### A New Fire Escape.

At a recent meeting of the Engineers' Club of Philadelphia, Mr. John E. Codman exhibited drawings of and described Nicholson's fire escape, which consists of a fireproof brick tower, octagonal externally and cylindrical internally, with central shaft about 18 inches diameter, around which is formed a winding passage, of a U-shaped section, 2 feet 3 inches in width, with smooth or glazed surface, and inclined at angle of 35°, with retarding curves of less gradient. Fireproof doors would connect with each floor and roof, and a vestibule with the surface of the ground below. It is intended that those escaping shall assume a sitting posture on entering the spiral and slide to the bottom, and it is claimed to be safer than other escapes for those unaccustomed to ladders, or weakened by fright or excitement.

### IMPROVEMENT IN STEAMBOATS.

Every boatman knows that the angle and depth at which the wheels of steamers strike the water affect very greatly their speed and power of propulsion, involving as a consequence the questions of time and consumption of fuel. The loading and unloading of a vessel alter the dip of the paddle; the heavier the load the greater the dip and angle, destroying the effective power of the engine. To remedy this difficulty many devices have been planned, the best of which are only partially effective, all more or less complicated, and the additional machinery being very liable to get out of order. The most common plan for side-wheel boats is the feathering wheel, which makes each paddle strike the water at right angles, but when deep in the water the power is applied at a great disadvantage, and too much of the wheel submerged for effective use.

A wheel large in proportion to the size of the boat and capacity is generally accepted as a solution of the difficulty; the vessel being constructed so that the load will not sink her below a line of effective working power. In stern-wheel boats the load is mainly carried on the bow, so that they do not run on an even keel, and the resistance of the water through which they plow their way is greatly increased. Other craft of this kind raise and lower the wheels by several devices not applicable to large and powerful boats.

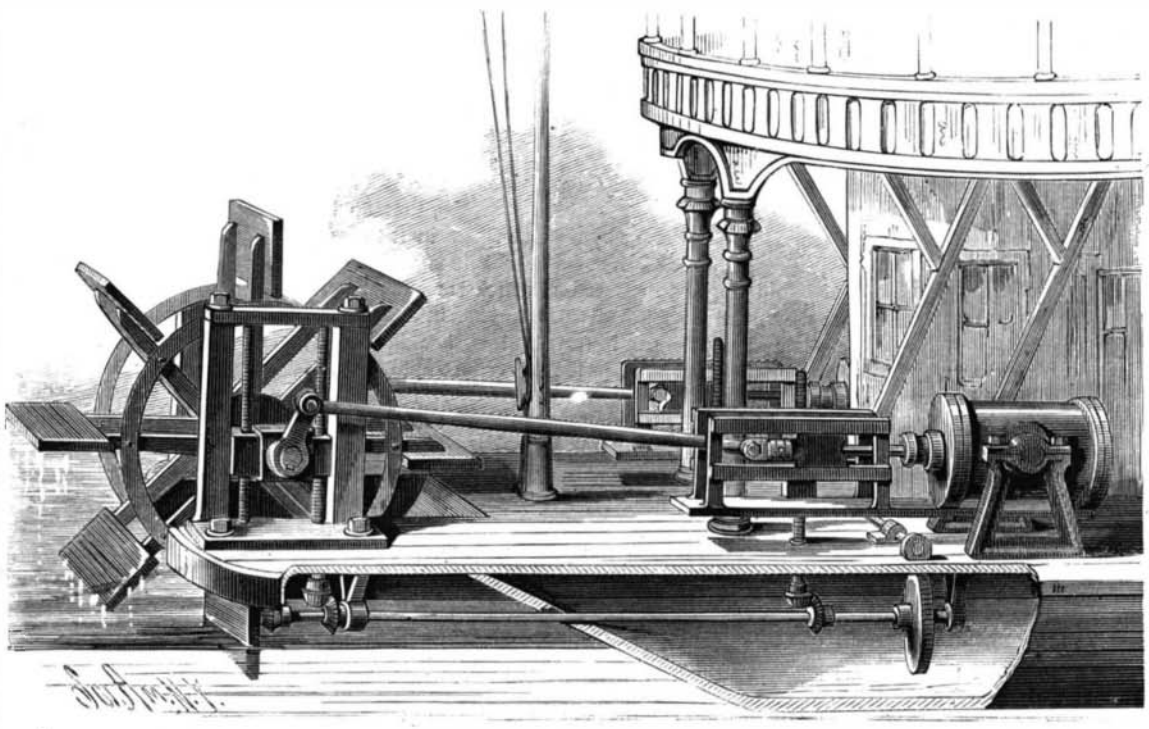
Mr. Robert L. Stevens, of Albany, Oregon, has recently patented a device which raises and lowers the wheels of either side on stern-wheel boats, so that whether the vessel be loaded or unloaded the paddle will strike at the most effective angle and depth, securing the greatest speed with a minimum of power, while the driving engines are not interfered with. This is effected by a series of screw shafts arranged for simultaneous movement by the driving engine, and they do not detract from the strength of the wheel or boat. The arrangement is not complicated, and adds but comparatively little to the weight.

