

THE FOOT LATHE.

Number 4.

It is not always an easy task to chase a true thread on a piece of work, and even "the boldest holds his breath for a time," if he has a nice piece of work all done but the thread, and that in a critical part. It is so easy to make a drunken thread, or one in which the spirals are not true, but diverge or waver in their path around the shaft, that many are made. That they are more common than true threads, is well known to mechanics. To start a thread true is quite easy with an inside chaser; for, strange as it may seem, it is seldom that drunken thread is made on inside work; only have the bore itself true and the chaser will run in properly. The case is different when a bolt or shaft is to be cut. With fine threads, the slightest obstruction on the rest will cause the chaser to catch and stop slightly. No matter how slight the stoppage, it is certain to damage the thread. The injury is more perceptible on fine threads than on coarse, for in the former, if the threads do not fit (as they will not if they are drunken, one crossing the other, when both parts are put together), the drunken thread will not core fair with the other. In coarse threads, however, it will not be so apparent, for, by making the drunken thread smaller, it will have play and accommodate itself to its place. This is not workmanship, it is "make-shift."

To chase a true thread the rest must be smooth and free from burrs or depressions. Nice workmen keep a special rest with a hard, polished steel edge expressly for this purpose.

If the chasers themselves are smoothly finished at the bottom, on an emery wheel, they are all the better. With these precautions, and others noted below, success is certain. When a thread is to be started, take a fine diamond-pointed tool and hold it on the end of the shaft to be chased. Set the lathe going, and give the tool a quick twist with the wrist, so that a spiral will be traced on the work, like this figure.

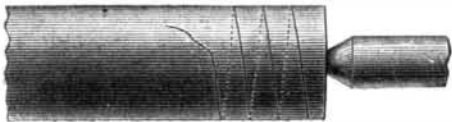


Fig. 16.

Some part of this will correspond with the pitch of the thread to be cut, and there is less liability of making it drunken. By a little practice one is able to hit the pitch of the chaser exactly in making a start.

"There is no trouble, after you once know how." We have chased quantities of small screws with 48 threads to the inch, and not a sixteenth of one inch in diameter. If the chaser once hesitates on such screws, they are spoiled. For heavy threads—seven and eight to the inch, which is about as hard work as any man wants to do, it is the custom of some turners to use a tool with only two teeth, and some use only a sharp-edged cutter, like this—

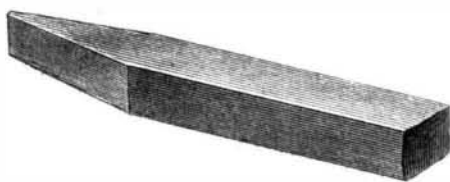


Fig. 17.

to deepen the thread, the chaser being used afterward to rectify the job. There is danger with this tool, unless it is used by an expert, of digging out the thread, so that the last end of it will be worse than the first.

Another tool used in chasing heavy threads is a doctor. This consists in having a fac simile of the thread to be cut on the back of the chaser and in applying a short set screw behind, so that as the iron is cut away the chaser may be followed up behind. This is the doctor, but the follower opposite the chaser is too narrow, and should be made nearly half a circle to avoid slipping; with this exception it is all right.

These tools, and the screws made by them, are all inferior to those made by lathes with traversing mandrels; that is, a mandrel which slides in and out of the head rest, as in a Holtzapfel lathe.

This lathe has a series of hubs, unlike the one shown previously, slipped over the back end of the

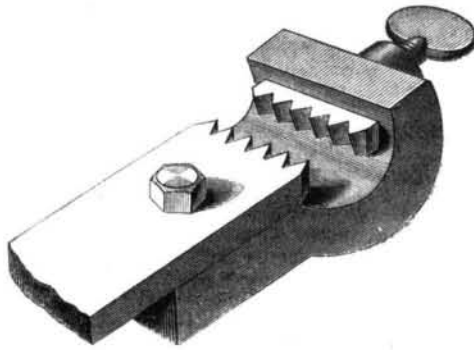


Fig. 18.

lathe spindle (furthest from the workman) and a fixed nut on the head-stock, which being put in communication with the hub on the mandrel, drives the same in and out according to the direction the cone pulleys are turned. Of course, with such an attachment as this, there is no danger of making drunken threads, for the hubs which start the threads are cut with a train of gears in an engine lathe, so that it is impossible for them to be incorrect. Moreover, a square thread, or a V-shaped thread can be made with them, which is not the case with common chasers.

In lathes that have traversing mandrels to cut screws, the tool itself remains stationary, but as this is obviously a disadvantage in many kinds of work, it is far better to have the tool advance and the mandrel revolve as usual. By this plan much time is saved, a greater range of work is possible with the same gear, and a piece that is chucked, or one that is between the centers can be cut with equal facility.

Any common lathe can be rigged to do this by putting a shell on the back end of the mandrel between the pulley and the set screw, and slipping the hub over the shell, with a feather, to keep it from turning. To take a thread from this hub, a round bar must be set parallel with the shears in easy working guides. The bar must have an arm at one end to reach over to the hub, said arm to be fitted with a piece of hard wood to match the thread on the hub. The other end of the bar has the cutting tool in it; of course at right angles, so as to run in to the work and bear on the tool rest. The tool is held in the bar by a set screw, so that it can be lengthened or shortened.

By this arrangement a true thread can be rapidly generated on any rod, hollow cylinder, or other kind of work—the pitch depending on the pitch of the hub.

