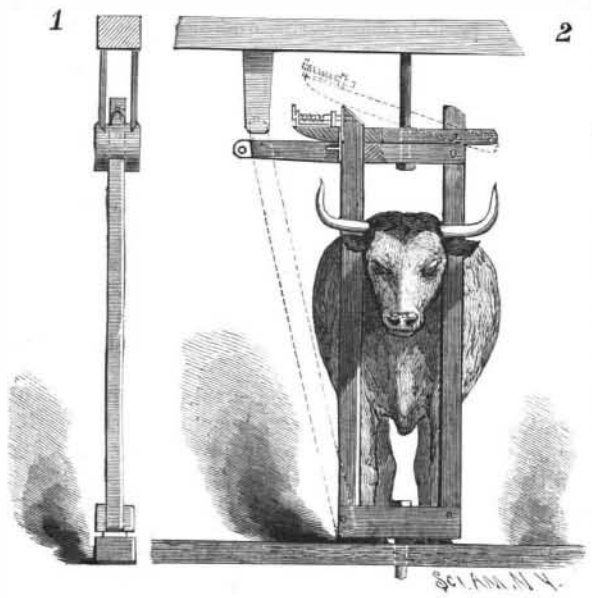
IMPROVED CATTLE STANCHION.

The cattle stanchion which we herewith illustrate is the invention of Mr. John Priest, of Franconia, N. H. The stanchion is pivotally held between the floor of the stable and any stationary upper beam, by two bolts, arranged as clearly shown in the engraving. To one end of the base block is rigidly connected a vertical upright, to which is rigidly connected a cross bar formed with an elongated slot. To the other end of the block is pivoted a swinging bar, whose upper end slides in the slot in the cross bar. Above the cross bar is a catch bar, formed with a slot, through

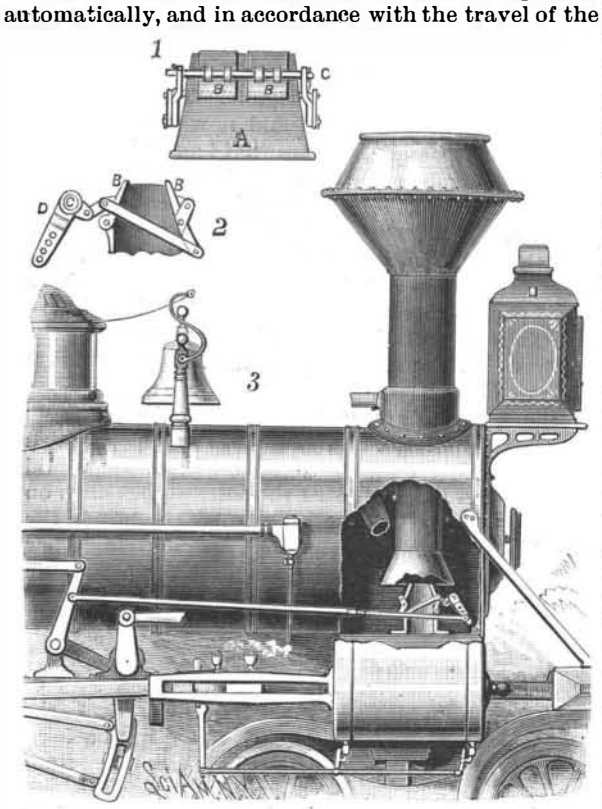


PRIEST'S IMPROVED CATTLE STANCHION.

which the end of the swinging bar projects. Upon one end of the catch bar is a bracket carrying a bolt pressed forward by a spring to enter a hole in the swinging bar, and thus hold the parts in the position shown by the full lines. When the bolt is withdrawn, the catch bar can be raised and the swinging bar moved to the position indicated by the dotted lines. A preferred method of preventing the cattle from raising the catch bar is by means of a plate secured to the outer face of the swinging bar, which prevents the animal from passing its horn up through the slot and raising the bar. When the plate is used—the locking bolt being, of course, then left off—the catch bar can be raised by pressing on the short handle end of the bar by hand, or by means of a pole from the rear of the stall; but when the bolt is used, the stall must be entered to release the bolt or raise the bar. The upper stationary beam carries two downwardly extending arms, so arranged that when the bar is swung back to the position shown in dotted lines, the stanchion will be held in a line parallel with the beam, that is, it will be prevented from turning on its pivotal supports.

EXHAUST MECHANISM FOR LOCOMOTIVES.

