

**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

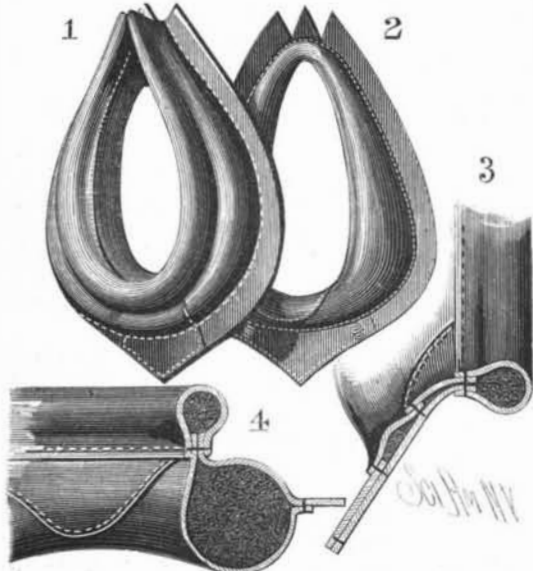


**WEIR'S MEASURING JACKET.**

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.

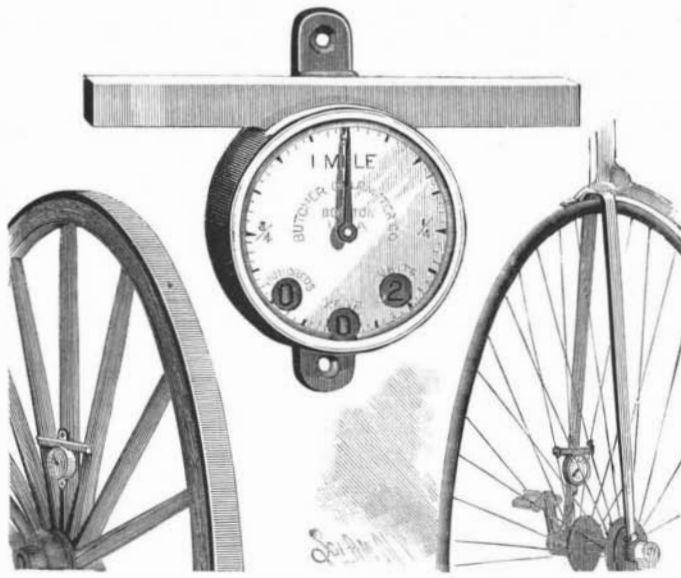
**AN IMPROVED HORSE COLLAR.**

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.

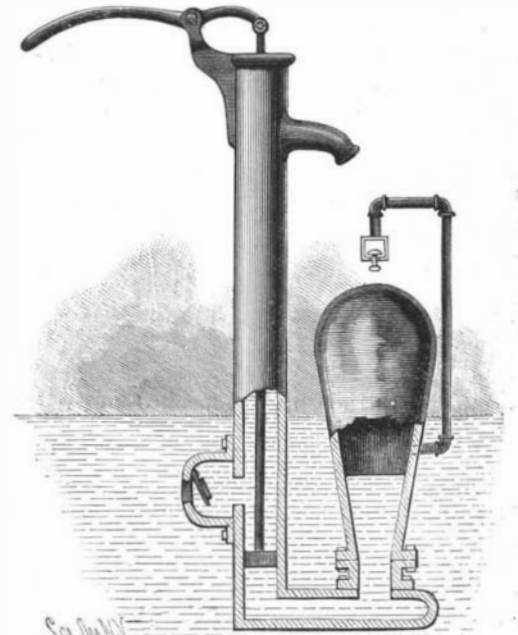
TURNER'S "Antwerp," which was sold in 1883 for \$1,000, was lately sold in London for \$34,000.

