Strong Magnets.

For some time past M. Trouve, the eminent Parisian instrument maker, has been engaged in discovering the best mode of making powerful magnets of identical strength. For this purpose he has investigated the best kinds of steel, the most suitable degree of temper, and the most practical and simple method of magnetization. In testing the different kinds of steel, he cut the pieces of the same dimensions and magnetized them, then measured their portative force. They were afterward tempered and magnetized anew. The portative force after this second magnetization has led M. Trouvé to the conclusion that the best French steel for making bar magnets is that of Allevard, as already known. He also finds that the portative forces, as determined after the two magnetizations, are connected by a simple law, which can be expressed by saying that they are to each other in the ratio of $n : n^2$, that is to say, if the portative force of the first magnetization is represented by 2, 3, and 4, that due to the final or saturated magnetization is represented by 4, 9, 16. As regards the temper of the steel, M. Trouvé finds that a regular temper is necessary, and to insure this condition he employs a muffle furnace heated by gas to a constant temperature. The actual magnetization of the bars is performed by placing them in two solenoids in juxtaposition, and closing the magnetic circuit by means of two plates of soft iron. The solenoids are then electrified by means of the current from six Wollaston elements. By proceeding in this manner M. Trouvé succeeds in preparing bar magnets which will sustain from twelve to fourteen times their own weight, and if they are bent into the horseshoe form the portative force is quadrupled, that is to say, it becomes from forty-eight to fifty-six times the weight of the magnet.

Absorption of Oxygen in Coal Mines.

The Belgian Academy of Sciences has received a report on the researches made by M. Fabre, regarding the diseases to which coal miners are especially liable. He finds that, as coal absorbs rapidly up to one hundred times its own value of oxygen, the air which the miners have to breathe is deprived of oxygen to a hurtful degree; the atmosphere of a mine is also further vitiated by the gaseous carbon compounds given off by the slow combustion of the coal. M. Fabre concludes that a supply of air is more essential than that of light, and even the best ventilated mines require better ventilation.

A Suspended Aqueduct.

A cheap suspension aqueduct was invented and used by some miners in California in 1852. A river ran between two bluffs, one of which was considerably higher than the other. Water was available on the one, but it did not "pan out" as well as that upon the lower. Some sailors, including the mate of a whaler, took up a claim, and succeeded in making a hose of strong duck, about eight inches in diameter, and stretching it from the higher to the lower hill, by means of a strong rope running through it. Water was then carried through this weak hose, which could not have resisted the pressure if lowered into the valley, and the ingenious sailors realized handsome fortunes out of the land that had been hitherto worthless.

AN EASILY MADE CHAIR.

We give an engraving of a very cheap yet strong and comfortable chair which may be made as elegant as the tastes of the maker may dictate. The chair, as will be seen by reference to Fig. 1, consists merely of a barrel cut off above the second hoop so as to form a complete back with half arms at the side. The barrel thus cut is mounted on two strips of wood, having casters under their ends, and brackets above to form the legs and to add to the appearance of the chair. A head is fitted to the circular portion, and the whole is neatly upholstered, as shown in Fig. 2.

Of course it is necessary to select a good barrel bound with iron hoops, and a little care should be taken in the upholstering to disguise the barrel form as much as possible.

A Strong and Handy Cement.

One of the strongest cements, and very readily made, is obtained when equal quantities of gutta percha and shellac are melted together and well stirred. This is best done in an iron capsule placed on a sand bath, and heated either over a gas furnace or on the top of a stove. It is a combination possessing both hardness and toughness, qualities that make it particularly desirable in mending crockery.

