No. 770,517. PATENTED SEPT. 20, 1904.

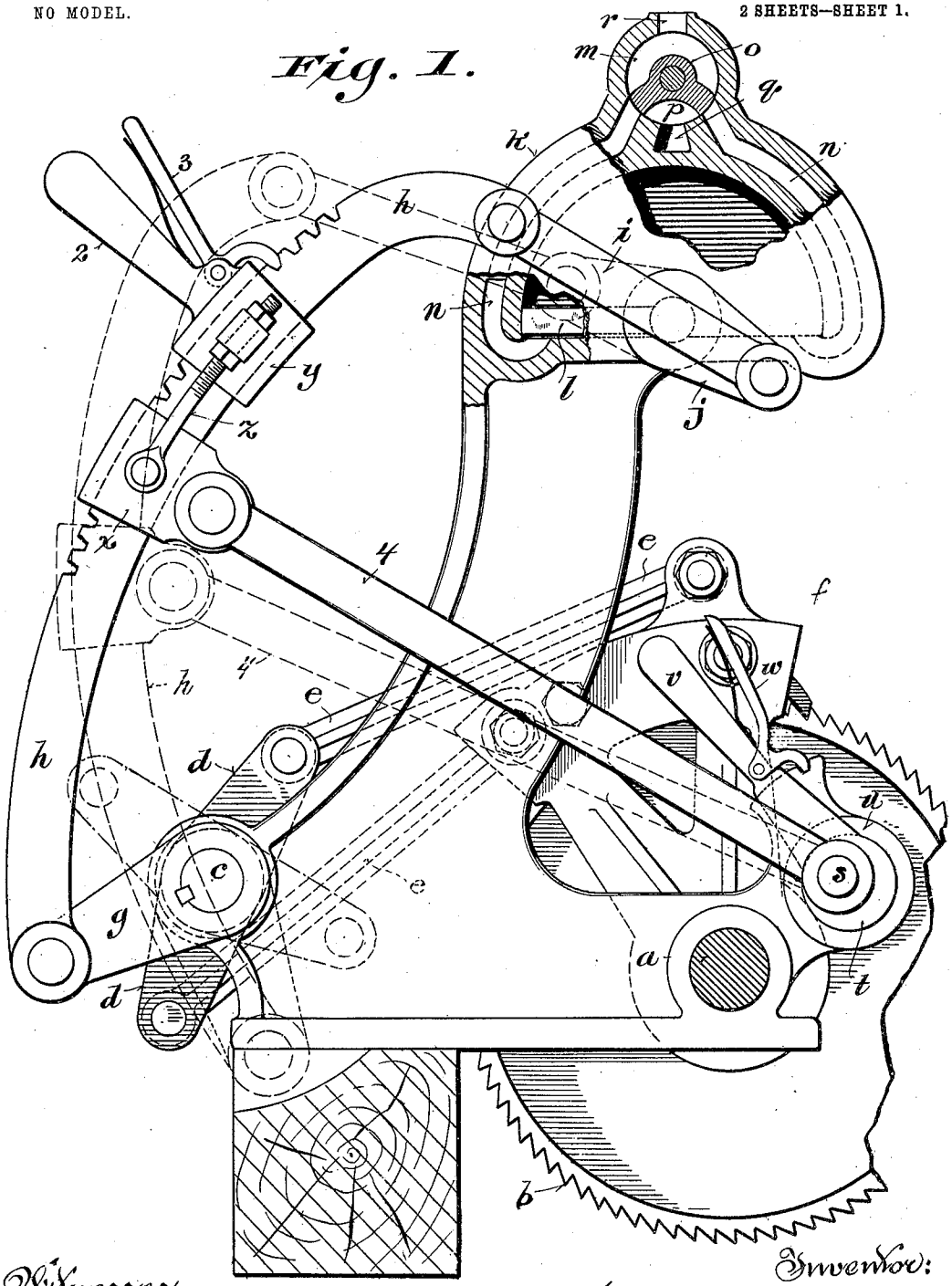
W. F. BROWN.

SAWMILL SET WORKS.

