

A FOLDING AND RECLINING CHAIR.

In this chair, which has been patented by Mr. Willis J. Moreland, of Mottville, N. Y., the construction is such that the footrest may be carried upward at its outer end above the level of the seat when the chair is in position for reclining, and the chair will balance in any position in which it may be placed

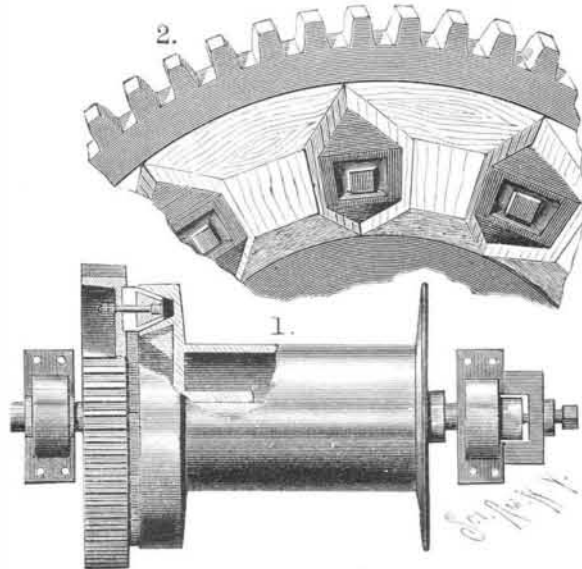


MORELAND'S FOLDING CHAIR.

without fastenings of any kind. The side pieces of the back of the chair are pivoted to the rear portion of a seat of ordinary construction, and the side bars of the footrest are pivoted to the forward portion of the seat, but these side bars have outward curved end portions extending above the seat, and pivotally connected by connecting bars with the arms of the chair. These connecting bars are hinged to the under faces of the arms, beneath which the bars may be rearwardly folded. The pivotal connection between the footrest and the arms is in advance of and out of vertical alignment with the pivotal connection between the footrest and the seat, enabling the chair to be balanced in any position by the body of the occupant, whether sitting or partially or fully reclining, and requiring for this purpose no ratchets or other fastening devices. Side pins in the footrest are also adapted to enter recesses in the upper forward ends of the rear legs when the chair is set up for use. This chair may be compactly folded for shipment, as shown in one of the views, and it can be manufactured at a moderate price.

AN IMPROVED FRICTION CLUTCH.

This clutch consists of a wheel having in one face an annular groove in which are set friction blocks to form a continuous friction rim, presenting even and well wearing surfaces, set end wise of the grain, for frictional contact with the clutch wheel. The improvement has been patented by Mr. Gust. Pers. Wern, M.E., No. 635 Eleventh Street, Brooklyn, N. Y. Fig. 1 is a side view showing the application of the improvement, Fig. 2 representing a face view of the friction wheel, with the sockets and heads of the bolts in the friction blocks, by means of which the latter are secured in position. The friction wheel is secured in the usual



WERN'S FRICTION CLUTCH.

manner on the shaft, to be thrown into frictional contact with the flange of the hoisting drum or other machinery. By securing the friction blocks in their places in the manner shown, one or more of the blocks may be readily removed and others substituted, when necessary, from wear or injury, without disturbing the other blocks. The wheel thus made has inside as well as outside friction surfaces, and presents even and hard contact faces designed to outlast almost any hoisting engine doing heavy duty. It has less than

the usual angle of friction cone, but with more friction capacity, will run cool, and damp or dry air does not affect or change the shape of the friction surfaces. The improvement may be readily applied to any hoisting drum, on new or old engines of any makers.

Improvement in Thermometers.

