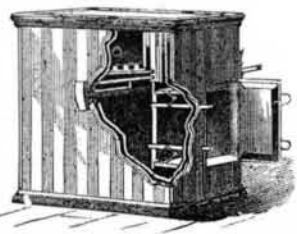


RECENT INVENTIONS.

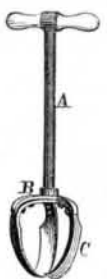
Improved Refrigerator.

The engraving shows a new refrigerator having the walls so constructed that the non-conducting material cannot be destroyed by moisture, and it is claimed that in this refrigerator considerably less ice will be required than in refrigerators of the usual construction. The walls, top, and bottom are made of three partitions, having paper placed between the outer and middle partitions, and having an air space formed between the middle and inner thicknesses. A smaller chamber is arranged within the refrigerating box and provided with a swinging top and bottom, which are opened automatically when the door of the small compartment is closed, and are closed automatically when this door is opened, so that the warm air of the room is prevented from passing into the large refrigerating box. This invention has been patented by Mr. Charles G. Wiesner, of 1507 Main street, Kansas City, Mo.



Earth Auger.

Messrs. Thomas Porter and George W. Gilliland, both of Abilene, Texas, have recently patented an earth auger, that requires but little power to operate it, and with which a hole can be bored in ordinary soil in much less time than with the common earth auger. Referring to the engraving, A is the shaft, having at its lower end radial arms, B, that are curved downwardly at their outer ends. To the arms, B, are attached the spring blades, C, having shanks that are bent to correspond with the curvature of the arms, B, and extending downward, and curved inward at the bottom to near the axis of the shaft. The shaft has an eye in upper end for inserting a sweep to turn the auger. In ordinary soil it is self-feeding, and requires but little pressure to start it in a hard soil. The earth which the blades cut loose is gathered in the blades, and held for raising out of the hole. The blades are adjustable on the arms for different sized holes. Further particulars may be obtained by addressing Thomas Porter, P. O. Box 24, Abilene, Texas.



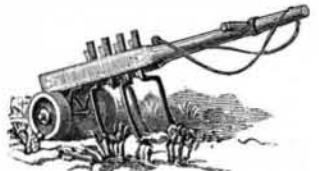
Adjustable Mop Holder.

An improved device for holding a mop, scraper, carpet stretcher, broom and brush handles, and other objects, has been patented by Mr. Isaac A. Rowell, of New Paris, Ind. Two shallow cups, one having a socket for attaching a handle, the other being enough smaller to set bottom up in the first, are each provided with ratchets in their inner surfaces, and are held to each other by a key that passes through the center of each of them, as shown in the engraving. A part of the rim of the outer cup is cut away, and to the inner cup is secured a pair of spring wire clamping jaws, provided with a slide to close them together to grip any object placed between them. By removing the key the parts can be so placed in relation to each other that the clamping device shall be at any desired angle with the handle, and they are secured in this position by replacing the key.



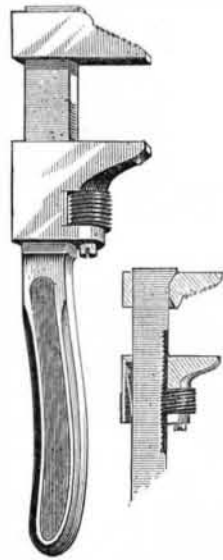
Blake's Improved Cultivator.

The implement shown in the engraving is a hand cultivator applicable to stirring up the soil between growing crops in gardens and other plats. The cultivator may be conveniently supported in front by a band or strap passing over the shoulders of the operator, and it may be readily guided and adjusted as to the depth to which it should work by simply pressing on handles attached to the beam as the operator draws the cultivator after him. By taking out one or more of the cranked cultivator teeth, of which there may be any desired number, the implement may be adjusted to work between rows of different widths. This is easily done by taking out the wedges which hold the teeth in place. A hand cultivator of this kind is cheaply and readily made, and will thoroughly stir the soil, destroying all weeds, and leaving the soil in a smooth mellow condition. This invention has been patented by Mr. William Blake, of Chester, S. C.



