

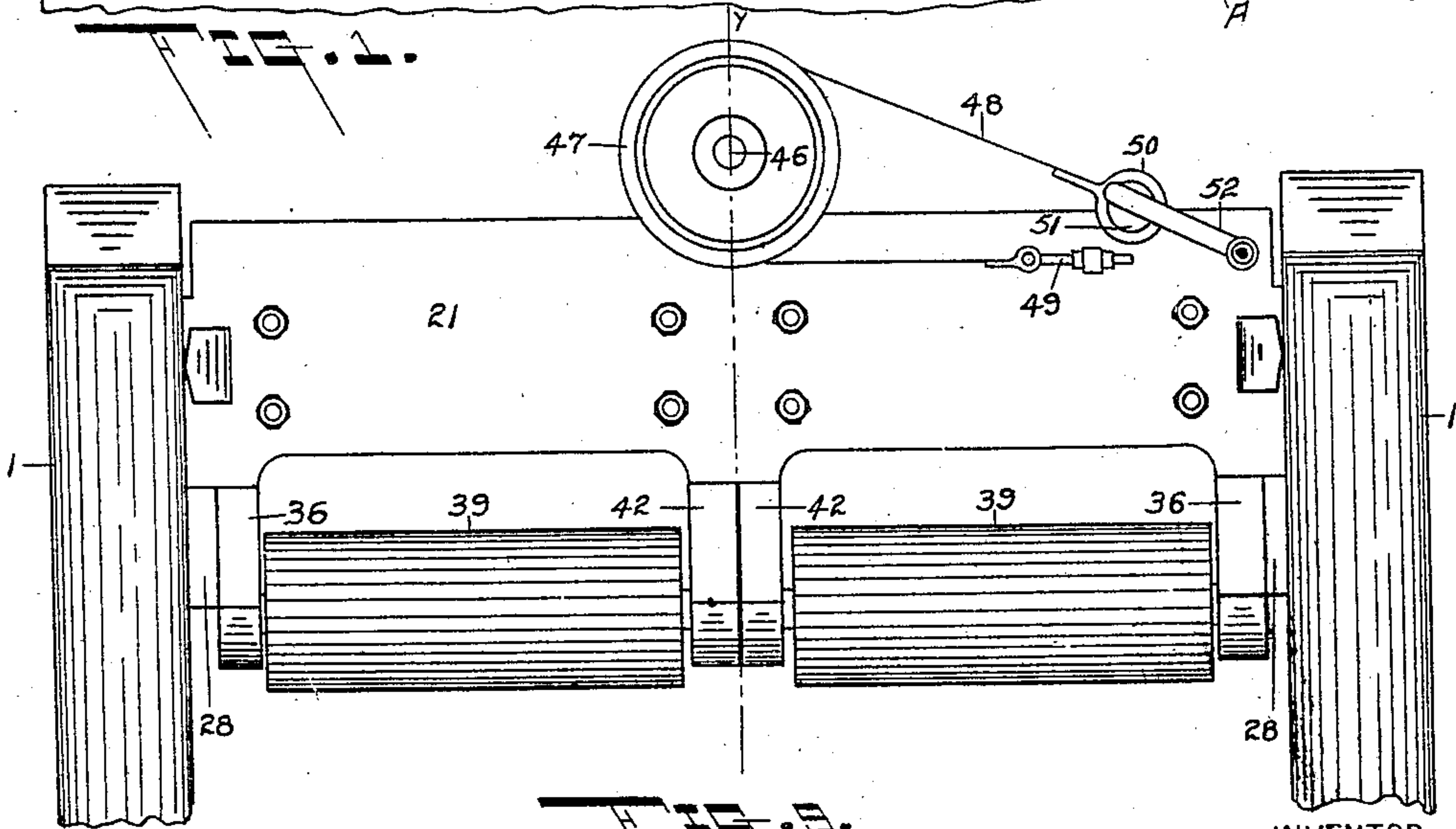
