

NEW INVENTIONS.

An improvement in wood pulp machines for preparing half-stuff of all kinds of pulp wood, whether wet or dry, has been patented by Mr. Andrew Kreider, of Annville, Pa. It consists in a stationary frame having a series of reversible double cutting rasp or file plates arranged at intervals on a plane, and a sliding frame moving thereon, provided with similar plates, and a central chamber for holding the block of wood, which is held down by a lever-regulated weight.

A trace buckle, which is easily operated with little strain upon the leather, and furnishes protection to the wearing part of the trace from the weather, has been patented by Mr. Oscar W. Moon, of Daytonville, Iowa. This invention consists in a metallic casing having a tongue pivoted in one of its open ends and a central transverse slot in its inner side for receiving a loop attached to the hame tug.

An improvement in that class of parasols which are designed to be suspended from the top, in contradistinction to being supported upon a subjacent handle, has been patented by Mr. James T. Smith, of New York city. The particular type of parasol or umbrella upon which this invention is an improvement is that in which the ribs are closed by the upward travel of the runner instead of its downward movement, as usual. This invention consists in the peculiar construction and form of the notch, to which the runner and braces converge. It is short, flat, and circular or ring-shaped, having a hole at the top through which the rod or staff projects. This notch has a recessed lower side to receive the upper end of the runner and its attachments when the umbrella or parasol is closed.

An improvement in annunciators has been patented by Mr. David Rousseau, of New York city. This invention relates more especially to electrical annunciators for use as call signals in hotels or other places to announce the location or nature of the call, and also for burglar or other alarms, to indicate the window, door, or room at which the circuit has been closed. The leading feature of this invention may be briefly stated to consist in a double-faced name plate or tag, having its two faces at right angles to each other, or nearly so, and arranged to circumscribe or inclose two sides of the magnet, and pivoted at the bisection of the angle on an axis passing preferably through, or partly through, the body of the magnet.

Mr. Levi McNall, of Allegany, N. Y., has patented an improvement in the class of wooden fences which are self-supporting without the aid of posts set in the earth, and whose independent panels are connected so as to adapt them to be readily detached one from the other. The improvements pertain to the construction and arrangement of the posts in connection with the rails of the fence.

An improved button and the method of ornamenting the same, has been patented by Mr. Charles L. Woodbridge, of Brooklyn, N. Y. The object of this invention is to produce in buttons of pearl, bone, or other suitable material, in a comparatively inexpensive manner, the effects or appearance of inlaid or inserted work or figures. The invention consists in cutting the pattern, figure, or design entirely through the button blank, in then securing on the back of the blank, with some suitable adhesive substance, a piece of metal foil, gilt, silvered, or otherwise colored paper, etc., that shall be seen through the open pattern or design, and in then applying over the back of the button, hard and smooth, a coating of collodion, celluloid, asphalt, varnish, cement, or other suitable material.

An improved fastening for gloves, which permits of fastening thick and heavy gloves very conveniently, has been patented by Mr. S. Oscar Parker, of Littleton, N. H. The invention consists in a short bar or lever with heads or knobs, mounted so as to slide in a swiveled head or button that is attached by an eyelet to the glove opposite the button hole, the bar and head or button being passed through the button hole, and the bar then turned to rest transversely over it.

Mr. John W. Maltby, of Rochester, N. Y., has patented an improved truss hoop for coopers' use, the laps of which are so riveted that they will not draw apart nor split, and the irons so applied that they will not come on the inside of the hoop. The laps are secured by diagonally bent binding irons riveted to the sides and periphery of the hoop.

Messrs. Joseph Lepine, Fils, and Pierre H. Roelants, of Brussels, Belgium, have patented an apparatus for holding skins and hides, whereby the application of coloring matter in ornamenting the skins is greatly facilitated. The invention consists of a table, having a cylindrical shape, on which the skin to be colored and ornamented is placed, and each side of the table is provided with a rotary shaft, a series of wires extending from one shaft to the other over the surface of the table, the two shafts being operated, by means of a central lever, in such a manner as to draw or press all the wires simultaneously upon the surface of the table.

An improved step for passenger coaches has been patented by Mr. Sylvester J. Tucker, of Richmond, Va. This invention relates to an improved additional adjustable step to lessen the distance between the ground and the front step of railway passenger coaches, it being designed principally for the convenience of women, children, and aged and infirm persons, who experience great inconvenience and even danger in mounting the higher steps now in use.

