New Inventions.

American Marks in Birmingham.

An American ax company has instituted proceedings against thirty-six merchants and manufacturers for using their mark on the axes and other edged tools sold in England. The parties proceeded against do not deny the existence of the practice for the last fourteen years, and plead its notoriety for so long a period as a justification.

Vibration near Mill Dams.

A paper, by Professor Snell, of Amherst. read at the recent Montreal meeting, was upon the vibration of waterfalls. Acknowledging the reality of vibration produced by friction on the edge of the dam, he proved that it was sometimes produced by the vibration of air behind the fall. It is important, of course, to know the cause of this evil, which sometimes becomes so serious in the neighborhood of mill dams as to keep windows and doors continually rattling. We have known it to be cured in some instances by constructing an inclined platform to deflect the water down the stream as it struck the base of the fall.

Improved Water Wheel.

The water wheel represented in the accompanying figures combines to a considerable degree the peculiarities both of the Jonval and the Fourneyron turbines. The water is fed into a case around and over the wheel, and is caused to impinge against the buckets, in a manner analogous to the former, while it is discharged from the periphery of the wheel at a lower level, through buckets which are curved in a manner similar to those of the latter much approved wheel. The effect attained or striven for, in this as in all turbines, is to receive the water at a tolerable velocity, approximating that at which it would escape freely under the given head, and to finally discharge it from the wheel with no considerable motion in any direction.

A is the shaft, and B a suitable step therefor. C is the side, and C′ the floor of the penstock. C″ is the lateral passage through which the water is admitted. D D are guide plates arranged around the periphery of the upper portion of the wheel, and between which the water is led in its passage to the buckets. E is the cover, a fixed casting which is supported on the guide plates, D D, and which relieves the wheel from any pressure of the water above. F F represent simple supports of the penstock, and may be made of any ordinary material, and in any form most convenient. G is the main body of the wheel, cast in one piece. G′ is a ring at the half hight of the wheel. It is fixed to and forms a part of the wheel, and revolves with it. H H are radial buckets, and I I are Fourneyron buckets—those which are curved backwards, and through which the water is finally discharged. J is a cast iron ring which fits tightly yet easily to the series of of guide plates, D, as also to the cover, E. It is free to be raised or lowered by the rods, K K, the upper extremities of which rods are connected by pinions and a shaft as represented to the hand wheel, L, or to any other suitable device for hoisting and lowering to regulate the speed. When the ring, J, is lowered quite down, its edge makes a tight fit on the upper surface of C′, but on being raised it allows the water to flow inward among the guide plates, D, in quantities proportional to the extent to which it is elevated. It is represented in the figure as hoisted to its full extent, and also as partially broken away, the better to show the other parts.

The water is received in the penstock, C″ with or without a slight rotary motion therein, depending on the manner in which C″ is connected. It is advisable to so connect the passage, C″, that the water shall rotate in C in the same direction as the wheel revolves. In this reservoir its surface stands at nearly the same level as in the mill pond from which it is received, and the water presses with its full hydrostatic force on the various parts of the interior. When, by turning the hand wheel, L, the gate J is raised, the water flows through the spaces between D D, and strikes in a tangential direction on the radial buckets H, thereby giving motion to the wheel. The water descends in the curved space represented in fig. 2 to the part below the central ring, G′, and escapes from the edge of the radial buckets, H, only by rushing out through the curved buckets, I, thus aiding still further in urging forward the revolution of the wheel.

BALDWIN'S TURBINE WATER WHEEL.

