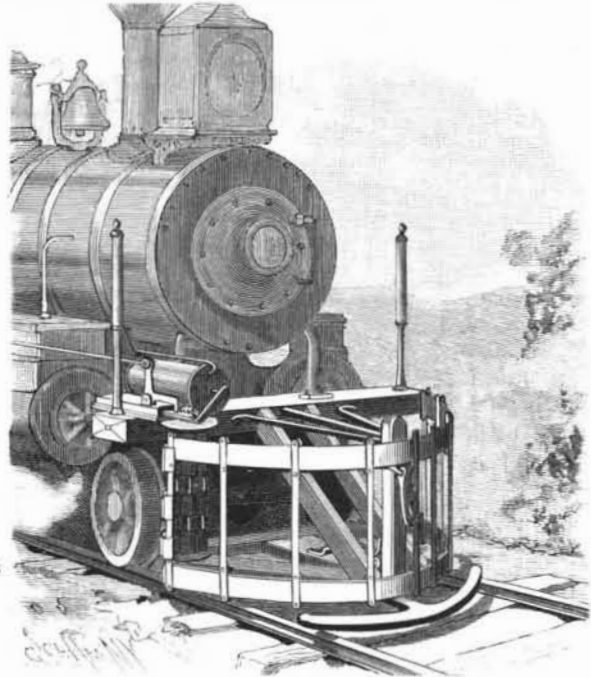


LOCOMOTIVE ATTACHMENT FOR REMOVING OBSTRUCTIONS FROM RAILROAD TRACKS.

The invention herewith illustrated provides a device to be attached to locomotives to be used in place of the pilot or attached to the ordinary pilot. It consists of a spring frame secured to the front of the locomotive, and arranged to be bowed in upright position where the cow catcher ordinarily

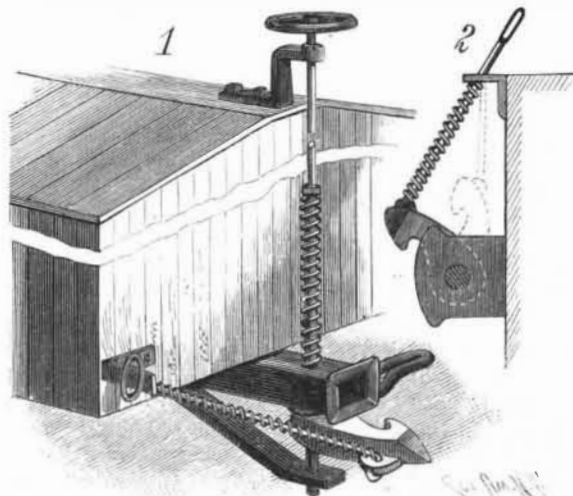
**ALEXANDER'S LOCOMOTIVE ATTACHMENT.**

comes. There is a spring-actuated catch for retaining it under strain, and a bar connected therewith for releasing the spring frame by contact with an obstruction on the track, the contact point of the device extending a few inches beyond the frame, at the bottom, just above the rails. When this contact point is struck by an obstruction in front of a train, the spring frame is released, and in straightening out, removes the obstruction to one side of the track, out of the path of the locomotive. Should the engineer at any time desire to prevent the operation of the device, he can do so by a pawl lever within convenient reach.

This invention has been patented by Mr. Tony Alexander, of Bogue Chittó, Lincoln County, Miss.

AN IMPROVED CAR COUPLER.

A car coupler especially adapted for freight cars, that is simple in construction and is designed to be automatic in its action, is shown in the accompanying illustration, and has been patented by Mr. Eugene A. De May, of Richmond, Texas. The shaft journaled in a bracket at the top of the car, and supported at its lower end by a brace attached to the drawbar, is adapted to carry not only a coupling hook, but also an ordinary form of bent link, by which to couple to a car that is not provided with this improved coupler. The spiral spring upon this upright shaft is capable of lifting and sustaining the shaft and parts carried thereby. Upon the back of the coupling hook is an apertured ear, which receives a hook formed on a bar carrying a spiral spring, which tends to press the hook forward into the position

