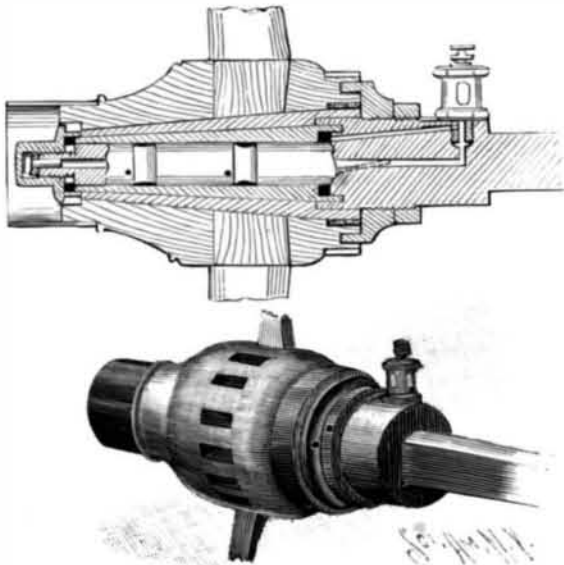


AN AUTOMATIC AXLE LUBRICATOR.

The illustration represents, in longitudinal section and perspective, a novel oiling device for the axles and wheels of vehicles, which is simple and reliable in construction and automatic in operation, lubricating the axle spindles and boxes of the wheels for a considerable period of time without replenishing the lubricant, and rendering it unnecessary to remove the wheels in supplying the lubricant. The improvement has been patented by Addison C. Holt, of Lynchville, Me. An oil cup communicates with a vertical passage in an en-

**HOLT'S VEHICLE AXLE OILING DEVICE.**

larged portion of the axle spindle, and this passage communicates with another which extends centrally through the spindle, and from which branch lateral feed passages, that cut through the outer surface of the spindle. From the vertical passage below the oil cup a smaller supplementary oil passage also leads, with a slight inclination, to the packing ring in the hub box. An outer cap nut draws the wheel hub into correct position on the spindle, and when the vehicle is moved oil is automatically fed from the cup into the lubricating passages. The spindle of the axle works automatically to distribute the oil with or without the oil cup, and there are shallow peripheral grooves in the spindle to receive any residuum that may form from the lubricant. The supplementary oil passage lubricates the spindle by infiltration through or around the washer, should the other passages become clogged, and a flanged collar perfectly excludes dust or other impurities from the joint between the spindle and its box.

A NON-REFILLABLE BOTTLE.

The invention shown in the illustration relates to that class of bottles known as "safety bottles," which are designed to prevent the refilling of the same after the contents have been removed. It has been patented by Mr. Henry C. Small, of 16 Cushman Street, Portland, Maine. The neck of the bottle is provided at its upper end with a deep fillet, and at a suitable distance below the bottom edge of the fillet an annular bead or rim is also formed on the neck. A glass cap,

**SMALL'S NON-REFILLABLE BOTTLE.**

Fig. 2, is provided, which has a slightly thickened lower edge, adapted to rest, when said cap is adjusted over the neck of the filled and corked bottle, upon the annular bead. The annular space between the cap and the neck of the bottle is filled with some hard, quick drying cement, or, if preferred, the lower rim of the glass cap can be fused down upon the bead. The contents of a bottle sealed in this way cannot be removed without breaking the cap, and when this is done the bottle is practically destroyed for the purpose for which it was originally used, as any attempt to use it a second time would be certain of detection. The

cap, moreover, forms a hermetical seal for the bottle, and it may be made in colors and utilized as a trade mark.

Science Notes.

All interested in physics will hear with regret of the death of Mr. Hippolyte Fizeau, which has taken place at age of 77. Mr. Fizeau will, of course, be remembered for his classical researches on the measurement of the velocity of light, not to mention his other work in physical optics and allied branches of science.

Prof. Thomson, in his address to section A of the British Association recently, sums up our knowledge in regard to the true nature of X rays in the following words: "Though there is no direct evidence that they are a kind of light, there are no properties of the rays which are not possessed by some variety of light."

