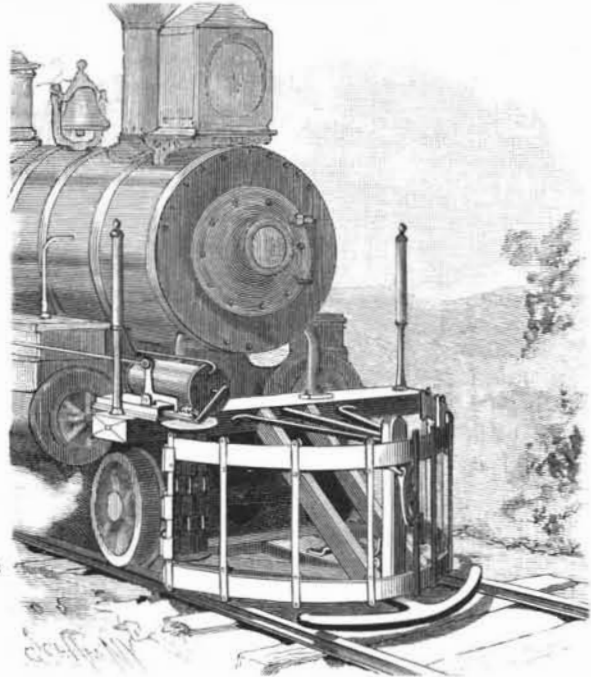


LOCOMOTIVE ATTACHMENT FOR REMOVING OBSTRUCTIONS FROM RAILROAD TRACKS.

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



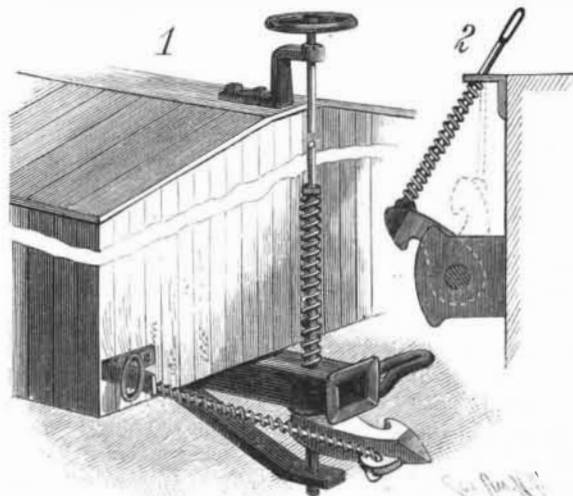
ALEXANDER'S LOCOMOTIVE ATTACHMENT.

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 Chitto, 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.

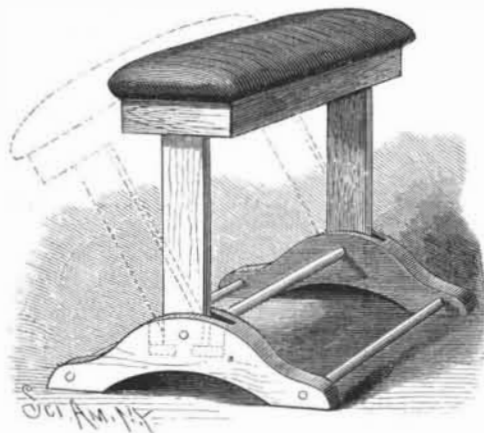
Tannin in Boiler Incrustation.

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.

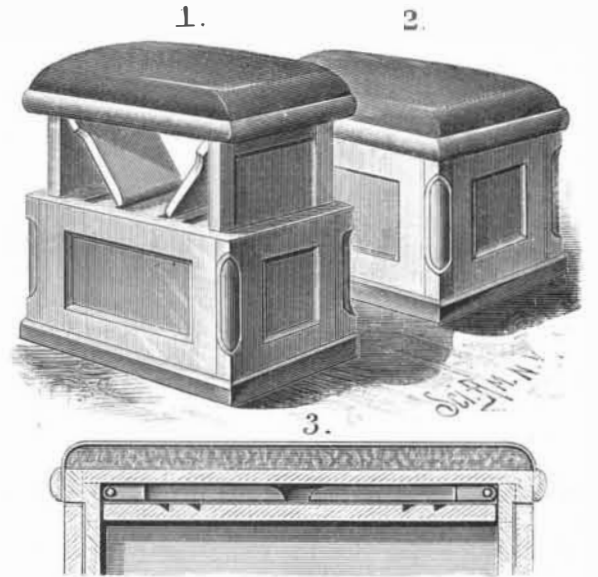
Delicacy of the Sense of Smell.

