



UTILITIES

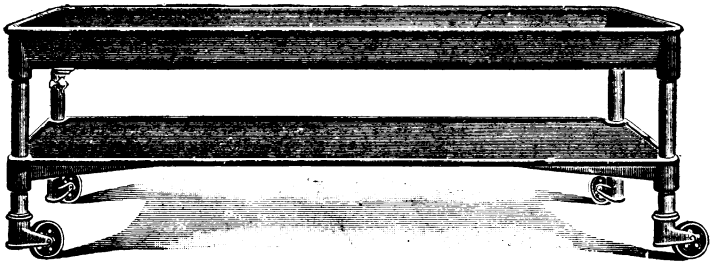
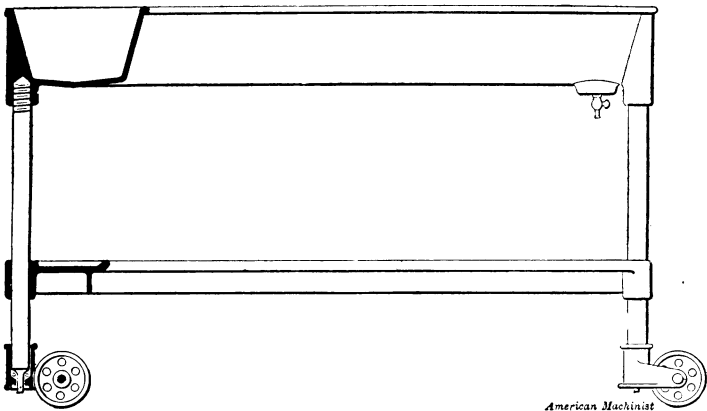


Fig. 280.



American Machinist

Fig. 281.

UTILITIES AND ACCESSORIES.

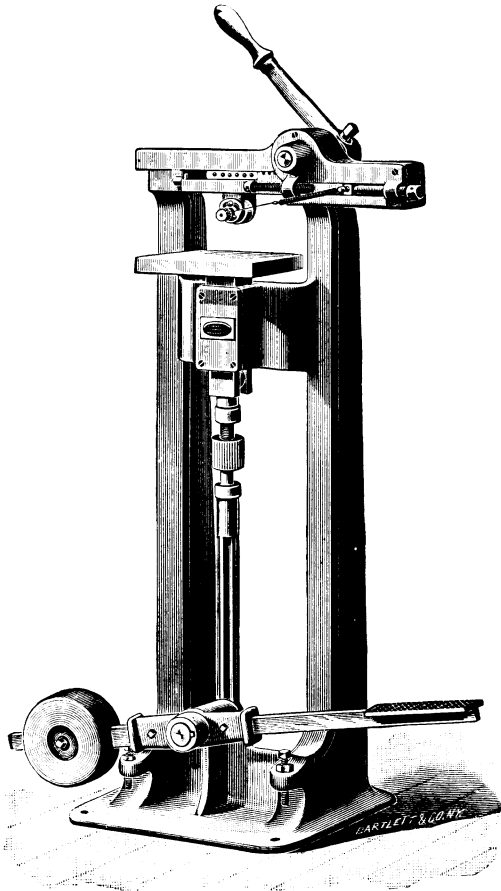


Fig. 282.

A utility is defined as a useful thing; a machine shop utility is a tool or device adapted for use among machines of larger and more pretentious reputation; each shop has

 JIGS, SHOP KINKS AND WRINKLES.

its own utilities, and upon their proper application depends largely the success of the whole organization.

An accessory machine or tool is one contributing to a general effect and belonging to something else as a principal; a "jig," defined below, is properly an accessory machine or device.

A jig is defined as any subordinate mechanical con-

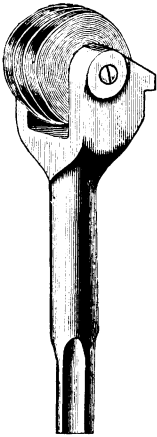


Fig. 283.