The death is announced of M. Henri Aimé Resal, the distinguished mining engineer, at the age of sixty-eight. He was a member of the Academy of Sciences, president of the Société Mathématique de France, editor of the Journal des Mathématiques Pures et Appliquées, and author of numerous treatises on mining and mechanics.

A member of the Zurich Medical Society recently exhibited a self-registering clinical thermometer on which there were no degree marks. The instrument could be left with the patient's family to take the temperature in the absence of the physician, and the latter could then read it by means of an attachable scale of glass or metal.—Medical Record.

Foreign medical students in France have had their position defined by the minister of public instruction. They are divided into two classes. Those wishing to practice in France must produce a French diploma of bachelor of arts or some equivalent diploma; others will be allowed to complete their studies, but their diplomas will not give them the right to practice in France.

A monument in memory of the mineralogist and poet, Franz von Kobel, was unveiled in Munich on July 19, says Science. Franz von Kobel, who died in 1882, was for over fifty years professor of mineralogy in the University of Munich and made many contributions to all departments of the science, and was also well known among the people for his poems in the Bavarian dialect.

A second International Art Exhibition will be held in the city of Venice from 22d of April to 31st of October, 1897. The exhibition will contain pictures, sculptures, etchings, and drawings. Signor Filippo Grimani, mayor of Venice, is the president of the exhibition. The total amount of prizes to be awarded to artists will not be less than 40,000 lire. Prizes will be given for the best critical essays on the exhibition.

We have it on the authority of Prof. W. Ramsay and J. Norman Collie that, by fractional diffusion through porous tubes, argon yields two portions, of which the lighter has a density of 19.93, the heavier of 20.01. Similar experiments with helium gave densities of 1.874 and 2.133 for the two extreme portions, results which were confirmed by measurements of the retractive indices by Lord Rayleigh. Both specimens, says Nature, gave spectra which were absolutely identical, and hence the possibility is suggested of there being here a true separation of light molecules from heavy molecules of the same substance.

The attention of the biological section of the British Association was drawn to the construction of microtomes by a communication from Prof. C. S. Minot, of the Harvard Medical School, Cambridge, Mass. In recent years there has been a growing and justified demand for microtomes to make good sections of great thinness, if possible, not over one five-hundredth of a millimeter or 2 microns (0.002 mm.) In the automatic microtome, worked by a revolving wheel, devised by Prof. Minot, which was now made in England, Germany, and France, as well as in America, the attempt is made to secure mechanical perfection, and so far successfully that sections of 1/300 mm. may be made with it. This microtome is, however, adapted only to cutting objects embedded in paraffin.

A paper on a new method of preparing alloys was recently read before the Paris Académie des Sciences by M. Moissan, according to whom alloys of refractory metals can be prepared by projecting a mixture of the oxide with powdered aluminum into a bath of liquid aluminum. The heat set free by the oxidation of the aluminum is sufficient to carry on the reaction. Alloys of aluminum with nickel, molybdenum, tungsten, uranium, and titanium have been obtained in this way. In a paper entitled "A Study of Melted Vanadium and its Carbide," M. Moissan says: Vanadium pentoxide, reduced by carbon in the electric furnace, yields an ingot of metal which always contains an appreciable amount of carbon. If the time of heating is as short as possible, a metal containing only 5 per cent of carbon can be obtained; by prolonging the time of heating the percentage of carbon is increased to 18.5 per cent, indicating the formation of the carbide VC. The carbide is not attacked by water at the ordinary temperature. Vanadium forms alloys with iron, copper, and aluminum, but not with silver.

