

PINKING MACHINE.

The annexed engraving represents a simple machine for pinking the edges of cloth, silk, velvet, leather, etc., and is designed to replace the punch used at present. The invention consists essentially of two rollers, one of which has the design in relief, the other having it cut in, the two rollers being in contact. They are made of hardened steel, and are mounted on parallel shafts, one of which is provided with a hand wheel for rotating it. The other shaft is rotated by means of a pair of gear wheels mounted on the shafts. The upper shaft can be raised or lowered according to the thickness of the material by means of an adjusting screw.

The relief of the pattern roller is not sharp, and does not really cut the fibers, but crushes them. As the various pattern rolls are not of the same diameter, the upper shaft is made adjustable in height, and can be locked in any position by means of a screw passing through the side of the frame. This machine is the invention of H. Schmidt, Berlin.—*Deutsche Industrie Zeitung.*

New Use for Sawdust.

The *Lumberman* says: We have been shown a model of a car wheel consisting of an iron rim of seven inches outward diameter by one-half inch thick, fitted with a well proportioned hub, the space between the hub and rim filled with pine sawdust, pressed in so solidly that we are ready to believe the assertion that resting the iron rim upon bearings, a pressure equal to 23 tons applied to the hub failed to develop any signs of weakness. We hesitate in these days of progress to assert that anything is impossible, and we begin to think that even sawdust possesses elements of value hitherto unsuspected, and that the day may come when the filled grounds adjacent to all sawmills may be seen to have a great value in the mechanical development and utilization of the now useless *débris* placed upon them to get it out of the way. Sawdust car wheels, sawdust brick, sawdust fence posts, railroad ties, and even sawdust window and door frames, wainscoting and mouldings, begin to appear among the possibilities of the immediate future.

AMATEUR MECHANICS.

WOOD-WORKING.

It is not the intention of the writer to enter largely into the subject of wood-working, but simply to suggest a few handy attachments to the foot lathe which will greatly facilitate the operations of the amateur wood-worker and will be found very useful by almost any one working in wood. It is not an easy matter to split even thin lumber into strips of uniform width by means of a handsaw, but by using the circular saw attachment, shown in Fig. 1, the operation becomes rapid and easy, and the stuff may be sawed or slit at any desired angle or bevel. The attachment consists of a saw mandrel of the usual form, and a wooden table supported by a right angled piece, A, of round iron fitted to the tool post and clamped by a wooden cleat, B, which is secured to the under side of the table, split from the aperture to one end, and provided with a thumb-screw for drawing the parts together. By means of this arrangement the table may be inclined to a limited angle in either direction, the slot through which the saw projects being enlarged below to admit of this adjustment.

The back of the table is steadied by a screw which rests upon the back end of the tool rest support, and enters a block attached to the under side of the table. The gauge at the top of the table is used in slitting and for other purposes which will be presently mentioned, and it is adjusted by aid of lines made across the table parallel with the saw.

For the purpose of

cross-cutting or cutting on a bevel a thin sliding table is fitted to slide upon the main table, and is provided with a gauge which is capable of being adjusted at any desired angle. For cutting slots for panels, etc., thick saws may be used, or the saw may be made to wobble by placing it between two beveled washers, as shown in Fig. 2.

The saw table has an inserted portion, C, held in place by two screws, which may be removed when it is desired to use the saw mandrel for carrying a sticker head for planing small strips of moulding or reeding. The head for holding the moulding knives is best made of good tough brass or steam metal. The knives can be made of good saw steel about one-eighth inch thick. They may be filed into shape and afterward tempered. They are slotted and held to their places on

ing three spurs, a central aperture, and a series of holes equally distant from the center and from each other, is attached by its spurs to the end of the cylinder to be fluted, and the center of the arbor in the arm, D, enters the central hole in the disk while its finger enters one of the other holes. The opposite end of the cylinder is supported by a center screw. A fork attached to the back of the table embraces the twisted iron, E, so that as the wooden cylinder is moved diagonally over the cutter it is slowly rotated, making a spiral cut. After the first cut is made the finger of the arbor is removed from the disk and placed in an adjoining hole, when the second cut is made, and so on.

