

to disprove the statement so often made that snakes cannot crawl on a smooth surface, such as a table or dish. The mirror does retard crawling, but it by no means wholly prevents locomotion.

The common water snake or water adder is the most numerous of our non-venomous reptiles and the least desirable on account of its destruction of small fish. Simulating an old stick it lies in wait among the aquatic plants for the minnows and other small fish that seek the shallows of creeks and rivers to feed where they will not be molested by the larger fish, only to be caught by the voracious water adder. It sometimes seizes a fish too large to swallow, but by perseverance it drags the struggling victim into shallow water or drowns it, when it sets about to eat a square meal. One evening as I was crossing a stream I saw a black bass at least six inches long floating by with a water snake not more than two feet in length holding it by the lower lip. As the bass appeared to be dead, I jumped into the water to get it. At my approach the snake attempted to drag its victim back into deep water, but as I gained on it the adder let go reluctantly and the fish swam away as lively as ever. The water snake enjoys a sunbath on the bank of a stream, on the branches of the bushes overhanging the water, or on a pile of drift. At the approach of anyone it glides swiftly into the water and hides beneath the bank or under the drifts. It is a graceful and rapid swimmer, but there is nothing attractive about its color nor interesting about its habits. It bites viciously, but there is, of course, no venom.

We have another snake which is generally found near water, to which it takes when alarmed. It is the pretty ribbon snake, the most delicate and beautiful of our serpentine family. It prefers the banks of secluded streams, where it basks in the sunshine on some large stone, displaying its three narrow stripes of gold and two broad ones of light brown. The eyes are large. Its disposition is gentle, the little creature seldom attempting to bite. It also possesses great elegance of form. A specimen I had measured two feet one inch in length and weighed only five-eighths of an ounce!

The common garter snake, to which the ribbon snake is related, is very widely distributed and is easily distinguished from other species of our common snakes by the yellowish dorsal stripe extending from head to tail along the back. It also is found frequently in localities bordering streams, where it goes to slake

its thirst or catch frogs. A large specimen three feet long which I had in captivity ate in one night a mouse, a large toad, and three tree-toads, but fasted for six weeks thereafter. At times, however, it drank copiously. This leads me to say that snakes undoubtedly drink more water than is generally supposed. During a drought reptiles become very scarce. One August day when all the small streams had been dried up by a droughty summer a friend and I found, in the bed of a dry run a large garter snake evidently in search of water. It was taken to an open field, and while I went after my camera my friend kept it from returning to the shade. It made two or three efforts to escape, but he thrust it back with a stick. On my return within a few minutes I found the snake lying with its mouth open and stark dead. It may have been injured by the rough handling, but I am convinced that its death was caused primarily by thirst and the intense heat of the parched ground.

Among our common snakes none is more interesting than the hog-nose snake, which forms the initial letter of this article. The hog-nose snake is known in different localities as the blowing viper, spread-head, or spreading adder. The body is stout and short, its usual length being something under three feet. The color is a reddish brown above with dark blotches, but some of the species are black. If the hog-nose has gorged itself recently, and is overtaken in its slow and laborious crawling, the curious snake halts, and having disgorged its partly digested food, generally a large toad, moves away at a livelier rate. And if still pursued or touched the chances are that it will throw itself into contortions, at length turning on its back and feigning death with mouth open, tongue protruding and its tail curled into a curious little spiral—for what reason it is difficult to conjecture, unless by playing possum it hopes to escape. Many people say that the snake commits suicide by throwing its jaws out of place. The wide extended jaws, however, soon come together and the snake turns over quickly and makes off. When confronted by a dog the hog-nose is at its best. It spreads its anterior ribs, flattens its head as if there were no bones in it, twists its tail into the inevitable spiral, and hisses as viciously as an old goose. Although perfectly harmless and useful, the spreading adder pays dearly for its blustering ways, for many people take it to be the hated copperhead. Its color also aids in the deception.

(To be continued.)

**New Boston-New York Electric Automobile Record.**

Several days after the Messrs. Babcock's run from Boston to New York (described in our October 31 issue) was completed, the second electric vehicle to make this 244-mile trip arrived in New York. It was the Boston Edison Electric Illuminating Company's Columbia service wagon, which is equipped with solid rubber tires, and is propelled by one of the new Edison storage batteries. The longest run on a single charge was the fifty-three miles from Worcester to Springfield. The journey occupied four days, and the cost for recharging *en route* was stated to be \$7.50.

Mr. H. M. Wilson, who ran the machine in this instance, recently made the return trip in it in 48½ hours elapsed time, or 22 hours, 52 minutes actual running time, thus making an average speed of 10.8 miles an hour. This will stand, therefore, as the electric vehicle record between Boston and New York, until faster and more powerful electric autos are constructed with which to beat it.

