

UTILIZATIONS OF THE GOOSE QUILL.

Metal pens came into general use in about the year 1840, supplanting, as is well known, the time honored goose quill. For the latter it therefore became necessary to discover some other utilization, and efforts in this direction have led in France to the establishment of a new industry, the manufacture of the so-called "feather articles" (*articles de plume*), the creators of which, and the inventors of the ingenious

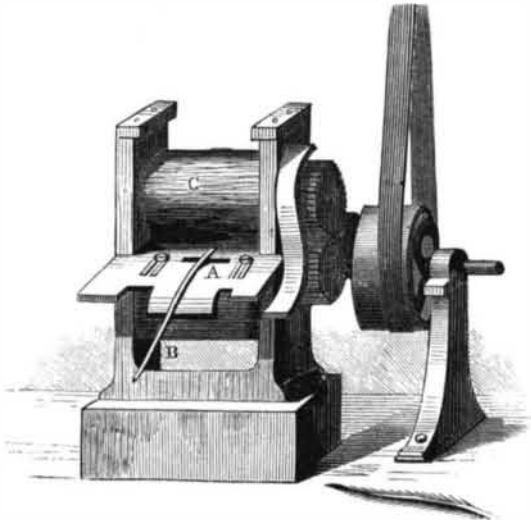


Fig. 2.—CUTTING FEATHER SHAVINGS.

machinery by which it is practiced, are MM. Bardin and Soyez. At present there are not enough geese raised in France to supply its needs, and hence large quantities of the feathers are imported into that country from Siberia and Russia.

The feathers of the goose wing, which are the only ones used, are classed by numbers, according to their position in the wing. Each package in commerce is composed of plumes of the same number, because each variety has a special application. In order to exhibit the process of manufacture it is necessary first to dissect one of the principal feathers employed, namely, the *bouts d'aile*, or exterior feathers of the wing. These consist of a strong stem or quill bent, and having on one side short and on the other long barbs, as shown in Fig. 1. The feather was useless for pen making, as, owing to the difference in weight of its vanes, it did not balance in the hand. This defect, however, now becomes the chief merit of the feather, as the short barbs or *biots*, 2 in our engraving, are especially useful. The first operation is to soak the feathers thoroughly in water. Then the lower portions of the quill are cut off by a special machine, and the plume is ready for the removal of the brillantine, 1. This is the thin horny layer which covers the outside of the shaft. It is removed by hand with a penknife in fine strips, and is sent in large quantities to dyers, who dye it in various bright colors. It then is used for the manufacture of light tufts or plumes for bonnet trimming. The wide barb, 3, is also removed by hand. The feather thus denuded is placed, little end first, under a roller, B C in Fig. 2, which carries it against a cutting edge which slices off the upper shaving, 4, a horny layer between the vanes on the back of the feather and under the brillantine. The remaining portion is again put through a similar machine and a second slice is taken off, called the lower shaving, 5. These shavings next go to the apparatus represented in Fig. 3, which has cylinders on which are cutting screw-threads, by which the shavings are split up into numerous fine filaments. With these, known as feather bristles, excellent brushes are made, and the waste and short scraps are employed for stamens, etc., of artificial flowers. The interior of the figure 6, Fig. 1, is a soft, white, elastic pith. This is ground up into a fine flock, and is used for the manufacture of flock wall paper. The material is suitably colored, and is sifted upon the paper while the coloring matter on the latter is yet wet. It adheres and produces a cloth-like surface, and is said to take dye better and to form a much more beautiful surface than the wool flock commonly employed.

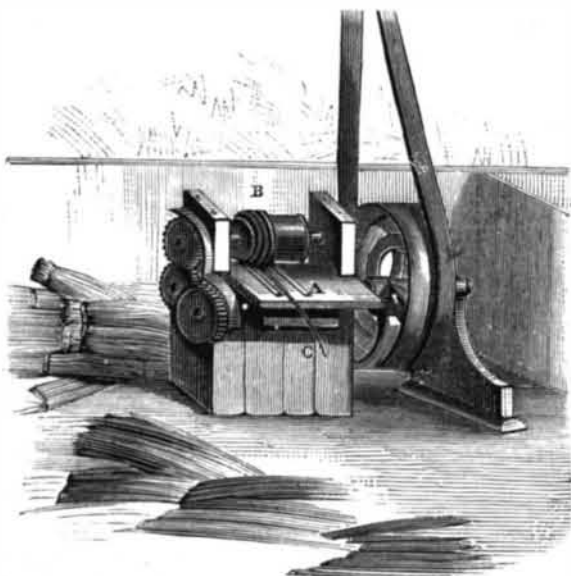


Fig. 3.—SPLITTING FEATHER SHAVINGS.