**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.

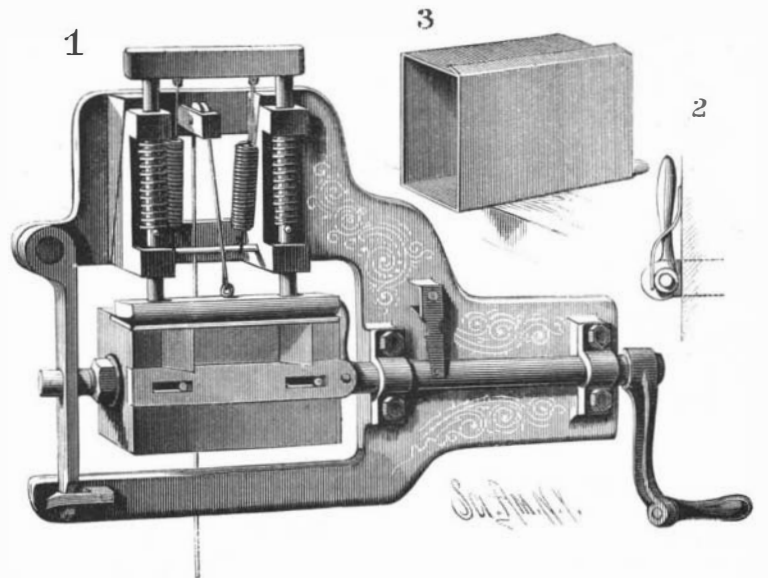


**DOBSON'S PUMP.**

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.

### The Proposed Tunnel under the English Channel between England and France.

This great enterprise, championed by Sir Edward Watkin, still lacks the authority of Parliament, and remains in *statu quo*. The preliminary borings on each side of the Channel have been carried a few miles—far enough to demonstrate beyond question the commercial and practical feasibility of the work.

To all the world outside of Great Britain the project commends itself as desirable for the public convenience; but the majority of Englishmen disapprove it, owing to the mortal fear they have of the French. They are afraid, in case of war, it will be impossible to prevent the Gauls from making a rush through the tunnel and capturing the entire country. Here are some of the latest and brightest British ideas upon the subject, expressed by the editor of the *Broad Arrow*, a semi-official military organ of the army and navy:

"From a purely naval point of view, the Channel tunnel scheme is most undesirable. Allow for instance that the command of the Channel passed from our hands for the space of six hours only, that is to say, that one of our many vulnerable spots on the south coast of England was denuded of its naval protection for the above-mentioned space of time. There are many ways in which this dire result could be brought about: for instance, a false alarm raised purposely at either end of the station to lure the ships away; secondly, a sufficiently strong squadron to enact the part of a forlorn hope and sacrifice themselves, caring nothing so that the landing be effected; and lastly, though by no means the least unlikely, there is the fog and thick weather, in which a flotilla could reach our shores. We say by no means the least unlikely, because the thick weather that would aid them in their unseen passage across the Channel would also aid them to assemble at their *point d'appui* for their dash across. . . . From Shoreham, where there is a tidal harbor easy of access, and with no particular means of defense, the Channel tunnel at Dover is within striking distance of an enemy who shall have six hours at his disposal. Aided as he naturally would be by the South Coast Railway and contiguous lines, with such a prize in view as the tunnel, it may be doubted if the hostile general would take more notice of Brighton than calling for the mayor and such resident notabilities as he could "grab." . . . Then when our squadrons returned to their stations, they would find themselves powerless any longer to protect these shores, in consequence of the pernicious Channel tunnel pouring forth the legions of the hostile army into this country, assuming that the first corps that landed had been successful in their operations to take the tunnel. . . . Sir Edward Watkin would, in his great scheme, create for us a military frontier which we do not covet, compel us to have recourse to a description, to treble our naval and military armaments, and to place an inviting gateway at Dover in the shape of a fortress, which, if captured by stratagem or *coup de main*, would never be restored until a ruinous tribute sank us for ages into the condition of a fifth or sixth rate power.

### The Entire Motive Force of the World.

From a note published by the Bureau of Statistics in Berlin the following very interesting figures are taken.

Four-fifths of the engines now working in the world have been constructed during the last five lustra (25 years).

France has actually 49,590 stationary or locomotive boilers, 7,000 locomotives, and 1,850 boats' boilers; Germany has 59,000 boilers, 10,000 locomotives, and 1,700 ships' boilers; Austria, 12,000 boilers and 2,800 locomotives.

