

A NEW FIRE ESCAPE.

The blocks, B, are formed with projections to rest against the side of the building, and in their upper ends have eyes to which are secured chains or ropes attached to hook bolts fastened to the upper part of the window casing or to the floor or wall within the building. Over a roller, A, journaled in these blocks passes an endless belt made long enough to reach to the ground, and strengthened by chains, G, along its edges. The belt and chains are made in sections; the adjacent ends of the belt can be connected by lacing, and the ends of the chains by snap books, so that a longer or shorter belt can be formed. The chains pass over chain rollers to prevent the belt from slipping and to allow the descent to be regulated by brakes. To the belt are attached pockets of sufficient size to readily allow people to get in and out of them.

The blocks, B, are slotted, and within the slots are brake wheels, which are secured to the roller shaft and around each of which passes a strap. The end parts of the straps cross each other above the wheel, and are joined to the ends of levers that cross each other at the pivot, L.

The levers work freely in the upper part of the slot. The outer end of a lever of each pair will project into the window, so that it can be reached by people within the room, and the rate of descent controlled. To the outer end of the other lever is fastened a cord which extends down along the endless belt in order that the people in the pockets can regulate their descent. In order to keep the lower part of the endless belt away from the building, it can be passed around a second roller secured to the ground by stakes. When the fire escape is not in use, the belt can be wound around the roller and kept in a box beneath the window.

Our engraving plainly shows the construction and operation of this useful device.

This invention has been patented by Mr. Samuel Norris, of Halifax, Nova Scotia.

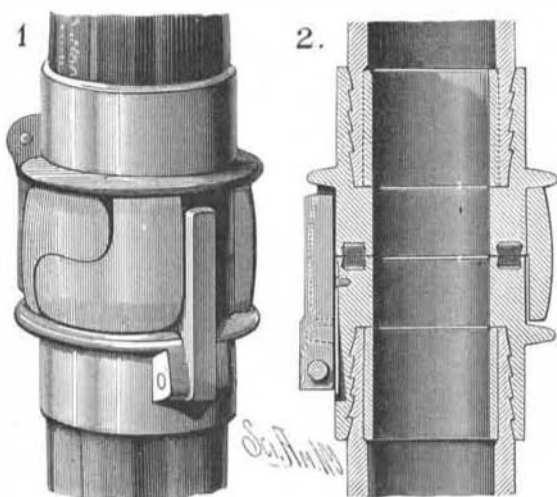
Preparation of Crystallized Aluminum Chloride.

It is an easy matter to prepare a solution of aluminum chloride by dissolving the moist and freshly precipitated hydrate of alumina in hydrochloric acid. Upon attempting to expel the water by evaporation, however, at a certain point it loses its chlorine, which unites with the hydrogen of the water and leaves only alumina (oxide) behind.

According to Gladysz, of Marseilles, the solution can be made to crystallize by evaporating it to 25° or 30° B., and then continuing the concentration in a closed vessel, where the pressure of the atmosphere has been reduced to 500 or 550 millimeters (about 20 or 22 inches of mercury). Here the solution can be evaporated to dryness, or the crystals be separated from the mother liquor in a centrifugal machine. If a concentrated solution of aluminum chloride is saturated with hydrochloric acid (gas?), the pure salt will crystallize out, while ferric chloride and other impurities remain in the mother liquor.—*Neueste Erfahrungen.*

IMPROVED HOSE COUPLING.

