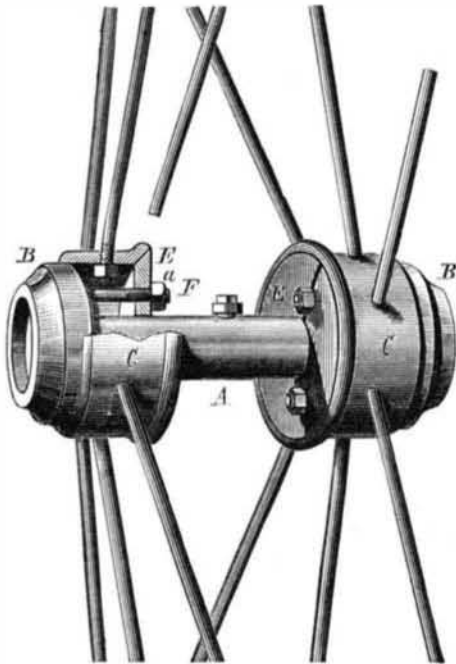


**IMPROVED VEHICLE WHEEL.**

The annexed engraving illustrates an improved metallic hub for vehicle wheels, by which the tire may be tightened quickly by the expansion or contraction of the spokes.

In the illustration, A represents the journal box that carries on end shoulders fixed rings or collars, B, along the outer circumference of which the spoke-carrying sleeves, C, are moved forward and back. One set of spokes is attached by screw nuts to the sleeve at one end of the box, while the alternating set of spokes is connected to the sleeve at the other end. The inner ends of the sleeves, C, are supported on disks, E, that form a bevel joint therewith, the inner circumference of the disks binding tightly on the box, A. The inner and outer disks retain the sleeves, C, tightly in posi-



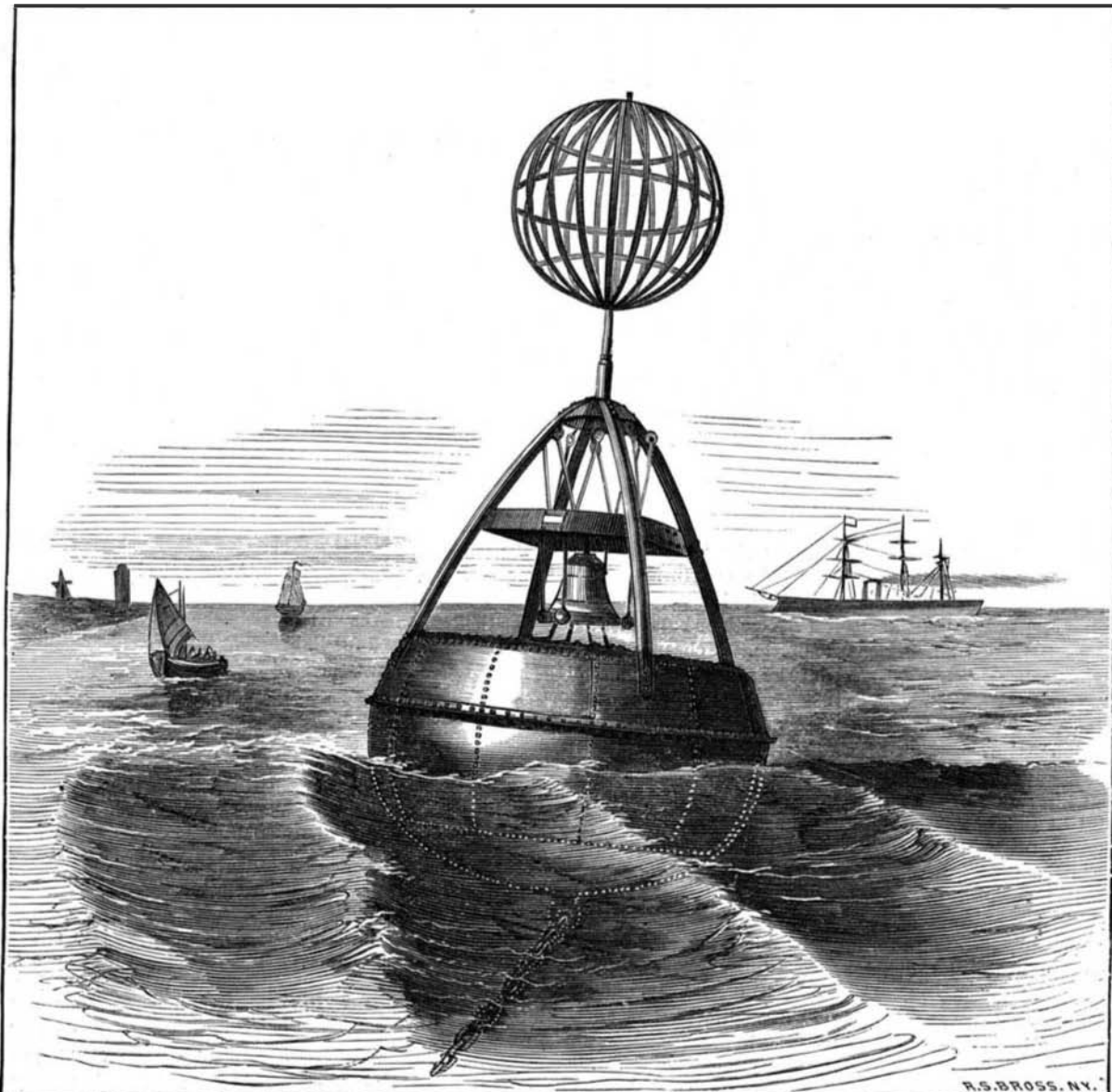
tion and keep the fastening nuts of the spokes firmly locked to the threaded ends of the same on the inside of the bands. A number of bolts, F, are attached to the collars, B, and run back parallel to the axis of the box, A, being extended through the inner disk, E, and threaded at their projecting ends for the screw nuts, a. By screwing up the nuts, a, on the bolts, F, the sleeve, C, is moved over the end ring, B, so as to bring the spokes together and tighten the wheel.

