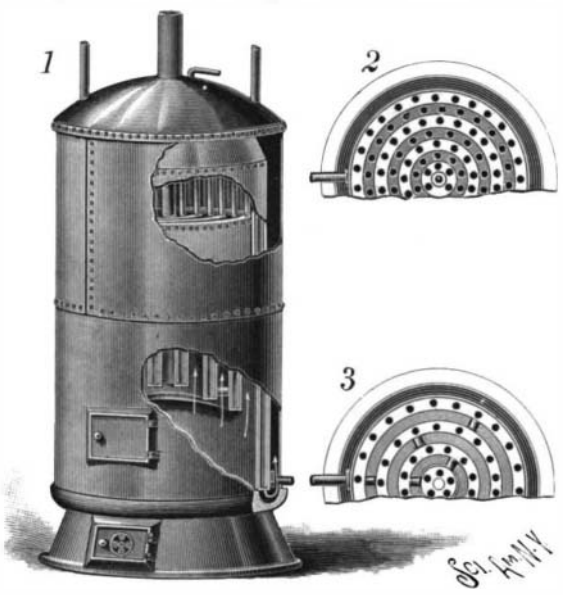
A BOILER OF NOVEL CONSTRUCTION.

In a new boiler invented by Jacob F. Klugh, of Highspire, Penn., ingenious means have been provided for securing a rapid circulation of the water, a large heating surface, and a utilization of the fuel to the utmost profit.

Fig. 1 illustrates the boiler in perspective, parts being broken away to show the interior construction. Fig. 2 is a sectional plan view taken through the water and steam compartment. Fig. 3 is also a sectional plan



A BOILER OF NOVEL CONSTRUCTION.

view, but taken through the lower portion of the water and heating sections.

The boiler comprises a series of concentric, circular water-sections, closed at the bottom, but opening at the top into the water and steam compartment. The outermost of these sections extends below the others, and is seated in a circular groove in the base of the boiler. By reason of this arrangement, annular heating spaces are formed between adjacent water-sections; and a central flue is formed by the innermost water section, which flue extends up through the water or steam compartment and the crown-sheet to open into a heat and smoke box arranged above the crown-sheet. The lower, closed ends of the water-sections are branch-connected, so as to enable the water to circulate through the boiler. Through the water-sections and the water or steam compartment pipes extend; through the crown-sheet similar pipes extend to connect the heating spaces with the heat and smoke box; and in the outermost water-section are pipes opening at their lower ends into the grooves of the base. A draft and heating chamber surrounds the outermost water section and opens into a dome. Between the heat and smoke-box and the dome a valved connection is provided which enables the two chambers to be directly connected.

In a boiler thus constructed the heat is required to penetrate only a thin sheet or body of water, thereby very rapidly converting the water into steam with a minimum amount of heat.

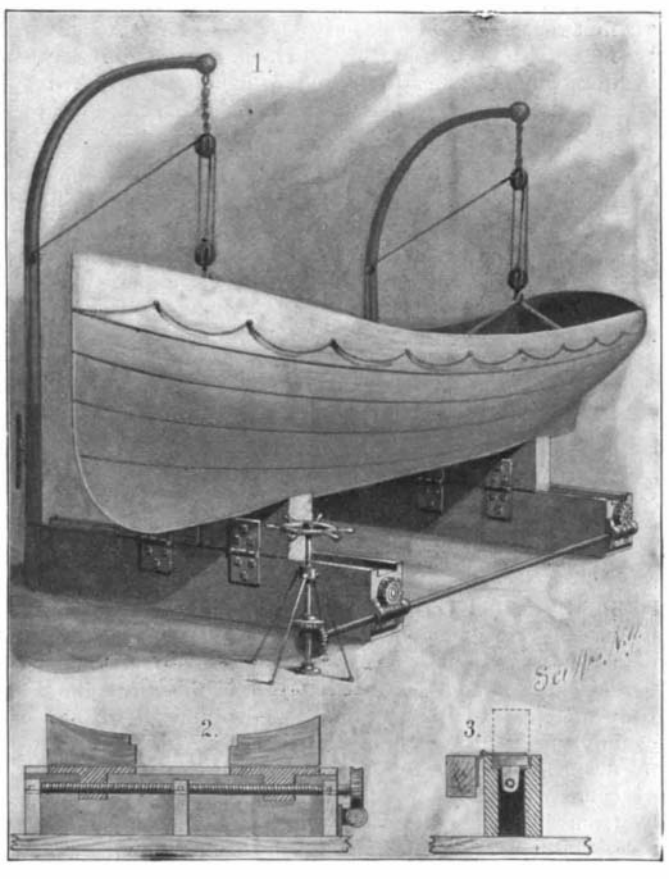
A SHIP'S BOAT SUPPORTING AND LAUNCHING DEVICE.

