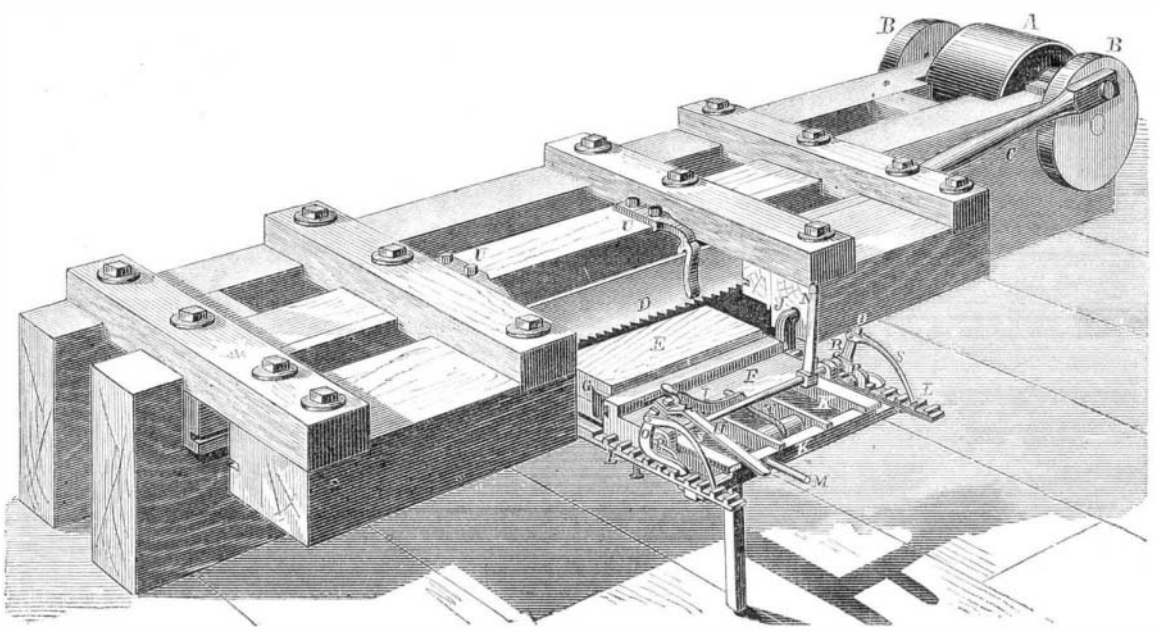
Improved Machine for Cutting Staves.

Two classes of machines have been employed for cutting staves; namely, those which operate upon the principle of cleavage, the wood being first steamed, and those which saw out the stave with curved faces. Of the latter class, the barrel-saw machines have been principally employed notwithstanding there are radical defects in the operation, well known to those who use them; one of the principal faults being, that in obstinate descriptions of wood, these saws will become more or less cramped out of their circular form, bind, and otherwise vex the operator, as well as perform the work imperfectly.

The improved machine herewith illustrated, may be used advantageously for cutting staves in all kinds of wood, hard and soft, and for all sizes of staves within ordinary requirements; and it could also be constructed to cut staves for the largest brewers and dyers' tanks, by sufficiently enlarging its dimensions, a great advantage over machines employing barrel saws, which cannot be employed for cutting staves of great length. In short it is one of the most substantial, and best constructed machines for this work we have ever met with.



BISHOP'S STAVE-CUTTING MACHINE.

Its operation will be readily understood by reference to the engraving in connection with the following explanations:

A is the main driving pulley keyed to a shaft which carries two crank and fly wheels, B, through which power is conveyed to the other working parts of the machines, of which there may be one on each side of the wood frame-work, but only one of which is shown in the engraving. C is the connecting rod or pitman which drives the saw, D.

This saw is concave on the side shown in the engraving, the curvature being that desired for the staves. This form gives it great rigidity, so that no saw gate or stretching apparatus is required. Guides, U, attached to the frame work are provided to steady the saw when working in obstinate kinds of timber, and the saw may be removed for filing and setting by simply taking out the key which connects it with the pitman.

Despensing with the gate renders the motion of the saw very light and a perfectly parallel motion is secured through guides not shown in the engraving, fastened to the interior of the frame work. The bolt, E, is laid on the metallic carriage, F, which slides on ways formed on the oscillating frame K. The frame, K, oscillates on the centers, J, by which the bolt is brought up toward the edge of the saw in an arc of a circle corresponding accurately to the concavity of the saw, This motion is imparted to the oscillating frame by the operator, who grasps with his left hand the handle, M, while the bolt is fed by an apparatus operated by the handle, N, and yet to be described.