The barbs of the feather are dyed and worked in between the threads of a woven backing, with which they form a kind of felt, their barbules tightly interlocking. So firm and close is the fabric thus produced, that several hours' rubbing by coarse feather bristle brushes worked by steam power is necessary to raise the nap sufficiently to give the material the desired appearance of a thick rich plush.

We have now traced the manufacture of all the different parts of the feather except the barrel or quill which was cut off. This is converted into toothpicks by the stamp or press exhibited in Fig. 4. The details of the cutting dies are shown in Fig. 5, at A, B, and C. At the factory of the above named manufacturers some 250,000 quill toothpicks are thus daily made.

There is much to do to the quill, however, after the above described cutting before it becomes a finished toothpick. The opaque covering skin must be taken off and the interior pith removed. The first is usually done before the toothpicks are cut, and is accomplished by throwing the quills into a large vat, where they are violently agitated with water simply. After the cutting, the quills are placed in a wire basket and moved to and fro in the water until the light pith within is washed out. The picks are then dried in a centrifugal apparatus and by heat, and are next made into bundles by means of the apparatus represented in Fig. 6. The toothpicks are simply inserted in a receiver, A, their ends, B, gathered in the hand and a copper ring slipped over them. Then while they are held in the ring they are bound by red string into a tight bundle.

Toothpicks are often met with in this country with names of popular restaurants or with fancy designs stamped upon them. Quill pens are also similarly ornamented. This is done by inserting the quills into a receptacle, A, Fig. 7, which contains ashes heated by a lamp beneath. When they



Fig. 1.—THE GOOSE QUILL DISSECTED.

have arrived at a proper heat the quills are removed and laid upon a band of iron, B, on which are raised characters or figures. Upon this they are pressed by the lever, C. The difference in temperature suffices to produce transparent letters, etc., on the dead white body of the quill.

Quills are also used for paint brush handles, in connection with cork for floats for fishermen, as a cover for cigarettes, and to form the stems of fuses for cannon. The ordinary percussion fuse has a quill stem filled with fine powder and a fulminating capsule above. The quill is inserted in the vent of the gun, and the capsule comes beneath the hammer when the lock string is pulled.

New Inventions.

A novel Sad Iron patented by W. B. Dolsen and J. B. Sherwood, of Moberly, Mo., has a hollow cylindrical handle filled with oil; from this runs a wick, which extends into a chamber in the iron and is there ignited, thus keeping the iron hot. The oil reservoir and lamp portion can be readily removed.

Royal W. Barnard, of Fayette, Iowa, has patented a Process for Purifying Rancid Butter. It neutralizes and removes the developed acids which are formed upon the butter globules by the fermentation of the milky film, and consists in working the butter through a solution of brine containing an alkaline carbonate mixed with a solution of tartaric acid

or its equivalent. The alkaline carbonate neutralizes the rancid acid, while the effervescence, caused by the decom-

