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A. DELANEY & J. M. BOND.

SAW MILL SET WORKS.

No. 321,282. Patented June 30, 1885.

Fig. 1

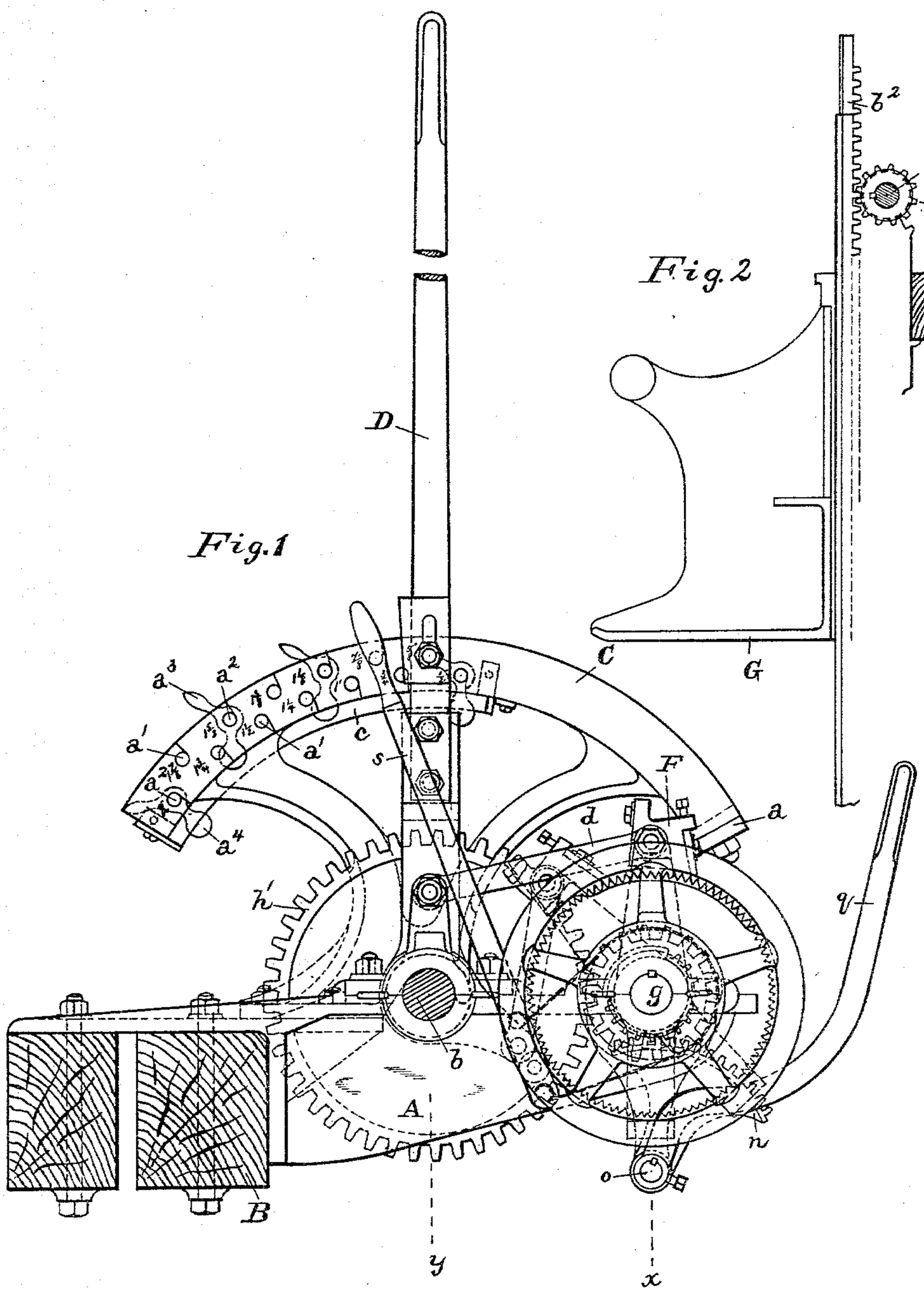

Fig. 2

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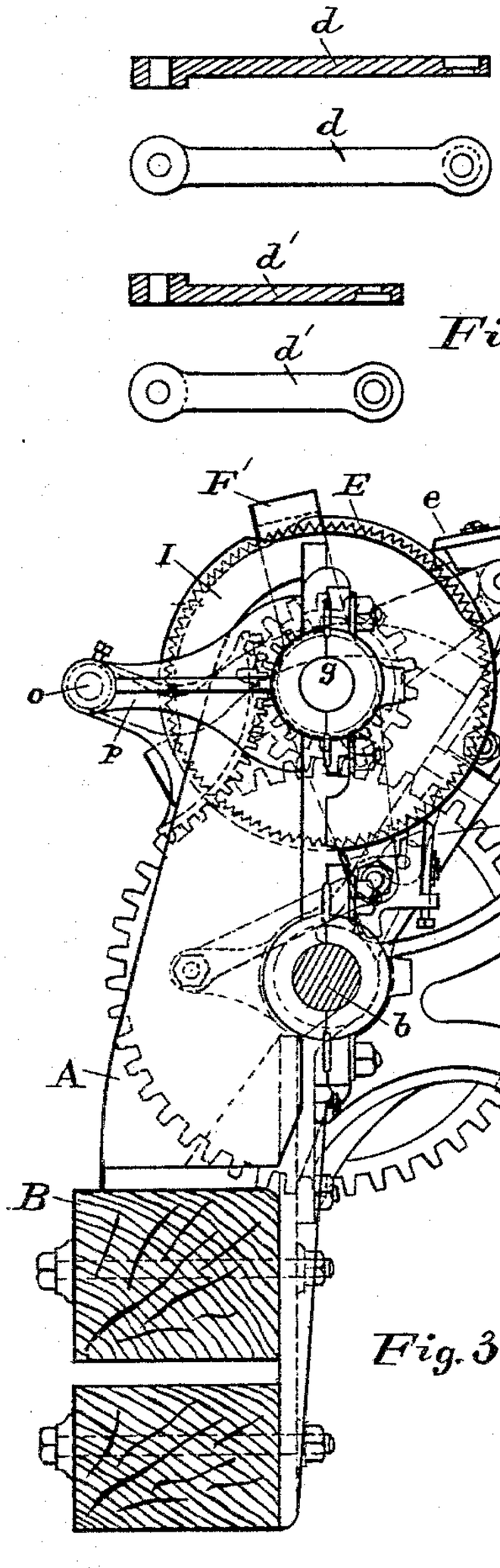

Fig. 7

Fig. 8

Fig. 3.

