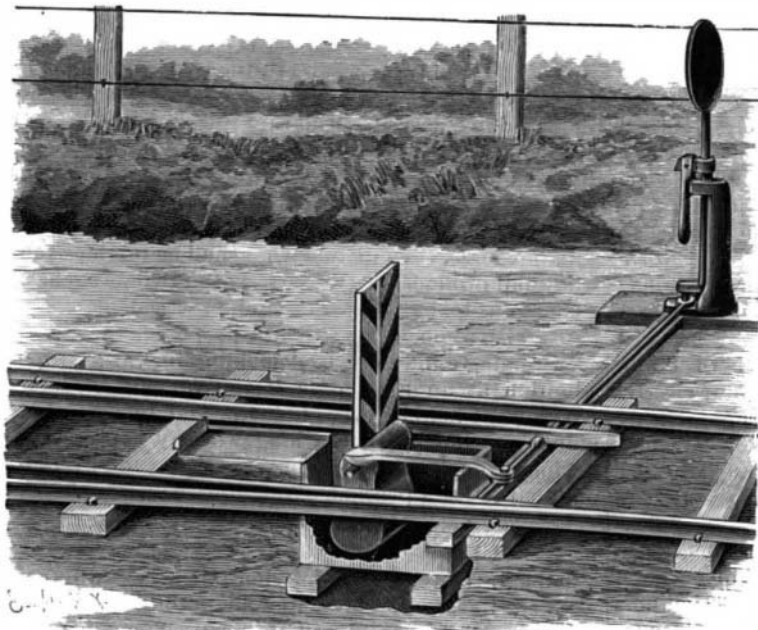


with their equally spaced and similarly shaped limbs, afford efficient means for the accurate and convenient adjustment of the knives, the grass roller being also adjustable and furnished with an adjustable cover to protect the roller from being impeded in its action, while a throat slot is provided in the cover to discharge grass accumulations through it. In the front of the machine, on the cross bar that retains the side pieces, is a protecting guard, preferably of rubber, whereby injurious contact with trees or shrubbery is avoided. There is no cutting action when the machine is moved backward, the cutter knives then being dormant, and injury to their cutting edges is avoided when the machine is drawn by its handle from place to place.

**AN IMPROVED SWITCH SIGNAL.**

The signal represented in the illustration is adapted to be located between the rails of the track, and is designed, when the switch is open, to be in an upright position. It is counterbalanced, so that the train being switched may readily pass over the track when the signal is displayed, while the signal will immediately return to its upright position after the train has passed. The invention has been patented by Mr. William R. Thomas, of Watertown, Wis. The switch rails are moved in the ordinary way by a switch rod, upon which is rigidly held an arm beveled at its outer end, where there is also a swell or projection on its under face. Near the switch rod, and beneath the track surface, is a box, having on one side a horizontal flanged table, and in this box is pivoted a signal, one end of which is

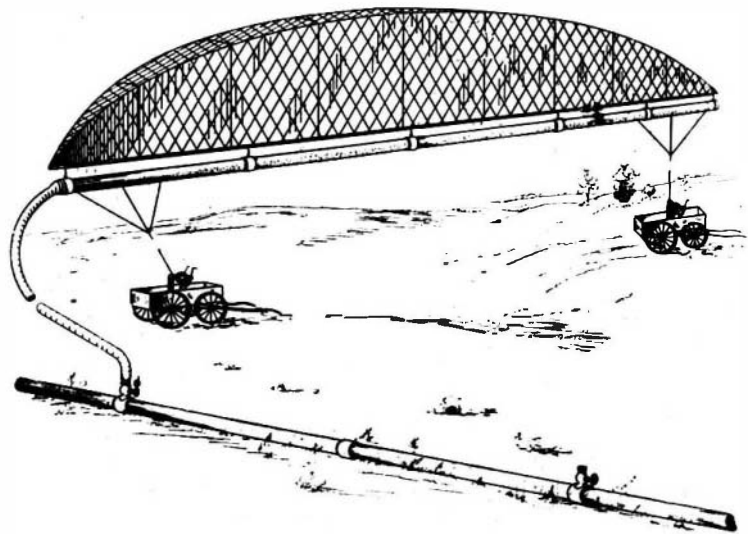


THOMAS' AUTOMATIC SWITCH SIGNAL.

weighted, while the other end presents a broad colored surface or may bear a flag. The entire signal is of such length that when brought to a horizontal position, it will extend from the outer end of the table to the opposite end of the box. To open the main line the switch rod is moved so that the beveled end of the arm secured thereon strikes the weighted section of the signal above its pivot and gradually presses the signal down to horizontal position, holding it there until it is desired to close the main line and open the switch. As this is done, the arm on the switch rod being carried out of contact with the signal, the latter, by reason of its weighted end, automatically assumes a vertical position, rendering the display or upper section visible from up or down the track.

