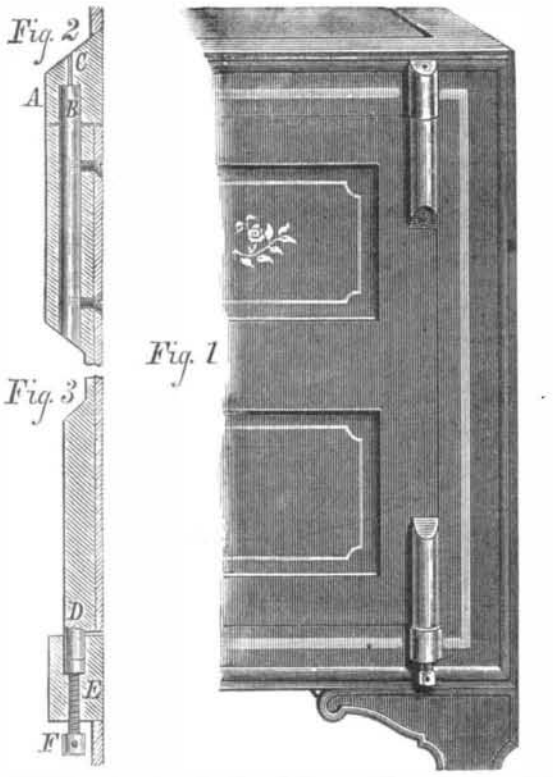
STEVENS' IMPROVED HINGE.

The invention represented in our engraving is a hinge, which is shown applied to the door of a safe, for which purpose it is especially well adapted. Upon the casing or body of the safe is cast, or otherwise attached, a socket, A, into which passes the pin, B. The latter is held in place by the screws shown in the sectional view, Fig. 2, and which have their heads within the safe. In order to remove the door, these screws are taken out; and a punch, pushed down the oil hole, C, speedily forces out the pin, B, in case the same should stick. The top of the door is then moved out a little, when the lower hinge, D, is readily lifted out of its socket, E. F is a set screw, provided to prevent the door from sagging as the tenant of the lower hinge wears away.



This invention is quite simple and easily applied, while it appears to be substantial and secure. Patented December 30, 1873, by Mr. Wm. F. Stevens, of Melrose, Mass., who may be addressed for further information.

IMPROVED PATENT GANG SAW TABLE.

This is an invention specially adapted to meet the wants of users of flooring machines, who have found difficulty in supplying material, sawn in strips from mixed widths of boards, fast enough to keep the floorer in operation. A good machine of the latter description should plane and match from ten to twelve thousand feet, broad measure, of four to six inch flooring, in ten hours; but it is hardly possible for a man to saw more than from six to eight thousand feet, into strips, in the same time and over a single saw. Hence it is either necessary to buy strips prepared at the saw mill (and these are rarely accurately sawn), have two saw tables for the floorer, or else not work the latter up to its full capacity, none of which are economical operations. Made on an ordinary saw table, strips are produced in varying sizes; and perhaps after some hours work, not enough of any one size can be sorted out to keep the matching machine at work, thus involving changing the apparatus so frequently as to prevent its performing its full amount of labor.

