

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-

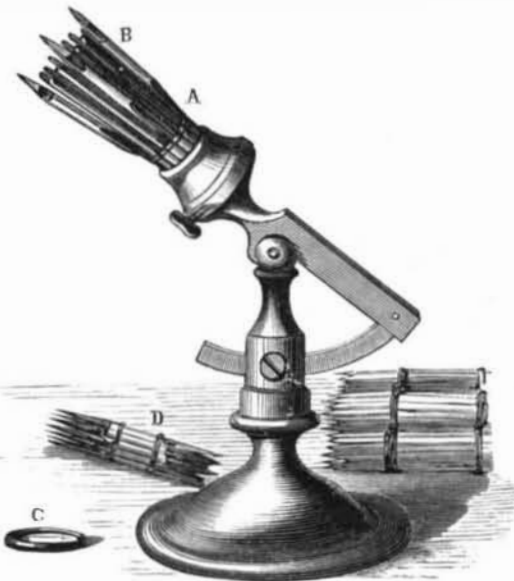


Fig. 6.—BUNCHING TOOTHPICKS.

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

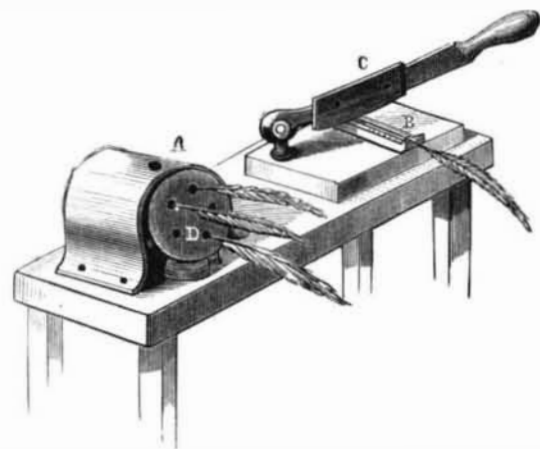


Fig. 7.—CUTTING QUILLS.

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.

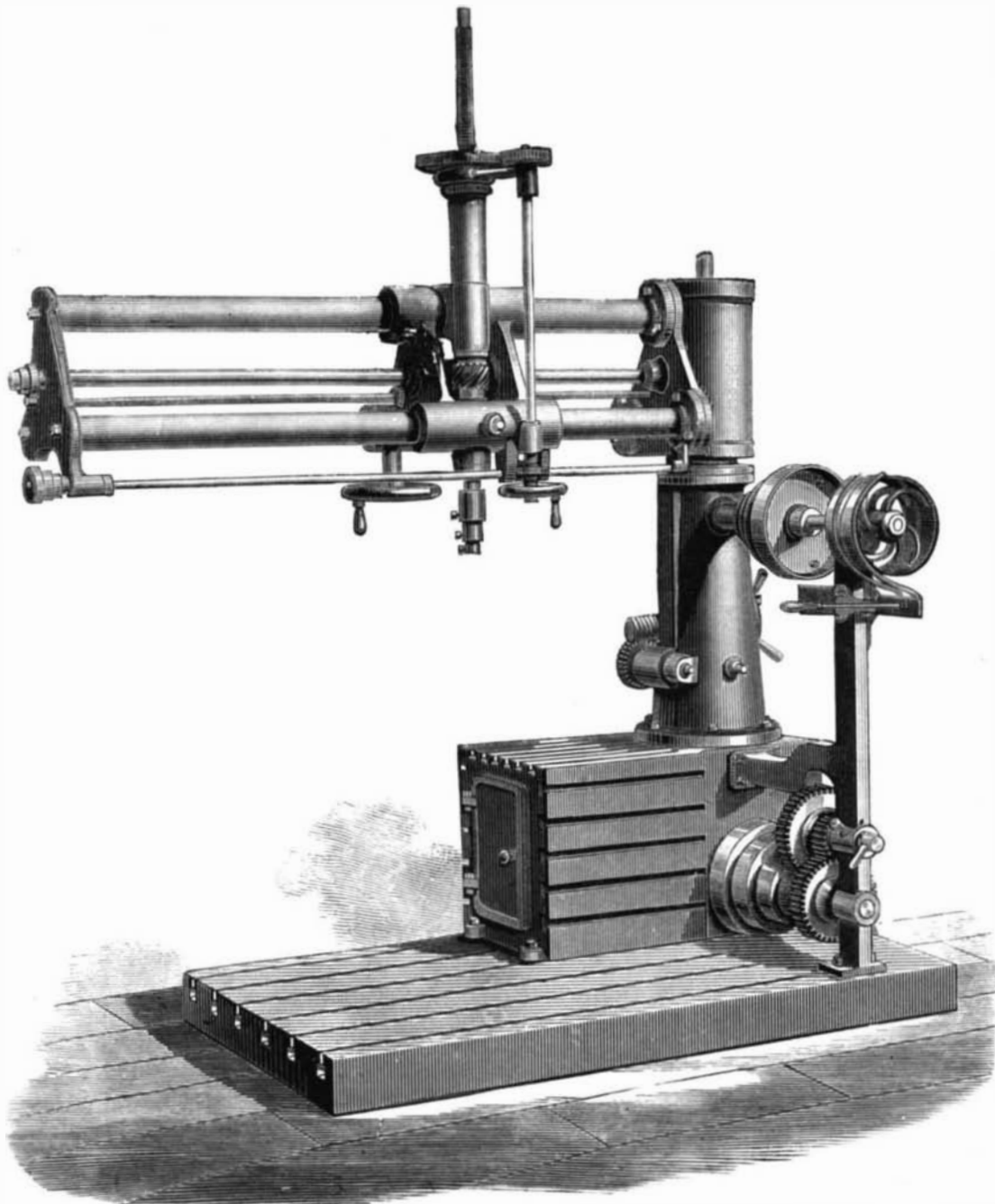
**RADIAL DRILLING MACHINE.**

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.**