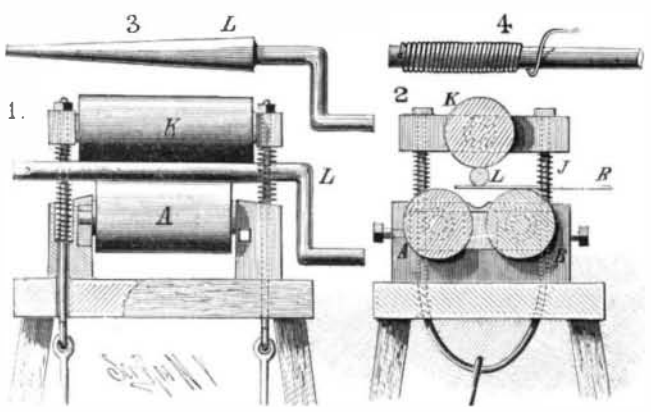
TINSMITH'S ROLLER.

The two lower rollers are journaled in boxes held adjustably in blocks on a platform supported by legs. A U-shaped frame passes up through each block and the platform and through blocks held above the rollers, and upon the upper ends of the prongs nuts are screwed. A roller, K, is journaled in the upper blocks, which are pressed upward by springs coiled around the prongs. Held loosely between the rollers is a mandrel, L, made either tapering or of a uniform thickness, and provided at one end with a crank handle. When the mandrel is pressed down, it enters notches formed in the center of the lower blocks. The bent frames are joined to levers, forming a treadle by which the roller, K, can be brought down.

The piece of sheet metal, B, to form the tube is placed on



BEALS' TINSMITH'S ROLLER.

the front roller, and the mandrel is inserted between the metal and the upper roller, when the treadle is depressed. This movement presses the mandrel down between the rollers, bending the metal. By turning the mandrel the rollers will be revolved and the piece of metal will be fed into the machine, and in its passage will be rolled around the mandrel. Tubes of different sizes are formed by using mandrels of greater or less diameter, and adjusting the rollers, A B, to or from each other as the case may be. When the tapered mandrel is used, the rollers are inclined to each other by means of the set screws. When spring wire is to be made, one end of the wire is passed through the hole in the mandrel (Fig. 4) and the wire wound on by turning the mandrel. This invention—recently patented by Mr. L. F. Beals, of Marquette, Michigan—can be applied to the ordinary tinsmith's rollers.

Glucosed Leather.

The fact that glucose is extensively employed in the adulteration of sugar, candy, and sirups has been well known for some time; we have even been told that the bee has been cheated out of the products of its honest labor, by substituting glucose for honey in the markets. While we fully admit that the number of applications of glucose in the adulteration line is almost unlimited, we are rather surprised to hear that tanners have used it to give additional weight to their leather. According to a circular recently received by the *American Tanner*, Louisville appears to be the headquarters for such fraudulent practice, and in order to save the reputation of the oak-tanned leather of that city a number of tanners sent out a challenge to find such adulterations in any of their products; by thus publicly denouncing any departure from ancient honest methods, under their full names, these firms hope to open the eyes of purchasers as to those who dare not join the protest, and are unable to sell their leather under a guarantee that it has not had its weight increased by any fraudulent means. The names of the firms who have signed the circular are as follows: Wedekind, Hallenberg & Co.; Louisville Leather Company; D. Frantz & Sons; Phœnix Tanning Company; Mantle & Cowan.

Speaking about the above subject, the *Shoe and Leather Reporter* says: "An effort is being made by the manufacturers of grape sugar to induce tanners to make use of this substance as a means of giving additional weight to leather, and it is even claimed that some tanners have been foolish enough to yield to such temptations. Glucose is a fraud, however used. It is even a greater fraud when used on leather than when used in adulterating sirup or sugar."

When we are told that some samples of leather have been found which had as much as 30 to 40 per cent of extra weight, it seems that something should be done in this matter. There are numerous tests for glucose, but the most of them require a number of more or less expensive apparatus, while the following recommends itself by its simplicity and cheapness, as the complete outfit, consisting of a small test tube and two small bottles, one containing cupric sulphate and the other caustic potash, may be obtained anywhere, and can be carried with ease in a vest pocket.

A little scrap of the suspected leather is soaked in pure water; to this liquid, enough to fill about one-quarter of the test tube, we add a few drops of a solution of cupric sulphate and half as much of a caustic potash solution as the liquid contained in the test tube; shake well and boil over a flame. If glucose is present, a yellow or red precipitate is formed in the tube.