**DE MAY'S CAR COUPLER.**

of use, this bar being held at its other end by a latch in a bracket at the side of the car, so that the coupling hook may be held open thereby, as indicated in dotted lines in Fig. 2. When it is desired to prevent the engagement of the coupling hooks while the train is in motion, and it is inconvenient to operate the hooks by the rods at the side, they may be thrown to one side to prevent engagement by simply pressing down upon the upright bar from the top of the car, thereby bringing the hook out of the path of the hook of the adjoining

car. This improvement can be fitted to almost any drawbar, and, with the link, made to couple with the old style drawheads, or with high and low drawbars, while it can be taken off and replaced in a few minutes.

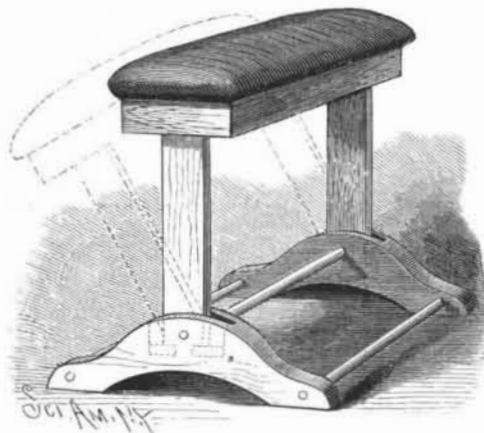
Tannin in Boiler Incrustation.

Mr. Villon, engineer and chemist, after five months' experimentation with various tannins in order to ascertain which is most effective in preventing the incrustation of boilers, states, in the *Chronique Industrielle*, that the best results are given by *Rumex hymenosepalum*, a species of dock that grows plentifully in sandy soils in a large territory on both sides of the Rio Grande, and from there northward over a large portion of Western Texas. The bulbous root (called "canaigre") is the part used. The roots are produced in clusters weighing several pounds. They contain 25 per cent of tannin, along with gum, starch, and ligneous matter.

A liquid extract is made from them which is purified with acetate of zinc in order to remove the gum and resin, and a brown liquid is obtained marking 20° B. Of this, 5 grammes (75 grains) per hydrotimetric degree of water and per cubic meter (264 gallons) are used.

AN IMPROVED FOOT REST.

A foot rest designed to be used by the occupant of a rocking chair, and arranged to oscillate to follow the movements of the rocker, is shown in the accompanying illustration, and has been patented by Mr. James W. Tilley, of the Beacon Oil Works, East Boston, Mass. In the end pieces of the base are formed mortises, in which are pivoted the lower ends of the uprights, the latter each having a tenon which extends nearly to the bottom of the mortise, rubber springs being placed upon opposite sides of the tenons. The position of these springs, and the oscillating motion of the top of the foot rest, are represented in dotted lines in the illustration, the springs normally holding the uprights in a vertical position. This foot rest may also be made adjustable as to height, the uprights then being made

**TILLEY'S FOOT REST.**

with telescopic legs, and the top is made hollow, to form a receptacle for slippers, brushes, and other articles.

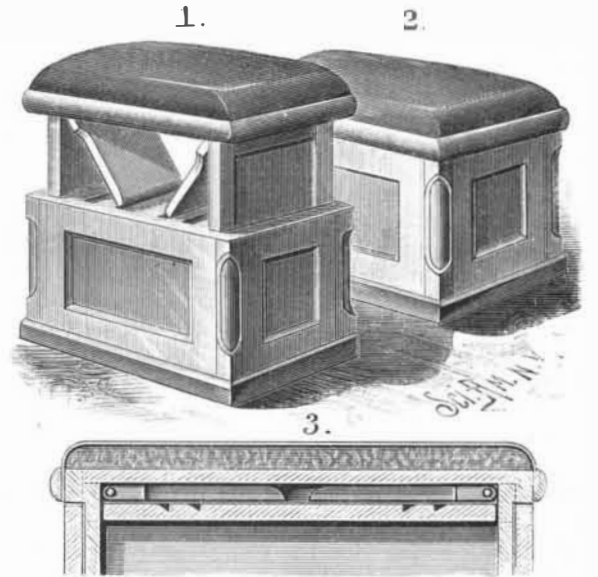
Delicacy of the Sense of Smell.

