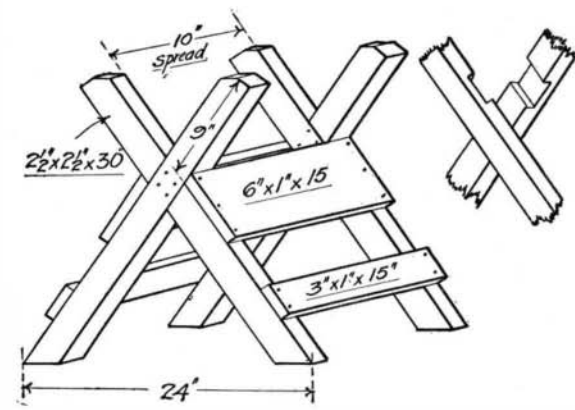
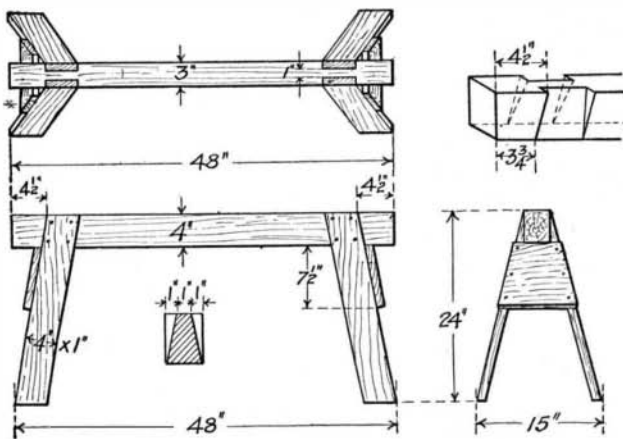


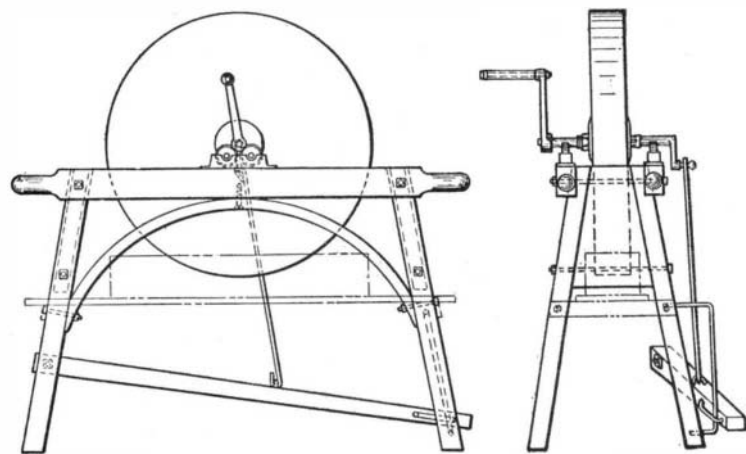


Handy Man's Workshop
 TOOLS FOR THE WORKSHOP.—III.
 BY I. G. BAYLEY.
 (Continued from issue of May 15th.)
 A ROLLER JACK.

For moving heavy timber and other uses, a roller jack will be found very handy. It is easily constructed, any amateur being able to do the blacksmithing required. The framework should be made of oak or heavy tough wood; the roller of pepperidge or sour gum, a wood which will not easily split. The bottom face of the framework is in the same plane, in other words lies flat on the ground at all points. The general dimensions are given for the construc-



CONSTRUCTION OF A TRESTLE.



FRAME CONSTRUCTION FOR GRINDSTONES.

tion on the sketch. The 3½ by 2-inch braces should be connected to the side pieces with mortise and tenon joints, and secured in place with wooden drift pins. Wrought-iron plates are bolted to the upper face of the sides, for the roller axles to wear on. These plates should project over the sides a little as shown, to take the wear of the washers on the axles. These washers are made from staples bent around the axles, which are three-quarters of an inch diameter, round iron. The axles are round at one end and square at the other; the square end being driven into the roller with a driving fit. The bearing ends of the axles are ¾ inch in diameter.

TRESTLES, HORSES, OR STOOLS.

They go by either of these names. Though simple enough, and at first thought almost unnecessary to refer to, it will be found by observation that few mechanics have a perfectly-built trestle.

