

Improved King Bolt for Carriages.

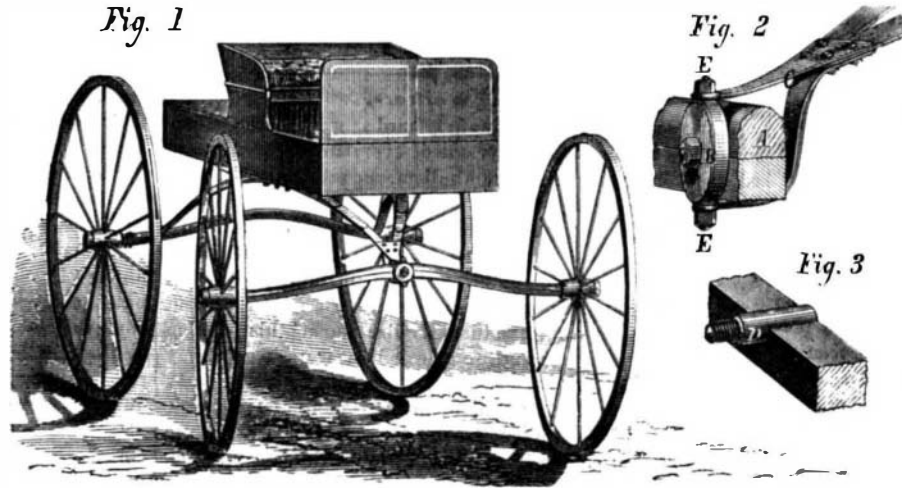
Our engraving shows an improved king bolt for carriages. By its use, the necessity for a fifth wheel, and many other attachments, is entirely obviated.

Fig. 1 is a perspective view of a buggy wagon with this improvement attached. Fig. 2 is a vertical cross section through the middle of the axle and the bolt; and Fig. 3 is a detail rear view of the middle of the axle.

In Fig. 2 the improvement is shown most distinctly. The body of the wagon rests upon two elliptic springs, placed lengthwise under the box, their front ends being brought together and joined, as shown at C, Fig. 2, forming what might be called a spring perch.

A bent piece is attached to the joined ends of the springs, and brought under the axle as shown. The bifurcations of the perch thus formed are pivoted to a plate, B, as shown at E. The plate, B, is also pivoted to the axle, A, as shown in Figs. 2 and 3. This not only allows of the horizontal radial motion of the axle in turning or cramping the wagon, but also permits a vertical motion of the axle on the pivot, D.

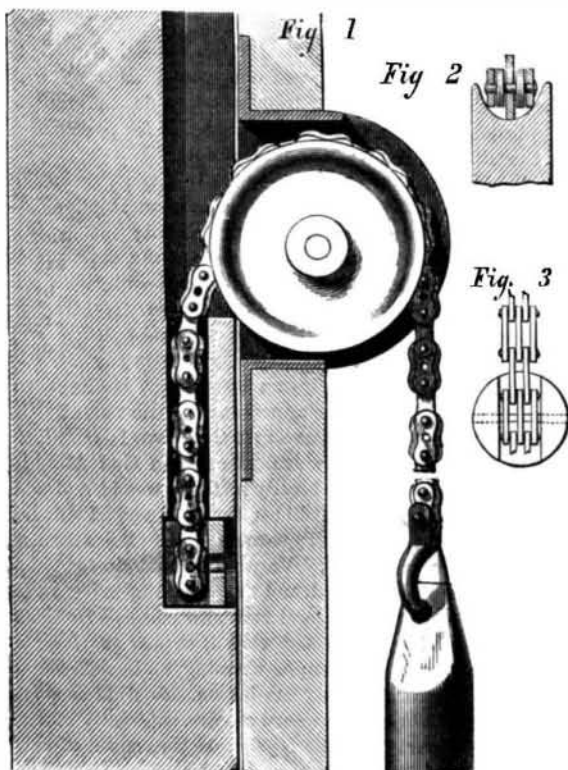
This improvement was patented through the Scientific American Patent Agency, March 29, 1870, by William Clark. Address, for further information, Clark Pivot King Bolt Co., Johnsville, N. Y.

**CLARK'S KING BOLT FOR CARRIAGES.****MAGRATH'S CHAIN FOR HANGING SASHES.**

Every housekeeper knows the trouble attending the use of hemp cord for suspending weights of sashes. A chain, as a substitute for the ordinary cord, has recently been patented, which is designed to obviate the trouble arising from the constant breaking of the latter. The chain can be applied to any window, without change in any of the parts, it being so made as to run smoothly on the ordinary grooved pulley. For heavy windows it is specially applicable.

