

A NEW FIRE ESCAPE.

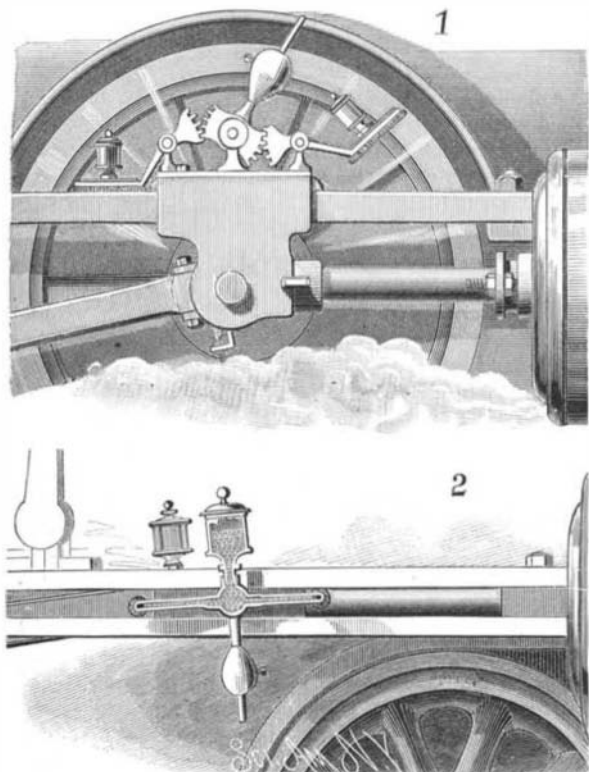
The balconies below the windows of the several stories of the building are constructed so as to lie in a fixed horizontal position or to fold up against the wall of the building. The ladder connecting the several balconies with each other and with the ground, for the escape of the occupants of the building, is arranged in a casing set up along the ends of the balconies. The front or door of the casing is made in sections of about the height of the respective stories, and each section is furnished with a spring latch to lock upon a catch of a rod supported along one side of the case. The latches are so constructed as to be automatically locked on the rod when the doors are closed, and to be unlatched by a vertical movement of the rod, which has an arm projecting toward each balcony. By this means the rod may be lifted from either balcony, and will simultaneously unlatch all the doors, permitting access to the ladder from any part of the building. A single door, provided with several latches, all of which catch upon the bar, may be used. The ladder can be used without the balconies, the arms being operated from the window of any story. This plan makes a fire escape which is always in place, and which can be quickly and easily operated from any story in the building.

This invention has been patented by Mr. Robert Stevenson, of Muskegon, and further particulars may be obtained from Mr. Charles Stroebe, of Ferrysburg, Mich.

GUIDE BAR OILER.

The accompanying engraving represents an invention, lately patented by Mr. John S. Park, for oiling the cross head guides of steam engines, and also the guides of other reciprocating parts of machinery. Held to the cross head is a base plate, to which are secured three standards. To the center standard is pivoted a head having projecting side pieces furnished with gear teeth, and having a central stem carrying a weight which may be held at any desired height by a set screw. On each side part is pivoted an arm carrying at one end a segment plate having teeth meshing with those of the head, and at the outer downwardly bent part of the arm is a plate, to the under side of which is secured a wiper made of any suitable soft material. This distributes over the face of the guide the oil fed to it from an oil cup carried on the back of the plate. The gears are so intermeshed that a rocking motion of the weighted stem will raise one of the oiling heads from and lower the opposite one to the guide bar.

At the end of each stroke the inertia of the weighted stem, combined with the motion of the cross head, shifts the oilers, so that one of them will always be in advance of the cross head. Not only is the upper face of the guide kept oiled, but it is also kept free from dust or grit, which would, if not removed, unduly wear the surfaces. The same principle of rocking the opposite oiling heads into contact with the guide bars is shown in Figure 2. A four-armed head, made hollow to carry oil from the cup to the oiling heads, is pivoted to each side of the cross head. The operation of this will be plainly understood from the cut.