A collar or piece of tubing is attached to the end of each hose, and to the outer surface of each collar, upon opposite sides, are secured two hook prongs which project beyond the end of the collar. The hook prongs are all of the same shape, so that their edges will fit very closely against each other. The lower edges of the prongs are formed with a compound curve, so that when locked together they cannot come easily apart. The end of the hose is held between a metal ring and the collar. Each collar is provided with an annular groove in its end edge, into which a metal ring is inserted on which a packing ring of rubber or leather is placed. The object of using the metallic ring is to facilitate the slip that is required in coupling two sections together;

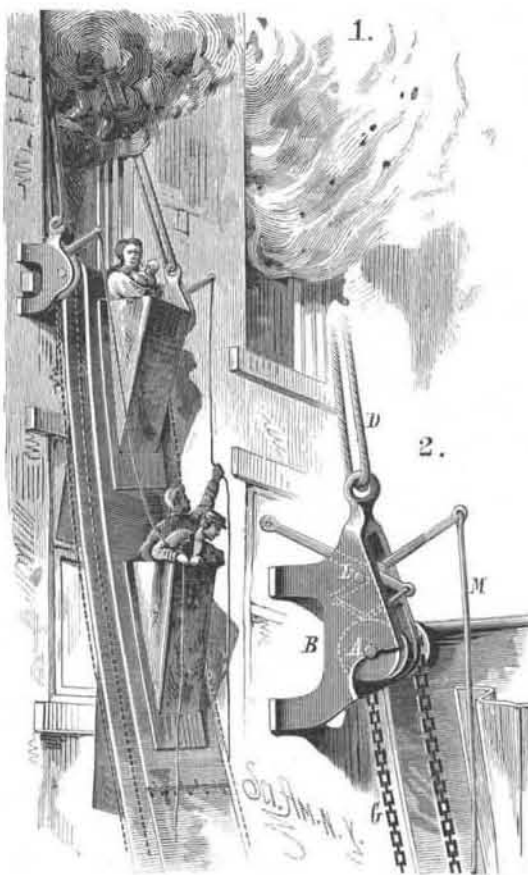
**WELLS' IMPROVED HOSE COUPLING.**

without these rings this would not easily occur. To prevent all possibility of the sections becoming loosened when once connected, a short bar is pivoted between lugs formed upon the collar in such a position that it will rest in front of the hooked prong when the sections are united. A spring acting upon the rear end of the bar holds it against the joint. This construction makes a joint that is readily operated and that cannot become disconnected accidentally.

Further particulars may be obtained from the inventor, Mr. Thomas E. Wells, of Sandy Hill, N. Y.

Paper Impervious to Grease or Water.

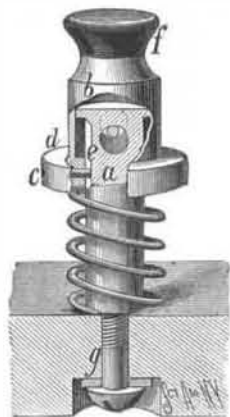
In *Burgoyne's Monthly of Pharmacy* we find the following method described for rendering paper impervious to grease or water. Parchment paper is plunged into a warm solution of concentrated gelatine, to which has been added 2½

**NORRIS' FIRE ESCAPE.**

to 3 per cent of glycerine, and allowed to dry. The resulting paper is impervious to grease. If desired to make a paper waterproof, the same parchment paper is taken, dipped in bisulphide of carbon containing 1 per cent of linseed oil and 4 per cent of caoutchouc.—*Les Mondes.*

BINDING POST FOR ELECTRIC CONDUCTORS.

The standard, *a*, is provided at its upper end with an annular flange, and is secured to the base by a screw, *g*, with

**GOODBODY'S BINDING POST FOR ELECTRIC CONDUCTORS.**

which the conducting wire is connected. On the standard is a loosely held cap, *b*, which is pressed upward by a spiral spring, and which is furnished with a head, *f*, of insulating material. The cap is prevented from turning by a pin, *c*, passing through the flange on its lower end, and entering a longitudinal groove, *e*, in the standard. The flange on the top of the standard prevents the spring from raising the cap too far. Through two holes placed diametrically opposite in the cap and through a hole in the standard (the holes being brought in line by pressing the cap down) is passed a pin secured to the conductor.

The upward pressure of the spring insures the pin being held firmly. The post is especially designed for use in medical batteries and also for ordinary electrical purposes. The insulated top enables the physician or electrician to change the current with great facility while treating the patient, and without diverting the current in any way from the patient.

