

MISCELLANEOUS INVENTIONS.

An improved bob sleigh has been patented by Mr. Charles R. Walkley, of Churubusco, Ind. This invention consists in a novel construction of the knee, and the arrangement thereof with relation to the runner and the bolster, and of the runner with relation to the knee and to the draught bar, whereby provision is made for enabling the runners of each pair to move independently.

An improvement in underground telegraph lines has been patented by Mr. Stephen D. Field, of New York city. The object of this invention is to prevent the accumulation of and to remove moisture from underground tubes containing telegraph wires, and thereby insure the insulation of the wires. The invention consists in the combination, with a system of underground tubes, of mechanical means for maintaining a circulation of dry air and drying or condensing chambers for relieving the air of moisture.

An improved boat plug which is simple, self-acting, and reliable, has been patented by Mr. Lewis H. Raymond, of New York city. The invention consists of a plate attached to the bottom of the boat over an aperture, and provided with a perforated neck having an external thread to receive a cap on the upper side, and with a hinged valve on the bottom side, this valve being protected by a suitable cage.

An improved baker's oven has been patented by Mr. George Brake, of Lansing, Mich. This invention is an improvement on the baker's oven for which Letters Patent No. 215,088 were granted to the same inventor May 6, 1879.

Mr. James Lidstone, of Farmington, Me., has patented an improved steam cooker for cooking meats, vegetables, etc. The novelty consists in the arrangement of parts whereby the steam and odors of the cooking food are conducted from the several compartments of the cooker into the fire space below, and thereby prevented from escaping into the room.

An improved apparatus for balancing or adjusting the running millstone upon its spindle has been patented by Mr. James Comerford, of Rathdrum, Ireland. This improved balance consists of a ring fixed in the eye of the stone by three or more radial set screws, and connected to the universal joint or other bearing on the cock head of the spindle, the ring being sufficiently smaller than the eye to admit of the stone being shifted by means of the set screws in any direction radial to the spindle, with which the ring remains concentric. The stone is supported on the ring by an inwardly projecting flange or lugs on a lining or a set of legs fixed in the eye and rising through it (more or less) toward the back of the stone, it being generally preferred that the ring should be high up in the eye, so that the bearing on the spindle may be at or above the center of gravity of the stone, although it is not limited to this position.

Mr. George Oliver, of London, England, has patented improvements in the apparatus for use in gymnastic or theatrical performances for which two applications for Letters Patent in the United States were filed by the same inventor on the 19th day of June, 1880; the invention consists in the combination, with the springs and the wire by which the performer is raised, of a drum and brake interposed between the springs and the wire for the purpose of taking up the slack of the wire after the performer has received an upward impetus from the springs, and of retaining the performer at any height to which he may be raised and checking his descent.

An improved self-inking stamp, which is simple, convenient, and effective, has been patented by Mr. Louis K. Scotford, of Kansas City, Mo. The invention consists in a self-inking hand stamp mechanism by which the die is pressed against the ink pad when the handle is raised, and is oscillated by depressing the handle.

Mr. James V. Pomeroy, of Boulder, Col., has patented a process of amalgamating ores containing gold and silver, which consists in introducing chlorine gas or chloride of lime with an acid into the pulverized ore with the mercury.

An improved eyeglass has been patented by Mr. Gideon C. Hilpert, of Hill, N. H. The object of this invention is to provide eyeglasses that are adjustable upon the nose in a straight horizontal line instead of with the rolling motion common in other eyeglasses. The improvement consists in lenses connected with each other by means of a straight rod, and adjustable with respect to each other by means of a spiral spring encircling the rod.

An improved can opener, so constructed that it can be readily adjusted to cut larger or smaller openings as required, has been patented by Messrs. George A. Snow and Franklin L. Coe, of New York city.

A wrench especially adapted to the unscrewing of bolts and nuts where but little room is given for the movement of the wrench handle, has been patented by Mr. Leslie P. Hiatt, of Peru, Iowa.

A device for preventing the lateral vibration of a circular saw while running, has been patented by Mr. Clarence A. Sherman, of Plover, Wis. The invention consists of a pair of laterally adjustable guide arms and guides fixed on an adjustable bar that passes laterally through a centrally mortised sliding block, which together with its attachments are held in place by means of a cam-operated bar.

