

IMPROVED SKEIN SETTER.

The machine represented in the engraving is claimed to turn an axle to a pattern so as to make a perfect fit, the axle being produced in the exact form or shape of the inside of the skein or pattern used. At the same time the proper pitch is given to the wheels, all four of which are placed in a plumb spoke, this being necessary to secure an easily running wagon. The apparatus also gives any gather required.

In preparing axles for the machine, it is necessary, first, to chop off the corners as far back as the skein reaches on the axle. It is not needed to lay off the axle, as the machine does this part of the work itself. The skein is next laid in the clamps as shown, and one end of the bar, A, having a friction roller attached, is then placed inside of the skein or pattern, B. The bar is then moved back to the bottom of the skein or pattern, by turning the crank wheel, which is represented on the side of the frame. The axle is now placed between the clamping flanges, which are loosened or tightened by the right and left hand screw, represented in the engraving as holding the axle in position: and the machine is started by pulling the handle, which is attached to a lever in connection with a friction clutch, which works inside of the rim of the driving pulley, C. By means of a feed screw, the sliding frame cylinder and bar, with the knife attached at D, are fed upon the axle until the friction roller comes outside of the skein or pattern. The machine is then stopped by its own mechanism, and cannot be again started until the skein is removed from the clamps and another skein is substituted in its place for turning the opposite end of the axle. When the work is completed, the skein or pattern will fit the wood, it is stated, with perfect accuracy throughout the length turned. The time necessary for fitting the skeins for sixty-five wagons is said to be ten hours, and for fitting the ends of wagon poles, used by agricultural shops, is one minute per pole.

The manufacturers submit a number of testimonials from parties having the machine in use, in which its working is spoken of in the highest terms. They also refer to Messrs. Studebaker Bros., of South Bend, Ind., Brown Manufacturing Company, of Zanesville, Ohio, and a number of other firms employing the invention. The device is the subject of several patents, the latest dated August 18, 1874. For further particulars address the Union Foundry and Machine Works, Mansfield, Ohio.

IMPROVED YARN SPOOLER.

Two machines, one for winding yarn and the other for knitting, both of improved construction and possessing many valuable advantages, have already been described in these columns as manufactured by Mr. C. Tompkins, of Troy, N. Y. We now add a third device, by the same maker, regarding which but little explanation supplementary to the engraving is needed, as its uses, as well as its simple construction, will doubtless be obvious. Its object is to wind skein yarn upon spools for thesewing machine, and it is intended principally for hosiery manufacturers who color their yarn and match the goods. The pulleys are leather-faced: and the jaws, which hold the wire on which the spools turn, are hinged and made heavy enough to cause the spools to move with the pulley face. The machine is mounted on legs, so as to be independent of bench room. It is automatic, only requiring the attendant to keep the ends tied; the reels are light and adjustable to different sized skeins. It is also calculated to save the delay caused to the sewing machine user by spools irregularly wound, and the vexatious breaking of sewing machine needles from the same cause; and it saves time in getting the skein thread on to the spools. The manipulation of the machine is a very simple matter, a child being usually competent to attend it.

Further particulars regarding the invention may be obtained by addressing the manufacturer, as above.

A GOOD lacquer for philosophical instruments is composed of alcohol 8 ounces, gum gutta 3 ounces, gum sandarac 8 ounces, gum elemi 8 ounces, dragon's blood 4 ounces, seed lac 4 ounces, *terra merita* 3 ounces, saffron 8 grains, and pulverized glass 12 ounces.

Recovery of Salt Soils.

