

## FRAME FOR GRINDING TOOLS.

(See page 349.)

It is rarely that tools upon the farm are ground in the best manner; even the tools of mechanics are sometimes found with faulty and ill-ground edges. Instead of a perfect bevel parallel as to heel and edge, and of a proper angle, the majority of cutting tools, such as plane irons, chisels of all kinds, and draw knives, are found on examination by a critical person, to have either a convex or a concave bevel which, at the same time, is wider from heel to edge on one side than on the other, not at right angles with the side of the tool, and with the angle of the bevel, too short in soft wood cutting tools, and too long in those for working hard wood or iron. This irregularity comes from unsteadiness in holding the tool while it is being ground, from holding it in a wrong position, and from having the stone uneven, although this last trouble is the necessary consequence of the first. The first requisite in grinding a tool properly is to have the stone hung and balanced truly. The next is to have the stone turned evenly on the face. This is best done by means of an old file used upon a solid rest as in turning in a lathe. The next is to have a contrivance for holding the tool to be sharpened in such a manner that it will be ground to the proper angle, and meanwhile is held rigidly and immovable to the surface of the stone. It is impossible to do this by hand without some help. When the operator must turn the stone himself, his case is hopeless, unless he can have some mechanical aid. Such aid may be secured by the help of the simple device here illustrated, which is shown separately in Fig. 1. It is a frame of wood furnished with clamps of light half-round or flat bar iron, which are tightened by nuts or thumb screws at the back. The tool to be ground is fixed firmly in the clamps. The frame is pivoted by the arms to the grind-stone frame by means of movable pins. There are several pin-holes by the use of which the angle at which the tool is presented to the stone may be changed. In Fig. 2, the frame is seen in use as the operator presses the tool to the stone while he turns it by the treadle. This contrivance may be modified in numberless ways to meet different requirements, but the principle will be always the same. For instance, and it is a very extreme case, to grind a cutting bar for a mower or reaper, we would use a stone with a double beveled face ground purposely for this work, as shown in Fig. 3. The bar would be clamped in the frame by using a piece of stout inch-board and placing the bar between this and the frame, and screwing the clamp tightly. To sustain the end of the bar steadily, a support should be used, consisting of a sliding-rod with a cross-bar at the top, which may be fixed by a wedge at the proper height for use. If a cylinder is to be ground, the frame may be fixed so as to form a rest upon which the tool may be steadied, also when grinding broad tools, as the knives of planing machines or edgers for shingle machines, it may be fixed in the same manner. By changing the manner of using the device or adding to it in this way, it may be made very serviceable.

**INGENIOUS ROBERT.**—A case before the Croydon Petty Sessions this week explains to some extent how recent robberies at railway stations have been effected. The suspicions of two detectives at the Victoria station having been aroused by the movements of a couple of well-dressed men, they were watched and followed to Norwood Junction, where they took tickets for Brighton. Just as the train drew up luggage was missed, and the two men, who had got into a first-class carriage, were arrested. Their portmanteaus were found to contain false bottoms fitted with springs for clutching anything over which they were placed. The missing articles were found attached to the bottoms of the portmanteaus, and the two "well-dressed persons" were remanded.

**CRACKS IN CAST IRON.**—In order to close cracks in cast-iron stoves good woodashes are to be sifted through a fine sieve, to which is to be added the same quantity of clay finely pulverised, together with a little salt. The mixture is to be moistened with water enough to make a paste, and the crack of the stove filled with it. The cement does not peel off or break away, and assumes an extreme degree of hardness after being heated. The stove must be cool when the application is made. The same substance may be used in setting the plates of a stove, or in fitting stove-pipes, serving to render all the joints perfectly tight.

## GATEWAYS.

(See page 349.)

There are perhaps no contrivances in general use that are so unsatisfactory as our gates. We find these the most frequently out of order of any of the surroundings of a house. We have borrowed our illustrations from Woodward's "Country Homes." The principles of these gates are built upon is the same as that of span roofs. Fig. 1, shows the simplest form of a gate of this kind. Within a simple frame there are eight braces crossing each other, and also five iron rods, the heads of which are let into the upper rail of the gate, and the lower ends are furnished with a screw and nut, by means of which they may be fastened. The braces are halved together where they cross each other; they are not tenoned into the frames of the gate, but are held in position by tightening the nuts. The ends of the braces that bear against the rods have a groove in each to admit the ends. The principle of construction here shown being adhered to, a gate of this kind may be ornamented in various ways. One of these is in the rustic gate Fig. 2, where the whole is made of cedar sticks and iron rods. Three other rails besides the upper and lower one are fastened to the braces by means of carriage bolts. In this gate the iron rod at one end is made to answer as a very simple and permanent hinge. It is prolonged at each end beyond the portion upon which the nut is screwed, the upper end moves in a strong iron eye screwed into the gate post, while the lower end is strapped into a stone placed to receive it. The hinges to the gate in Fig. 1, are strong and very simple, the rod which holds the upper post of the gate passes through the upper plates of the hinge, which is further secured to the gate by means of carriage bolts. In the lower corner the iron rod passes through the lower plate of the hinge, and is there fastened by the nut. The hinge may, if desired, be counter sunk, to present less iron-work to view.—*Manufacturer and Builder.*

## ON SAW MILLS.—HOW TO GET THE MOST LUMBER FROM SAWLOGS.

Experience has abundantly proved to our satisfaction that this can be done only by the use of the circular saw. Human ingenuity, thanks be to the Giver of all Good, has been so prolific in the invention and construction of this kind of machinery, that the principal difficulty with the intending purchaser seems to be an inability to decide whose machine is really the best. Every builder or inventor of a rotary sawmill appears to claim for his machine such a perfect constellation of most desirable features, that a certain amount of hesitation in coming to a decision seems to be inevitable. Having tried the up and down saw and the circular saw also, we would again repeat our conviction that the last mentioned is the best for manufacturing lumber, and should any person act on this expression of opinion, let him in the first place be very careful to get if possible the best machine, bring it to the mill, and set it perfectly level and true. When you get it in operation, see that you handle it carefully. If you have been used to running the up and down saw only, you will soon find out that your former experience avails almost nothing in the management of the rotary machine; but when you get the hang of running it, the compensation in the way of convenience, rapidity, and quantity of work, is immense. Some prefer to use the inserted tooth saws, and will use no other. They seem to possess many advantages, and are entirely safe. A late invention of spreading the upper part of the tooth towards the point during the process of manufacture, spreading it out so as to make the point of the tooth the thickest part of the circumference of the saw, enables the sawyer to dispense in a great measure with the use of the swage. Those inserted tooth saws which do not possess this improvement must be carefully swaged and filled at least twice per day, and sometimes as often as six or seven times per day, depending upon the kind of lumber being cut. In filing or swaging the saw, be careful to form the point of the teeth absolutely square, and even across, the slightest deviation from perfect truth in this respect being apt to cause the saw to run, as it is termed, or vary from its proper course while passing through the log. Some prefer to form the point of the tooth a little hooking, just enough so as to be barely perceptible, and in swaging to use that part of the die belonging to the swage, which gives the tooth of the saw a slightly curved or rainbow form, something in this shape, or scarcely so much curved. One