**The Current Supplement.**

The current SUPPLEMENT, No. 1454, opens with an illustrated account by Frank C. Perkins of German marine boiler construction. M. Eugène Pettigont presents an interesting and instructive account of analyses and tests of paper. "Fire Appliances at the Exhibition of the German Cities in Dresden" is the title of an article in which appliances are described which will probably be new to many of our readers. Mr. George J. Henry, Jr., recently read a paper before the Pacific Coast Electric Transmission Association in which he discussed tangential water-wheel efficiencies. Mr. Henry has analyzed these efficiencies, not mathematically, but photographically. The paper will be accompanied by very striking instantaneous photographs showing the action of a stream of water on a Pelton bucket. Prof. Raphael Meldola discourses on the relations between scientific research and chemical industry. The biological purification of sewage water is a subject which will be of interest to sanitary engineers. Emile Guarini presents an account of an unusual form of capillary electrometer. "The Faure Type of Accumulators" gives quite a thorough review of the principle of storage battery construction and operation. The usual consular reports, engineering, electrical and trade notes will be found in their accustomed places.

**RECENTLY PATENTED INVENTIONS.**

**Electrical Devices.**

**ELECTRIC JAIL-ALARM.**—R. F. ADAMS, Birmingham, Ala. The invention relates to jail-alarms specially adapted for indicating, at the warden's room or separate building in which he may reside, tampering with or severing of the jail-window grating by the prisoner in his attempt to escape by breaking or sawing the bars of the window-grating.

**Heating and Lighting.**

**LIGHTING ATTACHMENT FOR GAS-STOVES.**—L. E. ADAMS, Galena, Ohio. Pressure of gas varies in the mains and sometimes is so low as not to furnish sufficient gas to keep a lighted stove burning. At times it becomes necessary to leave the room or house for a short period, in which there is a lighted gas-stove. During this period the pressure of gas in the mains may fluctuate and get so low as to allow the jets to flicker out or be blown out by slight draft of air. This invention relights the jets upon return of gas to normal pressure in the mains.

**HOT-AIR FURNACE.**—T. F. MEINHARDT, Charlottesville, Va. This furnace provides a separate heating-chamber for each room, so the heating chamber can be proportioned to the area of the room. Means are provided whereby the opening and closing of the register in any given room will operate a valve, so that when the register of any room is opened the valve controlling the hot-air pipe leading to such room will be opened and when the register is closed the valve will close the pipe and open communication between the particular chamber and the furnace dome to prevent undue superheating in any particular hot-air chamber or hot-air pipe or furnace.

**STOVE.**—J. WOOD, Noroton, Conn. The prime feature of this invention is a construction involving an air-jacket surrounding the stove, so that the cold air entering at the bottom may be heated by contact with the walls of the stove and discharged from the top of the object to heat the surrounding air or be carried off to another apartment of the building in which the stove is placed.

**OIL-BURNER.**—E. B. RAYMOND, Dallas, Texas. In this patent the invention relates to a burner which may be used either with crude or refined oils, and the burner is adapted particularly to be applied to the fire-boxes of stoves. The combustion of the burning gases is complete and no smoke is developed by the burner.

**HOT-AIR FURNACE.**—F. J. PROCH, Creston, Iowa. In the present case the invention relates to hot-air furnaces and to analogous heating appliances, the more particular object

being to increase the efficiency and controllability of the draft and to produce certain improvements in construction. Both a sinuous and a straight smoke offtake are provided to permit of proper regulation of the furnace.

**Of Interest to Farmers.**

**SICKLE-BAR.**—B. F. STUART, Rushville, Mo. In this instance the improvement refers to a sickle-bar for harvesting machines of all classes; and its object is to provide superior means for holding the sickles in place and for allowing them to be separately removed without entirely dissociating the bar and without involving the use of rivets or the like.

**Machines and Mechanical Devices.**

**FELLY COMPRESSING AND BORING MACHINE.**—G. A. ENSIGN, Defiance, Ohio. Mr. Ensign's invention has reference to woodworking machinery; and his object is to provide a new and improved felly compressing and boring machine arranged to form oblong spoke-holes in the felly, to prevent checking and splitting thereof, and to allow convenient adjustment for fellyes of different sizes.

**RIMMING MACHINE.**—F. UNCKRICH, Galion, Ohio. The machine embodies a saw for trimming the ends of wheel-rim-sections, so as to cause them to fit properly with respect to each other, and a hammer serving to drive the rims onto the spokes, together with such auxiliary devices as the means for holding the wheel-hub during these operations, for operating the hammer and saw, and the devices for mounting and adjusting the various operative parts.

