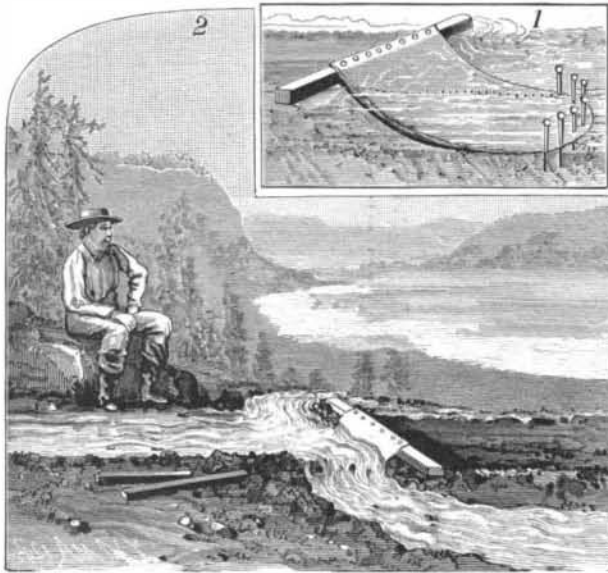


**IMPROVED DAM FOR IRRIGATING-DITCHES.**

In the engraving Fig. 1 is a perspective view of the dam, and Fig. 2 shows its position in the ditch. One end of a sheet of canvas, leather, or other suitable material is attached to a bar of wood, which is longer than the width of the canvas. This bar reaches across the ditch, the ends resting upon the banks, while the canvas lies in the ditch, with its free end extended upstream and secured by pegs driven through holes in it into the ground. The water pressing against the upper side of the sheet bulges the middle portion downward and presses the margins against the bottom and sides of the ditch, so that the sheet effectually dams the ditch in a most simple and ready manner.

By this plan the labor of building and removing the earth dams is saved, the only things necessary to do in this case being to lay the device in the ditch and drive a few pegs through the lower end when damming the stream; and for

**BIGELOW'S DAM FOR IRRIGATING-DITCHES.**

taking up the dam all that is required is to take the bar in one hand and pull up the pegs by the sheet.

This invention has been patented by Mr. William H. Bigelow, of Worthington, Minnesota.

**Active Seasons with Inventors.**

To those who have never given special attention to the patent business—many of whom incline to the belief that most of the great inventions of the age have been rather the result of chance than of reflection, study, and experiment—the statement that there are special seasons when the inventive faculty of the country is invariably most prolific, is not readily accepted. But when we show that this is so, and that it is only a legitimate manifestation of the natural relations between cause and effect, we destroy the theory that most inventions are the result of accident.

The records of our Patent Office for many years past show that there is always a great increase in the number of applications for patents when winter sets in, and the long evenings, during weather not suitable for outdoor employment, give the best opportunities for mental application; if at this season there likewise happens to come an unpropitious period in trade and manufactures, when workshops are closed, or running on short hours, and the times generally are hard, the activity of inventors is yet more marked, establishing conclusively the fact that, according as opportunity is afforded, do those in whom the originating, inventive, and constructive faculties are prominent devote themselves to the working out of ideas theretofore but dimly conceived or imperfectly apprehended.

And there is yet another fact even more strikingly contradictory of the idea that the generality of inventions are accidental, and showing that the bulk of those for which patents are granted result from earnest seeking after something to supply an acknowledged want. Great fires are followed by patents for a crowd of new devices in fire-proof construction, for the extinguishing of fires, and for the escape of the inmates of rapidly burning structures. Memorable railroad accidents likewise mark an era of activity in the introduction of improved brakes, couplings, automatic switches and signals, and the thousand other improvements which have so effectively contributed to the development of our railway system.

In fact, a great want in anything which seems possible of attainment through man's ingenuity needs only to be widely known to call out earnest efforts to supply that want from inventors in all sections of the country. This, indeed, merely bears out the old saying, that necessity is the mother of invention; but it is only through the beneficent operation of our patent system that thinking men everywhere are encouraged, as occasion seems to call, to help in the working out of valuable inventions.

