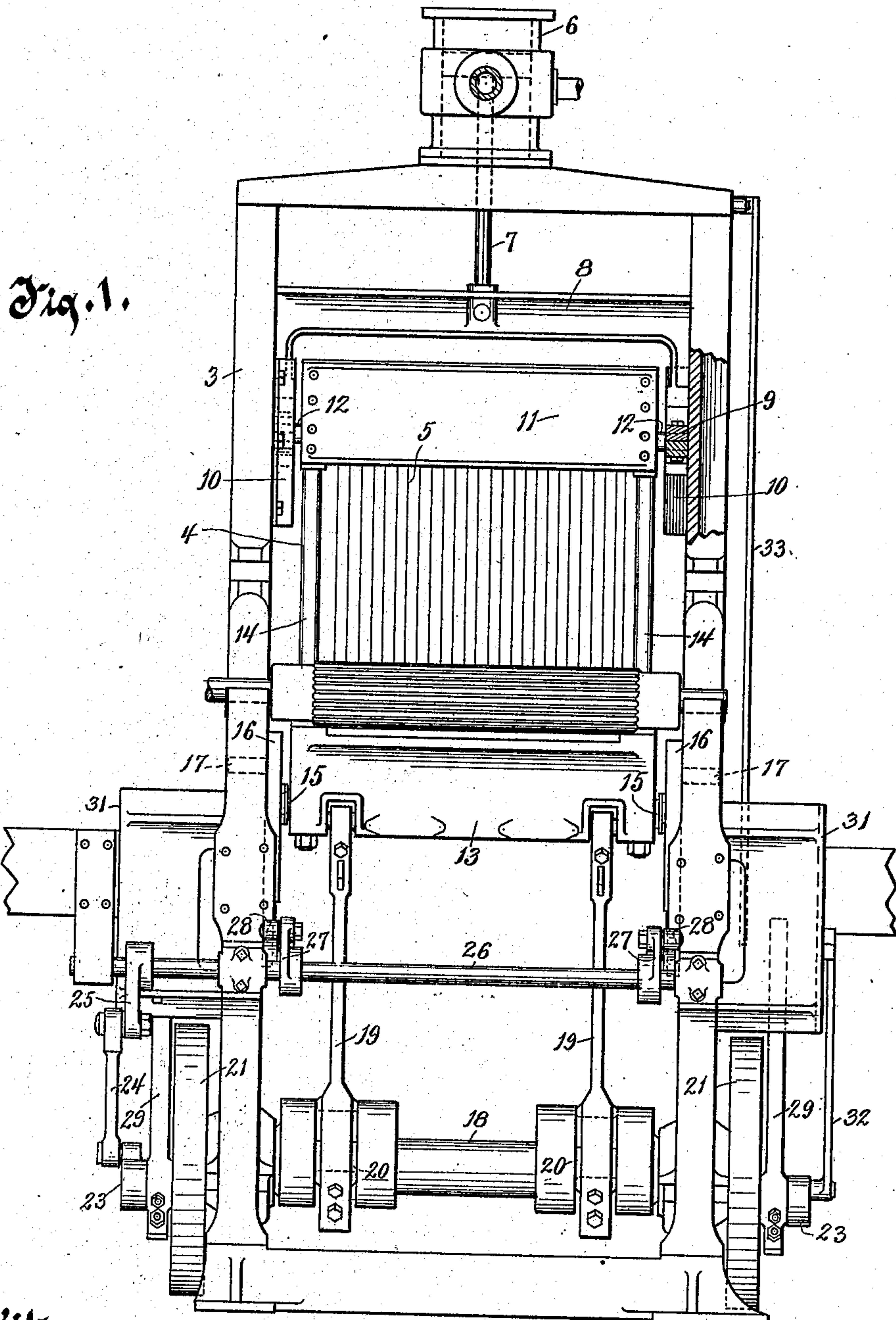


No. 885,119.