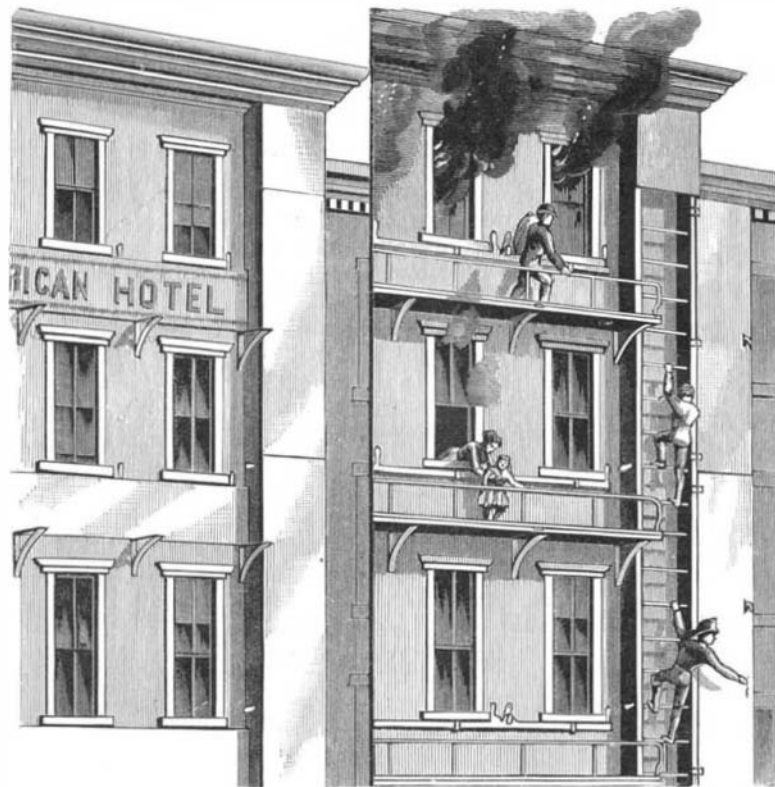
**PARK'S GUIDE BAR OILER.**

Further information regarding this novel device may be obtained from Messrs. Park, Basye & Weil, of Rockport, Ind.

Of the 27,672,048 inhabitants of France, 1,109,090 are foreigners, of whom 432,265 are from Belgium, 240,733 from Italy, 81,986 from Germany, 73,781 from Spain, 66,281 from Switzerland, and 37,066 from the British Isles. The number of naturalized persons is but 77,046.

Fireproofing of Wood.

Several preparations exist which render wood impervious to heat, and also increase its durability. Some of these solutions have been tested on a large scale, and have proved a success. Although these measures are cheap and their success demonstrated, they have, with few exceptions—as, for example, at Frankfort-on-the-Main, the Hof Theater at Berlin—not being employed. Perhaps constructors of theaters will, in view of these frequently occurring catastrophes, at last comprehend that even the incombustibility of the

**STEVENSON'S FIRE ESCAPE.**

woodwork would be of inestimable value in securing immunity from fire in theaters, and that the spreading of flames would be greatly retarded when, instead of burning rapidly, as dry wood will, it slowly, without flames, chars into coal. The nature of wood makes it an easy matter to change it into what an exultant chemist has called a "fireproof" substance. On account of its porosity a solution applied to its surface sinks deeply into its pores, thereby attaining a firm hold, and on account of its rigidity exposes the covering to abrasion only. Care should be taken, where such solutions have been used, to replenish them from time to time, so as to keep the wood entirely covered. It may be well to state here what is meant by "fireproof." As this term is usually used, it signifies the property of remaining intact in high temperatures such as are produced by the conflagration of buildings; but this is not the state impregnated wood or scenery is in. These are destroyed when in contact with a flame; not, however, by burning, but by charring. If we hold a piece of impregnated scenery in the flame of a Bunsen burner, we will find that the part which was in contact with the flame has been destroyed, that is, it has been charred without producing flames or injuring the parts not in direct contact with the gas flame.

In experimenting on the impregnation of wood, canvas, and gauzes, I was particularly careful to use only chemicals as they appear in commerce, and undistilled water. In my opinion one of the chief causes of failure in methods in practice which were successful in experiment, is that the chemicals employed in experimenting were the pure reagents of the analytical chemist, while those used in practice contain many impurities which must necessarily alter the results arrived at by purer supplies.

One of the oldest and best known processes is the coating of woodwork by water glass (sodium tetra-silicate), which for a short time gives good results, but soon the covering drops off. The reason for this is that a covering of water glass is as brittle as ordinary glass, and is readily cracked and broken; and secondly, as it dries very rapidly, it does not enter any distance into the pores of the wood, but rests on the surface. Any jar or abrasive action will, therefore, cause the water glass to drop off in small chips. Another objection to this substance is its solubility. It cannot be employed in places exposed to the action of water.