The bolt is firmly held by spurs, G, one on each side of the metallic carriage, F, one of which is movable, and is driven home by the pivoted lever, H, and held there by the toothed arc, I, which engages with the lever, H, while the bolt is being sawed. The toothed arc, I, is provided with a suitable handle for raising it when it is desired to release the lever, H, and through it the movable spur, G.

We will now endeavor to make plain the means by which the feeding is accomplished. The prime motion by which this is attained is imparted by the right hand of the operator through the lever, N. When this is moved toward the saw, the bent pawls or hooks, O, attached to a common rock shaft with the lever, N, and which, while each stave is being cut, engage with the racks, L, preventing any motion of the metallic carriage toward the saw, are disengaged from the racks, L, at the same time that the upper and longer pawls, S, are drawn toward the saw and take in another tooth on the racks. The pawls, P, which play loosely on the rock shaft and engage with the opposite side of the same tooth with which O engages and prevents any motion of the carriage from the saw, are also lifted by means of an angular projection shown at R, which engages with the back side of O, as shown in the engraving. The motion of the lever, N, being then reversed, the pawls, S, engage with the tooth taken in by the former motion and the pivots which connect them with the bent pawls or hooks, O, become fulcrums of the lever, M, through which the carriage is forced along toward the saw until the bent pawls or hooks, O, again engage with the racks, L, preventing all further motion toward the saw, while at the same time the pawls, P, also engage with the rack as shown, preventing all backward movement. These pawls are so adjusted that the single forward and backward movement of the lever, M, described, feeds the bolt onward exactly the thickness of one stave; these movements being made at the same time, the front side of the frame in which the carriage rests is raised in order to bring the carriage on the opposite side of the frame down low enough to let the upper side of the bolt come under the edge of the saw.

The movements in feeding are therefore as follows, the left hand of the workman grasping the handle, M, raises the front side of the oscillating frame and depresses the bolt, while the right hand grasping the lever, N, moves it quickly backward and forward and the feeding is accomplished. Both movements are accomplished instantaneously and simultaneously. A cord or strap, T, attached to the carriage, F, and running over the roller shown in the engraving, thence over a pulley attached to the under side of the carriage, F, thence through a hole in the floor, has a weight attached which serves both as a counterpoise to the oscillating frame, K, and also acts to throw the carriage to the front when the pawls are raised.

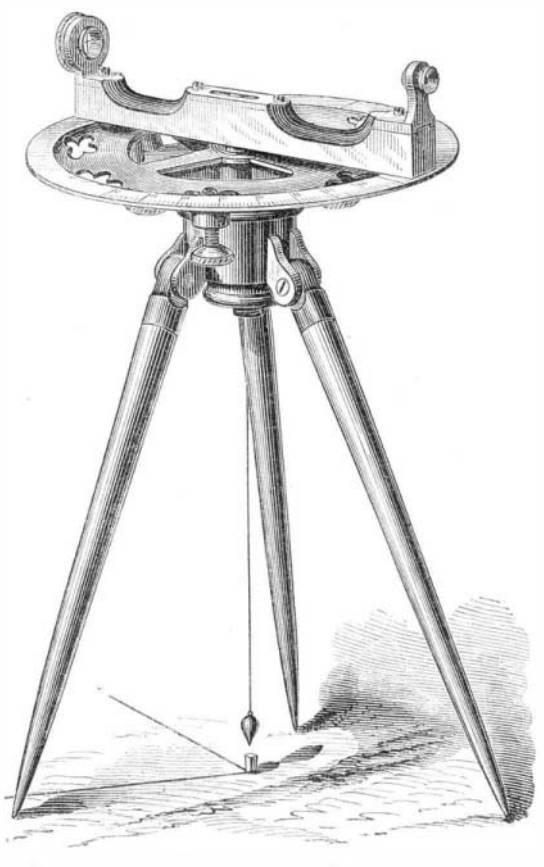
This machine has been in practical use three years, and the inventor informs us that no repairs have been found necessary during that time. He further states that a machine carrying two saws, with the attendance of two men will cut on the average seven thousand staves per day, these staves being sufficiently smooth and uniform, to be, after jointing, immediately set up into casks. Patented through the Scientific American Patent Agency, March 24, 1868, by W. R. and O. D. Bishop.

Orders for State rights, county rights, and machines, may be addressed to George M. Beach, Milwaukee, Wis., agent for the sale of this improvement.

SIBLEY'S IMPROVED LEVELING INSTRUMENT.

The instruments heretofore employed for leveling by surveyors and engineers, though excellent for the purpose and equally well adapted for carpenters and masons, in staking out foundations, or for farmers in leveling for ditching, etc., or for mechanics in general, were too costly for general use in their application to the purposes specified.

The invention herewith illustrated can be placed in the hands of all who desire it, at one fifth the cost of the old style of leveling instruments, and for most of the purposes alluded to is equally as good. For all distances within the scope of unaided vision they are sufficiently accurate.



