

RECENT AMERICAN INVENTIONS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week. The claims may be found in the official list on another page:—

Mode of Applying Netting to Windows.—The object of this invention is to provide a means for applying netting to windows for the purpose of excluding dust and mosquitoes, which shall be self-regulating and capable of being removed at pleasure. The invention consists, first, in inserting elastic bands in the sides of the fabric, which are cut of such length that, when fully stretched, the sash shall have reached its highest point. Thus, when the sash is being raised, the elastic bands will stretch and cause the netting to conform to any desired area of opening; and, at the same time, keep the netting close up against the sides or sash guides of the window, which is quite essential for the exclusion of both dust and mosquitoes. Secondly, it consists in the arrangement of two rods—one on the sash and one on the lintel of the window—which drop in hooks or spring in eyes provided for them. The netting, with the elastic sides, is secured at its top and bottom, respectively, to the said rods. When it is desired to use the netting, it is only necessary to spring the bars in place, and in the same manner remove it. Netting may be applied by this mode to either the upper or lower part of a window, (or to both at the same time), thereby insuring an uninterrupted ventilation of a room without annoyance from dust or mosquitoes. The patentee of this invention is M. M. Livingston, of Brooklyn, N. Y.

Letting-in Machine for Gun Stocks.—This invention consists in a machine composed of a rotating holder for containing the gun stock and having attached to it a series of patterns corresponding with the mortises and other cavities to be cut in the stock for letting in the metal work; combined with a reciprocating carriage for moving the said holder lengthwise, or in the direction of its axis, and with a rotating cutter and a tracer, in such manner that all of the said mortises or cavities may be cut without removing the stock from the machine, as is necessary in the letting-in machines at present in use for gun work. This saves labor and insures a perfect uniformity in the stocks, so that the parts of one may interchange with those of another, as is required in all government arms of a given pattern. H. W. Oliver, of New Haven, Conn., is the inventor.

String Clamp for Pianos.—This invention relates to the employment, in pianofortes, of what are termed string clamps for clamping the string at the points between which it should vibrate and prevent any vibration in the portions beyond those points. In such clamps as previously constructed and applied, the drawing together of the two jaws or portions of the clamp on opposite sides of the string, is effected by means of a screw which screws into the string bearing and secures the clamp thereto without any independent or positive action upon the said jaws or portions of the clamp. The consequence is that from various causes, as the occasional settling of the lower or back portion of the clamp, into the wood of which the said bearing is composed, the shrinking of the wood or the settling of the bearing itself, the clamp is apt to become loose upon the string, and thus its object is defeated. This invention consists in so applying the clamping screw as not only to make it serve the purpose of attaching the upper or outer portion of the clamp to the bearing, but to screw into the lower or inner portion of the clamp, and thus produce an independent or positive clamping action between the two portions of the clamp themselves; this obviates any liability of the clamp to become loose upon the string. Ferdinand C. Lighte, of New York city, is the inventor.

Tanning Vat.—This invention consists in constructing the shell of a tanning vat with tongued and grooved joints, and iron bolts running through the plank on the side of the tongues for the purpose of drawing the joints up tight whenever it becomes necessary; it consists also in the arrangement of a series of framed timbers around the sides, and on the ends of the vat, with iron bolts or stirrups running through them crosswise and lengthwise of the vat, in such a manner that the whole structure can be drawn together either sideways or endways, and at the same time the timbers, which run across the man-

holes and retain the manhole covers, can be removed and replaced at pleasure. The inventor is Jesse S. Wheat, of Wheeling, Va.

Churn.—This invention relates to an improved churn of that class in which either hot or cold air is introduced into the cream during the process of churning. The object of the invention is to obtain a simple and cheap means for the intended purpose, which may be applied to the up-and-down plunger churn, the kind most generally considered as being preferable to all others. It consists in the employment of a bellows in connection with a coiled pipe or receptacle for holding warm or cold water, and a valvular dasher, all arranged and applied to the churn in such a manner as to effect the desired end. A. P. Myers, Isaac Searles and G. W. Spencer, of Prattville, N. Y., are the inventors, and the patent is dated Jan. 17, '62.

Valve or Wicket for Canal-Lock Gates.—This invention relates, first, to an improvement in the construction of the valve or wicket, which is of wood and metal combined, and arranged in such a way as to effectually prevent springing or warping, and render it extremely strong and durable. Second, to a novel arrangement of the valve or wicket, as regards the relative position of its axis with its ends, and also as regards the shape of the latter, whereby the pressure of the water is made available in keeping the wicket closed and in assisting to open it when started from its seat. Third, to an improvement in the seats of the valve or wicket whereby the same is rendered water tight when closed and a substantial and firm bearing obtained. George Heath, of Little Falls, N. Y., is the inventor.

Radiation of Heat at Night.

