described, in which case the tool or piece may be removed without loosening the jaws.

The patentee claims the details as above described separately, in combination with one another, and the whole combination itself, forming a chuck which should consequently be named the *ne plus ultra.—English Mechanic.*

### ANOTHER LATHE CHUCK FOR HOLDING DRILLS.

*From the English Mechanic.*

*(See page 384.)*

I send sketch, if you think it worth insertion, of a cheap lathe chuck for holding drills or brace-bits which admits of easily setting the drills to run perfectly true, and which need not cost a couple of shillings. I made it when a child, some forty years ago, and have often since proved its value. The chuck is made of hard wood.

Fig. 1, side view.—*a*, wood screw for screwing into the lathe mandril; *b*, square fitting lathe chuck spanner; *c*, *c*, body of chuck of sufficient diameter to cover the heads of the four wood set screws and prevent accidents to the hands during revolution.

Fig. 2, front view.—*d*, iron plate, ⅛ in. thick, let into face of chuck, and then drilled out and filed square to fit the drill shanks, &c.; this plate is secured by two long wood screws, *g*, *g*; *f*, the drill.

Figs. 3 and 4. — Sections through set screws; *e*, *e*, four stiff wood screws screwed into the body of the chuck, with their points entering the central hollow and bearing against the square end of the drill. By altering these with the screw-driver the point of the drill is made to run *perfectly true*.

## ARTIFICIAL LEATHER OR CLOTH.

WHILE many inventors have sought to discover a substitute for leather, and have succeeded only to such extent as is represented by American leather cloth, others have endeavoured to utilise the waste cuttings of leather and from them form a material which is only so far leather that it is made from that substance. Unfortunately but very indifferent success has hitherto attended the attempts to utilise the cuttings, which, though not exactly waste materials, are little better. Recently in our "Scientific News" we alluded to a new article which under the name of "cuir-liège," or leather-cork, was attracting some attention at the Maritime Exhibition in Paris. It appears that Mr. G. E. Block, of Marylebone-road, London, turning his attention in a different direction to that taken by the inventors of American cloth, and discarding the scraps and refuse leather, has succeeded in manufacturing a compound of cork and india-rubber, which while possessing many of the useful qualities of leather, is superior for many of the chief purposes to which it is applied. The invention, which is patented, is called an improvement in the manufacture of artificial leather or cloth; but seeing that cork is the substratum, the term leather-cork or cuir-liège is a better name for the new fabric. The modus operandi is, simple sheets of thin cork are painted over with a solution of india-rubber on one side, and when the coating has dried a second is applied over the first. A piece of "japanned cloth," canvas, thin leather, or other material possessing similar qualities, is then dressed with two coats of the india-rubber solution on one side, and the cooled surfaces of the fabric and the cloth are then pressed together. The uncoated surface of the cork is now dressed with two applications of the india-rubber solution, and a piece of linen, cotton, or other fabric is similarly treated. When the solution on the cork and the piece of fabric is quite dry, the two surfaces are brought together, and the compound sheet is submitted to great pressure between rollers, under a stamper, or in a press. The inventor says that in order to insure the coated surfaces of the fabric and cork adhering-closely and firmly to one another he finds it better to apply the pressure suddenly, as by a blow such as would be given by a stamper. The two coatings of cementing solution thus brought together blend and form a perfect skin, which is found to possess the maximum of flexibility and resilience—bending and turning in any direction, and yet resuming its normal state without breaking. The coats of solution being permitted to dry before the parts are cemented together, the solution, it is found, does not penetrate the outer surfaces of the material, which thus retains its ordinary appearance.

The artificial leather-cloth or "leather-cork," thus prepared, can be made into boot, harness, bags, portmanteaus, and various other articles. It is also said to be suitable for belts for machinery. In manufacturing this material the sheets of cork must be laid with their edges fitted neatly together, as a gap between the two pieces of the cork may possibly produce a weak spot in the finished fabric, which will materially reduce the "life" of the sheet in which it occurs. From the fact of leather-cork being flexible, as well as light and waterproof, it would seem to be well adapted for tents and awnings, for gig aprons and similar purposes. As mentioned in the "Scientific News" paragraph on p. 64, it is well adapted for buckets, as owing to its flexible nature those useful vessels may thus be stored in large numbers in a comparatively small space. It is also suggested that, by attaching wooden veneers to its surface, it may be ornamented in any desired style, and be used as panels for carriages, &c. Other uses will doubtless be found for material which promises to be widely adopted as it becomes better known. The fabric is said to be unaffected by any ordinary degree of heat, and to be remarkably strong. It met with considerable attention from the visitors to the Maritime Exhibition, and though not yet on sale in this country, will undoubtedly form the subject of numerous experiments when its manufacture is established.—*Scientific American.*

### FILES AND FILING.

*(See page 384.)*

As the file is a tool of universal use among many classes of mechanics, and more especially those who work in iron, it may be well to give a few hints to those who are not throughly initiated in its use. Of the diversity of files and their adaptability to different processes we will say nothing, supposing that to be sufficiently understood.

The work to be filed should be elevated in the vice, or fastened by some means of a height a little below the elbow, as the operator stands erect. The reason of this is obvious. As the file-handle is grasped in the right hand and the point of the file in the left hand, the arms may hang in a more natural position, and as the file is thrust forward and brought back for a repetition of the thrust, the movement is made in a horizontal line with greater facility than if the elbows were required to be raised to make the stroke of the file in the line parallel with the line of the work. The file has not the guide principle, as the carpenter's plane has, and the movement of the file must be accomplished by the position and movement of the elbow. The most natural movement of the hand and elbow are in circular lines, the joints of the limbs being the centre of motion, but in filing a flat surface the hands must be trained to move in right lines.

The mechanic should select good well-proportioned handles for his files; disdain everything that pretends to be "fancy." Handles are best made of well-seasoned maple with strong brass or iron ferrules. The file shank ought to be inserted into the handle in which it is held nearly the entire length of the shank. The handles as purchased are usually bored with a hole for the reception of the file shank, but when they are not so bored the mechanic is necessitated to do it himself. If a small gimblet or bit be used to bore with, it is essential to observe that it enters the handle at the exact centre of the circumference of the ferrule, and that the hole is kept true and central in the handle as the bit advances. This can be ascertained by letting the handle turn in the hand as the boring progresses, the hold of the bit upon the wood being sufficient to admit of its so doing. As the file shank is made of a taper form, it is quite necessary that the hole in the handle be made to correspond, and a taper reamer will form it accurate enough to receive the shank. Do not let a file shank be inserted in the handle up to the shoulder of the file, for it will soon become loose, and the shank will no longer *wedge* into the wood; but if a space of about one-half or three-fourths of an inch be between the handle and the file shoulders, no immediate apprehensions of looseness need be anticipated.

Some mechanics heat the shank of an old file, and with it burn into the handle to shape a place for the reception of the file shank, but such a practice betokens a slovenly workman and is very detrimental to the wear of the handle, for by the wood being charred in the process of burning, it is rendered very brittle, and the handle soon splits ith even ordinary usage and must then be thrown away. If the mechanic seeks to retain the split handle, or mends it by inserting a screw or winding it with wire or cord so as to make it subservient to his purpose, it has a blotched and unsightly appearance, and is a very unsatisfactory handle after all.

We have seen on a workman's bench two dozen or more files of different sizes, and used for different kinds of work, and with each kind or size of file there was a handle wholly differing from its fellows. We might enumerate that we observed in this lot