The advantages of this improvement are many. The wheels and engines of large boats can be made smaller and driven faster, economizing weight and fuel, the destructive jar of an overloaded boat and its powerful engine obviated, increasing the durability of both. They can be deeply loaded without changing the paddles to a smaller diameter, as is often done on the Mississippi. They can be built deeper and longer, doubling or tripling their capacity in deep rivers. With light loads they can run up the shallow rivers at full speed, and thus avoid expensive transfers of freight, and their draught only limited by the depth of the rivers in which they ply. For example, a vessel drawing twelve feet of water when loaded with 1,000 tons, could start from New Orleans, leave portions of her freight at the great centers of commerce, and with a light load left, say 150 tons, and drawing three and a half feet or less, mount the swift and shallow tributaries of the Mississippi, carrying freight directly to its destination instead of transferring it to a steamer of lighter draught.

The paddle wheel and its shaft are supported at the stern of the vessel, as shown in the engraving, by boxes which are formed with side flanges entering grooves formed in fixed posts, so that the boxes are free to be raised and lowered. Screw shafts, supported at the top and bottom, pass through the internally threaded flanges of the boxes, so that the boxes with the wheel and shaft are sustained by the screws. On the lower ends of the screws, at each side, there are bevel gear-wheels meshing with similar gears on shafts that are fitted longitudinally of the vessel at each side.

The cylinders are hung for oscillation on trunnions, and the slides are connected to the cylinders so as to retain their proper relative position. A screw is fitted in connection with a nut on each slide, for swinging the slide and cylinder and sustaining them. All of the screws are connected for simultaneous operation. The movement being in an arc from the trunnions, the screws and bevel gearing are proportioned to obtain the variation in movement. To allow vertical movement of the boxes the piston and eccentric rods are fitted with right and left hand screw turn buckles, so that the rods can be lengthened and shortened.

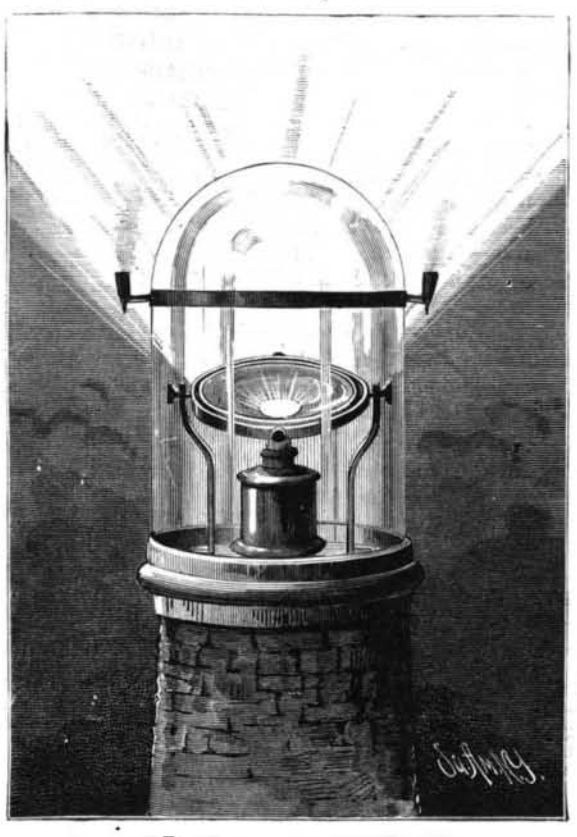
The invention can be applied in connection with side paddlewheels and beam engines by changing the relative position of the parts.



STEVENS' IMPROVEMENT IN STEAMBOATS.

### IMPROVEMENT IN LIGHTHOUSE LANTERNS.

The engraving represents a novel lighthouse lantern recently patented by Mr. Oliver Cook, of Darien (Rowayton P. O.), Conn.



COOK'S LIGHTHOUSE LANTERN.

The lantern is provided with a glass dome or cover, and a concave ring reflector in a gimbal, provided with clamping screw pivots to hold it in any desired position.