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.

High Ballooning.

The aeronauts Mallet and Jovis made an ascent, August 13, in the balloon *Horla*, starting from the Lavilette gas works, Paris. Their object was to penetrate to the greatest height at which it is possible to live. After a few hours' voyage in the air the balloon descended, landing in the village of Marche, Belgium. They reached an altitude of a little over four miles. This telegram has been received from M. Jovis:

"Victory! We attained an altitude of over 7,000 meters. We were obliged to descend for want of ballast. The conditions were excellent, except that M. Mallet fainted twice. The apparatus is intact."

COMBINED MEASURING JACKETS AND PATTERNS.

A measuring jacket made up of separable portions, with its side and shoulder seams overlapped and united by flexible cords, and portions of tape lines attached under the overlapping parts, is illustrated herewith, and has been patented by Mr. John Weir, of 122 South Jefferson Street, Dayton, Ohio. The jacket has two back pieces united down the center by a permanent seam, and two combined side and front pieces, with sleeves carrying sliding cuffs, permanently set into their armholes. The back and side pieces are overlapped and united by double rows of elastic cords, as are also the shoulder seams of the back and front pieces, convenient straps with buckles or hooks uniting the front pieces across the breast, in fitting the jacket to a person. In this manner an elastic jacket is formed which can be made to fit persons of different sizes and shapes. In connection with the jacket, patterns are provided corresponding in shape and size with the pieces forming the jacket, the patterns having marks to correspond with

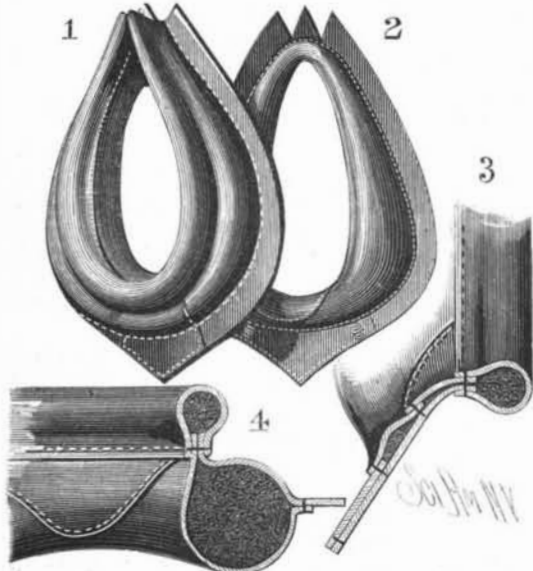


WEIR'S MEASURING JACKET.

the positions of the tapes, from which the exact measures afforded by the jacket can be readily transferred to the cloth, thus avoiding mistakes and reducing to a minimum the labor of measuring and cutting.

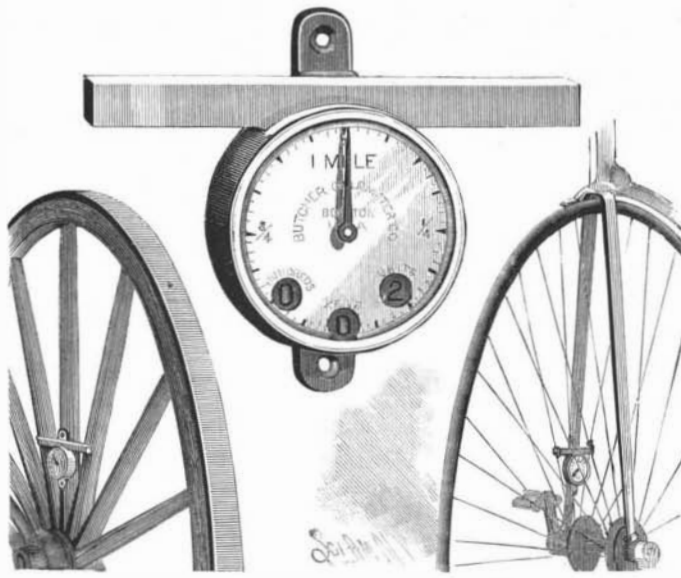
AN IMPROVED HORSE COLLAR.

