2 Sheets—Sheet 1.

W. H. KNIGHT.

APPARATUS FOR BUTTING AND DRESSING TIMBER.

No. 189,864. Patented April 24, 1877.

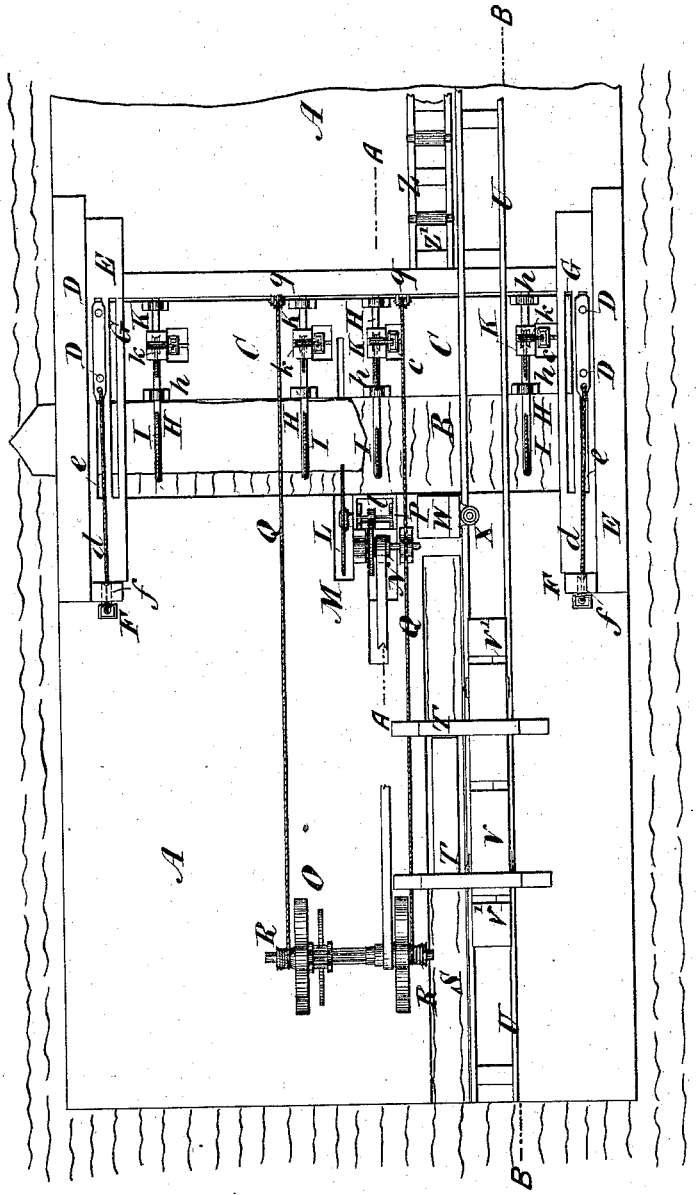

FIG. 1

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2 Sheets—Sheet 2.