The tower of the lighthouse is constructed in the ordinary manner, and supports the lantern, the sides of which are made of glass, secured to a frame attached to the top of the tower. The top of the lantern or lamp chamber is made of glass, arched in the form of a dome, and supported by the lantern frame. The glass dome may be made in one piece or in sections, as may be desired. The lamp is of the ordinary description. The reflector is a circular concave disk with a hole through its center, through which the flame of the lamp projects.

The pivots of the gimbal are screws which permit of clamping the rings of the gimbal in place when the reflector is adjusted in the proper position to throw the light vertically or at any desired inclination.

By this construction the light may be thrown upward against the clouds, and will be reflected by the clouds so that it can be seen at a much greater distance than is possible when the light is thrown from the lantern in a horizontal direction. The adjustment of the reflector depends upon the state of the air. The gas from the lamp escapes from the lantern through two or more elbow pipes. The lower arms of these pipes incline slightly downward, so that any rain that may fall into the open upper ends of the pipes cannot flow into the lantern, but will escape through small tubes connected with the pipes at their angles. The air to support combustion is admitted through openings in the bottom of the lantern.

This invention was suggested to the inventor by seeing the lights of New York city reflected from the clouds fifty miles distant from his home.

This style of lantern will enable vessels coming in from the sea to get the bearing of the harbors in dangerous weather much sooner than they could with the old form of lighthouse.

These lights could be made to flash, or they may be colored to distinguish them from other lights.

### RECENT INVENTIONS.

Mr. Josiah Wormuth, of Kinney's Four Corners, N. Y., has patented an improvement in the class of farm fences in which the rails or boards forming the panels are supported by means of wires attached to the posts. Boards, rails, or poles are used to form the panels, and instead of posts set in holes dug in the ground the inventor uses stakes which are sharpened to adapt them for driving, greatly facilitate the erection of the fence or its removal from one place to another. The invention relates particularly to the manner of applying and securing the wires to the posts or stakes. In addition to forming the eyes to receive the rails, the larger loops depend below the rails so that the weight of the rails causes a direct downward pull on the nails, and the pull or strain is mainly lateral, so far as relates to the lower nail of a pair. The result is, that the nails and wire are subjected to less strain, so that the nails retain their hold in the post longer, and the wire may be of smaller size, and will remain intact or unbroken for a longer time.

A novel toilet fan has been patented by Mr. James C. Stirrat, of Brooklyn (E. D.), N. Y. The object of this invention is to provide a new and improved fan which can also be used as a new and very amusing toy. The invention consists in a fan made of a circular or polygonal sheet of pasteboard, metal, or other suitable material, suitably ornamented, and pivoted on the fan stick or handle so as to revolve freely on its pivot. It is provided with a central ring, and a series of radial lines dividing it into a number of equal or unequal spaces, which may contain advertisements, etc., or they may contain mottoes, verses, names, letters, etc., or pictures of animals, nursery scenes, etc. It will afford children and others much amusement to revolve the fan and observe to which space the pointer points when the fan stops.

Mr. Amant H. Ohmann-Dumesnil, of St. Louis, Mo., has invented an improved device for holding stair carpet in such a manner that it can be removed or replaced and fastened conveniently and quickly. The invention consists of a latch provided on its under side with one or more studs or pins and pivoted to a prismatical or beveled plate or block which is secured to the riser and tread at the angle formed by the same, the carpet being placed over this block and held in place by the latch, which is closed down upon the block, the pins passing through the carpet into apertures in the block, the latch being locked by a spring or a pivoted catch.

An improvement in lead pencil holders has been patented by Mr. Edward Weissenborn, of Hoboken, N. J. The object of this invention is to facilitate and cheapen the manufacture of lead pencil holders of that class in which the lead is held by a spring-pressed divided point.

Mr. Henry H. Welch, of Cincinnati, O., has patented an improved car switch manipulator which is especially adapted to street car switches. The object of the invention is to enable the driver of the car, by means of suitable attachments to the front of the car, to operate the switch.

Mr. Frank N. Forster, of Buffalo, N. Y., has patented an improvement in tanks for storing petroleum, the object being to protect the tanks from the effects of lightning. It is well known that a rising quantity of gases attracts lightning; this inventor has, therefore, taken all possible precaution to prevent the escape of gases from the oil tank. If considerable quantities of gas accumulate in the tank and the pressure increases, a valve is opened by the pressure, and the gases are conducted to places some distance from the tank. If the gas should become ignited, the valve prevents any return of the flames into the tank.

An improved chain-work for jewelry, formed of interlocking spiral wires and crossbars in every other coil, the side edges of the crossbars and wires being folded over the body of the chain-work, so that soldering is rendered unnecessary, and polished crossbars may be employed, has been patented by Mr. Emile Vieille, of Providence, R. I.