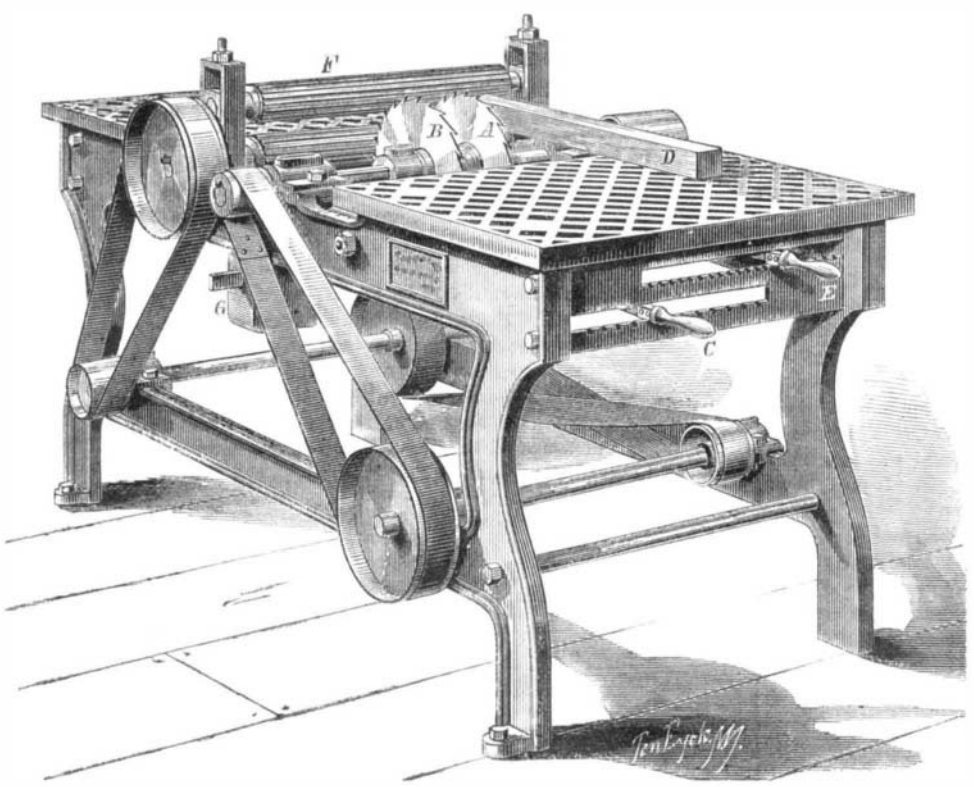
The device illustrated in the annexed engraving is claimed to meet the requirements above indicated. It is able to provide a supply sufficient to keep two matchers constantly at work. Two saws are used for slitting the lumber into strips of suitable width, one of which, A, is secured upon the arbor rigidly, and the other, B, is attached to a sliding and revolving sleeve and collar. This sleeve is provided with grooves to receive Babbitt metal, and works within a journal box which slides with it, and, besides, has a longitudinal channel to receive the feather by which it is made to revolve with the shaft while still sliding freely along the same. The lower part of the box is provided with a downwardly extending arm, at the end of which is an eye to receive a guide rod, which extends transversely across the machine. A mortise is made through the arm, between the box and the eye, to receive a lever which is pivoted at one end to the frame and terminates at the other with a handle, C, convenient to the operator. By means of this lever the arm, and with it the sliding sleeve and saw, B, is moved nearer to or further from the fixed saw, A, in order to govern the distance between said saws, and hence the width of the strip. At D is a gage which may be adjusted to any desired distance from the screw, A, by means of the hand lever, E which communicates with a sliding sleeve traveling on a guide rod, which sleeve is suitably connected with the gage.

The carrying or guide rollers, shown at F, grasp the sawn strips and carry them forward, thus acting also as feed rollers to guide the strips truly through the machine. The upper roller is made yielding by the application of the weight, G. It will be observed that no feed rollers are used to hold the lumber before the same reaches the saw; and by such arrangement, the operator is enabled to see, when the end of the timber is placed upon the table, whether the sliding saw or gage should be removed, so that all the material in the plank may be utilized.

The arrangement of two rows of notches, into which the hand levers are dropped to hold them securely in any position, will be readily understood from the illustration. The feed is driven from the saw arbor, so that a slip of the driving belt checks the feed correspondingly.

Though the machine is designed especially for planing mills, we are informed that it can be used as a strip machine in small saw mills, and the method of holding and moving the movable saw can be advantageously used on all the different makes of gang edgers. The gage can also be applied to the ordinary single saw table. The speed is from 2,500 to 3,000 revolutions per minute, and we learn that over 20,000 feet of dimension stuff can be made in a day from miscellaneous lumber, and a much larger amount from stock boards.

Patented August 12, 1873. For machines address the Erie City Iron Works (sole manufacturers of the apparatus for the United States), or George Carroll & Brother, Erie, Pa. For right to manufacture in Canada, address John McIntosh, Toronto, Ontario.



CARROLL'S PATENT GANG SAW TABLE.

The Welding of Iron.

When two pieces of ice are rubbed against each other, fusion take place between the surfaces of contact, at a temperature below zero. As soon as the pressure ceases, solidification is again produced and the pieces are welded together.