PATENTED APR. 21, 1908.

T. S. WILKIN.
GANG SAW MILL.
APPLICATION FILED JUNE 4, 1906.

3 SHEETS—SHEET 1.



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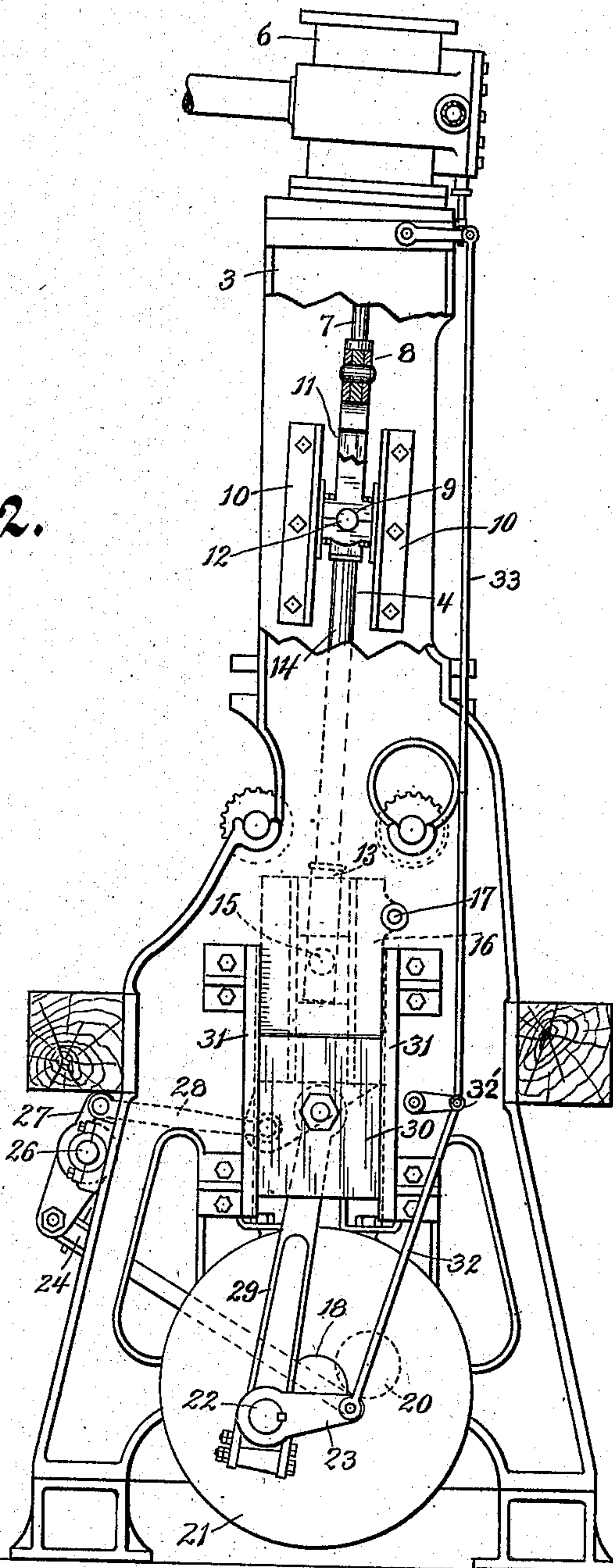
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3 SHEETS—SHEET 2.

Fig. 2.