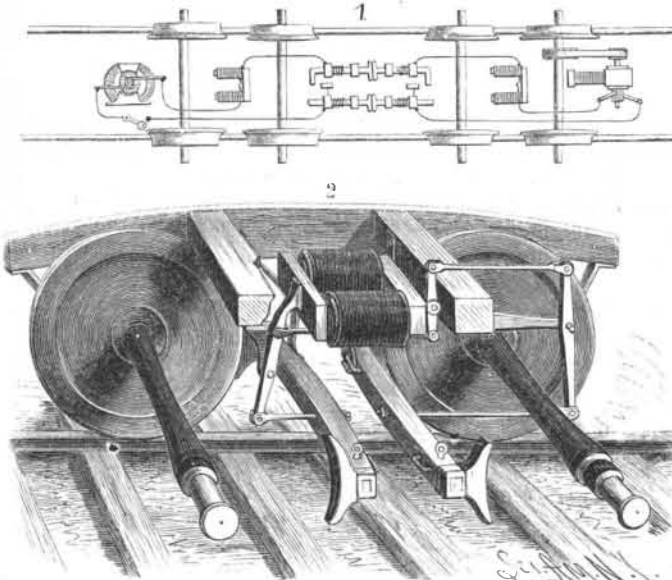
The force equivalent to the working steam engines represents in the United States 7,500,000 horse power, in England 7,000,000 horse power, in Germany 4,500,000, in France 3,000,000, in Austria 1,500,000. In these the motive power of the locomotives is not included, whose number in all the world amounts to 105,000, and represent a total of 3,000,000 horse power. Adding this amount to the other figures, we obtain the total of 46,000,000 horse power.

A steam horse power is equal to three actual horses' power; a living horse is equal to seven men. The steam engines to-day represent in the world approximately the work of a thousand millions of men, or more than double the working population of the earth, whose total population amounts to 1,455,923,000 inhabitants. Steam, therefore, has trebled man's working power, enabling him to economize his physical strength while attending to his intellectual development.

A REMEDY for burns, proposed by M. Dubois (*Jour. de Med. de Nantes*), consists in allowing the contents of a siphon of seltzer water to flow slowly over the affected parts. It quiets the pain almost instantly, and the writer believes it hastens the final cure. He ascribes the good effects to the carbonic acid gas and to the local lowering of the temperature.—*Amer. Jour. Pharm.*

### AN IMPROVED ELECTRICAL CAR BRAKE.

The invention herewith illustrated provides an electro-magnetic car brake which may be operated from the locomotive or from one of the cars of the train, with means for maintaining the electric circuit in case of the separation of the cars, and for automatically establishing the circuit when the cars are coupled. Fig. 1 shows a plan of the electrical connections of the train with the dynamo on the locomotive, and Fig. 2 is a side view of one of the trucks, with this improvement applied. Ordinarily, the circuit remains open, but, to apply the brakes, the engineer closes the circuit with a switch lever within convenient reach, thus energizing the magnet with which each truck is provided, by the dynamo on the locomotive, or by another dynamo on the last car of the train, driven by connection with one of the car axles, or by both. Should the train separate, it would cause a circuit to be closed covering the separated part, in connection with the dynamo on the rear car, and the brakes would be automatically applied to stop the motion of this separated portion of the train, the portion in con-



HERRINGTON'S ELECTRO-MAGNETIC CAR BRAKE.

nection with the locomotive still being under control of the switch lever of the engineer as before.

For further information relative to this invention, address Mr. James Herrington, the patentee, or Messrs. Joseph Forker and John Phillips, Sharon, Pa.

### The Revolution in the After Treatment of Cataract Operations.

BY JULIAN J. CHISOLM, M.D., SURGEON IN CHARGE OF THE PRESBYTERIAN EYE AND EAR CHARITY HOSPITAL, OF BALTIMORE, MD.

At the meeting of the American Medical Association, in May, 1886, at St. Louis, I brought before the ophthalmological section a statement from Dr. Charles Michel, of St. Louis, that he was treating successfully his cataract extraction cases with eyes closed by adhesive strips and in moderately lighted rooms. The section disapproved the plan, and advised a continuance of the method in universal use of compress bandages and dark rooms. I informed the section that I would put the proposed method on trial, and would report to the section the next year, in Chicago, the results of my experiments. That report has been rendered. During the year, ninety-eight cataract extractions and sixty-nine iridectomies have been performed, with such a percentage of successes as warrants the statement that bandages and dark rooms are not only permanently abandoned at the hospital, but must in the very near future be given up by all ophthalmic surgeons.

During the course of this year's experiments, not only have light isinglass straps superseded the heavy compresses and bandages, but much of the restraint in universal use has been proved useless and arbitrary. Under the belief that when the two lids are made one by the adhesive strap, with the tarsal cartilages acting as splints over the corneal surface, and kept in position by means of the tonic contraction of the palpebral muscle, the eye recently operated upon was thoroughly protected from disturbances, regardless of the movements of the rest of the body, the many restraints in universal practice were one by one abandoned.