Figs. 6 and 7 show a convenient and easily made attachment for moulding the edges of irregular work, such as brackets, frames, parts of patterns, etc. It consists of a brass frame, F, supporting a small mandrel turning at the top in a conical bearing in the frame, and at the bottom upon a conical screw. A very small grooved pulley is fastened to the mandrel and surrounded by a rubber ring which bears against the face plate of the lathe, as shown in the engraving. The frame, F, is let into a wooden table supported by an iron rod which is received by the tool rest holder of the lathe. The cutter, G, is made by turning upon a piece of steel the reverse of the required moulding, and slotting it transversely to form cutting edges. The shank of the cutter is fitted to a hole in the mandrel and secured in place by a small set screw. The edge of the work is permitted to bear against the shank of the cutter. Should the face plate of the lathe be too small to give the required speed, a wooden disk may be attached to it by means of screws and turned off.

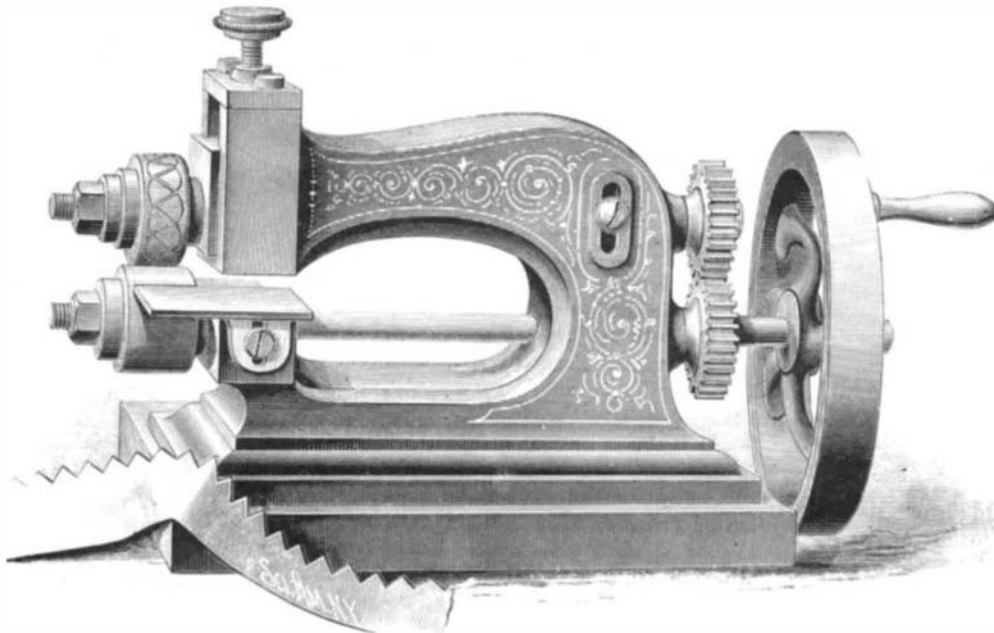
Figs. 8, 9, and 10 represent a cheaply and easily made scroll saw attachment for the foot lathe. It is made entirely of wood and is practically noiseless. The board, H, supports two uprights, I, between which is pivoted the arm, J, whose under side is parallel with the edge of the board. A block is placed between the uprights, I, to limit the downward movement of the arm, and the arm is clamped by a bolt which passes through it and through the two uprights and is provided with a wing nut.

A wooden table, secured to the upper edge of the board, H, is perforated to allow the saw to pass through, and is provided with an inserted hardwood strip which supports the back of the saw, and which may be moved forward from time to time and cut off as it becomes worn. The upper guide of the saw consists of a round piece of hardwood inserted in a hole bored in the end of the arm, J. The upper end of the saw is secured in a small steel clamp pivoted in a slot in the end of a wooden spring secured to the top of the arm, J, and the lower end of the saw is secured in a similar clamp pivoted to the end of the wooden spring, K. Fig. 10 is an enlarged view showing the construction of clamp.

The relation of the spring, K, to the board, H, and to the other part is shown in Fig. 9. It is attached to the side of the board and is pressed upward by an adjusting screw near its fixed end.

The saw is driven by a wooden eccentric placed on the saw mandrel shown in Figs. 1 and 2, and the spring, K, always pressed upward against the eccentric by its own elasticity, and it is also drawn in an upward direction by the upper spring. This arrangement insures a continuous contact between the spring, K, and the eccentric, and consequently avoids noise. The friction surfaces of the eccentric and spring may be lubricated with tallow and plumbago. The eccentric may, with advantage, be made of metal.