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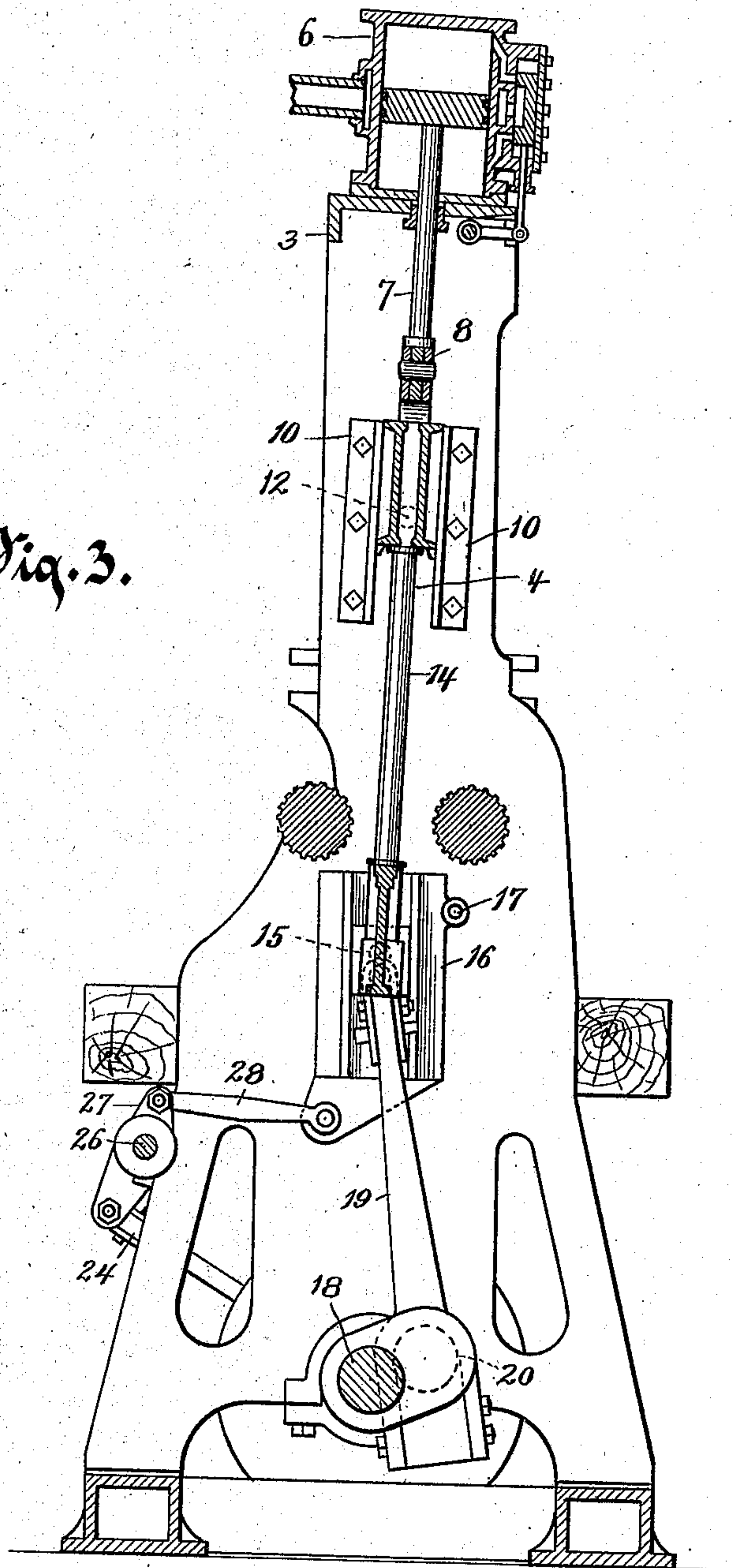
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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

THEODORE S. WILKIN, OF MILWAUKEE, WISCONSIN.

GANG-SAW MILL.

No. 885,119.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed June 4, 1906. Serial No. 319,983.