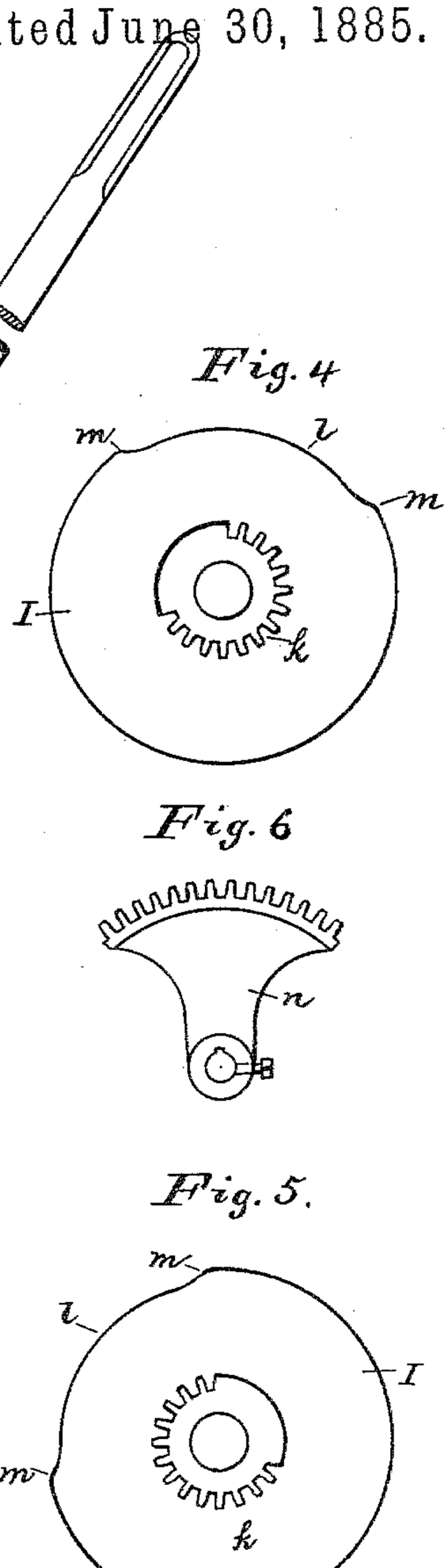

Fig. 4

Fig. 6

Fig. 5.

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Fig. 10

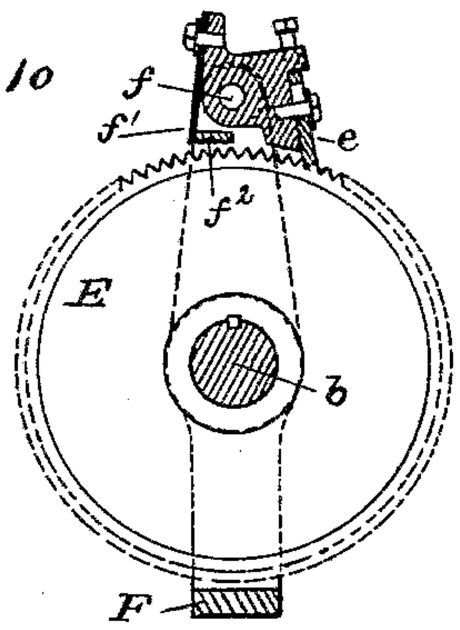

Fig. 11

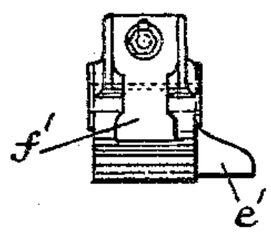

Fig. 12

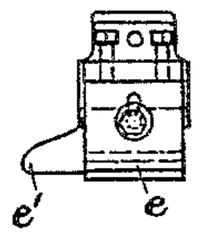

Fig. 9.

