

No. 607,931.

Patented July 26, 1898.

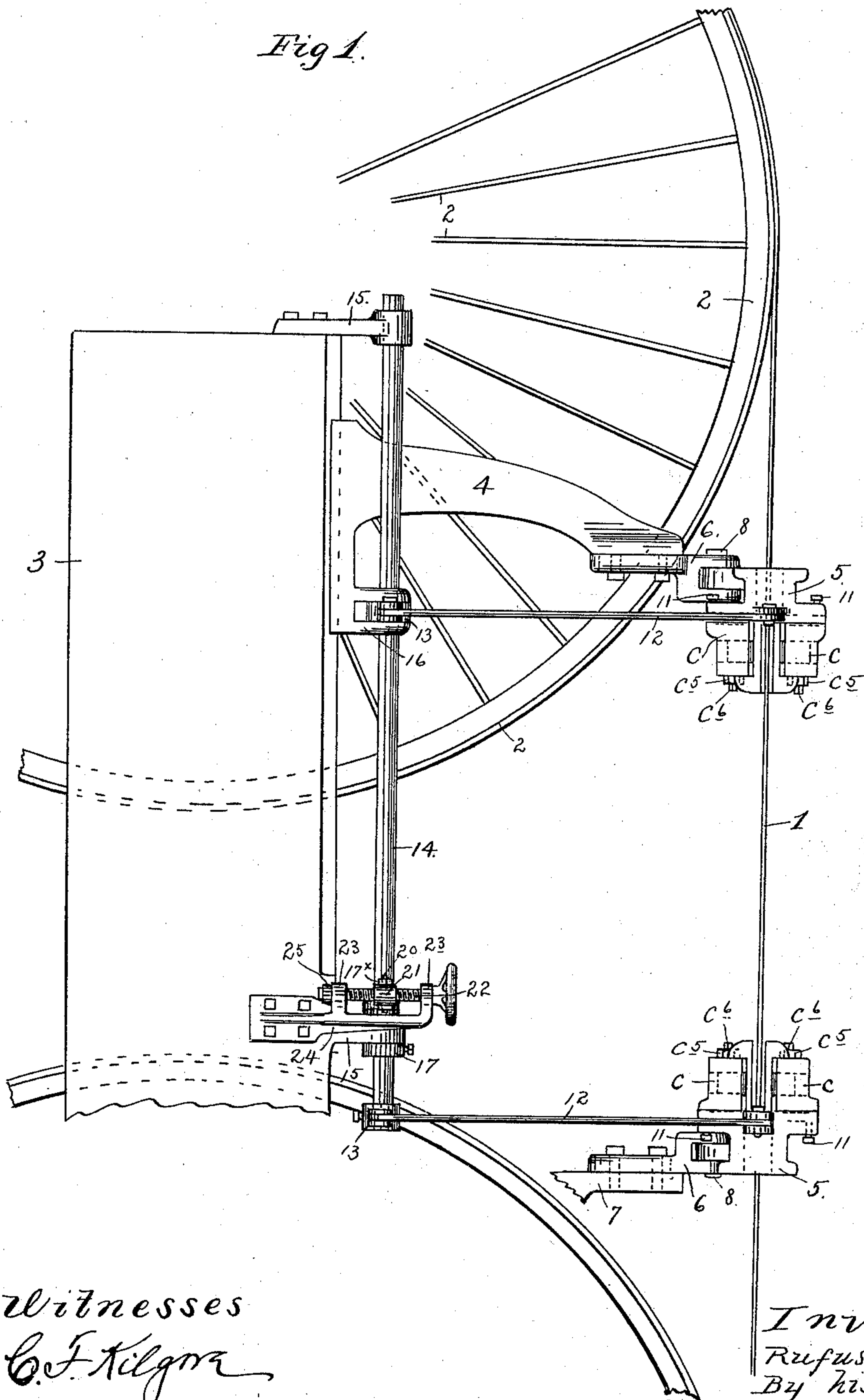
R. L. HOYT.
BAND SAW MILL.

(Application filed July 6, 1897.)

(No Model.)

3 Sheets—Sheet 1.

Fig 1.