Cupric sulphate, or blue vitriol, readily dissolves in water, and enough of it must be added to the sample to produce a faint blue coloring. The caustic potash solution is made by dissolving 58 grammes of the potash in 1 liter of water.

The principle upon which the test is based is as follows: The boiling alkali converts the glucose into glucic and melassic acids, substances which oxidize rapidly. The cupric sulphate is then converted into cuprous sulphate, and this again is decomposed, forming a deposit of cuprous oxide. Of course it is only a rough test, because we are told that under normal conditions leather contains a trace of glucose; but if the test has been performed once or twice on good leather, any excess of glucose in other samples can easily be detected by the deeper color of the more copious deposit in the test tube.—*American Tanner.*

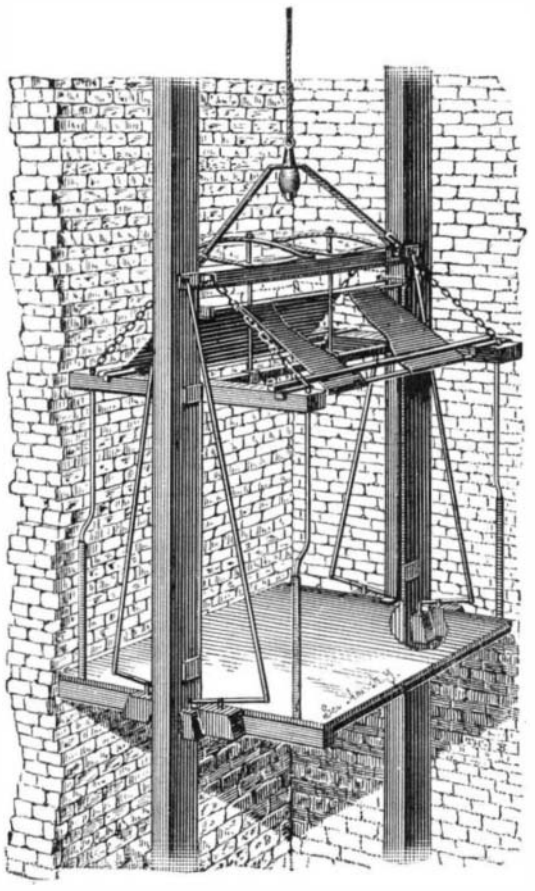
A Foot Fog Horn.

A new fog horn, invented by Mr. Bryceson, has recently been tried on the Thames by the representatives of the Admiralty. It is in the form of a pump, and is worked by a strap fastened to the signalman's foot, and so worked as to produce short or long sounds, as required. The advantages of the invention are, the length of time to which the sound can be drawn out, its cheapness, and the fact that it can be heard for three-quarters of a nautical mile in stormy weather.

SAFETY CATCH FOR ELEVATORS.

From opposite sides of the cage floor rise two standards, whose upper ends are united by a beam. To each standard near its upper end is secured a cross beam, at the ends of which are vertical rods which have their lower ends attached to the corners of the floor. The standards have forked clips at the top and bottom, which embrace the two side guide beams in the elevator shaft. Hung on the ends of the cross beams are stirrup rods, on which rest the free ends of sheet iron tops, which are hinged on rods connecting the upper ends of the standards. Resting upon a rubber spring secured to the lower end of the hoisting cable is a V-shaped inverted hanger, upon the ends of which are pivoted the ends of a bar carrying a beam. Between the ends of the beam and the bar are held clips which embrace the guide beams, and which are formed with outwardly projecting lugs. Chains are attached to clips upon the ends of this beam and to the upper ends of the corner rods. Passing through apertures in this beam are rods secured to the beam uniting the tops of the two standards; upon the upper ends of the rods are held elliptic springs. On each end of the floor a lever is pivoted, at each side of the standard, to the outer ends of which are pivoted rods whose upper ends are joined to the clips. To the inner ends of the levers are pivoted rods which pass through holes in wedge shaped blocks having transverse teeth formed in the faces toward the sides of the guide beams. Blocks are secured to the ends of the floor in such a manner that their beveled edges face the beveled edges of the lever blocks.

It will be seen that the cage is suspended from the spring rods, the springs being compressed. The beam carrying the springs keeps the outer ends of the levers raised, and the blocks are held a short distance from the guide beams.



