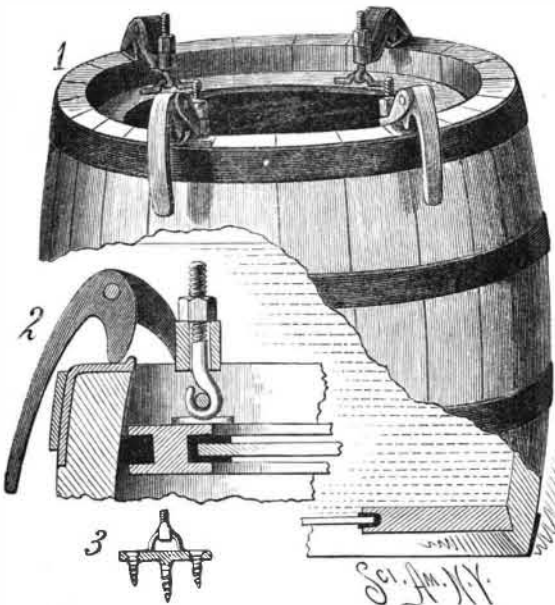


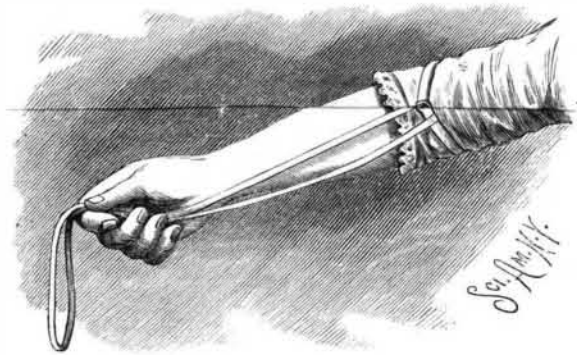
AN IMPROVED REMOVABLE BARREL HEAD.

An efficient barrel head and fastening, which may be locked air and fluid tight in the barrel, the barrel having a smooth inner face where the head fits it, is shown herewith, and has been patented by Mr. Robert C.



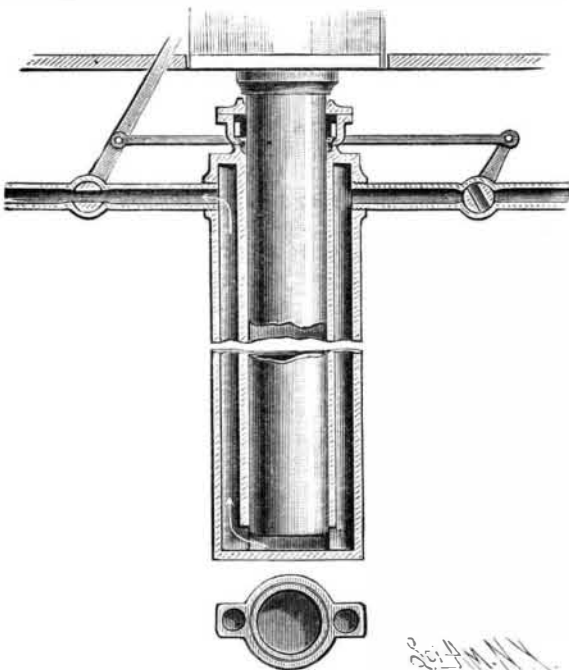
BOEKLER'S BARREL HEAD AND FASTENING.

Boekler, of Mankato, Minn. A removable barrel head is made with an outside frame or rim of wood or metal, with packing fitted in a groove in the outside edge of the frame to bear on the dressed staves, the inner edge of the frame being grooved all around to receive a glass or other transparent plate, with an interposed packing. The head is held to the barrel by cam lever clamping devices, their attachment being shown in section in Fig. 2, a lever with a cam head being pivoted to a link which has at its inner end an eyethrough which passes loosely the threaded end of an eyebolt, the loop or bent end of which incloses a cross bar or staple of a fastening plate, screwed or otherwise fastened to the upper face



NICHOLS' SLEEVE STAY.

of the barrel head frame. Fig. 3 shows another form of plate for holding the cam clamp. To prevent the toe of the cam lever head from indenting the end wood of the barrel stave, an angular metal plate is let into the stave to form a stop. By adjusting the nuts on the threaded end of the eyebolt connected with the link pivoted to the cam head, any required purchase may be given the levers to assure their effective operation in drawing the head tightly to place. With this construction there is no metal necessarily exposed to rust or corrode, and when the head is removed there is no flange, groove, or rabbet left in the barrel to hinder the free discharge of its contents and thorough cleaning of the barrel.



