

NEW INVENTIONS.

An improvement in apparatus for preserving timber, by removing the sap and other volatile elements and supplying their place by antiseptic agents, without impairing the organic structure of the wood or changing its chemical character, has been patented by Mr. Joseph W. Putnam, of New Orleans, La. This invention relates to a vacuum apparatus, by which the wood is first subjected to a steam bath, the steam then condensed to produce a vacuum, and a comparatively high temperature maintained in the treating chamber during the production and continuance of the vacuum, and lastly, oleaginous and preservative material is admitted, under pressure, to supply the vacuum and permeate the pores of the wood. In this improved apparatus the treating chamber, and the storage tank located at a lower point, have combined with them a suction and force pump for the oil, and suction and discharge pipes, together with a supplementary oil tank, so that the oil is first passed by said pipes, one of which is circuitous, from the main tank to the treating chamber, by atmospheric pressure, and subsequently is forced in by the pump, and the latter afterward diverted to supply the supplementary tank, from which a more powerful force pump draws oil and ejects it into the treating chamber. This improved apparatus perfectly performs the work for which it was designed.

Mr. John M. Walden, of Fort Valley, Ga., has patented a very ingenious and improved cotton chopper. The object of this invention is to facilitate the chopping of cotton plants to a stand. In this machine two side bodies are connected with a central main body. Three or more knives are arranged in the forward ends of the central body to cut the crust of the soil and prevent it from being broken away by the chopping hoe. There are also plates projecting below the sides of said body which enter the soil and separate the plants to be chopped from the plants to be left for a stand, to prevent the latter from being torn away by the soil when operated upon by the chopping hoes. The side bodies of the machine are similarly provided with knives and side-plates. These side bodies are connected at their middle portions with the central body by hinged bars, and are further connected longitudinally with the front and rear portions of the main body and handles of the machine by bent rods. These several connections are adjustable to provide for the side bodies being set at a greater or less distance from the main body, according as more or less plants are required to be left for a stand, and so that the side bodies can be raised and supported above the ground. The hoes project below the surfaces of the several bodies far enough to enter the ground to the desired depth, and the side parts of the under side of the said bodies beneath and at the rear end parts of the hoes are concaved to allow the plants and soil to escape from the said hoes freely, and so that the plants left standing will be supplied with sufficient soil without being covered by said soil.

Mr. John V. Capek, of Brooklyn, E. D., N. Y., has patented an improved dynamo-electric machine. The invention consists in a dynamo electric machine having the field magnets formed of removable U-shaped iron cores fitting in plate iron casings, in the ends of which the concave magnet heads surrounding the armature, and connected by non-magnetic plates, are inserted, and which casings are surrounded by several layers of wires, the ends of each layer being connected with a plate, uniting the two coils in such a manner that all or any number of layers can be included in the circuit—that is to say, the wire or line of the exciting current can be so connected that more or less layers of wire are excited. The invention further consists in an armature formed of a series of U magnets attached to circular soft iron disks, and provided with segmental plates integral therewith or riveted thereto, and projecting from the middle of the outer surfaces of the magnets, where they are united, on each side of which central segmental plates the coils are wound, these coils being wound around sheet iron casings, which are slipped on the magnets. The invention further consists in brush holders formed of two forked segmental arms united at one end and mounted loosely on pintles, between which pairs of arms the brushes are clamped between two plates provided with pins passing between the forked arms, and secured by nuts, these arms being provided at the outer end with a transverse rod fitting in a fork on the commutator, whereby the pressure of the brushes can be regulated. The invention further consists in a spring plate in the ends of the brush holding clamp plates, and set screws for drawing them together and separating them, whereby the length of the part of the brushes resting on the commutator can be regulated. The invention also includes various improvements in the construction of details which, taken in connection with the features of invention above stated, assist in producing a dynamo-electric machine that is simple in construction, capable of being easily repaired or adjusted, and is very advantageous in its operation.

An improved press for baling hay, moss, cotton, etc., and which provides in a very efficient manner for compacting the bales, for tying them and for removing them from the baling chamber, has been patented by Messrs. Andrew Wickey and Albert A. Gehrt, of Quincy, Ill. In this invention the chamber in which the follower moves is distinct from but in line and connects with the bale chamber, which is of larger transverse dimensions than the follower chamber, whereby the follower has the advantage of pressing the material to be baled from a smaller into a larger space, and the shoulders formed at the junction of the two chambers serve to hold the material as the follower is repeatedly

drawn back to admit new charges. The bale is thus built up gradually, and is more compactly formed than where a large quantity of material is pressed by a single movement of the follower. To carry out this method of working, the follower has its successive pressing actions given it by a cogged segment, which is operated from either end by an oscillating sweep, and meshes with a double-gear rack in pivoted connection with the follower, a spring applied to the follower serving to suddenly draw the latter back every time the rack passes its dead center on the segment. The press, which is horizontally arranged, is also provided with a pivoted and sliding reversible end piece to facilitate removal of the bale, and with longitudinally bisected tie tubes applied to the heads of said end piece and head of the follower to provide for the cording of the bales.