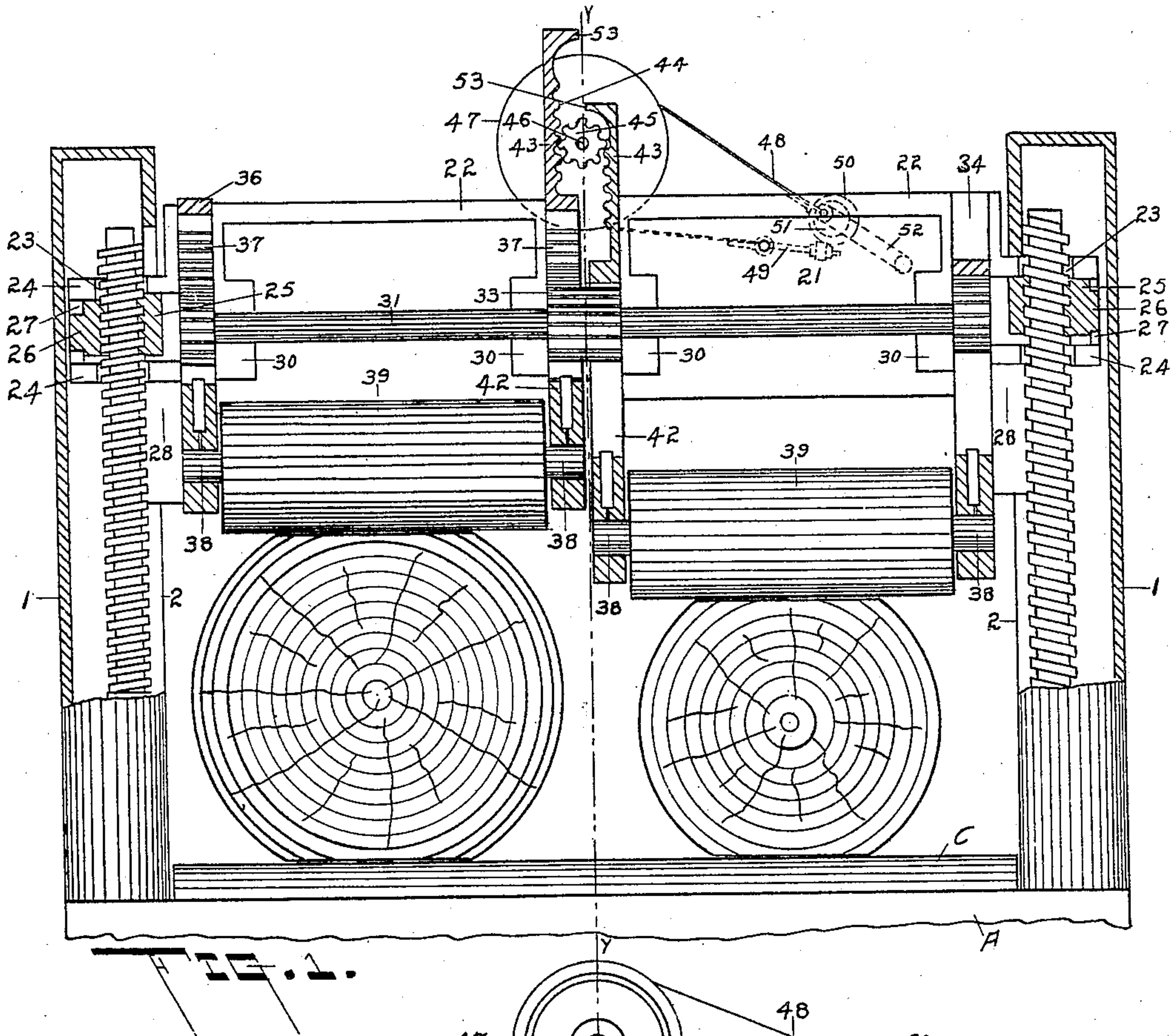
No. 838,772.