The only trustworthy determinations of the quantities of substances necessary to excite the sense of smell have been hitherto carried out by Valentin. He found that the quantities thus capable of recognition were 1-600 mg. bromine, 1-5000 hydrogen sulphide, and 1-20,000 oil of roses. The authors have undertaken analogous experiments with other strongly smelling substances, and have arrived at still smaller values. For the experiments they used an empty room containing 230 cubic meters, with painted walls and a stone floor. Of the substance to be examined, 1 grm. was weighed out, dissolved in 1 liter of pure alcohol, and 5 c. c. of this solution were again diluted with alcohol in known proportions. Of this last mixture from 1 to 3 c. c. were measured into a small flask closed with a cork provided with two bent glass tubes. The weighing, diluting, and measuring the odoriferous substance was carried on in the laboratory far distant from the room, and by a person not engaged in the experiment. For the experiment the contents of the flask were evaporated by one of the authors by means of a small hand blast, all openings of the room having been first closed, which required from five to ten minutes, and the air of the room was then very carefully mixed and agitated for ten minutes by means of a large flag. At a signal the other author entered to test the odor. The result was further checked by an independent observer. In one of the experiments the quantity of mercaptan evaporated was 0.01 mg. This was faintly but distinctly recognized. The proportion of mercaptan to the air was in round numbers 1 : 50,000,000,000, and the quantity which could come in contact with the olfactory nerves was 1-460,000,000 mg. This quantity is 250 times smaller than the quantity of sodium detected spectroscopically by Kirchhoff and Bunsen. Hence mercaptan may be utilized in experiments on currents

of air, the diffusion of gases, the efficacy of arrangements for ventilation.—*E. Fischer and Fr. Penzoldt, Liebig's Annalen der Chemie.*

A SEWING MACHINE COVER AND STOOL.

A convenient cover for sewing machines, which may also be readily adjusted as a seat for the operator or others, is shown in the accompanying illustration, and forms the subject of a recent patent. The box has the general form of an ordinary sewing machine cover, but its top is cut away to form slots at the ends, opening to the interior, and has two notched grooves near the

**ROBERTSON'S SEWING MACHINE COVER AND STOOL.**

ends. The uprights of the part forming the stool top pass through these slots, but have cross connecting strips to prevent their being withdrawn from the box. On the under side of the stool top are hinged supporting leaves or legs, their lower ends being beveled to adapt them to be engaged by the notches in the top of the cover. A sectional view of the top, showing these leaves folded under, is given in Fig. 3, Fig. 1 showing them in the position forming the stool, and Fig. 2 representing the device as a simple sewing machine cover.

For further information relative to this invention, address the patentee, Mr. H. Clarence Robertson, care of Messrs. Robertson, Taylor & Williams, Charleston, South Carolina.

AN IMPROVED CHURN.

A churn which may be given either a rocking or a rotary motion to effect the separation of the butter is shown in the accompanying illustration, and has been patented by Mr. Richard Deighton, of Shawnee Mound, Henry County, Mo. The supporting frame consists of oppositely inclined legs hinged together near the top, and held in upright position by eyebolts or pins above the hinges, the frame being readily folded together when the pins are withdrawn. The churn is held in the frame by a two-part circular clamp band, and a frame dependent therefrom, the clamp band also carrying short journals having bearings in the upper ends of the legs of the supporting frame. This dependent frame, in which the body of the churn sits, is secured to

**DEIGHTON'S CHURN.**

the clamp band by means of pins, whereby the body of the churn may be hung low, when it is desired to operate it with a rocking motion, as shown in the illustration, or the body of the churn may be secured higher up in the clamp band when the churning is to be effected by a rotary motion. The two parts of the clamp band are firmly held around the churn body by screw bolts, and the cover has a suitable packing, while different handles are provided for the two methods of operating the churn.