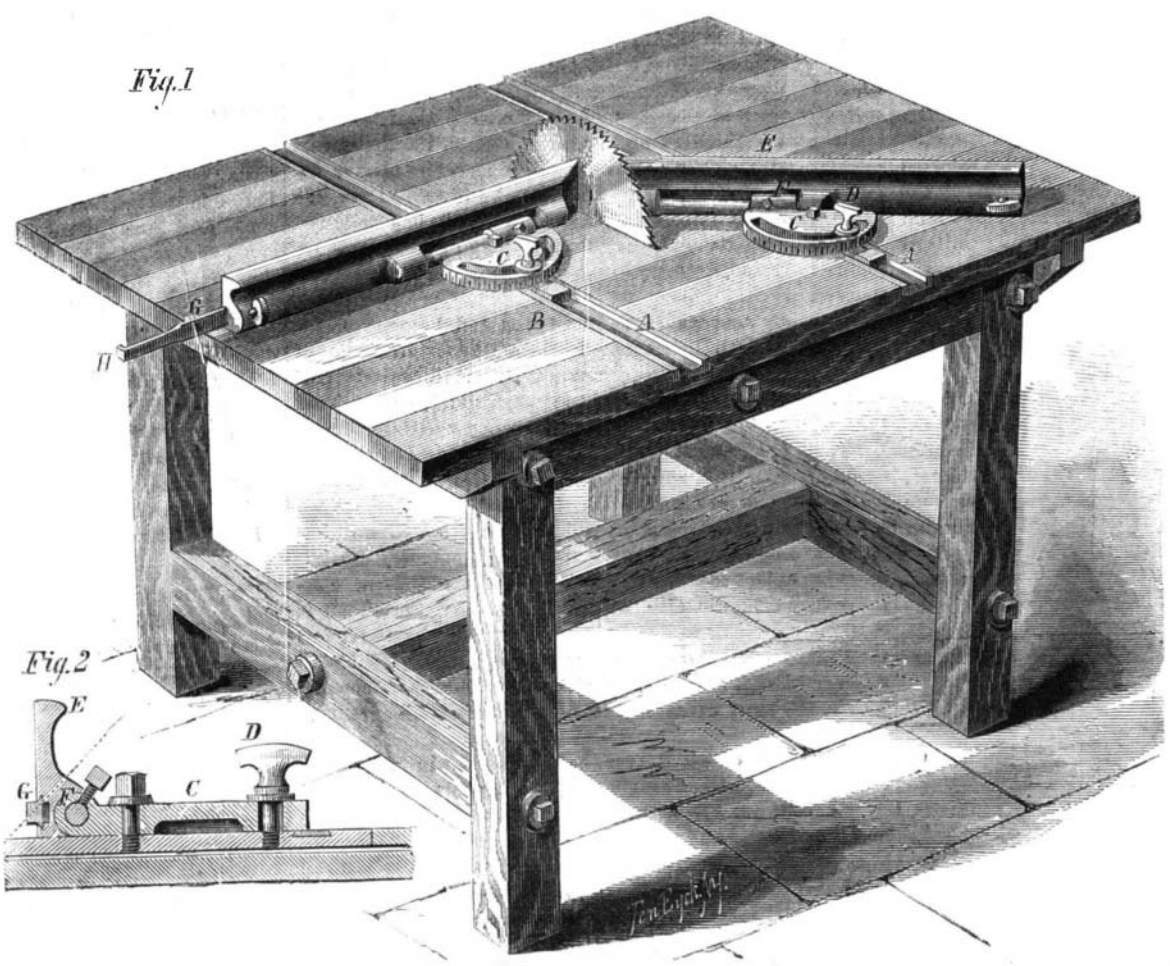
IMPROVED MITERING MACHINE.

The inventor of the device herewith illustrated aims to supply a machine that not only will cut any desired miter, but can also be used for cutting gains and rabbets at any angle, and be used in place of the crosscut saw for light stuff.

Fig. 1 gives a perspective view of the machine, and Fig. 2 a sectional view of one of the guides. Upon the table and upon opposite sides of the saw, are formed two grooves, A, which receive the sliding bars, B. At C are semicircular plates, which are pivoted at their centers to the bars, B, and held in position, when adjusted by the hand screws, D. Upon the curved edge of the plates, C, are formed scales of division marks, as shown in Fig. 1. Corresponding with these scales is a mark or line on blocks which are fitted tightly on the bars, B, though sufficiently movable, very accurately to adjust the scales with the saw. These plates, C, are connected to the guides, E, by a sliding hinge, F, which serves to longitudinally adjust the inner end of the guide closer to or further from the saw, as may be needed, and also enables the face of the guides to be set at any desired angle to the table, as shown by dotted lines (Fig. 2), for mitering moldings that are not fastened upon a solid. In the face of the guides, E, are inserted step bars, G, held in position by the set screws shown. These bars are longitudinally movable, and serve to saw pieces to a given length, by pushing the stuff to be sawn against the hook, H, formed on one end of said bars. This hook is made elastic and will, when pressed upon, sink into the groove behind it.