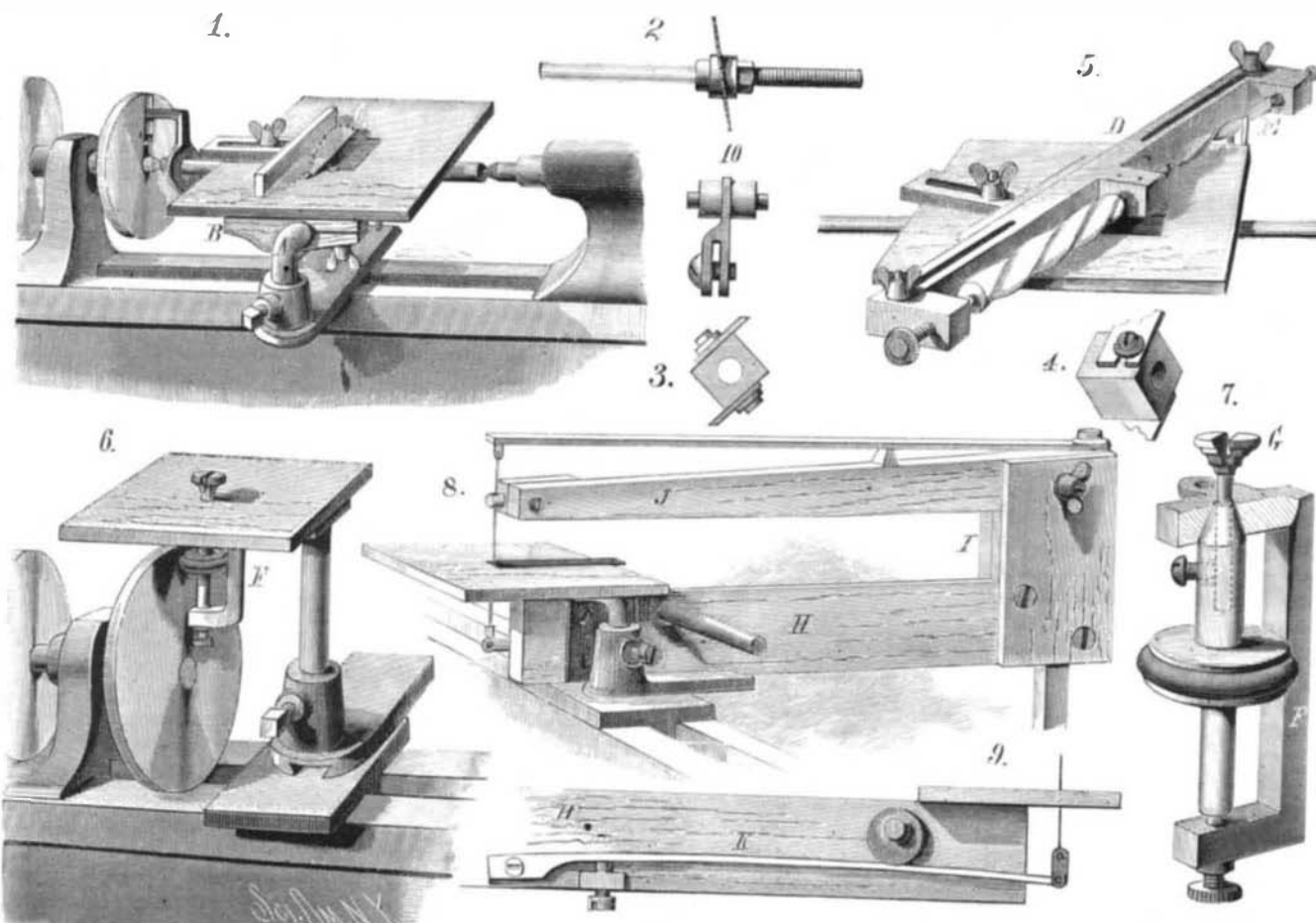
The tension of the upper spring may be



PINKING MACHINE.

the head by means of quarter-inch machine screws. It is not absolutely necessary to use two knives, but when only one is employed a counterbalance should be fastened to the head in place of the other. All kinds of moulding, beading, tonguing, and grooving may be done with this attachment, the gauge being used to guide the edge of the stuff. If the boards are too thin to support themselves against the action of the knives they must be backed up by a thick strip of wood planed true. The speed for this cutter head should be as great as possible.