PATENTED DEC. 18, 1906.

D. CRANE.  
HOLDING DOWN ROLLS FOR SAWMILLS.

APPLICATION FILED MAR. 28, 1906.

3 SHEETS--SHEET 1.



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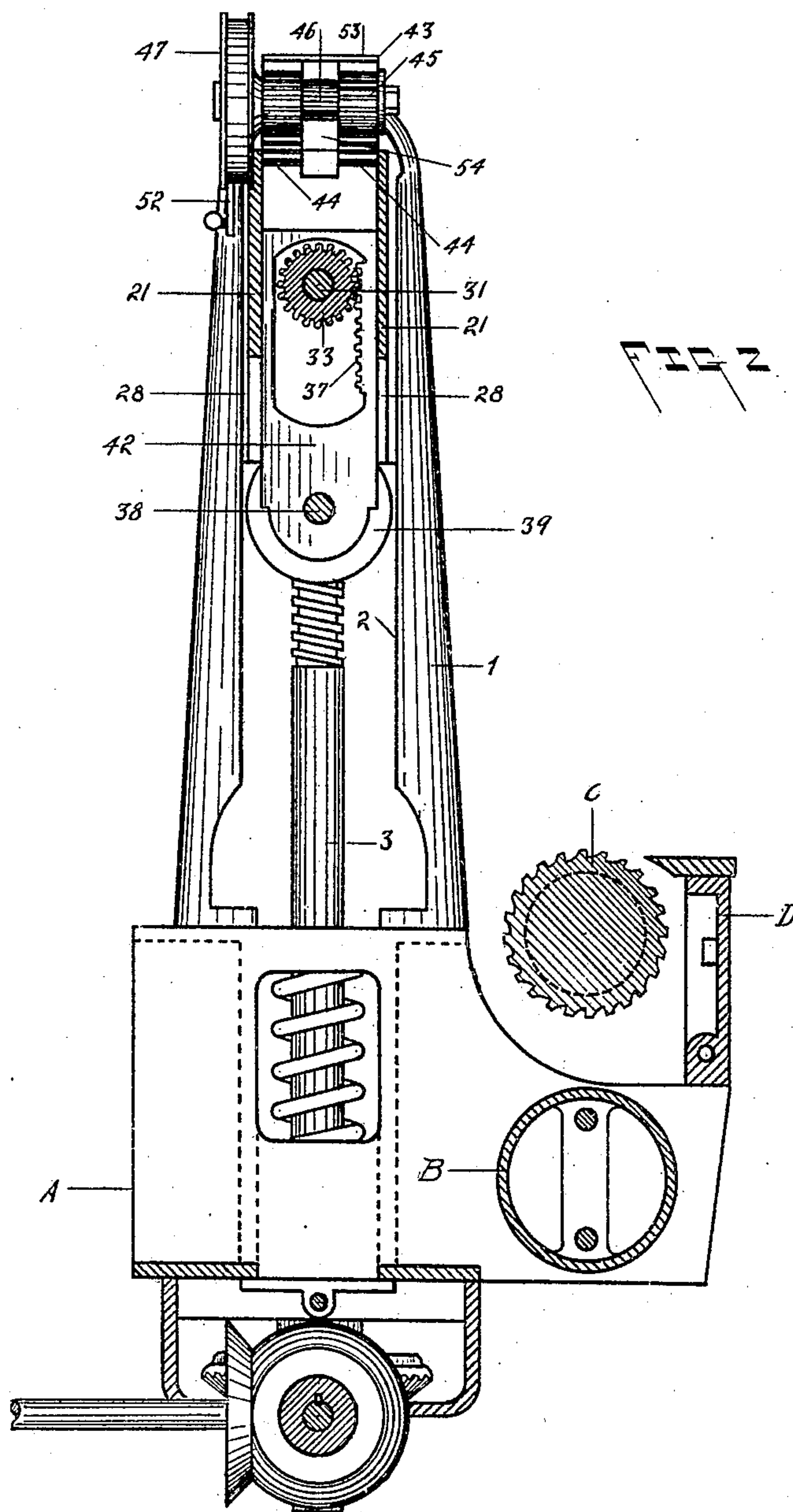
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WITNESSES:

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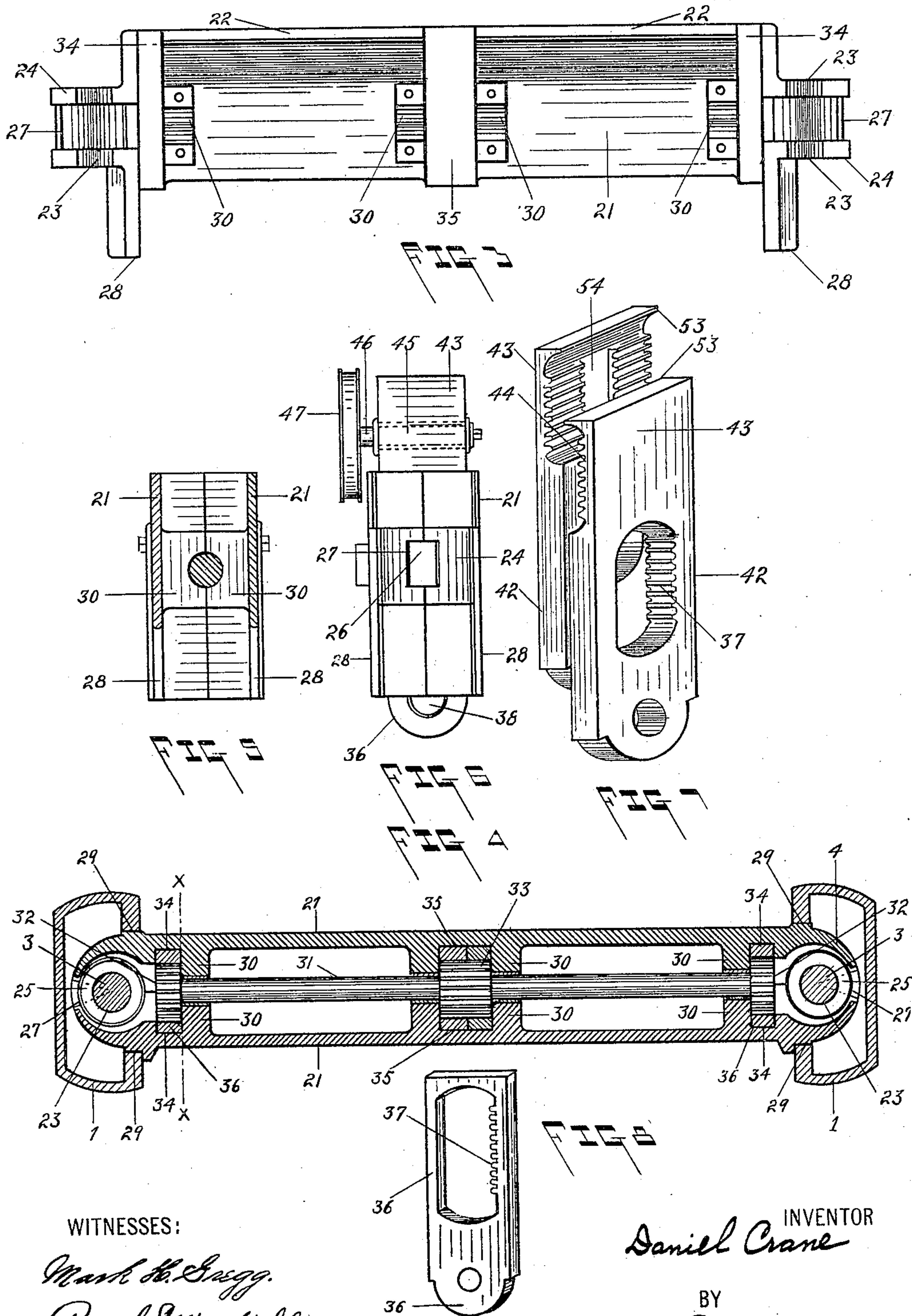
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# UNITED STATES PATENT OFFICE.

DANIEL CRANE, OF SAGINAW, MICHIGAN, ASSIGNOR TO WICKES BROS.,  
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## HOLDING-DOWN ROLLS FOR SAWMILLS.

No. 838,772.

Specification of Letters Patent.

Patented Dec. 18, 1906.

Application filed March 28, 1906. Serial No. 308,493.

*To all whom it may concern:*

Be it known that I, DANIEL CRANE, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Holding-Down Rolls for Sawmills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in holding-down means, and in the particular embodiment of my invention herein selected for illustration I have shown this invention as applied to a gang-saw mill, though it will be understood that its use is not restricted to gang-saw mills, as it may be applied in a variety of ways for other purposes as well.

In the sawmills heretofore in use it has been customary to provide some means for holding the cant or timber being cut firmly upon the feed-rolls to prevent it from chattering or dodging. If a movement other than toward the saw is permitted, the cant will injure the saw and oftentimes seriously damage the entire machine. Particularly is this true when the log or cant has nearly "run out," as at that time a comparatively slight movement thereof, aided by the engagement of the saw therewith, is all that is necessary to upend the remainder of the cant and cause it to dive down into the saw-pit to the serious detriment of the machine. Again, if the log or cant is permitted an oscillatory lateral movement it will at the least cause the saws to take a new direction relative to the strips being sawed, thus rendering the lumber unfit for use. This movement of the cant is technically known as "dodging."

In order to prevent movement of the cant as above set forth, it has been customary to provide holding-down rolls mounted in guides located in front and in rear of the gang-frame and preferably adjustable toward and from the feed-rolls on which the log or cant rests, such rolls engaging the upper surfaces of the logs or cants to hold them against lateral or up-and-down movement, particularly when operating with a gang-saw which tends to cause a chattering of the work. When a single cant is being operated upon, it is a simple matter for the sawyer to adjust the holding-down roll to the diameter

of the cant and leave the saw to do the work; but when two or more cants are being run off at the same time it very seldom happens that they are of the same length or thickness. Hence it is necessary to provide a holding-down means which will not only be adjustable simultaneously to different thicknesses of cants, but also it is highly important that the running out of the shorter cant will not affect the holding-down means to release the longer cant. In consequence it has long been attempted to provide a holding-down means which could be simultaneously adjusted to different thicknesses of cants and at the same time could be so manipulated that after the running out of the shortest cant the longer would still be held until it had run out.