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FIG. 2

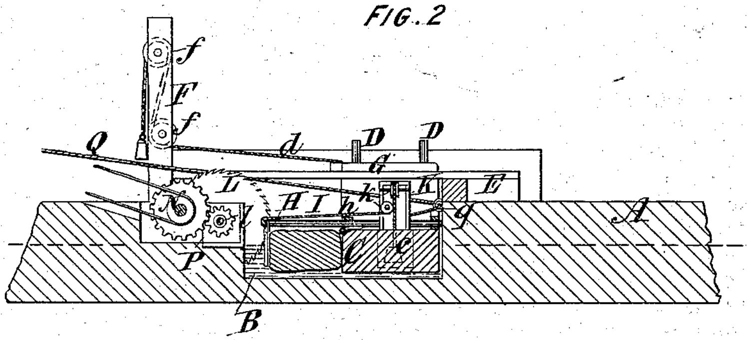
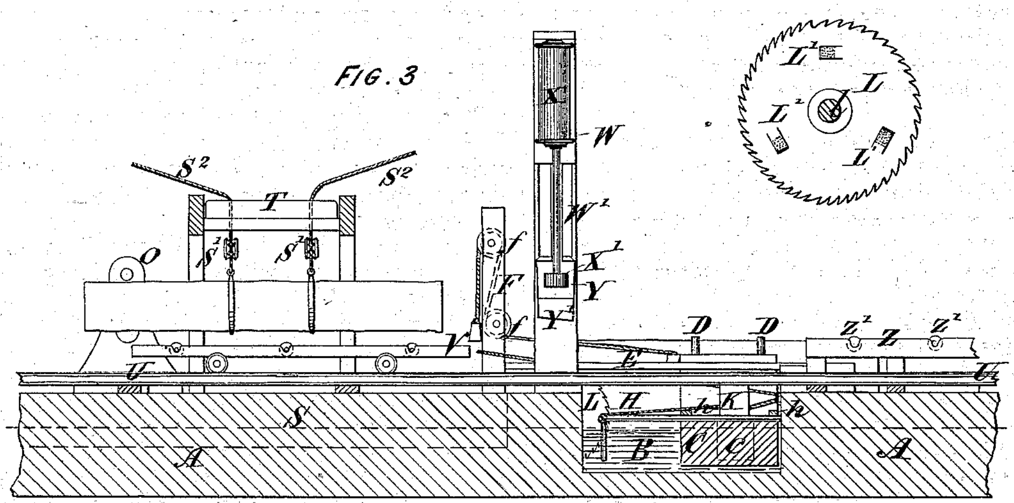


FIG. 4

FIG. 3



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UNITED STATES PATENT OFFICE.

WILLIAM H. KNIGHT, OF QUEBEC, CANADA.

IMPROVEMENT IN APPARATUS FOR BUTTING AND DRESSING TIMBER.

Specification forming part of Letters Patent No. **189,864**, dated April 24, 1877; application filed February 12, 1877.

To all whom it may concern:

Be it known that I, WILLIAM HENRY KNIGHT, of the city of Quebec, in the county and Province of Quebec, Canada, have invented certain new and useful Improvements in Apparatus for Butting and Dressing Timber; and I do hereby declare that the following is a full, clear, and exact description of the same.

I propose to perform the operation of butting or squaring the ends of logs by means either of a circular, vertical, or other suitable saw, (instead of by the ax, as at present,) and to do this by taking the logs directly from the rafts or cribs in which they are originally brought down the river, and butting them afloat, thus materially enlarging the sphere of this branch of industry in removing the existing restriction of it to tidal waters, while at the same time very largely reducing the amount of handling required, and saving time and expense.

I form in a floating ponton, preferably inclosed and roofed, a channel, into which the logs to be butted are introduced. In this channel is placed a feed-piece, from which project dogs, which gripe the log, holding it firmly, while the "feed-piece" is, by suitable means, drawn toward the opposite side of the channel, thus bringing the log in contact with, and keeping it pressed up against, a circular or other saw, which performs the operation of butting. As soon as this is finished, the feed-piece is drawn backward and the log released.

The timber to be dressed is conducted into another channel formed in this ponton, and thence raised onto a carriage, which brings it under the action of a cutting-knife working preferably in the same manner as a steam-hammer, which dresses one side while it passes along under it, the timber being run backward and forward until all four sides are dressed, and the operation is complete.

For fuller comprehension of my invention, reference must be had to the annexed drawings, forming part of this specification, in which—

Figure 1 is a plan view of my apparatus for butting and dressing timber. Fig. 2 is a sectional elevation through feed-channel, on line A A. Fig. 3 is a sectional elevation through ponton, on line B B, showing particularly the apparatus for dressing timber. Fig. 4 is a detail of modification of saw.

Similar letters of reference indicate like parts.

A is the floating ponton or stage, which may be of wood or iron, and provided with means for letting in and pumping out water, so as to raise or lower it to any floating level.