This level is made of iron, which is one reason why it can be afforded so cheaply.

At one end it is provided with a sight having a small aperture with a short tube attached, to obviate the dazzling effect of the light, consequent upon reflection from the edges of the aperture. At the opposite end of the level is a ring with cross wires, so adjusted that the center of the sight aperture and the intersection of the wires are level when the bubble at the center indicates that the instrument is level.

The level stands on a circular graduated table, from the center of the under side of which is suspended a plumb in the usual manner. This plumb being adjusted over any point, as the corner of a building lot, and the first line laid out, stakes can be set in a line drawn at any desired angle to the first line, by simply turning the level upon a central pivot provided for that purpose, the required number of degrees as indicated on the graduated table.

The level is of ample length to secure accuracy in sighting, and the small aperture in the sight also enables the operator to run a line with great certainty. Being made of iron, it is not liable to warp or spring. The level may be lifted off the table and the adjustment made by screws provided for that purpose. Milled thumb-nuts and screws are also provided to adjust the table to level, and a neat tripod sustains the working parts of the instrument when in use.

Patented June 23, 1868. Address for further information the Warwick Tool Company, Middletown, Conn.

The Phosphoroscope.

If a person places a poker in the fire, everybody knows that a quantity of heat can be carried by it into the next room. Heat, then, like water in a jug, can be taken into certain things and carried away from its source. Not so with sound; there is nothing yet known that will hold sound, and make itself tangible to our senses when taken away from that which produces it. Odors, like heat, are however absorbed by the hardest precious stones and polished steel. Neither the most delicate scales nor the most powerful microscope will discover anything on a diamond that has been near to musk or patchouly; but their fragrance announces the fact of retention and emission of odor. Hitherto it has been an axiom that when the light is put out we shall be in the dark. Modern science now proves to us this need not always be so; on the contrary, we can now carry light away from its source. We can, as it were, bottle up some light, and store it away in a dark cellar, assured that it is there, for we can see it. In proof of this assertion a pretty toy has been constructed for this purpose, called a phosphoroscope or light-bearer, by Messrs. Harvey and Reynolds, of Leeds. It consists of an apparatus like a color-box, which contains, instead of paints, certain glass tubes, holding various light absorbers, such as sulphides of lime, strontium, barium, etc. By exposing this light box to the full flame of a gas-burner, or to the sun, or to the light of burning magnesium, light is absorbed to such an extent that any one can see what's o'clock in the dark. Each tube, according to its contents, glows with light, but of different colors, some red, others blue; but the brightest is the green. The venders call this instrument "The Phosphoroscope, or a Trap to catch a Sunbeam."—*Septimus Piesse.*

AERO-STEAM ENGINES---STORM'S EXPERIMENTS.

During a period of several years, dating from about 1851, Wm. Mount Storm, an inventor and engineer of considerable note, made a series of experiments with air and gases in connection with steam, with a view to promote economy in fuel used for generating motive power. An engine, called the "Cloud Engine," was exhibited by him at the Fair of the American Institute in 1855. The engine was named as above from the fact that the air, which was mingled in the cylinder with the steam, changed the latter into a vesicular condition, resembling fog. The inventor claimed 33 per cent, and those who saw it state that, at times, it did actually make a gain of even more than this.

Its operation was, however, fitful and unreliable, and it finally was withdrawn from public attention, and nothing more has been heard from it.

None of these experiments, however, seems to have been made on the same principles as those of Mr. George Warsop, of Nottingham, whose object is to attain to a method whereby the expansive force of heated air may be used in an engine without the difficulties attending the use of heated air alone in the cylinder, and which are met with in the engines of Ericsson, and others employing only heated airs.

In Warsop's experiments the object seems to have been to make steam assist in applying the expansive force of air.

Warsop, however, has found that a maximum effect from mixed air and steam depends upon the proper proportion of the two gaseous bodies, a conclusion which might have been theoretically drawn from a consideration of the relative capacities of air and steam for heat. Still such an inference would scarcely have warranted great hopes of economy from this source without extended experiment, and although extraordinary results—stated in a former article—are claimed, we shall not be surprised to hear that some offset to these claims has ere long been discovered.

Incidental to the results sought by Warsop is of course a better circulation in the boiler employed to generate the steam used in the experiments, from which some gain might be expected, though nothing like what is claimed.

In December, 1866, D. B. Tanger, of Bellefontaine, Ohio, took out a patent for a steam generator, between which and the apparatus of Warsop we can recognize no essential difference.

JOSEPH WHITWORTH, the inventor of the Whitworth gun, and Wm. Fairbairn, the celebrated engineer, have been created baronets.