One object of my invention is the provision of means for easily and quickly adjusting two or more rolls to the same or different thicknesses of work being cut.

A second object is the provision of means for raising and lowering the rolls in a vertical plane parallel with the saws.

A third object is the provision of means for releasably locking the rolls at any point in their adjusted positions.

A still further object is the provision of a holding-down means which will permit two thicknesses of cants to pass through simultaneously, the holding-down rollers both being the same distance from the saw, thus insuring uniform holding-down effect on both cants.

To these ends my invention consists, in combination with various elements of lesser importance, of a plurality of rolls and vertically-moving means by which the rolls are carried, together with means for releasably locking the rolls in their adjusted positions for the purpose of preventing a release of the longer cant when the shorter cant runs out.

My invention further consists in certain novel features and combinations of parts and their equivalents, such as will be more fully described hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a rear view of one form of my invention applied to a gang-saw mill adapted to operate on at least two cants simultaneously, parts being broken away and in section. Fig. 2 is a vertical sectional view on the line *yy* of Fig. 1 looking in the direction of the arrow, the lock-



ing means being shown in full lines. Fig. 3 is a side view showing the interior face of one section of the cross-casing. Fig. 4 is a horizontal cross-section through the casing and standards or posts, parts being omitted to better disclose the construction. Fig. 5 is a vertical cross-sectional view along the line  $x x$  of Fig. 4. Fig. 6 is an end view of the casing. Fig. 7 is a detail perspective view of the central hangers, and Fig. 8 is a side view of an end hanger. Fig. 9 is a view in side elevation of the press-rolls.

In the present application, I have chosen to illustrate one of the many constructions which might be manufactured and which contains the elements of my invention, said illustrated conception disclosing a suitable support A, conveniently braced—as at B, for instance—and carrying a feed-roll C and a jaw D. In view of the fact that none of these features constitute essential elements of my present invention no detailed reference thereto is necessary.

The posts or standards 1 1 are mounted on the support or frame, such posts being hollow, as shown, and having slots 2 2 extending longitudinally of the inner faces thereof to receive and guide the ends of the cross-casing hereinafter referred to. Extending up through the posts or standards are the adjusting-screws 3 3.

The holding-down means comprises a cross-casing preferably composed of the registering sections 21 21, the upper edges 22 22 of which meet to prevent the entrance of sawdust or dirt thereinto. The ends of the sections may be reduced in size, as at 24, and are adapted to project into the posts 1 1 through the slots 2 2 thereof, said reduced ends having apertures 23 23 formed therethrough to receive the screws. The reduced ends are, furthermore, cored out to receive the wing-nuts 25 25, the wings 26 26 of which are received in the recesses 27 27 in the ends of the cross bar or casing, whereby the nuts are prevented from turning and serve as supports for the ends of the cross-casing which rest thereon. Depending also from the sections of the cross-casing are the guides 28 28, adapted to engage the walls of the slots 2 2 to guide the casing in its movement and, furthermore, to prevent its binding in the slots, the outer sides of the reduced ends of the casing being provided with the flattened faces 29 29 for the same purpose.

Interiorly each section is provided with a series of half journal-bearings 30 30, the bearings of one section adapted to register with those of the other to receive an equalizing-shaft 31, which carries a single gear 32 at each end and a double gear 33 intermediate its ends, the cross frame or casing being preferably made in sections to enable it to be formed with these journal-boxes and to receive the equalizing-shaft, as well as the

wing-nuts. The journal-boxes at or near the center of the cross-frame form a box for the double gear 33. The number of teeth on the double gear and on the end gears correspond.