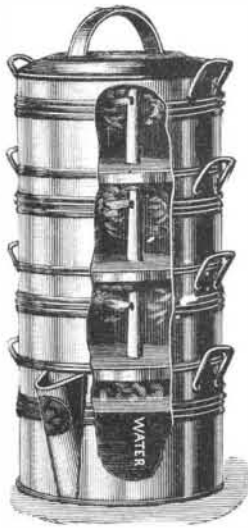
Mr. Lupin, of Munich, has recently called attention to two thermometers that are free from certain inconveniences that are presented by those filled with alcohol. One of them is obtained with sulphuric acid diluted with water. According to the experiments of Sohneke, the quantity of water abstracted by distillation in the thermometric tube is trifling, even when the free extremity is surrounded with ice, and, what is still more important, this small quantity of water is re-absorbed in a short time. The expansion of the liquid column is nearly constant. Mr. Vogel made use of this apparatus in the course of an expedition in Brazil, and obtained very satisfactory results with it.

The other liquid is a solution of chloride of calcium in spirits of wine (10 to 15 per cent of the anhydrous salt is the best proportion). This is especially recommended for medical uses on account of its pronounced color, which facilitates readings. It gives no rise to error, either, in consequence of distillation, and, besides, presents the advantage of taking the temperature of the body very rapidly, say in about three minutes. The regularity of expansion, although less perfect than with sulphuric acid, is satisfactory between 0° and 50° C.

These two solutions do not solidify, even at the temperature of evaporation of snowy carbonic acid, and, with the proportion of salt indicated, there is no deposit in the reservoir.—*Revue Scientifique.*

THE BEVERIDGE AUTOMATIC COOKER.

This cooking apparatus has four vessels, three cooking compartments and a lower vessel holding water. When placed upon a stove or range, and the water brought to boiling heat, the steam generated passes up into the several compartments by means of a small connecting pipe on the inside. A greater or less number of compartments may be used as desired, and the construction is such that each compartment is entirely separated from the others, so that the flavors are not mingled in cooking various kinds of food, and food thus cooked in entirely closed receptacles retains all its nutritious qualities. A whole meal can thus be cooked at once over one fire or one burner. This cooker is manufactured by W. E. Beveridge, No. 305 South Sharp Street, Baltimore, Md.

**A CHEAP AND EFFICIENT MOTOR.**

The ease and simplicity with which such a motor as the one shown in the illustration may be set up and utilized to do a great variety of work will be apparent at a glance. Supposing the house or shop to be supplied with water under pressure, the motor is preferably secured in position at a washstand, sink, or hydrant, the fittings being adjustable to all sizes of faucets or spigots without alteration. It is then connected by a light belt with sewing machines, fans, egg beaters, coffee mills, ice cream freezers, churns, or with lathes, dental engines, scroll saws, washing machines, printing presses, etc. It is made in two sizes, No. 1, with a 5½ inch wheel, for light work, and No. 2, with a 15 inch wheel, for heavy work. It is offered at a low cost, is not liable to get out of order, and invariably causes surprise, when first used, by the amount of work of various kinds it performs. It is made by the Bolgiano Water Motor Co., Peabody Fire Insurance building, room 25, Baltimore, Md.

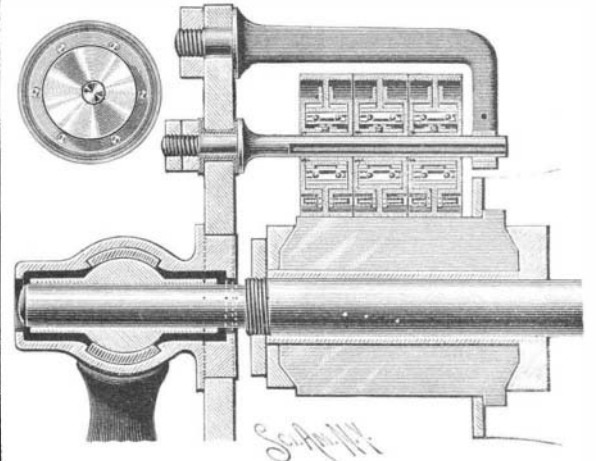
Instrument for Testing Hardness.