Witnesses

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Inventor

Rufus L. Hoyt

By his Attorney

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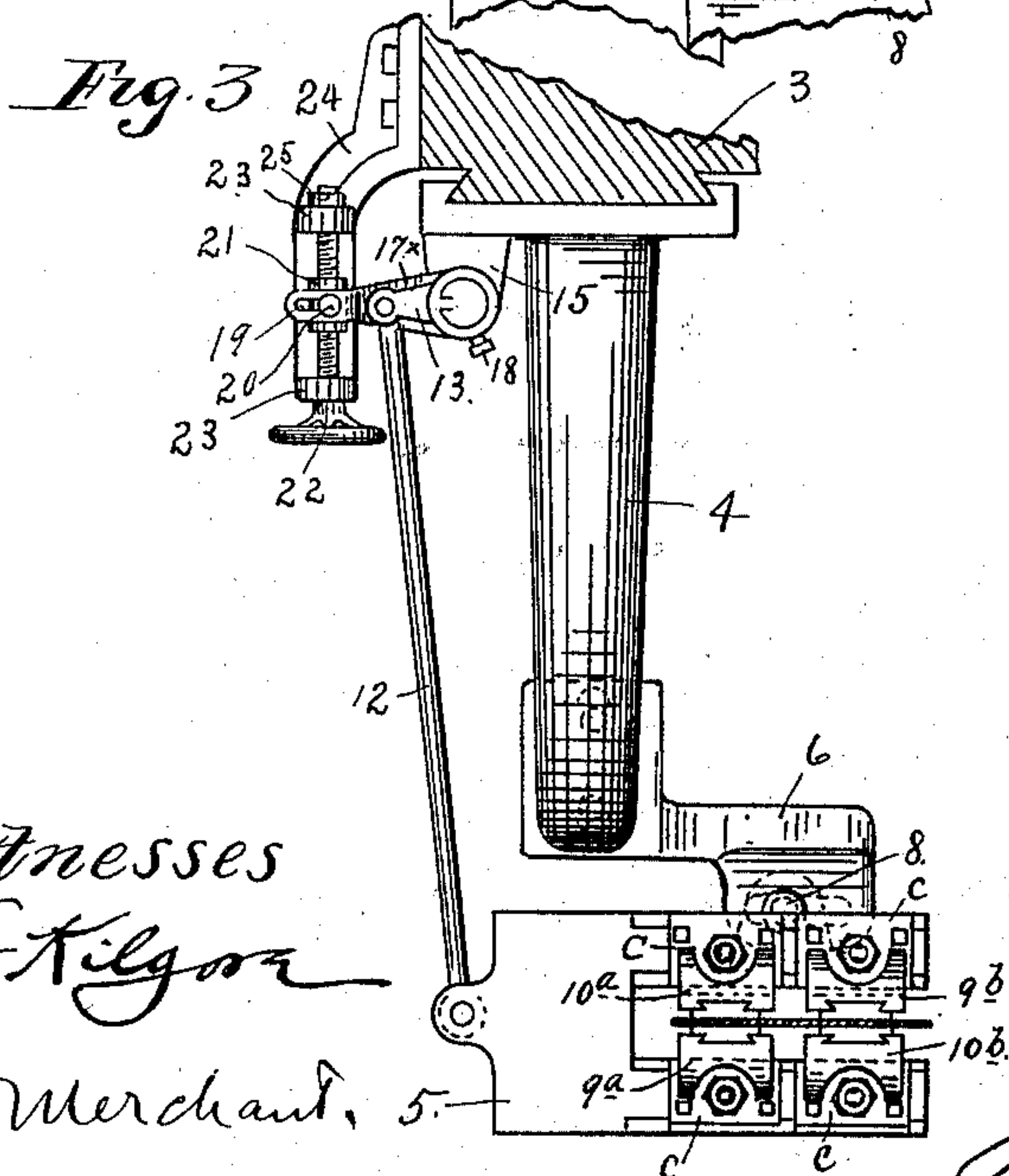
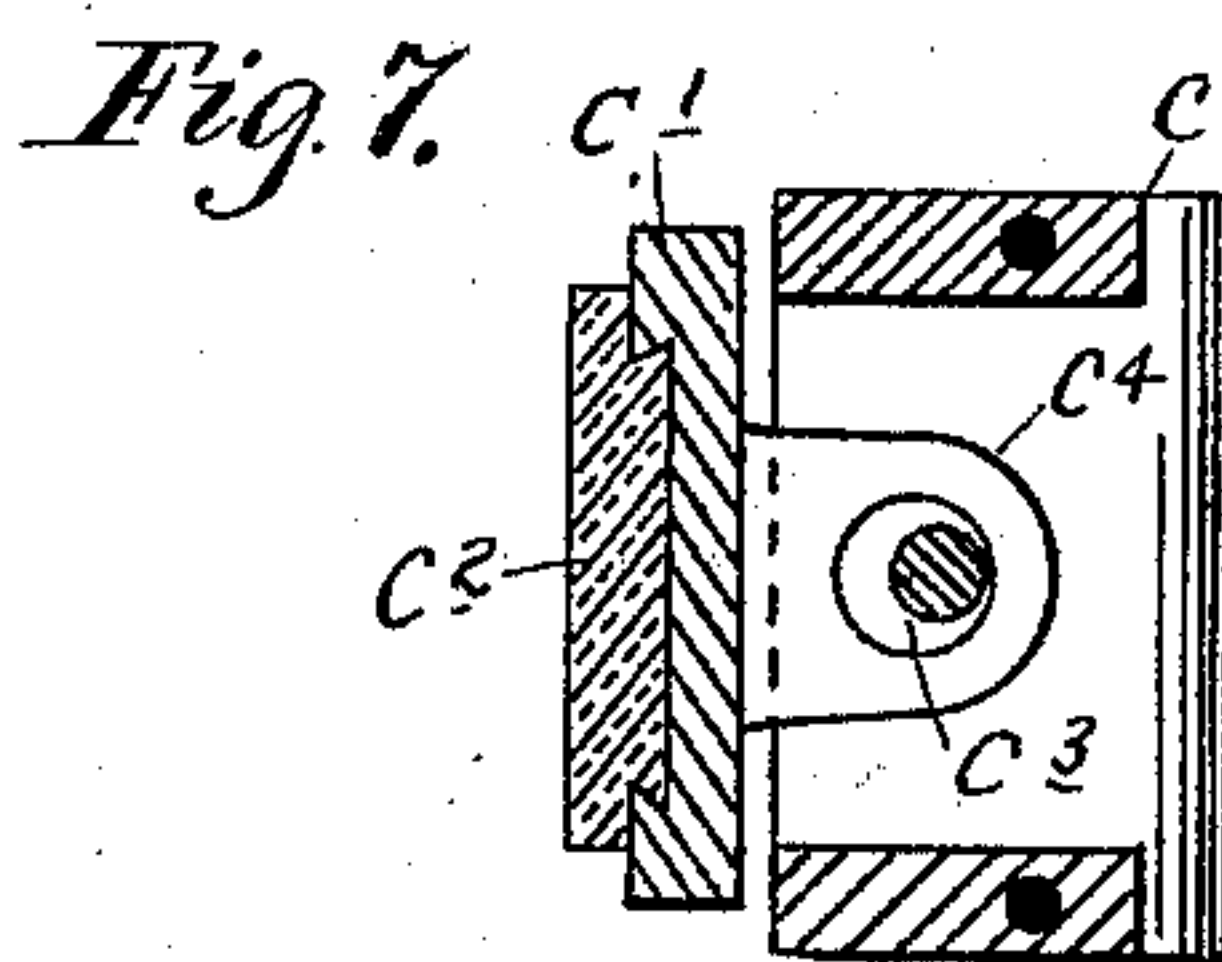
