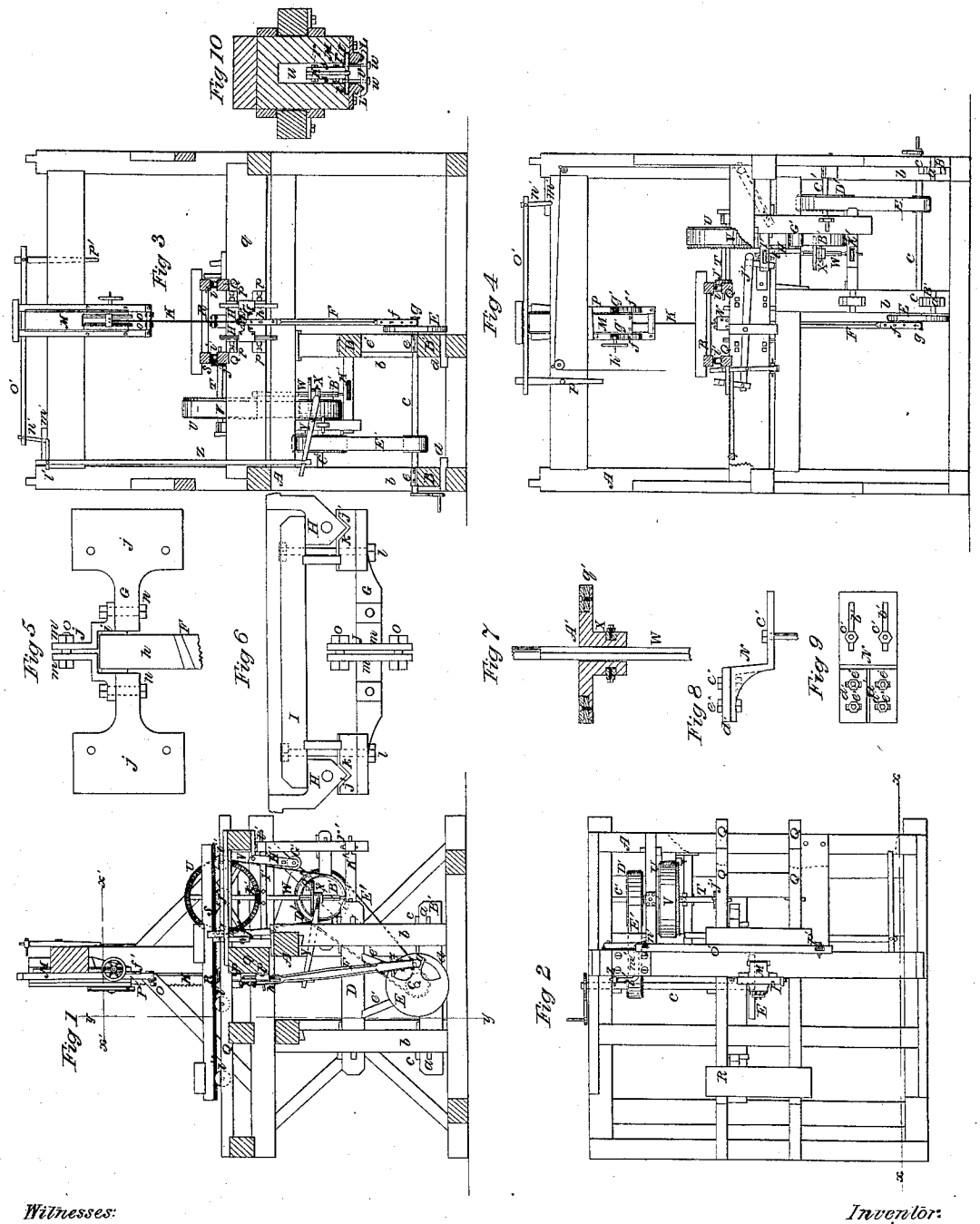
D. C. Gibbs,

Reciprocating Saw Mill.

No. 38,477. Patented May 12, 1863.



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AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

D. C. GIBBS, OF FLEETVILLE, PENNSYLVANIA.

IMPROVEMENT IN SAW-MILLS.

Specification forming part of Letters Patent No. **38,477**, dated May 12, 1863.

To all whom it may concern:

Be it known that I, D. C. GIBBS, of Fleetville, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Saw-Mills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same; Fig. 3, a vertical section of the same, taken in the line *y y*, Fig. 1; Fig. 4, a vertical section of the same, taken in the line *z z*, Fig. 2; Figs. 5, 6, 7, 8, and 9, detached views of parts pertaining to the same; Fig. 10, a horizontal section of the same, taken in the line *x' x'*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement in that class of saw-mills or sawing-machines in which a reciprocating saw is used and operated without a saw sash or gate, and which are commonly termed "muley-saws."

