New Inventions.

New Self-acting Railroad Switch.

Mr. W. S. Whiting, of New Haven, Conn. has invented a most admirable self acting Rail road Switch or apparatus for shifting the rails at turnouts. It is not easy to explain this invention without an engraving, although it is excedingly simple and operates like clock work. Suffice it to say that the rails are shifted by the wheel of the locomotive in the following manner: One section of the road has the ends of the two rails made so as to be raised up a few inches above the level of the track, one rail at once. This is done by the ends of the rails resting on a walking beam rocker under the track, which as one end is up, raises one rail and the other end when down keeps the rail that rests on it level with the track. This rocker is attached at its middle to a horizontal rod or bar running parallel with the track, and attached to that part of the track which is moveable or has to be shifted. It will readily be perceived then, that as the end of the projecting rail is depressed by wheel of the locomotive running on the track, that the rocker underneath, will oscillate the horizontal bar to which the moveable track is attached and shift the track to receive the locomotive and train. In this way the track is always shifted for the approaching train—there can be no mistake about this action, at least for the operating of a single track in one direction. At the same moment that the track is moved, a spring rod or clutch meshes into a small recess on a transverse bar and retains the track in its place in the most perfect manner. Measures have been taken to secure a patent.

Improvement in Power Looms.

Mr. Roger Lightbown, of Eaton, Oneida Co. N. Y., has recently made some improvements in Power Looms, for which he has taken measures to secure a patent. The improvements consist of three distinct features. 1st. An arrangement for arresting the motion of the loom more rapidly by the weaver than by any contrivance at present employed for that purpose. 2d. A superior mode of arresting the motion of the loom to prevent smashes by a self-acting lever that catches a cam placed on the driving pulley. 3d. A superior let-off motion to make the motion of the warp beam coincide or increase in speed as the warp is given off or the diameter of the beam decreases.

New Wagon Wheel.

The Philadelphia Ledger says:—"Isaac B. Ward, of Camden, N. J., yesterday exhibited at the Ledger Office the model of a wagon wheel, constructed upon a novel principle, for which he is now an applicant for a patent. The tire is of wrought iron, and felloes also of iron, cast in segments, so as to be substantially screwed to the tire. The spokes are of wood, and the hub of the ordinary construction. Mr. Ward has made several wagons with wheels of this description, and they have been in practical use for several months.—They can be made cheaper than of wood, and will probably outlast ten ordinary wheels."

Electric Light for Daguerreotypes.

Faithful daguerreotypes have been taken in the city of Dublin by an ingenious artist, by using terrestrial instead of solar light. The light employed was the famous electric, which produced pictures with marked fidelity of outline and a depth and delicacy of shade which elicited much admiration. This is a valuable discovery indeed.

Steam Plough.

Mr. Henry Cowing, of New Orleans, La., has invented a steam plough, or rather a land locomotive for operating the plough, which is intended especially for the sugar plantations of Louisiana.

Chapman's Balance Rotary Slide Valve.

Mr. James W. Chapman, of Washington, Davis County, Ind., has made a valuable improvement in the slide valve, which is operated by a rotary motion in a circular steam box, which admits the steam above and below the slide to balance the pressure of the steam upon the slide. The slide could also operate by a semi-rotative motion but the rotary motion appears to be the best. The principle upon which the valve is constructed exhibits great ingenuity and a good understanding of mechanical principles, as it can cut-off at any point desired.

G. W. VERGER'S IMPROVEMENT IN SURGICAL APPARATUS.

Fig. 2. Fig. 1. Fig. 3.

