

tion, namely, the use of a globe valve at the end of the radiating pipes on each side of the cars. In some cases it has been deemed wise to file a small groove in the valve seat, so that it can never be entirely closed. Such a groove is intended to be large enough to take care of all condensation in mild weather, and in cold weather the trainmen are expected to adjust the opening of the drip valve to suit the amount of condensation. By others it has been thought best to leave the drip valve intact, and to allow trainmen to regulate it for all conditions. This arrangement permits of allowing the condensation in mild weather to partially fill the radiating pipes, and the heat can be then controlled by the amount of condensation allowed to pass off. It can be readily seen that by this arrangement, if half the pipes were filled with water, the steam would only reach and heat the other half of the pipes.

With the present state of invention in relation to traps, I think the plain drip valves have decided advantages. In this connection I would recommend that, where possible, the steam admission and drip pipes should be kept in contact, and covered in the same jacket, and the outlet of the drip be in contact with the three-way valve, or pass through it as is arranged for in one style of three-way valve now on the market.

It may be of interest to know that since last spring a committee, representing several of the Vanderbilt roads have had in hand an investigation of the matter of steam heating for cars, and a summary of the results of their work is contained in the following recommendations for adoption:

1. That the "direct" system of steam heating be used for heating coaches.
2. That the "indirect" system of steam heating be used in sleeping cars.
3. That in the "indirect" system, salt water or a non-freezing mixture be used in the circulating pipes.
4. That a three-way valve be uniformly used for controlling the steam in the main train pipe, the parts located inside the car to be uniform, the valve to take a solid (male) wrench, and the marking on the floor plate to be uniform, and to indicate the direction of the main train pipe and the branch supply pipe, and to be similar in size and style to the Martin floor plates, now in general use on the roads represented.
5. That we approve and adopt for general use the style of steam controlling valves as designed and made for our committee by Fairbanks & Co., of Boston,

and by the Safety Car Heating and Lighting Co., of New York.

6. That the use of traps for taking care of the drip be dispensed with.

7. That we use a globe valve for the drip valve, with a small slot filed in the seat of the valve, so it can never be entirely shut off.

8. That two lengths of 2 in. pipe on each side of the car with no spurs under the seats are sufficient for satisfactory heating.

9. That for "indirect" heating, all pipes and connections, except train pipe, shall be maintained inside the car. That the system be limited to one steam valve and one drip valve, placed uniformly in all cars.

10. That at all terminal and junction points, where passenger trains are made up, or cars are likely to be set off, facilities be provided for heating cars by steam, when not in trains. This we consider very essential to the successful heating of cars by steam.

Sea Sickness.

Most of those who have experienced the miseries of sea sickness, however they might differ in minor details of statement, would agree in ascribing this most dispiriting malady to one main cause—the motion of the ship. In so far the whole medical faculty would concur in their decision. This, then, is the central fact which confers upon the disorder its unique position. It is really not a pathological, but a physiological disturbance. It has no natural connection with dyspepsia. The robust and healthy, by a strange contradiction, suffer from it for the time hardly less than the weak and ill. Its variations of intensity are felt to be counterparts of mere bodily oscillation. Some find relief from it in change of posture, others in active occupation, all more or less when their storm-tossed vessel sails under the lee of land. Custom and use commonly secure immunity. These are circumstances which one and all point to mechanical causation as the source of the discomfort. It is the unaccustomed rise and fall, the jerk and relaxation of loosely attached abdominal viscera, mainly, perhaps, but not alone, of the stomach, acting upon the central nervous connections, which must bear the brunt of accusation. It follows that successful treatment cannot be guaranteed by any one method or panacea. Recumbency, pure deck air, moderately firm bandaging of the body, are all useful. Drugs have their place and their par-

tial utility; but, as we have already suggested, there is no remedy equal to a lee shore. Nothing can be much more depressing than sea sickness, and for this reason we should strongly advise all weak persons not to encounter if possible the risk of its occurrence. It is astonishing how soon and how completely those who are favored with a fair measure of constitutional elasticity recover from its depression. In their case the benefits of a sea trip may thus, with compensations of air, diet and appetite, be even enhanced by a few hours of mechanical nausea. It is, in truth, for such persons only that tours of this kind are advisable.—*Lancet*.

The Fastest Steam Launch.

The steam launch Yankee Doodle, probably the fastest boat of its class in the world, was unfortunately destroyed by fire, at Philadelphia, in September last. The boat was originally called the Buzz, built by Mosher, of Amesbury, Mass., but as her speed did not prove satisfactory her original boiler and wheel were removed and new ones substituted by her new owners, Messrs. McBride Brothers, of Philadelphia, Pa. The new boiler was quite remarkable. It had 410 one inch steel tubes, tested to 1,900 pounds to the square inch hydrostatic pressure; 360 feet tubular heating surface; weight, 2,000 pounds; grate surface, 8 feet; steam dome, a peculiar feature, 2 by 4 feet; usual boiler pressure, 150 pounds.