To all whom it may concern:

Be it known that I, THEODORE S. WILKIN, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Gang-Saw Mills, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

10 My invention has relation to improvements in gang saw mills.

In gang saw mills, as ordinarily constructed, the motive power, that is, the steam cylinder or cylinders, has been placed either 15 below the crank shaft, or between the bottom of the saw sash and the crank shaft. These constructions are open to very serious objections, as experience has demonstrated that the cylinders, when thus located, are 20 necessarily so positioned that they receive thereon the dust and sand from the logs, as said logs are run through the gate or sash and sawed into lumber, the said dust and sand settling on the cylinder and in the working 25 parts, and clogging the stuffing boxes, governor, &c. Furthermore, in the old form of construction, the gang sawyer is subjected to the heat and steam ascending from the cylinders, which very seriously interferes with the 30 effectiveness of his work, owing to this uncomfortable heat. I am also enabled to dispense with all trunk pistons, or with connecting rods between the piston rod and the lower end of the sash, as formerly used.

35 It is the primary object of my invention to overcome the above pointed out difficulties by providing a construction wherein the cylinder is mounted on top of the gang frame, with its piston extended downwardly and attached to the top of the sash, whereby the 40 crank-shaft is driven through the gang sash, instead of the gang sash being driven by the crank shaft, as in the old constructions.

45 With the above primary object, and other incidental objects, in view, the invention consists of the devices and parts, or their equivalents, as hereinafter set forth.

50 In the accompanying drawings, Figure 1 is a front elevation of a gang saw mill constructed in accordance with my invention, parts broken away; Fig. 2 is a view at right angles to Fig. 1, parts broken away; and Fig. 3 is a central vertical sectional view looking towards the left of Fig. 1.

55 Referring to the drawings, the numeral 3 indicates the gang frame of ordinary and

usual construction, 4 the gang sash, and 5 the saws carried by the gang sash. Mounted on top of the gang frame is a steam cylinder 6. From the piston of this cylinder projects 60 downwardly a piston-rod 7 which extends through the top beam of the frame and is connected at its lower end to a central point of a yoke 8. Each depending arm of the yoke is provided with a bearing 9 which lies 65 between L-shaped guide ways 10, 10, secured to the gang frame. The side edges of the transverse top beam 11 of the gang sash 4 are provided with laterally-projecting trunnions 12, 12, which are turnable in the bearings 9. 70 The upper transverse beam 11 and the lower transverse beam 13 of the gang sash are connected by means of rods 14, 14, as in the ordinary form of gang sashes. The opposite end edges of lower transverse beam 13 are provided with laterally-projecting trunnions 15, 15 which are journaled in swinging or oscillating bearing blocks 16, 16. The pivot 17 of each of these blocks is located at the rear edge of the block, near the upper end of said rear edge. 80

In the lower portion of the gang frame is a crank shaft 18. This crank shaft is actuated by the gang sash through the medium of rods 19, 19, pivotally connected at their upper ends to the lower transverse beam 13 85 of the gang sash, and having their lower ends connected to the crank sections 20, 20 of the crank-shaft. On opposite ends of the crank-shaft are fly wheels 21, 21. These wheels have crank pins 22 projecting therefrom, and 90 to the extremities of these crank pins are keyed crank arms 23, 23. One of these crank arms (the left hand one with respect to Fig. 1) has connected thereto the lower end of a link 24. The upper end of this link 95 in turn connects with the end of a crank 25 extending from a rock-shaft 26. On the rock-shaft 26 are other cranks 27, 27, and to the ends of these cranks are connected links 28, 28, the inner ends of said links being connected to lugs at the lower ends of the bearing blocks 16. It is evident from this construction that when the crank-shaft 18 is rotated, the lower ends of the bearing blocks 16, which through the described connections, 105 are operated upon in a manner to cause the bearing blocks to swing or oscillate on the pivots 17, and this swinging of the bearing blocks will in turn be imparted to the lower transverse beam 13 of the gang sash, causing 110 said sash to swing on the trunnions 12.