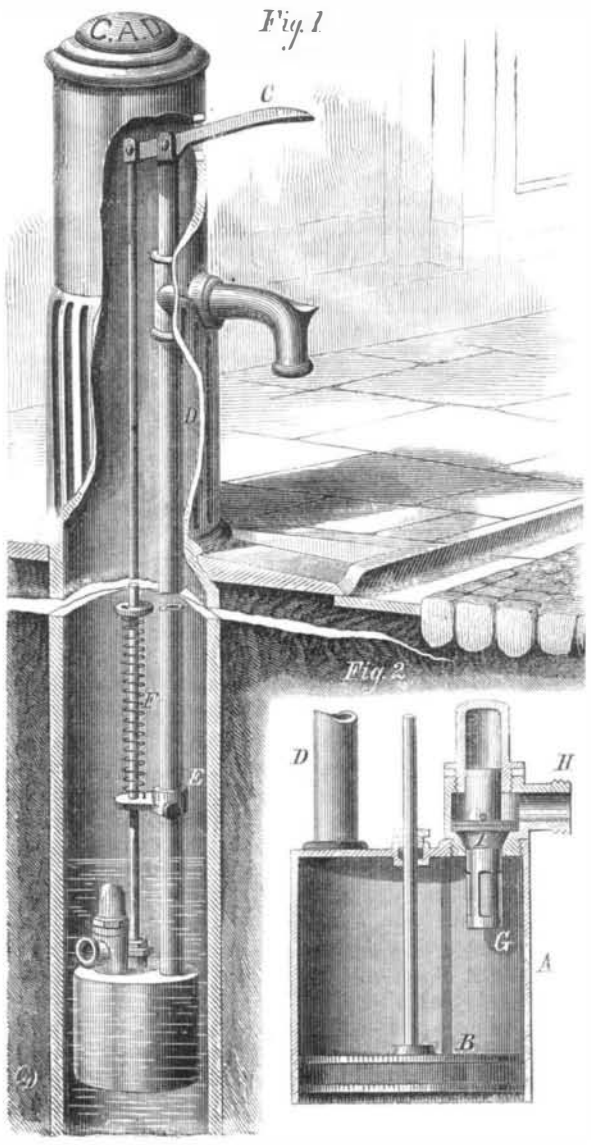
It seems to me that the welding of iron is a phenomenon exactly similar. The two pieces of iron are brought to a white heat, that is to say, more or less near to the fusing point. The repeated blows of the hammer, or the pressure of the rolls, lowers the point of fusion and causes a superficial liquefaction of the parts in contact, and thus welds the masses together; and this, because, like water, iron dilates in passing from the liquid to the solid state. Many other metals are similarly endowed; they all therefore may be welded like iron, if other conditions do not come in to oppose the manifestation of this property. Platinum welds easily at a white heat because its non-oxidizable surface, like that of ice, takes on a superficial fusion. To weld iron successfully, it is necessary that its surface should be clean, that is, free from oxide. Iron containng phosphorus welds more easily than pure iron, because its point of fusion is lower. Steel, which is more fusible still, welds at a lower temperature than iron, but the process is a more delicate one. Silver, too, like iron and platinum, has the property of expanding when it solidifies; but as it melts at a cherry red heat, it is easier to form it by casting than by welding. Bismuth and zinc are always included in the same class; but they are so very brittle near their fusing points that no one would think of attempting to weld them either by hammering or pressure. Iron in welding, therefore, only follows the example of water.

The fibrous state of iron is not a normal and regular one All crystaline iron, if the crystals are not too hard, breaks with a fibrous structure, if time be given, in the breaking, for these crystals to be drawn out into fibers. Iron which is fibrous is only iron in which the primitive crystals, surrounded by very thin films of slag—and thus separated from each other—have not been welded together during the rolling, but have been elongated into wires. A bar of such iron resembles a bundle of wires in its resistance to fraction, but it breaks with a granular fracture when exposed to a transverse blow, suddenly applied.—*M. Jordan.*

FOR a marking fluid, use coal tar dissolved in naphtha.

DAVIS' IMPROVED HYDRANT.

The hydrant represented in the annexed engraving is claimed to prevent freezing and waste of water. It is of durable construction, and is self-closing. The valve is not liable to become choked with dirt, as the passage of the water



serves to clean the orifice, while the pressure of the fluid keeps the valve down.

A is a cylinder or chamber, sunk in the well and provided with a piston, B, the rod of which connects with the handle, C. D is the eduction pipe, having a suitable discharge nozzle, as shown. To this pipe is attached a guide plate, E, Fig. 1, which may be adjusted to various elevations by means of a clamp screw. On the piston rod is a fixed disk, between which and the plate, E, a spiral spring, F, is extended. The latter, being stretched when the hand lever is depressed and the piston, B, raised, will retract and throw down the piston into place as soon as the force on the lever is remitted. G, Fig. 2, is a gravity valve, having a subjacent slotted tube and an upper head working in a guide. As the piston rises, the valve is carried up until the slotted tube receives, through the inlet pipe, H, a supply of water, which is then forced up through the eduction tube, D, and discharged. The chamber, A, is thus kept always in a condition to receive the water that may be left in the tube, D, after the flow has ceased from the spout.

I is a leather or flat flexible ring that is secured to the valve by a metal ring or pin, and which acts, in case of gravel or other obstruction settling between the valve and its seat, as an auxiliary valve, being forced by the pressure of the superincumbent water to cover any crevice made and to form a watertight joint.

Patented through the Scientific American Patent Agency, April 28, 1874. For further particulars regarding sale of patent rights, licenses, etc., address the inventor, Mr. John T. Davis, 1,212 Eleventh street, Southeast, Washington, D. C.

WIRE WORMS.—These are found in the greatest quantities in fresh new loam, just brought from the field, and such soil, when used for valuable plants, should be carefully examined, and the wire worms crushed; their brownish red bodies are easily seen. Mr. Tillary writes to the *Garden* that slices of potatoes or lettuce stems will likewise entice them where they are numerous. The slices should be placed under ground, and then frequently examined. He saved a bed of seedling gladiolus esthat were planted in some new loam, which, he found afterwards, swarmed with wire worms, by placing slices of potatoes and lettuce stalks in the ground after he found that some of the plants were flagging.