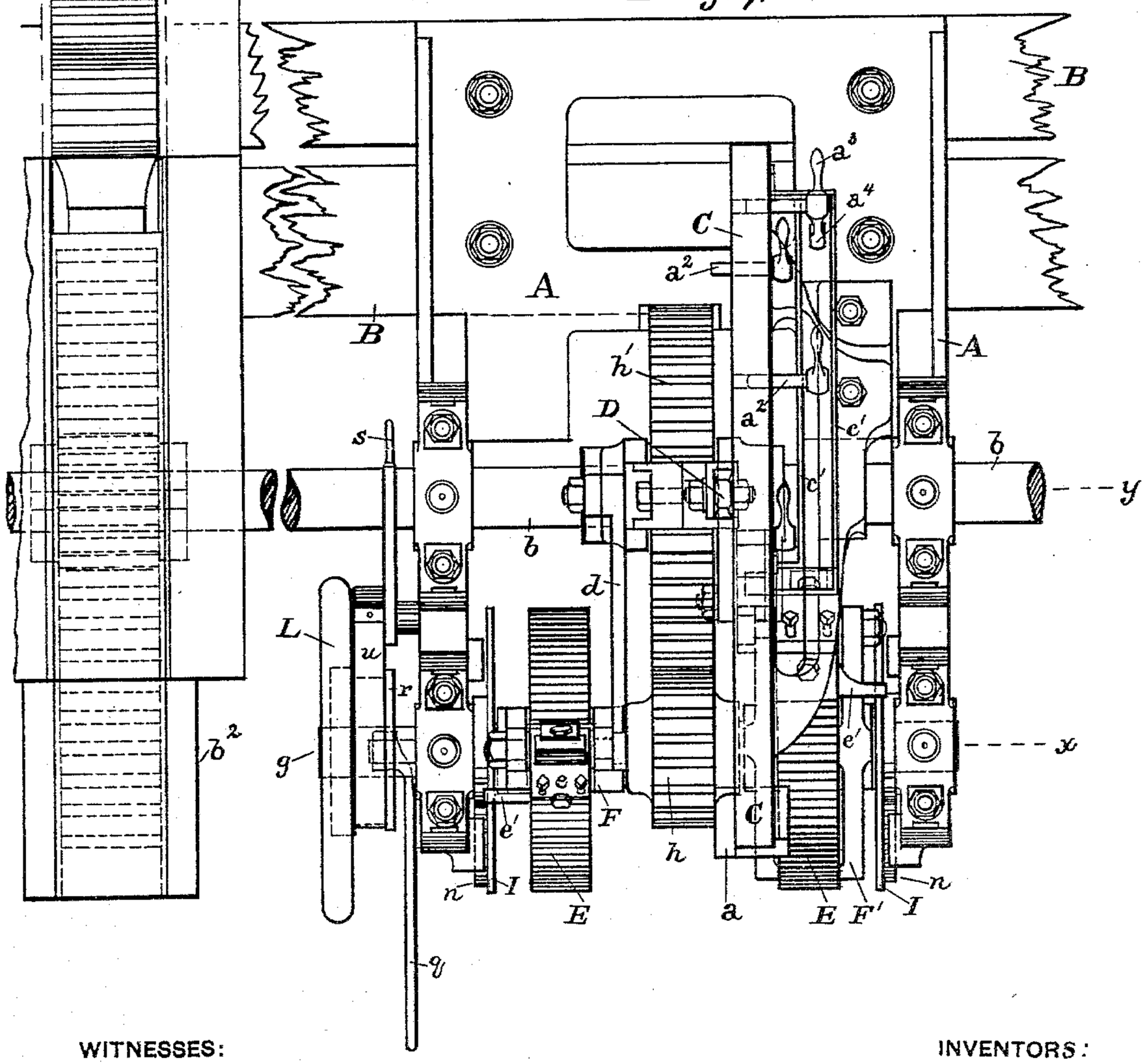

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Fig. 15

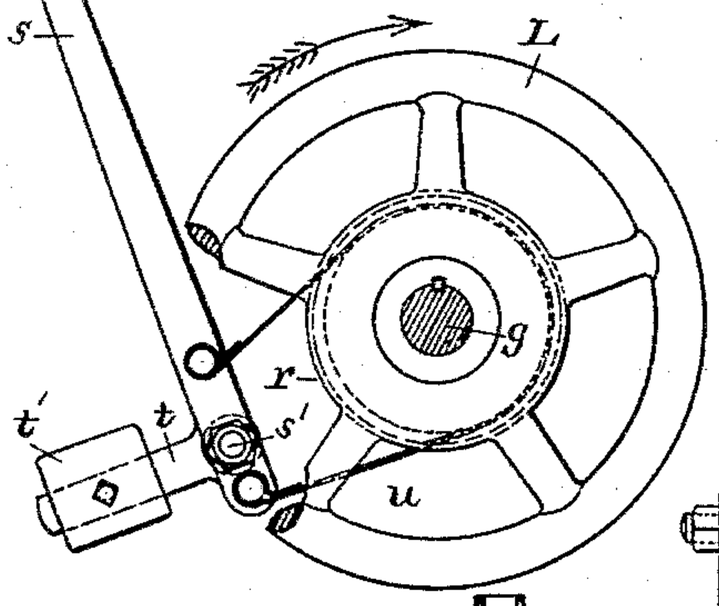