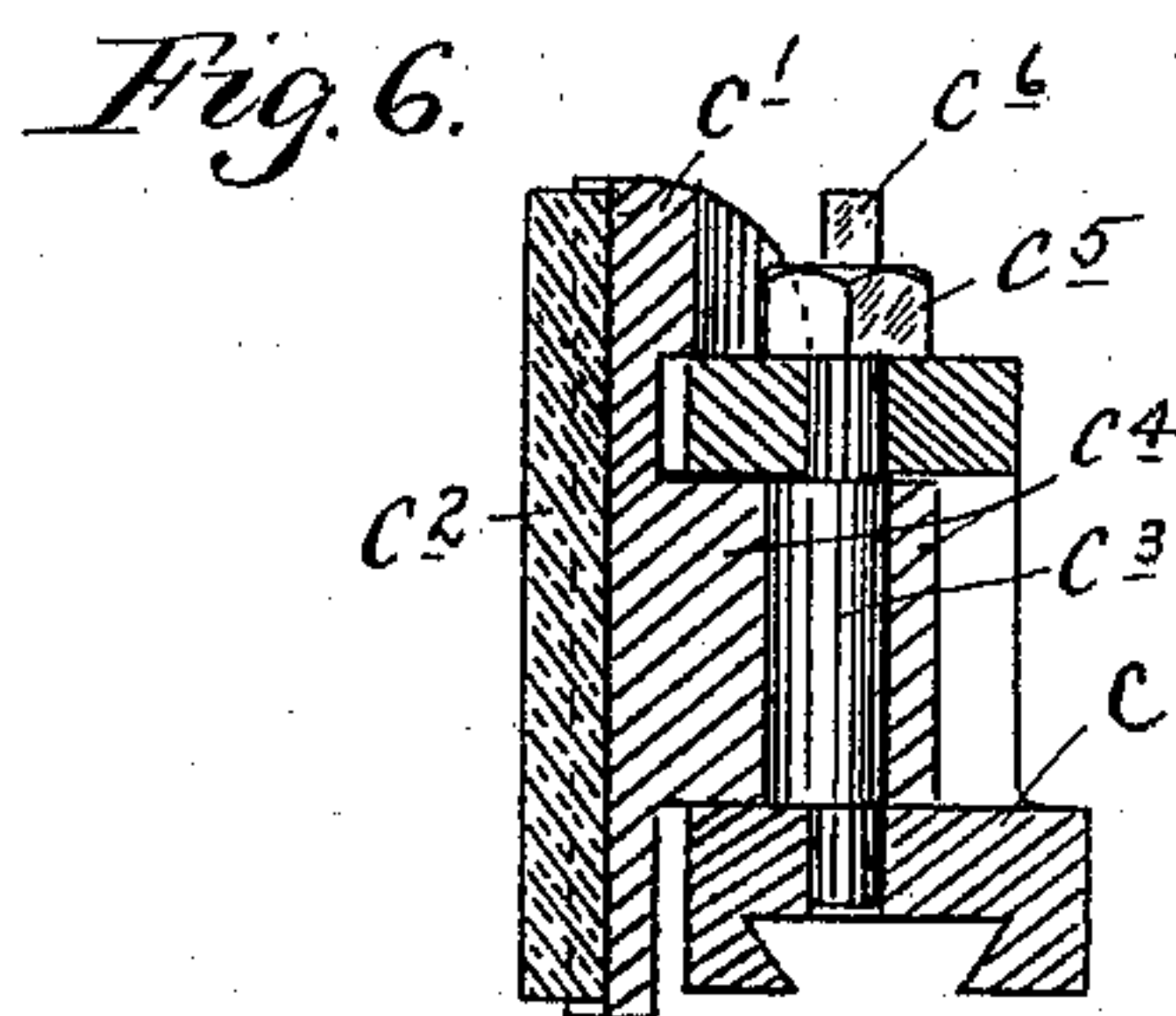
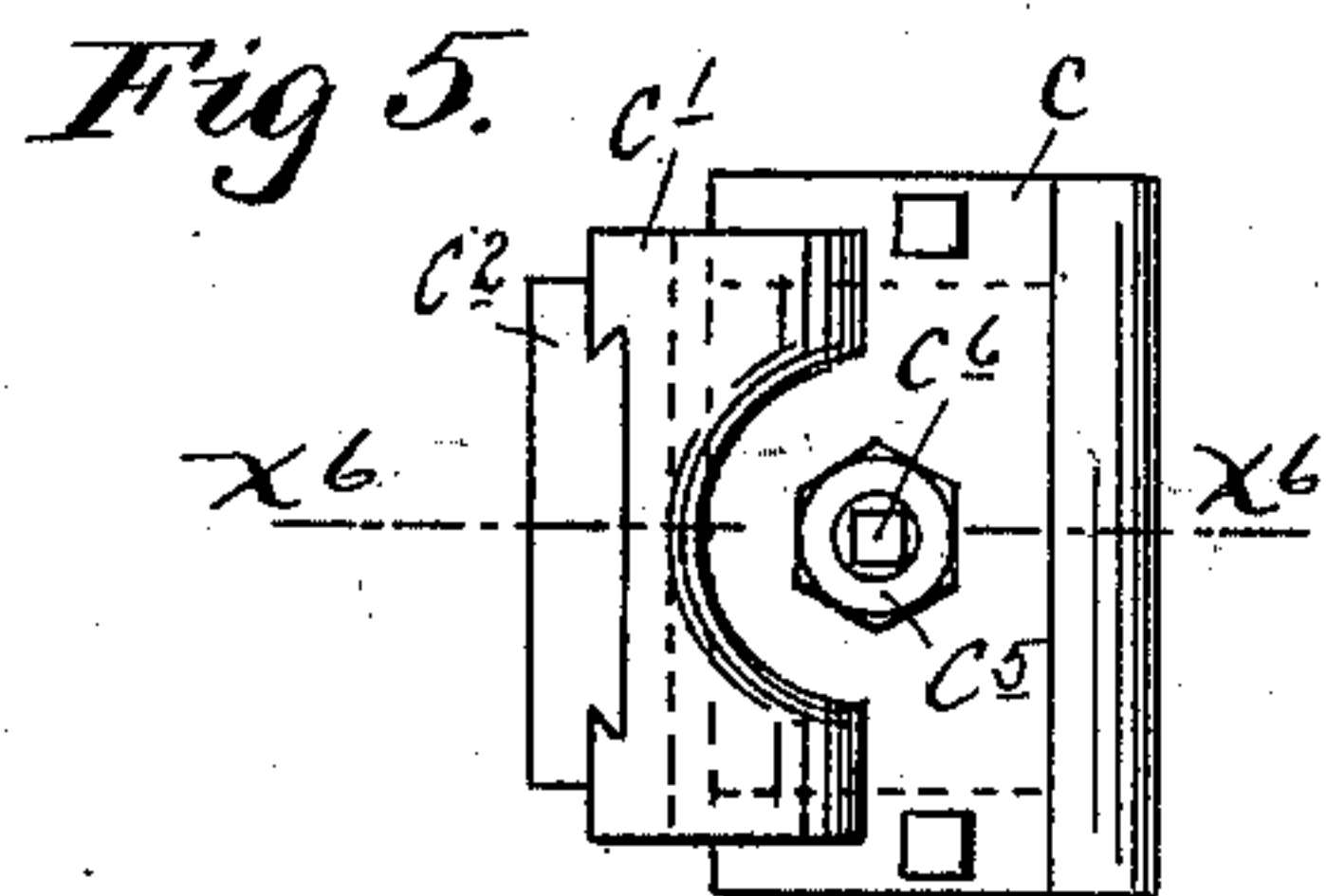
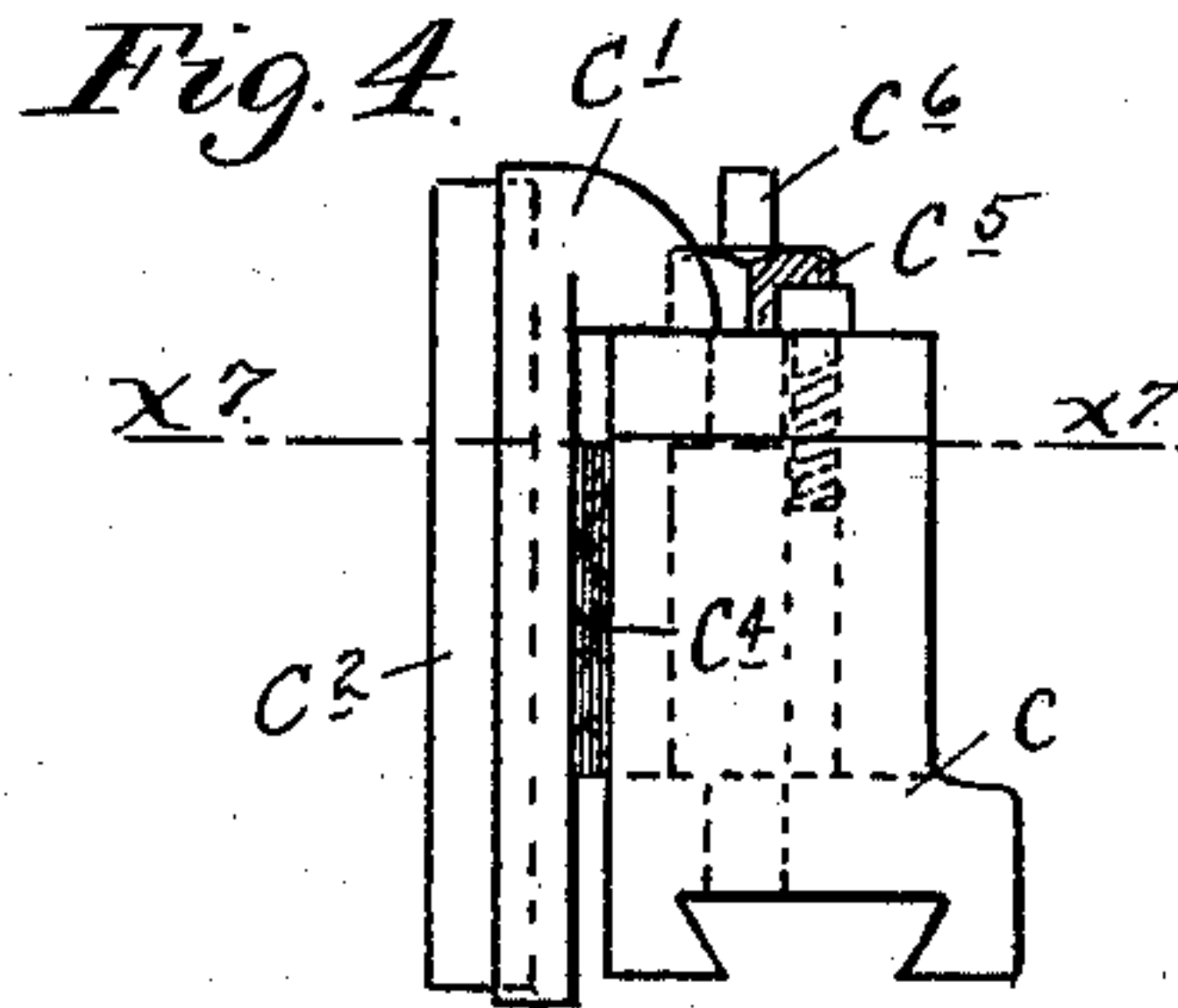