This exhaust mechanism for locomotives operates automatically, and in accordance with the travel of the



WALLACE'S EXHAUST MECHANISM FOR LOCOMOTIVES.

cylinder valves. Opening into the smoke stack is the exhaust nozzle, to the upper end of which are hinged doors operated by levers connected with the reversing shaft. Fig. 1 is an enlarged end view, and Fig. 2 is a side elevation of the improvement, which is shown attached to the locomotive in Fig. 3. The cylinders exhaust into the nozzle or pipe, A, which is provided on two opposite sides with the doors, B, which are formed with lugs, through which passes a rod connected by a link with arms secured to a shaft passing transversely through the boiler. On the outer end of this shaft is a crank arm, D, to which is attached an adjustable rod connected with an arm secured to the reversing shaft, as shown in the large view. In the arm are apertures, which permit of regulating the throw of the arm according to the travel of the cylinder valves. When the arm on the reversing shaft is in mid-position, the doors are nearest each other; when the arm is in either extreme position, the doors are furthest apart.

The doors are moved simultaneously toward or from each other, according to the oscillation of the reversing shaft, and thereby open or close the upper end of the exhaust nozzle, thus increasing or diminishing the opening for the free exit of the exhaust steam. The doors swing inward toward each other when the engine is using the least steam, and are swung apart and opened when the valves are opened to their greatest extent. This automatic opening and closing of the doors permits a free escape of the steam, thus preventing back pressure in the cylinders, increases the steaming qualities of the locomotive, and effects a saving of fuel. One lever arm, D, operates the doors upon both sides of the nozzle through the connections shown in Fig. 2.

The inventor of this mechanism, Mr. Ira F. Wallace, of Altoona, Wisconsin, a locomotive engineer running on the eastern division of the C., St. P., M. & O. Railway, has had his invention on an engine for the past year, the result being, as shown by the monthly official report, an increase of from 8 to 10 miles per ton of coal with this engine over other engines of the same class on the same division.

Liquid Fuel.

It appears, after an experiment of several months, that ferry boats plying between San Francisco and Oakland, which had been fitted up for burning petroleum, have now gone back to coal. The economy, as we understand, so far as the consumption of fuel is concerned, is said to be decidedly in favor of petroleum; but the trouble in its use came from the intense heat produced, by which, or by the peculiar nature of the combustion, the iron of both the furnaces and boilers began to indicate rapid deterioration—hence the return to coal.

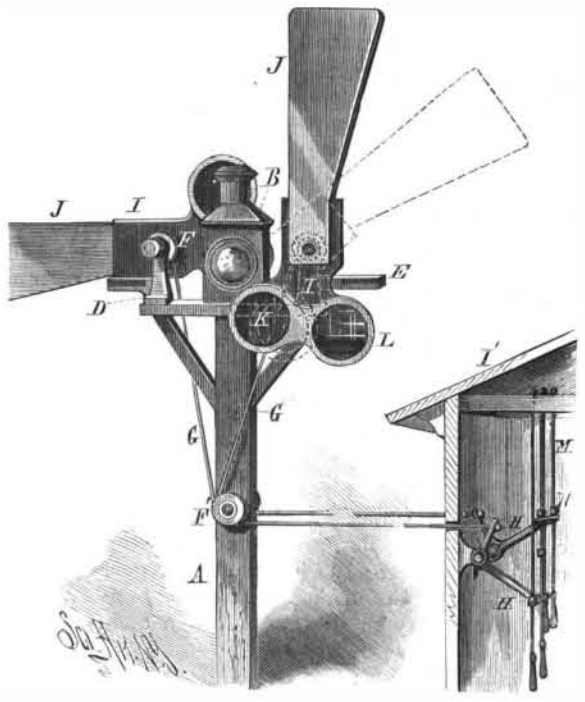
Instantaneous Process with Bitumen.

To obviate the drawback of the very feeble sensitiveness of bitumen of Judea, a process has been conceived, published quite recently by Geymet, which process consists in the application of a film or, better still, of a print in carbon, superimposed on the film of bitumen. This is how it is worked: The zinc is first covered with a film of bitumen in the ordinary way; then a carbon image is developed on paper for double transfer (flexible support), and transferred to the film of bitumen. This image forms a protection. The bitumen is then dissolved with spirit of turpentine, but the bitumen coating is not dissolved where it is covered by the lines of the carbon image. The plate may then be etched with acid in the ordinary manner. Again, the film of bitumen may be covered with one of bichromated albumen, exposed to the light, developed in cold water, and then the bitumen not covered with albumen dissolved.