Ways 34 are formed near the ends of the frame and interiorly thereof adjacent the bearings 30 30, such ways extending transversely of the frame in a vertical direction, and a double way 35 is formed intermediate the ends of the frame and preferably between the centrally-located journal-boxes thereof. Ways 34 are adapted to receive the end rack-hangers 36, extending across from side to side of the frame and preferably of the conformation shown in Fig. 8, such hangers being apertured and having a rack 37 formed on one vertical wall only of said aperture, the rack 37 of one end hanger being located on the opposite wall of the aperture from the rack in the remaining end hanger, the racks adapted to mesh with the teeth of the respective end gears 32 on the equalizing-shaft. The lower ends of the end rack-hangers depend beneath the cross-frame and are adapted to receive the shafts 38 38 of the holding-down rolls 39 39. From an inspection of the drawings it will be seen that the end rack-hangers support the outer ends of the shafts of the two holding-down rolls shown, the end racks being exactly similar with the exception of the position of the racks. The inner adjacent ends of the shafts of the holding-down rolls are journaled in practically similar hangers 42, located centrally of the cross-frame, the racks of the end and the nearest central hangers being on corresponding walls of the apertures, but the racks on one side of the line  $y y$  being on opposite corresponding walls from the racks on the other side of the line  $y y$ . The central rack-hangers are both received in the way 35 and slide up and down therein relative to each other, the racks on the opposing walls of two hangers each engaging the double gear 33 at opposite ends of its horizontal diameter. The hangers are free to slide up and down in the ways 34 34 35.

From the foregoing it will be seen that the apparatus as described will operate as follows: When the timbers or cants are supplied to the mill, the cross-frame will be raised or lowered in any suitable manner, as by means of the screws 3 3, to raise or lower the holding-down rolls until the cants can be received thereunder and the rolls arranged to press down firmly upon the timbers. This is accomplished by reason of the fact that when one roll is held stationary by its engagement with the larger cant, say, the cross-frame is still moving downward, which movement will cause the rotation of the equalizing-shaft, owing to the engagement of its gears with the temporarily-stationary racks of the hangers on the side, such rotation of the shaft operating to thrust the rack-hangers on the



other side downward, carrying the roll therewith until such last-mentioned roll has firmly engaged the smaller cant. Thus the movement of one roll upward for a certain distance will operate to simultaneously move the other roll downward the same distance to effect an automatic and very rapid adjustment, and the rolls may be caused to balance each other, whereby they will retain their positions when no timbers are beneath them. It will be observed, though, that when the shorter cant runs out there will be no pressure transmitted from one roll to the other, so that while it may be that the roll bearing on the longer cant would remain in position, providing the rolls were balanced, still no pressure would be exerted on the timber and it would immediately commence a chattering dodging movement highly injurious to the machine. Of course, also, it might be that when the shorter of two cants ran out the holding-down roll thus released would drop down to its lowest limit of movement, and thereby run the opposite roll up to its highest limit of movement, whereby the cant still being operated upon would be left free to thresh about in the mill, and hitherto it was necessary for the operator to attend closely to the machine when running two or more cants, and when the shorter cant was about to run out it was incumbent upon the operator to stop the feed of the cant and readjust the holding-down apparatus by running one roll up as high as it would go and lowering the remaining roll to its limit of movement, after which it was necessary to actuate the adjusting means until the upper roll was brought down upon the timber, whereupon the feeding could be started up to finish running out the longer cant. This of course occupied considerable time and labor and was highly unsatisfactory, wherefore cranked rolls were sometimes used, the rolls traveling on opposite arcs of a circle; but this also necessitated the constant attendance of an operator to stand ready to throw the rolls over the moment one cant ran out, and even then an undesirable vibration was permitted, the cant being cut during the time occupied by changing the rolls. Therefore in order to prevent and obviate the foregoing disadvantages I have provided a simple yet highly efficient means for releasably locking the rolls at any point in their adjusted positions, so that when the shorter cant or timber runs out the longer one will still be held in place at the same pressure as before. As one means for attaining this end I have extended the central rack-hangers 42 42 upwardly above the cross-frame, the adjacent faces of such extensions 43 43 having applied thereto the racks 44 44, between which racks is located a pinion 45, meshing simultaneously with the teeth of both racks, said pinion carrying a laterally-projecting shaft 46, provided, preferably, with a band or friction

brake disk 47, around the periphery of which passes a strap 48, one end of which may be stationarily secured in any suitable manner to the cross-frame, as by means of the adjustable eyebolt 49, the opposite end of the strap being secured to an annular ring 50, mounted on the eccentric 51, journaled on the cross-frame and controlled by the handle 52.

The upper ends of the extensions project inwardly, as at 53, and serve as stops to limit their movement relative to the gear 45, and the racks 44 on each extension are spaced apart, whereby an untoothed path 54 is left between the racks, the pinion comprising two gears connected by a shaft, the object of which construction is to afford a broad bearing or engaging surface to prevent the possibility of the binding of the rack-hangers in the way 35 and to maintain the shaft 46 in proper relation to the racks, the shaft and brake mechanism being unsupported save by the engagement of the teeth of the pinion with the racks 44.