Screw, 34 inches, 5 feet 10 inch pitch; two blades; 550 revolutions per minute.

Engine, 160 horse power; two 8 by 8 inch cylinders.

The hull was 50 feet long, 6½ feet beam; displacement, 4 tons; draught, 15 inches.

Her speediest record was made on the fourth of July last, when, according to the report of the official timers, Messrs. G. S. Carrigan, Dr. G. F. Root, and H. E. McPerson, she ran a mile on the Schuylkill River, on the National Course, in 2 minutes 1½ seconds—almost thirty miles an hour. The timers were not on the boat, and their record is believed to be reliable. We understand the Messrs. McBride intend, during the coming year, to build another boat equal or superior in speed.

CREOSOTED wood has been found to have such excellent lasting qualities that its economical properties have suggested its use for permanent haulage, roads, shaftways, etc., in collieries.

RECENTLY PATENTED INVENTIONS.

Engineering.

HYDRAULIC PROPELLER.—John T. Carstairs, Wellington, Canada. Two cylinders containing pistons are, according to this invention, operated simultaneously to alternately draw in and discharge water from either the stern or bow of a vessel, thus propelling it forward or backward as desired. A set of pipes also leads from the gate boxes connected with the cylinders to each side of the vessel, whereby the vessel may be steered by manipulating the gates in the boxes.

Mechanical.

LATHE DOG.—Richmond Parsons, Philadelphia, Pa. This dog is made in two parts, the body part being of U-shape, with teeth on its inner faces, and the bridge piece being adapted to be passed laterally into and out of the body. It can be readily adjusted to different sized work, and applied without removing the centers of the work from the lathe, a clamping screw firmly holding the work after adjustment.

MACHINE FOR NAPPING CLOTH.—George W. Burr and Michael Malony, Webster, Mass. This machine is especially designed for use with the ordinary shearing machine to raise the nap on woolen or worsted goods, and consists of an attachment having oppositely rotating napping cylinders, with needles to raise the nap both ways at the same time, in connection with a tension device to regulate the pressure of the cloth upon the cylinders. The invention also covers a novel construction of the cylinder needles.

SCREW DRIVER.—William E. Daily, Morristown, Tenn. This invention provides a tool of which the bit may be revolved, and the screw forced to place or withdrawn, by means of a crank handle and gearing. The construction is such that the bit may be held to turn only with the shank of the screw driver, of which it constitutes a fixture, while one of the bits may be used with large screws and its other end with smaller ones.

COUPLING.—Irvin P. Doolittle, Redlands, Cal. A means for speedily and firmly connecting sections of pipes, hose, or solid rods, at their ends, and so they may be detached as desired, is provided by this invention. A spiral cam-locking lever is pivoted in a slot on a female coupling section, and has an adjustable interlocking connection, with a channel shoulder on a male coupling section. By means of a joint washer an air tight or water-tight joint is made between the joined coupling sections.

Miscellaneous.

GUN CLEANER.—Charles W. Wunderlich, Washington, Mo. This device has a stock portion with internally threaded socket, forwardly extending spring arms being connected to the peripheral face of the stock, their forward ends contracted and bent to form radial scraper fingers, while a conical expander, having a threaded shank, operates in the threaded socket of the stock. In use the cleaner is attached to the

ramrod of a gun, in the chamber of which it is moved back and forth. Its construction is such that, if any of the parts be broken or injured, they may be readily repaired or replaced.

WATCHMAKER'S TOOL.—Charles Smith, Mount Carmel, Ill. This invention relates particularly to a holder for the movement while securing the hands to the center post, providing a solid anvil support for the post, by means of which the hands can be securely riveted thereto without danger of breaking the center jewel. Means are also provided for holding movements of various sizes by using readily attachable and detachable spacing rings in the box or case.

CONSTRUCTION OF BUREAUS, ETC.—Edward P. Lurker, Evansville, Ind. This invention provides a manner of constructing bureaus, dressing cases, chiffoniers, etc., with sliding drawers, in such a way that the entire article may be finished at one handling, the goods being thus turned out rapidly and the manufacture requiring but little room. With this construction the parting rails are adjustable vertically and laterally, and may be adjusted to the drawers when the bureau is built, to insure a perfect fit, the bottom being attached after the drawers are fitted, and being adjustable up or down.

CUFF BUTTON AND FASTENER.—James F. Poage, Kirksville, Mo. This device has a long flat shank on one end of which the button is held and made integral with the shank, while on the other end are pivoted jaws and a clasp, to secure firm attachment to the sleeve, whereby the cuff may be held in the exact position required, and an expensive cuff button may be used without danger of losing it.