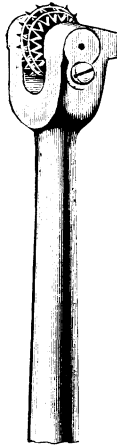


Fig. 284.

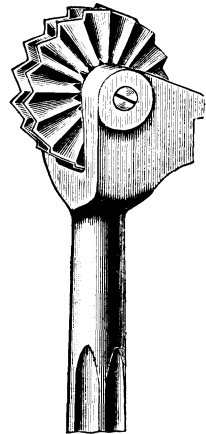


Fig. 285.

trivance or convenience to which no definite name is attached; a jig is a small special tool or otherwise a "wrinkle" or shop "kink."

NOTE—In repetition work, where hundreds, thousands or even millions of similar pieces are to be worked upon, the profitableness of these special devices is most apparent. Jigs to the number of many thousands have been devised and used, although not always to advantage; they have often "cost more than they come to" in economical results.

The few examples shown on the following pages are rather as suggestions than an attempt to fully explain all the useful contrivances known under the names of utilities, jigs, etc.

UTILITIES AND ACCESSORIES.

Fig. 279 shows a pressed-steel shop pan used for handling bolts, rivets, nails, screws, nuts, washers, castings and other substances; they are also used under lathes and drilling machines, to catch the turnings, trimmings, oil drippings, etc. The pressed steel pans are found, in practice, more durable than riveted ones, and are lighter and more easily cleansed.

Fig. 280 shows a lathe pan; the lower pan or "shelf" is intended for the usual lathe extras, the upper pan is for the chips or cuttings. The top tray, which catches the chips and oil, is sometimes provided with a strainer and draw-off cock, as shown in section in fig. 281; by using this, the lubricant can be separated and used again.

When emery wheels wear out of true or glaze on the surface, it becomes necessary to true them. For this purpose a hand tool is used, which consists of a pure carbon or black diamond set firmly in the end of a steel rod provided with a suitable wooden handle; with this tool any desired shape, round or bevel, can be given to face of the wheel; the diamond produces true and smooth work, but the cutting qualities of the emery are slightly impaired by its action.

The above device is designed to be operated by hand; it is not illustrated; a similar tool is used, which can be fixed in the tool-post, the diamond being set in a solid steel shank.

Emery wheel dressing tools usually held in a sliding holder, are shown in three figures on the opposite page.

NOTE.—The chips are made at or near the headstock end and, of course, drop in one end of the pan; when brass and iron work alternate, to keep the chips separate, simply turn the pan end for end—for this purpose the wheels of the casters are large and swivel readily.

EMERY-WHEEL DRESSING TOOLS.

For the purpose of removing the smoothness from emery wheels which have become glazed, emery-wheel dressers, as shown, are used; they are serrated or grooved discs which are pressed against the wheel and traversed back and forth across the face; the tool shown in fig. 283 is specially intended for large, thick wheels, say from 8 inches diameter and 2 inches thick or

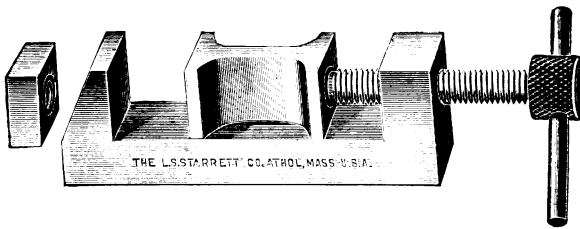


Fig. 286.

more, but are not practical for use on small, thin wheels; while the dressers shown in fig. 284 and fig. 285 are generally used on smaller and thin wheels, but can likewise be used on the large wheels.

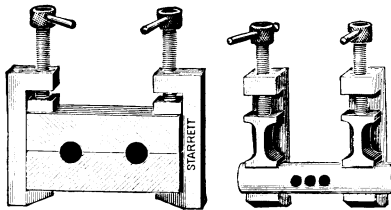


Fig. 287.