In operation it has been seen that when one of the rolls is held stationary the other descends to engage and bear upon the timbers or cants to be cut, the movement of the rolls being controlled by the engagement of the gears on the equalizing-shaft with the racks of the hangers which support the rolls. A similar movement is imparted to the two extension-racks, one of which will ascend or descend with its roll as the opposite one descends or ascends, respectively, such movement of the racks operating to rotate the pinion 45 but not altering its position vertically. Now when the desired adjustment has been obtained and the rolls are bearing down upon the timbers or cants the operator can turn the handle 52, controlling the brake mechanism to tighten the strap 48 on the band-wheel 47, thus locking the pinion 45 against rotation, which results in locking the central rack-hangers 42 42 against relative movement and absolutely retains the rolls in their adjusted positions. The operator may now safely attend to other business secure in the knowledge that when the shorter cant runs out the roll thus freed will not drop down, but will remain locked in its adjusted position while the longer cant will still be forcibly held by the remaining roll, since an upward movement thereof and of its rack-hangers is prevented by the non-rotatable pinion 45. A backward movement of the handle-lever 52 will operate to release the braking mechanism and release the pinion in order that the rolls may be adjusted to the next set of cants.

It will be remembered that the upper surface of the frame is closed by the meeting faces of the inwardly-projecting edges 22 of the sections composing the frame, except where the ways 34 35 are formed there-through. The lower face of the frame is



open, however, to permit the easy exit of any dirt or dust which may enter the frame and also to partially receive one or the other of the rolls 39 39.

5 It is of course evident that many changes and alterations might be made in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do  
10 not wish to limit myself to the exact construction herein set forth.

Having thus fully disclosed my invention, what I claim as new, and desire to secure by Letters Patent, is—

15 1. A press-roll mechanism for sawmills comprising a plurality of suitably-supported horizontal rolls arranged in the same vertical plane, means for permitting simultaneous  
20 adjustment of the rolls in opposite directions relative to each other to cause them to simultaneously engage work of two or more varying diameters, and means for locking the rolls in their adjusted positions.

2. A press-roll mechanism comprising a  
25 plurality of horizontal rolls arranged in the same vertical plane, slides in which the rolls are mounted, equalizing mechanism connecting the slides, a casing by which the slides and equalizing mechanism are supported, the  
30 rolls being capable of adjustment independently of the casing, and means for bodily raising and lowering the casing.

3. A press-roll mechanism comprising a casing, hangers sliding in the casing, horizontal  
35 rolls supported by the hangers, the rolls lying in the same vertical plane, equalizing-gearing connecting the slides to simultaneously move the latter vertically in opposite directions independently of the casing, means  
40 engaged by the slides for locking the latter and the rolls in their adjusted positions and means for vertically moving the casing bodily toward and from the work.

4. A press-roll mechanism comprising a  
45 casing, a plurality of hangers slidingly received in the casing, horizontal rolls journaled in the hangers, the rolls lying in the same vertical plane, equalizing mechanism connecting the hangers to simultaneously  
50 move the rolls vertically in opposite directions independently of the casing, and means for bodily moving the casing and rolls toward and from the work.

5. A means of the character set forth, comprising a vertically-movable casing, vertically-movable hangers slidingly received in the casing, horizontal rolls supported in the hangers, equalizing mechanism connecting the hangers for moving them simultaneously  
60 in opposite directions independently of the casing, and means engaged by the hangers for locking the rolls in their adjusted positions.

6. A press-roll mechanism comprising a  
65 vertically-movable casing, vertically-moving

hangers slidingly received in the casing and arranged in parallelism, racks carried by and moving with the hangers, gears meshing with the racks and a shaft journaled in the casing and connecting the gears. 70

7. A press-roll mechanism comprising a set of rolls, an adjustable casing, hangers slidingly mounted in the casing, racks carried by the hangers, gears meshing with the racks, a shaft on which the gears are secured, and  
75 means for releasably locking the racks in their adjusted position to prevent movement of one or more rolls after the work has passed from beneath them. 100

8. A press-roll mechanism comprising an  
80 adjustable cross-casing closed at its upper face and open along its lower face, a set of horizontal rolls slidingly supported relative to the casing, the rolls lying in the same vertical plane, and means for simultaneously ad-  
85 justing the rolls in opposite directions independently of the casing.

9. A press-roll mechanism comprising an adjustable cross-casing closed at its upper  
90 face, a set of horizontal rolls slidingly supported relative to the casing, the rolls lying in the same vertical plane, and means for simultaneously adjusting the rolls in opposite directions independently of the casing.

