

IMPROVED CONSTRUCTION OF GRAIN ELEVATORS.

A system of building and arranging the machinery for the work in grain elevators which is designed to reduce the cost of erecting and equipping such establishments, and whereby the work may be systematized and facilitated and the running expenses reduced, is illustrated herewith, and has been patented by Mr. John A. McLennan, No. 83 Metropolitan Block, Chicago, Ill. Fig. 1 is a transverse sectional elevation of

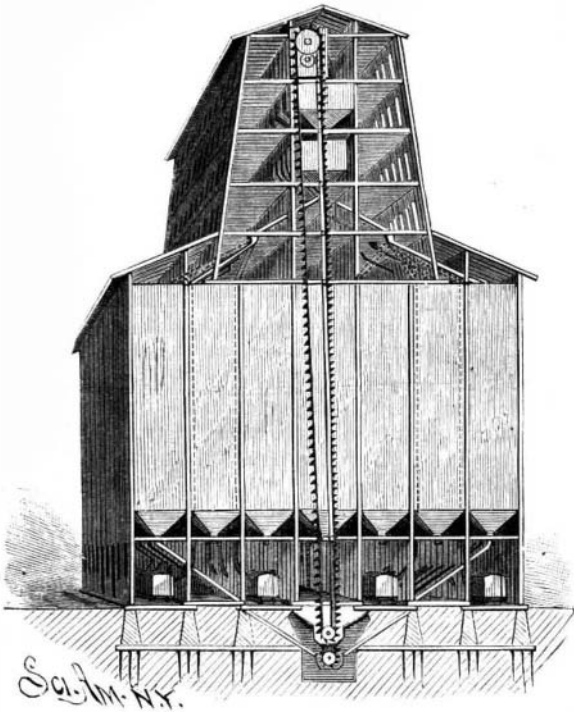


Fig. 1.—McLENNAN'S GRAIN ELEVATOR.

the elevator building, and Fig. 2 is a central longitudinal section above the bin floor. The cupola, running longitudinally with the body of the building, is divided into four floors, in the following order, from the top down—machinery floor, garner floor, scale floor, and spouting floor—the latter immediately above the bin floor in the body of the building. Near the longitudinal center of the structure, as shown in Fig. 1, are located a series of endless elevators, placed in pairs of one receiving and one shipping elevator, and extend-

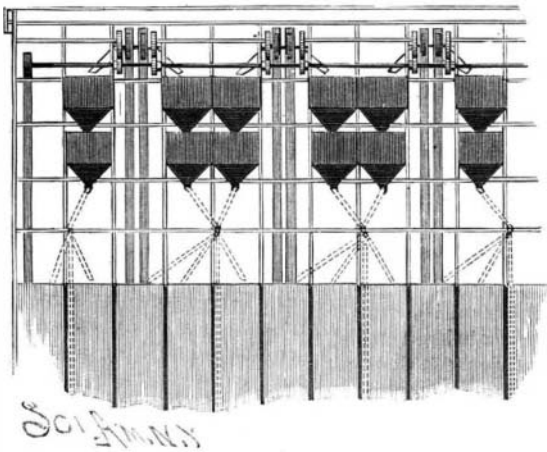


Fig. 2.—McLENNAN'S GRAIN ELEVATOR.

ing below the basement floor, preferably through the same tanks, which are made of two depths, forming hoppers for the receiving and the shipping elevators and the boots thereof. The elevators extend to the machinery floor, and are all operated from the same shaft, a spout being attached to the head of each elevator to discharge the grain into either a receiving garner or its adjoining shipping garner, as shown in Fig. 2, these garners each occupying a separate bent in the building. Below these garners, and on the scale floor, are located, respectively, the receiving hopper and the shipping hopper scales, likewise arranged in pairs, and in the same relation with the bents of the building and with the receiving and shipping elevators, there being an arrangement of spouts for directing the grain from the scales to the bins, or to any of the pipes for loading the cars, as indicated in Fig. 1. The lower ends of the bins may also be connected with the transfer or shipping elevators by the spouts leading therefrom to the lower portions of the receiving hoppers.