The invention consists in a novel and improved construction and arrangement of the parts pertaining to hanging and the running of the saw, and also to the adjustment of the driving-shaft by which the saw is operated.

The invention further consists in a novel and improved arrangement of means for operating the carriage on which the log to be sawed is placed, all the parts pertaining to the invention being described as follows.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a framing, which may be constructed in any proper manner to support the working parts of the mill; and B B' represent two side pieces, the ends of which are provided with tenons *a a*, which are fitted in mortises in uprights *b* of the framing, and have keys *c* above them, which are also inserted in the mortises. These sill-pieces B B' rest on keys or wedges *d d*, which are placed centrally underneath them, as shown in Fig. 3. On these sill-pieces the bearings *e e* of the driving-shaft C of the saw are secured.

By adjusting the sill-pieces B B', through the medium of the keys *c* and wedges *d d*, it will be seen that the horizontality of the shaft C may at all times be preserved.

In order to render the inner sill-piece, B', as firm as possible, for that one is subjected to the most strain in consequence of the crank-wheel being near it, I brace said sill-piece from a cross-bar, D, which is fitted in the same uprights *b* as the side piece, B', and in the same manner. These braces, which are designated by *e' e'*, are partially shown in Fig. 1, and one is shown entire in Fig. 3.

On the inner end of the shaft C there is placed a crank-pulley, E, to which a pitman, F, is attached, said pitman having a metal strap, *f*, secured to it, which passes around a turned cylindrical bar, *i*, in a cross-head, G, as shown in Figs. 3 and 5, but more particularly in the latter. This cross-head at each side of the turned bar *i* is flattened out, so as to form quite broad plates *j j*, to which wood, leather, or metal composition bearings *k* are bolted to bear against guides H H, (see Fig. 6,) the bolts *l*, which are used for this purpose, also passing through a plate, I, which is at the back of said guides. It is immaterial whether the wooden bearings *k* be at the front or at the back sides of the guides. If desired, the plate I may be of wood and the plates *j j* of metal, with leather strips *j'* bolted to their inner sides. The same result would be attained in either case—to wit, a diminution of friction and wear and tear. The guides H H are of course of metal, and they should be of V form at one side, as shown in Fig. 6.

J represents the stirrup, which is made of two parts, *m m*, as shown in Figs. 3 and 5. (See more particularly the latter.) The lower end of each part *m* of the stirrup is made in the form of a screw-bolt, and is secured in the cross-head G as shown at *u* in Fig. 5. The upper ends of said parts *m* are flattened to form jaws, and have bolt-holes made in them to admit of bolts *o* passing through the jaws and the lower end of the saw K. The bolt-holes in the jaws are made rather larger in diameter than the bolts *o*, to admit of the saw being moved or adjusted a little forward or backward. By having the parts *m m* of the stirrup fitted to the cross-head G by the bolt-connections, as described, the saw may be "ranged" as may be required, as the parts *m m* may be turned more or less obliquely or angularly. The guides H H are each formed

with brackets p, by which said guides are attached to a timber or fender sill g of the framing, and made to project out sufficiently far therefrom as to admit of the plate I working behind them. To the top or upper end of the saw K there are secured by bolts r two plates, s s, one at each side of the saw. These plates s are bent outward at their front ends, as shown at l in Fig. 10, and bear against the back surfaces of guides L L, which are secured to a pendent bar, M, in the framing A, the plates s s and the upper part of the saw working in a slot, u, in said bar M, and to the bent front ends, t, of the plates s s a plate, v, is secured by bolts w, the plate v bearing against the front surfaces of the guides L L.

N represents a bent plate or bracket, which is attached to the upper surface of the fender-sill g, and has a slot, a', made longitudinally in it to allow the saw to work or pass through. This plate N has two slots, b', made longitudinally in it, through which screws c' pass into the fender-sill. On the front part of the bracket N, at each side of the slot a', there is bolted a piece of wood, d', which bears against the sides of the saw K and serves to steady it. The bolt-holes $e^{\times}$ in the pieces of wood d' are of oblong form, to admit of the lateral adjustment of said wood, so that the latter may be adjusted to the saw whenever required. Similar guides, O O, are attached to the lower end of a sliding frame, P, which is fitted on the bar M, said frame having racks s' s' attached to it, into which pinions g' g' on a shaft, h', gear. By turning this shaft h' the frame P, and consequently the guides O O, may be raised or lowered, as circumstances may require. (See Figs. 3 and 4.)

