

IMPROVED LATHE CHUCK.

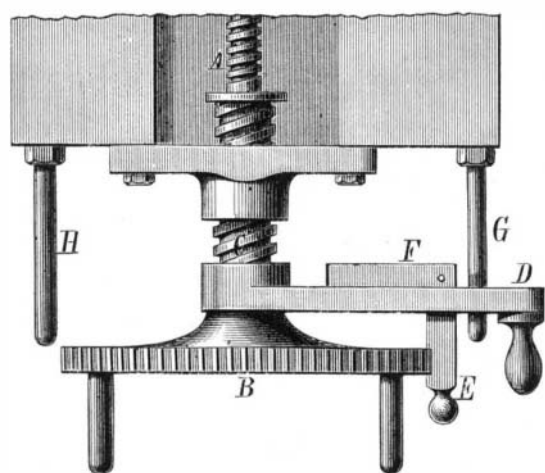
The annexed engravings represent a new lathe chuck, which may be constructed of any size, which holds tools with great firmness, and which is provided with an improved device for taking up wear and for the separate adjustment of the jaws. The implement is made of the best steel, by special machinery, so that its parts are interchangeable.

Figs. 1 and 2 represent the chuck taken apart so as to exhibit the interior. Figs. 3 and 4 are sectional views. A is a collar which encircles the spindle, and has formed on its outer face a bevel gear wheel, B. C, Fig. 3, is the rear portion of the shell of the chuck inclosing the forward part of the collar, A. Also on said collar, A, is a washer, D, which rests against the shell, C, and a nut, E, which travels on a thread formed on the collar. As it is necessary, as will be explained further on, to turn the entire shell in order to move the jaws, the use of the nut just described is to jam the part, C, and the enlarged portion of the collar, A, tightly together, and so rigidly hold the jaws in any position in which they may be adjusted. Fig. 1 represents the outer face of the chuck with the jaws and their working mechanism. Within the chuck, each jaw has attached to it a screw, E. This enters a bevel wheel, F. As the jaws are incapable of any but radial motion, it follows that, when the chuck is rotated bodily and the bevel wheels engage on the motionless gear wheel, B, the effect of the rotation of said bevel wheels is to cause the jaws to travel toward or from the center of the chuck face. And it will be further clear that this motion must be simultaneous in all the jaws. As the outer portion of the chuck is rigidly secured to the shell, C, by screws, of course when that shell is jammed, as already stated, by the nut, E, it becomes impossible to turn the chuck bodily; and hence the bevel wheels cannot be rotated around the main gear wheel, and consequently the position of the jaws cannot be altered. The above comprises the mechanism proper of the device, that is to say, all that is necessary for moving or clamping the jaws.

There is, however, another feature of considerable importance yet to be described, and that is the device for taking up any play of the jaws due to wear, and which enables each to be adjusted so that the motion of all may be uniform. By referring to Fig. 4, it will be seen that, above the bevel wheel, there is a projection, into the threaded interior of which, as already explained, the jaw screw enters. Surrounding this projection is a sleeve, G, the outer surface of which is threaded to fit a similarly threaded aperture, cut partly in the shell and partly in the face plate. The upper portion of the sleeve is notched to receive a wrench or driver; and beneath the sleeve an armed washer, H, is slipped over the projection. The arms of this washer enter recesses in the face plate. It will be evident that, by turning the sleeve, F, so that the screw works inward, the jaw and all its appendages will be moved bodily in corresponding direction. But its movement is limited by the arms of the washer, G, which, through the narrowness of the recesses, are allowed only just enough play to compensate for slight changes in the jaw. As the above device is applied to every jaw, it follows that any one of them may be nicely adjusted from the outside, so that all are caused to grasp the tool accurately. The spindle, instead of being solid as represented, may be made hollow. Patented to J. H. Vinton, August 18, 1874. For further information, address the manufacturer, Mr. F. Armstrong, Bridgeport, Conn.

SCREW-CUTTING LATHES.

An English lathe, now in use at the Rogers Locomotive Works, Paterson, N. J., contains several novel features. The



ways are flat on the faces, instead of having raised Vs; and this is a feature of all English lathes, and of those known in this country as the Freeland lathes. A great deal of discussion has at various times taken place as to the relative qualification or merits of these two forms of lathe bed. The advocates of the flat way, with Vs at the edges of the way,

claim superiority on the score of steadiness, increased wearing surface, and strength; while, on behalf of the raised Vs, it is urged that, the Vs being true, the saddle is bound to travel true, because there can be no lost motion on the slides; whereas any lost motion, from want of adjustment of the slides in flat ways, is liable to be reproduced twofold in the work, for the reason that $\frac{1}{100}$ of an inch lateral movement of the slide carriage becomes $\frac{2}{100}$ of an inch in the diameter of the work. Then, again, the most of the wear upon a lathe bed takes place at the part at and near the running center of the lathe, because the saddle is, on account of short jobs, more used in that part than on any other. As a result, when wear has taken place, the saddle, if adjusted to suit the worn part, becomes too tight to travel over the unworn part of the bed; and hence, after the wear has taken place, a proper ad-