Fig. 288.

Figs. 286 to 288 are steel clamps made from drop forgings, case-hardened, and have take-up blocks to slip on and off the end of the screw. They will hold work square and parallel for laying out on surface plates, drilling, etc. A round piece may be rigidly held in two of the clamps and drilled, as shown in the illustration, fig. 288.

UTILITIES AND ACCESSORIES.

Various devices are used for stamping on metal surfaces impressions of trademarks, etc.; the machine shown in fig. 282 is designed for this purpose; it will mark, by means of steel dies, letters, numbers, etc., on either flat or round metal surfaces, such as twist drills, taps, dies, reamers, etc.

The piece of work to be marked is held on the table by a suitable fixture. For marking flat surfaces a cylindrical die is used, carried in a yoke or holder, which is attached to the slide bar or rack, and which is moved by the lever and pinion shown. By using a round die only a single point on its circumference is in contact with the work at one time. Many kinds of material that would be distorted by the use of a punch press can readily be stamped

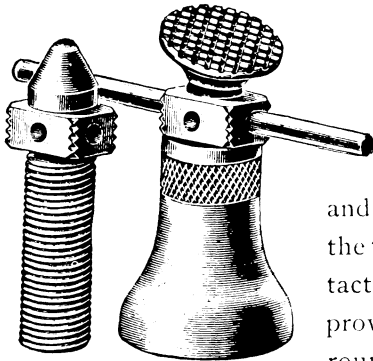


Fig. 289.

by this machine. When marking round surfaces, as the shanks of drills and reamers, a flat die is attached to the rack or slide, and the work allowed to roll on the table as the die comes in contact with it. Adjustments are provided when using flat or round dies, so that the proper character on the die shall come

in contact with the work at a stated point; the amount of travel, after contact is made, is governed by screw stops; the round die, after use, is relieved of pressure and returned by spring tension to its original position.

Fig. 289 shows a screw jack, which is useful for lifting heavy castings into position on the planer, etc. The illustration explains itself, the cap being self-adjusting.

MACHINE SHOP UTILITIES.

Fig. 290 exhibits a pair of "two and two" sheave rope blocks, fitted with an "automatic lock" or self-sustaining brake, which holds the load in any desired position; this lock can be released only by a pull on the rope, hence it is a safety block; for many purposes, rope blocks are superior to chain blocks.