ENVELOPE.—Hugo Roberts y Fernandez, Havana, Cuba. This envelope is made of but one piece of paper, the blank being so formed that glue or cement is not needed in fastening the parts together, but when the parts are united the envelope cannot be opened without tearing some of the parts. The bottom and end flaps each have slots which register when the blank is folded, while the top flap has a cruciform tongue, the vertical member of which passes through the three pairs of slots, the transverse member being wider than the slots, and being folded to pass through an upper slot, then unfolded to prevent withdrawal.

FISHWAY.—William H. Rogers, Amherst, Canada. This invention covers an improvement on a former patented invention of the same inventor, the fishway being so constructed that it may be built below the dam and inclosed in a strong cribwork, securing an entrance for the fish close to the dam, at a point where they will readily find the opening. The upper flume and upper end of the fishway leading into it are constructed to extend any desired distance above the dam, the flume and upper fishway being protected from ice and floods by a suitable covering. The fishway or channels may be applied to a perpendicular dam or one with considerable batter, the whole structure being firmly anchored to the dam, and the entire lower portion of the cribwork being ordinarily loaded down with stone ballast.

WAGON BRAKE.—Vardiman T. Sweeney, Springfield, Ky. A brake mechanism by which the brake may be applied directly and positively to both the front and the rear wheels of a vehicle, or to the rear wheels only by simply backing the team, is provided by this invention. The device may also be so operated that the team may be backed without applying the brakes, this result being effected by a shifting device in ready reach of the driver. The construction is very simple, and this brake may be readily applied to any form of running gear.

PHOTOGRAPHIC DARK CHAMBER.—Isaac Bryner, Callaway, Neb. A box containing collapsible parts of a dark room is formed of a base board, hinged side boards and top pieces, with end pieces, the inner surface of the side pieces having attached receptacles to receive and hold bottles with chemicals for developing and treating the negatives, while a plate-holding box is held in place by a spring. A compact and simple portable dark room is thus formed for photographic work, one which may be quickly set up and readily taken down and packed in small compass for transportation.

CURTAIN STRETCHER AND CLOTHES HORSE.—Edward N. Kenworthy, Oldham, England. This is a combination device comprising standards adjustably secured to a top bar, with two stretcher bars on opposite sides of the standards. The structure is readily adjustable to various sizes and patterns of curtains, facilitating their stretching and drying, and enabling the curtains to be secured without the use of permanent pins or hooks, while it may also be used as a clothes rack or clothes horse, or to support draught screens or screens for use in magic lantern lectures.

LACE FASTENER.—Justus W. King, Helena, Mont. This is a device adapted for attachment to a corset, to shoes, or any article in connection with which a lace is employed, automatically locking and holding any portion of a lace brought in engagement with it, and being also capable of adjustment to laces of different thicknesses. The device consists of a circular base of thin metal with a central depressed surface, loosely carrying a spring-controlled locking button, the frictional engagement between the cylindrical portion of the base, the lace and the button effectually preventing the lace from slipping.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

SCIENTIFIC AMERICAN BUILDING EDITION.

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1. Elegant plate in colors, showing a handsome residence at Belle Haven Park, Greenwich, Conn., recently erected at a cost of \$18,000 complete.

Floor plans and two perspective elevations. Messrs. Lamb & Rich, architects, New York.

2. Plate in colors showing an elegant residence at Montclair, N. J. Perspective view and floor plans. Cost \$7,000 complete. Mr. E. T. Hapgood, architect, New York. An excellent design.
3. A house at Montclair, N. J. Two perspective views and floor plans. Cost \$4,750 complete. E. T. Hapgood, architect, New York.
4. A Queen Anne cottage recently erected on Chester Hill, Mount Vernon, N. Y., at a cost of \$5,000. Floor plans, perspective elevation, etc.
5. A house for two families erected on Armory Hill at Springfield, Mass., at a cost of \$7,000 complete. Mr. F. R. Richmond, architect, Springfield, Mass. An excellent design. Floor plans and perspective.
6. A model dwelling at Holyoke, Mass. A unique design. Perspective elevation and floor plans.
7. A small cottage and separate summer kitchen. Perspective views and floor plan. Cost for both buildings, about \$1,600.
8. The parsonage at Montclair, N. J., built for the Congregational Church. Cost complete \$15,000. J. C. Cady & Co., architects, New York. Perspective view and floor plans.
9. A handsome residence at South Orange, N. J. Floor plans and perspective elevation.
10. A cottage at Fanwood, N. J., erected at a cost of \$5,166 complete. Perspective elevation and floor plans.
11. Portal of the church of Moret-sur-Loing, France.
12. Illustrations of two handsome English country houses.
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