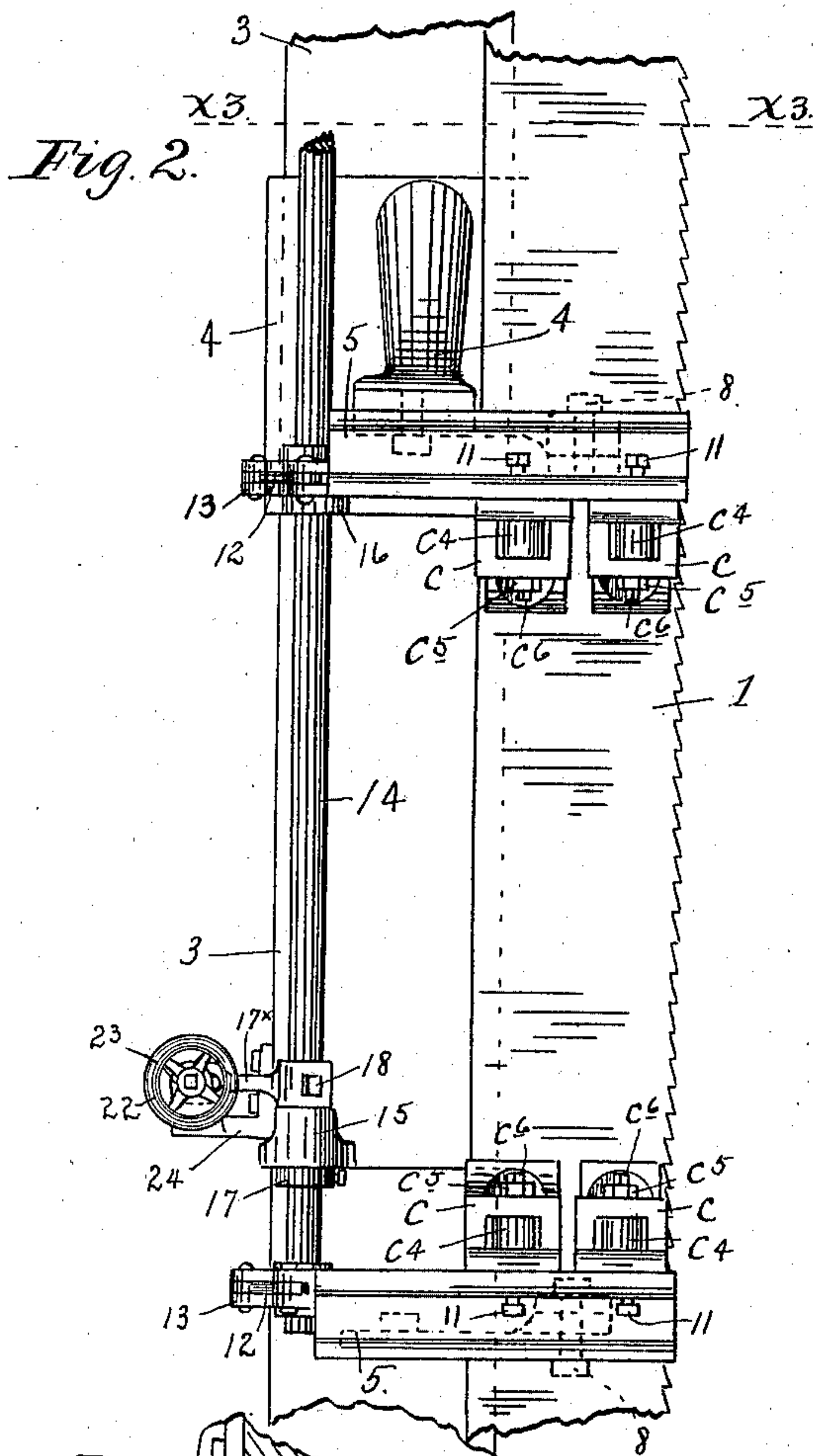
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3 Sheets—Sheet 2.