APPLICATION FILED MAR. 21, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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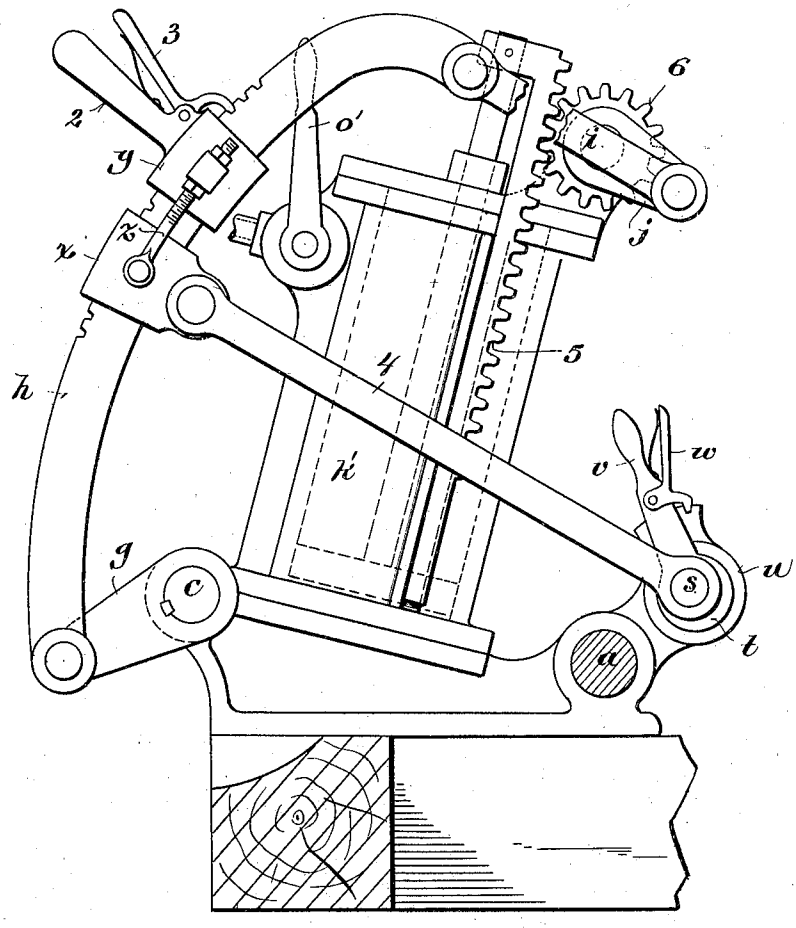
W. F. BROWN.

SAWMILL SET WORKS.

APPLICATION FILED MAR. 21, 1904.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.



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No. 770,517. Patented September 20, 1904.

UNITED STATES PATENT OFFICE.

WALTER F. BROWN, OF RACINE, WISCONSIN.

SAWMILL SET-WORKS.

SPECIFICATION forming part of Letters Patent No. 770,517, dated September 20, 1904.

Application filed March 21, 1904. Serial No. 199,057. (No model.)

To all whom it may concern:

Be it known that I, WALTER F. BROWN, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Sawmill Set-Works, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to power set-works of the type of that for which United States Letters Patent No. 673,493 were issued to me May 7, 1901.

The main object of the present invention is to avoid sliding joints or bearings in the power-transmitting connections of this type of set-works, to provide for manually operating the set-works in order to more readily and accurately adjust a cant or squared log on the carriage for the first cut without disconnecting or working the motor, and generally to simplify and improve the construction and operation of this class of set-works.

It consists in certain novel features of construction and in the peculiar arrangement and combinations of parts hereinafter particularly described, and defined in the claims.

In the accompanying drawings like characters designate the same or similar parts in both figures.

Figure 1 is a side elevation of set-works embodying my invention, parts being broken away and shown in section; and Fig. 2 is a similar view, on a smaller scale, of a modification.

Referring to Fig. 1, *a* designates the set-shaft, on which is mounted the ratchet-wheel *b*, and *c* a rocker-shaft parallel with the set-shaft and having a cross-head or double crank *d* connected on opposite sides thereof by links *e* with pawl-carriers *f*, as in double-acting hand set-works in common use. The rocker-shaft *c* is provided with an arm *g*, to which is pivoted one end of a curved lever *h*. The opposite end of this lever is connected by a link *i* with the wrist-pin of a crank *j*. This crank is arranged to be turned back and forth a half-revolution at a time into line with the link *i* by a fluid-pressure motor, consisting in the present case of a semicylindrical cylinder *k* and an oscillatory wing-piston *l* fitted therein and fixed on the shaft of said crank. The cylinder *k* is formed or provided with a cylindrical valve-chamber *m*, which is connected by passages *n n* with opposite sides of the cylinder. An oscillatory valve *o*, fitted in said chamber, closes in its central position the ports of the two passages *n*, as shown in the drawings, and has a cavity *p* in one side arranged to connect either one of said ports with an intermediate exhaust-port *q* when the valve is turned to admit steam or other motive fluid to the other supply-port. The motive fluid is supplied to the valve-chamber through a connection at *r*.