Fig. 14

Fig. 16

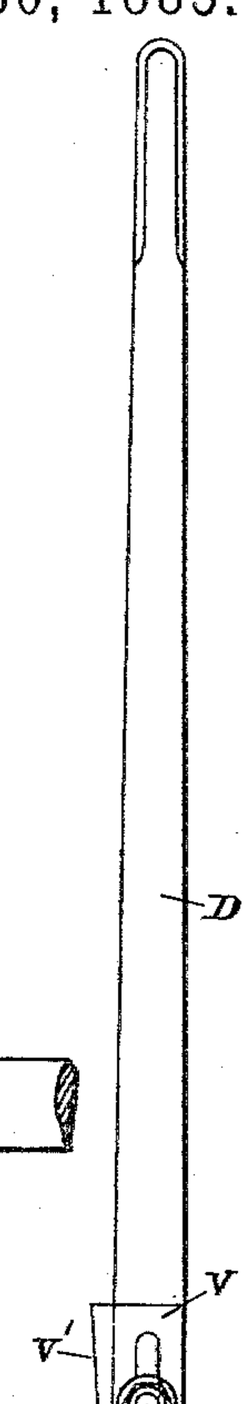


Fig. 13

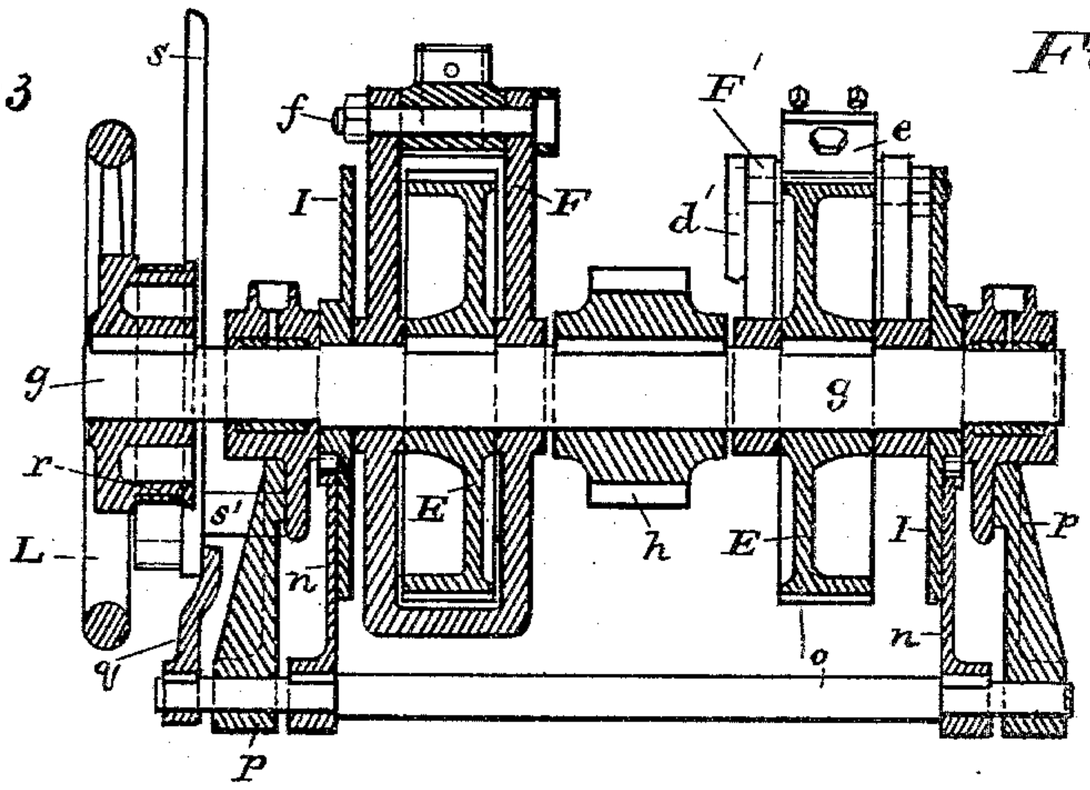
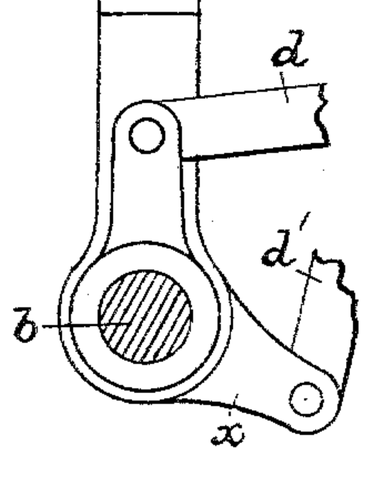