Mr. Jacob R. Scott, of Nyack, N. Y., has patented a machine for sewing boots and shoes that will meet the peculiar requirements of that class of work without complicated mechanism; and the invention consists, specially, in the mechanism for tightening the stitch, whereby the layers of leather are tightly drawn together, and also in the looping mechanism for forming the stitch.

An improved lathe tool has been patented by Mr. Joseph

V. Hoffman, of Raritan, N. J. The object of this invention is to prevent the springing of the work and the chattering of the cutting tool when a shaft or other piece of work is being turned, faced off, or centered in a lathe.

Messrs. Stephen H. French and William J. Maltby, of Belle Plain, Texas, have patented a vehicle wheel whose spokes may be adjusted radially outward, and also forced tightly together around the axle box to compensate for shrinkage.

An improvement in the class of wardrobe bedsteads has been patented by Mr. Ernest N. Doring, of New York city. It consists in the construction of the stationary and folding parts which adapt them to close together and in the means for connecting and balancing the folding part.

James C. Watson.

James C. Watson, Professor of Astronomy in the Wisconsin State University and Director of the Washburn Observatory, died at Madison, Wisconsin, November 23. For a week or more Professor Watson had been suffering from a severe cold contracted while superintending the construction of a large addition to the observatory and a new solar observatory which he was constructing at his own cost. He was better the day before his death, and unwisely exposed himself to chill, which in his exhausted condition he was unable to withstand.

Professor Watson was born, in 1838, at Elgin, Canada, of American parentage; and when he was still a child his parents returned to the United States, settling in Ann Arbor, Mich. At the age of fifteen he entered the State University at that place, and took his first degree at the age of nineteen. Two years later he was elected Professor of Astronomy and Instructor in Mathematics in the university where he had studied, and rapidly rose to eminence as an original discoverer and contributor to scientific periodicals.

In the course of his connection with the university he added twenty-three planets to the list of those already known, besides the more important discovery of the planet Vulcan. For these contributions to the world's knowledge he received, in the year 1870, the award of the gold medal of the French Academy of Sciences; was made member of the National Academy of Sciences in 1867; the American Philosophical Society in 1877; of the Royal Academy of Sciences, of Italy, in 1870; and in 1875 Knight Commander of the Imperial Order of the Medjidich, of Turkey and Egypt. The University of Leipsic in 1870, and Yale College in 1871, conferred upon him the degree of Ph.D.; and Columbia College, in 1877, the degree of LL.D. He was also appointed Judge of Awards at the International Exhibition of 1876.

Professor Watson was also repeatedly called upon to take charge of government expeditions for astronomical observation. In this capacity he went to Mount Pleasant, Iowa, in 1860, to observe an eclipse of the sun; to Carlentini, Sicily, in 1870, for a like purpose; to Peking, China, in 1874, to observe the transit of Venus; and to Wyoming Territory, in July, 1878, where, during the solar eclipse, he discovered the planet Vulcan, and satisfied himself of the existence of another unknown planet of lesser magnitude.

In 1879 Professor Watson left Ann Arbor to take charge of the new observatory of the Wisconsin State University at Madison. The private solar observatory which he was building at the time of his death, was on a plan suggested long ago by Bacon, but never tried. A cellar twenty feet deep had been sunk below the surface of the ground at the bottom of the first hill slope, in front of the entrance of Washburn Observatory. Over this a fine stone building was being erected at the top of the hill, which is about sixty feet above the bottom of the cellar. Powerful reflectors were to have been placed to throw rays of light down a long tube which ends in the cellar, where the observer would be stationed.

Professor Watson believed that in this way better observations of the sun could be taken than ever heretofore obtained. All these projects and plans for the future are, however, brought to their end by his untimely death.

Among his best known publications are a "Popular Treatise on Comets," published in 1860; "Theoretical Astronomy," 1868; "Report on Horological Instruments," 1878; and "Tables for the Calculation of Simple and Compound Interest and Discount," 1878. Since 1872 he has been president of the Ann Arbor Printing and Publishing Company, and for several years has been actuary of the Michigan Mutual Life Insurance Company.

Extension of Telephonic Facilities.

The American District Telegraph Company, in this city, have recently placed in a number of their offices telephones for public use. By means of this extension of facilities parties who wish to talk with subscribers of telephone exchanges in New York City, Brooklyn, Jersey City, Newark, Paterson, Elizabeth, Orange, Yonkers, and Coney Island, can do so under certain restrictions for five minutes, on paying a fee ranging from twenty to forty-five cents, according to distance. The next improvement will be the establishment of telephone stations, through which conversation may be had by appointment with non-subscribers.