10. A press-roll mechanism comprising an  
95 adjustable support, vertically-moving parallel hangers mounted therein, horizontal rolls, mounted in the hangers, the rolls lying in the same vertical plane, and means carried by and adjustable with the support, said means  
100 engaging the hangers for supporting the same and for automatically effecting a simultaneous vertical adjustment up or down of the rolls in opposite directions relative to each other. 105

11. A holding-down mechanism of the character described, comprising an adjustable casing, a set of rolls, hangers mounted in the casing and in which last-named means the rolls are journaled and means connecting  
110 the hangers whereby a movement of one roll vertically in one direction causes the adjacent roll to move vertically in the opposite direction.

12. A press-roll mechanism comprising an  
115 adjustable support, vertically-moving parallel hangers mounted therein, horizontal rolls mounted in the hangers, the rolls lying in the same vertical plane and means carried by and adjustable with the support, said means  
120 engaging the hangers for supporting the same and for automatically effecting a simultaneous vertical adjustment up or down of the rolls in opposite directions relative to each other. 125

13. A press-roll mechanism comprising a set of horizontally-disposed rolls lying in the same vertical plane, a set of hangers for each roll, the hangers being parallel, a support in which the hangers are vertically adjustable, 130



a rack carried by each hanger, the rack-teeth of one set of hangers being oppositely located relative to the rack-teeth on the adjacent set of hangers, and an equalizing-gear-carrying shaft, the gears of which mesh with the racks to effect a simultaneous vertical adjustment of the roll in opposite directions.

14. A press-roll mechanism comprising a set of horizontally-disposed rolls lying in the same vertical plane, a set of apertured sliding hangers for each roll, the hangers arranged in parallelism, racks located on corresponding walls of the apertures in each set of hangers, the racks of one set of hangers being located on the opposite walls of the apertures from the racks carried by the adjacent set of hangers and a gear-carrying equalizing-shaft, the gears meshing with the racks of each set of hangers to effect a simultaneous vertical adjustment of the rolls in opposite directions.

15. A press-roll mechanism for gang-saw-mills comprising a plurality of adjustable hangers, horizontal rolls carried by the hangers and lying in the same vertical plane, equalizing means connecting the hangers for simultaneously adjusting them in opposite directions and a releasable locking means for retaining the hangers and rolls in their adjusted positions at all times.

16. A mechanism comprising adjustable hangers, antifriction devices supported thereby, equalizing means connecting and supporting the hangers, racks carried by the adjacent hangers of adjacent antifriction devices, a pinion engaging both racks, a band-wheel secured to the pinion, a strap passing over the band-wheel, one end of the strap being stationarily supported, a suitably-mounted eccentric, a ring surrounding the eccentric, the opposite end of the strap secured to the ring and means for actuating the eccentric and ring.

17. A press-roll mechanism comprising a casing, adjustable hangers, slidingly received therein, rolls supported by the hangers, equalizing means connecting and supporting the hangers, racks carried by the adjacent hang-

ers of adjacent rolls, a pinion engaging and having a bearing only in both racks, and a releasable brake mechanism connected to the pinion for retaining the hangers and rolls fixedly in position.

18. A press-roll mechanism comprising a casing, a roll, hangers slidingly received in the casing and supporting the roll, racks carried by the hangers, a shaft, gears on the shaft engaging and adjustably supporting the hangers, and a braking mechanism engaging at least one of the hangers to releasably lock the same fixedly in its adjusted position.

19. A holding-down mechanism comprising an adjustable casing, journal-bearings therein, a shaft received in the bearings, toothed hangers arranged in parallelism and slidingly received in the casing, a set of press-rolls journaled in the hangers and extending parallel with the shaft and gears on the shaft engaging the hangers, the adjacent journal-bearings forming a box for one of the gears.

20. A holding-down mechanism comprising a casing, horizontal rolls depending therefrom, the rolls arranged in the same vertical plane, hangers supporting the rolls an equalizing-shaft journaled in the casing and extending parallel with the rolls, and gears on the shaft engaging the hangers to simultaneously adjust them in opposite directions.

21. The combination in a press-roll mechanism with an adjustable casing, of a set of horizontal rolls, adjustable hangers for each roll racks carried by adjacent hangers and projecting above the casing, the racks spaced apart from each other, a double pinion engaging and having a bearing only in the spaced racks of the adjacent hangers, and means for releasably locking the pinion against rotation to hold the rolls fixedly in position.

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

DANIEL CRANE.

Witnesses:

C. E. RUSSELL,  
MARY L. RUSSELL.