On each crank pin 22, between the crank

arm 23, and the face of the adjacent fly wheel, is loosely mounted an arm 29. The upper ends of these arms are connected to slidable counterweights 30, which are adapted to slide or reciprocate in guide ways 31. To the extremity of one of the crank arms 23 (the right hand one with respect to Fig. 1) is connected a rod 32, which in turn is connected to an upward extension 33, the said upward extension being adapted to operate the inlet and outlet valves of the steam cylinder.

It is evident from the construction described that when the piston in the cylinder 6 is actuated, an up and down movement is imparted to the sash frame through the piston rod 7, and this up and down movement of the sash frame, through the links 19 causes rotation to be imparted to the crank-shaft 18, the crank-shaft serving to stop the reciprocating parts at the ends of their stroke. The rotation of the crank-shaft causes, through the described connections, an oscillation of the gang sash, and also a movement of the counterweights 30 up and down, the said counterweights serving to counterbalance the gang sash throughout its movement. The rotation of the crank-shaft also has the effect of actuating the rods 32—33 which regulate the inlet and outlet valves of the steam cylinder, both inner ends of the rods 32 and 33 being pivotally connected to a rock-arm 32' to offset said rod 32 and prevent its striking the guideway 31, as herein before explained.

By the employment of my improved construction, there is no possibility of dust and sand falling on to the steam cylinder and clogging the working parts, and at the same time the sawyer is not subjected to the discomforts of the excessive heat and steam arising from the steam cylinder. By placing the cylinder on top of the gang frame, as in my invention, the ascending heat is always above the operator, and this disposition of the cylinder will also permit of building a wooden or metal box loosely about the cylinder, and extending said box upwardly through the roof to create a draft and carry off the heat, without in the least interfering with free access to the working parts. Furthermore the arrangement of the cylinder on the top of the gang frame, places said cylinder in the most convenient position for ready access thereto at all times for the purpose of adjustment. Under the old forms of construction the location of the cylinders was such as to render it very unhandy to get at the different parts of the mechanism when necessary to adjust the same.

I would further call attention to the fact that it is desirable to have the gang sash oscillated at the bottom, and in order to accomplish this there must be a yielding connection between the sash and the piston. Therefore, where the cylinder is placed on top of the gang frame, as in my invention, it

is desirable to connect the lower end of the piston-rod with the yoke 8, hereinbefore described, the said yoke in turn being pivoted on the trunnions 12 extending from the gang sash. By this construction when the lower end or bottom of the gang sash is oscillated, the upper end of the sash is necessarily caused to turn on the pivots formed by the trunnions 12.

It will be understood that the construction shown in the drawings is for a narrow or medium width of gang, and therefore only one steam cylinder is necessary. I do not, however, wish to confine my invention to but one cylinder, inasmuch as I may use two, or even more, cylinders, where the width of the gang would require the use of a plurality of cylinders, as in wide gangs. The gang shown is intended for running from twenty to twenty-five saws. Some gangs carry as high as fifty saws, and in the use of my invention in connection with gangs of this latter character, the use of the yoke 8 would be impracticable, owing to the fact that it would have to be too heavy to withstand the cylinder driving a sash of such excessive weight, and under the circumstances, I propose to place a cylinder at opposite ends of the top of the gang frame, with the piston rods thereof running direct to the trunnions 12, and the cross-heads 9 running in slides, as shown in the drawings, omitting, of course, altogether the yoke 8.

I would further call attention to the fact that in gangs as formerly constructed, and where the lower end of the sash is oscillated, a cross-head on the end of the piston-rod and a link between the cross-head and bottom of the sash have been employed, and in other constructions connections have been employed running from the bottom of the sash to the piston-head direct through a large hollow trunk, or again, in some constructions, the bottom of the sash is not oscillated at all, but the sash is engaged direct by the piston-rod, and the top of the sash oscillated by pendulum slides arranged at the top. With my present construction, in which the cylinder is disposed on top of the gang frame, I can run the piston-rod direct to the top of the gang sash, allowing a free oscillation of the bottom of the sash, without the necessity of employing the cross-heads, and slides and connections between the cross-heads and the sash.