Another process is to paint wood with a solution of three parts of alum and one part of sulphate of iron; after the wood has received two or three coats of this solution, it is thoroughly dried; then a solution of potter's clay and sulphate of iron, having the consistency of paint, is daubed on the prepared wood until all pores are filled, and a thin layer remains on the surface. It is claimed that in this process the alum and sulphate of iron enter deeply into the fibers of the wood, and form indestructible compounds with the chemical elements of the fibers, which cling tightly to them and cannot, as in the case of water glass, be readily washed out. The covering of clay greatly protects the wood from moisture, so that the first solution cannot be washed out or thrown out by the action of frost. This sounds well, but in practice would be too complicated.

Another objection which makes it valueless for theaters is that the clay on the surface comes off very readily in the

form of dust, and, therefore, must frequently be renewed; it is also an unclean process; an actor unconsciously leaning against a piece of wood thus prepared would afterward appear before the audience with a stripe of clay dust on his back.

The following is also a complicated process: The wood is painted with hot glue water until all pores are filled, the number of coats depending on the porosity of the wood used. Then applying to the surface, before the glue dries, a powder consisting of one part of sulphur, one of ochre (or clay), and six parts of sulphate of iron. Care should be taken to powder and mix these substances well before applying them. This process labors under the same difficulty as the preceding one described.

A clean and excellent coating for wood is asbestos paint, or better still, the thicker asbestos concrete. These substances act like true paint, adhere tightly to the wood, give good protection against high temperatures, and do not readily rub or chip off. It has but one objection, that is, its solubility in water; it cannot be used in places exposed to the action of water, but for interior theater purposes this is no material objection. Great care must be taken in purchasing this article, and it should always be tested before being used, as much of the so-called "asbestos paint" which is sold is entirely worthless.—C. John Hexamer, in the Spectator.

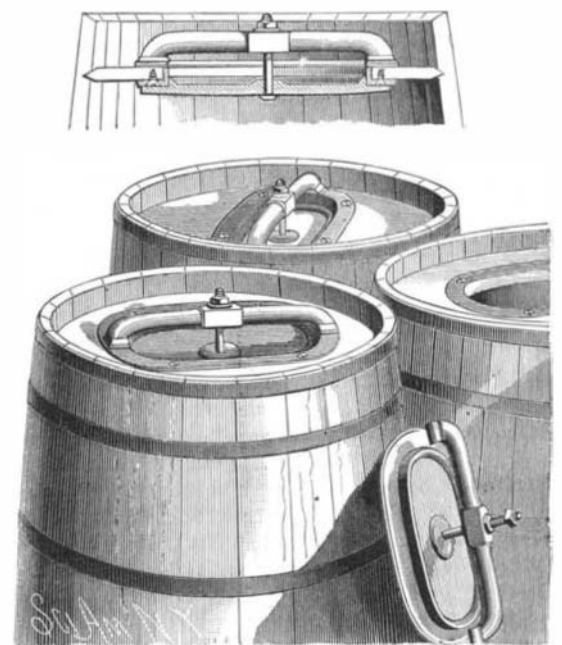
Our Patent Laws and Foreign Manufacturers.

A Philadelphia manufacturer writes us that, in 1882, he sold out his business in England, and has since been manufacturing here, selling his goods to American consumers at lower figures than they were formerly imported for. He came to this country on account of the better protection afforded by our patent laws, and is the owner of many widely used patented inventions, while also engaged on further labor-saving devices in connection with woolen, worsted, and silk spinning; but he says he shall most certainly decline to make known here in what any of these improvements consist, should there be any danger of Congress so changing the law that the public might immediately rob him of the fruits of his labor.

HEAD FOR BARRELS, CASKS, ETC.

An elliptical opening is formed in the head of the cask, in which fits a flanged curb held in place by screws; between the curb and head is inserted packing in order to form an air tight joint. A flanged plate of about the same form and external size as the curb fits within the curb, and is furnished with a central screw bolt by which it is held in place in the curb by means of a cross piece through which the bolt passes. Packing is placed between the plate and curb. Upon the upper edge of the curb is placed a flat, elliptical ring which serves as a chafe plate for the ends of the cross piece to rest upon, and also makes a nice finish to the head. The construction and arrangement of the several parts will be readily understood from the engraving.

To open the cask it is only necessary to remove the nut from the upper end of the bolt, when the cross piece may be removed and the plate taken out of the cask by passing it endwise through the curb. The cask may be very easily

**MORAN'S HEAD FOR BARRELS, CASKS, ETC.**

opened and closed without removing the head, and can be closed perfectly airtight; the parts are strong and durable, and can be cheaply made.

Additional particulars may be obtained from the inventor, Mr. Patrick Moran, of 443 Water Street, Bridgeport, Conn.

EXPERIMENTS made with gases upon insects proved the Colorado beetle hardest of all. It took prussic acid vapor to kill it outright, and was paralyzed in illuminating gas.