First, it was found, not necessary to operate in the bed in which the patient was to remain during the after treatment. For this was substituted an operating table of convenient height and width, placed near a large window, from which good light could be had. This permits the operator to complete the manual to his own satisfaction. When the operation for cataract extraction is smoothly done, nine-tenths of the dangers against the restoration of sight are removed.

The next step in the abandoning of restraints was not to put the patients to bed, but to allow them the use of their limbs during the entire treatment. Dr. Michel, the advocate of the light room and light dressing treatment, still adopts the restraints in com-

mon use, not allowing his patients to turn from their backs for five days. When at the end of this period their backs were aching, he would allow them to turn over on the side opposite to the eye operated upon. I do not put them to bed at all. After the operation I allow them to use a lounge, bed, or chair, following their own preferences. They go to bed at their usual bedtime hour, sleeping on any side that is most comfortable, and they dress themselves in the morning before breakfast.

For the past four months I have taken another great step forward, and have released the eye not operated upon from being strapped. This was a bold step in defiance of the theory universally accepted, that the movements of the eye when left open must affect the cornea of the other recently cut, and therefore a needful quiet must be secured. However satisfying this theory may be—and we have all adopted it for generations back—the experience at the Presbyterian Eye and Ear Hospital, of Baltimore, has conclusively shown that this restraint was never called for and had never been of any utility, but, on the contrary, of much annoyance and discomfort.

Thus one by one the old rules of universal adoption have been abandoned, and I may say that now the revolution in the after treatment of cataract cases has become complete.

Hereafter there will be no more bandaging, dark rooms, bed operations, bed restraints, diet lists, isolation, or smoked glasses needed. The year's work at the hospital has shown that the red, suffused, watery, sensitive eyes, so constantly seen after cataract operations, were made so by the restraining treatment, and were not necessary accompaniments of the convalescence. Thick bandages, dark rooms, and restraint in bed caused most of these annoyances. When cataract extractions are treated with a very thin, light-colored isinglass strip over one eye as the sole dressing, leaving the other eye open, the patient allowed to enjoy in his chamber the light to which he is daily accustomed, the strap removed at the end of the fifth day, when the corneal wound is perfectly healed, very little sensitiveness or congestion or watering will be found. Convalescence is in this way very much expedited. At the end of the first week the patient can be allowed the privilege of the entire house, and before the two weeks are

finished he will be ready for dismissal, with eyes so strong as to need but little protection from smoked glasses.

The fruits of my early experiments were given to the profession in June last, with reasons for the change in treatment. These were deemed satisfactory by many specialists, who, upon my recommendation, determined to try the new plan for themselves. At the Chicago meeting, June 7, 1887, many were found in the section who were as enthusiastic as myself over the new after treatment. Several had used the isinglass strap and light rooms, and expressed themselves as delighted at the beautiful results secured. At my suggestion they have promised to test equally the no bed treatment, leaving one eye open for the guidance of the patient, so as really to remove all restraint. This is to be the dressing of the future, and is an immense advance over the blind groping of both patient and surgeon as now conducted.

My present improved practice is to treat the wound made in the extraction of cataract as if it were an ordinary corneal wound, such as we daily see resulting from accident. Close the eye with a piece of isinglass plaster, and restrict the patient to his chamber for a few days.

What a change is this over the course still adhered to by some as expressed at the Chicago meeting! First preparation of patient, then operating in the bed, the carefully and thoroughly excluding light from both eyes with compresses and head bandages, in a dark room, then restraint in bed, patients not allowed to talk to friends or to eat solid food, must stay on their backs, even with hands tied to prevent an accidental touching of the eyes while asleep, and this cruelty kept up for days in the name of progressive surgery. To be sure, such statements only came from old practitioners, who had been so long running in this deep rut that they could not get out of it, and yet up to one year since this was orthodox practice, sanctioned by every authority on cataract operations.

The work at the Presbyterian Eye and Ear Charity Hospital for the past year has broken the spell, and a number of specialists who have tested successfully the new plan have renounced altogether the old method. From present appearances, it would look as if the dark room and confining after treatment of cataract and iridectomy cases will soon be assigned to the shelves of a surgical museum, and all such patients will be allowed to enjoy the blessed light of day throughout their entire treatment, for their own immediate benefit and also for the comfort of the attendants.—*American Journal of Ophthalmology.*

THE Midland Railway of England is making experiments with steel sleepers.