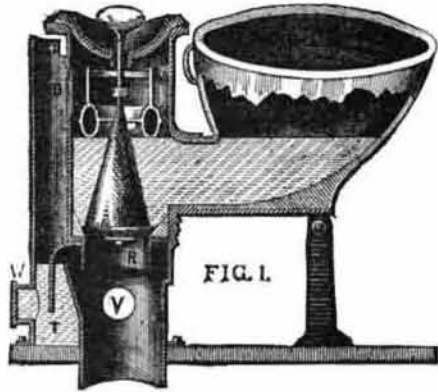


NEW TRAPLESS WATERCLOSET.

Noxious gases issuing from defective closets and sewerage connections are an intolerable nuisance, productive of disease, and always injurious to health.

The watercloset illustrated in the accompanying engraving is designed so as to prevent efflux of these dangerous gases. Fig. 1 represents a sectional view of it, by which its peculiar construction will be easily understood. R is a detachable ring, which holds a porcelain non-corrosive valve seat; O, the overflow; T, overflow trap; W is a socket that can be closed with a cap or used as a connection with a washbasin waste; V is a socket for ventilator.

The feature of novelty in this closet is the absence of a trap between the basin and the soil pipe. It is, however,



doubly protected by the tight seating ball valve and the water seal left in the basin after flushing. The overflow is trapped, as shown in the cut, with a sufficient depth of seal to resist any ordinary pressure, and much more than ever takes place in properly ventilated pipes. The valve of this "trapless" closet is regulated by a float, which makes it automatic and insures an abundant flush when the closet is in use. Cisterns and service boxes are unnecessary, but may be used as safeguards against the possible danger of fouling the service pipe when, from any cause, the head might fall below the closet level. The seat of the solid conical plunger is protected from corrosion by a porcelain non-corrosive coating, and the vent, V, relieves the soil pipe and overflow trap from any pressure of gas or foul air. This should always be provided in waterclosets, in addition to the ventilation secured by the soil pipe. This is a feature that should enter into all good plumbing work. There is no complicated mechanism about this closet; it is strong, simple, and, we are informed, efficient and inexpensive. It is the invention of Mr. Jennings, the well known sanitary engineer, of England. Further information can be obtained at the Jennings' Sanitary Depot, conducted by Mr. A. G. Myers, 94 Beekman St., in this city.

ASTRONOMICAL NOTES.**OBSERVATORY OF VASSAR COLLEGE.**

The computations of the following notes, which are merely approximate, have been made by students in the Astronomical Department of Vassar College.

Position of Planets for December, 1877.**Mercury.**

On December 1, Mercury rises at 8h. 9m. A.M., and sets at 4h. 53m. P.M. On December 31, Mercury rises at 8h. 37m. A.M., and sets at 6 P.M.

Mercury can probably be seen during the last week of December, after the sun has set, a few degrees north of the sunset point.

Venus.

On December 1, Venus rises at 10h. 45m. A.M., and sets at 7h. 43m. P.M. On December 31, Venus rises at 10 A.M., and sets at 8h. 23m. P.M.

Venus will be very brilliant all through the month; it will pass very near the moon, according to the *Nautical Almanac*, as seen at Washington a little south of the moon's limb on December 8.

Venus will be at its greatest eastern elongation on December 11, but will be higher in altitude later in the month.

Mars.

Mars is conspicuous all through the month, but is becoming smaller, and passes the meridian early in the evening.

On December 1, Mars rises at 1h. 10m. P.M., and sets at 0h. 53m. of the next morning. On December 31, Mars rises at 0h. 20m. P.M., and sets at 11h. 44m. P.M.

Jupiter.

Jupiter sets early and is so nearly in range with the sun that its satellites cannot be seen with ordinary glasses.

On December 1 Jupiter sets at 6h. 18m., and on the 31st at about 5 P.M.

Saturn.

Saturn, although it appears so pale and so small contrasted with the ruddiness of Mars and the brilliancy of Venus, is at present the planet of most interest to astronomers. The ring is so situated with regard to the sun and the earth that but little more than the edge is seen, but the numerous satellites which pass around Saturn, at different distances and at different inclinations, give great variety to the configurations. Some of these satellites pass along the edge of the ring, going around in a few days, and others are weeks in their circuit and depart long distances from the central body. Titan, the largest, can be well seen with an ordinary glass. It is now (November 16) on the right of the planet

as seen in the telescope, and in seven days it will be on the left, and around again in fifteen days at the right.