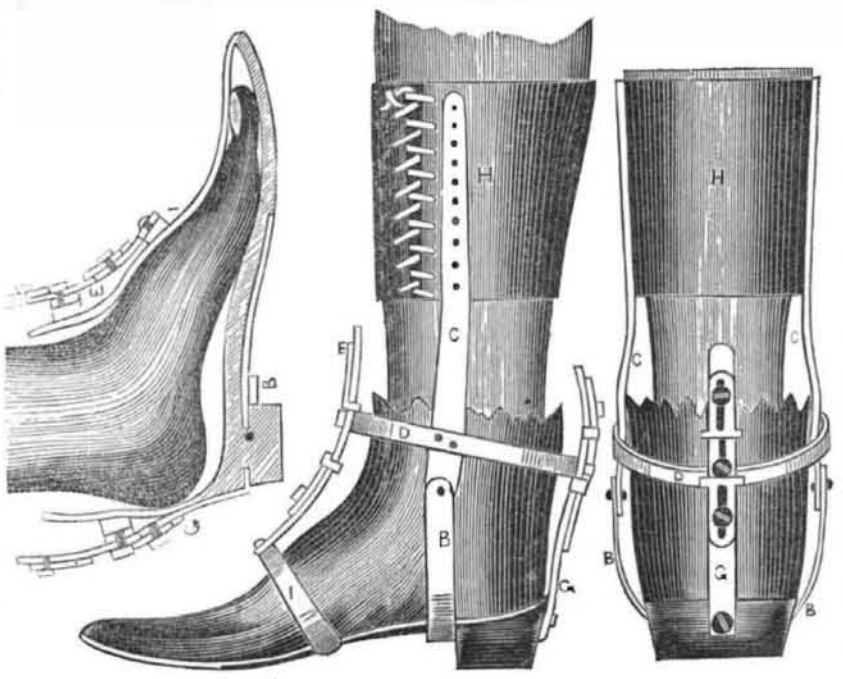
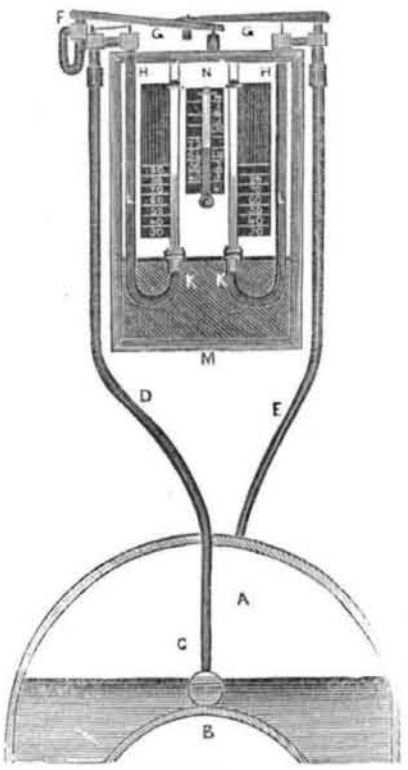


Fig. 1 is a side elevation of a boot with the improvement attached. Fig. 2 is a section of the same, and fig. 3 a back view of the same. Similar letters refer to like parts.

This improvement consists in securing to the shank and heel of the boot designed for the fractured or otherwise injured limb, a series of curved and spring and jointed bars I, E, G, B, C, corresponding as near as possible with the boot to which they are contiguous, extending over the front part and instep, and upward behind, and on the sides of the ankle of the boot, and on the sides of the calf of the wearer, and attached at this last mentioned part to a pad H, corresponding with the form of the calf of the said leg, in such a manner as to cause the weight of the body of the wearer to rest entirely on the lower part of the calf of the leg, except a slight pressure on the front part of the foot, and thus suspend the ankle above the heel of the boot as represented in fig. 2, and relieve it of all the pressure of the body, forming a double acting graduating spring support for fractured or otherwise injured ankles, and enabling persons thus afflicted to walk without the aid of crutches or other support, and with much greater facility than with them. The oval bar D, being attached permanently to the bar C, and loosely to the slotted spring bars E, G, allows a slight movement to the leg of the afflicted person. This apparatus is already patented and has been successfully applied in many cases of fractured ankles at Philadelphia where the ingenious inventor resides.

Lyman's Patent Steam and Water Guage.



This is an invention of Mr. A. S. Lyman, of St. Louis, Missouri. A, is the boiler. B, the flue. C, box on the flue. D, iron tube connecting box with water guage. E, iron tube connecting boiler with steam guage. F, elastic valve. G G, levers resting on elastic and steam valves. H K, iron tubes filled with mercury to L, and with water from L to H.—M, case enclosing guage. N, thermometer.

The Steam Guage.—This consists of an iron tube (of any required length,) one end of which is attached to the top of the boiler, and the other curved in the form of an inverted siphon; connected with this is a strong glass tube, sealed at the top, and placed in an upright position, beside a scale, properly graduated, to show the number of pounds inch of steam in the boilers. The longer leg of the iron tube H K, is, in part, filled with mercury, above which is a column of water. to protect it from the heat of the steam which is forced from the boiler, through the iron tube, until it comes in contact with the water.—The pressure of the steam on the top of the column of water compresses the air in the glass tube, and double the pressure drives the air into nearly half the space, as will be seen by the scale. The safety and correctness of the Guage depends upon the fact that the water is a good non-conductor, and incapable of transmitting heat downwards.