Witnesses
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3 Sheets—Sheet 3.

Fig 8.

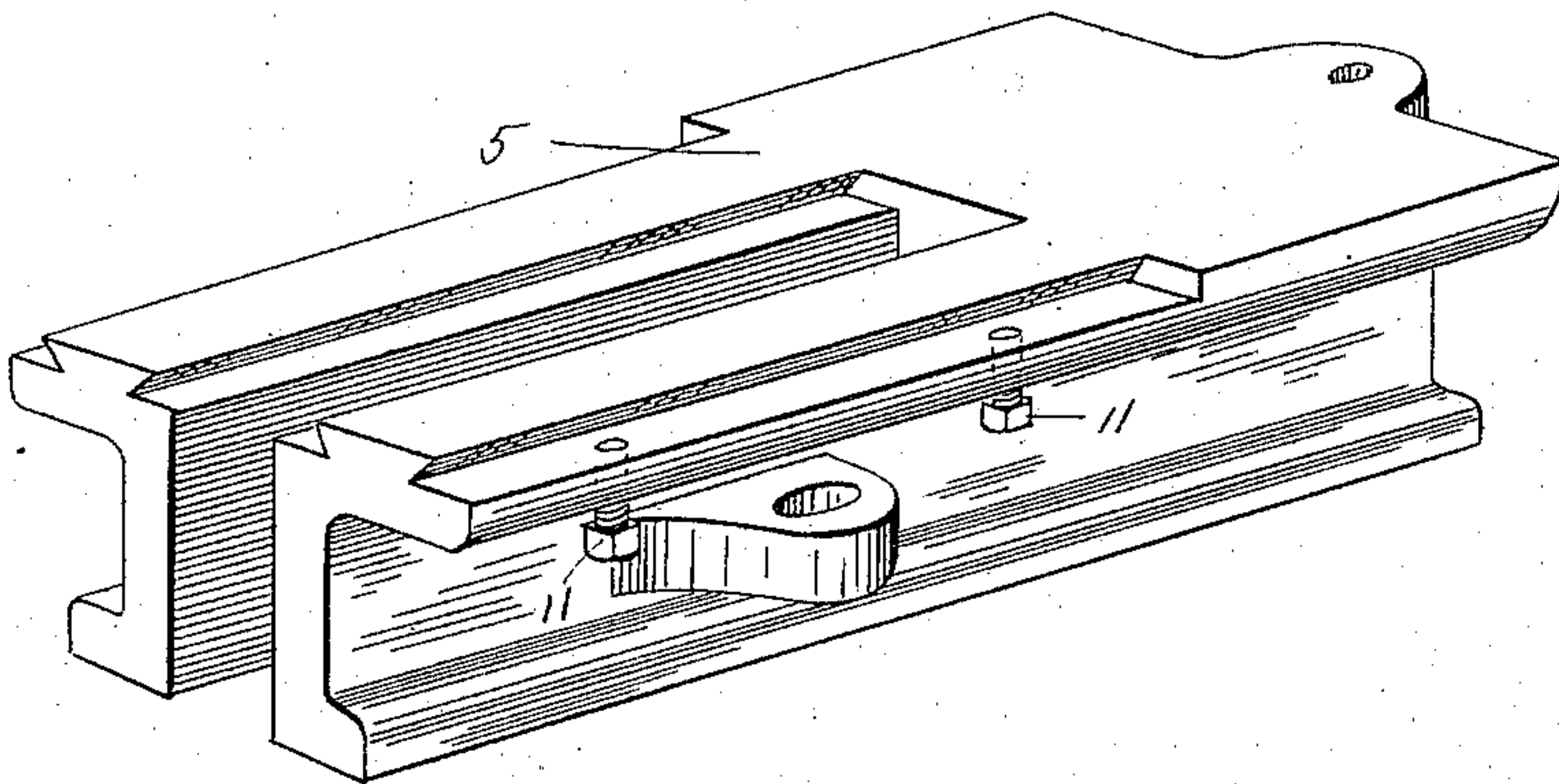
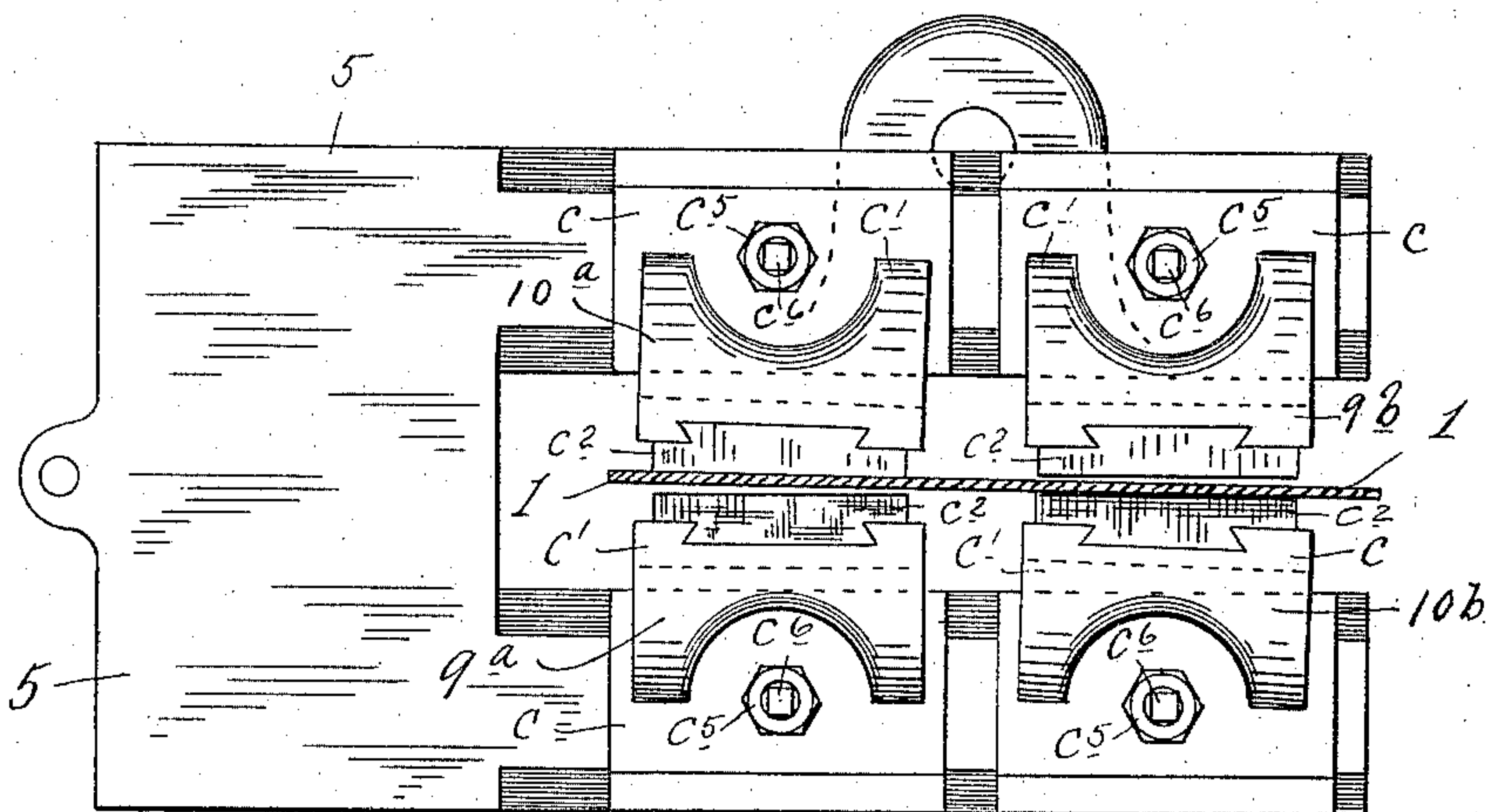


Fig 9.