On December 1, Saturn comes to meridian at 6h. 20m., and sets at 11h. 50m. P.M. On December 31, Saturn comes to the meridian at 4h. 28m. P.M., and sets at 10h. P.M.

Uranus.

On December 1, Uranus rises at 10h. 37m. P.M., and sets at 0h. 7m. P.M. of the next day. On December 31, Uranus rises at 8h. 37m. P.M., and sets at 10h. 8m. A.M., of the next day.

Neptune.

Neptune rises on December 1 at 2h. 48m. P.M., comes to the meridian at 9h. 30m., and sets the next morning at 4h. 12m. On the 31st, Neptune rises at 0h. 49m., and sets at 2h. 11m. A.M. of the next day.

New Use for Beet Molasses Refuse.

A promising new mode of producing cold has lately been described to the French Academy by M. Vincent. A short time ago he found that, by distilling the residue of molasses of beet, he could prepare large quantities of chlorhydrate, bromhydrate, and iodhydrate of trimethylamine. He has now shown how it is easy to pass from this body to chloride of methyl, and he insists on the applications of which this latter compound is capable: At 33° below zero (C.) it liquefies, and nothing is easier than to keep it liquid in sealed tubes. If it then be caused to evaporate—*e.g.*, by sending a current of air through the mass—a cooling is obtained which goes down to — 55°. Mercury immediately congeals in such a medium. This method of producing a very low temperature is, moreover, a very cheap one.

DORR'S ADJUSTABLE HAT AND COAT RACK.

We illustrate herewith an improved adjustable hat and coat rack, which may be constructed of either wood or metal and in a variety of styles. The hooks, it will be noted, slide upon parallel rods of polished metal, and can be placed either near together or far apart, as desired. The rods are secured in handsome brackets of either metal or wood. Fig. 1 represents the single rack; Fig. 2 is an orna-

Fig. 1.

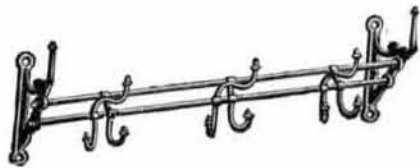
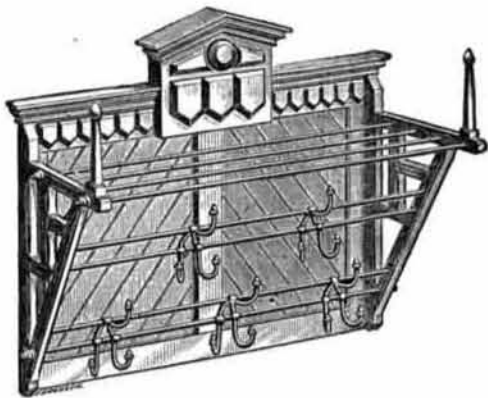


Fig. 2.



Fig. 3.



mental form of metal rack; and Fig. 3 has a wooden bracket in the fashionable Eastlake style. Each rack may be easily taken to pieces for convenience in packing or shipping. The device is exceedingly strong and durable, and is a neat and handy substitute for the ordinary large and expensive stand.

For further particulars relative to agencies, rights, etc., address the Dorr Hat and Coat Rack Company, 542 Broadway, Albany, N. Y.

The New Tea Region.

The tea trade is generally considered as being the exclusive business of China and Japan, and tea from other countries is apt to be looked upon with suspicion as a spurious article. Seventeen years ago the first tea plantations were established in Assam, and the growth of tea in India was regarded merely as an experiment. The trade steadily increased until, from 1,300,000 lbs. of tea in 1861, the export from Calcutta advanced to 25,000,000 lbs. in 1875. The cause of the poor quality of China teas of late years lies in hasty preparation, with a view of bringing the teas early to market. Small

farmers grow from 50 to 500 lbs. of leaf, and carry it off to a market. If they fail to sell it here they take it to others, and in the meantime the unfired leaf is spoiling fast by exposure to the air. In India the planting, picking, and firing are done more systematically, and consequently a better quality of tea is produced.