s is a pivot-pin having an eccentric shank or journal *t* in a fixed box or bearing *u* in the frame or base of the machine. A lever *v*, attached to the journal of the pivot-pin, affords means for rocking it for a purpose hereinafter explained. A spring-actuated latch-lever or detent *w*, pivoted to the lever *v*, serves by engagement with a notch in a projection on the bearing *u* to lock the pivot-pin *s* in its normal position, in which it is concentric with the curved lever *h* when the latter is in its normal position, as shown in the drawings.

x is a pivot-block mounted and movable endwise on the lever *h*. A latch-block *y*, also mounted and movable endwise upon said lever, is adjustably connected with the pivot-block *x* by a threaded eyebolt *z*, which is pivoted to one of said blocks, and passing at its threaded end through a sleeve on the other is provided at opposite ends of the sleeve with adjusting-nuts. The block *y* is provided with a handle 2 and with a spring-actuated latch-lever or detent 3 pivoted thereto and adapted by engagement with one of a series of notches in the lever *h* to lock said blocks in adjusted position thereon. The lever *h* is graduated, and the notches are arranged therein to adjust the setting mechanism for sawing lumber of various dimensions, as hereinafter explained.

A link 4, corresponding in length with the radius of the curve or arc of the lever *h*, is pivoted at one end on the pin *s* and at the other end to the block *x* and serves as the fulcrum or fulcrum-support of said lever.

This form of set-works operates as follows:

Assuming the several parts to be in their home positions, as shown in Fig. 1, to advance the knees with the log or cant the valve *o* is turned to the left, admitting steam or other fluid to the cylinder through the left-hand passage *n* and connecting the right-hand passage with the exhaust-port *q*. The piston *l*, with the crank *j*, is thereupon turned a half-revolution to the right, and the starting and stopping of the crank approximately in line with the link *i* on dead-centers avoid shock or jar to the setting mechanism, bringing the knees with the log or cant to a gradual stop and preventing overthrow and inaccurate setting due to momentum and any slight variation in the traverse of the crank. This movement of the actuating-crank swings the lever *h* on the pivot connection between the block *x* and link 4 as a fulcrum and turns the arm *g* downward to the left a distance corresponding with the position of the pivot-block *x* on said lever. Motion is communicated in the usual way through the rocker-shaft and its connections with the pawl-carriers to the ratchet-wheel and set-shaft, thereby advancing the knees with the log or cant a predetermined distance according to the adjustment of the pivot-block *x*. The valve *o* is then reversed, admitting steam or other motive fluid to the cylinder through the right-hand passage *n* and connecting the left-hand passage with the exhaust-port. The crank *j* is thus turned back to the right, and the several parts of the setting mechanism are restored to their original positions, advancing the knees with the log or cant another interval and completing the set. To change the set for sawing lumber of different dimensions, the blocks *x* and *y* are moved up or down on the lever *h* to a position determined by the scale on said lever and are then locked in that position by the engagement of the latch-lever 3 with the proper notch. The pivot and latch-blocks are moved up, carrying the fulcrum of the lever *h* toward the actuating-crank *j*, for cutting thicker lumber, while they are moved down, carrying the fulcrum of the lever away from said crank, for cutting thinner lumber.

It is often necessary to advance the knees a greater or less distance without changing the adjustment of the latch-block *y* or working the motor in order to move a squared log or cant on the head-blocks for the first cut, so that it may then be cut into a certain number of boards or pieces of lumber of certain dimensions without waste. For this purpose the lever *v* is swung back and forth by hand, while the motor remains at rest, thereby causing the lever *h* to work on its pivot connection with the link *i* as a fulcrum. The arm *g* is thus moved back and forth through a short arc and the ratchet-wheel and set-shaft are turned by short intervals, so that the log or cant can be readily moved with certainty and accuracy into the required position for making the first cut.

Referring to Fig. 2, illustrating a modification of the set-works consisting in the employment of a different form of motor, *k'* designates the cylinder of a reciprocating motor, *o'* a valve-operating lever controlling the admission and exhaust of the motive fluid to and from opposite ends of the cylinder, and one of a pair of similar racks attached to the piston-rod of the motor and meshing with pinions 6 on the shaft of the crank *j*. In this case the crank is turned a complete revolution by each single stroke of the piston in either direction. In other respects this form of set-works is in construction and operation essentially like that shown in Fig. 1 and hereinbefore described.

The adjustable connection between the pivot-block *x* and the latch-block *y* serves to nicely adjust the fulcrum of the lever *h* with reference to the notches engaged by the latch-lever 3 to compensate for play, wear, and any inaccuracy in fitting, so that the log or cant will be accurately advanced the required distances to exactly cut lumber of the desired dimensions.