What I claim as my invention is:

1. In a gang saw mill, the combination of a gang frame, a motor arranged on top of said frame, a pivotally hung gang sash, a connection between the reciprocating portion of the motor and the pivotal end of the gang sash and adapted to reciprocate said sash in the frame, and means for giving to the sash a swinging or oscillating movement on its pivot.

2. In a gang saw mill, the combination of a gang frame, a motor arranged on top of said frame, a yoke reciprocable in the frame, a connection between the reciprocating portion of the motor and the top of the yoke, and a gang sash pivotally secured at its upper end to the arms of the yoke near the motor connection thereto.

3. In a gang saw mill, the combination of a gang frame, a motor arranged on top of said frame, a yoke reciprocable in the frame, a connection between the reciprocating portion of the motor and the top of the yoke, a gang sash pivotally secured at its upper end to the arms of the yoke, and means for giving to the sash a swinging or oscillating movement on its pivot.

4. In a gang saw mill, the combination of a gang frame, a motor arranged on top of said frame, a gang sash pivoted at its top within the frame, a connection between the reciprocating portion of the motor and the top of the gang sash and adapted to reciprocate said sash in the frame, a crank shaft below the gang sash, a connection between the gang sash and the crank of the crank shaft, whereby the reciprocating movement of the gang sash imparts a rotary movement to the crank shaft, swinging bearings to which the lower end of the gang sash is connected, and a connection between the crank shaft and the swinging bearings, and adapted to impart an oscillating movement to said bearings as the crank shaft is rotated.

5. In a gang saw mill, the combination of a gang frame, a motor arranged on top of said frame, a yoke reciprocable in the frame, a connection between the reciprocating portion of the motor and the top of the yoke, a gang sash pivotally secured at its upper end to the arms of the yoke, a crank shaft below the gang sash, a connection between the gang sash and the crank of the crank shaft, whereby the reciprocating movement of the sash imparts a rotary movement to the crank shaft, and means for giving to the sash a swinging or oscillating movement on its pivot.

6. In a gang saw mill, the combination of a gang frame, a motor arranged on top of said frame, a yoke reciprocable in the frame, a

connection between the reciprocating portion of the motor and the top of the yoke, a gang sash pivotally secured at its upper end to the arms of the yoke, a crank shaft below the gang sash, a connection between the gang sash and the crank of the crank shaft, whereby the reciprocating movement of the sash imparts a rotary movement to the crank shaft, swinging bearings to which the lower end of the gang sash is connected, and a connection between the crank shaft and the swinging bearings and adapted to impart an oscillating or swinging movement to said bearings as the crank shaft is rotated.

7. In a gang saw mill, the combination of a gang frame, a motor arranged on top of said frame, a gang sash, a connection between the reciprocating portion of the motor and the gang sash, at or near the top of said gang sash and adapted to reciprocate the sash in the frame, a crank shaft below the sash, a connection between the sash and the crank of the crank shaft, whereby the reciprocating movement of the sash imparts a rotary motion to the crank shaft, vertically reciprocable counterbalancing mechanism, and a connection between said mechanism and the crank shaft, whereby, as the crank shaft is revolved, the counterbalancing mechanism is reciprocated and serves to counterbalance the sash throughout its movements.

8. In a gang saw mill, the combination of a frame, a reciprocal pivoted gang sash operatively connected to said frame, and a motor located above the gang sash, parts of which are operatively connected to both the frame and the pivoted end of the gang sash whereby said gang sash is reciprocated and swung on its pivots.

9. In a gang saw mill, the combination of a gang frame, a yoke reciprocable in the frame, a gang sash pivotally secured to the yoke, and a motor connected to the yoke near its pivotal connection to the gang sash.

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

THEODORE S. WILKIN.

Witnesses:

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D. W. FROMANDE.