Fig. 16



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UNITED STATES PATENT OFFICE.

ALEXANDER DELANEY AND JOHN M. BOND, OF RICHMOND, VIRGINIA.

SAW-MILL SET-WORKS.

SPECIFICATION forming part of Letters Patent No. 321,282, dated June 30, 1885.

Application filed April 14, 1885. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER DELANEY and JOHN M. BOND, citizens of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Set-Works for Head-Blocks of Saw-Mills, of which the following is a specification.

Our invention relates to new and improved set-works for head-blocks of saw-mills. The set-works of a saw-mill is that part of the mechanism by which the timber or boards to be sawed are shifted laterally with respect to the saw, so that any thickness of board may be cut. The mechanism hereinafter described is adapted to set out the timber in such manner that it may be cut to the fractional part of an inch without requiring on the part of the sawyer any calculating or nice adjustment of parts.

Our invention consists of novel parts, combinations of parts, and novel features of construction, as hereinafter set forth and claimed.

The invention is illustrated in the accompanying drawings, in which Figure 1 is a side elevation of the improved set-work mechanism. Fig. 2 is a view of the knee. Fig. 3 is an elevation of the set-works on the side opposite that shown in Fig. 1. Figs. 4 and 5 are views of the two cam-plates, each of which lifts one of the pawls from a ratchet-wheel. Fig. 6 shows one of the sectors which move the cam-plates. Figs. 7 and 8 are views of the link which connects the actuating-lever with the pawl-carrying levers. Fig. 9 is a plan view of the head-block set-work mechanism. Fig. 10 is a side view of a ratchet-wheel and section of a pawl-carrying lever. Figs. 11 and 12 are back and front views of the pawl. Fig. 13 is a vertical section lengthwise of the shaft *g*, (see line *x*.) Fig. 14 is a vertical section lengthwise of the shaft *b*, (see line *y*.) Fig. 15 is a view of the friction-brake and hand-wheel. Fig. 16 is a view separately of the actuating-lever.

The frame A of the mechanism is bolted to the log-carriage B of the saw-mill. The quadrant C is mounted on the frame, and has at one end a fixed stop, *a*, and the actuating-lever D is pivoted loosely on the main shaft *b*, and in one direction said lever can go no farther than the fixed stop *a*. Holes *a'* are in the quadrant, and the face of the quadrant has a figure or a fraction, or both, near each hole to designate a given thickness of board. Several movable pins, a^2, are employed in these holes, and are adapted to be shifted from one hole to another. Each movable pin has a head provided with a handle, a^3, and a pendant, a^4. These pins are inserted in and withdrawn from the holes of the quadrant at the back side thereof, and when the end of any pin a^2 projects beyond the face side it serves as a stop, and limits the movement of the actuating-lever when moving away from the fixed stop *a*. The back of the quadrant has two guards, *c c'*, (shown in Figs. 1, 3, 9, and 14,) a space being between the quadrant and inner guard and another space between the inner and outer guard. The pendants a^4 of the movable pins normally occupy these spaces, and thereby the guards keep the pins from moving. By grasping the handle a^3 the pin in any hole may be partly turned to swing the pendant clear of the guard. The space next to the quadrant is for the pendant of that pin which for the time being is in use as a stop, and the space between the inner and outer guard is for the pendants of all the pins not in use. All said pins are thereby prevented from slipping out of their holes.