Fig. 1 is a view of a sash with chain and weight attached. The peculiar construction of the chain is shown in the detailed engravings, Figs. 2 and 3. As will be seen, every alternate link is composed of three blanks, punched from sheet metal. Each blank has a hole through the center, as well as at the extremities. The object of this is to enable the chain to be cut off at any required length, and be readily fastened, at one end to the sash and at the other end to the weight, by the insertion of a pin or rivet.

The triple blank links are connected by links made of two blanks, as shown. The middle blank of each triple link is made wider than the two outside ones, as shown in Fig. 3. This enables the link to adapt itself to the curvature of the groove in the pulley, as shown.



In attaching this chain to the sash, the latter is grooved or recessed along the edge, as shown in Fig. 1, so as to receive the chain. At the lower end of the groove is formed a vertical hole, which extends from the open groove down to a hole bored in the edge of the sash at right angles thereto. A metal plug or stop, of a size to fit the last named hole, is inserted therein. This stop is recessed on its face to receive the links, as shown in Fig. 2. The chain is secured to the stop by a rivet or pin, as shown in Fig. 1. The weight is attached to the end of the chain by a hook.

Patented, March 21, 1871, by Michael Magrath, whom address for further information, 74 Irving Place, N. Y.

Steam Nut Crackers.

In the manufacture of palm oil, it has been very desirable to get rid of the shells which envelop the kernels in a speedy and effective manner. An English inventor proposes to do this by an apparatus of his devising, as follows:

The nuts are raised up to the second floor of the building by means of hoisting apparatus, and are fed into a hopper, which delivers them into a shake or spout, the bottom of

which is perforated to allow parts of the husks or other foreign matters to escape. The spout delivers the nuts into the upper end of a revolving perforated cylinder, which is placed in a slanting position. The nuts in passing down this cylinder are agitated to remove portions of the husks and other foreign matters, which are carried off by the shoot. The nuts drop from the end of the cylinder into a hopper, which delivers them to the machinery by which they are broken.

Subterranean Electrical Disturbances.

A few minutes before and after the earthquakes of the 17th March last, says *Nature*, powerful positive electrical currents were rushing towards England through the two Anglo-American telegraph cables, which are broken near Trinity Bay, Newfoundland. Mr. C. F. Varley, C.E., who informed us of the fact, broaches the novel speculation that some earthquakes may be due to subterranean lightning. He

imagines that as the hot center of the earth is approached, a layer of hot dried rock may be found which is an insulator, while the red hot mass lower down is a conductor. If this conjecture be true—and there is plausibility in it—then the world itself is an enormous Leyden jar, which only requires charging to a very moderate degree to be equal to the production of terrific explosive discharges.

The French Atlantic cable was disturbed at the same time, and so were many of the English land lines, but the only observations as to the direction of the current were made by means of the Anglo-American telegraph cables.

A number of Mr. Varley's charts about earth currents were published in the Government Blue Book of 1859-60, showing that the direction of these currents across England was in a very notable degree determined by the contour of the coast, and that the same

auroral discharges would often produce currents at right angles to each other in direction, in different parts of Britain.

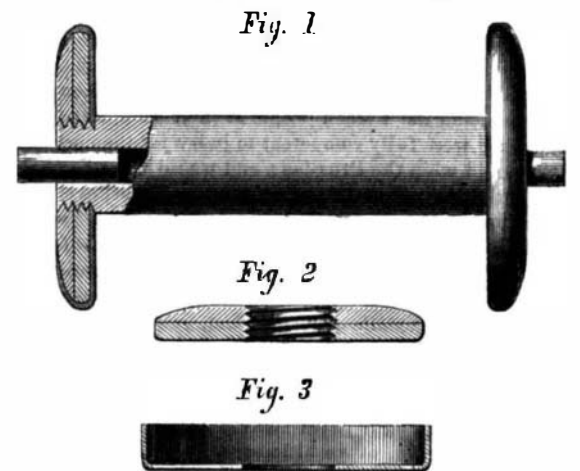
Necessary Rules for Sleep.

There is no fact more clearly established in the physiology of man than this, that the brain expends its energies and itself during the hours of wakefulness, and that these are recuperated during sleep. If the recuperation does not equal the expenditure, the brain withers—this is insanity. Thus it is that, in early English history, persons who were condemned to death by being prevented from sleeping, always died raving maniacs; thus it is also that those who are starved to death become insane, the brain is not nourished and they cannot sleep.