**AN IMPROVED IRRIGATING APPARATUS.**

The illustration represents an apparatus patented by Mr. Edward C. Chapman, of Leadville, Col., designed to distribute water in fine streams or drops upon more or less elevated surfaces. The invention contemplates the furnishing of water under adequate pres-



CHAPMAN'S IRRIGATING APPARATUS.

sure through a main conduit, by a pump or other means, and at different points along the conduit pipe are outlet valves to which a hose or flexible tubing may be attached. Upon the other end of the hose is attached an extended water conductor or pipe, having perforations in its lower semi-circumference, adapting it as a sprinkler. An elongated chamber, filled with any gas lighter than the air, is attached to the water conductor, to hold it, on the principle of a balloon, above the surface of the earth, while guy ropes from the conductor lead to the drums of winches mounted on loaded wagons, by means of which the conductor may be anchored in any desired locality. When the device is in service, it is designed to produce an artificial rain-fall, the area of which is extended by moving the conductor by means of draught animals attached to the wagons, and by connecting the hose to different outlet valves along the main conduit.

**AN IMPROVED CHANNEL CLEANER.**

An apparatus to be anchored in a channel where there are sand bars, to agitate the water and stir up the sand, so that the current may remove it, is shown in the accompanying illustration. A trunk or large tube, A, with perforations, a, along its bottom, and with a flaring mouth, C, at its up-stream end, for concentrating the current, is anchored in a channel where there are sand bars, the down-stream end of the trunk being closed with a perforated cap, B, the apertures having hinged valves which allow the water to pass out of the tube, but close when the flow of water is in the opposite direction. In the trunk is journaled a spiral screw, D, on the lower end of which is mounted a motor screw, E. The current of water passing through the trunk rotates the spirals and the motor screw, thus communicating motion to the water outside of the trunk in the vicinity of its bottom perforations, loosening the sand and causing it to be carried along by the current.

For further information relative to this invention address Mr. William Evans, the patentee, in care of Mr. Marcus Hamer, corner of Twentieth and Mechanic Sts, Galveston, Texas.

**Bread Buttering Machine.**

One of the latest and most unique inventions is a machine for buttering bread. It is used in connection with a patent bread cutter, and is intended for use in prisons, workhouses, and other reformatory institutions. There is a cylindrical shaped brush which is fed with butter, and lays a thin layer on the bread as it comes from the cutter. The machine can be worked by hand, steam, or electricity, and has a capacity of cutting and buttering 750 loaves of bread an hour. The saving of butter and of bread and the decrease in the quantity of crumbs is said to be very large.

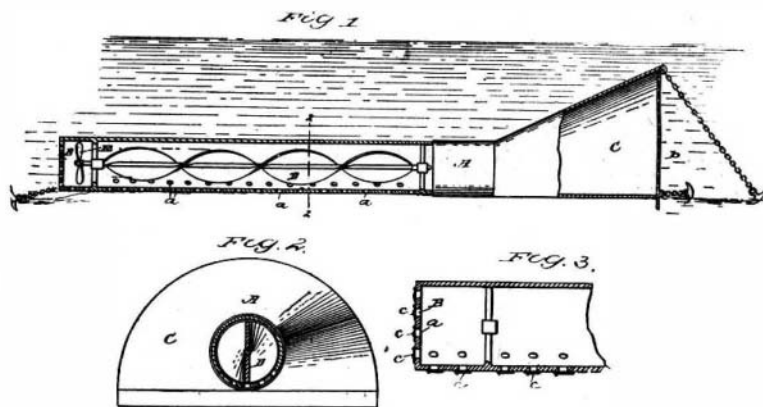
**Strong Oxygen Cylinders.**

A test of metallic cylinders for holding oxygen was lately made at Glasgow. The cylinders were of 1/4 inch steel, 6 1/2 ft. long, 5 1/2 in. diameter, weight 107 lb. They had been subjected twice to the ordinary test pressure of 3,600 lb. to the square inch, the practice being to make them more than twice as strong as the normal pressure to which they are regularly charged with the gas, namely, 1,800 lb. to the inch. The test in this instance was to try the strength of the cylinders in respect to indentation, breakage by falling, etc. Dropped from a height of 35 ft. upon iron blocks, the cylinders were only slightly indented. Weights of 600 lb., dropped from a height of 35 ft. in the center of the cylinder, which was supported at the ends, bent and flattened the cylinder somewhat, but caused no leakage of the high pressure gas.