The main shaft *b* extends the whole length of the saw-mill. On this shaft at suitable intervals are small pinions *b'*, which engage with racks b^2, attached to the main knees G of the saw-mill head-blocks, it being understood that the timber to be sawed will be held up to these knees by dogs or other suitable appliances, and thereby the timber will be moved toward or receded from the saw by means of the "fractional set-works" herein described.

Two pawl-carrying levers, F F', have the form of a yoke, and are mounted on a shaft, *g*, which extends in the same direction as the main shaft. They are connected with the actuating-lever D by link-rods *d d'*. The link-rod *d* is attached to the actuating-lever above its pivot, (the shaft *b*,) and the other link-rod, *d'*, to an extension, *x*, below the pivot. A ratchet-wheel, E, keyed to the shaft *g*, turns in the said pawl-carrying yoke. A pawl, *e*, is on

top of each lever or yoke and bears upon the ratchet-wheel, and each pawl has a lateral projection, e', at one side, which serves for a cam-plate to strike and lift or disengage the pawl from the ratchet-wheel, as hereinafter described. The pawl is pivoted on a bolt, f, and a spring, f', at the back of the pawl, bears on a projection, f^2, on the top of the yoke, and keeps the pawl in contact with the ratchet-wheel.

It will be observed that the position of the two link-rods $d\,d'$ is such that a movement of the actuating-lever in either direction will, through the medium of said link-rods, pawls e, and ratchet-wheels E, impart a rotary motion to the shaft g. A pinion, h, is keyed to the shaft g and gears with a spur-wheel, h', keyed to the main shaft b. The said spur-wheel is preferably about four times as large as the pinion, thus affording a great increase of power. The spur-wheel h', to give compactness to the mechanism, turns in a yoke (see Fig. 14) formed on the actuating-lever, and from one side of the yoke the extension x projects below the shaft and the two link-rods $d\,d'$, being connected to opposite sides of the said yoke.

It will be seen that the mechanism thus far described is sufficient to cause the saw-mill knees, and consequently the timber, to be moved toward the saw. For the purpose of reversing this movement or receding the saw-mill knees, a cam-plate, I, is loosely mounted on the shaft g at one side of each ratchet-wheel. Each cam-plate has a hub provided part of the way around with spurs k. The cam-plate I has its rim divided to form two diameters. (See Figs. 4 and 5.) The lesser diameter is that part, l, between the two shoulders m. When the pawls e are engaged with the ratchet-wheel, and are moving, the lateral projection e' moves over this lesser diameter of the cam-plate. Two sectors, n, are keyed on a rock-shaft, o, whose bearings are in hangers p, directly below the shaft g. Each of the sectors n gears with the spurred hub k of one of the cam-plates. A lever, q, is fixed on the rock-shaft, and when grasped by the sawyer serves to throw the sectors, and thereby bring the shoulder m of the cam-plates against the lateral projections e' of the pawls, and, by the projections rising onto the larger diameter of the cams, release the pawls from the ratchet-wheels E. When this is done, the main shaft b may revolve in the opposite direction, and so recede the knees of the saw-mill head-blocks.

Any suitable or well-known mechanism may be employed to turn back the main shaft, and the same may be supplied by any one skilled in the art. We have a special mechanism devised for receding the head-blocks, which forms the subject-matter for another application for Letters Patent, which latter will issue same date as this.

A hand-wheel, L, is fixed on one end of the shaft g, and is to enable the sawyer in emergency to have control of the parts connected therewith when receding. A brake-drum, r, is also on the shaft g, and may be made part of the hand-wheel. A differential brake-lever, s, is pivoted by a bolt, s', to the frame, and has an arm, t, provided with a weight, t', and a band, u, passes over the brake-drum, and each end of the band is made fast to the lever at an opposite side of the pivot-bolt s', one end, however, being nearer the said pivot than the other; or, in other words, each end of the band is at a different distance therefrom, making a differential lever. When the shaft g is turning to set up the knees in the direction shown by the dart, the brake-band u takes no effect; but on the reverse movement taking place, when the knees are receding, the brake-band, through the operation of the weighted lever, would apply automatically on the brake-drum, and thereby stop the receding mechanism, and the sawyer would have to lift the brake-lever s to release the brake-band.