A ship's boat, in order to be launched by the ordinary method, must first be raised before being swung out and lowered. In cases of emergency this operation could be properly performed only by a ship's crew. An invention patented by Henry J. Matson, of the steamship "La Touraine," Compagnie Générale Transatlantique, Pier 42 North River, New York city, provides a simple device whereby the launching of a boat can be readily performed by the passengers without the assistance of the crew.

Of the accompanying illustrations, Fig. 1 is a perspective view of the device showing a boat placed thereon. Fig. 2 is a longitudinal section through a supporting-block used in connection with the device. Fig. 3 is a cross-section showing the supporting-block in two positions.

To the deck of the ship, beneath each boat, are secured two cross-beams. Upon guideways in these beams, plates slide to which the blocks which support the boat are hinged, in such a manner that they may be swung aside to the position shown in Fig. 3, in order to leave the boat free. To the plates nuts are screwed which engage bars mounted in the beams. These bars have a right-handed thread at one end and a left-handed thread at the other. To the outer ends of the threaded bars, wormwheels are secured which mesh with worms on a shaft journaled in the two cross-beams, and connected by bevel-gears with a vertical shaft operated by a hand-wheel.

In launching a boat, the hand-wheel is turned to separate the supporting blocks by the operation of the threaded bars which engage the plate-nuts previously mentioned. When the blocks are sufficiently drawn apart, they are swung down into the position shown in Fig. 3. The boat being thus left freely suspended, may be readily swung out over the ship's side and lowered by the ordinary tackle without the necessity of being first raised. The entire operation may be performed by a single person and in much less time than would ordinarily be required.



MATSON'S BOAT-LAUNCHING DEVICE.

Electrolytic Galvanizing.

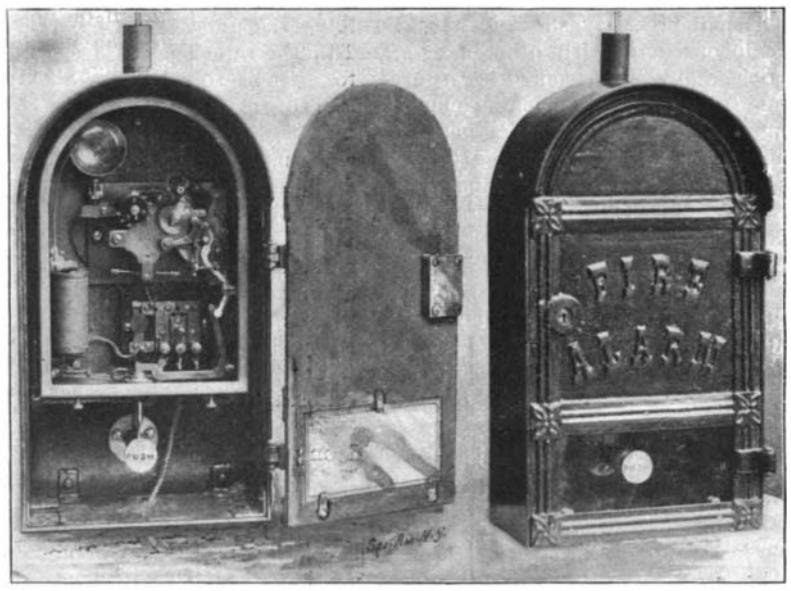
A company started some two years ago to introduce a new cold process for galvanizing, and now a number of plants are running. The New York plant, with a capacity of about two tons per day, galvanizes any kind of jobbing work, and fills sample orders for manufacturers to show the advantages of the process. A glance at the old method will show clearly by comparison the advantages offered by this new process. As is well known, zinc is the only metal which will effectively preserve iron from rusting, and therefore is used for galvanizing purposes. The process of zincing by heat is defective. It puts on much superfluous metal, leaving the surface of the object treated rough and uneven, and does not give a coating of uniform thickness and strong adherence. Screws and threads have to be recut after treatment, involving much extra labor. All such defects are claimed to have been overcome by this new process of electrolytic galvanizing. A multitude of articles can thus be galvanized. Screws, nuts, cutting instruments, tools of every description, springs, locks (inside and outside parts), umbrella frames and artistic metal articles can be treated. Screws and threads need no recutting; springs preserve their elasticity and temper. The coating adheres to the surface of the iron, and all designs retain their original forms. Iron sheets or wire can be bent, folded, twisted, etc., without injury to the galvanizing. The exposure of articles to atmospheric influences will not injure their rust-proof character, nor will salt water cause corrosion.

