

[For the Scientific American.]

A CHAPTER ON COCKROACHES.

BY JOHN R. GORDON.

There is a tribe of very disagreeable little individuals of a class of insects belonging to the order *Orthoptera*, to which is given the appellation cockroaches. These abominable creatures abound in the West Indies. They are of the tribe called *Blatta*. Several species are found, the most common, however, being the *Blatta gigantea*, and *B. Americana*. The *B. gigantea* is termed by the natives, the drummer cockroach; and the *B. Americana*, the common cockroach. The former makes a most remarkable noise when excluded from light. This noise is similar to that caused by a person rapping on any sonorous object with the fingers, hence its cognomen of drummer.

The drummer is considerably larger than the common cockroach, it being about two inches, while the latter is only about an inch and a half in length. The former has a skin of a dusky brown color, sometimes inclining to an olive tinge, and the latter is of a chestnut color, inclining to red. The antennæ of the common cockroach are more delicately formed than those of the drummer. Both of these species exclude themselves from the light when they can, and prefer the abode of man for the place of their habitation, hence they are found secreted behind all objects of household virtue which are not frequently removed. When roused they emit a very disagreeable odor, not unlike that arising from asafetida. They are predaceous, and are very destructive, eating almost anything that comes in their way—apparel, provender, all household articles that can be gnawed by their delicate mouths; and even men's fingers and toes do they nibble. Like most others, they have wings, which are mostly employed at night. They may be heard whizzing over one's head in their nocturnal gyrations, particularly during the rainy seasons, which seem to be propitious to their peregrinations.

The earth is not their element, for there are too many enemies to be met with there, principally in the poultry yard. Woe betide the poor roach who setteth foot within the domains of Chanticleer, he is not sooner there than he is gulped down by some greedy denizen of the hen coop.

Cockroaches increase very rapidly, and gather in such clusters that they necessitate frequent cleaning of the habitations of mankind; and it is a source of amusement to the native children at such times to get hold of some fowl, tie a string to its foot by which to hold it, and set it to catch these insects.

Besides being offensive in their predaceousness, they are very objectionable on account of the filth which they deposit in their track. The cockroach brings forth its young by eggs, which it deposits all about. The eggs are inclosed in a horny case, which is generally placed within the angles of any regular-sided object. The case is attached by means of a sort of glutinous matter, which holds it so firmly that if an attempt be made to detach it, the case will be frequently broken before it can be separated from the place where it is fastened.

One night I heard a peculiar grating noise in my bed room. Desirous to ascertain the cause, I jumped up and struck a light, when, to my disgust, I saw one of these creatures gnawing away at my sperm candle. He had actually climbed up the side of a highly polished china candlestick, and was as busy as could be satisfying his appetite. Selecting a good stout pin and a piece of pine board, I killed and pinned him to the board, laid him aside till next day, and took his portrait, which I added to my collection of others I had taken.

I have occasionally heard strangers remark, when rising of a morning, that they could not think what was the matter with the tips of their fingers, they were so sore, little imagining that these greedy things were the sole cause, and being informed, they would hardly believe the assertion that the cockroaches had done the mischief.

Various means are adopted for destroying cockroaches, but there are none so effective as the broom, fire, and fowls for exterminating them.

The common house spider is great enemy to the roach, but it very often finds its match when it meets in combat with some tough-skinned *Blatta Americana*. Although the *B. gigantea* is so much larger than the former, it is not so formidable, as its skin is less hard, and therefore more liable to injury.

I have often stood and watched a combat between a cockroach and a spider. Upon a certain occasion one of these flew right into the web of a huge spider. He watched it for a while, then advanced and placed a foot upon it. The roach immediately turned round and charged at him, turning him over; but, by so doing, it became entangled in the spider's web, which the spider perceiving, made haste to take advantage of the opportunity, and, springing upon the inverted roach, sank his fangs into its stomach. After having accomplished this feat, he bore it off to the center of the web, there to terminate its sufferings by sucking it to death.

Beneath a spider's web may frequently be seen the skins of some unfortunates who have perished in this way.