Patented through the Scientific American Patent Agency, June 19, 1877, by De La Fayette Remington, of Silverton, Oregon.

**IMPROVED AUTOMATIC FOG SIGNAL.**

In the accompanying engraving we present a new form of combined fog signal and bell buoy, working automatically, which has lately been introduced in Germany. It is intended to be stationed at places where the conditions are such that no better forms of signals, such as cannon and sirens, are available.

The buoy consists of a wrought iron body, spherical below and flat on top, upon which a stout frame is placed, carrying a heavy immovable bell, together with several bell hammers, and above a large metallic basket, to render the buoy more plainly visible on clear days. The iron body is made of sheet metal, one third of an inch thick. It has a diameter of about nine feet, and a height of about six, and is provided below with a strong eye, to which the anchoring chain is fastened. This body is divided in its interior into three compartments by a second bottom placed nearly in its center, and by an annular wall reaching from this bottom to the top, which separates the space above the second bottom into a central circular and annular space. The lower compartment serves as a receptacle for the ballast, while the upper inner compartment is made large enough to prevent the sinking of the buoy, should by any accident the outer shell be ren-



AN AUTOMATIC FOG SIGNAL.

dered leaky. The buoy, after having been towed to its destined station and accurately anchored there, soon acquires an oscillatory motion from the action of the waves. The four freely suspended hammers in the vicinity of the bell are thus made to strike upon the latter and so give rise to the required alarm signal. Rubber buffers are provided to prevent any undue range of motion of the oscillating hammers.

**American Institute Exhibition.**

The interest evinced in the coming exhibition of the Institute is practically proven by the demand for space, and by the improved character of the exhibits offering. The managers state that the promise of a fine display never was better, and that although business is generally dull and the manufacturing industries are generally depressed, nevertheless the outlook is hopeful and encouraging. For all details address the General Superintendent, room 22, Cooper Union Building, New York.