The practical inferences are three: 1st. Those who think most, who do the most brain work, require the most sleep. 2d. The time "saved" from necessary sleep is infallibly destructive to mind, body, and estate. 3d. Give yourself, your children, your servants, give all that are under you, the fullest amount of sleep they will take, by compelling them to go to bed at some regular, early hour, and to rise in the morning the moment they wake; and within a fortnight, Nature, with almost the regularity of the rising sun, will unloose the bonds of sleep the moment enough repose has been secured for the wants of the system. This is the only safe and efficient rule; and as to the question how much sleep any one requires, each must be a rule for himself—great Nature will never fail to write it out to the observer under the regulation just given.

METALLIC LINED SPOOL HEAD.

The object of this improvement is to overcome the difficulties experienced in the use of the ordinary wood spool heads, both for cotton yarn, and woolen roving on jack spools. The wood heads, after being used a short time, become rough on the edge, and this roughness catches and breaks the yarn, causing much unnecessary stopping of machinery. On jack

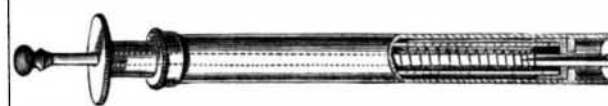


spools, much waste is made by the outside strands of the roving adhering to the surface of the head, and it is frequently the case that the strands next to the head have to be run off, and cannot be spun, making considerable waste which would be saved by the use of a smooth head, such as this improvement offers. It consists in covering the inner surface and outer edge of each head with sheet metal, which is firmly pressed on with dies, binding the two thicknesses of wood firmly together, preventing them from breaking and the edges from splintering, making a strong and durable spool, and giving at all times a perfectly smooth edge and surface for the yarn to run from, saving much of the breaking of the yarn, and enabling the machines to do more and better work. They have, we are informed, been in successful use nearly one year, by some of the first manufacturers in the country, and have given entire satisfaction. Patented May 10, 1870. All communications, either from manufacturers or spool makers, should be addressed to Stillman & Carmichel, Westly, R. I.

This machinery consists of a drum with blades or projections on its circumference. This drum revolves at a high velocity in a casing, and the shells are broken without breaking the kernels by the rapid action of the blades on the revolving drum striking the nuts. The broken shells and kernels discharged by the centrifugal force of the drum are delivered into the upper end of a perforated cylinder, which is also placed in a slanting position, so that in revolving it carries the shell and kernels to the lower end, whence they fall into a separating cistern. The small particles of shell and husk drop through the perforations of the cylinder into a discharge shoot. The cistern contains a solution of common salt and water, or any other solution the specific gravity of which is rather greater than that of water, in order that the kernels may float on the top of the solution, while the shells sink and drop on to an endless belt or creeper, which in traveling along conveys the broken shells towards and into the right hand end of the cistern, from whence they are discharged continuously by a spout. The outlet from the cistern is provided with a sliding valve, the position of which can be regulated by a lever. The lower part of the spout consists of open rods or a perforated plate, through which the solution escaping from the cistern with the broken shells is discharged on to the floor or into a suitable receptacle.

ARTIFICIAL LEECH.

This instrument is the invention of Frederick Wolff, of New York city. It consists of a lancet, or puncturing device, and a suction piston, the lancet acting independently of the



piston in making its puncture, and then both the lancet and piston being withdrawn, the body of the instrument is filled with blood. The instrument operates precisely on the general principle of first puncturing and then sucking, employed by the natural leech.

Disease and Carelessness.

There can be no doubt that carelessness is the origin of most diseases. Medical men also hold that foolish people who follow their own whims have hardly a chance of recovery when visited by serious disease. Nine tenths of the doctor's work would be done if people were only consistently prudent and cautious. Only it is so hard to be habitually cautious. On abundant occasions a man may be most elaborately prudent, and then, to his utter astonishment, he dangerously imperils his health by some startling impropriety. When he has used every imaginable pains, he is always amenable to the force of accident. There is another plausible theory, antagonistic to the one we have named, to the effect that every man has the seeds of some particular disease in his constitution, and some trifling accident will come, sooner or later, which will have for him the same effect as a match falling upon gunpowder.

Medical men explain this on theories of constitutional tendencies, or of some poison latent in the system. The fatal accident to one man is the merest accident for another. Two men while walking get well soaked by the rain. One man shakes off the water pretty much as a dog or a duck might do, and rather enjoys his shower bath than not. The other man is taken ill of inflammation of the lungs, and probably dies. The doctors cannot explain the different issues, and they would also be very much puzzled to give a satisfactory account of the phenomenon itself. They will, indeed, generally explain theories more or less plausible, and practice has been built upon theory, and theory has, no doubt, sacrificed a number of lives. Yet medicine must have its dogmatic system, and without it medicine becomes little better than empiricism.

COMMON salt is recommended for the extermination of ants.