

HOWELLS' IMPROVED TRIP-HAMMER.

The accompanying illustration is a perspective view of an improvement in trip-hammers for which a patent was granted on the 10th of last April. The invention consists in the employment of an adjustable cone cam, as the lifting device of the hammer, by which the force of the blow is graduated in the most simple and efficient manner to suit different kinds of work in forging, and also to suit the strength of blow required at different stages of any work under the hammer. A, is the base block or sole plate; B B are pillar blocks forming supports and fulcrums for the hammer, C. The cone cam, F, for lifting the hammer, is secured on a rotating shaft E, which has its bearings in the pillar blocks, D. The cone cam is made with regularly tapering sides. There are two feathers, e, on the cam shaft, E, which permit the cam, F, to slide freely endwise, but which carry round the cam when the shaft revolves. G is a peculiar clutch; it has a bolster, G', standing up at each end of the cam, F, and a bottom plate adapted to slide in the bed plate, A, between the guide strips, a a. This slide clutch is attached to the rack bar, H, into which the pinion, P, of the vertical rod and gage plate, R, gears. K is the hammer head; L, the anvil; T, the usual tail block; and W, a fly wheel, which regulates the action of the hammer, whereby it is operated in a superior manner without any jarring.

It will be observed that, by taking out the catch pin in the gage plate, R, and turning the spindle of the pinion, P, the rack bar, H, will move the sliding clutch, G, back and forth, and also slide the cone cam, F, on its shaft so as to bring its varying diameter under the hammer, C, to give it the exact lift required to graduate the force of the blow upon the work on the anvil, and under the hammer head. A screw rod or lever may be employed in place of the rack bar and pinion to move the clutch; either of the devices will effect the object. This is a most simple and effectual manner of graduating the force of the blows. A cam weighing 756 lbs. can be slid upon its shaft by a boy. From the engine for operating this hammer, a cord is connected with the throttle valve, and is brought down to the frame, so that the operative can with his left hand, by drawing the cord, regulate the amount of steam, and with his right, move the cam so as to graduate the force of the blow given by the hammer. The cam can be moved rapidly on its shaft so as to forge a strip of metal half-an-inch in thickness, or a bar eight inches thick.

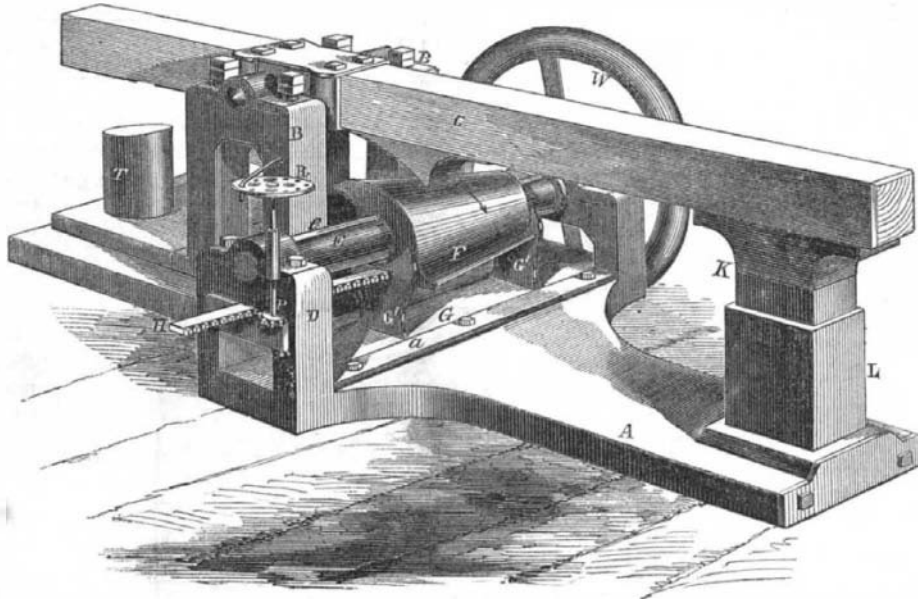
A tapering wedge with a rod attached to it, is used to shove under the helve, when the hammer is to be caught up, and when it is desired to start the hammer, the cam is slid gently back, when the catch wedge can be taken out, and the hammer easily brought into contact with the lifter.