The length should be twice the height. The 3 by 4 piece should be on edge, and it should bear squarely upon the end boards, which in turn should be secured to the legs with screws or nails. The legs should slant in two directions; their bearing location longitudinally being in line with the ends of the 3 by 4

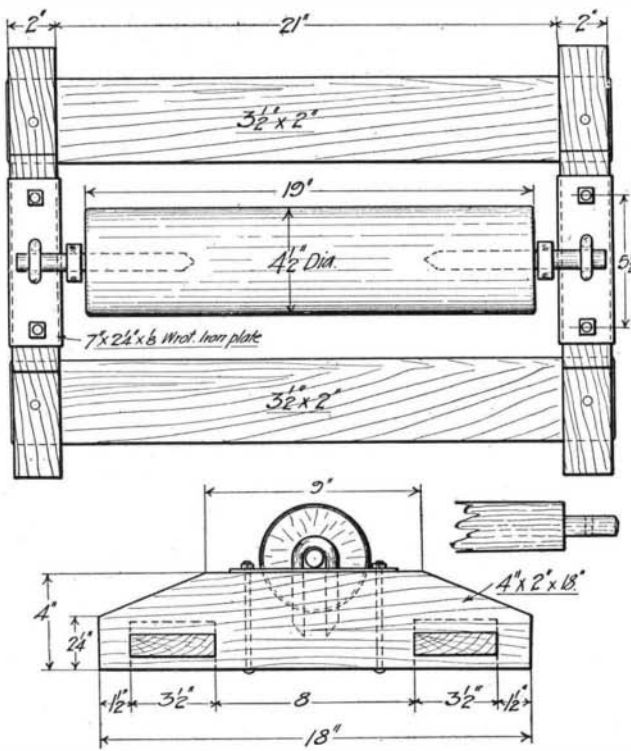
piece, as shown, so that the trestle will not tilt. Full dimensions for construction are given on the various views, and need not be repeated in the text. The notches for the logs are shown in larger scale views, and are dimensioned in such a manner that no trouble need be experienced in cutting them out.

THE SAW BUCK.

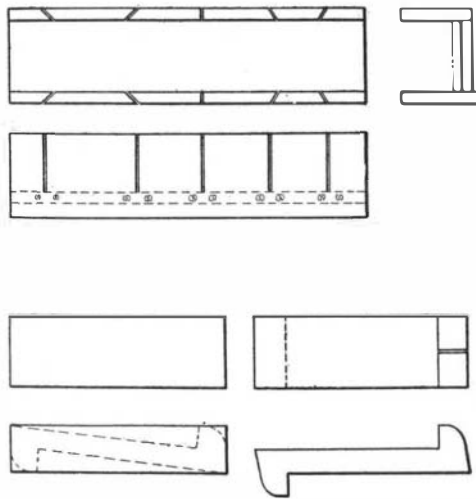
The saw buck is made from 2½ or 3-inch stuff, 30 inches long, half-jointed, 9 inches from one end, as shown, the feet being spread 24 inches out to out. Battens, 6 inches by 1 inch, with the top edges bearing squarely against the legs, secure the latter together, 10 inches apart inside measurement. A 3 by 1-inch strip at the bottom on each side serves as a foot rest.

THE GRINDSTONE.

The grindstone is generally purchased with frame complete as shown. The frame is usually 24 inches high by 38 inches in length, out to out of handles, which are made of 2½ by 1½-inch stuff, shaped at the ends to 1½ inch diameter by 4 inches long. The legs are 1¾ by 1½ inches, spread at the base 33 inches one way and 11½ inches at the ends, inside dimen-



PLAN AND END VIEWS OF THE ROLLER JACK.



THE MITER BOX AND THE BENCH HOOK.

sions. The handles are spaced 9 inches apart outside dimensions. A piece of timber 1¼ inches thick by 10 inches deep is bolted to the legs at each end. The treadle rod and guides are made of ¼-inch round iron. The stone can be turned by hand or foot power, the handle being easily removed. The bearings are shown with the dust cap removed, to show the rollers. Under the stone is shown, in broken lines, a wooden water trough resting upon a 1-inch board, which in turn rests upon two strips nailed to the legs. Some mechanics object to this manner of wetting the stone, claiming that it washes off all the powdered stone necessary for the grinding process. Instead they put an ordinary tin can, with a small hole punched in the bottom, just above the stone, allowing the water to drop on the stone instead of washing it.

MITER BOX.