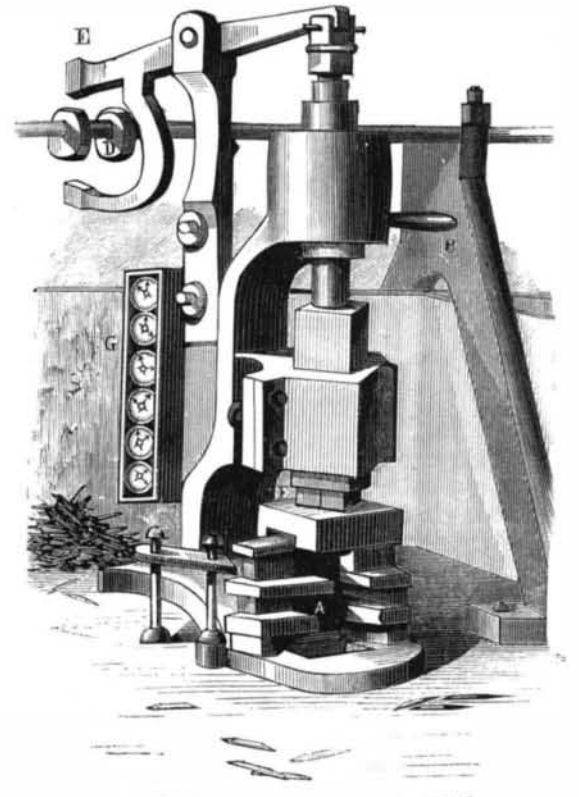


Fig. 4.—STAMP FOR TOOTHPICKS.

position of the alkaline carbonate by the tartaric acid, loosens and removes the neutralized impurities.

Philip Pointan, of Baltimore, Md., has patented a Roofing Tile. It has upon one side an overhanging lip and upon the other two parallel projecting ribs between which the overhanging lip of the next adjacent tile fits and is secured. A ridge is formed near the end of its upper face, a corresponding groove upon its lower face at the opposite end, and also a raised and hollowed out cap piece at the said lower end of its upper face which covers and holds the adjacent lip and ribs of the two next lower tiles, said cap piece being raised to double the height of the marginal side ribs and lip, so that, when the tiles are laid face to face in piles for baking, the cap pieces abut against the lower plain surface of the tile to form a support for it at the ends, the ribs and lip resting upon each other at the ends, and a central projection resting upon a similar projection in the center; the whole to form a reciprocal support for each and every tile at the ends, side, and center, which holds them straight during the baking operation and prevents warping.

Byron E. Chollar, of Chicago, Ill., has patented an Automatic Feed Regulator for Carbureters. It is designed more particularly for regulating the feed of the hydrocarbon in carbureting ordinary city illuminating gas in large public buildings, in order to enrich the quality of the gas just before it is consumed, and thus to secure a more economical consumption as well as a better light, by making a smaller amount of gas supply the requisite light by reason of its increased illuminating power resulting from the absorption of the rich hydrocarbon. It consist in connecting the valve of any of the ordinary forms of automatic gas governors directly with the valve or cock controlling the supply of hydrocarbon so as to cause them to act in constant unison together, whereby the sensitiveness of both valves is always the same, and the flow of the gas and hydrocarbon always bears a constant and uniform relation to each other independently of the carbureting apparatus.

In a Coffin patented by Lewis W. Drake, of Hazleton, Pa., the ends and sides are connected by intermediate corner pieces, placed at obtuse angles thereto. The corner pieces are made with semi-circular side beads, and the joint with

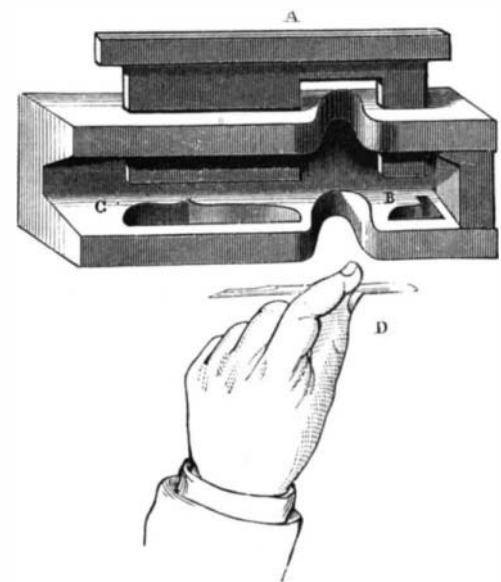


Fig. 5.—TOOTHPICK CUTTING DIES.

the ends and sides obtained by interlocking tongues and grooves of a suitable form.

Salomon Pischlowitz, of New York city, has invented a method of Turning Angular Bodies having Convex Surfaces. It consists of wooden boxes having an oblong groove of twice the size of the body to be turned, and socket holes for inserting the tenoned ends of the blocks. The boxes are secured to the lathe center and turned by the spindle, so as to cut, first, the outer sides. The blocks are then changed in the boxes, and the second side cut, and so on until the sides are turned off forming angular bodies with arc-shaped sides.