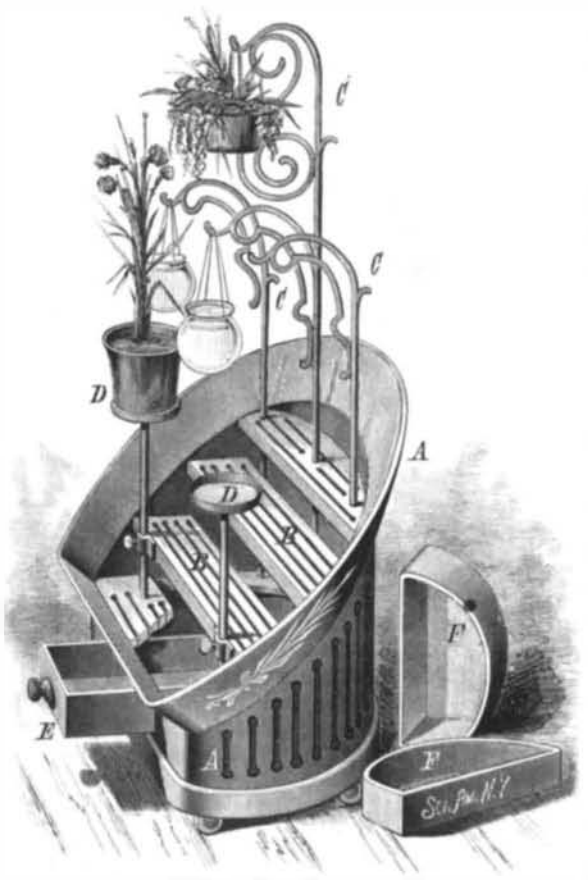
When this cement is used the articles to be mended should be warmed to about the melting point of the mixture, and then retained in proper position until cool, when they are ready for use.

Whooping Cough.

On an extended trial the author, Dr. Gaspar Griswold, of this city, finds *carbolic acid in whooping cough*, in doses of one-fourth minim to a child of six months, one-half minim for one of a year, and one minim for one of two years and upward, to be the best remedy. "The whoop goes; the vomiting ceases; the paroxysms are modified in intensity and frequency." This result he believes to "arise from a similar action to that of creosote on the motor fibers of the vagus to the stomach, and from a lowering of the vitality of the specific germ of whooping cough disease."

IMPROVED FLOWER STAND.

The engraving shows an improved ornamental flower stand lately patented by Mr. William D. McCallum, of Truro, N. S. The stand, as will be seen by the engraving, is intended not only for the support of flower pots and vases, but for hanging baskets, fish globes, etc. When properly filled it makes an elegant window garden, holding a great number of plants, while the ornamental brackets support the fish globes and hanging baskets, and form a trellis for the vines.



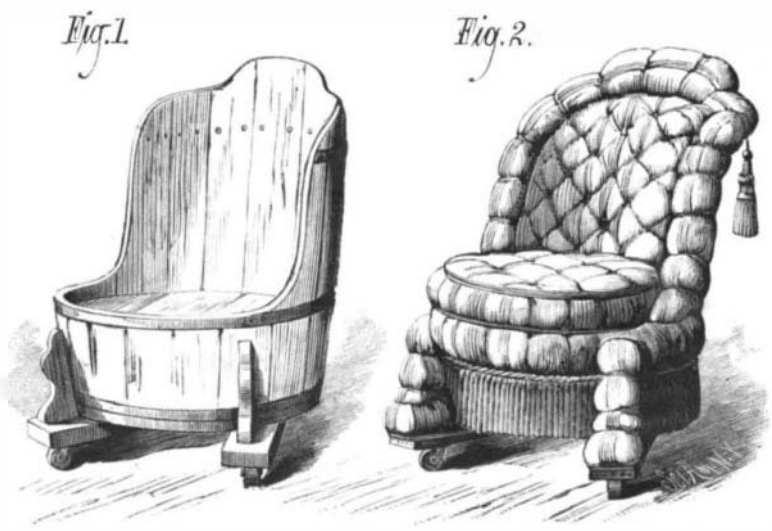
McCALLUM'S FLOWER STAND.

The capacity of the stand is increased by two or more vertical rods, provided with cups at the upper ends for receiving flower pots.

The flaring rim around the stand supports the foliage and prevents water from getting on the floor while sprinkling the plants.

A Naval Experiment with the Electric Light.

The Providence *Journal* gives an account of a trial of the electric light as used to detect the movements of vessels, at night, especially torpedo boats in time of war. The light is placed in a parabolic reflector, which is pivoted to turn in any desired direction and moved by a small electric engine in the horizontal plane of the motion. In this respect it seems to differ from the calcium reflectors that were often displayed on our streets, although hand power may be applied to the new reflector by detaching the small motor. The experiment was directed by Captain Selfridge, of the United States Navy, and with the United States steamship Nina and a small steam launch from the torpedo station of Newport, R. I. The launch was sent to the outer harbor, followed after some time by the Nina, fitted with a light on each side, to seek for her in the darkness. The launch was to play around and approach with muffled ores and hidden lights as near as possible to the Nina without being heard. The little craft was promptly detected at considerable distance as soon as the light swept over her locality, and the experiment was considered a success.