Fig. 5 shows an attachment to be used in connection with the cutter head and saw table for cutting straight, spiral, or irregular flutes on turned work. It consists of a bar, D, carrying a central fixed arm, and at either end an adjustable arm, the purpose of the latter being to adapt the device to work of different lengths. The arm projecting from the center of the bar, D, supports an arbor having at one end a socket for receiving the twisted iron bar, E, and at the other end a center and a short finger or pin. A metal disk hav-



WOOD-WORKING ATTACHMENTS FOR THE FOOT LATHE.

varied by putting under it blocks of different heights, or the screw which holds the back end may be used for this purpose.

The saw is attached to the lathe by means of an iron bent twice at right angles, attached to the board, H, and fitted to the tool rest support. The rear end of the sawing apparatus may be supported by a brace running to the lower part of the lathe or to the floor.

The simple attachments above described will enable the possessor to make many small articles of furniture which he would not undertake without them, and for making models of small patterns they are almost invaluable.

M.

THE OSPREY.*

One of the most interesting of the predaceous birds which belong to Great Britain is the celebrated osprey or fishing hawk. This fine bird was formerly very common in England, but is now but rarely seen within the confines of the British Isles, although isolated species are now and then seen.

As the bird is a fish-eater, it is generally observed on the sea coast or on the banks of some large river, but has occasionally been observed in some comparatively waterless situation, where it has probably been driven by stress of weather. In some parts of Scotland the osprey still holds its own, and breeds year after year on the same spot, generally choosing the summit of an old ruined building or the top of a large tree for that purpose. The nest is a very large one, composed almost wholly of sticks, and contains two or three whitish eggs, largely blotched with reddish-brown, the dark patches being collected toward the large end of the egg. As in the case with the eagles, the osprey is monogamous; but on the death of either of the pair, the survivor soon finds another mate, and is straightway consoled by a new alliance. From all accounts it is an affectionate and domestic bird, paying the greatest attention to its mate and home, and displaying a constancy which is not to be surpassed by that of the turtle-dove, so celebrated for matrimonial felicity.

The flight of the osprey is peculiarly easy and elegant, as might be expected from a bird the length of whose body is only twenty-two inches, and the expanse of wing nearly five feet and a half. Living almost wholly on fish, the osprey sails in wide undulating circles, hovering over the water and intently watching for its prey. No sooner does a fish come into view than the osprey shoots through the air like a meteor, descends upon the luckless fish with such force that it drives a shower of spray in every direction, and soon emerging, flies away to its nest, bearing its prey in its grasp. In order to enable it to seize and retain so slippery a creature as a fish, the claws of the osprey are long, curved, and very sharp, the soles of the feet are rough, and the outer toe is capable of great versatility. When the bird has settled upon its nest, or upon any spot where it intends to eat its prey, it does not relinquish its hold, but, as if fearful that the fish should escape, continues its grasp, and daintily picks away the flesh from between its toes. Sometimes in making its swoop it arrests itself for a second or two, as if to watch some change of position on the part of its intended prey.

The singular beauty of the osprey's flight attracted the attention of M. de Quatrefages, who remarked that the bird was able with outstretched and immovable wings, not only to withstand the power of a "squall" that would have flung a man to the ground, but even to work its way against the wind. How this feat was performed he confesses to be a mystery to him, and that the so-called scientific theories of "acquired velocity" or "tremulous movement" of the wings could not at all account for the phenomenon which he observed.

Harmless though the osprey be—except to the fish—it is a most persecuted bird, being not only annoyed by rooks and crows, but robbed by the more powerful white-headed eagle, who strikes the osprey on the wing and snatches from the poor bird the results of its morning's labors.

*For our beautiful cut of the osprey we are indebted to "Brehm's Animal Life." We extract the description from "Wood's Natural History."

There is but one species of osprey, although it has been thought that the American bird ought to be reckoned as a different species. The general color of the osprey is dark brown, but it is pleasingly variegated with various shades of black, gray, and white. The crown of the head and the nape of the neck are covered with long gray-white feathers, streaked with dark brown. The under surface of the body is white, with the exception of a light brown band which extends across the chest. The primaries are brown tipped with black, and the tail is barred above with a light and a deep brown, and below with brown and white. The legs, toes, and cere are blue, the eyes golden yellow, and the beak and claws black.

A Wasp Attacks a Spider.