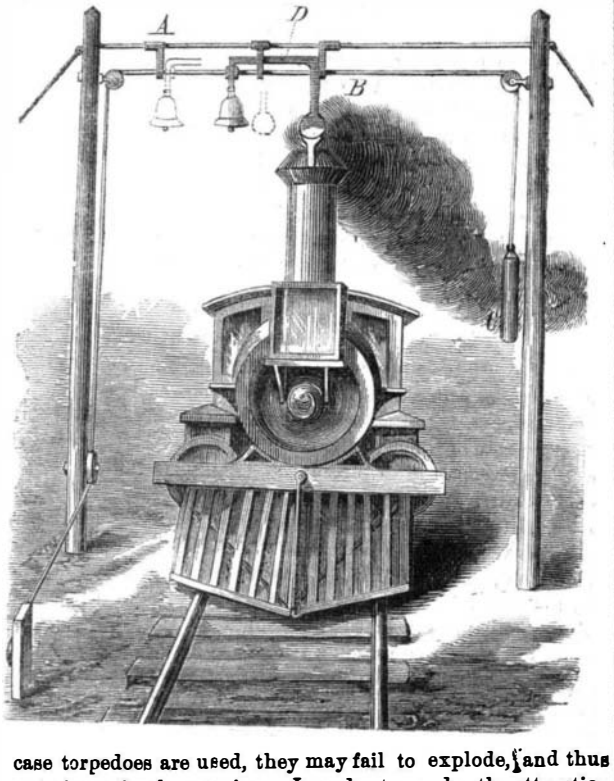
The operation of the machine will be easily understood by any mechanic, and no further explanation is, therefore, necessary.

By having two of these devices the operator is enabled to cut a different angle on each end of a piece of molding, thus saving the time of handling stuff twice. By exchanging them, the guides are made to face in the opposite direction, which is found desirable for many kinds of work. By putting a gaining head in place of the saw, the machine will do all the range of work in that line generally required in a shop. Among the other advantages claimed for this machine are easy and safe handling, susceptibility of accurate adjustment on all points, simplicity, durability, and cheapness.

Patented through the Scientific American Patent Agency, December 9, 1873, by C. Loetscher, 1,238 Jackson street, Dubuque, Iowa, of whom further particulars may be obtained. Patent for sale on reasonable terms.

SAFETY BELL SIGNAL FOR RAILWAYS.

At night and especially in times of dense fog, it may happen that a train traveling at high speed may run past a danger signal before the same is noticed by the engineer; or, in case torpedoes are used, they may fail to explode, and thus not give a timely warning. In order to render the attraction of the engineer a matter of certainty, M. Scheppers, in the *Chronique de l'Industrie*, suggests the simple arrangement represented in the annexed engraving. Two posts are erected on each side of the track, at a suitable distance from the draw, switch, or other point, the connection of which the engine driver must be informed of before proceeding. Between the tops of these is a stout wire, on which are three travelers, A, the lower and vertical portions of which serve for supports for a line, B, which passes over pulleys on the posts, is connected with the switch lever, and carries at its free end a counterpoise, C. Secured to the line, B, which passes through and is secured to its vertical arms, is a double lever, D. One arm carries a bell, the other extends down and has a disk-shaped end directly over the middle of the track. When the switch lever is properly adjusted, the counterpoise is raised, and the lever carried by the rope, B, over to the left of the track, as indicated by the dotted lines: should, however, the rails be wrongly placed or left open, the arrangement of the connecting lever is such that the counter weight draws the bell lever into the position shown. As soon as a train comes along, a projection on the smoke stack of the engine strikes the disk arm of the lever and rings the bell, thus warning the engineer. The usual signals for the eye, may, of course, be connected to apparatus in the ordinary manner.



LOETSCHER'S MITERING MACHINE.

Pressure Forging.