Thomas S. Hall.

Mr. Thomas S. Hall, inventor of the automatic electric railway signals bearing his name, and in use on many of the railways of this country, died at Hartford, Conn., Dec. 1, at the age of 52 years. Mr. Hall was a man of great force and persistence, and his inventions have done much to diminish the hazards of railway travel.

The St. Gothard Tunnel.

The Geneva correspondent of the London *Times* writes, under date November 3: "The 94th monthly report of the St. Gothard Railway Company, which has just been presented to the Federal Council, bringing the history of the undertaking to September 30, contains details which, in view of its approaching completion, are more than ordinarily interesting. As for the great tunnel, the enlargement of the upper part is complete over a length of 14,872 meters. There remain now only 40 meters to be enlarged. The excavation is finished and continuous for a distance of 9,530 meters. The completed masonry of the roof measures 13,057 meters; of the west side, 9,830; and of the east side, 9,891; and the length of tunnel entirely finished, with aqueducts, rails, and niches, is reckoned at 9,300 meters, about two-thirds of the whole. The average number of men employed inside the tunnel during the month of September was 3,031. The total outlay on the tunnel to the date in question was estimated at 49,853,545f. The mean maximum temperature of the tunnel was 87° Fah., the mean minimum 85°. The average daily consumption of dynamite was 235 kilogrammes, of oil 578. Good progress is being made with the lines of approach. Between Immensee and Lugano there are five stretches which, taken one with another, are completed, as touching excavations and embankments, in the proportion of 72 to the 100; as touching masonry and rail laying, 67 to the 100. The average monthly rate of progress is about 6 per cent. Of the forty-nine smaller tunnels, thirty-four are pierced and several quite finished. The outlay on the lines of approach to September 30 reached a total of 32,781,000f. The average number of workmen employed in the making of these lines is 13,420. It results from the foregoing particulars that, should no unforeseen delays occur, the St. Gothard line in its entire length can hardly fail to be ready for traffic in the first half of next year. Meanwhile, the differences between the company and the contractors for the great tunnel are being fought out before the Federal Tribunal. The contractors, while expressing their intention to have the tunnel completely finished by the end of April next, contend that, but for the company's sins of omission and commission, it would have been finished 730 days before that time. For this loss of time they claim heavy compensation. The company, on the other hand, disclaim all responsibility for the delays in question, and demand the enforcement of the penalty stipulated in the contract—£200 for every day beyond October 1, 1880, by which the completion of the undertaking is protracted."

Rain Not Produced by Cannonading.

To the Editor of the *Scientific American*:

Your issue for November 27 has a notice of an invention for causing rain, with a satisfactory engraving of the inventor bringing down a heavy shower simultaneously with the explosion of his patent dynamite balloon. The inventor assumes that it is "well known" that cannonading is always followed by rain.

Now I don't know how that comes to be so "well known" by people who never witnessed the effects of heavy cannonading, and I think it is time that they should know that it is not the case. It may rain after a heavy cannonade, or may not, or may rain just before the cannonade. The cannonade has no effect whatever. The cannon explosions in a battle exceed the explosion in the inventor's patent balloon twenty thousand times or more, and if the former does not cause rain, the patent balloon will not do it.

I was at the battle of Shiloh, which lasted two days, April 6 and 7, 1862. The cannonade was as rapid as the strokes a man could give a base drum with two drum sticks, and it was continuous, to say nothing of the musketry fire, which was not a roll or rattle at all, but a continuous, even roar. What was the effect on the weather? It rained before the action opened, and rained all the first day and night. The second day of the battle was clear and sunny, and so were several succeeding days.

The battle of Corinth was fought in a dry, hot spell, October 3 and 4, 1862. There had been no rain for two weeks. This was a good chance to test the thing. The cannonading was heavier than at Shiloh, and lasted for ten hours. It was a perfect hell on earth. No rain followed the battle. The dry hot weather continued for two weeks more.

The two battles of Lookout Mountain, November 24, 1863, and Missionary Ridge, November 25, which followed each other, were not followed by rain. The night after Missionary Ridge was one of the clearest and loveliest moonlight nights I ever saw. The next week was also clear, except a very light shower the second day after. Very few of the battles of the Atlanta campaign were followed by rain, and in such as were, it would have come anyhow. If there is a popular delusion that heavy cannonades cause rain, it might as well be dispelled, as experience shows there is not the slightest foundation for the notion.