Beech, a strong and durable close-grained wood, should be used in making a miter box. Make the box of 1-inch stuff, planed down to ¾. The length will vary according to whether the 60-degree miter cuts are used, in addition to the 45-degree and the right-angle cuts, in which case the box should be about 30 inches in length.

One of the sides and the bottom are made of 6-inch wide material, the other side being 7 inches wide, so that it will project below the bottom of the box 1 inch, forming a ridge to bear against the work bench when sawing.

The positions of saw cuts should be laid out very accurately in pencil first, and when sawing them care taken to keep the saw over the pencil lines in the horizontal and vertical lines. The sides should be secured to the bottom with screws or nails at points each side the saw cuts. It is a very good plan to lightly tack a narrow board to the bottom of the box, as indicated by the broken line, to protect it from the wear of the saw.

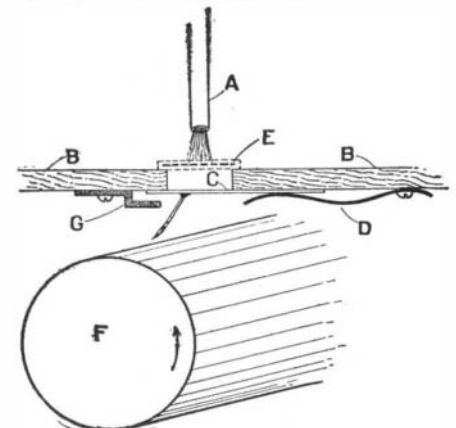
BENCH HOOK.

A bench hook can be made from a piece of beech wood 3 by 2 by 9 inches in length. Cut out as shown in dotted lines, and round the ends. The saw cut should be vertical and at right angles to the cross piece. When one side of the hook is worn, it can be turned over, and the other side be used.

A SIMPLE METHOD OF MEASURING THE SPEED OF PHOTOGRAPHIC SHUTTERS.

Quite a new principle in methods for measuring the speed of a photographic shutter is embodied in an apparatus invented by Mr. W. H. Smith of Croydon, England, and first shown and described at a meeting of the Royal Photographic Society in London recently. From the drawing it will be seen that the method dispenses with elaborate apparatus. Though it supplies a record on paper of the time the shutter remains open; no photographic operation is necessary, and a test can be made in a few seconds, more quickly than by any of the many devices suggested or constructed for this purpose.

A is a glass tube through which a current of air is blown from a bellows or from the mouth of the operator. B is a board in a small aperture, in which a thin light plate of mica, C, is held by a light metal spring, D. To the lower side of the mica plate is



A SIMPLE METHOD OF MEASURING THE SPEED OF PHOTOGRAPHIC SHUTTERS.

fixed a tiny brush dipped in a strong solution of an aniline color. A stop, G, serves to limit the movement of the mica plate in either direction. Below the plate a drum, F, covered with paper, is rotated at a constant known speed by means of a small motor, such as is used for gramophone disks.

The shutter to be tested is laid on the board so as to cover the aperture. On a current of air being blown through the tube, and the shutter immediately released, the mica plate is depressed, and the brush thereby caused to remain in contact with the revolving drum as long as the shutter is open. The distance traversed by the drum during the time the shutter is open is thus recorded by a line of color; and if the number of revolutions made per second is known, the speed of the shutter is a matter of very simple calculation.

Thus, supposing that the drum is 10 inches in circumference and makes two revolutions per second, a line 20 inches in length represents one second, and therefore a line, say, half an inch in length indicates a shutter speed of one-fortieth of a second.

Owing to the enormous speed attained by air currents, any error due to the distance between the shutter and the mica plate is extremely minute, that is to say, is immeasurably smaller than the variations produced, in consecutive operations of shutters of certain types, from changes in the temperature or the moisture of the atmosphere. The whole apparatus, exclusive of the motor for operating the drum, does not cost more than a few cents.

A SUBSTITUTE FOR TINFOIL IN LEYDEN JARS.

BY REV. I. J. KAVANAUGH, S. J.

The deposit of silver from a mirror solution is a convenient and effective substitute for the tinfoil on the inside of Leyden jars. It lies close, and presents no points or sharp edges to invite a puncture of the glass. I have never seen this process suggested, and, on the chance of its being a novelty, I submit it to you. It very much enlarges one's choice of bottles, as one is not obliged to sacrifice a flask of good dielectric proper-