

NEW STETHOSCOPIC MICROPHONE.

By means of this apparatus of MM. Ducretet & Co., of Paris, the feeblest pulsations of the heart, pulse, and arteries may be heard in several telephones placed in circuit. It is a very delicate instrument, and exquisitely sensitive, and this is its fault, if it have any.

Two tambours, such as devised by M. Mavey, are coupled to a microphone; one of these, T', serves as a searcher; the other, T, as receiver. The feeblest movements communicated to the tambour, T', act, through the medium of the India-rubber tube which unites them, upon the tambour, T, and, consequently, on the lever microphone. L, the sensitiveness of which can be regulated by the counterpoise, P O. The microphone terminates in a pencil, C, formed of retort carbon or of plumbago, which rests on a disk of the same material fixed on the receiving tambour. The whole forms a complete circuit, in which is a Daniell or Léclanché battery of one to three elements, and the telephones through which are heard the pulsations from the searching tambour, T'.

This microphone is susceptible of modification, and will undoubtedly be the means of more extended physiological observations. By substituting a small funnel for the tambour, T, speech may be transmitted.

Tubular Water and Air Bed.

Mr. J. Millar, L. R. C. P. Ed., the physician of Bethnal House Asylum, Eng., has designed a bed capable of being distended with air or water, or both. It is made in compartments formed by rolls, or bolsters, some three feet in length, lying across the bedstead, and retained in position side to side by a case. The great advantages of this construction are obvious. The bed is capable of being adapted to any pressure by filling each separate tube or bolster to the required degree. Thus the pressure may be taken off a tender part by simply drawing off a little water or allowing some of the air to escape. The tubes, which lie in the center of the bed, and are liable to be soiled, can be withdrawn and changed at pleasure, or, for the convenient use of the bed pan, one or more may be depressed. If the bed is wetted, the fluid gravitates into the interspaces of the bolsters, and the patient is saved from lying in a pool. One or more of the tubes may be kept filled with warm water in special cases with great facility.

A PLATFORM SCALE OF CONSTANT EQUILIBRIUM.

M. A. Redier, of Paris, constructed lately a new recording balance, which is intended to furnish to physicians, physiologists, agricultural chemists, etc., great experimental facilities in their investigations. It is a platform scale in constant equilibrium; it registers continuously the variations in weight of any object placed upon it—animated, such as an animal, a plant, etc., or inanimated, such as a volatile substance, a lamp in combustion, or any object of variable weight. The scale traces curved lines representing the gain and the loss of weight of the objects under investigation, and this with a remarkable sensitiveness and exactitude.

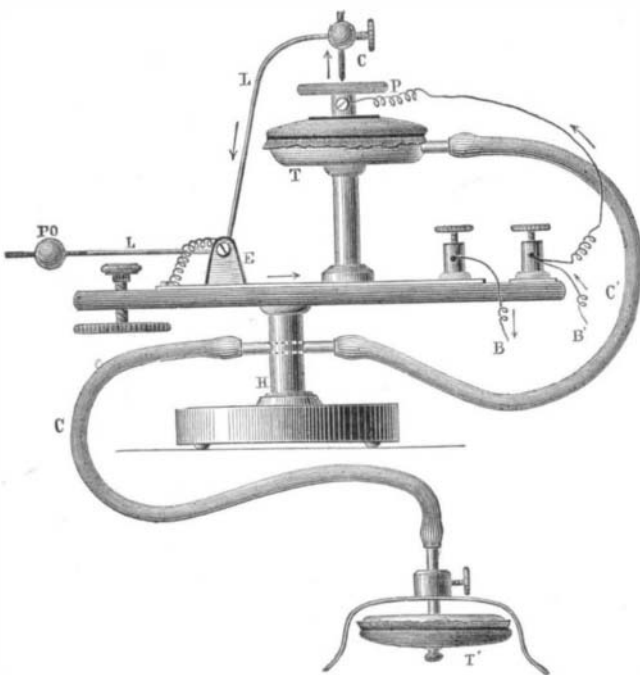
This scale, when charged with a weight of 620 lbs., will record grains. A body much less heavy, such as a lighted wax candle, will equally as well record all changes in weight by the curves on the paper. This sensitiveness is attained by a constant state of oscillation, which animates the balance and displaces it by very small quantities. Few persons know this property of balances. Messrs. Hervé Mangon and Melsens, of Brussels, seem to be the first who have brought this property to light and applied it practically.