A horse collar which can be made very strong, and at the same time be flexible at the bottom, so that it can



BOLESKA'S HORSE COLLAR.

be easily passed over the horse's head, is represented in the accompanying illustration, and has been patented by Mr. Joseph Boleska, of No. 1802 South Thirteenth Street, St. Louis, Mo. Figs. 1 and 2 are front and rear



AN IMPROVED ODOMETER OR SPOKE CYCLOMETER.

views, and Figs. 3 and 4 are views in section. The front roll and the pads are both stuffed in the usual manner, but at the bottom of the front roll a diamond shaped piece of leather is stitched in with the leather composing the pads, above this being secured a flap, stitched at its edge to the pads. The leather forming the pads is bulged outward near the bottom to form a cushion, which serves to protect the horse's throat and prevent him from being choked.

AN IMPROVED ODOMETER.

The illustration herewith shows an improved device, recently patented, for measuring the distance traveled, either by an ordinary carriage or by bicycles or tricycles. The action of this odometer, or spoke cyclometer, is caused by a sliding rod or weight inclosed in the cross bar at the top. The instrument is screwed to one of the spokes of a wagon or carriage wheel, as near the hub as possible; and with every revolution of the wheel the sliding rod, traveling across the direct line of centrifugal force, operates a worm and gear within the small case, the front dial showing a change in the unit place for each mile traveled, and correspondingly in the places of tens and hundreds for tens and hundreds of miles, all returning to zero on the completion of the one thousandth mile. The sliding rod or weight within the bar strikes at either end against a buffer, and its motion is so great in length that all possibility of jar affecting it is obviated, while its action is positive and certain up to much greater speeds than have ever yet been made, either by bicyclists or the best trotters. These instruments are now being made and used for all sizes of wheels by the Butcher Cyclometer Company, of Nos. 6 and 8 Berkeley Street, Boston, Mass.

A MACHINE FOR FORMING SQUARE TIN CANS.

The special construction of tin can machine herewith shown has been patented by Messrs. James W. Hazen and Charles F. Merrill, of Woodstock, Vt. The former is secured upon a crank shaft journaled in boxes on the main frame, the outer end of the crank shaft being also journaled in a hinged arm. The former, at one edge, has a holder or shallow space to receive the edge of the tin to be bent; and for firmly grasping its edge there are fitted, in shallow recesses on the face of the former, sliding plates, with inclined ends, in contact with cams of a central sliding plate on the same face. This plate is moved longitudinally by a pivoted lever at one side, shown in Fig. 2, the lever and plate being moved back by the action of a spring. A presser-foot or follower is held in contact with the former by springs so arranged that the follower may be adjusted both vertically and horizontally to suit formers of different sizes. As the former is revolved by the crank, the follower folds the tin at the corners and wraps it entirely around the form, the follower being held away from the form as required by a cord or wire running over a pulley at the top, and thence down to a treadle. The meeting ends of the sheet tin being soldered together, the hinged arm at the left is swung outward and the can body slid endwise off from the former. This arm is held in closed position by a catch, and the crank shaft is prevented from being turned in the wrong direction by a catch attached to the main frame, and adapted to engage with a small stud in the shaft.

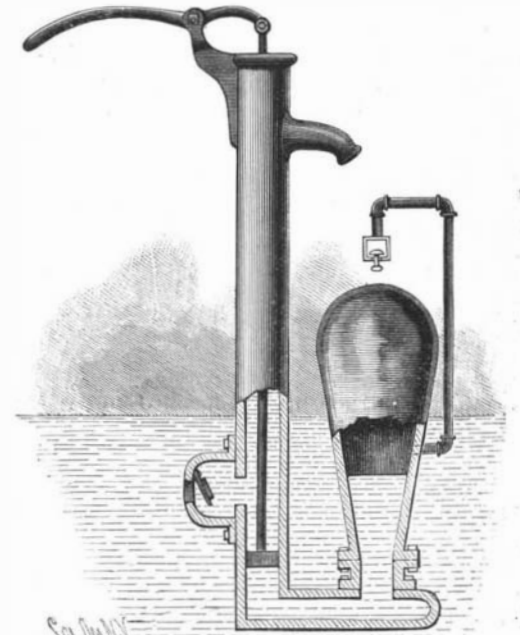
TURNER'S "Antwerp," which was sold in 1883 for \$1,000, was lately sold in London for \$34,000.