Fig. 1

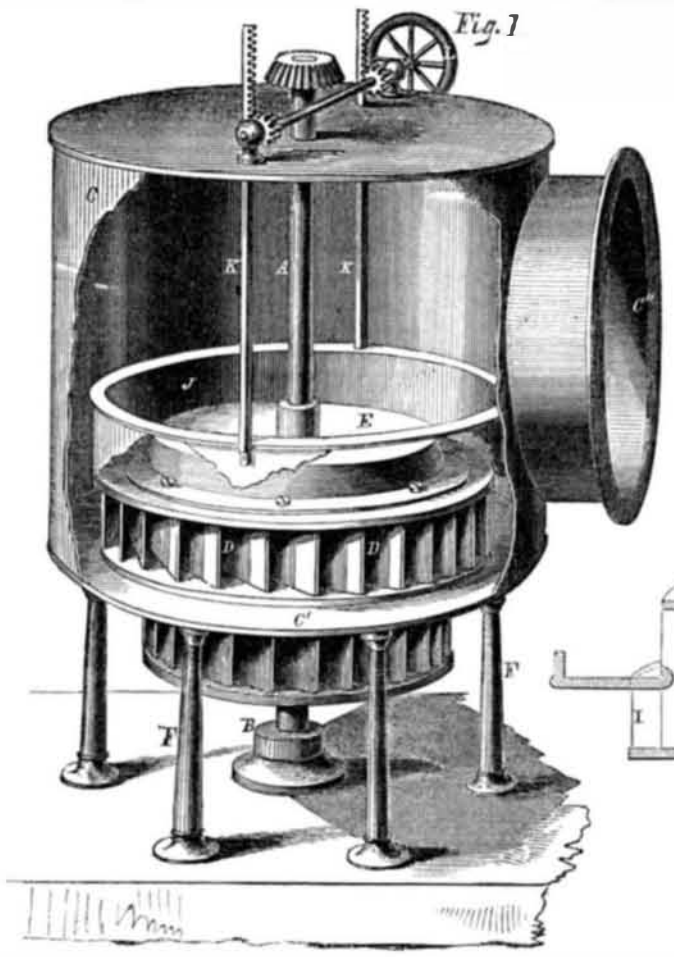
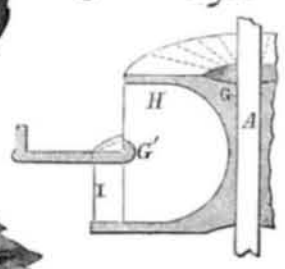


Fig. 2



It is thus discharged in lines so nearly tangential to the periphery, and at a relative speed so nearly equal to the actual motion of the latter, that its momentum is very trifling.

This wheel was patented on the 25th of November, 1856. For further information, address the inventor and patentee, Stephen K. Baldwin, Guilford, N. H.

WELLS' AUTOMATIC SAW MILL BLOCKS.

FIG. 2

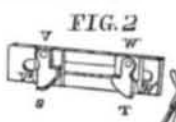


FIG. 1.

The ordinary head and tail blocks mounted on the carriages of saw mills are adjustable by hand, and their operation requires two men, or if only one is employed, he must travel at each setting of the log, from one end to the other of the carriage, and adjust each end separately. There are automatic head blocks, however, several of which we have at different times illustrated, in which the operation of setting the log is performed with mathematical precision, without any aid of the attendant. In the invention now to be described, the advantages of quite perfect mechanism are secured without sacrificing the convenience afforded by the ordinary method of adjustment by hand. The latter is especially desirable in sawing tapering joist, or the like. The form of head block here represented is designed for circular saw mills, but the same principle may be applied to those with reciprocating saws.

Fig. 1 is a perspective view of the whole, and fig. 2 a diagram of a small portion which is peculiarly important, and represented but obscurely in Fig. 1. A is the stationary frame or support, B B are the longitudinal timbers, and B′ the cross timbers of the carriage, which is by the ordinary means induced to travel backward and forward on ways, or on friction wheels, *b b*. The engraving represents both blocks, which are precisely alike, and represented by C C. D is a rack which is fitted to slide longitudinally in a suitable dove-tail groove on the upper surface of C. It is connected to the bent lever E, which latter is hinged to C at the angle E′, so that any angular motion imparted to E moves the rack D backward or forward transversely in the carriage. F is a knee-shaped casting also supported in the groove in the top of G. It is free to slide backward and forward in C, except for the action of three or more pawls, G, which are so mounted as to take in the teeth of the rack, D. F′ is a dog which aids in holding the log firmly in contact with F, and H is a lever by which the pawls, G, may be all lifted out of contact with D at pleasure. The lever, E, may be grasped by the handle represented at the nearest extremity, and it follows that any movement given to this lever imparts a longitudinal reciprocating movement to D, which in its turn, through the aid of the pawls G, imparts an intermittent motion to F. The saw is mounted near the further edge of the carriage, and by working the lever E of either head block, that extremity of the log can be fed forward to any extent desired. This constitutes the mechanism for setting the log by hand.

