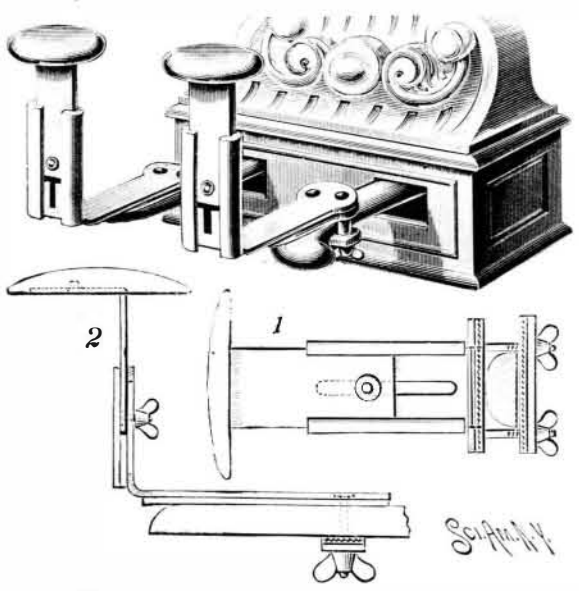
AN IMPROVED PEDAL ATTACHMENT.

An attachment readily applied to the ordinary pedals of a piano or organ, and which can be quickly adjusted to afford foot rests of such height as may be desired for children or very short persons, is shown in the illustration, and has been recently patented by William A. Hobday, M. D. Figs. 1 and 2 are front and side sectional views of the device, which has an angular body whose vertical member has slide-

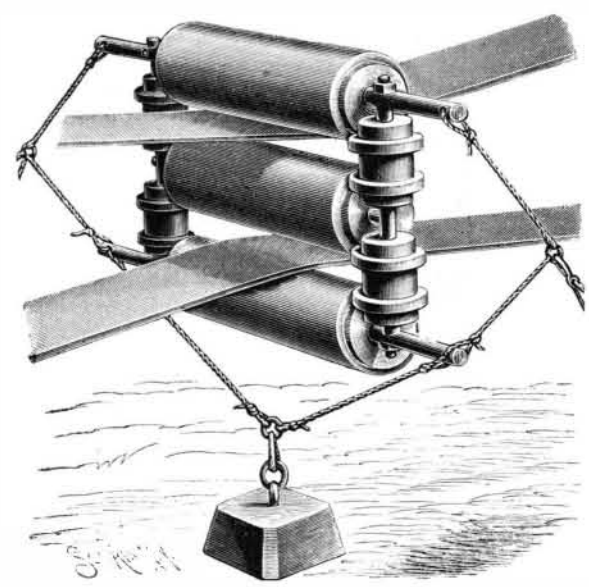


HOBDAY'S PEDAL ATTACHMENT FOR ORGANS OR PIANOS.

ways in its side edges in which slides an extension section, having a head adapted to serve as a foot rest, a bolt attached to the extension section extending through a slot in the vertical member, and the height of the foot rest being adjusted by means of a thumb nut. The under face of the horizontal member has an attached pad, and connected to its rear end by bolts and thumb nuts is a transverse plate, whose upper surface is padded. In applying the device, these thumb nuts are sufficiently unscrewed to permit the pedal to be passed between the upper padded surface of the transverse plate and the under padded surface of the horizontal member, when the nuts are screwed up to tighten the device upon the pedal, as shown in Fig. 2 and in the perspective view, the vertical extension being afterward adjusted as may be desired. Further particulars in reference to this improvement may be obtained by addressing the inventor, room No. 10, Pickering Building, Cincinnati, O.

A BELT GUIDE AND TIGHTENER.

The device shown in the picture is more especially designed for use on thrashing machines and in other places where driving belts are exposed to the wind. It has been patented by Mr. William F. Cleveland, of Rounthwaite, Manitoba, Canada. The shafts on which the horizontal and vertical rollers are journaled form a frame for the device, and one of the vertical shafts with its rollers may be removed by taking out bolts or



CLEVELAND'S BELT HOLDER.

pins at the ends, when the top and bottom horizontal shafts may be slightly sprung apart to facilitate attaching the device to a belt. To hold the frame and rollers in proper position a weight is suspended from the lower shaft, and the ends of both upper and lower shafts are connected by suitable ropes with stakes driven in the ground. As a portable guide and tightener the device can be readily applied on almost any long belt, sufficient tension being given the ropes to tighten the belt as desired. By its use, also, the labor of setting heavy engines exactly in line with the separators may sometimes be avoided.