**LIFTING-JACK.**—G. STOCKAMP, Hooper, Neb. In this patent the invention refers to an improvement in lifting-jacks, and has for its object the provision of a simple, cheap, and efficient device which may be used for lifting vehicle-axes, whereby the axle-spindles may be oiled. It may be also used for lifting rails, houses, etc., and possesses great lifting power.

**Railway Accessories.**

**NUT-LOCK.**—M. J. WALZ, Defiance, Ohio. The object of this invention is to provide a construction for a nut-lock that is simple, practical, very effective in operation, and adapted for general use to reliably hold a nut on a bolt for securing the bolt in place and preventing the loosening of the nut when tightened thereon. The invention is well adapted for application upon a bolt for clamping two fish-plates upon a track-rail.

**STATION-INDICATOR.**—P. P. I. FYFE, Concord, N. C. This invention is an improvement on two former patents granted to Mr. Fyfe. It provides a construction whereby the names

of stations or streets, with or without advertisements, may be displayed at the car ends, when the time for displaying arrives, and provides means operated so that one roller will wind up material while the next will be turned in direction to drop its curtain and whereby the operating means will travel from one pair of rollers to the other until all in a series have been operated on. Mr. Fyfe has invented another station-indicator, which displays in street or railroad cars the names of streets or stations, with or without advertisements, upon tapes carried by spring-controlled reels, with means for causing one tape to be rolled up upon its reel simultaneously with the next tape being unwound to expose data and held in display position until released.

**CAR-STAKE POCKET.**—J. F. MCKECHNIE, Eleele, Hawaii. The object of this invention is to provide novel details of construction for a car-stake pocket which will hold the stake in a vertical position, prevent rattling of the stake, greatly strengthen the side walls of the pocket, and prevent detachment of the stake accidentally, but permit its convenient removal from the pocket.

**FLUID-PRESSURE BRAKE APPLIANCE.**—A. G. TURLAY, Clinton, Ill. In this case the object is to provide a safety appliance for connection with the train-pipe in the cab of a locomotive to cause automatic application of the brakes whenever the train-line pressure falls below a predetermined pressure, which is caused by stoppage of the air-pump or gradual air leakage not sufficient to apply the brakes or move the triple valve and allow air to pass from the auxiliary reservoir to the brake-cylinder and out through a leakage-groove without applying the brake.

**NUT AND BOLT LOCK.**—H. E. OWEN and A. J. SHAW, Spokane, Wash. The inventors by this improvement are able to use a round bolt to fit round holes for bolts, forming the bolt with the flattened threaded portion to fit the flattened opening in the locking-plate, thus furnishing a nut-and-bolt-locking device applicable with great economy to structural work in bridges or other structures. This construction prevents accidental turning of the nut or of the bolt independent of the nut in use of the invention, on rail-joints, etc.

**Miscellaneous.**

**DECOY.**—G. E. LOEBLE, New York, N. Y. Mr. Loeble's invention relates to improvements in decoys for wild birds or fowls, especially aquatic birds or fowls, an object being to provide a decoy so arranged as to be operated from a distance to rise and fall and to move the wings, thus giving a life-like appearance and immediately attracting the birds or fowls.

**SCISSORS-HOLDER.**—A. E. MOORE, Winnipeg, Canada. The prime object is to provide means for holding the scissors within convenient reach of the user and by which the scissors may be held securely and readily engaged with or disengaged from the holder. To this end the invention comprises a body, gripping-fingers carried thereby and serving to hold the scissors, and a device at the rear of the body for attaching it to the clothing of the wearer.

**SECTION-LINER.**—R. KASTMANN, New York, N. Y. This is an invention which relates to an instrument for facilitating the drawing of parallel lines. Such lines are very commonly employed in the art of drafting to indicate sections, and it is to this work that the invention is especially adapted, although it may be employed in the various other branches of drawing, if so desired.

**STIRRUP AND CONNECTIONS THEREFOR.**—W. J. MAY, Leonard, Texas. This invention refers to novel features of construction for a stirrup and connections therefor which suspend the stirrup and an attached fender device at right angles to each other and dispose the stirrup in position for engagement by the foot of a rider without twisting the connection of the pendent stirrup-leather with the saddle or disarranging the fender from normal adjustment.

**DEVELOPING-TRAY.**—W. H. C. DUDLEY, JR., Americus, Ga. Mr. Dudley's invention refers to improvements in trays for developing photographic films, an object being to furnish a developing-tray of simple and inexpensive construction particularly adapted for outdoor or daylight developing and with which the work may be quickly and easily done with a comparatively small amount of solution.

**CHAIR.**—O. C. DORNEY, Allentown, Pa. The object of the inventor is to provide a chair of simple construction, having no parts liable to get out of order or break and so arranged that the seat and back may be easily adjusted as desired. The invention has reference to improvements in chairs particularly adapted for use in schools, theaters, public halls, and the like.