A Folding Chair patented by Zenophon Earle, of Apple-

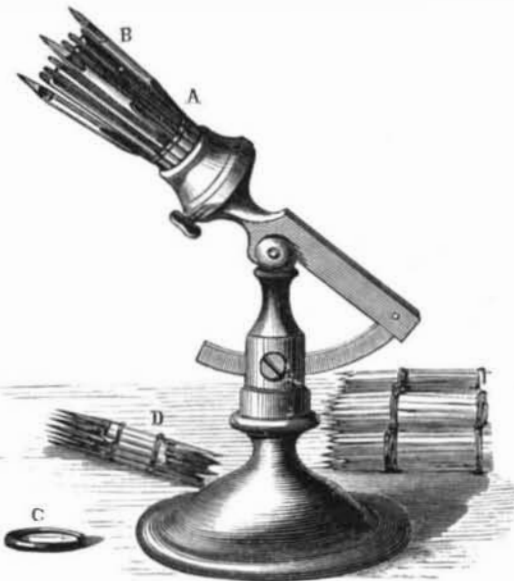


Fig. 6.—BUNCHING TOOTHPICKS.

ton, Wis., consists of the following connected pieces: A back, a swinging seat with locking side pieces, hinged front legs, and rounds connecting center bar or side bars. It is easily folded up. The side pieces and center bar of the rounds make the chair strong and durable.

An Orthographic and Numerical Frame for the use of schools patented by Henry O. Harden, of Stoutsville, O., consists of a rectangular frame. Parallel cross slats are framed into one side bar of the frame, but the other side bar is made into two parts securely attached together, with a space between. The cross bars are grooved to receive letter or numeral blocks inserted through the opening of the side bar. It will prove a great help to teachers.

A Spring Air Gun patented by Michael Weber of Zurich, Switzerland, consists of an air cylinder and sliding spring-piston arranged in the stock, and connected with the barrel by a sliding air tube, which is carried back to set the spring piston to the trigger catch by a swinging lever and trigger guard, that engages, by a toothed front segment, a bottom rack of the connecting air tube. As soon as the air tube is carried back, a hinged guard shield is dropped below the breech of the barrel, and admits the insertion of a ball. The return of the lever carries the air tube back to connect with the barrel, and raises the guard shield, the gun being then ready to be discharged by pulling the trigger, which releases the spring piston, and throws the ball by the compression of the air in the air cylinder and tube.

John P. Dorr of Oconto, Wis., has patented a Steering Apparatus, of the kind used to move rudders by steam pressure. His improvements consist of a chain sheave over which the tiller rope runs. The slide valve of the valve chest of the cylinder is connected with a sliding bar which is operated by a lever fulcrumed above the deck. By it the motion of the rudder is controlled by shifting the valve, so as to admit steam to the cylinder as circumstances may require.

A Hat Box patented by Frederic Jinkins of Orange, N. J., has its body extended above the base of the rim and formed with a lip which

is adapted to engage with a flange on the rim portion. The hat is thus held securely in place and is prevented from turning or shaking around, and from rubbing the binding.

A Ship's Log invented by David Carroll, of Spring Creek, Pa., consists of a tube passing down through the bottom of the vessel and forming a well hole below, in which two revolving screws are arranged, of which the upper is placed parallel to the longitudinal axis of the vessel, the lower at right angles to the same. The revolutions of the screw are indicated by suitable transmitting gearing and registering apparatus inside of the vessel. Below the screws is arranged a longitudinally and laterally swinging speed indicator that works a pointer along a graduated plate.

A Roller Skating Surface, the invention of George M. Rollins, of Brooklyn, N. Y., consists of a floor composed of rock-asphalt, bitumen, and resinous oil, which are mixed together and applied in a warm and plastic state. It is manipulated by means of floats until the surface becomes entirely cold and level.

An Invalid Bed Attachment patented by B. D. Brown, of Shamrock, Mo., can be worked by one nurse, and enables the patient to be easily moved. Canvas is attached by side pieces stretched by end cross pieces and raised by a portable hoisting apparatus attached by hooks to cords of the side piece. A second canvas is hinged to the main canvas and raised in the same manner.