It would be thought that the formidable sting of the *Apis mellifica*, or honey bee, would deter the cockroach from going into its hive, but by some means or other these bugs manage to gain admission to a place to which not many other insects have entrance. Often, in cleaning my hives, have I discovered these demon-like creatures secreted therein, although not in great numbers, for they would then be detected and expelled by the revengeful bees.

I suppose that the honey was the cause of their congregating in the hives. I did not much like these incursions on my bees, and being informed that corn meal saturated with laudanum placed where the roaches could eat it, would destroy

them. I tried it, but it was useless. To introduce a fowl to the realms of the queen bee would be disastrous, so I had no other alternative but to sweep them out and exterminate them.

It is impossible to keep cockroaches out of any piece of furniture, unless it be made very tight. Book cases, chiffonniers, escritoirs are all infested. Even pianos are not free from their inroads. The backs of upright pianos are generally covered with a light quality of merino, or something of the kind, when purchased. They eat through this and enter the instrument, doing it considerable injury. I had recourse to insect powder, but found it useless, and after trying various dodges to put a stop to the incursions of these voracious things, I bought some wire gauze and placed it on the back of my piano, and likewise beneath the silk of the front; I also made a pedal box to prevent entrance through the apertures below the pedals.

The name of the drummer roach in the Creole patois is, Tucko-tucko, applied to it as characteristic of the noise which it makes. The common roach is termed, Cacka-lacka. Whence this term, I know not.

The noise occasioned by the drummer cockroach is considered by persons who incline to superstition, as token of the death of some acquaintance of those who happen to hear it, and it is held in almost the same awe as is the insect known in northern countries as the death watch—*Atropis pulsatorius*.

The cockroach has ascribed to it by the negroes, medicinal qualities; and, indeed, if an asthmatic person should turn up his nose on finding one of these disgusting creatures in his cup of tea or coffee, he is very coolly informed by his servant who is standing awaiting his call that it will no harm, it is good for the asthma.

The Croton, or water bugs, which resort to American kitchens, bear a strong resemblance to a small roach called the Spanish cockroach in the West Indies. It is of the same size, shape, and color. These are not so numerous as the *Blatta Americana*, nor are they so destructive.

For the Scientific American.
BALLOON VARNISHES.

BY JOHN WISE.

There are two ways of preparing linseed oil for balloon varnish. The quick and the slow process. The first is by heating the oil up to a temperature at which it will ignite spontaneously. In order to secure it from burning up it must be heated in an iron or copper vessel, with a lid that can be closed when it begins to emit dense white vapor. If it is desired to have it fast drying, from four to six ounces of litharge per gallon should be boiled in it. This process takes about one hour, and renders the oil thick and tough, giving a good body and glossy surface to the cloth.

The slow process is to boil the oil from twelve to twenty hours, keeping it at a temperature of about 200° Fah., incorporating with it while boiling half an ounce of sulphate of manganese to each gallon of oil. These varnishes should be applied to the cloth tolerably hot.

There are other formulæ, such as the incorporation with the oil of some bird-lime, a gelatinous substance made from the inner bark of the white holly. Gum elastic is also used to give the oil body and elasticity. When I desire to make a balloon extraordinarily close, I give it a first coating of compound varnish, made of equal parts of white glue and glycerin.

I filled a balloon last October on the "Union Fair Ground," of Orrville, Ohio, with pure hydrogen, on Wednesday, and ascended with it on Friday following, after it had stood rain and wind, and sailed over a hundred miles with it. This balloon was varnished with the slow process oil, over a first slight dressing of glycerin and glue.

Coal gas, or technically, carbureted hydrogen, does not *exosmose* from the balloon nearly so fast as pure hydrogen. By coating a balloon heavily with either of the above varnishes, it will retain its buoyancy with a loss of about one per cent in twenty-four hours, provided it has a capacity of 30,000 cubic feet. When larger, the *exosmose* is comparatively less; when smaller, comparatively greater, owing, of course, to the disparity of cubic contents to surface.

[For the Scientific American.]

SCIENTIFIC PERIODICALS FOUND IN NEW YORK LIBRARIES.

BY H. CARRINGTON BOLTON.