Witnesses

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UNITED STATES PATENT OFFICE.

RUFUS L. HOYT, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF
TO WILBERT H. McMULLEN, OF SAME PLACE.

BAND-SAW MILL.

SPECIFICATION forming part of Letters Patent No. 607,931, dated July 26, 1898.

Application filed July 6, 1897. Serial No. 643,503. (No model.)

To all whom it may concern:

Be it known that I, RUFUS L. HOYT, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Band-Saw Mills; 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 band-saw mills, and has for its object to improve the construction and the mounting of the saw-guides with a view of securing increased efficiency.

To this end my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like notations refer to like parts throughout the several views.

Figure 1 is a side elevation of part of a band-saw mill embodying my improvement. Fig. 2 is a detail in front elevation illustrating some of the parts shown in Fig. 1. Fig. 3 is a horizontal section on the line $x^3 x^3$ of Fig. 2. Fig. 4 is an end elevation of one of the guide-blocks detached. Fig. 5 is a plan view of one of the guide-blocks detached. Fig. 6 is a vertical section on the line $x^6 x^6$ of Fig. 5. Fig. 7 is a horizontal section on the line $x^7 x^7$ of Fig. 4. Fig. 8 is a perspective view of the head-block detached, and Fig. 9 is a diagram for showing the action of the guide-blocks on a saw under the sidewise or torsional movement of the same.

The general features of a band-saw mill are of course well understood, and for the purposes of this case it has been deemed sufficient to illustrate only such parts of the same as are essential to illustrate the connection and the action of my improvement. For this purpose I have indicated the band-saw 1, the upper member 2 of the pair of driving-wheels, the guide-bracket 3 for the vertically-adjustable arm 4, and the various features constituting my improvement.

According to my invention I provide head-blocks 5, which are pivoted to their supports for angular movement at right angles to the plane of the traveling saw. The upper mem-

ber of said head-blocks 5 is pivoted to a bearing-lug 6, which is bolted fast to the adjustable arm 4. The lower member of said head-blocks 5 is pivoted to a similar bearing-arm 6, which is bolted fast to a supporting-bracket 7, projecting from some part of the husk or main frame of the mill. The axes of the pivot-bolts 8, which connect the said head-blocks 5 to their respective bearing-lugs 6, are of course in the same line lengthwise of the travel of the saw.

On the head-blocks 5 I mount four guide-blocks which cooperate in staggered pairs on the saw from opposite sides of the same. The cooperating members of one of the said pair of guide-blocks are marked with the references 9^a and 9^b , and the cooperating members of the other pair of guide-blocks are marked with the references 10^a and 10^b . These guide-blocks are independently adjustable lengthwise of the head-blocks 5 and are securable in any desired position thereon by suitable set-screws 11. The said guide-blocks are insertible on and removable from their guideways at one end of the block in a manner which is obvious from an inspection of Figs. 3 and 8. Each of these guide-blocks is made up of several parts, which may be distinguished, respectively, as the slide c , the jaw c' , the bearing-plate c^2 , of Babbitt metal, secured in the jaw c' , and the eccentric pivot-pin c^3 , which connects the jaw c' with the slide c . The eccentric part of the pin c^3 works through a lug c^4 , projecting from the jaw c' between the upper and lower plates of the slide c , with the ends of the pin extended in each direction beyond the eccentric portion and engaging with suitable passages or seats for the same in the upper and lower plates of the said slides c . The upper extension of the pivot-pin c^3 is of a length to reach through a nut c^5 and is screw-threaded for cooperation with said nut to hold the eccentric in whatever position it may be set. The upwardly-projecting part of the pivot-bolts c^3 is square-ended or of other angular shape, as shown at c^6 , for the application of a wrench thereto to turn the eccentric pivot c^3 in the lug c^4 of the jaw c' . Hence by this eccentric pivot c^3 engaging with the lug c^4 on the jaw c' , as described, the said jaw c' , with its bearing-plate c^2 , of

soft metal, may be adjusted toward and from the saw on the slide c and when properly set may be held by tightening the nut c^5 . This affords an extremely simple device for properly setting the bearing-plate c^2 in respect to the face of the saw. Moreover, in whatever position the jaw c' may be set by the eccentric c^3 on the slide c , the said jaw will be free for a limited oscillating or pivotal motion on the said pivot c^3 . This freedom for pivotal or oscillating motion enables the bearing-plate c^2 of the guide-blocks to automatically adjust themselves to the saw under the action of the side or torsional movement of the saw, so as to insure a true guiding action on the saw. This will be readily understood by reference to the diagram view. That diagram is on an enlarged scale and greatly exaggerates the action for the purpose of distinctness. From an inspection of the same it will be seen that under the sidewise or torsional motion of the saw in the direction shown in said view the cooperating members of one pair of the guide-blocks 10^a 10^b have automatically adjusted themselves, so that the bearing-plates c^2 , carried by the pivoted jaws c' of said guide-blocks, have aligned themselves into parallelism with each other, so as to continue to bear throughout their entire length on the opposite faces of the saw-blade. If the torsion or side motion of the saw had been in the opposite direction, the members of the other pair of cooperating guide-blocks 9^a 9^b would have made a similar adjustment, so as to act in a corresponding manner on the opposite faces of the saw. When the members of either of the two pair of guides are in action under the torsional or sidewise movement of the saw, the members of the other pair of guide-blocks will clear the saw. Hence there is no tendency of the saw to bind on the corners of the guiding-surfaces or to unevenly wear down any portions of said guide-surfaces. Otherwise stated, by the automatic adjustment described the full area of the guiding-surfaces or soft-metal plates c^2 of at least two of the guide-blocks are always available on the saw. Of course when the saw is running without sidewise or torsional strain all four of the guide-blocks will be in action on the saw. By this construction, therefore, a true guidance of the saw is insured and the parallelism of the cooperating members of the guide-blocks is always preserved.