The War Ship Chicago.

It appears from the recent annual report of George W. Melville, Chief of the Bureau of Steam Engineering, that some of the vessels of our new navy have already become antiquated and require to have new and better machinery put in. Here is what the chief says of her:

It is not likely that the boilers of the Chicago can be depended upon for more than three years (or one cruise) longer, and it is none too soon to consider the question of replacing them. The Chicago has been in constant and very active service since her completion, and the consequent wear and tear upon her boilers has been as great as that of two or three cruisers of the older type of ships, which performed their voyages mostly under sail. The hull of this vessel is of excellent design and in first-class condition, and she is, therefore, well worth fitting with modern machinery. The present boilers are externally fired with brick furnaces—a type that has some merits, but whose great weight for the power developed renders its use on a modern ship of war inadmissible. The engines are compound beam engines—a type that is also heavy, unsuitable, and out of date.

The machinery of this vessel weighs, in steaming condition, about 1,042 tons and occupies fore and aft in the ship a length of 142 feet. The greatest horse power ever developed by it was 5,248, and the speed of the vessel slightly over 15 knots.

The machinery in one of the newer vessels of the navy has developed 8,800 horse power on a weight of about 750 tons in steaming condition and a space fore and aft in the ship of 130 feet; in other words, nearly 70 per cent more power than the Chicago, on more than 25 per cent less weight, and a space occupied fore and aft less by 12 feet. Similar machinery to this can be fitted in the Chicago, and will give her an increase of speed of nearly three knots, as well as an increased carrying capacity of nearly 300 tons.

To decrease the weight of the machinery of a vessel to that necessary for the safe production of the power desired means more than merely additional weight or space available for something else; it means also that the needless expense of freighting unproductive dead weight around the world is avoided, and this expense in the case of a vessel like the Chicago will soon amount to a very considerable sum.

In view of the foregoing it will, in my opinion, be extremely unwise to furnish the vessel with new boilers and allow the present engines to remain in her. It is believed that machinery to develop 8,800 horse power can be built for between $500,000 and $600,000; probably for $500,000, if suitable old material on hand in some of the navy yards is utilized, as well as parts of the present machinery, such as pumps, blowers, line shafting, etc. I therefore recommend that an appropriation of $200,000 be asked for to begin the construction of new machinery for this vessel, either by contract or at the New York navy yard; work to be commenced as soon as the appropriation is available. When completed, probably about two years from commencement, the vessel can be laid up to have it erected on board, and her services thus lost for a comparatively short time only.

MONUMENTAL LUMINOUS FOUNTAINS.

Mr. Gustave Trouve's luminous drawing room fountains were described by us at the time of their presentation to the Academy of Sciences. The simplicity of the mechanism and the direct and powerful illumination of the liquid wheat sheaf jets permitted of reducing them to small dimensions that the inventor, in addition to the drawing room model, constructed luminous fountains of demonstration for cabinets of physics and even table fountains. These same advantages were likewise to facilitate the construction of monumental luminous fountains. As the jets of water are entirely united in the luminous pencil directed by a parabolic projector of a very sharp curvature, it will be conceived that with an adequate electric source the dimensions of the fountains may be as large as one desires; and, since such source may always be given the intensity desired, one will find himself practically arrested only by the rapidly increasing difficulty of submitting great masses of water to considerable pressure. Fig. 1 represents the new luminous fountain constructed by Mr. Trouve. It adorns the winter conservatory of the magnificent Craig-y-Nos Castle, in Wales, the royal home of Madam Adelina Patti Nicolini, the great cantatrice.

This fountain, which weighs ten thousand kilogrammes and is placed in a basin of water six meters in diameter, is automatic. The water that falls back into the basin is led by a discharge pipe to a small overshot wheel, which through the intermedium of an endless screw and a train of wheels actuates two circular screens with sectors of variously colored glasses. These two screens, one of them mounted centrally upon rollers and the other eccentrically, revolve in opposite directions, with equal or unequal velocities, as may be desired. To sixty revolutions of the bucket wheel corresponds about one revolution of the disks. The combination of the double rotation and of screens with multiple colors is a happy one, in that the effects of light obtained are very unexpected.

The aspect of the jets, in turn monochromatic and polychromatic, and incessantly varied, like the figures of a kaleidoscope, seems always new.