The following list of the principal scientific journals found in the libraries of this city was compiled for private use, but may prove of value to the readers of the *SCIENTIFIC AMERICAN*. It by no means pretends to be a complete catalogue of periodicals in all our libraries, but comprises those most useful for reference in the five libraries mentioned, especially journals relating to chemistry, physics, technology, and natural history.

The abbreviations used are as follows:

- A.—Astor Library.
- L.—Lyceum of Natural History.
- M.—Mercantile Library.
- S.—Society Library.
- SM.—School of Mines, Columbia College.

When a letter is inclosed in brackets, the sets of journals in the library indicated are not complete.

AMERICAN AND BRITISH.

American Journal of Science (Silliman). 1818-70.....A. SM. [L.] S. M.
Annals of Electricity, Magnetism, etc. (Sturgeon 1836-43. A.)
Annals and Magazine of Natural History (See Magazine item). 1838-70.....A.
Annals of N. Y. Lyceum of Natural History. 1824-70.....A. L. SM.
Annals of Philosophy. 1813-26.....A.
Annals of Scientific Discovery. 1850-70.....SM.

Chemical Gazette. 1842-59.....SM.
Chemical News. 1860-70.....SM. A.
Dublin Quarterly Journal of Science. 1851-70.....A.
Edinburgh Journal of Science (Brewster). 1824-32.....A.
Edinburgh Philosophical Journal. 1819-70.....A.
Geological Magazine. 1864-70.....A. [SM.]
Journal of Chemical Society (London). 1848-70.....SM.
Journal of the Franklin Institute. 1823-70.....A. [S.] [SM.] [M.]
Journal of Natural Philosophy (Nicholson). 1797-1813.....A.
Journal of Philadelphia Academy of Sciences. 1847-70.....A.
Journal of the Photographic Society. 1854-70.....A.
Journal of Microscopical Science. 1853-70.....A.
London Journal of Arts and Sciences. 1820-70.....A.
Magazine of Natural History (See Annals item). 1829-33.....A.
Mechanics' Magazine. 1823-70.....A.
Mining Magazine (N. Y.). 1853-58.....A. SM.
Mining and Smelting Magazine. 1862-70.....A. SM.
Patent Specifications of Great Britain. 1632-1870.....A.
Patent Reports, U. S.A.
Pharmaceutical Journal and Transactions (Bell). 1841-70. A.
Philosophical Magazine. 1793-1870.....A. [SM.]
Philosophical Transactions. 1665-1870.....A. S.
Proceedings of Chemical Society (See Journal item). 1841-48.....SM.
Proceedings of Philadelphia Academy of Sciences. 1841-70. A.
Quarterly Journal of Science (Brandes). 1816-31.....A.
Records of General Science (Thomson). 1835-36.....M.
Report of the British Association for Advancement of Science. 1831-70.....A. SM.
Report of the American Association for Advancement of Science. 1848-70.....A. SM.
Repertory of Arts and Manufactures. 1794-1831.....A. S.
Repertory of Patent Inventions. 1835-70.....A. S.
SCIENTIFIC AMERICAN. 1845-70.....A. SM.
Yearbook of Facts. 1839-70.....SM.

FRENCH.

Annales des Arts et Manufactures. 1800-17.....A.
Annales de Chimie (et de Physique). 1789-1870.....A. [S.] SM. [M.]
Annales des Mines (Sec. Journal item). 1816-70.....A. [SM.]
Annales du Musée d'Histoire Naturelle. 1802-30.....A.
Annales du Génie Civil.....A. [SM.]
Annales des Sciences Naturelles. 1834-70.....A.
Annuaire de Chimie (Millon et Reiset). 1845-51.....A.
Archives des Découvertes. 1808-38.....A. S.
Bulletin du Musée de l'Industrie de Bruxelles. 1842.....A.
Bulletin de l'Industrie Minière. 1855-70.....SM.
Bulletin de la Société Chimique de Paris. 1864-70.....A. [SM.]
Bulletin de la Société Géologique de France. 1830-70.....A. [SM.]
Bulletin de la Société d'Encouragement. 1802-70.....A.
Bulletin Universelle, 2ème Section, Géologie. 1821-31.....A.
Compte Rendu de l'Académie des Sciences. 1835-70.....A. [SM.]
Cosmos (Moligno). 1852-70.....A.
Journal de l'Ecole Polytechnique. 1794-1870.....A.
Journal des Mines (See Annales item). 1797-1815.....A.
Journal de Physique (Rozier). 1771-1822.....A. L.
Journal de Pharmacie. 1815-1870.....A.
Mémoires de l'Académie des Sciences de Paris. 1666-1870. A.
Repertoire de Chimie par. 1820-63.....A.
Repertoire de Chimie Appliquée. 1820-63.....A.
Revue des Cours Scientifiques. 1863-70.....A. [SM.]
Revue Universelle des Mines. 1857-70.....SM.
Technologiste. 1840-70.....A.