IMPROVED RAILROAD SIGNAL.

The object of this signal, which may be used on either a single or double track road, is to enable the operator to communicate accurately with trains at a distance the condition of the block or track while the trains are under full speed or otherwise. The vertical post, A, is provided with a horizontal top bar and a stationary lamp, B. Upon each outer end of the top bar are secured standards, D, formed with horizontal arms, E, upon the upper surface of each of which is a hard rubber block. Pivoted to each standard is a light metal frame, formed at one end with two distinct circular openings, and having the sheave, F, rigidly attached to it. Secured to the rectangular portions of the frames are wooden arms, J, which constitute, by their position in relation to the standards, signals by day. Cables attached to the fixed sheaves, F, pass downward over sheaves, F', to the bell crank levers, H, in the station, I, where they are operated by means of the cords, M, which are attached to the ceiling at one end, the other ends entering apertures in the levers and terminating in suitable handles.

The different positions of the signal arms are controlled by the position of stops, N, upon the cords, which come in contact with the upper side of the lever when the handle is drawn back. When the signal arm is thrown to a vertical position, it indicates a safety signal by day and the unobstructed white light by night. When the arms are set in a horizontal position, a danger signal by day is indicated, and as the red disk, L, is then in front of the lamp, a danger signal is indicated at night. When the arms are at an angle, a cautionary signal is indicated by day and the same at night, as the green disk, K, is then in front of the lamp. When in a horizontal position, the arms rest upon the rubber blocks on the arms, E, of the standards, D. The signal will return to the red or danger position automatically the instant it is released by the operator, or in case of breakage. The failure to operate the signal, either on the part of the attendant or owing to



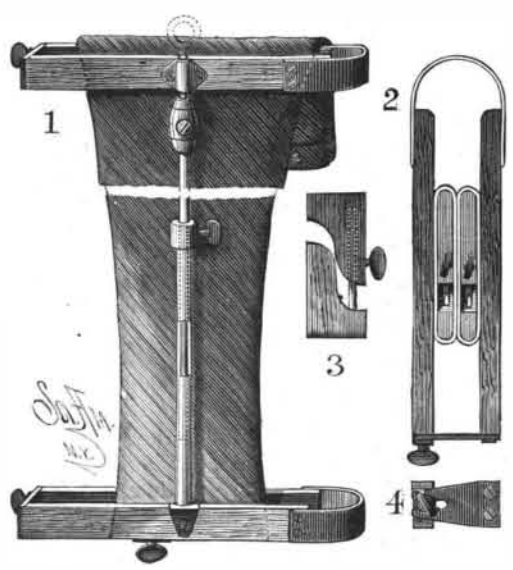
COX & BLACK'S IMPROVED RAILROAD SIGNAL.

breakage, is a notice to the approaching train that something is wrong, which in itself is a signal to stop and ascertain the cause.

This invention has been patented by Messrs. J. C. Cox and W. F. Black, of Louisville, Ky.

TROUSERS STRETCHER.

Trousers stretchers now in use, while stretching the trousers, give an objectionable shape to their bottoms, and form a crease front and back. Another objection is that they are not adapted to different sizes of trousers. It is claimed for the invention here illustrated that it is adjustable to any size of trousers; that it will not form creases in them; and by the use of adjustable forms inserted in their bottoms, it not only does not give any objectionable shape to them, but directly tends to restore their original shape; it is thoroughly effective in stretching the trousers, as well. Engaging with the upper and lower part of the pantaloons is a clamp, Fig. 2, consisting of two bars united at one end by a bent spring, and provided at the other end with a slotted strap and screw, Fig. 4, by means of which the bars are held against the trousers. Within the bottom of each leg is placed a tree, Fig. 3, the bars of which have rounded faces, and can be adjusted, by means of a rod and clamping screw, so as to properly occupy the bottom portion of the pantaloons. When the clamps are located in the position shown in Figs. 1 and 2, they grasp the top and bottom of the pantaloons. Connected with one of the clamps is a tube in which slides a bar entering a socket secured to the other clamp, the tube being provided with a screw for holding the bar in any desired position. Attached to the bar is a knob that allows the hand to obtain a firm



WESTON'S TROUSERS STRETCHER.

grasp. This telescopic connection of the tube and rod permits of the proper stretching of the trousers, and adapts the stretcher to trousers of different lengths. When the straps are released, the springs cause the bars to spring apart, thereby disengaging the clamps from the pantaloons.

This invention has been patented by Mr. E. C. Weston, of 17 South 40th Street, Philadelphia, Pa.