Cincinnati, Nov. 22, 1880. ANDREW VAN BIBBER.

By subscribing for the *SCIENTIFIC AMERICAN*, a new volume of which commences with the next issue, you will have illustrations and descriptions of the most extensive manufacturing establishments of the country, as well as engravings of the newest and best iron and wood-working machinery and implements made, besides all the most novel and important inventions patented in this and other countries during the year. Remit \$3.20 to MUNN & Co., 87 Park Row, New York.

Sewing Machine Motors.

That there is a large field for a good practical sewing machine motor cannot be denied; but, like perpetual motion, many have tried the "perplexed thing," but failed. A motor, to be practical and popular, must be a part and parcel of the sewing machine—not a heavy, cumbersome contrivance that costs more, and occupying more space, than the sewing machine itself. How it is to be accomplished must be left to the inventive genius of the country, which in time may solve the question. Of course these remarks refer to motors for family use. For factories and workshops, water and steam solve the question.

So far the best motor for sewing machines is the common treadle. Such devices as those which imprison one hand in their operation are useless—as far as practicability and usefulness are concerned. A person might as well have but one arm, as it leaves but one hand to direct the work. Whenever a sewing machine motor is invented that will do the ordinary work of a family, without the aid of steam, water, or electricity, and run a reasonable length of time without replenishing the power exhausted, a step will have been made toward solving this question. But, where more power is expended in storing up what is wanted for use than it takes to operate the machine for a given period of time, such devices are worse than useless—they are time lost. We expect, yet, to see this problem solved.—*The Sewing Machine Journal.*

A Fossil Human Skull.

Dr. T. G. Horn, of Colorado Springs, Colorado, favors us with a photograph of "a petrified human skull," picked up near Gothic, Gunnison County, Colorado. The doctor says that the skull has been examined by quite a number of the medical profession, and all pronounce it the greatest curiosity ever discovered. Every bone, suture, and outline is perfect. As shown in the photograph the posterior half of the skull seems to justify the description; the forepart is less clearly exhibited. The jaw is gone, and a mass of stone resembling a hot spring deposit obscures the facial outline.

No account is furnished with regard to the conditions under which the skull was found, so that no estimate can be made of its probable age. If found in connection with hot spring deposit, it might easily be quite modern. On the other hand, it may be the skull of an "original settler," ancient enough to have used the implements found in the inter-glacial or pre-glacial gold gravels.

A NOVEL STEAM CARRIAGE.

A great many steam wagons and carriages have been devised and built for transporting loads on our ordinary highways without tracks, but although some of the devices were masterpieces of ingenuity, the practical results obtained were never perfectly satisfactory. Walter Hancock, the most persistent of inventors and constructors in this line, built a steam phaeton in 1838, and obtained a maximum speed of 20 miles and an ordinary speed of 10 miles per hour. Within the last few years the interest in steam wagons has been renewed, and some very successful experiments have been made with them, the trip by M. Schmid, M.E., who traveled from Zurich to Paris, in 1878, on a self-propelling steam fire engine of his construction, being an example. A steam carriage, invented and built by the French engineer Bollé, of Le Mans, and exhibited at the Paris Exhibition of 1878, was an object of more than ordinary interest. Its speed was said to surpass that of any ordinary vehicle drawn by horses. The inventor named his carriage "La Manselle," in honor of his native city Le Mans.

This carriage is shown in the annexed cut, taken from the *Leipziger Illustrirte Zeitung*. The casing in the front part of the carriage contains the driving engine, which is controlled by the engineer seated above it, who also operates the steering gear and the powerful brake levers. The rear axle is driven by spur wheels and chains. The boiler is placed above the rear axle, the coal bins are at each side of the boiler, and the water truck is below the seat of the engineer. Experimental trips have been made with one of these carriages on the road from Berlin to Charlottenburg. The average speed attained, according to the above authority, was 18 miles per hour, but a maximum of 22 miles per hour was reached. Coke was used as fuel, which produced but very little smoke, about 8½ to 10 pounds being consumed per hour. The carriage rounded the curves in an excellent manner, and the entire experiment proved most satisfactory.