GERMAN.

Allgemeines Journal der Chemie (Scherer). 1798-1803.....A.
Allgemeines Journal der Chemie (Gehlen). 1803-10.....A.
Allgemeine Nordische Annalen der Chemie (St. P.) 1819-23.....A.
Annalen der Chemie und Pharmacie. 1822-70.....A. SM.
Annalen der Physik (Gilbert). 1789-1833.....A. SM.
Annalen der Physik (Poggendorff). 1824-70.....A. SM.
Archiv für Microscopische Anatomie (Schultze). 1855-70. SM.
Archiv für Naturgeschichte (Erichson). 1835-70.....A.
Archiv für Berg- und Hüttenwesen (Karsten). 1818-31.....A. SM.
Archiv für Mineralogie, etc. (Karsten). 1829-55.....A.
Archiv für gesammten Naturwissenschaften. 1824.....A.
Bergwerk's Freunde. 1839-56.....SM.
Berg- und Hüttenmännische Zeitung (Hartmann). 1842-70. SM.
Bericht über Fortschritte Eisenhütten-Technik. 1864-70. SM.
Bericht Deutsche Chem. Gesell. Berlin. 1863-70.....SM.
Bericht Mittheil. Naturw. (Haidinger). 1846-51.....SM.
Chemisch-Technisch Mittheilungen (Elsner). 1846-70.....SM.
Fortschritte der Physik. 1845-58.....A.
Gesellschaft Naturforsch. Freunde zu Berlin; Beschäftigungen, Schriften, Magazin, Verhandl. der. 1775-1819. A.
Jahrbuch für Berg- und Hüttenwesen (Moll). 1797-1808.....A.
Jahresbericht der Chemie (Berzelius). 1822-51.....SM. A.
Jahresbericht der Chemie (Kopp und Will). 1847-70.....SM. A.
Jahresbericht der Chem. Technologie (Wagner). 1855-70. A. SM.
Jahresbericht der Agricult. Chemie. 1858-70.....A.
Jahrbuch der K. K. Geolog. Reichsanstalt Wien. 1857-67. SM.
Jahrbuch f. Mineralogie und Geologie Leonhard. 1828-70. A. [SM.]
Journal der Physik (Gren). 1790-98.....SM. A.
Journal für Chemie und Physik (Schweigger). 1811-27.....A.
Journal für Techn. und Ökonom. Chemie. 1828-33.....A.
Journal für prakt. Chemie (Erdmann). 1834-70.....A. [SM.]
Keferstein's Deutschland (Geologie). 1821-31.....A.
Kalender für Berg- und Hüttenmänner. 1827-70.....SM.
Magazin f. Bergbaukunde (Lempe). 1785-96.....A.
Oestreich. Zeitschrift f. Berg. H. und Salinenw. 1854-70.....SM.
Oryktographie von Sachsen. 1828-48.....SM.
Pharmaceut. und Chem. Centralblatt. 1830-70.....A. SM.
Polytechnisches Centralblatt. 1835-70.....A. [SM.]
Polytechnisches Journal (Dingler). 1820-70.....A. [M.] SM.
Repertorium der Physik (Dove und Moser). 1837-49.....A.
Taschenbuch f. gesammte Mineralogie (Leonhard). 1807-1824.....A.
Verhandlung. Mineralog. Gesellschaft (St. Petersburg.) 1842.....A.
Zeitschrift f. analyt. Chemie (Fresenius). 1862-70.....A. SM.
Zeitschrift f. Chemie. 1853-70.....[SM.]
Zeitschrift f. Physik und Mathem. (Baumgartner). 1826.....A.
Zeitschrift d. Verein. Deutsch. Ingenieure.....[SM.]
Zeitschrift f. Mineralogie (Leonhard). 1824-29.....A.

