NEW INVENTIONS.

Railroad Signals.

Moses S. Beach, of New York City, has invented an improvement in Railroad Signals, for which he has taken measures to secure a patent. The great number of accidents occasioned by the want of proper signals, has induced inventors to devise a variety of means for preventing them. This is one of the most efficient methods for accomplishing this purpose which has come under our observation. The certainty with which this signal gives notice of an open draw-bridge or turned switch, at any desired distance from the place of danger, entitles it to particular notice by railroad men and engineers. The improvement consists in a new mode of operating a series of signals for day and night, placed near the draw or switch, and also at a considerable distance from it, on either side, by means of eyes and arms. These are so arranged that when the draw or switch is moved, a corresponding motion is communicated to the signals by means of cords or small chains passing from and operated by the draw-bridge or switch, to the signal or signals, a number of which may be used sufficient to insure safety. Thus, when the main track is clear, the signal boards are parallel with the track as day signals, and green lights are shown up and down the track, as night signals, that all is right and safe. And when the main track is broken, either by a turned switch or an open draw, the signal boards are turned at right angles with the track as day signals, and red lights are shown up and down the track as night signals of danger. The signal is turned by a pulley upon the signal staff, over which the cord or chain passes. This arrangement is exceedingly simple as well as cheap and efficient.

An Improvement in the Construction of Cars for Turning Curves.

An improvement in the construction of cars for the purpose of accomplishing the object above named, has been invented by Archibald C. Ketchum, of New York City; it is designed to be used in the running gear of cars, and all other carriages used on railroads. This invention is intended to prevent the liability of cars to run off the track in turning curves, by making all the wheels of the track follow exactly in line of the curve. To effect this result, each side of the truck is made in two parts, these parts being long rectangular plates of the required thickness to support the weight of the car, and connected in such a way as to admit of their sliding, longitudinally in relation to each other, the bearing of one of the two axles being in one of the said parts and that of the other axle in the other part of the said sides. The two parts of each of the two sides being held with a transverse sliding bar, which is connected with a lever having its fulcrum on the inner axle, the opposite end of the lever being attached to the end of the car. The transverse sliding bar is furnished with two slots in each end, which receive studs projecting from the top of the bars, upon the sides of the truck, and are cut at such an angle to each other that, when the bar is moved by the action of the lever, in turning a curve, they will cause the studs to move within the slots, and the sliding sides to move longitudinally so as to bring the axle in the position of radii to the said curve; by means of the arrangement thus briefly described, a rail car will be no more likely to run from the track in turning a curve, than in moving in a direct line. The structure of this car is not complex, and is at least worthy of a trial. Measures have been taken to secure a patent.

New Car Wheel.

Benjamin H. Overhiser, of Binghamton, N. Y., has invented an improvement in railroad car wheels, for which he has taken measures to secure a patent. The nature of the improvement relates to the form and manner of constructing the body of the wheel, more particularly the portion between the hub and rim. In the arrangement of Mr. O., a series or chain of arches are interposed between the hub and rim of the wheel, for the purpose of giving elasticity to the wheel when cast, and also compensating for the shrinking or contracting of the metal while cooling, said arches being connected to the rim by short radial spokes, or otherwise, as desired. It is necessary that improvements in railroad car wheels should be tested by experiment in order to determine, with any definite degree of certainty, their operative practicability. This wheel has good qualities to recommend it, but it should, like all others intended for use, be subjected to trial before being adopted.

Improvement in Temples for Looms.

Jerome B. Greene, of Worcester, Mass., has taken measures to secure a patent for a new temple for looms, the construction of which is simple and the expense trifling. The cloth is held between rollers placed over or under each edge of the cloth turning on an axis transversely to its edges, and adjustable cups or guards made nearly globular, surrounding the said rollers. These guards have deep recesses in their opposite sides, forming jaws, through which the edges of the cloth pass. The rollers have points upon their peripheries within the cup, to prevent the cloth from sliding from the temple, or the cloth may be held by friction between conical portions of the roller and the guard. The rollers are operated by helical springs upon their axes, which serve to keep the rollers apart, and consequently the cloth at a proper tension. The rods which form their axes are bent in the form of a syphon and are attached to the breast beam by their ends opposite the cups and rollers through which they pass, so as to give a small amount of elasticity to the axes and their attachment while the cloth is passing through the temple.