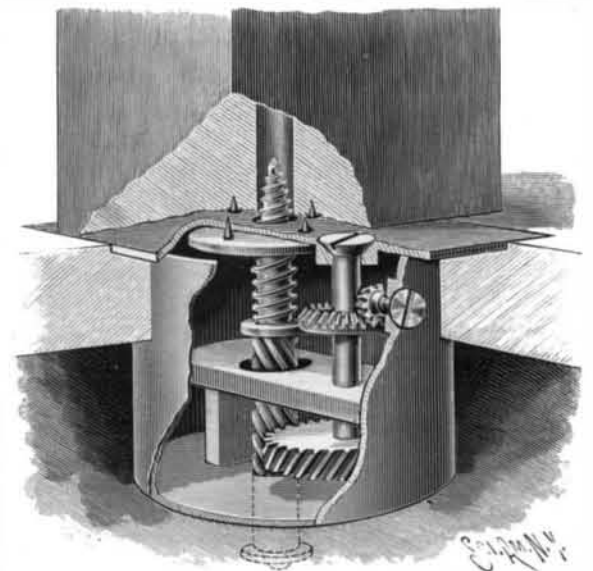
A Great Lens Finished.

The lens for the great telescope of the new observatory at Lake Geneva, Wis., the finest and largest telescope lens in the world, has been completed after two and a half years' labor, and now lies at the workshop of Prof. Alvin Clark, in Cambridge, awaiting the orders of the Chicago University authorities. Its focal distance is 61 feet, the extreme diameter of the clear aperture is 41 3/8 inches. The crown is about 3 inches thick at the middle and 1 1/4 inches thick at the outer edges, and weighs 205 pounds. The flint weighs 310 pounds. The lens and its iron ring and cell weigh about 1,000 pounds.

The cost of the glass plates in Paris was \$40,000, and the entire cost of the lens is estimated to have been \$100,000. For its journey west it will be wrapped in flannel and bedded in curled hair in a box mounted on springs and packed with excelsior in a larger box. It will ride in the center of a parlor car and will be accompanied by four men.

A NOVEL POST FASTENING.

To facilitate the securing of standards or posts to a flooring without damage to the floor, as may be desirable in the erection of removable partitions in office buildings, etc., the improvement shown in the accompanying illustration has been invented and patented by Joseph Schmidt, of No. 257 East Seventy-eighth Street, New York City. A suitable metal casing is made fast in an opening formed in the floor, the top plate being flush with the floor, and a screw adapted to engage the bottom of a post is arranged to move vertically in the casing and through a hole in the plate. This screw has on its lower end a flange adapted to engage the bottom of the casing, and its lower portion has a worm engaged by a worm wheel on the lower end of an upwardly extending adjacent shaft adapted to be turned by a screw driver, or it may have a squared end adapting it to be turned by a wrench.

**SCHMIDT'S POST FASTENING.**

Resting on a collar on the vertical screw is a plate carrying pointed lugs which extend up through openings in the top plate to pass into the lower end of the post and afford additional security to that given by the central screw when the latter, rotated by the shaft, is turned into the post. If desired, the casing may be placed in the lower end of the post and the screw made to engage the flooring, and for this purpose a beveled gear is placed on the turning shaft, the gear meshing with a pinion on a short shaft extended through the side wall of the casing and adapted to be engaged by a turning tool. The improvement is also well adapted for use in the placing of rail posts, stair posts, etc.

Artificial and Natural Petroleum.

Writing to the Echo des Mines, M. Francis Laur draws attention to the unexpected discovery of the artificial production of petroleum, which, he says, starts a new question of great interest to scientists, as to whether petroleum is an ancient deposit in the earth's surface or is being reproduced to-day in the lower series of measures. Those who consider that the production of petroleum is contemporaneous are, says M. Laur, unable to account for the method of its formation, and have to be content with the mere hypothesis of certain obscure reactions which took place in the bowels of the earth. Now, however, it is only needful to invoke the presence of the metallic carbides which exist in the central nucleus, and which can be reached by the water which is sucked in through the earth's crust, so that it is rational to suppose that firedamp, acetylene, petroleum, tar, and inflammable gases of all kinds may be produced and infinitely modified by the difference of pressure and temperature. Arguing from this point, M. Laur suggests that Lake Baku must, if this is the case, be the outward and visible sign of a natural production of hydrocarbons, while the Caspian Sea, whose issue has not so far been determined, but whose boundary does not grow less, may be regarded as a natural means of feeding the important internal laboratory where the petroleum is produced.