A Car Axle Box has been patented by Trenton W. Lillard, of Luray, Va. In the bearing of the upper part is placed a lining of anti-friction metal to receive the wear, and in the face are formed grooves to receive the surplus oil from the journal and carry it down into the grooves in the surface of the lower part to a wick, which by an arrangement of endless bands catches any grit or surplus oil and carries it down into a tank.

Messrs. W. H. Haylock and Alonzo Benedict, of Jonesville, N. Y., have patented new Wagon Springs. The invention consists in making the side bars each of two parts, joined together at the middle of the vehicle by a flexible steel plate, which is secured by a slip or otherwise to the center of a side spring. The ends of the latter are attached one to each of the two parts of the side bar.

A new Level has been devised by Mr. Oliver Pickering, of Needham, Mass. Movable sights are combined with a common level so that they may be thrown out into position for use, or retracted, in order that the level may be used in the ordinary way.

Caleb W. Durham, of Chicago, Ill., has patented a Hot Air Furnace which is composed of two parts: First, a rect-

angular, oblong combustion chamber, from which projects a series of radial, inclined, continuous flanges; second, a case enclosing the aforesaid parts. The air circulates in passages formed between the combustion chamber, outer case, and the parallel flanges, and becomes highly heated before escaping at the top of the furnace into the conducting flue. The flanges have a lengthwise inclination on the sides of the combustion chamber, but are horizontal at the corners thereof, which construction causes the air currents to change at each corner in such a manner that at each angle or corner the colder portion takes the place of the warmer, so that the whole is uniformly heated. The furnace is said to be an effective one.

A new Basket has been invented by Mr. Abraham Fox of

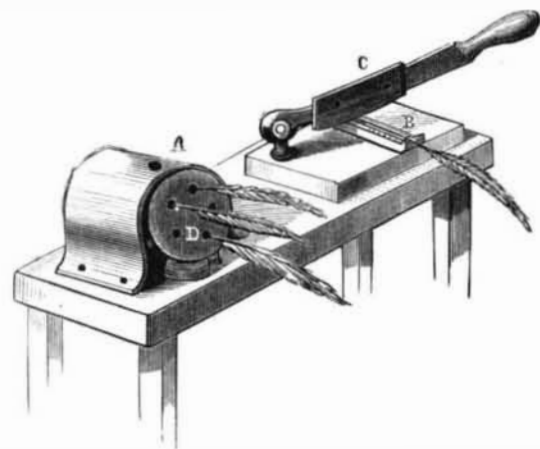


Fig. 7.—CUTTING QUILLS.

Stittville, N. Y. It embodies a new mode of combining the splints together and with strengthening splints so as to increase the strength and durability of the bottom.

A new Ironing Board invented by Mr. Andrew Aitken of Well's River, Vt., is so constructed that it may be readily attached to or detached from the table without marring the latter. When attached it is firmly and securely held.

Mr. Jeremiah E. Walton has patented a new Thill Coupling in which the rubber blocks or packing which render it noiseless and which take up the wear may be removed without taking out the thills and without the aid of a wrench.