Cast and wrought iron, steel, brass and copper can be treated, and such articles afterward brassed, coppered or silver or gold plated for decorative purposes. A considerable reduction in cost of operating is effected, 80 to 90 per cent of spelter being saved, and there is also a saving in fuel. There is no dross, which in the old process consumes 30 to 50 per cent of zinc, and the use of sal ammoniac is avoided. The gradual depreciation of the expensive zincing kettle, caused by burning out, and the keeping up furnace fires day and night, essential with the old method, is entirely avoided. The size of the article to be galvanized is immaterial, it being merely a question of making tanks to correspond. The bath prepared for galvanizing is permanent and only requires an occasional addition of inexpensive chemicals. Ordinary zinc plates are used for anodes. The process can be made continuous—that is, the articles first put in the tank will be galvanized and ready to be taken out by the time the tank is filled with the material to be galvanized, provided it is made of sufficient size. Electrolytic galvanizing is particularly adapted to articles consisting of two or more movable parts, such as pulley blocks, gage tools, snap hooks, etc., as no parts are soldered together by the galvanic process.

AN IMPROVED FIRE-ALARM.

In many of the fire-alarms at present in use it is first necessary to open the door of the box by means of a key before sounding an alarm. Often the box is rendered useless by turning the key the wrong way, and sometimes the key is broken by not inserting it far enough in the keyhole. A fire-alarm invented by Harlie E. Greene and John W. Haley, of Hot Springs, Ark., seeks to overcome these objections by employing a box in which an alarm is sounded by breaking a glass plate and by operating a push-button. Our illustrations represent this improved fire-alarm with the door of its box opened and closed.

The outer casing of the box is provided with a hinged door having at its lower portion a glass panel. Secured to the lower portion of the inner wall of the casing is a slotted barrel, in which there slides the spring-pressed shank of a push-button. On the shank there rests a cam, the inclined upper surface of which engages a pin sliding in vertical guideways at right angles to the push-button. Through the medium of a series of spring-pressed levers this vertically-sliding pin operates a stop-lever engaging the notch of a stop-wheel journaled in the upper portion of the casing.



AN IMPROVED FIRE-ALARM.

The stop-wheel is connected by clock-gearing with a commutator wheel provided with two brushes, one of which is in fixed contact with the commutator and the other of which is adapted to engage contact points on the wheel. Two line-terminals are connected by wires with the two commutator brushes, one line-terminal being directly connected with one brush and the other having in the circuit bell-magnets and a bell, which may, however, be cut out whenever it is desirable or necessary.

When it is desired to send in an alarm the glass panel is broken, and the push-button is then forced in against its spring. The inclined surface of the cam will then raise the superposed pin; and the pin will operate the connected spring-pressed levers to raise the stop-lever from engagement with the notched stop-wheel. The clock-gearing will be set in motion and will drive the commutator-wheel so that the points thereon will complete and break the circuit as they alternately pass into and out of contact with the movable brush. The relation between the commutator and stop-wheels is such that the former will make two revolutions for a single revolution of the latter, thus sending in two alarms for one operation of the push-button. Should the fire-alarm circuit at any time be disabled by the burning-out of the magnet-coils, the magnets and bells can be cut out and direct communication established between the brush and terminal. The inventors claim that the fire-alarm will have a resistance no greater than 20 ohms, and that by cutting out the bell-coils the resistance is still further reduced, hence permitting the use of small battery-power in operating the lines.

The Incineration of Garbage in Hamburg.

At a recent meeting of the German Society of Public Hygiene, Meyer (Tribune médicale, N. Y. Med. Jour.) described the system employed in Hamburg for the cremation of garbage. It applies to the central part of the city, occupied by about half the population. The works consist of thirty-six Horsfall furnaces. The material to be burned is delivered in sealed metallic receptacles. Combustion is promoted by forcing warm, dry air into the furnaces. This is found to be superior to the English practice of employing steam. Except for kindling purposes, no adventitious fuel is required; the combustion is complete. The heat generated is turned to account in operating dynamo-electric machines for illuminating and other purposes.