Work on the Montreal ice palace began about the first of the year. Its size will be 100 by 150 feet; cost, \$3,000.

**The Dwight Life Insurance Case.**

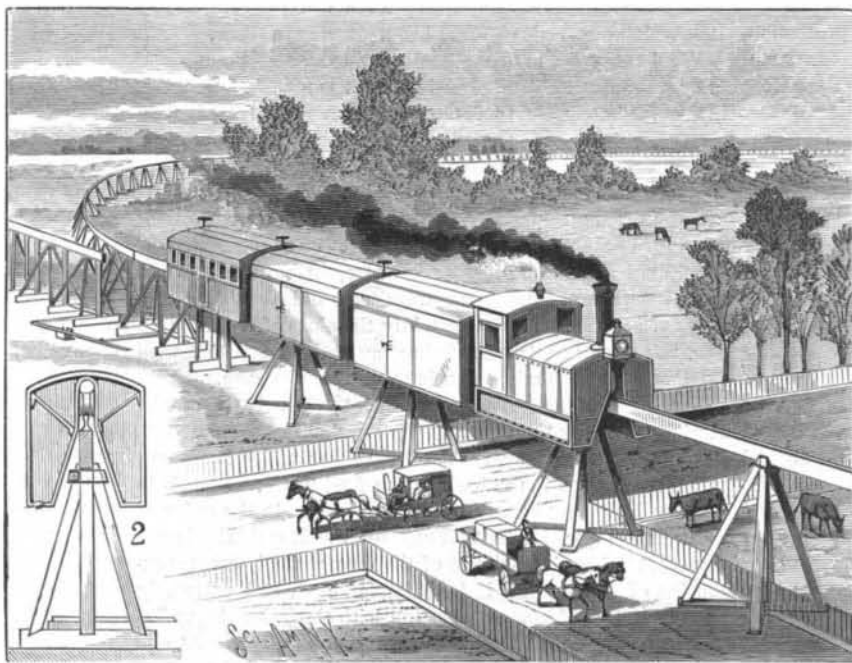
The expert testimony in the contest of the insurance companies to escape payment of the amount of the policies in this now famous case has not, thus far, been fully printed. Dr. Horatio C. Wood, a professor in the University of Pennsylvania, who was one of those experts on behalf of the life insurance companies, contributes to the *Medical News* a summary of the evidence. The professor says the experts were remarkably free from serious disagreement, that there was no evidence to show that overdoses of morphia had been given, and that no medical man ventured to assert that Col. Dwight died from other cause than strangulation. Col. Dwight's death occurred in November, 1878, at which time his life was insured for \$256,000; only the first quarter's premium was ever paid on any of the policies, their annual maintenance would have cost over \$8,000, the insured was at the time in bankruptcy, and the first premiums were paid with borrowed money. The most of the insurance companies have refused payment, claiming that Col. Dwight committed suicide; and although the courts have once given judgment against the companies, it is said they will appeal and further contest the case.

**SINGLE RAIL ELEVATED RAILWAY AND TRAIN.**

The rail may be the ordinary T-rail or a flat piece of iron or wood, and is fastened to a longitudinal string piece, which may be supported upon vertical posts rising from the ground at suitable distances. These supports may be placed on concrete bases or driven as pile supports. The girders are secured to the posts in any suitable way, and may be further strengthened by braces, which are placed in groups of four. The upper ends of the braces are cut away so as to form shoulders, affording a seat for the girder to rest upon. Two braces are brought together at the top and on each side, and are held in place by a band which passes around them and secured by a bolt. The lower ends extend diagonally outward, and are secured in plates attached to the posts. These braces are to be placed centrally between the posts, and prevent any lateral movement of the girder, as well as assisting to resist vertical strain.

The two sections to be used as a switch are adapted to move away from each other, so as to avoid moving one section to a great distance from the other, in order that the car can be switched. In this instance the supports and braces are placed on sills. Where the sections come together the sills are placed on grooved guide plates, curved sufficiently to allow the inner sills to move back and forth. The sections are secured to the supports about which they revolve by pivots or knuckle joints. On each section a horizontal bar is secured to the sills, and to which are pivoted the inner ends of two rods, the outer ends of which are pivoted to a lever that is centrally pivoted to a block. When the sections are in their normal positions the lever is parallel to the road, but when the levers are moved the sections move apart and afford room between them for the passage of a car.