justment of the lathe saddle becomes impossible if the job is a long one. In the case of raised Vs, however, the wear simply causes the saddle to fall vertically, so that an amount of wear equal to $\frac{1}{100}$ of an inch would have the same effect as lowering the tool $\frac{1}{100}$ inch, its effect upon the work being almost imperceptible by ordinary measurement. On the other hand, however, V lathes are usually made with either a weight or a spring to keep the saddle down; and as a result, when the cutting tool stands far out from the tool post, the saddle is apt to tip, especially in the case of boring with a lathe tool. In some cases, the raised Vs are accompanied with gibs to secure the saddle; but in many instances the gibs are given too little wearing surface. In the lathe above referred to, there are three ways in one casting, with the slide angles on the outer edges. There are also three separate and independent tail stocks fitting into the two openings between the ways. The running head has one cone pulley connected by suitable gearing to three face plates. The three centers at the running head are stationary. The slide rest saddle spans the three ways, having a V slide which contains three separate slide rests, all connected by a nut to the feed screw, so that all three are operated by the one screw. In addition to this, the two back slide rests have the nuts so attached that they can be moved by means of a separate screw, the object being to facilitate setting the cuts, since it would be a tedious matter to set all three tools to an equal cut, or to their desired respective cuts, without means of operating two of them independently. To set the cut during screw-cutting operations, the ingenious device shown in our engraving is provided. A represents the cross-feed or slide rest screw, which operates the three slide rests. It is fast to the notched wheel, B, and is operated by it in the usual way. C is a short screw which provides journal bearing for the screw, A, by a plain hole. It is screwed on the outside, and the plate in which it fits acts as its nut. It is fast to the handle, D, and is in fact operated by it. The handle or lever is provided with a catch, E, pivoted in the enclosed box, F, which also contains a means of detaining the catch in the notches of the wheel, or of holding it free from the same when it is placed clear. If, then, the lever, D, be moved back and forth the feed screw, A, and hence the three slide rests, will be operated; while, if the catch be placed in one of the notches of the wheel, B, both the screws, A and C, will act to operate the rests. When, therefore, the operator is cutting screws, he sets the catch, E, into one of the notches so soon as the tools are properly adjusted to the work; and then lifting the catch, E, he turns the wheel, B,

Natural Ornaments in Winter.

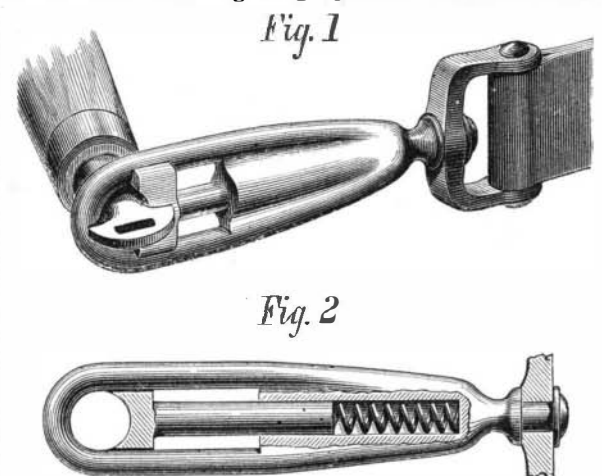
Now that the hedges are no longer green, and the trees stand black and bare on the landscape, is the time to seek for endless variety and beauty waiting to be admired in its turn. What miniature fairy glens and grottoes are distributed over the hedge banks of our country lanes! Mosses, delicate and beautiful, may be found in the interstices of any old wall, or at the foot of almost any tree or shrub. In the winter time mosses and lichens are found in fruit, and are beautiful objects. A pocket microscope lens is essential for their proper observation; and though the delicate carmine cups of the species known as the cup moss, and the familiar gray and yellow mosaic appearance we see on twigs and branches on our way, are easily recognized, the study of this form of winter vegetation is an inexhaustible one, and is an occupation for a lifetime, if earnestly pursued. We do not however, suggest that every one who endeavors to recognize the different species of moss, lichens, or fungi should necessarily do so through the medium of the microscope; but it will greatly add to the pleasure of making a collection out of doors if there be a good microscope at home, so that when the contents of the basket be turned out, after the winter's walk, there should be interest even in the fragments left, after a little pile of varied bits has been constructed, rivalling the choicest summer bouquet in beauty of form and color. We have seen such a collection formed into a beautiful object by raising a little mound of rough bits of bark in a plate or saucer, and placing on it varieties of fungus of every shade of red, brown, yellow, and gray. They seem to spring forth from a bed of sphagnum or bog moss of brightest emerald green; while a clump of the screw-wal moss in fruit, with its curious little box-like capsules, supports a gray or yellow lichen, which has been gently removed from some

old wall or tree. A bit of stick or a twig, incrusting with a bright orange-colored lichen, supports a trailing branch of delicate green ivy, the most beautiful and adaptable of all winter foliage. Over this little arrangement is placed a bell glass, to preserve it from dust and the effect of a dry atmosphere; and we know how pleasing to the eye is its varied beauty of form and color, lasting thus, a constant source of pleasure, for many a day without renewal.—*Chambers's Journal.*

IMPROVED HARNESS COCKEY.

We illustrate herewith a very simple little device for attaching traces to the single tree. It forms a secure fastening which may be instantly attached, and which, by its construction, is prevented from wearing out rapidly.

Fig. 1 shows the cockeye attached to the single tree, and Fig. 2 exhibits parts in section, displaying the construction very clearly. The yoke is of the usual pattern. Swiveled to it is a long loop, which is chambered out to receive a spiral spring which acts upon a plunger. The latter is provided with a follower having a semicircular notch, which corresponds in form to the inside of the end of the loop. The follower also has guiding lips which extend over the



sides of the loop. Through the yielding of the spring, the space between the follower and loop adjusts itself to studs or hooks of any size. Patented December 12, 1876, through the Scientific American Patent Agency. For further particulars, address the inventors, Messrs. F. W. Knapp and C. Schallhorn, Fiddletown, Amador county, Cal.

VINTON'S LATHE CHUCK.