The patentee states that a 400-lb. trip-hammer of this character has been in operation since the 5th of last April; it has been run at a speed of 250 revolutions per minute, and has given great satisfaction. Either a spiral metallic or wooden springs may be employed at the tail block to catch the hammer when it goes from a strong blow to a low one.

The patent for this invention was obtained through the Scientific American Patent Agency, and further information may be obtained by letter addressed to the patentee, David Howell, of Louisville, Ky.

NEW BENCH PLANE.

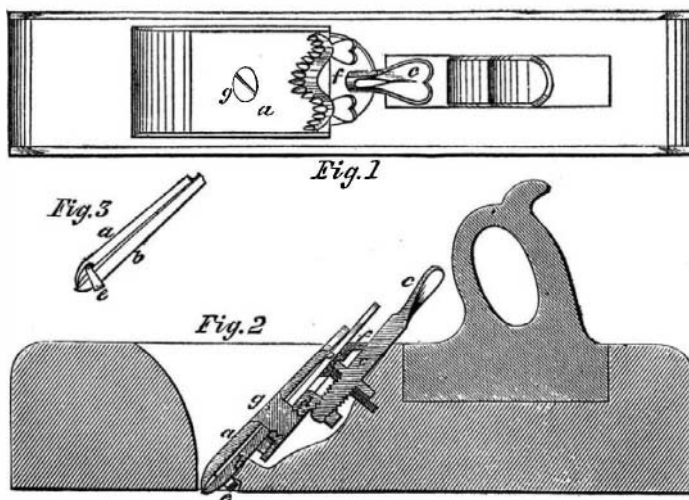
Although the carpenter's plane is one of the oldest instruments for reducing and smoothing wood, yet it has not hitherto been considered perfect, even after having received quite a number of improving touches during recent years. One well-known defect of the plane is that its cutting bit receives more injury during the reverse movement over the surface of a board than during its forward cutting movement. The improvement in bench planes represented by the accompanying engravings is



HOWELL'S IMPROVED TRIP-HAMMER.

designed to obviate this evil, so that the cutter will not be dulled when it is not doing useful work.

Fig. 1 is a top view of the plane; Fig. 2 is a vertical section of it, and Fig. 3 is an edge view of the plane bits detached from the stocks. There are double bits, a b, combined with each other, and the stock, as shown in Fig. 2, viz., the cutting bit, b, has a central slit which passes from the upper end about two-thirds of the length thereof. A metallic plate, f, which is secured to the after-side of the throat of the plane-stock is of such a shape that it furnishes a metallic bearing surface for the cutting bit, and also the requisite supporting and guiding bearings for the screw, c. The screw-shank of c is received within a screw aperture in the angular nut, d,



HUNT'S IMPROVED BENCH PLANE.

which works in a slot in the throat plate, f. The cutting bit is confined with the front bit a, and with the angular screw, d, by the screw, g, which passes first through an aperture in the front bit, a, then through the slit in the cutting bit, b, and then into the aperture in the nut, d. It will therefore be perceived that while the two bits, a b, can be simultaneously moved outwards or inwards by turning the screw, c, the cutting bit can also be readily adjusted, so as to cause its cutting edge to project any desired distance beyond the closely embracing lower end of the front bit, a. A protecting metallic

strap, e, whose turned-up extremities are pivoted to the edges of the lower end of the front bit, a, loosely embraces the lower end of the cutting bit, b, so that when the plane is shoved forwards, the said strap will swing freely upwards into a notch which is formed in the plane stock for its reception; but when a rearward movement is imparted to the plane, this metallic strap will be drawn outwards to a position that will cause it to elevate the front portion of the plane stock to a sufficient distance above the face of the board that it is operating upon, so

as to prevent the cutting bit from touching the face of the board during the reverse movement of the plane. This improvement renders the cutting bit more durable, and more work can be executed with the plane, the cutter not requiring so frequent sharpening.

A patent was granted for the improvement on the 24th of April last, to H. C. Hunt, of Ottumwa, Iowa, from whom more information may be obtained by letter.

TEMPERING ARTICLES OF STEEL—A temperature of 570° will produce a dark blue color on polished steel, and 590° a pale blue. Oil or grease of any kind will answer for drawing the temper of cutlery. The temper for lancets is obtained at 430° Fah., axes at 500°, swords and watch springs at 530°, small saws at 570°, and large saws at 590°. Copper-colored spots are

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