The Thermometer.—Air is expanded by being heated, and it requires a greater pressure to drive it into a given space when warm than when cold. Eight degrees of temperature makes a difference of one pound in the indication of the Guage; for this reason the thermometer is added, and the scale is made when the mercury stands at 72 degrees. At this temperature, therefore, the scale is strictly correct; when it stands at 8 degrees above, or 80 degrees, we add one pound to the indication on the scale; at 88 degrees, add 2 pounds. At 64 degrees, or 8 degrees below, subtract one pound; at 56 degrees, subtract 2 pounds, &c. &c.

The Water Guage.—The construction of the Water Guage is the same as that of the Steam Guage, with the exception that, instead of being connected with the top of the boiler, it is connected with a copper box, hermetically sealed, laying in the boiler, and on the top of the flue. This box is filled with water, sufficiently saturated with salt to prevent freezing, and has no outlet except through the Water Guage. The indications of this Guage vary slightly from those of the Steam Guage, for several reasons, one of which is, from the fact that the box is filled with salt water, and it requires more heat to produce a given pressure of steam from water which is salt, than from that which is fresh. As soon as the water falls too low, or is driven off from the surface of the flues, so that they begin to receive extra heat, the pressure in the copper box, laying on the flue, will increase rapidly. The Water Guage will indicate that increase, and the alarm above the case containing the Guage, will sound a short time before the flues receive sufficient extra heat to become dangerous. When the alarm is sounded, the flue caps should be opened immediately, the safety valve of the boiler raised, and ten or twenty pounds of the pressure suffered to escape. This will cause the water to rise in foam, wash off and cool the surface of the flues. There will be no danger of collapse from the sudden accumulation of steam by the water thus coming in contact with the heated top of the flue, if the alarm is attended to; but if neglected for any length of time, the safety valve should not be raised, but the fires should be partially extinguished and the pumps started. If these precautions are immediately observed when the alarm is sounded, no danger need be apprehended in any case. The boilers are then as safe as at any other time

Directions for detecting any incorrectness in the Guage.—The Steam Guages for cabins are so constructed that they will contain no more air than is introduced before the scale is made; should more be forced in, it will escape the first time the steam is down. The only way then to make them indicate less than the real pressure, would be to slide the scales upwards; but these are so fitted to the stuffing boxes, holding the glass tubes, that any interference of this kind would at once be detected.

The only method of interfering with the correctness of the Water Guage, and preventing the alarm, would be—

1st. By drilling or cutting a hole in the box laying on the flue, thus giving the water in this box vent into the boiler as soon as the flues receive extra heat.

2d. By fastening down the alarm valves.

Now if a hole is made in the box, it may be known from the fact that the vibrations of mercury in the Water Guage would correspond with those of the Steam Guage. If the valve should be fastened down, the small iron tube conducting the steam from the box to the Water Guage will burst open at the weld the first time the water falls too low, and suffer the water in the box to escape in the form of steam. This would take place before the top of the flues were heated to the temperature of 450 degrees, while it requires about 1000 degrees to produce a red heat, and would give sufficient warning.

If the mercury in the Water Guage falls considerably lower than that of the Steam Guage, and is moved by sudden impulses, the box is nearly empty of water, and should be immediately filled; but as the steam escapes from the main boiler and not from the box on the flue, in case of an alarm from either low water or high steam, this box never need be emptied, unless there is a leak in the tube leading from it to the Guage.

[This apparatus cannot be too highly praised, nor its importance too highly magnified. More information may be obtained by communicating post paid with Mr. Charles H. Tillson, St. Louis.

Important Discovery.

Mr. N. S. Day, writes us that he has just made the discovery of attaching cast iron in a fusible state to potters' clay.

New Electric Telegraph.

The London Patent Journal describes a new telegraph invented by Geo. Henry Bachhoffner, Doctor of Philosophy in the Polytechnic Institution in London, in which he claims an improvement only on the mode of actuating the pointers, and signalling by figures and letters on dials. In our opinion it is not at all equal to permanent marks, such as Morse's, House's and Bain's, the three that are now before the American public.