**HAT-SHAPING DIE.**—M. A. CUMING, New York, N. Y. In the present patent the invention of Mr. Cuming has reference to hat-making machinery, and more particularly to an improved hat-shaping die for forming bell-crowned hats—that is, hats in which the crown diminishes in diameter from the tip to the base.

**CONVERTIBLE CHAIR.**—W. D. RUSSELL and F. N. RUSSELL, Streator, Ill. This chair relates to improvements in convertible chairs, the object being to provide a device of this

(Continued on page 356)

character that may be easily arranged to form a reclining-chair, a rocking-chair, a stationary high chair and jumper, or a bed and when not in use may be compactly folded.

TOY.—F. R. DAVIS, Washington, D. C. This invention is an improvement in toys, being in the nature of a light-box designed to carry a candle or other illuminant to shine through fancy patterns of mica, colored tissue-paper, or other transparent or translucent material. As the toy is pulled along the ground its pattern-disks will be automatically revolved, displaying figures on the disks and increasing the attractiveness of the box.

DESIGN FOR A BROOCH, BUTTON, OR BUCKLE PLATE OR LIKE ARTICLE OF MANUFACTURE.—C. M. WENDELSTEIN, Attleboro, Mass. This is an ornamental design for a brooch, button, or buckle plate, or like article of manufacture in which the figure represents an irregular shaped yet graceful border pointed with leaf clusters surrounding a flat surface on which is depicted the full-faced head and neck of a young woman.

AXLE OR SHAFT MARKER.—O. SOVELLUS, Hancock, Mich. The apparatus provides means for marking axles or shafts so as to accurately lay off thereon the points and lines for the proper position and direction of the drill or planing machine in boring, planing and milling. The marker comprises a saddle which sits upon the axle to be marked. A center punch is mounted upon the saddle, and on release of a catch is operated by a spring, to strike the axle and make a mark. Two spirit levels are provided. One, which is stationary, determines the vertical position of the punch and the other, which is mounted in a rotary graduated plate, may be used to measure off any angle from the vertical desired.

STICKY FLY-PAPER.—O. A. JONES, Union City, Mich. The particular object of this invention is to remedy many defects incident to fly-paper now in use, of which the oozing out of the adhesive substance over the edges of the base-sheet upon surrounding objects, is an example. Another object is to so form the surface of the paper that it may be readily and easily separated without tearing or destroying it, yet will always retain the adhesive substance upon the border of the base-sheet.

FLASK-CLAMP.—I. R. BROWN and L. A. BROWN, Ebensburg, Pa. In carrying out this invention the object in view is the provision of a clamp for molding-flasks of simple construction that may be quickly adjusted to lock the flask members together. The clamp may be made of different lengths, and each clamp, as it consists of two sliding members, has a considerable range of adjustment for different sizes or depths of flasks.

WATCH-HOLDER.—R. K. HOHMANN and A. ROSENFELD, San Diego, Cal. In this patent the invention relates to improvements in holders or pockets for watches, particularly women's watches, an object being to provide a holder that may be readily attached to a dress-waist, belt, or any part of a garment and as easily removed, the device also having means for preventing accidental dislodgment of the watch.

MARKING INSTRUMENT.—F. MOEHLE, Mason City, Iowa. The device comprises a base with a central pin and a number of grooves of various forms therein. On the pin an arm is mounted to slide and to swing, the arm having a pin arranged to run in any of the grooves. By adjusting this pin in the desired groove the arm may be swung over the base and various ovals or circles described. Other measurements may be made by the arm for describing squares and other like figures.

CHATELAINE-PIN.—NETTIE F. VALENTINE, Brook Haven, N. Y. In this instance the improvement relates to a pin useful in many respects, but especially designed for application to women's waist or "chataleine" bags, in which connection it serves to prevent the bag from swinging idly about as the wearer walks and also prevents the bag from being torn from its place.

CURRENCY-HOLDER.—F. E. WALKER, Bedford, Iowa. The purpose in this case is to provide a holder in which bills may be held in separate bunches of equal amounts and to so number the partition strips that the total amount of cash may be ascertained at a glance without counting, thus facilitating the making up of the cash account at the end of a banking day and also facilitating the withdrawing of notes of a desired amount.

ARTIFICIAL DENTURE.—G. J. DAVISON, Richmond, Va. The present invention is in the nature of an improvement in artificial teeth, and especially in the means for securing the porcelain facing. Important features of the invention consist in not limiting the improvement to any special kind of tooth, and to the ability of the inventor to apply rubber-plate teeth to a bridge without vulcanizing them on.

LUBRICATOR.—C. L. HOFMANN, Cincinnati, Ohio. In the present patent the invention is an improvement in lubricators, and especially in that class of such devices for application to pulleys and the like wherein the pulley revolves on a bearing or shaft and the lubricator revolves with the pulley.

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