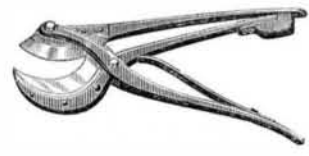
Improved Wrench.

We give a perspective and a detail view of a novel wrench recently patented by Mr. Henry Tregellas, of Delaware Mine, Mich. This is a combined nut and pipe wrench provided with a reversible jaw to adapt it to both nut and pipe work. The larger figure is a perspective view of the wrench, with its reversible jaw arranged to adapt the instrument as a nut wrench; and the smaller view is a partially sectional longitudinal view of the wrench with its reversible jaw adapted for a pipe wrench. The body of the wrench terminates at its lower end in a curved skeleton handle. The movable jaw is fitted to slide on the bar, and is adjustable thereon by means of a screw arranged to be turned by the thumb of the hand which holds the wrench. The screw projects through a slot in the jaw and engages with a spirally toothed hollow rack in the front side of the bar. This jaw has a recess in its back, in which is a spring. The spring holds the screw in gear with the rack. By throwing the screw out of engagement with the rack the jaw can be pushed forward or backward by the thumb to adjust it to its work, so that only a slight turn of the screw is afterward necessary to give the requisite grip. The same construction also provides for the rapid removal of the serrated jaw from the bar and over and off the skeleton handle. When the wrench is in use the harder the strain thrown upon the jaw the firmer will the screw engage with the rack. The tool can be very quickly changed from a nut wrench to a pipe wrench.



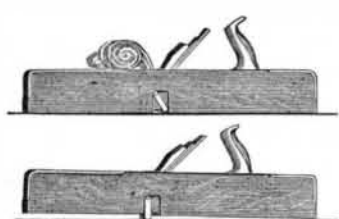
Slanker's Pruning Shears.

In the improved pruning shears shown in the engraving one of the shear blades is attached to a lever which ranges along the lever of the other shear blade, and is pivoted at the point of the blade to a lever, which is itself pivoted to the lever of other shear blade in about the position where shears are ordinarily pivoted, making an efficient compound lever arrangement, enabling the instrument to cut more powerfully than in the simple form. This useful invention has been patented by Mr. Frank O. Slanker, of Pomona, Cal.



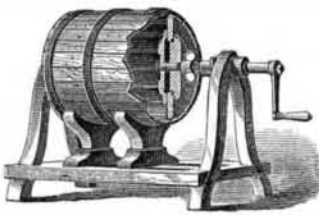
Improved Bench Plane.

The improvement consists in a stirrup pivoted to the sides of the plane in such a manner that the cross piece of the stirrup passes through a transverse groove in the under surface of the plane, this groove increasing in height toward the rear of the plane, so that when the plane is drawn backward it will be slightly raised by this stirrup, so that the cutting-edge of the plane iron cannot slide on the board being planed, the object being to prevent dulling the cutting-edge of a plane-iron by the backward movements of the plane. The upper figure of the engraving shows the position of the stirrup while the plane is being moved forward, and the lower figure shows the plane as lifted by the stirrup during its backward movement. This invention was recently patented by Mr. Geo. F. Sawyer, of Livingston, Tex.



Improved Churn.

The invention shown in the annexed engraving consists in an internally serrated churn journaled in standards, and provided with an opening in one of the heads, closed by a cover held in place by a screw pintle passed through a cross piece on the inside of this head and through the cover, the cover being pressed against the head by a winged nut on the threaded pintle. The end of the threaded pintle is screwed into one end of the journaled handle shaft, which, when the pintle is screwed in the proper distance, is locked by means of a latch to prevent further longitudinal movement and to rotate the churn. There is a sliding supporting frame on the base of the churn for holding the



cream box during adjustment of the bearings. By rotating the churn by means of the crank the cream is quickly operated upon to release the oil globules, and the butter is produced with little exertion. This invention has been patented by M. Henry Hays, of Bridgeport, Cal.