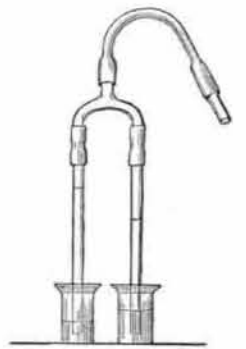
A Special Specific Gravity Apparatus.

BY JAMES TAYLOR.

It is often desirable to ascertain approximately the specific gravity of a liquid in cases where the hydrometer and specific gravity bottle are not applicable, or would take up too much time. The following contrivance answers very well for this purpose, is very readily applied, even with tolerably small quantities of liquid, and easily gives results correct to the first decimal place.

Two straight pieces of glass tubing, 5 to 10 m.m. bore and 250 m.m. long, are joined by caoutchouc tubing to two ends of a T-joint which have been bent so as to be parallel. The third end of the T-joint has a piece of caoutchouc tubing of convenient length slipped on, and this is stoppered by means of a bit of glass rod. Two small beakers, a rule, and any convenient stand arranged so as to hold the long tubes vertically, complete the apparatus.

Its application is almost obvious. On pouring a little distilled water into one beaker, and the liquid whose specific gravity is to be determined into the other, bringing the beakers under the two vertical tubes so as to immerse the ends of the latter in the respective liquids, and partially exhausting above, the liquids will rise to heights depending on their relative densities. The plug is now inserted, the lengths of the liquid columns are measured, and the specific gravity required, is obtained by dividing the length of the water column by that of the other.—*Chemical News.*

**NEW INVENTIONS.**

A new Gasket, patented by Cyrus S. Stoy, of Butler, Ind., consists of two thin annular metallic plates, joined together at their inner edges, having a space between them for a coil of packing. In taking the joint apart, there being no part of the elastic packing in contact with the face of the joint, it may be readily removed without injury, and may be used many years without renewing.

A simple Wire Stretcher, the invention of D. A. Smith, of Marak, K., consists of a forked casting having a squared upper end for receiving a wrench, and perforated ears for receiving a nail that prevents the wire from unwinding after being tightened.

An ingenious Automatic Toy Figure of a Man, invented by John Schwiapl, of Brooklyn, N. Y., performs somersaults in an amusing manner. A spring inside the body works a geared shaft, imparting a rotary motion to the arms, which causes the body to roll over and over.

An Iron Fence Post, patented by S. S. Crocker and Albert Wilcox, of Clarence, Iowa, has notches on the front edges of the upper part to receive the fence wires. In the bends and angles of the concave post are holes to receive the hook bolts by which the wires are locked together. By tightening the nut of the bolts the wires are drawn into the hollow of the posts, so that they cannot change their position. This invention will be of great service to farmers.

Cellar Bottoms are generally easily permeated by noxious gases exhaled from the earth, or crack from the pressure of gas beneath. To remedy this difficulty Tobias New, of New York city, has patented a vent for the gases. A narrow channel is constructed at the bottom of each cellar wall under the flooring, from which arises an escape pipe, and thence to the roof of the house. By means of this improvement cellars are freed from noxious gas and are rendered healthy.

A neat Basket, invented by J. J. Cole, of Hillsdale, N. J., consists of a single piece of veneer or similar material cut so that when folded together at the ends it may be fastened at a single point, where a handle is also affixed. It will prove very convenient for carrying berries or small groceries.

Abraham Morris, of New York city, has invented an improved Sofa Bedstead. A swinging seat section is hinged to the lounge frame and a head section is swiveled centrally to the swinging section, and connected at the upper rear corner by a strap with the head section of the lounge frame. The head section has a supporting front foot that fits into recesses of the lounge frame. It is a convenient article to have in the house.

A new Water, Grain, and Earth Elevator, patented by Levi Gallaher, of Businessburg, O., has an endless chain of lifting buckets, which are connected together by open links, a lower drum having scoops affixed to it, and which supply the buckets of the chain with the material to be raised. The upper drum has chutes so arranged as to register with the buckets of the chain and guide the water to the receiver. It promises to be an invention of much advantage.

A new Gas Burner Regulator, patented by Eugene Giness, of New York city, consists of a hollow cylinder screwed on between the burner and gas fixture. Two conically bored nipples are screwed into the bottom of the cylinder and communicate with the interior of the socket. These nipples direct the head of gas against the side of the cylinder, thus