This invention has been patented by Mr. A. G. Goodbody, of Louisville, Ky.

Steam Launches for the Arctic Regions.

The two launches for the Greely expedition are whale boat shaped and are built very strongly of oak frames, double cedar planking and copper fastened throughout, with a Herreshoff condensing engine and improved safety boiler. They are 28 feet in length, 7 feet 8 inches beam, and have a draught of 3½ feet. The shaft is fitted with a knuckle joint, so that the wheel can be hoisted out of water in case of ice or when sail is used. They are also fitted with three keels, which will act as sled runners when being hauled over the ice.

To Prevent Air Bubbles in Cast Iron.

It frequently happens, says the *Polytechnisches Notizblatt*, that in working castings porous places are found beneath the surface, which render the casting useless. On examining the cavity closely, a little smooth and hard bullet will be found within it. Simple air bubbles can be produced as foam is in melting the metal; but these little bullets indicate that little particles of the metal have been broken or thrown off, and this could only happen while pouring it into the mould. The mould generally consists of a double box (flask) filled with sand. In pouring in the metal from above, it spurts when it comes in contact with the bottom, just like any other liquid; that is, little particles break off, and forming pellets or balls harden in the air. This cooled and solidified iron floats on the surface of the melted iron, and the air that it carries with it forms bubbles, which also barden on the surface, as it is very thin, and hence these bullets and bubbles frequently collect in nests, which are either on the surface or in the corners, and are not melted again by the rest of the fused metal.

The metal that falls perpendicularly frequently tears loose single particles of sand from the mould, and this sand floating on the metal forms cavities wherever it rests, and doubly spoils the casting.

According to the *Techniker*, all this can be avoided if the funnel or pouring-in hole is arranged at an angle of 30° to 45°, and in such a manner that the metal shall enter the mould from beneath if possible. With such a pouring-in place the metal will enter the mould without spurting, and if care is taken to furnish a suitable escape for the air it will fill out the form beautifully. The only disadvantage of this arrangement is that it would require a larger flask, and for most patterns even this can be avoided by skill in placing the pattern and funnel.

Glass Manufacturing in Europe.

Each of the various countries on the Continent where glass is manufactured produces an article peculiar to itself and unlike its neighbors; and one of the specialties of Austrian glass making is the manufacture of various fabrics for ladies' wear from spun glass. The glass is spun into threads, like ordinary silk or cotton, and woven into different colored fabrics, sometimes entirely of glass, and sometimes with a warp of silk or cotton. Collars, neckties, cords and tassels, fringes, pin cushions, feathers, belts, etc., are all made of this material. At the Paris Exposition in 1878 a bonnet made entirely of spun glass, with feather and ribbons, lined with silk, was shown, as well as cloaks and other articles of wear. This spun glass is also used for watch chains, brushes, etc. Glass flowers are also made to a considerable extent, but it is difficult for these to compete with those made from china.

NEW RECLINING CHAIR.

The side bars of the back are pivoted to the outside of the arms—thus making a wide and comfortable back—and below the arms they are bent inwardly and extended downwardly inside of the legs. The lower ends of the bars are connected by rods to the foot rest frame that is pivoted to the arms near their front ends. The seat frame is pivoted to the foot rest frame and also to the side bars of the back. This makes a contrivance of parallel bar connections between the foot rest and back, allowing the person occupying the chair to swing the back to suit his pleasure by simply moving his body backward or forward. One end of a flat bar, having its surfaces serrated so as to prevent it from slipping on the

**DEPPEN'S NEW RECLINING CHAIR.**

bars, is placed under the lower cross bar of the back and over a front cross bar, by which the weight of one or both of the legs will hold the seat and back when set; the removal of the weight will relieve the back so that it can be shifted. This bar can be readily adjusted lengthwise so as to bring the rest to any desired position, and can also be adjusted laterally. Our engraving shows a side elevation and a perspective view of this comfortable and durable chair.

This invention has been patented by Mr. Isaac Deppen, of Scranton, Pa.