl 132.

It is to be noted that when the operator disengages the clash blocks in order to effect a setting movement the swinging movement of the clash block 100 may occur only by swinging over the clash block 101 due to the interfitting of the extremity of the projection 205 and of the seat or recess 215. In this way, and due to the action of the latching pin 219 and its seat 220 previously described, the clash block 101 is repositioned automatically when the clash block 100 is manipulated for gauging a setting operation.

The setting head also includes means for indicating the distance of the knee face from the sawline, and, as shown in Figures 1, 3 and 4, this means comprises a horizontally disposed annular indicator plate 145 secured to the flange 146 of an internal gear 147, the internal gear 147 having a hub 148 rotatably fitted on the shaft 93. The exterior of this hub 148 provides the mounting for the upper bearing arm 99 of the adjustable clash block 100. A driving eccentric 150 is machined on the shaft 93 and lies in the same plane as the internal gear 147. On this eccentric the hub of an intermediate gear wheel 151 is fitted, the gear wheel 151 having a number of its teeth always meshing with the teeth of the internal gear 147. To secure the desired speed reduction the gear wheel 151 usually has a slightly less number of teeth than the internal gear 147. Means is provided for constraining the gear 151 to move bodily without rotating. In other words, the gear 151 is held against rotation about its own axis but is constrained to partake of such bodily movement as will permit it to roll around the internal gear 147. This means consists of three eccentrics 152, each eccentric including a pin 153 rotatably fitted in a bearing provided therefor in the fixed ratchet plate 114 and an offset or eccentric 154 rotatably fitted in a bearing provided therefor in the gear wheel 151. The eccentrics 152 are spaced at equal angular intervals about the gear wheel 151 and they have the same throw as the eccentric 150. With this organization during the rotation of the shaft 93 its eccentric also rotates and due to the action of this eccentric 150 and to the action of the eccentrics 152 the gear wheel 151 is moved bodily in such manner as to roll around the internal gear 147 and thus impart to the gear 147 a greatly reduced rate of rotation from that of the shaft 93. This properly gears down the motion of the set shaft and moves the index or indicator 145 therefrom in such manner and degree that it indicates to the setter the distance of the

knee from the sawline. As shown in Figure 6, the indicator or index plate 145 has scale markings and numerals designating inches and fractions thereof and these scale markings and numerals coact with a fixed indicator arm 160 secured to the mounting arm 116 of the fixed ratchet plate. With this mechanism the setting operations are greatly facilitated. The adjustable abutment 112 is first properly positioned by grasping the levers 127 and 125 to release the detent 121 and to adjust the index plate 113 until the proper scale marking thereon registers with the pointer 131. The handle 127 is then released whereby the adjustable abutment 112 is held in adjusted position. Now, as long as boards of the same thickness are to be cut the operator need not disturb the adjustment 112 and need only swing the clash arm 98 around to a position where it engages the adjustable abutment between each setting movement. Of course, when swinging the clash arm 98 to engage the adjustable abutment, pawl 105 is released from the ratchet drum 97, but when the clash block 100 and the adjustable abutment 122 are engaged the setter latches the clash arm to the ratchet drum 97 by manipulating the handle 104 to engage the pawl block 105 with the ratchet drum. Then, by appropriately swinging the control lever 60, the power drive is set into operation to advance the knees until the clash blocks 100 and 101 engage in the manner previously described. Receding movement is effected by merely reversely moving the control lever 60, and disengaging the pawl block 105 from the ratchet drum 97. At any time a change in the thickness of the board being cut may be effected by appropriately adjusting the adjustable abutment 112. The indicating or gauging means which facilitates the proper position of the adjustable abutment is in the full view of the setter and is easily read. This same advantage is also had in connection with the indicating means for displaying the distance of the knee face from the sawline.