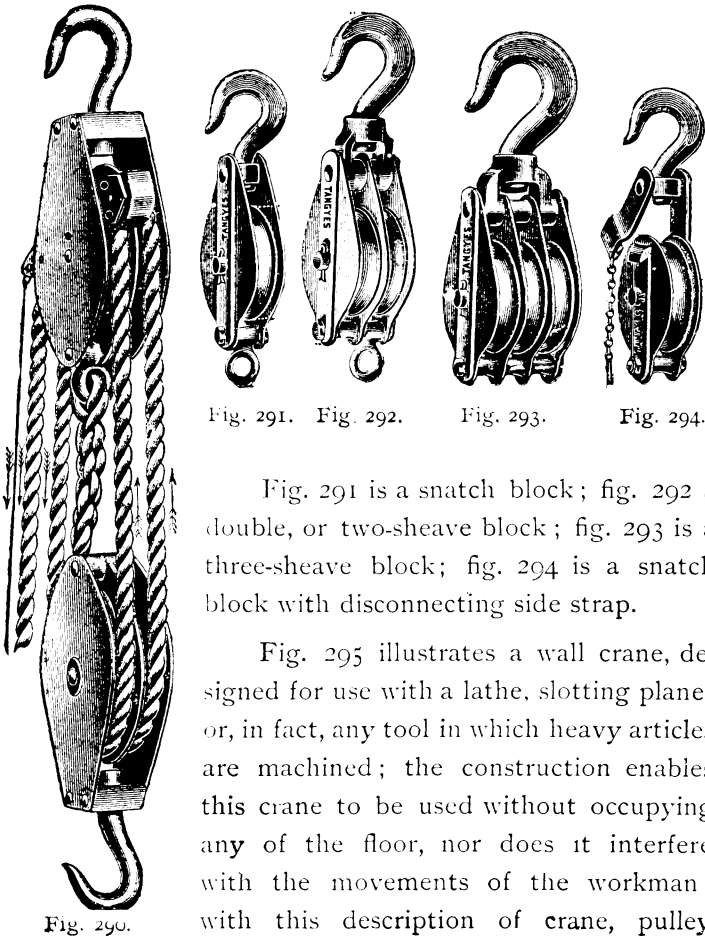


Fig. 291. Fig. 292. Fig. 293. Fig. 294.

Fig. 291 is a snatch block; fig. 292 a double, or two-sheave block; fig. 293 is a three-sheave block; fig. 294 is a snatch block with disconnecting side strap.

Fig. 295 illustrates a wall crane, designed for use with a lathe, slotting planer or, in fact, any tool in which heavy articles are machined; the construction enables this crane to be used without occupying any of the floor, nor does it interfere with the movements of the workman; with this description of crane, pulley

SNATCH AND SHEAVE BLOCKS.

blocks are generally used to raise the work, to a trolley which slides on the top of the crane arm, as shown in fig. 295.

Fig. 296 shows a simple and convenient method of supplying a grindstone with water, an essential feature being to provide a supply of water for the wheel while in operation, and to keep the wheel dry when not in use. The wheel, as illustrated, is mounted on a wooden frame, and the trough for the water is made of galvanized iron, the

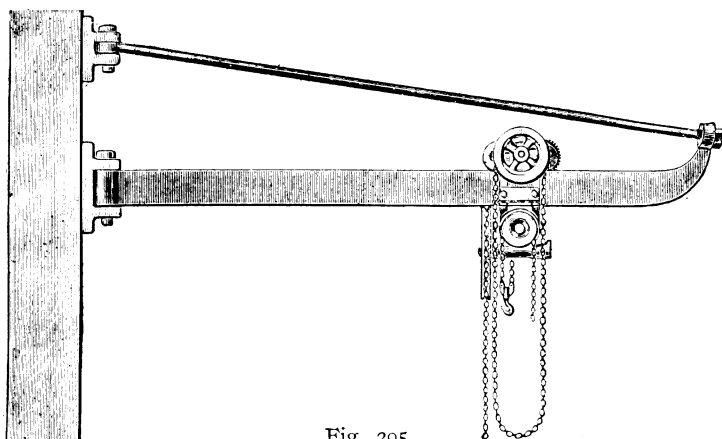


Fig. 295.

trough being high enough to enter the top of the frame, which serves as a guide, thus returning all the water to the trough again. When down, the water is below the bottom of the stone; the treadle, made of a piece of pine 1×5 inches, is connected to the trough by a couple of kettle ears and fulcrumed about the center of its length to the floor. The weight of the water keeps the trough down, and a pressure of the foot quickly brings the water in contact with the stone.

MACHINE SHOP UTILITIES.

Fig. 297 shows a "buff" or polishing machine. The stand or pedestal is hollow, and the wheel guard is of such shape that the draught, caused by the rapid movement of the wheel, carries the larger part of the dust produced by polishing, from the operator to the bottom of the stand; this may be connected with a blower, and the dust almost completely removed.