The automaticity of the great condensation of the light at the focus of the reflector accommodated itself better to incandescent than to arc lighting, but this required quite small although very powerful lamps. To this effect, Mr. Trouve has bent the carbon filament into a spring of five or six spirals. The luminous power, concentrated into a very small space, is thus quite sufficient and easy to place at the center of the reflector. In the present case, the electromotive force being 110 volts and 6 amperes, the consumption of one

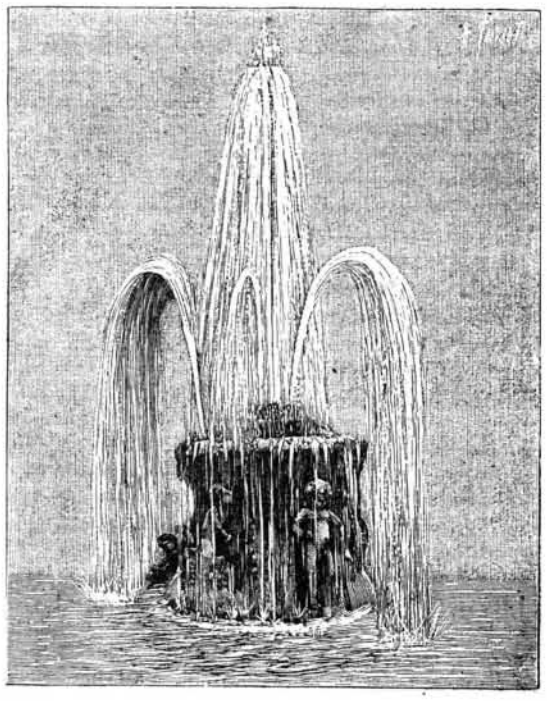


Fig. 1.—TROUVE'S LUMINOUS FOUNTAIN.

lamp is at the rate of one candle per 3 watts, and of 220 candles per lamp, say 880 for the four lamps.

Precautions have been taken to prevent ram strokes upon the glasses on the entrance of the water. A bell glass placed in the interior of the rock is branched upon the conduit, and the cushion of air obtained so deadens the blow that no break is to be feared. The thickness of the glasses is 25 millimeters and their diameter 300.

Fig. 2 shows the arrangement of the glasses, screens and reflectors. These new fountains require no maintenance; a cock is turned, the water enters and the circuit is closed simultaneously. The cost of installation likewise is reduced to a minimum. There is no subterranean foundation work, and any basin can be used just as it is. The whole of the expense is therefore reserved exclusively for the decoration.—*La Nature.*

A FRIGHTFUL accident occurred at the White River Iron and Steel Works, near Muncie, Ind., the week before Christmas. By the release of the rolls, at the end of the night shift, the belt was thrown off the governor, when the engine commenced running at a fearful

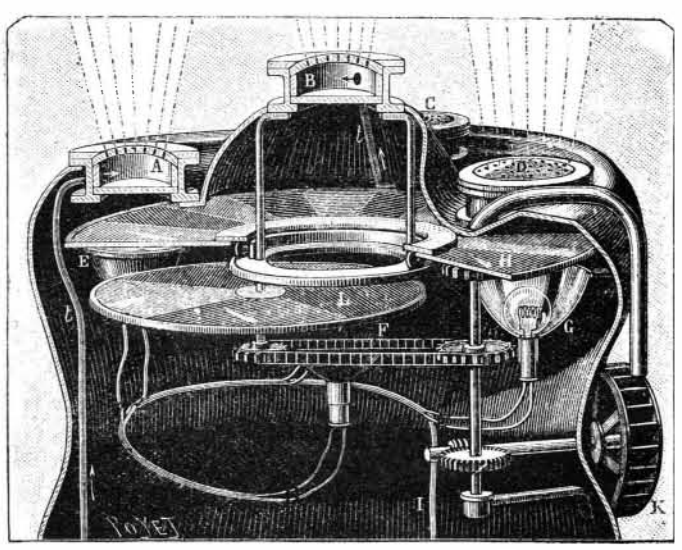


Fig. 2.—TROUVE'S LUMINOUS FOUNTAIN.

speed. The engineer and foreman jumped for the throttle valve, but too late. At that moment the great fly wheel burst in pieces, instantly killing the foreman and fatally injuring the engineer. The engine and part of the building became a total wreck.