An improvement in slide valves has been patented by Mr. William S. Hughes, of Long Island City, N. Y. The main object of this invention is to reduce or prevent the noise made by the exhaust steam of engines, which has heretofore

been attempted by the use of muffles and similar devices. This is accomplished by the valve in the steam chest, which is constructed to wire-draw the steam or break it up into fine streams as it leaves the cylinders, thus controlling each exhaust separately instead of the combined exhaust, securing freedom from dirt and other matters liable to clog the device, and further obtaining a steady continuous draught in the smokestack instead of a series of explosions, as heretofore.

The Telegraph in Arctic Exploration.

It is suggested by Mr. James Gamble, General Superintendent Western Union Telegraph Company at San Francisco, that profitable use might be made of the electric telegraph in Arctic exploration.

His plan would be to use light steel wire—say number 20 gauge—weighing about twenty pounds to the mile. The wire, coiled on reels, could be hauled on sledges, either by men or dogs, over the snow or ice, paying it out as the advance exploring party went along. By this means the party would keep in constant communication with their base of supplies. They would have no cause for uneasiness about getting lost or beyond the means of rescue, as they would be able at any moment to call for aid. With this feeling of the certainty of relief in case of accident, they would not hesitate to push their explorations to a distance far beyond what would be considered safe in the absence of means of telegraphic communication with the main body. And should any accident happen to the advance party of explorers, or should they require a further quantity of supplies, the line of wire would serve to guide those going to the rescue straight to the spot where the explorers were camped. It would also serve as a guide for their return, materially lessening the chances of danger to life and loss of the party. Having established a base of supplies at some central point, there would be nothing to prevent several exploring parties being sent out at the same time in different directions, they reporting each night to the central station the progress and observations made during the day. Directed in this way the practicability of one route over another could, from the telegraphic reports sent in, be determined upon, and much time that would otherwise be wasted in vain endeavors to make way over barriers of ice, be saved. As hard frozen ground, dry snow, or ice is a perfect insulator, no poles to string the wire would be required. It could be paid out on the snow or ice by the party as they went along. The generally accepted theory of those familiar with the Arctic regions is that the ice is seldom more than five or six feet in thickness, so that by boring through it with a common drill or through the frozen ground, there would be no difficulty in obtaining a good ground connection to complete the electric current. It would not be necessary to carry any battery material. One main battery at the central station would be all that is required. For a distance of 100 to 150 miles telephones could be used, dispensing with practical telegraph operators. Still, it might be advisable to have some of the party possessed of a practical knowledge of telegraphy.

At 20 pounds to the mile, 100 miles of wire would only weigh 2,000 pounds. It could be wound on reels in size easy to handle. The cost of steel wire of that gauge is about 20 cents a pound, so that the total expense, including cost of reels, winding, etc., would not exceed \$1,000.

Wastefulness in the Use of Steam.

As scientific investigation has established the fact that the best forms of modern steam engines develop only a fraction of the power which should be obtained from the combustion of the fuel consumed in the boiler, it will be instructive to ascertain the nature of these losses, in order if possible to apply a remedy. In tracing out the causes of the loss of power in the steam engine, the first and greatest element doubtless resides in the difficulty—we may be justified, perhaps, in saying the impossibility—of burning solid fuel economically in any form of furnace that has yet been devised, and for the following reasons:

The buyer of coal purchases, at the outset, at least ten to fifteen per cent of non-combustible and useless material in the form of ash, which should of course be deducted from the weight of the fuel to get at the quantity of available combustible. Starting with this quantity, probably not less than five per cent of useful combustible is lost by falling through the grate bars in the form of dust or partially burned fragments that find their way into the ash pit unutilized.

Again, in no form of furnace that has yet been devised, has it been found possible to retain the gaseous products of combustion generated in the furnace long enough in contact with the steam generating surfaces to yield up all their available heat; on the contrary, they are thrown out of the chimney frequently at a temperature as high as 800°.

Again, combustion is frequently so imperfect, that great quantities of unconsumed carbon are carried off out at the chimneys, with the furnace gases, in the form of smoke, unutilized, and representing a sad waste of heating power.

Another item of loss is found in the cold air with which the furnace is fed, and which must be highly heated before it will begin to combine with the combustible elements of the fuel, and which must necessarily abstract this heat from the glowing coals through which it passes; and this item of loss is often a serious one where there is careless stoking and the furnace doors are frequently opened, permitting great volumes of cold air to rush into the fire space.