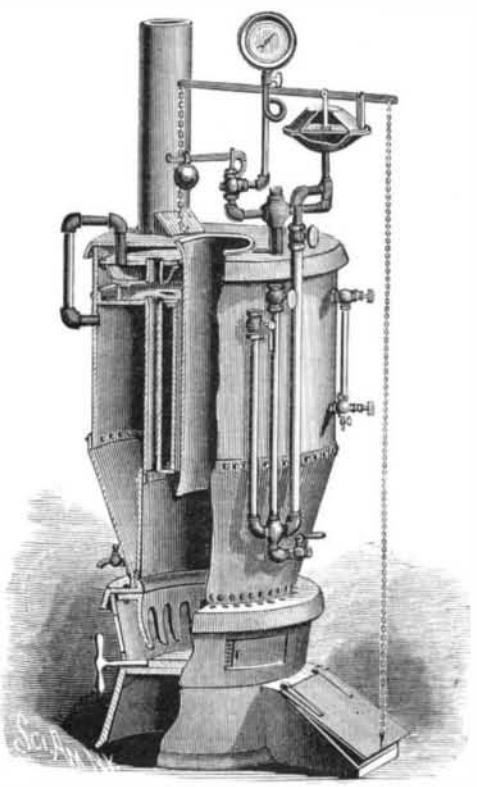
GILES' SAFETY CATCH FOR ELEVATORS.

When the cable breaks, the springs exert a downward pressure, thereby forcing the beam downward, and through the rods and levers pressing the blocks against the sides of the guide beams, firmly locking the car in place.

Further information concerning this invention may be obtained from the patentee, Mr. William Giles, of Mount Olive, Ill.

IMPROVED STEAM HEATER.

Near the middle of the circular cast metal base, having a double conical form, is a shaking and dumping grate, and resting upon its upper edge is a ring shaped plate, to the lower side of which is bolted a ring having downwardly projecting fingers forming the lower portion of the fire pot. The lower edge of the fire pot wall and the boiler shell, which is made conical at its lower end and cylindrical above, rest against an inner flange on the ring plate. In the upper



BOYER'S IMPROVED STEAM HEATER.

portion of the base are openings with sliding doors, through which access may be had to the fire. Between the crown sheet and the top of the boiler are a number of tubes for the passage of the products of combustion; the inside wall of the boiler connects the crown sheet and the fire box.

The top plate of the heater closes in the smoke space and sustains the central magazine, through which coal is fed to the fire pot. Between the crown sheet and the cover is an annular space in which is located an annular steam superheating chamber, which is connected with the steam space of the boiler by an elbow pipe, and from which the steam issues through a pipe to the radiators. Through this chamber there are short tube sections so arranged as to register with the flues below. Connected with the steam pipe there are a steam gauge and a safety valve; a regulator, within which is a flexible diaphragm of soft rubber, is supported by a plugged pipe attached to the delivery pipe. A glass water gauge, a feed water pipe, and a return water pipe are arranged upon the outside of the boiler.

A pipe communicates with the boiler below the water line, and with the under side of the diaphragm in the regulator. A damper in the smoke pipe and a draught damper for the fire pot are respectively connected by chains to the opposite ends of a lever united by a rod with the diaphragm. These parts are so arranged that when the fire burns too freely the increased pressure on the diaphragm moves the lever, closing the draught damper and opening the smoke pipe damper; when the heat and pressure are reduced, the diaphragm falls and the movements are reversed. This insures an automatic regulation of the heat and pressure and the most economical use of fuel.

This invention has been patented by Mr. J. L. Boyer, of Reading, Pa.

The Black Snake Cure for Rheumatism.

The patient is Mrs. H. W. Stevens, wife of the Chief Engineer of the Danbury, Conn., Fire Department. The mode of treatment is to take the snake, which is about five feet long, and wind it about the patient's leg. After remaining for twenty minutes he is taken off and put in a box. This is done two and sometimes three times a day. A month ago Mrs. Stevens could walk only with the aid of crutches. She is now able to walk with a cane, and entertains strong hopes of ultimate recovery. At times the snake will bring his restrictive powers into play, and give a painful squeeze to the leg. A pin thrust into him cures him of this. Several times he has bitten his handlers, but no harm has followed.

We are inclined to think a thin rubber tube filled with warm water might replace the snake, and prove to be more advantageous as a cure.

Aerial Navigation.

M. Herve Mangon has lately presented a report to the Academy of Sciences concerning a recent balloon ascension at Meudon. The balloon was under the direction of Capt. Renards, and, although it moved against the wind, it easily followed the course along which it was steered. It was then veered around and brought back to the point from which it started.