In Dinger's *Polytechnisches Journal* there was recently described a new form of apparatus in use at the Royal Research Laboratory, Berlin, for testing the comparative hardness of different materials. The substance to be tested is prepared with a smooth or polished face, and scratched with a diamond. This diamond has a point as nearly as possible conical, with an angle of 90 degrees, and is drawn over the substance to be tested under a constant pressure. The hardness is then estimated by the width of the scratch made, which is measured by a micrometer. The following comparative results were obtained, and are expressed in arbitrary units, which are inversely proportional to the

measured breadths of the lines: Lead, 168; tin, 234; copper, 398; zinc, 426; nickel, 557; soft steel, 765; glass, 1,355; hard steel, 1,375.

AN IMPROVED COMMUTATOR BRUSH.

In the brush for dynamos and motors shown in section in the accompanying illustration the contact of the brush with the commutator cylinder is a rolling instead of a sliding one. The improvement has been patented by Mr. Frederick H. Sandherr, of No. 2618 St. Louis Avenue, St. Louis, Mo. The commutator

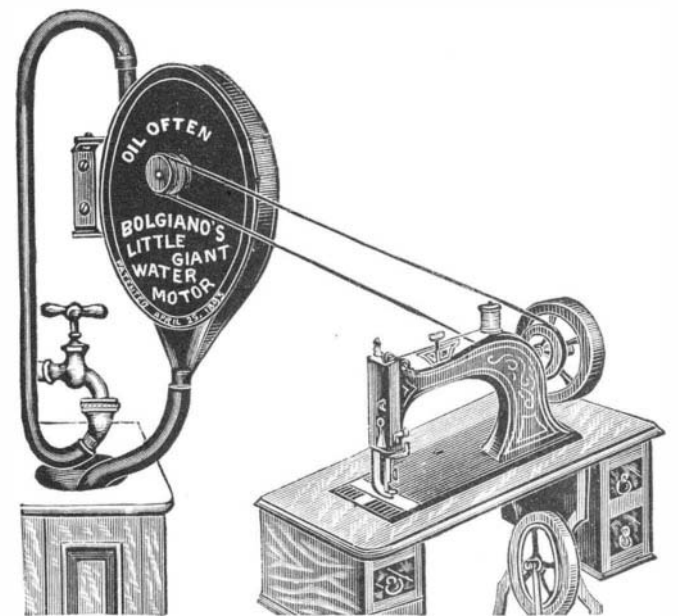


SANDHERR'S BRUSH FOR DYNAMOS, ETC.

cylinder carried by the armature shaft is of ordinary construction, and the brush arm is pivoted on the journal box of the armature shaft as usual. A longitudinal stud inserted in the brush arm, and insulated therefrom, has a longitudinal groove, and the outer end of the stud is supported in a split insulating thimble by an arm projecting from the brush arm. Upon the stud are shown three collecting wheels, though a greater or less number may be used, the boss of each wheel having a feather which fits in the groove of the stud, the boss also having an integral collar and a shoulder supporting a loose collar, while a ring between the collars has an attached spring, the arrangement being such that a collecting wheel running on the ring will accommodate itself to the inequalities of the commutator cylinder. The outer portion of the wheel consists of a tread and web, the latter bored out and provided with a steel lining, between which and the ring are placed hardened steel rollers. In the collars are capsules, each containing a contact piece pressed forward by a spiral spring. The boss and attached collars being stationary, and the movable portions of the collector being in good electrical contact with the contact pieces, the current collected by the movable part of the brush is conveyed to the stud, to be taken therefrom in the same manner as from the brush-holding studs of sliding brushes.

Success of the New Cunard Steamer Lucania.

The Cunard steamer Lucania made one of the most remarkable first voyages ever made across the Atlantic, and lowered the maiden record by seventeen hours. Her time on this first trip was 5 days 15 hours and 37 minutes. Her captain stated that the coal was poor,



BOLGIANO'S "LITTLE GIANT" WATER MOTOR.

owing to the strikes at the Liverpool coal docks. The distance traveled by the Lucania was 2,781 miles, and by the Paris on her record trip 2,782. The Lucania has since lowered the western record by fifty-nine minutes on her second westward trip, which ended at Sandy Hook bar October 6. The time of this second trip was 5 days 13 hours and 25 minutes. The best time ever made by the Paris was 5 days 14 hours 24 minutes.