On the framing A there are placed two horizontal parallel ways, Q Q, on which a carriage, R, is placed, said carriage having the log or timber which is to be sawed secured upon it. This carriage works or runs upon friction-rollers i', and to the under side of said carriage a rack, S, is secured longitudinally. (See Figs. 1, 3, and 4.) Into this rack S a pinion, j', gears, said pinion being on a shaft, T, which has a wheel, U, upon it, said wheel having a smooth periphery, so that it may be driven by a belt, V, and being toothed at one edge of its periphery to receive a pinion, k', on a vertical shaft, W, which has a sliding hub, X, placed upon it. The hub X has a lever, Y, attached to it, and the outer end of said lever is connected to an upright, Z, the latter being attached at its upper end to a crank, l', on a shaft, m', at the upper end of the framing A. To this shaft m' there is also attached another crank, n', which is at right angles to the crank l', the crank n' being connected by a rod, o', to a pendent hand-lever, p'.

To the hub X there is attached a friction-pulley, A′, in the periphery of which there is inserted an annular piece of leather, g', or other similar material, which will not slip readily when brought in contact with the side of a wheel, B′. This construction or arrangement of the friction wheel is fully shown in Fig. 7. The wheel B′ is placed on a shaft, C′, and the former is provided with a broad periphery, which projects considerably beyond each side of the plate. On the shaft C′ there is also placed a pulley, D′, around which a belt, E′, passes from the driving-shaft C. The belt V passes around the wheel U and the wheel B′, said belt being rendered operative or inoperative by means of an idle-pulley, G′, placed in a suitable frame, H′. The shaft W, on which the sliding hub X and pinion h' are placed, has its upper bearing in a bar, I′, which is movable and is operated by a lever, J′. (Shown in Fig. 4.) The lower bar, K′, in which the shaft W is stepped, is also movable, working on a pivot, r', at one end, and having a spring attached to it near its opposite end, said spring having a tendency to keep the bar K′ toward the wheel B′. The upper bar, I, is also pivoted at one end, as shown at t', and the spring of the lower bar, K′, has a tendency to throw the upper bar, I′, outward.

When the mill is in operation, the log is fed to the saw through the medium of the wheel B′, friction-pulley A′, pinion k', and wheel U, the lever J′ being operated by means of the foot in order to throw the pinion k' in gear with the teeth of wheel U, the lever J′ being retained in position by suitable fastening. The feed motion of the carriage R may be varied or regulated as desired by raising or lowering the friction-pulley A, which is done by moving the lever p'. In order to gig back the carriage R, the fastening which holds the lever J′ is actuated so as to release said lever and admit of the pinion k' being thrown out from the teeth of the wheel U, and the belt F is tightened by adjusting the idle-pulley G′ by means of a cord or rope, or any suitable contrivance, so that said belt will turn the wheel U.

I would remark that the saw k, I prefer to have narrower at the top than at the bottom—say one-eighth of an inch narrower for every inch in length.

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

1. The arranging of the sill-pieces B B′ with keys c and wedges d, substantially as shown, to admit of the adjusting of the driving-shaft C, whenever required, to maintain the horizontality of the same.

2. The cross-head G, formed with a turned cylindrical bar, i, and flattened ends or broad plates j j, in connection with the plate I and wooden, leather, or other suitable bearings, k and the guides H H, all arranged substantially as herein shown and described.

3. The plates s s, formed or constructed as shown, and attached to the upper end of the saw K, in connection with the plates v, guides L L, and pendent bar M, having a longitudinal or vertical slot, u, in it to receive the plates s s, substantially as set forth.

4. The bracket N, attached to the fender-sill

g, provided with a slot, *a'*, and wooden bars *d' d'*, attached to it, as shown and described, to form adjustable saw-guides, as set forth.

5. The movable or adjustable frame P, with saw-guides O O attached, in combination with the bracket N and guides *d' d'*, arranged as herein set forth.

6. The band and toothed wheel U, in combination with the wheel B', friction-pulley A', provided with the leather or other suitable material, *g'*, in its periphery, the pulley A' being placed on an adjustable shaft, W, which has a pinion, *k'*, placed on it, and the wheels U and B having a belt, F', passing around them, which is rendered operative or inoperative by an idle-pulley, G', all arranged as shown, for communicating a feed movement to the carriage and gigging back the same, as set forth.

7. Arranging the friction-pulley A' so that it may slide on the shaft W, and moving said pulley on its shaft by the means herein set forth, when said pulley thus arranged and operated is used in connection with the wheel B' for the purpose specified.

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