The car is made in two sections, one on each side of the track, as shown in Fig. 2, the frame pieces being made of one piece of angle iron. The frame pieces extend above and below the rail. The body of the car is made in the usual way of tongued and grooved timber, the bottom resting on the bottom of the frames. The wheels have a double flange, and may be journaled in boxes secured to the upper or lower side of two beams placed in the upper-bend of the frame.

**SINGLE RAIL ELEVATED RAILWAY AND TRAIN.**

The exterior sides of the frames are vertical, the interior being bent outwardly from the track. This throws the weight outward from the roadway and prevents the oscillation of the car. The greatest weight is brought below the rail, the strain comes upon the wheel and rail, and derailment is prevented. The engine will have a boiler and fire box on each side of the rail, and the driving mechanism can be placed at each side of the beams, or in any suitable position.

This invention has been patented by Mr. E. S. Watson, of Water Valley, Mississippi.

**IMPROVED GATE.**

The gate is of any ordinary construction. The lower end of the rear upright has a pivot formed upon it which works in a socket in a plate attached to the hinge post by a bolt. The upper end of the upright is made round, and has a tooth or projection formed upon its forward side, and is surrounded by a bar, the middle part of which is bent into circular form and has three recesses formed in its inner side, one recess being in line with, and the others at right angles to, the gateway. The recesses are designed to receive the tooth and hold the gate in place when closed, or when opened to either side. The circular bar is provided with a bolt by which it is held to the post.

To the inner side of the latch post is attached a plate having an angular slot formed in it, with a flange along its inner edge. The flange serves as a stop and guide to the end of the fastening bolt as the gate swings shut, the bolt enter-

**HAMILTON'S IMPROVED GATE.**

ing a deep recess in the angle made by the slot. The ends of the bolt slide in bearings between the upright bars of the gate, and is held forward to engage with the catch plate by a spiral spring placed upon its rear part. To the middle part of the bolt is pivoted a bar whose lower end is pivoted to a bar in the gate. To its upper end, which projects above the gate, are fastened two ropes that pass around guide pulleys attached to the outer ends of two arms secured to the hinge post. The ropes cross each other at the rear of the post, and are kept in place and from contact with each other by guide pulleys. The ropes then pass over pulleys attached to the lower side of arms projecting from the upper ends of posts set in the ground at suitable distances from the hinge posts. Handles are secured to the free ends of the ropes.

When either end of the rope is pulled the bolt is drawn away from the catch plate by the pivoted bar, the gate is raised, withdrawing the tooth from the forward recess and releasing the gate, so that the strain upon the rope will swing it open in a direction away from the operator. The gate is held open by the tooth, which drops into one of the side recesses. After the operator has passed through he pulls upon the other rope, when the gate swings back. The strain on the rope is continued until the gate is between the posts, when the latch is shot out by the spring and the gate drops so as to let the latch enter the slot.

This invention has been patented by Mr. William James Hamilton, of New Boston, Iowa.

**Irrigating a Vineyard.**

The vineyard of Governor Stanford at Vina, Cal., consists of 10,000 acres, planted in vines of different varieties. The irrigation of this vineyard is, perhaps, the most complete in the world. At regular intervals through the vineyard avenues are cut which are forty feet in width. Through these avenues are run irrigating ditches, with a driveway on each side. The blocks thus formed by the irrigating ditches are about fifty yards wide, but extend a great length and contain about one hundred acres each. In this way the system of irrigation is made complete, and all the land receives an equal proportion of water. Every two of these blocks are planted to a different variety of grapes. The main ditches run east and west across the field,

and where the field is uneven intersecting ditches are made. In some cases it has been necessary to construct flumes to carry the water over lower lands. A flume 1,800 feet long has been built to carry water over the alfalfa fields.

**Vaccination in India.**

The total number of persons operated upon during the year was over 4,400,000. Generally speaking, the treatment appears to have been successful, the ratio ranging as high as 98.39 per cent.