**A Court of Patent Appeals.**

The bill which has been introduced in Congress to establish a court of patent appeals seems to be a step in the right direction. Litigation growing out of patents for inventions is becoming very voluminous; and, what is more, the cases being generally suits in equity, reach the Supreme Court on voluminous records, presenting questions for decision which depend largely upon the solution of disputed and complicated facts, which facts are again involved in questions of mechan-

ics. It is obvious that a court competent to deal with such questions must be a court composed of experts in that department of the law. Moreover, they should not have too much work to do, in order that they may give the necessary attention to each case. Although, counting the cases, the patent, trade mark, and copyright cases which come before the Supreme Court are not very numerous, yet it is believed that, considering the size of the records and the difficulties of the ques-

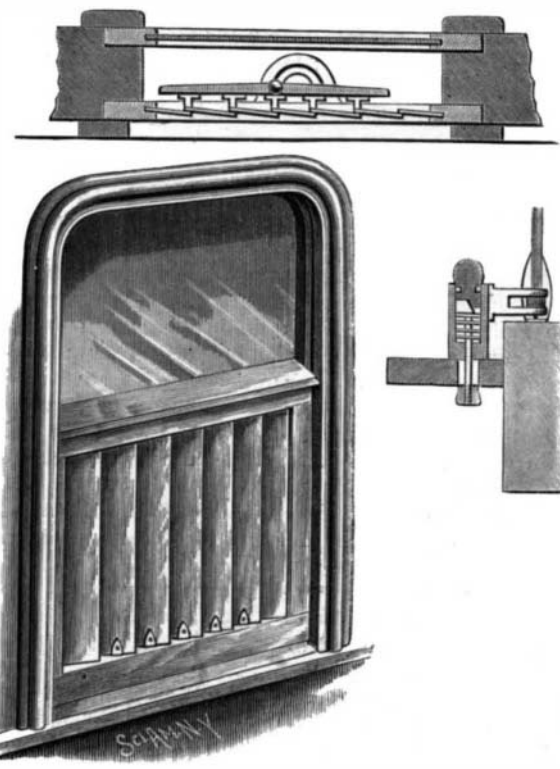


EVANS' CHANNEL CLEANER.

tions involved, they occupy a very large portion of the time of that tribunal. It should not be troubled at all with such questions, except in so far as may be necessary to a proper superintendence of a court of patent appeals.—American Law Review.

**AN IMPROVED DUST GUARD AND VENTILATOR.**

The accompanying illustration represents an attachment for car windows designed to prevent smoke, dust, and cinders passing into the cars while being ventilated, and also to prevent the passage of very strong currents of air while the car is in motion and the window raised. The invention has been patented by Mr. Joseph B. Ballard, of Ballardville, Miss. A frame is made to fit the window, extending as high as the bottom of the upper sash, or higher if necessary, the side pieces of the frame being adjusted between cleats of the window frame, and there being an inwardly projecting strip on its upper edge extending close up to the upper sash, to prevent cinders from falling between the frame and the car window. The window portion of the frame is formed of a series of transparent slats, preferably of glass, as shown in the sectional view at the top, all of which except the end slats are pivotally supported in the upper and lower cross pieces. The pivotal slats are of such width that when turned edge-wise they permit of convenient attachment to an operating lever, as shown in the small sectional view. The pivot plates have extension or winged portions adapted to lap the sides of the slats, thereby making a strong connection with the glass, and the outer ends of the extensions of the lower set of plates have apertured ears pivotally connected with lugs projected in-



BALLARD'S DUST GUARD AND VENTILATOR FOR CAR WINDOWS.

ward from a reciprocating operating lever. This lever is supported on an inwardly projecting plate secured on the cross piece of the frame, and is capable of being locked in any portion of its movement on the plate by a simple locking device. The entire construction is designed to be afforded at a small cost, and to be readily adjusted to car windows of the ordinary description.