It is necessary to have as many different hubs, varying in pitch as there are different kinds of work to be done, and although the thread on the hub is only an inch or half an inch long, perhaps, a screw of any length may be cut on a rod by simply shifting the cutter on the rest. This same bar is also useful for turning, as with a slide rest, for, by sliding it along gradually it acts in a measure like a fixed tool in a slide rest.

From these hints the amateur who takes a lathe in hand for the first time, or is at best a neophyte, may learn much to his advantage. Persons of a mechanical turn only need a hint, when the mind springs to the conclusion with surprising rapidity.

This little tool is very handy in many instances, particularly for running under the necks of screws when the thread is cut up to the head. By so making them the head comes fair down upon its bed and holds much better.



Fig. 19.

THE POTTERS' WHEEL.—In the archæological investigations in France, remains have been found of pottery so uneven and rude as to show clearly that it was made by hand without the aid of the potter's wheel; but in Egyptian tombs, which were built more than 2,000 years before the Christian era, there are paintings representing men at work with this ancient implement.

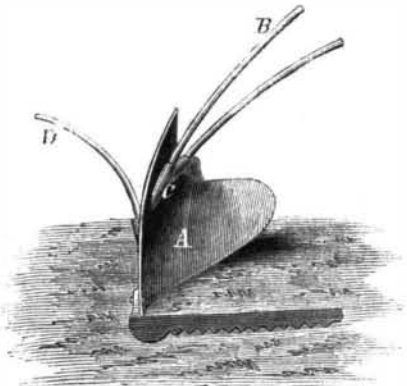
MARKET FOR THE MONTH.

The expected collapse in the great Chicago grain speculation has occurred, with the failure of many heavy operators. The price of cotton is, however, maintained, notwithstanding there is said to be a larger stock in this city and other markets, in bales and pounds, than ever before. Gold remains steady in spite of the continued inflation of our paper currency by the issue of notes to new National banks. The following table gives the prices of leading staples at the close of November and of December:—

	Price Dec. 27.	Price Nov. 29.
Coal (Anth.) @ 2,000 lb.	\$13 00 @ 13 50	\$13 00 @ 13 50
Coffee (Java) @ lb.	27 @ 28½	28 @ 29
Copper (Am. Ingot) @ lb.	41½ @ 43	42 @ 45
Cotton (middling) @ lb.	51 @ 53	52 @ 54
Flour (State) @ bbl.	\$7 20 @ 8 75	7 90 @ 9 00
Wheat @ bush.	2 25 @ 2 80	2 25 @ 2 85
Hay @ 100 lb.	75 @ 80	80 @ 85
Hemp (Am. drs'd) @ tun.	325 00 @ 345 00	320 00 @ 350 00
Hides (city slaughter) @ lb.	13	13
India-rubber @ lb.	43 @ 95	37½ @ 90
Iron (American pig) @ 50 lb.	51 00 @ 52 00	50 00 @ 51 00
Iron (English and American refined bar) @ 100 lb.	110 00 @ 115 00	125 00 @ 130 00
Lead (Am.) @ 100 lb.	10 00	10 50
Nails @ 100 lb.	8 00 @ 8 25	8 00 @ 8 50
Petroleum (crude) @ gal.	40½ @ 41	40 @ 41
Beef (mess) @ bbl.	11 00 @ 24 00	11 00 @ 17 00
Salt-peter @ lb.	22	22
Speiter (plates) @ 10½	10½	10½
Steel (Am. cast) @ lb.	13 @ 22	13 @ 22
Sugar (brown) @ lb.	11½ @ 17½	12 @ 17½
Wool (American Saxony fleece) @ lb.	75 @ 77	75 @ 77
Zinc @ lb.	15 @ 15½	15 @ 16
Gold	1 45¼	1 48½
Interest (loans on call) @	6 @ 7	7

FRAILEY'S MOWING MACHINE ATTACHMENT.

This improvement in mowing machines consists mainly in the combination of adjustable rods and a curved dividing board. The dividing board, A, has the shape of the mold board of a plow, which aids



greatly in turning the grass inwards as it is cut, and assists the ordinary rods, B, in their office. These rods are made adjustable, however, in fixed sockets, C, in the manner shown, and held by a set screw.

In addition to these details, there is an outside rod, D, made adjustable in like manner; this performs the important office of turning back the overhanging grass from the swath cut by the machine and throwing it upon the standing grass, thereby bringing the stems open at the bottom, so that in going the next round the machine can again cut to its full capacity, instead of losing six or more inches or cutting the overhanging tops only, as is the case when the grass is heavy or tangled.

By the use of this track-clearer more work can be done, and done much better, in mowing grass, than without it. Experience and a fair trial, says the inventor, will secure its favorable reception every where as a desirable and useful improvement.

For particulars as to rights to sell or manufacture, apply to Frailey & Rohrer, Lancaster, P. O., Pa. Patented by H. L. Frailey, Dec. 5, 1865.

A PNEUMATIC DISPATCH IN BERLIN.—A pneumatic communication has just been set up between the Bourse and the central telegraph office at Berlin. Between the two there have been placed two parallel iron pipes 2,835 feet in length and 3½ inches in diameter. By one of them telegraphic dispatches deposited at the Bourse are carried to the central office, and by the other the reverse takes place in the space of from one minute to a minute and a half.