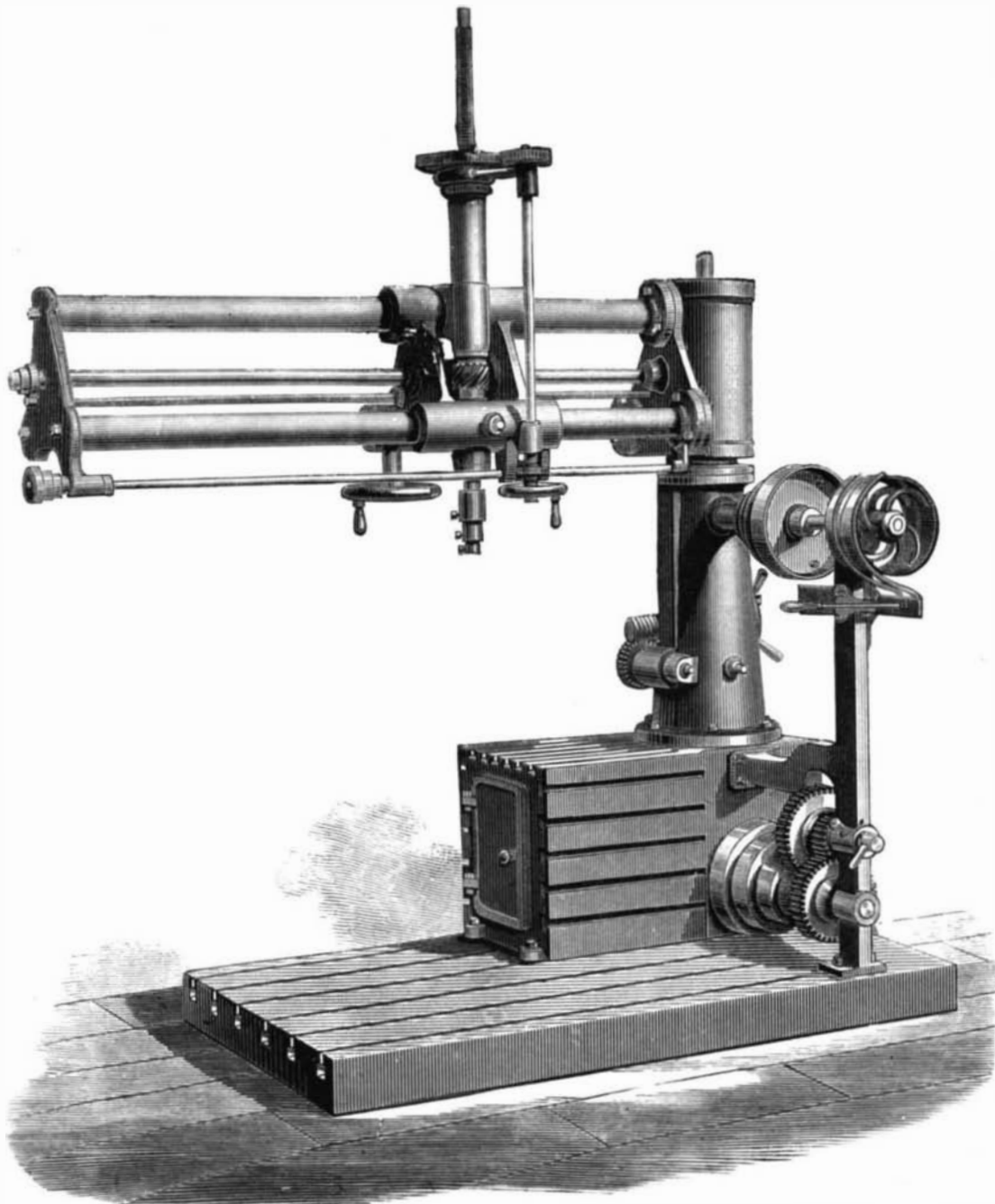
RADIAL DRILLING MACHINE.

We copy from *Iron* an illustration of a new English radial

drilling machine. It is made on a very different system from that of the older radial, and is not nearly so heavy, nor does it so much obstruct the light. The expense is considerably diminished, owing to the reduction in weight and number of parts, and in the cost of fitting. The driving head and spindle in this machine slides upon an arm composed of three bars placed parallel and in a triangle with each other. With the arm constructed in this manner the side twist commonly found in the working of radial drills does not appear. This machine has an all-round sweep, and can be set to bore at any position in the circle—an arrangement which is convenient for drilling the ends of long articles, which can be placed in a pit sunk beside the table. The hand wheels for working the spindle and horizontal slides are quite close to the spindle, so as to be always within reach of the workman, wherever he may be operating.

In a modification of this machine the three bars slide through a bracket supported on the main pillar of the machine. The spindle is placed at the end of the arm and exactly in the center of the bars.

Owing to the simplicity and lightness of the working parts of these machines, they can be adjusted with great facility, vertically, radially, and horizontally, and thus a great amount of work can be obtained from them. Their general arrangement is good and compact, the construction is strong and durable, and the various movements are within reach of the workman.



RADIAL DRILLING MACHINE.