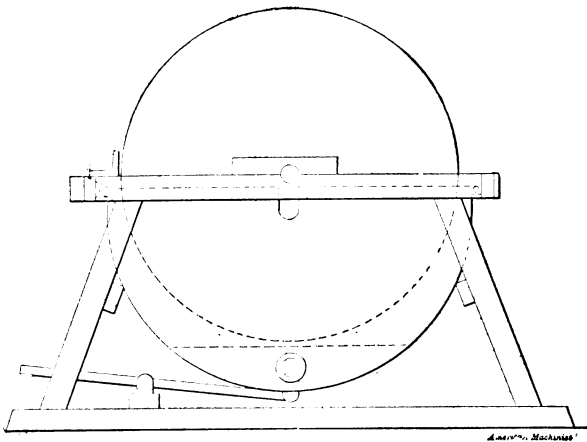


Fig. 296.

Polishing wheels are made of different materials, such as wood covered with leather, canvas clamped between iron plates, felt, unbleached muslin, etc.; the best wheels are

NOTE.—While most shops are provided with special tool grinders and sharpeners, the old grindstone still seems to have a place of its own among them, and most machinists prefer the grindstone when it is kept in good shape and well supplied with water. The chief objections to grindstones are that they do not hold their form any great length of time, and that the means usually employed to keep them well supplied with water are unsatisfactory. If the stone is kept submerged in water when not running, soft spots will result, and these will wear much faster than the rest of the stone.

THE GRINDSTONE.

solid leather and are made in three grades: soft, medium and hard; and they are well adapted to all kinds of polishing. These wheels are made of discs of oak-tanned leather, held together with elastic water-proof cement, and compressed under a hydraulic pressure of from 75 to 100 tons. They have advantages over other wheels, being more pliable and elastic, can be turned to any shape face, saving the

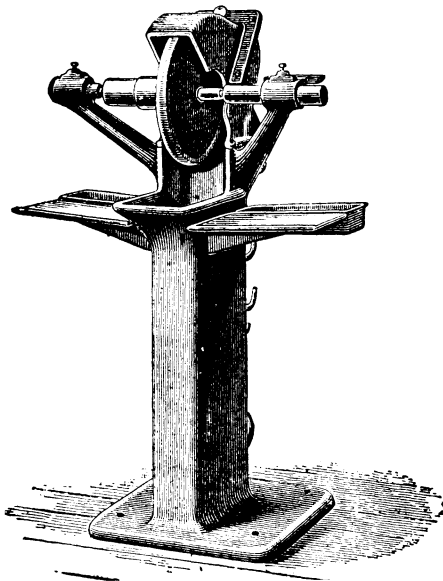


Fig. 297.

expense of re-covering, as a coat of emery is all that is needed to make them ready for service. Being water-proof, they can be washed like a leather-covered wood wheel when a new coat of emery is needed, and they can be run at any speed with perfect safety.

A tool chest is shown in fig. 298. This is preferably made of hardwood and furnished with locks and handles.

“ The user of the machine tool, wiser in his generation than the agitator, refuses to make sudden and radical changes in methods which have proved successful. To him machines are but a means to an end. He does not purchase them because they make watches, or engines, or ships. For these things he does not care. He wants them to make money, and

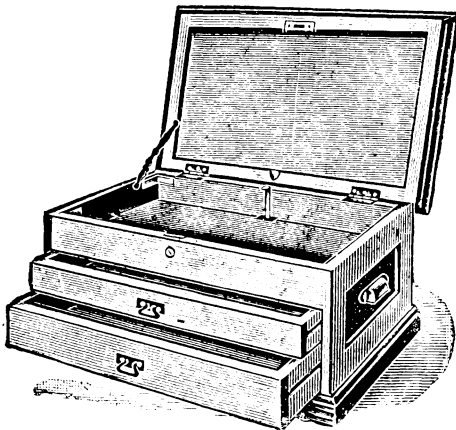


Fig. 298.

if he finds that a new machine can turn out more of it in an hour than an old machine, he tries the new. But it is labor lost, explaining the beauties of its construction, the excellence of its work, and the rapidity of its output, if it cannot be shown that it makes more money than a tool his grandfathers found good.”