**TRIAL TRIP OF THE NEW STEAM CARRIAGE AT BERLIN.****BURTON'S IMPROVED STREET LAMP.**

The engraving shows a lamp for lighting streets, parks, and other places where gas lamps are not used. It is a novel arrangement, and has the advantage of simplicity and cheapness.

Projecting from an opening in the cap there are one or more downward curving hollow arms, carrying a series of chains; these chains extend into the base, where their inner

**BURTON'S IMPROVED STREET LAMP.**

ends are attached to a weight or counterbalance, their outer ends being secured to the sliding lamp frame. There is a pin or bolt threaded to work in a nut at the top of the base; its inner end is shaped to fit a groove in the weight, and forms a key or stop to secure the lamps at any desired elevation. When the key bolt is withdrawn the lamps may be readily raised or lowered by sliding the frame on the post, the chains running freely through the arms, and the weight rising and falling in the body of the post. The weight need

not necessarily be made fast by the key or bolt, as the weight counterbalances the lamps so that they will remain in any desired position.

The post is made of cast iron, in two parts, firmly united by a set screw at the top. The weight weighs 20 pounds, and is secured to the bail of the cage by a three-quarter inch chain. The sliding frame is of cast iron, of sufficient strength to hold and guide the lamp along the body of the post. The lamp is well made of the best material, and may be adapted to either kerosene or gasoline.

With this post the inconvenience of carrying a ladder is avoided, and there is no danger of dropping the chimney or spilling of oil. After the lamps are once filled, a small crooked handle, which is furnished with each post, is all that is required to equip the lamp-lighter for his evening journey to light the streets for one month. All that is required is to draw the lamp down, trim, and light it; a slight push upward replaces it, when it remains in the proper position.

This lamp has been manufactured and sold extensively for the past two years, and we are informed that it is meeting with great favor in the New England States. It has been patented in the United States and in Canada. It was awarded a silver medal at New England Fair, 1878. For cities, towns, suburban villages, and private use, and for other purposes where outdoor lighting is required, it fills a great want.

Further information may be obtained by addressing the inventor, Mr. Geo. D. Burton, New Ipswich, N. H.

ENGINEERING INVENTIONS.

Mr. William H. Weeks, of Dartmouth, Nova Scotia, Canada, has patented a device for the safe and economical burning of liquid hydrocarbons under boilers, evaporators, etc., whereby the combustion is made perfect and the control over the flame absolute.

Mr. Orlando S. Emerson, of Elkhart, Ind., has patented improvements in steam valves. These improvements relate to puppet valves which have heretofore been constructed with an adjustable lip, fitted for movement by a screw ring to adjust the lip, and held in place by screw pins entering notches in the ring. In such valves the screw pins become loose or are jarred off, so that the adjustment is unreliable. The object of this invention is to avoid these difficulties. The invention consists in a spring pin used in place of a screw for retaining the adjustable lip in place.

An improved egg beater has been patented by Mr. George A. Schmidt, of New York city. The object of this invention is to provide an effective and durable device designed especially for use by confectioners, bakers, hotels, etc., when a large number of eggs are to be beaten at a time.

A machine for grinding mower and reaper knives has been patented by Mr. Charles Askew, of Madison, Wis. The invention consists in a novel rest and carrier for the sickle bar and combination and arrangement thereof with relation to the grindstone, whereby provision is made for adjusting the sickle bar to the grinding surface.

Messrs. Leonard A. Cooper and Oliver F. Bostwick, of Atchison, Kan., have patented a combined listing plow and seed planter, so constructed as to open the ridge or clear a space for the row of hills, open a furrow to receive the seed, drop the seed, cover the seed, and roll down the soil. It is simple and readily adjusted and controlled.

An improved injector and condenser has been patented by Mr. Gaspare Mazza, of Turin, Italy. The invention consists in combining a boiler pipe, cones, and connected eccentrics having different throws with a feed water pipe and a steam inlet pipe having a cock.

An improved steam engine governor has been patented by Mr. Walter E. Crane, of Alma City, Minn. The object of this invention is to dispense with all devices depending on centrifugal action or the force of gravity for their operation in the regulation of the speed of steam engines or other motors. The invention consists in a governor wherein the straight line movement for regulation of speed is obtained by the variations in speed between mechanism operated by the engine and mechanism moved by a separate motor at a regulated speed.

Mr. Alexander C. Lewis, of Fayetteville, Ark., has patented an improved rotary engine of the class in which a rotary valve is employed. The novelty consists in a combination of parts which cannot be clearly described without engravings.