Inventions Patented in England by Americans.

[Compiled from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

1,022.—MEANS FOR BINDING MUSIC, PAMPHLETS, ETC.—A. M. Crowhurst Boston, Mass. April 13, 1870.
1,163.—STOVES OR FURNACES.—M. C. Hull, New York city. April 21, 1870.
1,170.—MOWING AND REAPING MACHINES.—R. Eickemeyer, Yonkers, N. Y. April 23, 1870.
1,219.—PROCESS FOR CLEANING WOOL AND HAIR.—C. F. A. Simonin Philadelphia, Pa., and E. W. Coffin, Glendale, N. J. April 27, 1870.
1,226.—APPARATUS FOR STARTING TREADLE MOTIONS, APPLICABLE TO SEWING MACHINES, ETC.—O. H. Needham and C. N. Brainerd, New York city. April 28, 1870.
1,225.—MECHANISM FOR TRANSMITTING MOTION.—R. B. Hann and J. B. Holden, Jersey City, N. J. April 28, 1870.
1,227.—PIPE WRENCH.—D. C. Stillson, Charlestown, Mass. April 28, 1870.
1,252.—STOP COCK.—J. C. Chapman, Cambridgeport, Mass. May 2, 1870.
1,270.—TRACTION FOR LOCOMOTIVE ENGINES.—J. K. Lake, Chicago, Ill. May 3, 1870.

Keables' Improved Sewing Machine.

Of all the labor-saving machines produced during the last half century, none has worked a greater revolution in the arts than the sewing machine. Its influence is directly or indirectly felt in almost every branch of the mechanic arts, and it has opened up new avenues for the employment of millions of operatives.

We never witness the operation of one of these useful little workers, without a feeling of admiration and pleasure, and we confess to a real delight in personally putting them through their various movements, and watching them as they rain stitches upon the texture they are designed to sew.

It is, therefore, a pleasant task we perform in presenting to our readers an illustrated description of a new member of this now large family of labor savers. The machine under consideration is a single thread machine, its principal and most important feature being the looper hook, which is constructed in a novel manner.

The needle bar has a parallel vertical motion, imparted to it by a crank and slotted cross-head, the crank wheel shaft being driven by a gear and pinion. The feed motion is obtained by a small eccentric on the crank wheel shaft connected with a rock-shaft underneath the table of the machine by a connecting rod.

The looper hook upon which the interest of the invention chiefly centers is shown in detail at the left of the engraving, and also at A, in the principal engraving, in which latter it is shown in conjunction with the point of the needle.

The swinging arm, A, in the detail which carries the hook, B, has a slot in which a part of the hook commonly rigidly connected to the arm, is pivoted at C, and a spring, D, is introduced between the end of the hook projecting rearward of the pivot and the bottom of the slot, to support the said rear end at the required point to maintain the point of the hook in the true position, and to yield and allow the working thread to draw the point upward, at the time the loop is escaping, and at the moment the point moves back to the needle to facilitate and insure the escape of the loop.

Any suitable stop may be provided to prevent the spring from forcing the point of the hook down too low.

The spring may be attached in a different way, for instance, it may be attached to the arm at the bottom of the slot, and connected to the hook at the front of the pivot, so as to draw it downward thereat, or a spiral spring may be substituted for it and placed either side of the pivot, in the one case forcing upward, and in the other pulling downward. The arrangement first described is however preferred.

It is claimed that the following advantages have been demonstrated for this form of construction by ample tests, and that those who have tried the machine are unanimous in their indorsement of the value of the improvement. We will add our own opinion, based on a personal trial of the machine, that the advantages claimed are secured.