Mr. Seth Green, writing to the *New York World*, says that one morning when he was watching a spider's nest a wasp alighted within an inch or two of the nest, on the side oppo-



THE OSPREY.—(*Pandio haliaetus*.)

site the opening. Creeping noiselessly round toward the entrance of the nest the wasp stopped a little short of it and for a moment remained perfectly quiet; then reaching out one of his antennæ he wiggled it before the opening and withdrew it. This overture had the desired effect, for the boss of the nest, as large a spider as one ordinarily sees, came out to see what was wrong and to set it to rights. No sooner had the spider emerged to that point at which he was at the worst disadvantage, than the wasp with a quick movement thrust his sting into the body of his foe, killing him easily and almost instantly. The experiment was related on the part of the wasp, and when there was no resort from the inside he became satisfied probably that he held his fort. At all events he proceeded to enter the nest and slaughter the young spiders, which he afterward carried off the at a time.

IMPROVED FERTILIZER.—In Biedermann's *C. Bl. l.* W. Pochin describes a new fertilizer obtained from sls produced by dephosphorizing iron with lime. The sls are powdered, are treated with muriatic acid for removal of the iron and lime, and are finally transformed into phosphates by means of sulphuric acid.

Peculiar Reddening of Salted Codfish.

During the hot and damp weather of summer a peculiar redness often makes its appearance on salted codfish, rendering them unfit for the market and causing them to putrefy comparatively quickly. The loss suffered by dealers from this cause during some years is considerable. Prof. W.G. Farlow, of Harvard University, having been requested to investigate the matter, has rendered a report, which appears as an appendix to the recently issued report of the U. S. Fish Commission for 1878.

Prof. Farlow finds, on microscopic examination, that the redness is due to a minute alga known to botanists as *Clathrocystis roseo-persicina*. The plant consists simply of very minute cells filled with red coloring matter and embedded in a mass of slime. Its development has been studied by several botanists, who agree in considering it closely allied to *C. æruginosa*, a common species growing in freshwater ponds, and which has lately come into public notice in consequence of the so-called "pig-pen" odor which it exhales when decaying. The species found on the codfish is also known in dissecting-rooms, where it grows in tubs in which bones are macerating. Wherever found it does not flourish nor increase very rapidly at a temperature below 65° F. Although the plant may be introduced into the fish-packing houses from the marshes in the vicinity of Gloucester, Prof. Farlow is inclined to believe that its origin is to be looked for from another source. The two kinds of salt most used by the fishermen of Gloucester are the Cadiz and Trepani. The former has a rosy tinge, while the latter is pure white. An examination with the microscope revealed the fact that the rosy color of the Cadiz salt was due to the presence of considerable quantities of precisely the same minute plant which is found in the red fish. What must happen then is plain. When the latter salt is sprinkled in large quantities upon the fish as they are packed in the hold of the vessel, the plants, if the weather is sufficiently warm, begin their growth, and the fish are soon affected during the voyage. As a preventive of the evil, Prof. Farlow recommends that every part of the woodwork of the packing houses be painted, so it may frequently be washed clean and the lodgment of the plant be prevented. He also suggests that Trepani salt be used instead of Cadiz in curing the fish, although the cost may be greater.

Descent of Man.

Two French savants have for the last twelve months been keeping nine pigs in a state of habitual drunkenness, with a view to testing the effects of different kinds of alcoholic liquors; the Prefect of the Seine having kindly put some sties in the yard of the municipal slaughter-houses at the disposal of the savants, in order that they might conduct their interesting experiment at the smallest cost to themselves. Pigs were chosen for the experiment because of the close resemblance of their digestive apparatus to that of man. The pig who takes absinthe is first gay, then excitable,

irritable, combative, and finally drowsy; the pig who has brandy mixed with his food is cheerful all through till he falls to sleep; the rum swilling pig becomes sad and somnolent almost at once; while the pig who takes gin conducts himself in eccentric ways; grunting, squealing, tilting his head against the sty door, and rising on his hind legs as if to sniff the wind. Dr. Decaisne, describing these experiments with intoxicated swine, remarks in the *France* that they are none the worse for their year's tipping.

These experiments, taken in conjunction with the pig's well known personal peculiarities in feeding and his obstinate refusal to travel the correct path, go far to show that man was evolved from the hog rather than from the monkey, as some have surmised.

FOREIGN COMMERCE TO THE UNITED STATES.—The Secretary of the Treasury reports that the value of merchandise exported from the United States for the single month of December, 1880, was ninety-eight million eight hundred and fifty-six thousand six hundred and thirty-two dollars (\$98,856,632), being the largest monthly export ever made in the history of the country. The total exports for the year 1880 were \$889,649,840. Imports during same period, \$696,803,433.