Artesian Well at Galveston.

An artesian well is being bored at Galveston. The city stands on a narrow sand spit, which fences off Galveston Bay from the Gulf of Mexico, and is surrounded by water, being at different places from two to forty miles from the mainland. It is therefore a peculiar place for an artesian well. So far a depth of 658 ft. has been reached. The following is the stratification passed through: Quicksand, 32 ft.; blue clay, 17 ft.; coarse sand, 26 ft.; white clay, 107 ft.; sea mud, 57 ft.; olive clay, 116 ft.; sea mud, 130 ft.; blue clay, 26 ft.; sea mud, 11 ft.; blue clay, 147 ft.; total, 658 ft. At a depth of 500 ft. several palmetto logs were passed through. At present a 9 in. tube is being sunk.

AN IMPROVED PUMP.

The illustration herewith shows a form of pump that has recently been patented by Mr. Robert F. Dobson, of Darlington, Wis. In operation, the liquid is first placed in the vertical tube, after which the piston is introduced and forced to its position below the valve chamber, thus compressing the air in the air chamber, the pressure upon each side of the piston equalizing itself. When the piston is at the end of the down stroke, there is space enough above the upper face of the piston and in the horizontal tube connecting the air chamber with the vertical tube to allow the passage of the water from the vertical tube to the air chamber and from the air chamber to the vertical tube. When the air in the air chamber becomes rarefied, or a partial vacuum is formed, the valve is lifted by external atmospheric pressure, to supply the waste of air from the chamber.

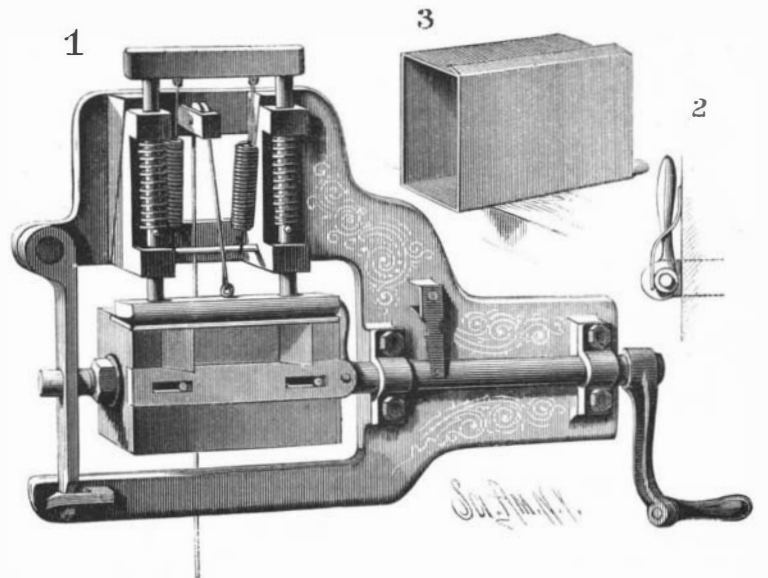


DOBSON'S PUMP.

For further particulars concerning this invention, application should be made to Messrs. Dobson & Bray, P. O. box No. 7, Darlington, Wis.

The Names Microphone and Telephone.

According to the *Electrician*, the word *microphone* was applied for the first time, in 1827, to an instrument invented by Wheatstone, and designed to render the slightest sounds audible.



HAZEN & MERRILL'S TIN CAN MACHINE.

The word *telephone* was used in 1845 to designate an apparatus invented by Captain John Taylor, for the transmission of signals during a fog by means of the sounds produced by the passage of compressed air through trumpets.