The hook being elastic it is less liable than others to break thread, allows the drawing up of the stitch more regularly and perfectly, obviates the possibility of catching the loop a second time, and therefore prevents tangling or leaving loose open loops on the under side of the seam. In a word it surmounts difficulties that have hitherto been considered insurmountable, and enables it to do perfect sewing with any kind of thread or any description of goods. It is easily managed and adjusted, running from one to many thicknesses of goods, or over any irregularity of seams or otherwise, perfectly without change of tension.

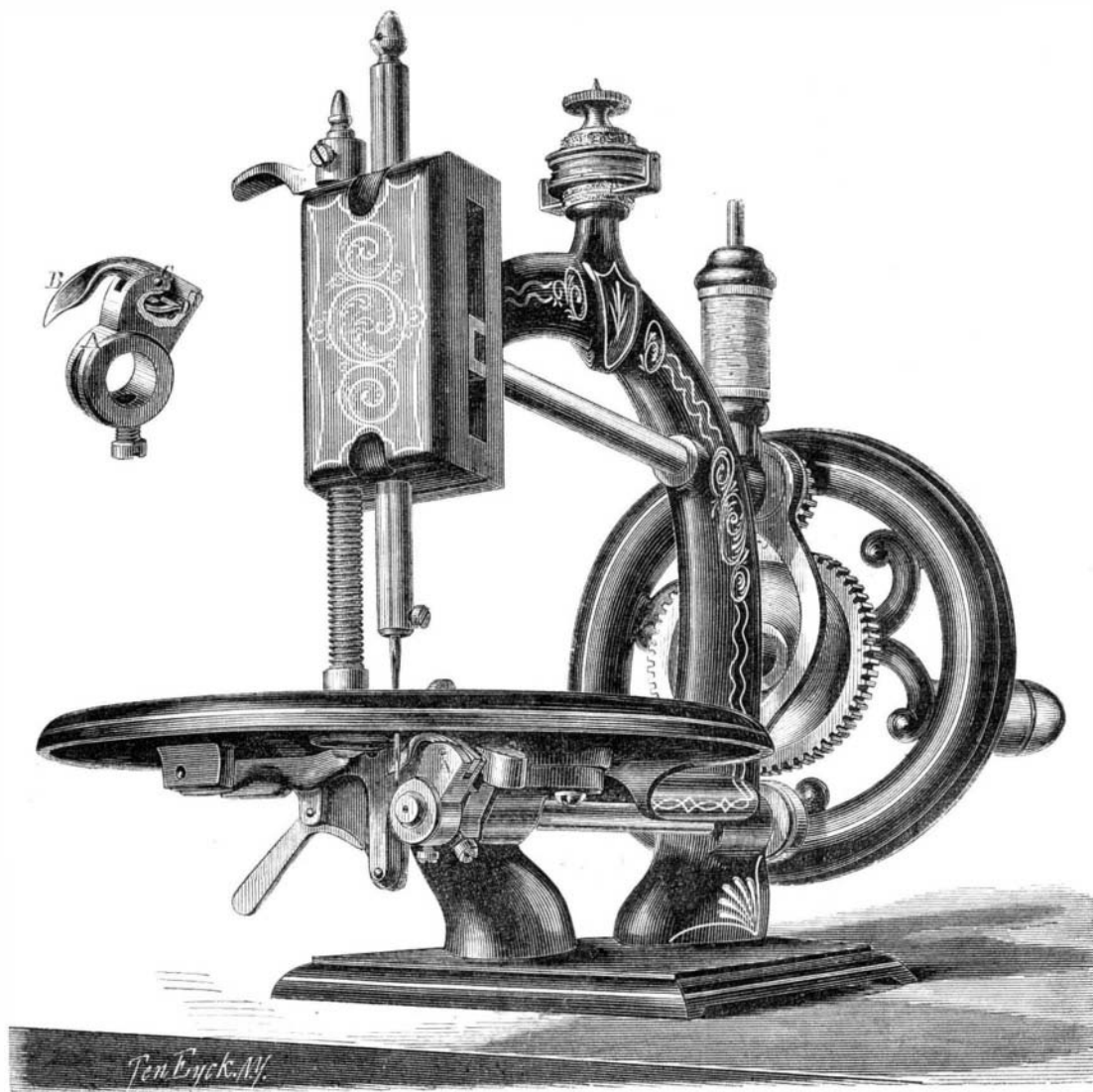
Patented, through the Scientific American Patent Agency, May 17th, 1870, by Michael Ash Keables, of Brattleboro', Vt. For further information address Keables, Osborn & Co., Guelph, Ontario county, Canada West.