**Applications of the Electric Light.**

Lighting experiments with Gramme machines are being tried daily at the Palais de l'Industrie, in Paris. The area of the building is 2½ acres, the elevation of roof 95 feet. This immense space has been lighted *à giorno*, with two electric lustres, each composed of six electric lamps. The motive power required is fifty horse power, and the results are very satisfactory, although it has not been stated whether they are superior to those of the Alliance system, and Jablochhoff electric candle. The Great Northern Railway Company regularly use electric lamps for their luggage room. The Paris-Lyons Railway is preparing an experiment for the illumination of the whole of the large Paris station. All these experiments are conducted with the intention of testing several electric systems, in order to obtain an immense lighting power for the International Exhibition.

**Octahedral Crystals of Copper.**

M. Sidot has allowed sticks of phosphorus to lie for some months in a cold saturated solution of sulphate of copper, and has obtained a series of copper tubes, the outer surface of which was covered with fine octahedral crystals of the metal. In this reaction the water is decomposed, metallic copper and phosphide of copper are formed, whilst sulphuric and phosphoric acids remain in the liquid.

**Chairs that are Chairs.**

The advertisement of the Common Sense Chairs, published last week, and for several weeks previous, was accompanied by an engraving which gives some idea of their comfort and

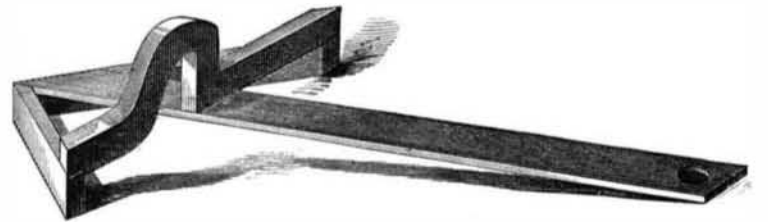
excellence. They are made by F. A. Sinclair, Mottville, New York. We are happy to be able to say that the chairs in question are all that the maker represents them to be. We have had them in use for a long time with much satisfaction; and judging from our own experience, whoever buys them will be fully satisfied with the purchase.

**Laffin's Parlor Rowing Apparatus.**

To persons who have not ready access to gymnastic exercise, and desire a means for preserving health and vigor, the rowing apparatus invented by J. M. Laffin, 31 Union Square, New York city, is especially adapted. It can be readily used, even in a small room, and the steady regular movements which can be practised on the apparatus have a direct tendency to give freedom to the flexors, extensors, pectorals, and shoulders. A slight change converts the machine into a health lift. It can also be used in many other ways, and in each and every way furnishes healthy exercise and social amusement.

**IMPROVED UNIVERSAL SQUARE.**

In the old form of universal square much annoyance was experienced when work was necessary to be scribed at places



that came immediately under the cross-bar. This was particularly the case when small square or round pieces of work were to be centered.

The accompanying engraving represents an improvement upon this square, which consists of a curved or raised portion in front of the cross-bar, and so made that the space formed above the blade is sufficient to admit of drawing or scribing a line along its whole length without removing the square.

Patented through the Scientific American Patent Agency, May 8, 1877, by Charles A. Schrier, of Holyoke, Mass., to whom application may be made for further particulars.

**Killing Cattle by Dynamite.**

Mr. Thomas Johnson, of Dudley, England, has recently made experiments with the above. A small quantity, the size of a thimble, was placed on the foreheads of several animals and exploded in the ordinary way with a short piece of safety fuse and detonator, and the cattle were instantly killed, and only required bleeding. Lately other experiments were made at Mr. Bruton's, Red Hill, Dudley. The charges were exploded by electricity instead of the ordinary way, and by this means any number of animals may be instantly killed by the same current of electricity. Two large horses and one donkey, unfit for work, were drawn up in line about half a yard apart, the donkey being in the center. A small primer of dynamite, with an electric fuse attached, was placed on the foreheads of each, and fastened by a piece of string under the jaw. The wires were then coupled up in circuit, and attached to the electric machine. Mr. Johnson turned the handle of the machine and discharged an electric current, which exploded the three charges simultaneously, the animals instantly falling dead without a struggle.—*Land and Water.*

**BRONZE PAINT FOR IRON OR OTHER METALS.**  
Take of chrome green, 2 lbs.; ivory black, 1 oz.; chrome yellow, 1 oz.; good japan, 1 gill. Grind all together and mix with linseed oil.

A good black paint may be made by mixing together lampblack and common carriage rubbing varnish.