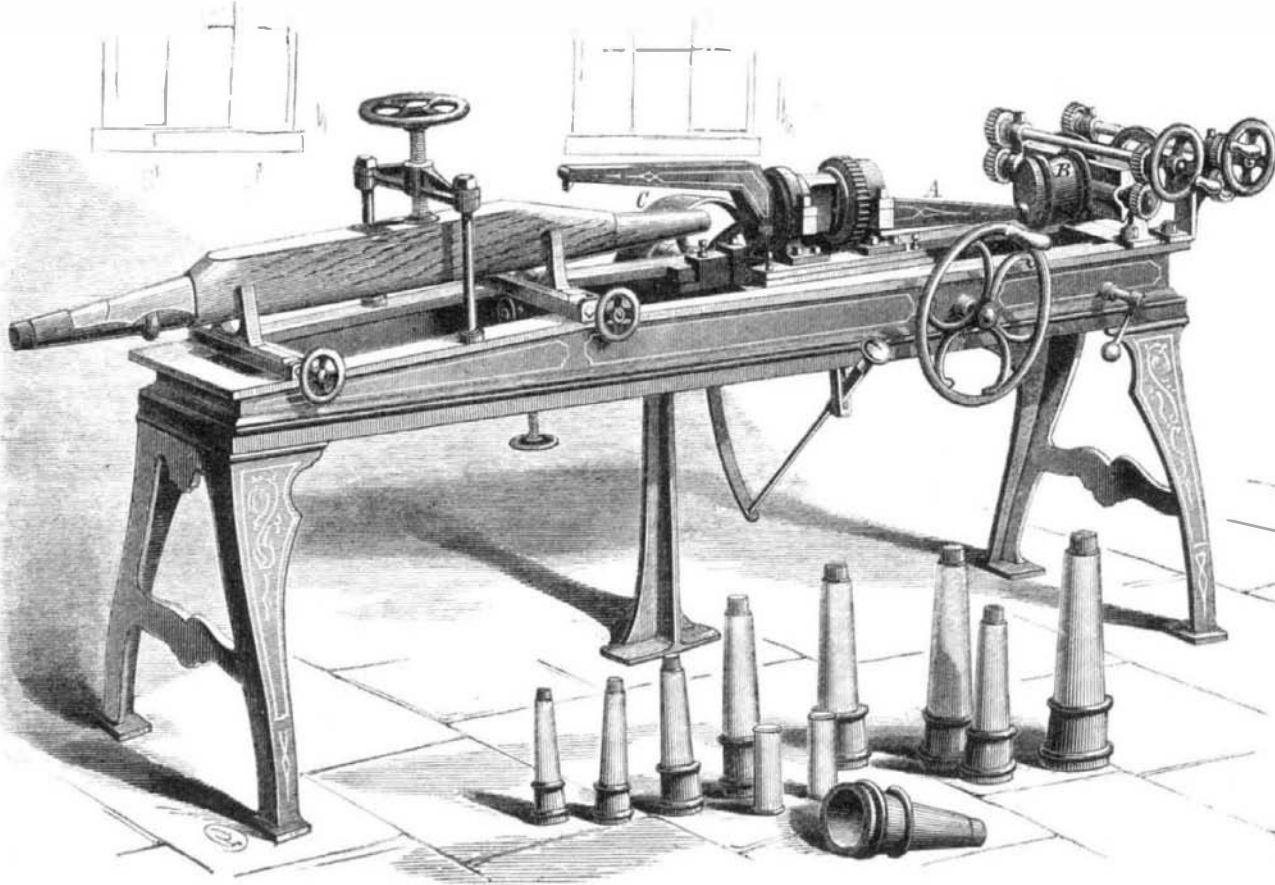
Along the Mediterranean coast of France, there are vast surfaces of ground that are entirely unproductive. The soil, however, which is of rich alluvium, contains the principles of a vigorous vegetation; but the presence of marine salt renders it quite sterile. M. Joannon states that he has succeeded in overcoming this pernicious feature in the following simple way: The land is first drained, and dug up to a great depth (about 20 inches), then covered with fresh water. The water filters through and dissolves the salt, which flows off by the drains. This process is maintained with continuous immersion for three to five months, and the

most of the surface: and (in contrariety to the latter) they have great tension, but small magnetic moment. Suppose, now, the austral pole of a magnet to approach. While it is still distant, it is subject to the predominating effect of the boreal layers of the bar, and is attracted. But when brought quite near the extremity, the austral points gain the predominance and there is repulsion; thus matching Galileo's mysterious stone (which, somehow or other, got lost).

Utilization of Power.

Mr. F. J. Bramwell said in his annual address to the Institution of Mechanical Engineers: "Do we, in our applica-

tions of power, make as much use of wind, water, and waves as we ought, remembering that their power may be transmitted to a distance? Do we resort, to any large extent, to sources of power in Nature other than coal? Is it not the fact that mechanical invention has gone back in these matters rather than forward? And do we utilize that primary source of power, the heat of the sun, the current heat from year to year, making the most of barren hillsides, as it seems to me we might do, by planting quick-growing trees, which, fostered and matured by the sun, would yield large quantities of wood to be used as fuel for domestic purposes? Are we estimating at their full value the deposits of peat, and are we not tempted to pass by this large store of fuel because its use is attended with difficulties? Is it not true that we use coal in the

**IMPROVED SKEIN SETTING MACHINE**

ground is then suitable for agriculture. The general practice of this method, he says, would reclaim for France a whole department of fertile land.

Curious Magnet.