About the period of sunset, provided the sky be clear, the temperature of the air in contact with the earth's surface is cooler than that of the atmosphere at a certain height above the ground. This is attributable to the gradual cooling of the earth's surface, arising from the nocturnal radiation of the heat into empty space. The cooling of the surface of the earth naturally gives rise to a corresponding diminution of the temperature of the stratum of air in its immediate vicinity; the effect is communicated to the stratum above, though naturally in a less degree, and so on from one stratum to another, until a height be obtained at which the temperature of the atmosphere is found to be equal to that of the stratum of air in contact with the earth. Professor Marcet in October last made a series of observations on the Lake of Geneva to ascertain whether the effects of nocturnal radiation, tending to produce a gradual increase of temperature on ascending above the earth's surface, are entirely dependent on the radiation of the ground, properly so called, or whether they are equally perceptible above a large sheet of water.

With mercurial thermometers capable of showing a tenth part of a degree (Centigrade) the temperature of the air at three inches, six feet and fifteen feet above the surface of the lake, was examined, the observations being made at the distance of about 600 yards from land during exceptionally fine weather. Comparative observations were made at the same moment on the borders of the lake within a few feet of the water, and in the center of a large field about 700 yards from the lake. The average results of these observations are given in the following table, the temperature being expressed in Centigrade degrees:—

	Lake.	Shore.	Field.
Surface.....	12°	9°-90	6°-98
3 inches.....	11-65	10-40	8-
6 feet.....	11-62	10-55	9-10
15 feet.....	11-80	10-62	9-65

From these observations Marcet draws the following conclusions:—1. The gradual increase of temperature occurring on ascending through the lower strata of the atmosphere, which appears constantly to prevail on land about and after sunset, is not apparent above a large surface of water. 2. The immediate vicinity of a large sheet of water is sufficient to modify to a considerable extent the effects of the nocturnal radiation of the earth, and thereby materially diminish the increase of temperature observed under ordinary circumstances on ascending above the surface of the ground. 3. A striking difference (amounting to between 2 and 3 Centigrade degrees) is constantly observed between the temperature of the atmosphere a few feet above the ground, and that of the air at the same height above a large sheet of water.

It is well known that farmers who reside closely adjacent to our Northern lakes, are not so liable to have their crops injured by late and early frosts, as those whose farms are situated at some distance from the lakes. The experiments of Professor Marcet explain the cause of this.

Venetian Water Cisterns.

The city of Venice is wholly supplied with rain water which is retained in cisterns. The city occupies an area of about 1,300 acres. The annual average fall of rain is 31 inches, the greater part of which is collected in 2,077 cisterns, 177 of which are public. The rain is sufficiently abundant to fill the cisterns five times in the course of the year, so that the distribution of water is at the rate of 312 gallons per head. To construct a cistern after the Venetian fashion, a large hole is dug in the ground to the depth of about 9 feet. The sides of the excavation are supported by a framework made of good oak timber, and the cistern thus has the appearance of a square truncated pyramid with the wider base turned upward. A coating of pure and compact clay, 1 foot thick, is now applied on the wooden frame with great care; this opposes an invincible obstacle to the progress of the roots of any plants growing in the vicinity, and also to the pressure of the water in contact with it. No crevices are left which might allow the air to penetrate. This preliminary work being done, a large circular stone, partly hollowed out like the bottom of a kettle, is deposited in the pyramid with the cavity upward; and on this foundation a cylinder of well-baked bricks is constructed, having no interstices whatever, except a number of conical holes in the bottom row. The large vacant space remaining between the sides of the pyramid and the cylinder, is filled with well-scoured sea sand. At the four corners of the pyramid, they place a kind of stone trough covered with a stone lid pierced with holes. These troughs communicate with each other, by means of a small rill made of bricks, and resting on the sand; and the whole is then paved over. The rain water coming from the roofs of the buildings runs into the troughs, penetrates into the sand through the rills, and is thus filtered into the well hole by the conical holes already described. The water thus supplied is limpid, sweet and cool.

Potabilisation of Sea Water by the Electric Current.

In *Macmillan's Magazine* is an interesting paper by Dr. Phipson, entitled, "Electricity at Work," in which the author passes in review the useful applications of this wonderful agency. He concludes his paper as follows:—"Reflecting upon the powerful decomposing chemical force with which we are furnished by the electric current, it occurred to me that I might be able to render sea water potable by decomposing and extracting its salt, by means of a moderately powerful battery. The experiments were made at Ostend a few years ago. My apparatus consisted of three vessels containing sea water; the center one contained the water to be operated upon, the two others communicated with the two poles of the battery. The three vessels were connected by two bent U-tubes filled with sea-water. As the only battery I could procure in Ostend was rather weak, I passed the current through the water for about fourteen hours, after which one of the outside vessels had become acid and the other alkaline. The sea-water was then filtered through charcoal, and was nearly drinkable. It would have been, I doubt not, quite potable had the battery employed been more powerful; as it was I found it difficult to extract the last particles of salt; and the water, after subsequent trials, still presented a slightly brackish taste. I have not had an opportunity of repeating this experiment since, but from the results obtained, I think it probable that sea water may be rendered potable by means of the electric current."

The number of letters delivered in the post offices in Great Britain, during 1861, was 593,000,000, or about 22 to every person. In the same period 72,300,000 newspapers and 12,300,000 books were delivered by the post office. Money orders were also sent through the same agency amounting to about \$75,000,000.

The Stockton (Cal.) *Independent* of June 7th, says the shipment of copper ore from Copperopolis to Stockton averages 30 tons per day, at \$8 per ton. The ore sells at \$100 per ton.