Our engraving represents this ingenious apparatus. On a stand next to the platform are placed the registering cylinder, P, the clockwork, H, which rotates slowly, and the double wheel work, which determines the state of constant equilibrium.

The principle by which the equilibrium is restored, as soon as it has been disturbed by some cause or other, is this: If we place on an ordinary balance a glass full of water, counterbalanced by a weight, and if we dip into that glass a mass, whatever it may be, hanging from a thread, the equilibrium will be destroyed; in proportion as the plunger penetrates more or less into the liquid, it will more or less disturb the equilibrium. It is such a plunger which M. Hervé Mangon has made use of to establish the state of constant equilibrium on the platform scale in question.

Under the little platform of the instrument is a cylindrical vase, V, three fourths filled with water; a cylindrical

plunger, of which the supporting thread is rolled over the pulley, R, is lowered or hoisted by the wheels of the pulley as soon as the large platform experiences any augmentation or diminution of weight. The equilibrium restores itself immediately, and the motions of the pulley, R, are transmitted to the lead pencil which passes over the surface of the registering cylinder, P, leaving on the unrolled paper traces of all its movements. The wheels of the pulley, R, are the same as those used in the registering barometer of Redier; the one goes constantly to the right with an escape; the other to the

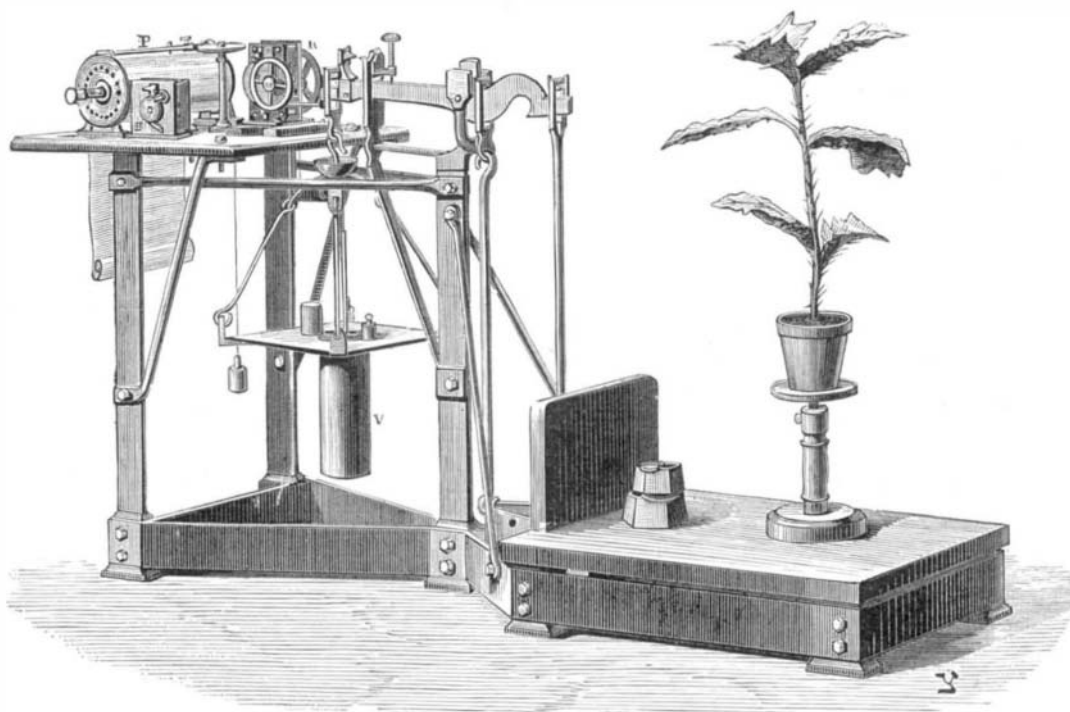


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left, with twice the speed of the first, and the extremity of the balance, by its motions, determining the freedom of the fan of the second wheel-work, which makes the pulley, P, turn in the desired direction.

Several specimens of this balance have been successfully used for several months by Grandeau in his laboratory of the Western Agronomical Station. M. Grandeau has, with the help of this balance, undertaken a series of experiments on the evaporation of the soil and of plants. Our engraving represents the photograph of one of these experiments, and shows the platform scale ready to register the changes in weight of the plant standing on it.