AIR-COOLING APPARATUS.

Figure 1.

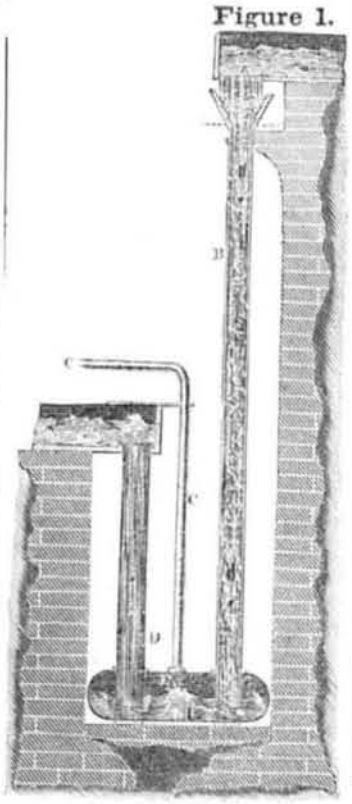


Figure 2.

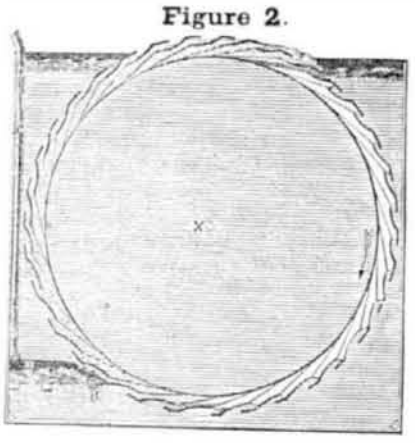


Figure 3.

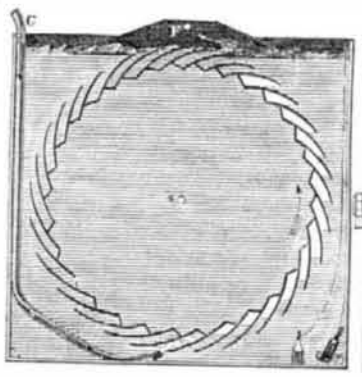
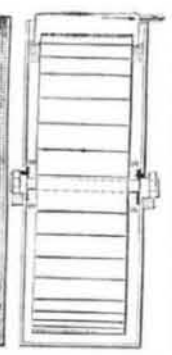


Figure 4.



The annexed engravings are representations of an apparatus for cooling the air in warm climates, or other places where it may be necessary for comfort or convenience. The warm season is rapidly approaching, and is doubtless looked upon by many with dread, particularly in those pent up cities like our own, where a cool breeze is but occasionally felt. Those who desire a constant current of cool air in their dwellings will do well to give the annexed plans for supplying it a careful perusal. Its simplicity will particularly recommend it to those who do not choose to expend a large amount of money in cooling their apartments. Railroad cars might be rendered far more comfortable by the adoption of an apparatus similar to the one here described, taking the air to be used (cooled) from the front of the moving train.

Figs. 1, 2, and 3 are vertical side elevations of different arrangements to effect the above named object; and fig. 4 is an end view of the arrangement, shown in fig. 3.