I is a long straight bar mounted in suitable bearings, J J, on the near side of the carriage, B, and free to slide longitudinally therein. K K represent adjustable blocks mounted on I. On K is an upright projection, as represented, and E is slotted to fit thereon. The levers, E, of both the head blocks, C C, being thus connected to I, any longitudinal motion of the latter will set both ends of the log simultaneously. On the upper surface of I, near one end, is a rack, as represented, and adapted to receive the segmental gearing on the band lever, N. By working N, therefore, the bar I may be moved at pleasure, and by adjusting the stop, O, in the curved slot represented at the side of N, the extent of the motion of the latter, and consequently the extent of the motion of the levers, E, and of the parts F F′ may be graduated. This provides a very efficient means of setting both ends of the log simultaneously by hand.

It now remains to describe the device by which this latter movement is effected automatically. On the side of I is a stout projection, I′. On the side of the foundation, A, is mounted in a suitable housing, a vertical bolt, L, which is urged upwards by a spring, not represented. By the means now to be described, this bolt is at each motion of the carriage allowed to remain up until the stop I is brought in contact with it. In this position it holds I stationary, while the carriage moves onward until the levers E have been moved to a certain desired extent, when the bolt L is automatically depressed, and the projection I moves freely past it. The motion of the carriage, B, is then by the ordinary means reversed, and the stop I is again brought into contact with the bolt L, and the levers E E are consequently moved back, feeding both ends of the log forward till at the right point, the bolt L is again depressed, and the projection I moves freely past. None of the parts are again disturbed until the carriage has traversed the whole extent of one cut and returned.

The automatic motion of the bolt, L, is induced as follows :—On the side of L is a projection, not represented, extending towards the carriage, B. On the side of the carriage, B are mounted two hanging cams, S and T, which are distinctly shown in fig. 2. They are mounted in adjustable frames, V M, and confined by stops thereon, V′ M′, so that they can only swing in the directions towards each other. The automatic adjustment of the log is always effected after the carriage has been run entirely back, so as to be clear of the saw. When the projection, I′ meets the bolt, L, the bar I remains stationary, thus moving the levers, E, and causing the pawls G to click over the rack, D, until the enclosed surface of the hanging cam, S, strikes the projection referred to on the bolt, L, and depressing it, allows the stop I′ to pass, after which the bolt L is again allowed to rise. On the return motion, the projection I′ again meets the bolt L, again stops the bar, I, while the carriage moves onward, and changes the levers, E E, back to their original positions, at which moment the cam T becomes effective, and in its turn depresses L by acting on the projection referred to and allows I to pass freely. By moving V and W into positions nearer together or further apart, the thickness of the boards or stuff sawed may be controlled with perfect accuracy, and the log is thus fed up to the saw without any assistance from the attendant until the whole is consumed, or so much thereof as it is desirable to saw.

This ingenious apparatus is the invention of Hiram Wells, of Florence, Mass., and was patented on the 9th of June last. It may, of course, be employed in connection with double or single saw mills, and is susceptible of many modifications. Either or both the levers E may at any time be lifted out of connection with the bar I, by simply grasping the handle, as represented, and the apparatus gives a very perfect control of the feed of the log in every respect. For further information address H. Wells & Co. at the above place.