Improved Wagon Wheel.

Among some of the most interesting and practical inven-

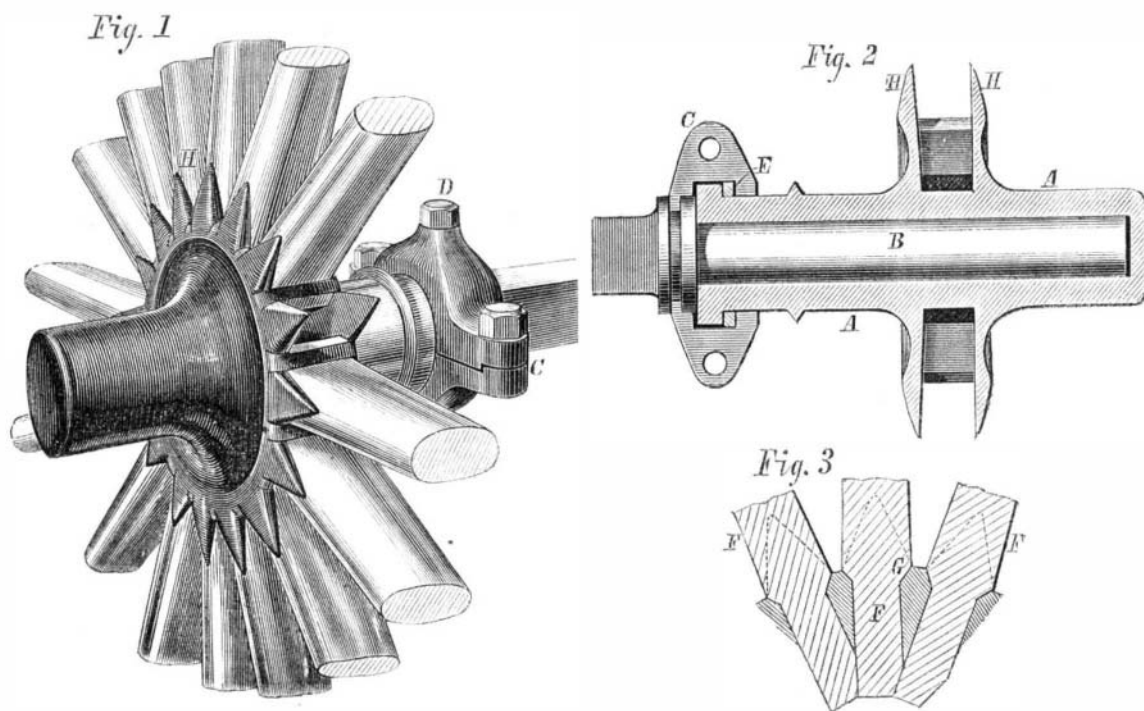
tions we have of late been called upon to illustrate and describe are those pertaining to draft vehicles. We this week present still another, which we regard as combining the essentials of a good wheel in a high degree. It is light, strong, and graceful in appearance, while it also provides for convenient and constant lubrication, and the exclusion of dust from the journals of the axle.

The improved construction is confined principally to the central part of the wheel, and Fig. 1 is a perspective view of so much of a wheel as is necessary for purposes of description; Fig. 2 being a sectional view of the same, and Fig. 3 a detail, showing more particularly the method of inserting the spokes.