Mr. Homer H. Hunt, of Muscatine, Iowa, has patented an improved holder for bows for musical instruments. The object of the invention is to facilitate holding the bow of a stringed instrument in the position to insure neatness of execution and a fine and clear tone. The invention consists in attaching a thumb plate or bow holder to the bow or making it integral therewith. Said bow holder, which can be attached to the bow of any kind of stringed instrument, such as the violin, violoncello, etc., is formed with an under concave recess for the thumb of the player, the hairs of the bow touching the thumb nail. It relieves the player of all strain on his hand, and protects the hairs of the bow from being soiled or broken.

An improved fastening for neckties, which is simple and capable of ready application, and which serves to securely fasten together the shirt, collar, and tie, has been patented by Messrs. Emmet C. Standiford and John T. Todd, of Chrisman, Ill. In this fastening, which is designed to be used in conjunction with any collar button having a hinged or detachable outer head, a spring clasp having two leaves hinged together is applied to the tie, by securing the outer leaf to the back face of the bow over the inner end of the strap of the tie. The collar button is inserted in the buttonholes of the shirt and collar, with the hinged or detachable head outward and turned so as to lie in the plane of the shank of the button. Said head is then passed through a slot in the inner leaf of the clasp, and the strap of the tie passed around the neck of the wearer, and a hole in the outer end of the strap passed over the outer head of the collar button, which latter is then turned so that the heads of said button are parallel with each other, and the spring clasp closed.

An improvement in nut locks has been patented by Mr. Francis R. Hewitt, of Evington, Va. This invention relates to that description of nut locks in which a nut is provided with a spring and pin in its bearing surface, and so that the pin is made to engage with recesses in the washer for holding the nut in position. A leading object of the invention is to construct a nut lock which shall be adapted for use in combination with fish plates having elongated perforations for the bolts, to allow for expansion and contraction of the rails. The invention consists in a nut lock provided with a ratchet-faced washer, which has two opposite rectangular lugs struck up from its central portion on the edge of its central aperture. These lugs are inserted within the elongated sides of the perforation in the fish plate and prevent the washer from turning when the nut is screwed down. The invention also comprises a square-headed pin to engage with the ratchet-faced washer and keep the nut from turning.

A gong-bell of improved construction has been patented by Mr. George B. Owen, of Winsted, Conn. The object of this invention is to facilitate the attachment of gong bells to clock cases and other supports and give them a louder, clearer, and more musical tone. The gong is made in the form of a spirally-coiled wire, the coils being at such a distance apart that they will not touch each other when the said gong is struck by the bell hammer. The end of the gong is fastened to the central exterior portion of a sounder, which is made in the form of a circular plate with an inwardly projecting flange around its edge. A standard, screwing into an interior central hub of this sounder, connects the latter with the foot or base of the bell, which may be fastened to the back of a clock case or other support. Such standard is bent in its middle part into an arc of about three-quarters of a circle, and has its end parts bent inward to the central part of a circle, and then bent in opposite directions at right angles with the plane of the said circle, whereby the gong can be brought close to the foot or base that supports it without having its vibrations checked or its tone deadened.

A simple but useful improvement in cuff or sleeve buttons and studs, also applicable to studs for use in collar-bands, wrist-bands, etc., has been patented by Mr. Shubael Cottle, of New York city. This invention is an improvement in ornamental cuff or sleeve buttons and studs whose backs or shoes are constructed with a radial open slot to facilitate attachment and detachment of the same. In this improvement the shank is made hollow and provided with a vertical notch in its upper edge, or otherwise equivalently constructed, and the back or shoe has a central hole and radial slot coinciding with the notch. By this construction, in applying the button, one edge of the buttonhole is drawn into the center of the back, and thus crosses the end of the shank diametrically, instead of coming in contact with the side of the same and being pressed and turned outward. Thus the opposite edges of the buttonhole not being crowded so far apart, the button may be attached with greater rapidity and with less injury to the cuff and less rumpling or soiling of the latter.