At the State Railway Works, Vienna, Austria, two large hydraulic presses are in use, the largest, with a piston 14 inches in diameter, giving 1,500 tuns pressure, and the second, with an 18 inch piston, giving 600 tuns pressure. The pressure in the pumps is 600 atmospheres. The piston descends upon the work, and for forging ingots it is armed with a hammer-like head. If, for instance, an ingot of soft Bessemer steel, weighing 2,030 pounds, is placed upon the anvil, and the piston brought slowly down, it is crowded into the mass as if it were putty or dough. The piston is then raised, and the ingot is moved forward for a second squeeze, and so on until the first half has been reduced in thickness, when it is turned on edge and the operation repeated. It is then turned end for end, and forged until the whole length has been reduced to the required size. It is cut into masses of the proper length by a chisel forced through the bar by the press. There is no noise or jar in the whole operation, which requires less time than the ordinary method of hammering or rolling, while the pressure affects the very center of the mass; and there is no distribution of the blow by the vibration of the foundation of the anvil and the surrounding objects, as there is with the violent impact of a steam hammer. The masses cut from the forged ingots are taken to a heating furnace and are made nearly white hot, preparatory to the operation of pressing. The molds or dies, made in several parts, if necessary, are securely held together by bands of wrought iron. A plunger head or follower, called the stamp, is attached to the piston and descends into the cavity of the mold. All the parts being properly adjusted, and the inside of the mold and the surface of the plunger being smeared with thick oil, a block of hot steel is thrown into the cavity, the plunger descends and dresses the steel each way into all the angles and recesses of the mold. When the plunger has reached the proper depth, the piston is raised and the mold and contents removed from under the press. A few blows of a sledge liberate the forging, which is thrown aside to cool. If the work is well done, all the angles are full and solid. All pieces of the same kind are alike in dimensions, and there is no great excess at any part to be cut away. The rapidity with which intricate forgings are made is one of the greatest advantages of the method. Of such objects as cross-heads for locomotives, twenty-five or thirty can be made in a day. The molds are made of cast iron, and are used cold. The plungers are generally cast, and duplicates are kept on hand for use in case of breakage. The process is also successfully applied to forming of boiler heads, steam domes, etc., the large plates of Bessemer steel being forced through a ring, while a great number of spokes for locomotive wheels are also manufactured in this way.

The total production of pressed forgings in these works for nine months was 7,830 pieces, weighing 1,071,200 pounds.

Hydrogen a Metal.

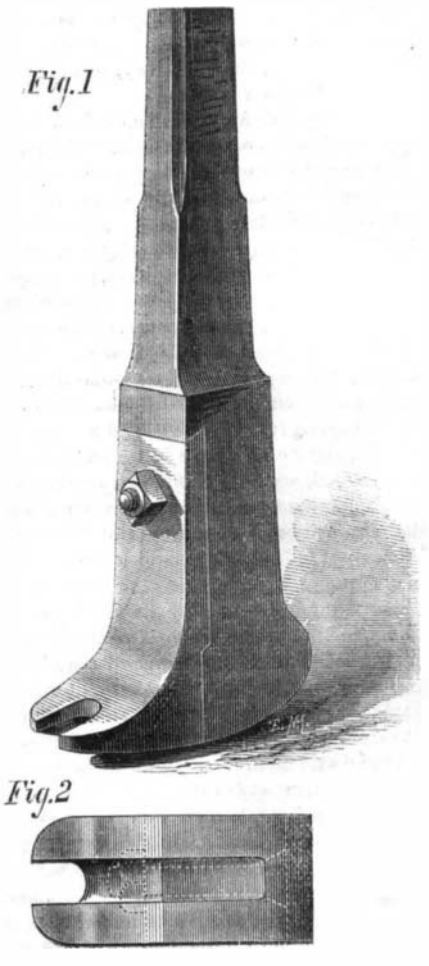
M. Dumas has communicated to the French Academy some curious experiments of MM. Troost and Hautefeuille on the hydrates of mercury or combinations of hydrogen with that metal. These combinations, it is said, so strongly resemble those which constitute the amalgams of mercury, with silver and other white metals, that it is hardly possible to doubt that they are themselves amalgams, and hence that hydrogen is a metal, a fact apparently indicated in many other analogies.

CHRISTIE'S RAILROAD DETACHABLE CLAW BAR.

The invention represented in the annexed engraving is an improved railroad bar, provided with a detachable claw which is so applied as to cause the entire strain to be thrown upon a jog and shoulder on the solid portion of the implement. The device, it is stated, will pull spikes straight out of the tie, leaving the bolt ready to be immediately driven again.

The claw piece, the shape of which is plainly set forth in our engraving, fits firmly up against the main portion of the bar, and is secured by a bolt passing through. It will be noticed that the bar has two flat faces, a jog, and an under cut, which fit the corresponding surfaces of the claw so that, as soon as the bolt is set up, the parts are tightly united together. The entire strain comes on the jog and shoulder and not on the bolt, which merely serves as a means of junction.

The trackmen, working on a line of road, may be furnished with a number of claws, and in case one should break a perfect one could be quickly substituted, putting the bar again in working order. The claw is quite cheap; and, according to the inventor, costs about one tenth the price of the ordinary jaw bar. Its appearance from below is shown in Fig.



2. We are informed that the device has been in practical use for two years past with excellent success.

Patented July 18, 1871. For further particulars see advertisement on another page, or address the inventor, Mr. David Christie, Chillicothe, Ohio.