In the year 1607 Galileo wrote to a friend about a wonderful magnetic stone, one property of which was that the same pole would both attract and repel the same piece of iron. At a distance of four or five finger lengths, it attracted the piece, but at a distance of one finger length it repelled it. He found, on examination, that the piece of iron was magnetized steel. In a note to the French Academy, M. Jamin says he is able to produce the phenomenon in a quite intelligible way. He magnetizes a bar to saturation with a cur-

most grossly wasteful manner? How much of the fuel goes up the chimneys of our furnaces unconsumed, in the form of visible carbon, or in the worse, because less readily detected, form of invisible carbonic oxide? In the face of such faults and errors, Mr. Bramwell argues that it is the duty of mechanical engineers, "by precept, practice, and example, to do all that lies in their power to cause all to respect and understand the value of that which they have too long lightly treated and grossly abused."

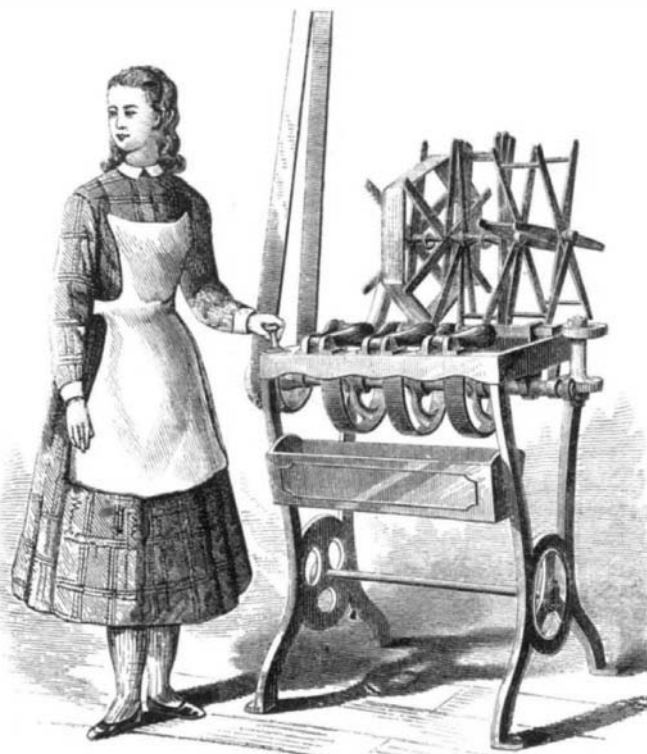
The Use of the Mosquito.

Appropos to our article in answer to an inquiring correspondent on the uses of the bedbug, here is something which imparts a value to the winged nuisance which aids and abets the aforesaid crawling individual in his Macbeth-like efforts toward murdering sleep. Dr. Samuel W. Francis says that it is his "firm conviction that the mosquito was created for the purpose of driving man out of the malarial districts," and "that no region where chills and fever prevail can be free from the pest." "Now," he adds, "if man will not go after the warning is given in humming accents, then the mosquito injects hypodermically a little liquid which answers two purposes—first, to render the blood thin enough to be drawn up through its tube, and second, to inject that which possesses the principles of quinine."

The difficulty with this roseate view of the mosquito family is that it imposes upon the propounder the necessity of explaining why it is that, in hundreds of perfectly healthy localities, the insects appear in swarms, also why the females alone have been constituted the biters, to the exclusion of the males, and why, if the fluid in the proboscis possesses quinine properties, it has been known to cause ugly ulcers. We do not propose to accept Dr. Francis' theory so hastily. We decline to admit that the mosquitoes are of any use save to the birds and the bats, to the inventors of patent mosquito bars, to that enterprising Yankee who devised an astonishing machine for capturing them in immense quantities and converting them into manure, and to Professor Mayer, who found out that they hear with their antennae.

The expensive part of the Daniells' battery is the copper plate, the cost of which can be reduced two thirds in the following manner: Procure sheets of the ordinary sheet tin of commerce, brighten, and plunge into a very weak copper-plating solution, in connection with a voltaic battery of a very low quantity. In fifteen minutes a tenacious film of copper will have been deposited on the tin, and the plate can then be bent into shape and used in the ordinary manner.

A SILVERING powder for coating copper consists of nitrate of silver 80 grains, common salt 30 grains, cream of tartar 3 1/4 drachms. Mix, moisten with water, and apply.

**TOMPKINS' YARN SPOOLER.**

rent producing (say) austral magnetism. Then with an inverse current he communicates the certain amount of boreal magnetism, less than the austral, and leaving some of it in the deeper parts. Then he dissolves the steel with acid, which gradually removes the boreal layers, and ere long discloses the austral. Now, the latter are not disclosed equally all over; they make their first appearance at the extremity, on the edges and corners, the boreal layers still occupying