Our Foreign Commerce.

The annual report of the chief of the Bureau of Statistics for the past fiscal year is packed with information. It shows the foreign commerce of the United States to have been for the year \$1,675,024,318, and larger than in any previous year in the history of the country. The value of exports of merchandise amounted to \$902,377,346, exceeded the value of exports during the preceding year by \$66,738,688, and was considerably larger than in any previous year. The value of imports was \$642,664,628, and was greater than that of any preceding year except that ending June 30, 1880. During the last six years the value of exports of merchandise has exceeded imports by \$1,180,668,105. The excess of the value of exports over imports of merchandise during the last fiscal year was \$259,712,718. The imports of specie exceeded the exports by \$91,168,650. The value of exports of merchandise was \$883,925,947, exceeding that of such exports the preceding year by \$59,979,594, and were larger than in any previous year. The specie value of the exports of domestic merchandise from the United States increased from \$428,398,908 during the year ended June 30, 1871, to \$883,925,947 during the year ended June 30, 1881—an increase of \$455,527,039. This increase was due mainly to the increased exports of breadstuffs, provisions, and tallow, cotton and manufactures thereof, live animals, leather and manufactures of leather, and wood and manufactures thereof. The increased value of the exports of these commodities during the fiscal year 1881, as compared with the fiscal year 1871, amounted to the sum of \$374,059,476, and constituted 82.12 per cent of the increased exports of domestic merchandise, exhibited as follows:

Commodities.	Value of Exports during the year ended June 30.		Increase.
	1871.	1881.	
Bread and breadstuffs...	\$79,381,187	\$270,332,519	\$190,951,332
Provisions and tallow...	41,870,254	158,328,896	116,458,642
Cotton and manufactures of.....	221,885,245	261,267,133	39,381,888
Animals living.....	1,019,604	16,412,388	15,392,784
Leather and manufactures of.....	1,397,395	5,058,445	3,661,050
Wood and manufactures of.....	12,916,542	15,600,312	2,683,770
Total increase.....			\$374,059,476

A Quicksand Section.

Underneath the surface of the ground, and directly overlying the rocky formation of the "Portage group" of rocks, contiguous to the falls of the upper Genesee River, in the towns of Genesee Falls, in Wyoming County, N. Y., and Portage, in Livingston County, is a stratum of quicksand of the most treacherous character, jeopardizing the construction of any public works that may be built thereon. The celebrated "slide section" of the Genesee Valley Canal, opposite the Middle Falls of the Genesee, has passed into history as the most expensive piece of earthwork ever maintained, not only in this State, but the United States. This section one mile in length, has cost more money than any twenty miles of the same canal between Rochester and Orleans. To maintain navigation upon this particular piece of work not only cost fabulous sums of money, but baffled the scientific knowledge of the engineering corps of the State, and to-day, but for the abandonment of this thoroughfare as one of the waterways of the commonwealth, the problem would still be a vexed question in the brains of the State officials.

To-day, upon the opposite bank of the river, but little to the westward, the New York, Lake Erie and Western Railroad have, in order to lessen a 40-ft. grade between Portage Bridge and the village of Castile, put in a loop line, which leaves the old road bed directly after crossing the bridge and passes over a deep ravine with an embankment about 80 feet in height, where it makes a sharp detour through a hill of quicksand, with a cutting of about 40 feet. The embankment at this point, which is made from the surplus material in the cutting, is about 600 feet in length. At the bottom of the ravine is a culvert, built upon pile foundations extending down to the rock. The superincumbent weight of earth upon this treacherous mass of natural earth has caused the whole to sink, while the lower material is making preparations to move down the ravine. Already, large forest trees have been carried downward toward the river bank, and fears are entertained that, as the soil becomes permeated with moisture, the whole embankment will slide out of position. The bed of the present track has moved far enough to take out the alignment of the curve, and the track repairers, who have raised the bank three times within as many months, have substituted a short tangent, to accommodate the running trains. The culvert in the new road bed has become to some extent demoralized, and information is now wanted how to hold the track to its original survey. When the new loop line shall have been brought into use, the vigilant care of the railroad officials, no doubt, will prove equal to the emergency, and before traffic is carried over this new line, measures both vigorous and remedial will be instituted.—*Buffalo Express.*

Success of the Elevated Railways, New York.

The travel over the elevated steam street railways of New York city for the month of October was the heaviest yet recorded, aggregating 7,121,961 passengers, as against 5,881,474 for the corresponding month of 1880, an increase of 1,240,487, representing just about the entire population of the city.