Wages in American and English Shipyards.

In the building of iron ships the mechanics employed may be roughly divided into thirty-six classes, in five departments; in the shipyard department, fourteen classes; in the departments of steam engine and boiler building, seven each; in the iron and brass foundries, four grades each. The wages paid in these several departments here and in England are thus contrasted by *Our Continent*:

In the first department the highest wages paid go to the shipsmith, and the lowest to the rivet boys. In the United States the shipsmith receives per week \$15.95; in England \$6.65; the rivet boy here gets \$3.30; and abroad \$1.69. In the steam department the draughtsmen with us receive \$19.80; in England he has \$8.22. A helper in this department in this country gets \$8.80; in England and in Scotland \$3.87. In the boiler department in the United States a flange-turner gets \$16.50; the same man abroad gets \$6.20. A loam moulder in the iron foundry here gets \$16.50; in England \$6.50. Brass moulders with us receive \$14.30, and in England \$6.15. The total week's wages of thirty-six men in England would be \$192.60, while in the United States their wages would be \$406.01. In a shipyard, in good times, both here and in England, which might employ two thousand men, they would receive in that case with us \$22,540, and in England or on the Clyde only \$10,708.

A leading ship builder asserts that in the construction of iron ships ninety per cent of the total cost is for labor, applied first or last to the raw material as found in the mine or the forest. The difference in the actual cost of ships in the two countries, however, is not at all in proportion to the difference in rates of wages, owing chiefly to the larger use of machinery here, and the greater efficiency of the higher priced workmen.

The Bartholdi Statue of Liberty.

The inaction of the committee having in charge the work of soliciting subscriptions for the foundation and pedestal for Bartholdi's Statue of Liberty has led to some impatience on the part of the French Committee of Presentation. The rumor that the latter committee were contemplating an offer of the statue to Boston has stirred the New York committee a little; but they are still debating whether to attempt to raise the money by popular subscription or to solicit a few large contributions from the more wealthy citizens of the city. It is due to the artist and his friends that the inaction here should be speedily terminated. A member of the committee has said that various engineers have estimated the cost of a suitable base for the statue at from \$150,000 to \$1,000,000. It is thought that an acceptable base can be made for \$200,000. This sum is a mere trifle for the wealth of New York; and if the committee cannot raise it promptly they ought in courtesy to decline the proffered gift in favor of Boston or some other more deserving city. The statue is valued at about \$400,000.

The Hecker Mills Fire.

John V. Hecker, superintendent of Hecker's flour mills in this city, which were recently destroyed by fire, testified as follows before the Fire Marshal in the examination into the cause of the fire: "I believe that the fire originated in the Harris 'smutters' on the seventh floor, directly under the dustroom. 'Smutters' are generally considered the most dangerous parts of the machinery of a mill, on account of the friction which may be produced by any foreign substance getting in and striking fire between the revolving cylinder and the case surrounding it. These cylinders were of stone, and the casings were of chilled iron. The smutters make from 250 to 300 revolutions per minute. The dust is sucked from the smutters and forced by a fan into the dustroom, through a spout about ten inches square. I think the fire was caused by a spark, struck by friction in the smutters, igniting the dust, and passing through the spout into the dustroom, and igniting the dust therein. I have seen sparks fly from the smutters, and have found pieces of nails which have passed through the smutters."

Blasting by Means of Lime.

A trial of this new process of blasting in coal mines by means of quicklime, lately illustrated in the *SCIENTIFIC AMERICAN*, was made the other day in what is known as the Silkstone Colliery in England. A hole three inches in diameter and four feet deep was drilled in a solid mass of coal, and after clearing out, a perforated iron tube was first inserted, and then a charge of compressed quicklime, formed into a cartridge about three inches long. After forcing the cartridge into place and tamping the hole, water was pumped into the tube, and the coal immediately began to give way; and in thirty minutes a mass weighing about ten tons separated almost unbroken. The waste in dust and small coal was only six per cent, a much smaller proportion than is usual where powder is used for extraction, and the new process seems likely to become popular.