**KEABLES, OSBORN & CO'S SEWING MACHINE.**

The hub, A, is of metal, and has the form shown in Figs. 1 and 2. The journal of the axle, B, Fig. 2, has two collars formed at the part where it joins the body of the axle, and the hub, A, has also a collar formed upon its inner end. A clutch C, Figs. 1 and 2, clasps both the collar on the hub and one of the collars on the axle, thus preventing the wheel from slipping off. An oil cup, D, formed in the top of this clutch, and provided with a suitable plug, serves as a reservoir for lubricators, securing not only economy, but convenience in

known substance within the popular reach, is clear, white, and burns with perfect steadiness. In these regards nothing better could be devised, especially when the flame is properly shaded, and the light cast only on the work. But the introduction of kerosene has brought in a history of fearful destruction to life. Much of this has been due to most reckless carelessness, or wicked cupidity. Manufacturers, unrestrained by conscience or law, sell what they know to be explosive material of the worst kind, in place of what is harm-

**ADAMS' IMPROVED CARRIAGE WHEEL.**

oiling. The spokes are inserted, as shown in Figs. 1 and 3, the tenons being shown at F, Fig. 3. The shoulders, G, are beveled, as shown, so that the spoke has two points of support where it meets the hub, and one at the bottom of the mortise. They rest against each other at the bottom, as shown, and are supported latterly by radial projections, H, Figs. 1 and 2, which branch from the body of the hub, and which give great

lateral strength to the wheel when subjected to side strains. The hub can be made very light for light carriages, and when plated or handsomely painted, is quite ornamental in appearance. The invention is covered by two patents, obtained, through the Scientific American Patent Agency, by Levi Adams. They are respectively dated February 18 and March 31, 1868. For further information address J. Adams & Sons, manufacturers of wagons, carts, and wheels, Amherst, Mass.

Wanted--Better Artificial Lights.

Civilization, says the *Christian Union*, often brings in necessities, which art is backward in properly providing for. A

good artificial light for common use is still to be sought, the myriad advertisements of eureka which promise to perfectly replace the sun in its absence to the contrary notwithstanding. A very large share of work, reading, studying, and writing, must be done after the sun has set, and the demand, on sanitary grounds, is for a light that will be bright, that will not flicker, that will not emit nauseous odors, and, finally, that will not keep the nerves in a continual state of tension for fear there will be an explosion and a conflagration, to say nothing of the direful results when such an accident does happen. In brightness of indoor illumination we have greatly advanced on our forefathers. For cities, gas has long replaced candles, whale oil, and other materials, which now have but a sickly burning to our eyes, and more recently petroleum has been joyfully welcomed as a blessing where gas is not available, and travels all over the world to cheer dark places with its unrivaled brilliance.

For a general lighting up of buildings coal gas has much to commend it; for closer use, where the eyes are intently fixed upon any book or work, it is about as bad for these organs as anything that could be devised. The inevitable flickering, except where it is used in a very expensive manner, strains the nerves to the ruin of the eyes. As contrasted with gas, for those who have to task their eyes severely, kerosene is pre-eminently superior. It has a illuminating power beyond any

known substance within the popular reach, is clear, white, and burns with perfect steadiness. In these regards nothing better could be devised, especially when the flame is properly shaded, and the light cast only on the work. But the introduction of kerosene has brought in a history of fearful destruction to life. Much of this has been due to most reckless carelessness, or wicked cupidity. Manufacturers, unrestrained by conscience or law, sell what they know to be explosive material of the worst kind, in place of what is harmless in this respect. People are so stupid or ignorant that they will fill burning lamps, or throw kerosene into the kitchen fire. Perhaps the number of such is overrated. Kerosene is in use everywhere through our vast population. Every accident by it, from Maine to Texas, is telegraphed by the Associated Press, and, perhaps, if comparisons were made, it would be found that disasters through its careless use are not so out of proportion to disasters from many other articles in common use as would seem.

For illumination and for the safety of the eyesight it is by far the best material within reach of the public; and it is worth a great deal of pains to learn how to use it with safety. The glass lamp needs care to prevent breakage when lit, though in most cases the flame will be harmlessly extinguished by a fall; on the other hand, a metal lamp is more likely to heat, and raise gases from the surface of the oil.

The student's lamp is very near the ideal, only it requires more careful cleaning than most domestics bestow, and should be generally under the immediate care of master or mistress. Some gentlemen consider it a nuisance to have anything to do with a lamp, but we like to see such enthusiasm for a good light as will lead a person to keep his lamp under his own charge, just as he does any other appurtenances of his study.