A CHEAP AND COMFORTABLE CHAIR.

RECENT INVENTIONS.

Mr. John K. Harris, of Springfield, Ohio, has recently patented a novel and comparatively simple construction of buttonhole worker, applicable to the ordinary sewing machines, which, for neat and substantial work, bids fair to greatly extend the use of this class of devices. In its general organization it comprises a cloth clamp that holds the cloth and oscillates it under the needle at right angles to the line of feed, first on one side of a center line, and then (after shifting its position at the end) returns on the other side of the center line, which center line is then opened or cut with a knife to disconnect the two lines of stitching and form the buttonhole. The cloth clamp is oscillated by a connection with the needle bar of the machine. The prominent feature of the invention is to be found in causing the lateral oscillation of the cloth clamp to be converted directly into a secondary intermittent progressive feed longitudinally with the buttonhole, by the direct impingement of the cloth clamp against an adjustable stop or resistance that causes the cloth clamp to react and move longitudinally, the length of feed and depth of stitch having always an automatic correlation to each other. This, in connection with the other features of the device, gives a nicety of adjustment and accuracy of work that must be seen to be fully appreciated. Mr. Harris has also patented other constructions aiming at analogous results.

Mr. Rece W. Trude, of Lock Haven, Pa., has patented a cheap, simple, and durable folding drier for drying clothes.

Mr. John J. McLean, of Hillsborough, Ill., has patented an improved folding case or cabinet for holding and preserving court and other papers for use particularly by clerks of courts. It is so constructed that the file papers in different causes on the docket may be conveniently selected from and returned to their respective pigeon-holes, and which will exhibit at all times the absence of papers and by whom taken.

An improved animal trap, patented by Mr. Russell Elliott, of Somerset, Ky., consists in a box divided into three compartments by two partitions, a sliding plate for closing the entrance apertures in the front of the trap, the rock shaft carrying the sliding plate, an oscillating treadle, and chains or cords connecting the treadle and the rock shaft.

An improved wardrobe bedstead has been patented by Mr. Ernest N. Doring, of New York city. This wardrobe bedstead is so constructed that the frames or cases of the bedsteads and the weight boxes can be readily disconnected, when desired, for convenience in moving the bedstead from place to place.

Mr. Fred Terstegen, of Elizabeth, N. J., has patented an eyeglass having the nose-piece or bow-spring jointed in the middle so as to permit the lenses to fold sidewise toward each other, and having the ends of the two sections of the nose-piece or bow-spring extended past the pivot and provided with locking devices for holding them in position for use.

Mr. Charles Oyston, of Little Falls, N. Y., has patented an improvement in syringes. The invention consists of a nozzle with flaring lip, containing several fixed crossbars and adjustable basket-like devices and a tapering screw thimble, by whose adjustment relatively to each other and to the crossbars the fineness of the spray issuing from the nozzle is regulated.

Mr. Albert Back, of New York city, has patented an improved box for packing and exhibiting ruchings, laces, embroideries, and analogous articles. The invention consists in a box provided with a reel pivoted to arms of one of the longitudinal sides of the box, which side is hinged to the bottom of the box so that it will swing outward into a horizontal position, the arms carrying the reel being in a vertical position, and thus permitting the reel to turn freely.

Mr. John M. Cookingham, of Hudson, N. Y., has patented a secure and inexpensive fastening that is durable and will not require openings cut in the inner case. This invention is applicable to hunting and open cases and key and stem winders; and it consists in a locking pendant fitted to slide on a stem and formed to lap over the case.

Mr. Joshua W. Trussell, of Rockland, Me., has patented an improved door securer for fastening doors, drawers, cases, or where locks are ordinarily used, in which a central shaft armed with sharp projections from two opposite sides is inclosed in a rectangular wedge-shaped frame, the shaft being provided with a thumbscrew head in one instance and a lever in the other, for turning it at right angles with the frame.

Mr. Bertram G Seebach, of Peru, Ill., has patented a composition for cleaning and polishing metals, consisting of potash, lime, mineral oil, and the oil of *Elaïs guiniensis*.

The American Institute Fair.

The annual exhibition of the American Institute Fair began September 15. As this is the fiftieth exhibition of the Institute special efforts have been made to celebrate its semi-centennial becomingly. The applications for space are said to have been larger than ever before, and the exhibition promises to be the finest ever held. But the exhibitors are, as usual, sadly behind in their preparations, and the exhibition opens in the customary state of unreadiness.