Again, we must take into consideration a variable and often considerable percentage of loss of heating effect due to the radiation and conduction of heat from the generator to surrounding bodies.

And finally, we must take into consideration the loss involved in the passage of steam from the boiler to and through the engine.

Summing up all the items of loss in the steam generator, it is probable that with the best boiler which it has been possible to construct, not more than fifty per cent of the thermal effect of the fuel is utilized in the generation of steam, and of this fifty per cent from fifteen to thirty per cent is lost somewhere during the passage of the steam from the boiler to and through the engine, by condensation in steam pipes, friction of the moving parts of the engine, and so forth, leaving us but twenty-five to thirty per cent of the duty actually realized, that theory demands we should have.

It seems somewhat absurd in the face of these facts to see and hear statements to the effect that the possibilities of improvement in the duty of the steam engine have been exhausted. Our inventors need not puzzle their brains concerning new motors so long as they have a margin of seventy-five per cent before them for improving the steam engine.—*The Milling World*.

A Gigantic Corn Sugar Factory.

The Chicago Sugar Refining Company are building a factory to convert 25,000 bushels of corn into sugar a day, or something like 8,000,000 bushels a year. The buildings cover 320,000 square feet, and are expected to cost \$1,500,000. The sugar house is 160 feet square, with eleven stories and basement, or 140 feet high. It is to be of wood and brick, containing 4,000,000 bricks. It will be supported by 90 piers of masonry, resting on piles, each pier carrying about 400 tons. There will be required 42,000 forty-foot piles, or 318 miles of piling.

Adjoining the sugar house is a building for corn, 60 by 160 feet, and three stories high. It contains five large steam engines, two pumping engines, one flowing engine, and several small steam pumps. The pumps have a capacity of 10,000,000 gallons per day. The steam engines will be equal to 2,000 horse power, and the blowing engine blower furnishes a blast for 7,000 horse power boilers.

Next to the corn house is the filter house, 120 by 100 feet, and eleven stories high. This building is a fireproof one, built of brick, iron columns, wrought iron floor beams, with brick arch floors. Its twenty-four piers carry 500 tons each, or 12,000 tons. There are 2,500 forty-foot piles driven 50 feet below the surface.

The next building is a corn house, 60 feet square and three stories high, with machinery in it to empty the cars automatically.

The next is a boiler house, 75 by 150 feet in size, three stories and basement, with a coal bin suspended above the boilers to feed them automatically with coal. The boilers have a capacity of 7,000 horse power. There are twenty of these known as the Babcock & Wilcox section boilers.

The chimney for the house is 240 feet high, with a 12 foot inside flue. The base is 40 feet square.

Between the boiler house and the chimney is an "economizer," that the waste gases of the boilers pass through on the way to the chimney. By this means the heat is utilized by pumping the feed waters of the boiler through this economizer.

The works will commence with 12,000 bushels of corn per day, which will soon increase to 25,000 per day. The corn can be received by car or vessel, and the goods likewise shipped.

The company will manufacture all kinds of starch for laundry and culinary purposes, sirup, and grape sugar.

The Treatment of Constipation by the Swedish Movement Cure.

In order the more readily to convey a definite idea of the principles on which the Swedish movement cure is based, and the mode in which these principles should be carried into practical execution for the relief of chronic constipation, Dr. Benjamin Lee, at a recent meeting of the Philadelphia County Medical Society, stated that, in addition to the movements which afforded the introduction of oxygen in the blood, the rapid rotation of the entire trunk upon the pelvis promoted activity in the portal circulation and stimulated peristaltic action of the intestines; that, in order to relieve congestion of the liver and excite a healthy flow of bile, the patient should assume an attitude that would place the muscles of the right side strongly on the stretch, while the operator produced a rapid vibration of the parietes of the chest and abdomen immediately over the liver. Finally, the patient assuming a recumbent posture, thorough kneading of the abdomen is given, followed by pressure and vibration over the solar plexus. The circulation of all the abdominal viscera is thus stimulated, the passage of both chyle and feces through the alimentary canal is aided, healthy secretion is promoted, undue accumulations of mucus are dislodged, and the great nervous centers of the organic system are roused into the highest state of activity. There are very few cases of constipation, however obstinate, which will resist a fortnight of this treatment daily, and many cases will yield in a week. The manipulation occupies about one hour.—*Medical and Surgical Reporter*.