The two head-blocks 5 are subject to common controlling devices arranged to swing the same on their pivotal centers 8 simultaneously and to an equal extent and to hold the same in whatever position they may be set. As shown, rods 12 connect the rear ends of the head-blocks 5 with crank-arms 13 on a common rock-shaft 14. The said rock-shaft 14 extends through a pair of guide-lugs 15, fixed to the main bracket 3, one at the top and the other near the bottom of said bracket. The said shaft 14 also passes through lugs 16

on the adjustable arm 4, which prevents any lateral movement of said adjustable guide-arm 4, which would otherwise occur to some extent by the slight play between the engaging or guiding parts of said arm 4 and the frame-bracket 3.

The shaft 14 is held from longitudinal displacement in its bearing-lugs in any suitable way. As shown, this is accomplished by a set-screw collar 17 below the bottom bearing-lug 15 on said shaft and by the hub of a lever-arm 17^x , secured to the shaft by set-screw 18 directly above the bottom bearing-lug 15. The said arm 17^x is provided with a slot 19, in which works a pin 20, tapped into a nut 21. The nut 21 is mounted on a hand-screw 22, which rotates in bearings 23, rising from a bearing-bracket 24, fixed to the frame-bracket 3. The hand-screw 22 is held from longitudinal movement in the bearings 23 by the hub of the hand-wheel at the head of the shaft and by a cotter-secured nut or other device 25 at the opposite end of the shaft. With these connections it is obvious that the shaft 14 may be rocked and be held in any desired adjustment. The hand-screw is a very desirable means for working the operating-lever 17 and said rock-shaft 14, for the reason that it permits a fine adjustment and holds the parts wherever set.

The purpose of pivoting the head-blocks 5 and providing the common controlling connections for the same is to afford means for adjusting the saw to the proper run. It is well known that if the saw-teeth be unevenly filed or become unequally dulled the saw will lead off sidewise from the true desired line of the cut or kerf. With the construction just described the head-blocks 5 may be swung through a small arc on their pivotal centers 8 whenever it may be necessary to offset the lead on the saw. Otherwise stated, the saw may be held to run or effect the cut in a true line regardless of its tendency to otherwise lead sidewise on account of the condition of its teeth or other cause. This pivotal adjustment of the head-blocks 5 would, of course, only need to be made occasionally.

By the two features of improvement so far emphasized I have found that the efficiency of a band-saw mill is greatly increased. The true guidance of the saw being insured, as above described, it follows that the saw makes a clean cut with a kerf of a minimum size. The side scorings on the lumber are very greatly reduced, thereby lessening the loss, especially for lumber which is to be dressed. It has also been found that in virtue of the true guidance secured by my improvement the saw may be run at a higher speed and be crowded much harder by the feed on the log. Hence a largely-increased capacity is afforded to the mill, while at the same time a considerable saving of lumber is effected.

In addition to the advantages above especially emphasized it should be further noted that the way in which the guide-blocks are

constructed is a great convenience for purposes of adjustment and repair. The eccentric device connecting the slides *c* with the jaws *c'* of the block enables the face-plates *c*² to be readily set up in proper position in respect to the face of the saw and to be securely held when so set. The guide-blocks as entireties are readily removable endwise of their slideways on the head-blocks 5 whenever needed for any purpose. The fact of the independent adjustment of the four guide-blocks is an important feature for insuring the proper action of the cooperating members of said guide-blocks. It should further be noted that the position of the pivotal centers 8 of the head-block is central with respect to the working positions of the four guide-blocks in respect to each other. This is important for insuring equal angular adjustment to the two cooperating blocks in staggered relation, which continue to operate on opposite faces of the saw under sidewise or torsional movement thereof. The guide-blocks may be made of such size relative to the length of their guideways on the head-blocks 5 to permit adjustment of the said blocks relative to each other as required for adaptation to saws of different widths without materially changing their relation to the pivotal centers 8; or, otherwise stated, the central position of the pivots 8 may be maintained under the adjustment of the guide-blocks lengthwise of the head-blocks.

It will be understood that although the two leading features of my improvement or invention cooperate with each other nevertheless each is capable of separate use, and when so used serves a useful function. It will be further understood that some of the details of the construction might be changed without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a band-saw mill, the combination with

a head-block, of guide-blocks pivoted to said head-block for pivotal movement crosswise of the saw, with the cooperating members of said guide-blocks in staggered relation to each other crosswise of the saw, substantially as described.

2. In a band-saw mill, the combination with a head-block, of two pairs of guide-blocks pivoted to said head-block for pivotal movement crosswise of the saw, with the cooperating members of each pair in staggered relation to each other crosswise of the saw, substantially as described.

3. In a band-saw mill, the combination with a head-block pivoted for angular motion crosswise of the saw, of guide-blocks pivoted to said head-block for pivotal motion crosswise of the saw, with the cooperating members thereof in staggered relation to each other crosswise of the saw, substantially as described.

4. In a band-saw mill, the combination with pivoted head-blocks, of pivoted guide-blocks on said head-blocks cooperating in pairs with the members of each pair of blocks staggered in respect to each other, crosswise of the saw, and the pivotal centers of the head-blocks centrally located in respect to the guide-blocks, substantially as and for the purposes set forth.

5. In a band-saw mill, the combination with upper and lower head-blocks pivoted on a common axis for angular motion crosswise of the saw, of two pairs of guide-blocks on each head-block with the cooperating members of each pair in staggered relation to each other crosswise of the saw, and a common connection to said head-blocks for effecting simultaneous and equal adjustments thereof, substantially as and for the purposes set forth.

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

RUFUS L. HOYT.

Witnesses:

C. F. KILGORE,
F. D. MERCHANT.