It is obvious that in place of the crank *j* an eccentric may be employed as the equivalent thereof. In short, various changes in details of construction and arrangement of parts may be made without departing from the principle and intended scope of the invention.

I claim—

1. In sawmill set-works the combination with the set-shaft, a rocker-shaft parallel therewith, means for communicating motion from the rocker-shaft to the set-shaft and a motor, of a crank or eccentric arranged to be actuated by the motor, a lever connected with said crank or eccentric and with an arm on the rocker-shaft, and a link pivotally connected with said lever and with a fixed support and free to vibrate with the movement of said lever in conformity with the movement of the arm on the rocker-shaft, substantially as described.

2. In sawmill set-works the combination with the set-shaft, a rocker-shaft provided with an arm for communicating motion to the set-shaft and a motor, of a crank or eccentric arranged to be actuated by the motor, a lever connected with said crank or eccentric and with said arm, and a link pivoted to a support and having an adjustable pivot connection with said lever, substantially as described.

3. In sawmill set-works the combination with the set-shaft, a rocker-shaft provided with an arm for transmitting motion to the set-shaft and a motor, of a crank or eccentric arranged to be actuated by the motor, a lever connected at one end with the arm on the rocker-shaft and at the other end by a link with said crank or eccentric, and a link piv-

oted at one end to a support and having at the other end a pivot connection with said lever adjustable endwise thereof, said last-mentioned link being arranged transversely to said lever and being free to vibrate at the end connected therewith, substantially as described.

4. In sawmill set-works the combination with the set-shaft, a rocker-shaft for transmitting motion to the set-shaft and a motor, of a crank or eccentric arranged to be actuated by the motor, a lever connected with said crank or eccentric and with said arm, and a link pivoted to a support and having an adjustable pivot connection with said lever, which is curved concentrically with the pivot at the opposite end of the link and is graduated for adjusting the set-works to cut lumber of different dimensions, substantially as described.

5. In sawmill set-works the combination with the set-shaft, a rocker-shaft for transmitting motion to the set-shaft, and a motor, of a crank or eccentric arranged to be actuated by the motor, a curved graduated lever connected with said crank or eccentric and with an arm on said rocker-shaft, a link pivoted to a support concentric with said lever and connected with said lever by a pivot-block movable endwise thereof, and a latch-block also movable endwise of said lever and adjustably connected with said pivot-block, substantially as described.

6. In sawmill set-works the combination with the set-shaft, a rocker-shaft for transmitting motion to the set-shaft and a motor, of a crank or eccentric arranged to be actuated by the motor, a lever connected with said crank and with an arm on said rocker-shaft, an eccentrically-mounted pivot-pin, a link connecting said lever with said pivot-pin, said lever standing normally in a position transverse to said link, which is free to vibrate at the end connected therewith and means for rocking said pivot-pin, substantially as described.

7. In sawmill set-works the combination with the set-shaft, a rocker-shaft for transmitting motion to the set-shaft and a motor, of a crank or eccentric arranged to be actuated by the motor, a curved graduated lever connected with said crank or eccentric and with an arm on said rocker-shaft, a block mounted and movable endwise upon said lever, a detent for locking said block in place on said lever, and a link pivotally connected with said block and with a support and corresponding in length with the radius of the curve of said lever, substantially as described.

8. In sawmill set-works the combination with the set-shaft, a rocker-shaft for transmitting motion thereto and a motor, of a crank or eccentric arranged to be actuated by the motor, a curved lever connected with an arm on said rocker-shaft and by a link with said crank or eccentric, a pivot-pin eccentrically journaled in a fixed bearing, a lever for rocking the journal of said pivot-pin, a detent for holding it in place, and a link pivoted on said pin and having an adjustable pivot connection with said curved lever, said link being arranged transversely to said lever and free to vibrate at the end which is pivoted thereto, substantially as described.

9. In sawmill set-works the combination with the set-shaft, a motor and a rocker member for communicating motion from the motor to the set-shaft, of a crank or eccentric arranged to be actuated by the motor, a lever connected with said crank or eccentric and with said rocker member, and a link pivotally connected with said lever and with a suitable support and free to vibrate at the end connected with said lever, substantially as described.

10. In sawmill set-works the combination with the set-shaft, a motor and a rocker member for communicating motion from the motor to the set-shaft, of a crank or eccentric actuated by the motor, a curved lever connected with said crank or eccentric and with said rocker member, and a link pivoted to a support and having an adjustable pivot connection with said lever, said link being arranged transverse to said lever and free to vibrate at the end which is pivoted thereto, substantially as described.

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

WALTER F. BROWN.

Witnesses:
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HERBERT R. MANGER.