The readers of the "Scientific American" are already informed that bodies, in passing from a rarer to a denser medium, emit caloric and absorb it *vice versa*. The different plans represented are constructed upon this principle. The stream of water falls through a number of small openings pierced in a metallic plate, A, fixed in the bottom of a trough. The water, after falling for a short distance through this perforated plate, forms into a mass of drops, thoroughly intermixed with air. This mixed air and water is received into a vertical tube, B, of sheet zinc, for instance, which is fixed, air-tight, into a small reservoir or vessel, E; here the air, which is carried down in large quantities with the water, accumulates and becomes compressed in the reservoir and passes out by the air pipe, *c*, which leads to the locality where the cold air is required, while the water, freed from air by settling a moment as it passes through the reservoir, is forced by the pressure of the condensed air up the outlet tube, D, and flows away in the direction of the arrow. The air pipe, *c*, should be throttled by a stop-cock just sufficiently to keep the air compressed in the reservoir to the greatest amount; that is, by the whole hydrostatic pressure of the water in the outlet tube, D. It much air is observed to bubble up through D, it is an indication that the air pipe, *c*, is too much throttled. The water may be mixed with air or broken into spray before it enters the descent tube, in many ways.

The following are deductions from experiments, in one instance, taken from the apparatus above described:—Temperature of the atmosphere 90° Fah., temperature of the water 84°, temperature of the air as it rises in the reservoir, E, at the bottom of the descent tube, 86°, and the temperature of the cooled air as it issues from the air pipe, *c*, reduced (from 90°) to 54 2-3, having lost 35 1-3 by compression; 105 cubic feet of cool air being discharged per minute,—this is far superior to the arrangement for cooling air by compressing the air with a piston and cylinder, as is sometimes done. In this structure of an air cooler, the water must be elevated, or at least received from an elevated position, say 16 or 18 feet high. Another means of compressing the air—more available in many instances—will be by thrusting the air below a sufficient head of water, for instance 6 or 8 feet, by means of an air wheel shown in fig. 2—that is, a water wheel inverted in a tank of water. The mechanical force which would be required to compress the air by any other means, is here employed to turn the wheel which is immersed to within a certain distance of its highest part, the axis, ×, being horizontal and passing through the tank at one side, or both, with a leather washer, W W, fig. 4, to make the hole for the shaft water-proof. This machine effects the compression of air with but little loss of power. The air is collected in small recesses or nests of the wheel, as they rise above the water, and is carried downward in the direction of the arrow, until it comes to the air reservoir, E, when it is deposited; and compressed by the action of the water in the manner first above stated. The edge of the receiver, E, is kept at a uniform and close distance from the edges of the nests upon the wheel, by carrying rollers or small wheels, R, which revolve at each side of the receiver against the edges of the sides of the air wheel, and are kept pressed against them—the edge of the receiver next the wheel having a strip of india rubber upon it to make it fit up to the wheel as the wheel revolves. A pipe, C, from the receiver, conveys the compressed air to the locality where the cool air is required.

Another apparatus for effecting the same purpose, and by which an amount of power is saved, which is lost in fig. 2, is represented in figs. 3 and 4; here the air is compressed and descends through the tube, C, in the direction of the arrow, and passes out through a small orifice in the ends of the tube, under the bottom of the wheel, and is received by its nests or recesses, and conveyed to the receiver, F, from whence it passes to the apartments to be cooled. The force of the air in driving the wheel assists in compressing the air within the tube. The water in this cistern or tank will become considerably cooled in consequence of the expansion of air, and may be used for baths or to cool liquids of any kind. Thus we have an arrangement at once simple, not soon requiring repairs, and very economical of moving power. The cool air produced has no taint of oil, and has the advantage of keeping a large bath of very cold water always at hand, which can serve the purpose of an ice house.

New Lifting and Force Pump.

Henry Johnson, of Hartford, Conn., has invented an improved lifting and force pump, which improvement consists in a new method of combining together in one, the air chamber and upper portion of the pump. The main body of the pump above the base board is cast in three separate parts which are firmly joined together by means of screws, packing, &c.; the middle portion, being made square, and of sufficient size, has passing through two of its opposite sides an intermediate shaft or bolt, which is rendered air-tight by appropriate packing boxes; the said shaft or bolt projecting far enough on each side to allow the handle or handles to be keyed upon its extremities. Upon the central portion of this intermediate shaft or bolt is cast an arm or projection which connects with and works the piston rod. By this improvement the lifting and force pump is at once made cheap, simple, and remarkably strong and durable; and being provided with two handles, as well as being very strong, admits the application of great force, thus rendering it a very powerful forcing pump.