In one of his late lectures at the Conservatoire of Arts and Trades, M. Mangon made the registering balance operate in a striking manner. A man sat on the platform scale; the curve traced by the apparatus indicated a certain diminution



PLATFORM SCALE OF CONSTANT EQUILIBRIUM.

of weight, to which all living beings are subject during repose. When the curve was neatly traced, the man began to read aloud. The Mechanical part of the apparatus, as small as it is, at once indicated its sensibility; as soon as the reading began the curve changed its form, and indicated a greater loss of weight.

This instrument opens the way to a large series of studies upon the variations of weight of the human body, and also upon a great number of other not less important researches.

Two old rats were recently caught carrying off the eggs placed in a nest for a setting hen. They ran the lower jaw through the shell, raised the head slightly, and carried off the eggs with the greatest ease.

New Inventions.

Mr. Timothy Hawkes, of Jersey City, and John Hawkes, of New Brunswick, N. J., have patented an improved Feed Bag for Horses, which is so constructed that the top of the grain will always be in the proper position for the horse to eat conveniently, whether the bag be full, half full, or nearly empty.

Mr. John Lahmeyer, of Fort Wayne, Ind., has patented an improved Self Coupler for Cars, and by which the link may be held in position for entering the drawhead of the next car, thus precluding the necessity and danger of introducing the link by hand, as heretofore done in coupling.

Mr. Lewis Want, of Golden, Col., has patented an improved Baby Walker. This invention consists in a novel construction of the framework of a baby walker, whereby facility is afforded for readily placing a child in position in the apparatus and removing it therefrom.

An improved Shutter has been patented by Mr. Asher Bijur, of New York city. This invention relates to improvements in the construction of the shutter for which Letters Patent have been granted to the same inventor January 22, 1878. By means of this improvement the slats may be adjusted with greater facility, and the manufacture and repairing of the shutter made cheaper and easier.

An improved Clasp has been patented by Mr. P. F. Tunny, of Greenbush, N. Y. The object of this invention is to provide an improved clasp for suspenders for supporting pantaloons without the use of buttons.

Mr. Joseph Clark, of Brooklyn, N. Y., has patented an improved Sewer Trap, in which the siphoning of the trap is prevented, the choking up of the same obviated, and the stench of the gases arising from the sewer neutralized to a certain extent.

Mr. Charles W. Pagett, of Keokuk, Iowa, has patented an improved Attachment to Curry Combs for cleaning the fetlocks and depressions of the limbs. The invention consists of a convexo-concave disk having radial teeth, the disk being secured by a clamp screw to the curry comb, so that it may be extended beyond the comb or be turned back out of the way.

An improved Broom has been patented by Mr. William Walter, of Arcadia, Washington Ter. The object of this invention is to furnish a broom so constructed that the brush when worn may be readily replaced by a new one.

An improved Lamp has been patented by Sarah Thomas, of Youngstown, Ohio. The object of this invention is to furnish, for use in rolling mills, sawmills, and manufacturing establishments in general, an improved lamp that is not liable to explosion, so as to expose the building to the danger of fire. The oil is supplied from a central reservoir of considerable capacity, and is forced into the different burners.

Mr. Charles Copman, of New York city, is the inventor of an improved Back Sink, of that class which are used in private residences and tenement houses, and are set back into recesses of the walls, so that the wood work or partitions at the upper part of the recess may be put up, removed, and replaced with great facility, and without injury to the same, to facilitate repairs to the plumbing.

Mr. William Loudon, of Superior, Neb., has devised an improvement in Lift Pumps, which consists in operating the pistons through a rope or chain and a loose drum, which latter raises the piston to any suitable height by winding up the said rope or chain, the said drum being so constructed and arranged as to be thrown out of gear during a portion of its revolution, at which time the rope or chain unwinds and the piston rod and piston descend by gravitation.

Mr. Samuel Hedges, of Wheeling, West Va., has patented an improvement upon that form of Window Shade

in which two rollers are employed, one at the top and the other at the bottom of the shade, to enable both ends of the same to be adjusted, the said shade being sustained by a tightened cord wrapped around the rollers, which, as the rollers are separately adjusted by an independent cord, serves to give, by frictional contact, the necessary rotary motion to wind or unwind the shade.

HARDENING OF COPPER AND ITS ALLOYS.—Everitt gives the following recipe: Melt together and stir until thoroughly incorporated, copper and from one to six per cent of oxide of manganese. The other ingredients for bronze or other alloys may then be added. The copper becomes homogeneous, harder and tougher.