The distance between the pairs of elevators is governed by the length of the cars in use, as there must be the length of one car between each pair, in such manner that all the cars in a line may be unloaded simultaneously, the construction being such that both receiving and shipping may be conducted at the same time, with no loss of time or labor in shifting gangs of men, as is unavoidable under the old system, where the receiving elevators are placed in one line, leaving the distance between each elevator nearly the length of a car, and locating the shipping or transferring elevators in one or more lines parallel to the receiving elevators,

but in different lines of bents. By this arrangement, also, both the receiving and shipping elevator boots may be put in the same tank, thus making a saving in the cost of construction, while (the transfer or shipping boot being on a lower level) the transfer spouts may be passed below the railway tracks and be stationary and yet out of the way, the loading of the two elevators together causing only one bent to be obstructed, and the work of both the weighers and the machinery men is greatly facilitated.

Improvements in Batteries.

In batteries employing two liquids, it is of much importance to keep them separate, and hitherto this has been only imperfectly done. Again, in a single fluid battery, where the depolarizer is a powder, it is very difficult to prevent the contact of this latter with the positive electrode.

MM. Dun, Montanus, and Hasslacher have nevertheless succeeded by solidifying or gelatinizing one of the liquids. This preparation is not a bad conductor, and above all is not liquid, which is important in batteries where the depolarizer is a soluble metallic compound, as, for example, where the electrodes are composed, one of zinc, the other of lead or copper, the depolarizer being sulphate of copper.

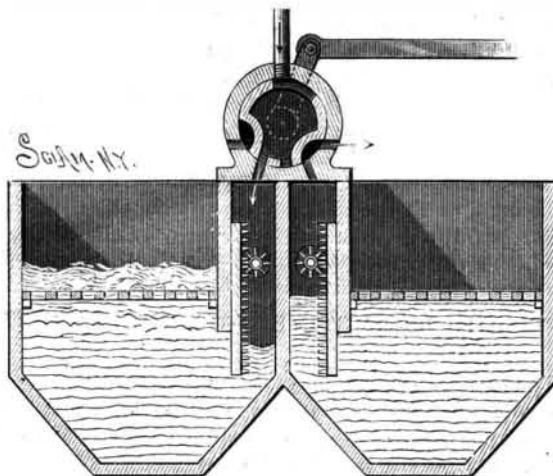
Such an element can be thus mounted: On the bottom of a glass vessel a plate of zinc rolled into a cylinder or spiral is placed, to which a conductor insulated with gutta percha is attached. By adding starch to caustic soda a gelatinous mass is obtained, which is first liquefied by heat, and then poured into the vessel until its level rises one centimeter above the zinc plate. After cooling, two pieces of wood are placed across the glass vessel with which the negative electrode is suspended, composed of a perforated plate of lead, bent into the shape of a basket, in which crystals of sulphate of copper are placed. When the second conductor is connected to this plate, water has only to be added for the battery to be in working order.—*Revue Scientifique.*

AN IMPROVED ORE JIGGER.

A simple and effective device for washing and separating ore is represented in the accompanying illustration, and has been patented by Messrs. David Hill and George W. Hall, of Georgetown, Col. The inclosing walls form large main compartments and small side compartments, the latter communicating with the large compartments below the partitions and vertically moving gates shown. The small compartments are closed at the top by a block, in a chamber of which is fitted a rotary valve, operated by a crank and connecting rod. A constant pressure of air, steam, or gas is supplied to the interior of the valve, and the reciprocation of the valve admits intermittent sudden blasts upon the surface of the water in the small compartments, suddenly forcing the water downward there and correspondingly elevating it in the large compartments, thus causing pulsations which wash and separate the ore upon the perforated tables just above. The course by which the compressed air, etc., is supplied to the valve, and thence admitted to the compartments, and of its escape through the exhaust, is indicated by the arrows. The intensity of the pulsations is regulated by raising and lowering the gates, which are provided with racks to engage with pinions upon shafts projecting from the side of the water tanks.

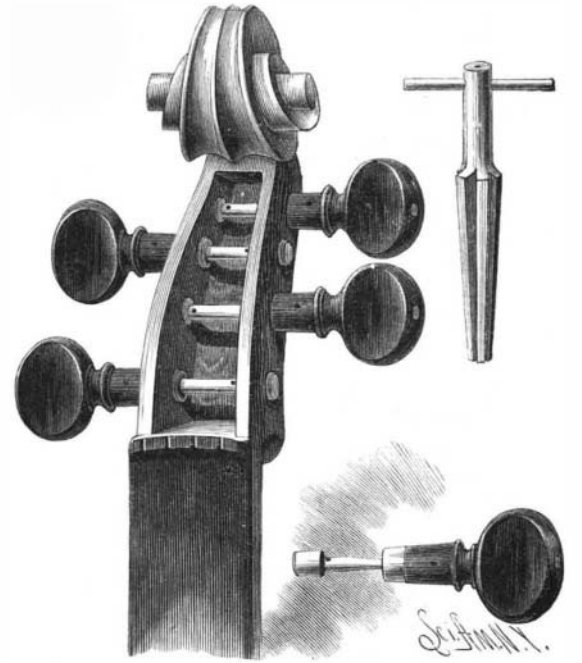
AN IMPROVED VIOLIN TUNING PEG.