This ponton is, by preference, roofed and inclosed for greater convenience in working, and through it is formed a feed-channel, B, which is of such depth as to allow, when the ponton is at its highest level of flotation, the largest-sized logs to enter easily.

C is the feed-piece, which is a floating platform, framed and put together in any way desired, placed, as shown, in the channel B, (by preference running its entire length,) and having at either end uprights D, which pass up through long slots or openings *e* in cross-beams E E, spanning the channel B.

To these uprights are secured ropes or chains *d*, which are carried to, and pass under and over, sheaves *f*, carried in bearings in standards F, and being weighted at the ends, thus drawing the feed-piece over from one side of the channel to the other, guides G G passing up through other slots *e* in the cross-beams E, thus insuring the evenness of the movement.

H H are the dogs, four or more of which may be used, so as to hold to the feed-piece both ends of the log to be butted, from whichever side it may be brought in. They are of a length sufficient to allow of free movement of the largest log between their griping-surfaces and the front of the feed-piece when the latter is thrown back or in position to receive the log; are carried loosely in bearings *h*, so as to revolve, if struck; and have secured to their holding ends ropes or chains I, which pass over and under sheaves *k k*, set at right angles to each other, in short standards K, secured to the feed-piece, one to each dog.

These ropes I are carried down into recesses *c*, formed in the feed piece C, (to the farther sides of which their ends are preferably secured,) weights being hung to as to slide upon them.

L is a circular saw of any desired diameter, carried on the end of a shaft, *l*, and revolving in a suitable recess, M, motion being imparted to it (preferably through gears, so as to attain

the necessary speed with the greatest economy of power) by a pulley, N, driven by a belt either directly from a small engine placed in the ponton, or from a winch, O, actuated by such an engine or provided with its own motive power.

The chamber P, formed in the ponton, in which is set the immediate driving mechanism of the saw, is completely shut off from the recess M; and a stuffing-box is placed on the shaft L, so as to keep the chamber P perfectly clear of water. A cap or cover is also placed over the saw for the same purpose.

It may in some cases be found desirable, where a great depth of water can be obtained, to substitute for the circular saw a vertical one, to which motion may be imparted from the engine by any of the ordinary mechanism used to operate such saws in a mill.

If desired, the saw may, at one or more points near its periphery, have a portion of its metal detached, so as to project, as at L′, beyond its face, this piece having the face farthest removed from the saw formed with a file or rasp surface, thus acting as a scraper upon the butt-end of the log to be operated on.

Q Q are ropes, secured at one end to the feed-piece C, passing through sheaves *q*, attached to the ponton, as shown in the drawings, and having their other ends carried to and secured on gypsies R, mounted on the shaft of the winch O, or of the engine giving the motive power. It must be understood, whatever may be the exact construction of this engine, that means must be adopted for instantaneously disconnecting it from the driving-gear, such as, for instance, a cone-pulley, being used as the driving-pulley; or a slip-pulley or friction-clutch, or any like device, may be adopted for the above purpose.

S is a channel, preferably at right angles to the channel B, and distinct from it, into which the timber to be dressed is conducted, and from which it is raised by blocks S^1 and tackle S^2, passing through the longitudinal beam of a staging, T, erected at any convenient spot over the channel S and tramway U. The ropes S^2 are conducted in contrary directions to the opposite ends of the building, and there pass over sheaves, and are brought back and secured to the gypsies R. Upon this tramway U runs a carriage, V, to which a forward or a backward movement is imparted by means of a rack and pinion, or any other of the well-known devices used for that purpose in saw-mills.

The timber raised from the channel is laid upon this carriage, adjusting-pieces V′ being used to secure it in the proper position.

The mechanism for dressing the timber is as follows: W is a standard, upon which is secured a cylinder, X, (to which steam is furnished from the boiler of the main engine,) provided with proper slide, cut-off, &c., to the piston X′ of this cylinder being attached a pitman, Y, working up and down in guides W′, formed in the standard, and carrying a cutting-knife, Y′, the edge of its blade forming, as shown in the drawings, an oblique angle with its narrow sides, for the purpose of insuring the successive, instead of the simultaneous, contact of the various points of the edge with the surface of the timber to be dressed, and by this shearing motion obtaining a smoother surface.