McDONALD'S HYDRAULIC ELEVATOR.

AN IMPROVED AIR SHIP.

A vessel for aerial navigation, which is designed to be a light and yet strong and roomy structure, capable of easy ascension and being readily steered, is illustrated herewith, and has been patented by Mr. Charles H. Morgan, of Gunnison, Col. It is constructed with a series of longitudinal tubes, adapted to hold concentrated gas, and bent to assume a generally spherical shape. These tubes are secured at their extremities to reduced end ribs, and to transverse circular or oval ribs, between which and the longitudinal ribs is an inner inclosing silk or metallic wall. An outer smooth metallic wall is also provided, having a sharp forward point, in which is a sight opening, a steering apparatus being mounted near by. In the central portion of the ship is a compartment, in subdivisions of which are electric motors to furnish propelling power, the wings being designed to partake somewhat of the appearance of a bird's wing, the upper row of wings propelling the ship forward and slightly upward, while the dip and stroke of the wings may be adjusted within certain limits. The rudder is made somewhat in the shape of a fish tail, and consists of two fans arranged side by side in the same plane. The ship is elevated principally through the introduction of the concentrated gas in the longitudinal tubes into the gas chambers, and ascension may also be facilitated by exhausting the air from other small chambers, and filling them with gas, while the ship may be lowered by external valves arranged with connecting cords within easy reach. The strength and character of the walls allow for great expansion of the gas, and automatically working valves are arranged to accommodate the varying internal and external pressures in upper and lower strata of air.

AN IMPROVED SLEEVE HOLDER.

A simple device for holding a sleeve in place on the arm when another sleeve is being drawn over it is shown herewith, and has been patented by Mr. Fred H. Nichols, of No. 24 Market Street, Lynn, Mass. It consists of a string or tape having a ring or loop fastened at one end, through which the tape freely passes, the other end being fastened to the tape adjacent to the ring. With this holder an adjustable loop may be readily formed at either end of the folded tape and drawn tight upon an arm, when, after holding the sleeve in position until the garment has been drawn over it, the hold is readily released.

AN IMPROVED HYDRAULIC ELEVATOR.

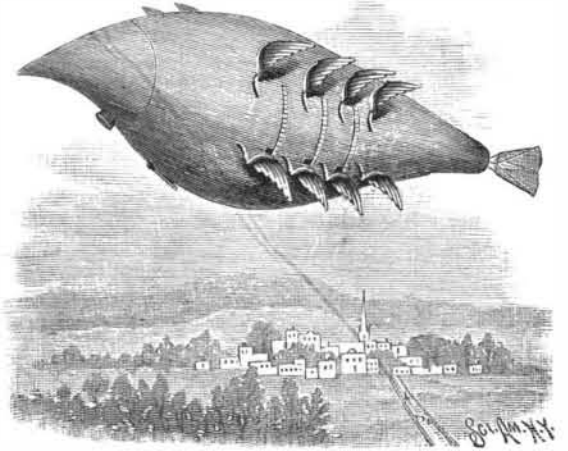
A hydraulic elevator, in which water is used as a motive power, has been patented by Mr. John S. McDonald, of No. 42 Decatur Street, New Orleans, La., and is illustrated herewith, the larger view showing a longitudinal sectional elevation and the smaller one a plan view midway through the cylinder. In a cylinder which is closed at the bottom and open at the top operates a plunger, supporting the carriage on its upper end, outside the cylinder. On the sides of the cylinder are two channels, connected near their upper ends with the water inlet and outlet pipes, each having valves connected with each other by a single rod, so that they are operated simultaneously to close one and open the other. The lower ends of the side channels have openings into the bottom of the cylinder, the plunger, when in its lowest position, resting a short distance above the bottom, so that the openings are never closed. As water enters the inlet valve, the outlet valve being then necessarily closed, it passes by one of the side channels to its opening in the bottom of the cylinder, thus operating to raise the plunger, with its load. When the plunger reaches its extreme upper position, by the reversal of the valves, closing the inlet and opening the outlet pipe, the downward movement commences, the weight of the plunger, its carriage and load, forcing the water from the cylinder, through the outlet pipe, with a strength of current sufficient to carry away any sediment it may have contained. The side channels are in this way so connected with each other, through their bottom openings into the cylinder, as to make a passage in which the sediment is prevented from settling, but will be carried out by the rush of water each time the cylinder descends.