It is to be understood that a suitable power drive is provided for the set shaft which is controlled by the lever 60. As this power drive per se forms no part of the present invention, it has not been described or shown in detail. For one example of a power drive that is suitable for use with the present invention, reference is made to my copending application for networks, filed July 2, 1928, Serial No. 289,881.

The invention claimed is:

1. A networks comprising a column, a shaft rotatably mounted thereon and adapted to be driven from a set shaft, a rotatable ratchet drum fixed to the shaft, a setting arm mounted for rotation about the shaft and drum, a manually operable pawl carried by the setting arm and engageable with

the ratchet, a clash block carried by the setting arm, a cooperable fixed clash block mounted on the column, an adjustable abutment facilitating setting of the setting arm, an index plate disposed substantially in a horizontal plane and carrying said abutment, a fixed ratchet plate underlying the index plate, a latch carried by the adjustable abutment and engageable with the fixed ratchet plate to hold the adjustable abutment in said position, said index plate having a scale therein indicating the thickness of boards to be cut, and a pointer carried by the ratchet plate and cooperable with the scale of the index plate.

2. A networks comprising a column, a shaft rotatably mounted therein and adapted to be driven from a set shaft, an eccentric fixed on said shaft adjacent its upper end, a single gear wheel fitted on and actuated by said eccentric, means connected with the column for holding said gear wheel against rotation about its own axis while permitting it to move bodily, and a dial having an internal gear meshed with said gear wheel and driven thereby and provided with indicia for displaying the distance of the knee face from the sawline.

3. A networks comprising a column, a shaft rotatably mounted therein and adapted to be driven from a set shaft, an eccentric fixed on said shaft adjacent its upper end, a single gear wheel fitted on and actuated by said eccentric, a plurality of eccentrics constrained to rotate about fixed axes and connected to said gear wheel for holding said gear wheel against rotation about its own axis while permitting it to move bodily, and a dial having an internal gear meshed with said gear wheel and driven thereby and provided with indicia for displaying the distance of the knee face from the sawline.

4. A networks including the usual column and shaft rotatably mounted in the column, an indicator for displaying the distance of the knee face from the sawline, means for driving said indicator from said shaft and including an internal gear fixed to the indicator, an eccentric on said shaft, a single intermediate gear fitted on said eccentric and meshed with said internal gear and means for holding said intermediate gear against rotation about its own axis while permitting it to roll bodily around said internal gear.

5. A networks including a relatively fixed clash block mounted for limited swinging movement, means for releasably holding said clash block in either of its two positions, an adjustable clash block, one of said clash blocks having a cylinder formed therein and being provided with a lateral vent to said cylinder and an internal tapering groove communicating with the vent, a piston fitted in said cylinder and uncovering the vent in its outermost position, yieldable means for pro-

jecting the piston, a projection carried by the piston and extending beyond the clash block when the piston is in its outer position, said other clash block having a recess coope-
5 rable with the projection of the piston.

6. In a setworks of the type having a column, a column shaft rotatable therein, a setting arm, an adjustable abutment facilitating setting of said arm, and a fixed ratchet
10 plate to which the abutment is adjustably secured, indicating means comprising an index plate carrying said adjustable abutment and adjusted therewith and having indicia indicating the thicknesses of boards cut in
15 any particular adjustment of the index plate, a pointer carried by the fixed ratchet plate and coacting with the index plate, a second indicator of annular form surrounding the index plate and provided with indicia for
20 displaying the distance of the knee face from the sawline and means for driving said annular indicator from the column shaft.

7. A setworks comprising a setting arm, an adjustable abutment facilitating setting
25 of said arm, an index plate carrying said abutment and adjustable therewith, a fixed ratchet plate to which the abutment is adjustably secured, and a pointer carried by the ratchet plate and coacting with the index
30 plate, said index plate having indicia cooperable with said pointer to indicate the thicknesses of boards cut in any particular adjustment of the index plate and consequently also of the adjustable abutment.

35 In witness whereof, I hereto affix my signature.

GEORGE M. PELTON.

40

45

50

55

60

65