This knife may be attached to the pitman in any usual or convenient way, such as by forming in the lower edge of the latter a dovetail, into which the knife is slipped, and secured in place by set-screws.

It will be understood that this apparatus may be constructed so as to give the piston any length of stroke desired, and that the quickness of its operation will be regulated by the speed at which the carriage V travels and the width of the cutting-blade.

The tramway U is, as shown in the drawings, carried the whole length of the building, running up to and alongside the staging Z, which is provided with rollers Z′, for the purpose of removing the log from the building when the operation of dressing is finished.

The timber can, as the dressing of each side is completed, be turned or canted upon the carriage V, so as to expose another side to the action of the knife Y′.

The operation of my invention may be thus described: The log to be butted is, usually by men standing on a floating stage outside the ponton, guided from the pond into the floating channel B, and brought up into contact with the feed-piece C, when it is at once firmly seized by the dogs H, which, by the action of the weights sliding on the several ropes I, and hung in the recesses C, gripe and hold it firmly, the feed-piece being at the same time drawn by the weighted ropes *d*, passing through the standards F, toward the opposite side of the channel, the guides G insuring that this movement shall be at right angles to the line of the channel B.

Should by any chance the log in its entrance into the channel strike against either one of the dogs it will simply revolve and resume its position when the log is in place.

The movement of the feed-piece C across the channel brings the log held by it in contact with the circular saw L′, (at a point, of course, previously marked by the operator,) and holds it to it until the portion or butt to be removed is cut off, the gripe of the log at both ends by the dogs H preventing it from yielding to the pressure of the saw in its working, and insuring a square butt.

As soon as the saw has performed its work, the shaft on which the gypsies R are set is put in gear with the engine which supplies the motive power, either by engaging the friction-clutch or slipping the belt onto the pulley, and by its revolution winds upon these gypsies R the ropes Q, thereby drawing back the feed-piece to its original position, and the rear ends of the dogs H, coming in contact with the ponton, leave sufficient space between their hold-

ing portions and the feed-piece to allow the butted log to be drawn out. This part of the mechanism is then thrown out of gear, and the whole operation just described repeated as often as desired.

In dressing the timber, the stick is, as before, guided from the outside pond into the channel S, and brought under the staging T. Tongs, holdfasts, or any other usual and suitable devices connected with the blocks S^1, are then attached to the log, and the shaft carrying the gypsies R being then, as before described, put in gear, the ropes S^2 are wound upon them, thus raising the log out of the channel, and enabling it to be placed on the carriage V, the arrangement of these ropes preventing any straining of the staging. When once secured upon the carriage and adjusted to the proper position, the log is run forward until it comes under the action of the rapidly-moving cutting-knife Y′, the motion being so regulated that the carriage shall move forward nearly or the exact width of the knife at each stroke of the piston-rod X′.

When one side is thus dressed, the timber is canted or turned on the carriage so as to expose a fresh side to the action of the knife, the carriage being run back for that purpose, and so on for the four sides, thus performing the operation automatically and in a very short space of time.

What I claim is as follows:

1. A ponton or floating chamber having formed in it one or more channels, into which the timber to be butted or dressed is introduced, as herein set forth.

2. The combination, substantially as specified, of the feed-piece C and the floating channel B, in which it is automatically moved forward and backward.

3. In combination with the feed-piece C, the dogs H, arranged in bearings so as to revolve, and drawn back by means of weights and ropes I, set at right angles in the standards K, all substantially as and for the purposes herein set forth.

4. The circular saw L, placed in recess M, and driven by gearing set in dry chamber N, all as herein described.

5. In combination with a carriage carrying the log to be dressed, and advancing at a regulated speed, a cutting-knife, as herein described, moving in guides in a vertical standard, and actuated by the piston-rod of a cylinder, all substantially as and for the purposes set forth.

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