A METHOD AND APPARATUS FOR HEATING CARS.

An improved method and apparatus for heating cars by utilizing the waste products of combustion, conveying them beneath the cars of a train, and supplying air heated thereby to the interior of the cars, is illustrated herewith, and has been patented by Mr. Thomas R. White, of No. 33 Wellington St., Boston, Mass. A hand lever in the cab of the locomotive is connected with a lever pivoted in the smoke box, which controls a double damper, whereby the products of combustion may be directed through an aperture in the bottom of the smokebox, and thence through a jacketed flue consisting of an inner and outer pipe extending beneath the locomotive and cars, or said products may be

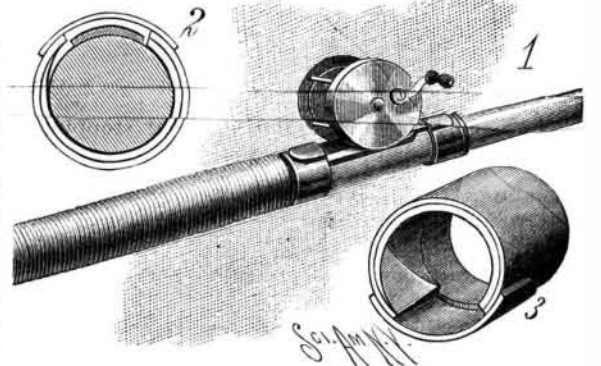
allowed to escape through the smoke stack in the regular way.

Two blowers are mounted in the locomotive cab, operated by a small engine, and when sufficient steam has been raised by the natural draught of the fire, with



MORGAN'S AERIAL SHIP.

the usual opening to the smoke stack, and it is desired to divert the products of combustion into the jacketed flue, the double damper is turned, and one blower operated to supply a forced draught to the fire while the other supplies air to a pipe which surrounds the one carrying off the products of combustion under the cars. These pipes extend longitudinally beneath each car of a train, and are adapted to be coupled to each other and to the pipes of the engine in any suitable or approved manner. At regular intervals smaller semi-circular pipes are made to radiate from each side of the outer longitudinal pipe, as shown in the small figure, and pass up through the floor of the car, through a suitable register. Upon the outer end of the longitudinal pipes, at the rear of a train, is fixed a screen through which the smoke and gases pass off, the ashes and cinders dropping through an aperture in the under side of the tube. By this means the heat ordinarily wasted and passing off through the smoke stack is

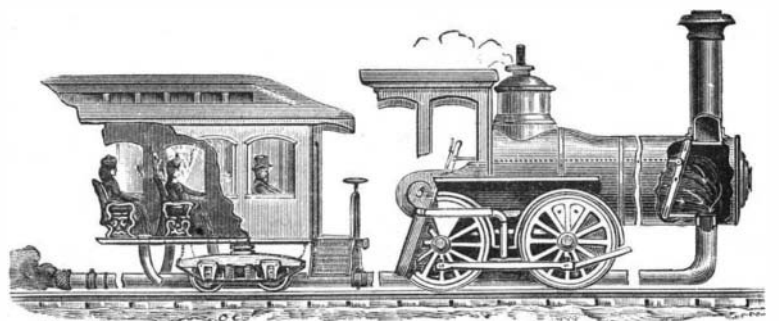


PRITCHARD'S WEDGE FERRULE.

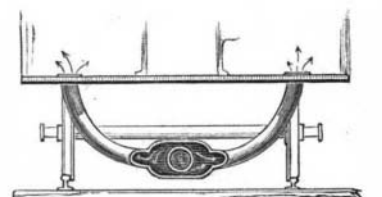
utilized to heat the air supplied to the cars, fresh air being constantly forced through the outer tube by one of the blowers. The smoke and cinders from the engine, ordinarily so great a discomfort in traveling, and frequently necessitating the closing of windows and ventilators, will be, by this method, carried to the rear of the train, so that they cannot be of any annoyance to the passengers, and the danger of fires caused by locomotive sparks will be removed.

WEDGE FERRULE FOR FISHING-ROD REELS.

A simple and effective device for readily and securely attaching a fishing reel to a rod is shown herewith, and has been patented by Mr. Henry Pritchard, Fig. 1 showing the device in use, and Figs. 2 and 3 sectional and perspective views of the wedge ferrule. The ferrule has the usual recess for the reception of one end of the



reel bed plate, the recess being formed by cutting away a portion of the body of the ferrule and covering the opening with a cap. A



WHITE'S CAR HEATING APPARATUS