The actuating-lever D has an adjustable stop, v, attached to it. (See Fig. 16.) One side of this stop is straight, while the opposite side, v', is inclined. The vertically-inclined side of the stop at all times projects beyond the side of the lever, whereby it is the part which comes in contact with the stop-pins on the quadrant. The position of the inclined stop on the lever D may be changed by sliding it lengthwise of the lever, and it is retained on the lever wherever placed by a set-screw. It will thus be seen that by raising or lowering the stop a different part of its inclined side v' will come in contact with the stop-pins a^2. This stop is to use when adjusting the mechanism, so that the pawls e may be just exactly engaged with the ratchet-wheels at the time the lever D brings the inclined side of the stop up to any of the pins a^2. As already stated, the face of the quadrant at each hole for the movable stops a^2 shows by figures the thickness of the board to be sawed. Supposing, for instance, it is desired to saw a board one and three-fourths inch thick, the movable stop a^2 at the hole having that mark is pushed out. The lever D is then moved from the permanent stop a up to the said movable stop a^2, and then back to the permanent stop. This movement of the lever D will have moved out the saw-mill knees the exact distance to allow of a board one and three-fourths inch thick being sawed, and will also make due allowance for the thickness of the saw. Thus the knees may be set for any thickness of board marked on the quadrant by one forward and back movement of the lever D. If it is necessary to saw a board of greater thickness than any marked on the quadrant, several movements of the lever must accordingly be made.

Having described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In set-works for head-blocks of saw-mills, the combination of the actuating-lever,

a quadrant having pin-holes and guards *c*, and stop-pins, each provided with a pendant, as set forth.

2. In set-works for head-blocks of saw-mills, the combination of the actuating-lever, provided with a stop having an inclined side which projects beyond the side of the lever and arranged to slide lengthwise of the lever, and a quadrant having stops against which the said inclined side abuts, as set forth.

3. The combination of the knees having racks, a main shaft, *b*, having pinions engaging with the racks, an actuating-lever, D, having a yoke pivoted loosely on the main shaft and provided with an extension, *x*, below the shaft, a spur-wheel, *h'*, keyed to the main shaft and turning in the said yoke of the actuating-lever, a shaft, *g*, having a pinion, *h*, engaging with the aforesaid spur-wheel, and two ratchet-wheels, E, one each side of the pinion, a pawl-lever for each ratchet-wheel, a link-rod, *d*, connecting one side of the yoke with the pawl-lever of one ratchet-wheel, and a link-rod, *d'*, connecting the extension on the opposite side of the yoke with the pawl-lever of the other ratchet-wheel, as set forth.

4. In set-works for head-blocks of saw-mills, the combination of the knees having racks, a shaft having pinions engaging with the racks, and provided with a spur-wheel, *h'*, a shaft having a pinion, *h*, and a ratchet-wheel, a pawl-carrying lever, F, mounted on the latter shaft and having a pawl with a lateral projection, *e'*, a cam-plate loosely mounted on the said shaft for disengaging the pawl, and a lever to actuate the pawl-lever, as set forth.

5. In set-works for head-blocks of saw-mills, the combination of a shaft, a ratchet-wheel on the shaft, a lever having a pawl with a lateral projection, a cam-plate loosely mounted on the shaft and having its rim divided to form two sections of different diameters, the greater one of which will lift the pawl, and provided with a spurred hub, a rock-shaft, and a sector on the rock-shaft to engage with the spurred hub of the cam-plate, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ALEXANDER DELANEY.
JOHN M. BOND.

Witnesses:
C. A. DELANEY,
WM. ZEOANZIGER.