A straining peg for violins, which is easy to turn and not liable to fly back, nor stick in damp weather, and with which the different strings are more readily tuned exactly as desired than is possible with the ordinary straining peg, is represented in the accompanying illustration, and has been patented by Mr. Samuel W. Wilcox, of Milford, Mass. (lock box No. 44). It is composed of a handle piece and a foot piece, connected by a junction piece of metal of much smaller diameter than the adjacent ends, the end of the string being held in this junction piece in a small hole made to receive it. The parts of the peg which have their hold in the violin head, on either side of the junction piece,



HILL AND HALL'S ORE JIGGER.

are slightly cone-shaped, or tapered, in the same direction from the thumb piece to the farther side, whereby the peg can be easily inserted to give sufficient friction, and, from the smaller diameter of the central portion forming the junction piece, the string can be wound to better advantage, and with less liability of the peg slipping back. This is also of great advantage in tuning, the tuner not being so likely to get a tone or two out of the way by a slight turn of the thumb piece as with the ordinary peg. A special peg is also made for the E wire string and silk string, as shown in one of the small figures, by which such strings can be as easily managed as the gut strings. A reamer, tapered in the same direction as the pegs, is



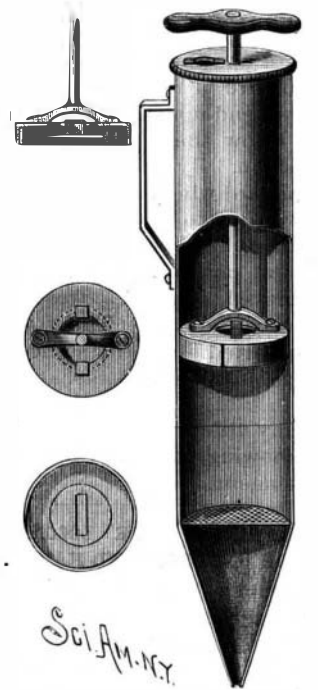
WILCOX'S TUNING PEG FOR VIOLINS.

also shown, by means of which the holes may always be kept in perfect gauge for the accurate fitting of the pegs.

AN IMPROVED VERMIN EXTERMINATOR.

A device to facilitate the ejecting of sulphurous or other acid or destructive fumes or smoke into the holes or places where vermin resort is represented in the accompanying illustration, and has been patented by Mr. Wm. A. Loughry, of Odessa, Buffalo Co., Neb.

It consists of a metallic cylinder or tube with funnel-shaped nozzle, fitted at its rear end with a removable cap, a piston being fitted to work within the cylinder, and operated by a rod passing through a hole in the cap, such rod having either a metal or wooden handle. The small figures represent back, front, and sectional views of the piston, which is of an inverted cylindrical cup shape, with its side split so that the ends overlap one another, the rod being secured to the back of the piston by a cross arm or brace extending over a central aperture in the back of the piston, the aperture being closed by a self-supporting valve adapted to close in the forward stroke of the piston. The cap at the rear end of the cylinder is similarly fitted with a self-supporting valve, controlling an aperture on one side of its center. The valve construction is simple and effective, neither the valves nor piston requiring packing liable to be injured by jets of flame, smoke, or products of combustion, while the parts are not likely to bind from expansion. In operation, the cylinder is charged with the necessary combustible and medicated material, as with hay, straw, etc., sprinkled with sulphur or carbolic acid, and the material having been fired, the piston is operated to force the fumes or smoke into the holes or places where the vermin may be concealed. The valve in the cap at the rear closes when the piston is being drawn backward, but opens when the piston is being forced forward. In the latter movement the valve in the piston closes, causing a continuous stream of smoke through the nozzle, while there is no back suction.



LOUGHRY'S FUMIGATOR.