

wire may be woven or coiled about fence wires to form a stay for them, the wire being drawn directly from the coil as it is applied to the fence wires in position. The frame of the device forms practically a double crank, thus obviating the necessity of the operator passing his hand through parallel fence wires to grasp and turn it, and the stay wire freely leaves the post on which it is coiled without liability to become tangled up with the frame.

POST DRIVER.—Robbert G. Work, Marion Center, Pa. This is a portable post driver adapted to be mounted on a wagon bed, at the rear end of which the falling weight, or "monkey," is guided between vertical standards. The cable for raising the weight passes over a pulley depending from a cross beam and is attached to a winding drum on a splined shaft, the drum engaging the spline on the shaft to be wound up and lift the weight, and being withdrawn from the spline to permit the fall of the weight. Between the vertical standards are transverse guides or supports adapted to steady large or small posts in position for driving.

HORSE FLY NET AND COVER.—Henry C. Carter, Belmont, N. Y. This is a net which is made in sections, there being a head piece or bridle section located at each side of the neck, a breast piece or collar section, and a back piece having two side members, the frame of each section being made of spring wire bent to proper contour and having hooks or loops to facilitate attaching the netting in position. The netting consists of pendent strips or a fringe attached to a hem through which a portion of the wire of each frame section is passed. This net is designed to permit a free circulation of air around the body of the animal, and is readily attached to the harness.

REIN GUARD.—Thomas Thompson, New London, Wis. To prevent the reins from catching beneath the ends of the thills of a vehicle, this inventor provides a guard of flexible material, such as a leather strap, to pass across the breast and connect the ends of the thills, the guard being attached to sleeves which fit on the ends of the shafts. This arrangement also prevents the horse from catching a shaft around a post, and prevents the ends of either shaft from being run into another horse in case of collision.

THILL COUPLING.—Charles W. Goble, Canyon, Col. This is a coupling designed to facilitate changing from a thill to a pole, or vice versa, as desired, and one requiring no burr, the head of the coupling pin also being concealed, and no portion of the device being liable to produce rattling. The base plate is clipped to the axle and has forwardly extending jaws, one with a recess in which fits the head of the pin, held in position by a slide, while a spring is formed with opposing shoes which engage the lower portion of the slide ways and lock the pin in position.

SASH FASTENER.—Joseph L. Bossler, Alton, Ill. According to this improvement a latch is attached to the upper rail of the lower sash and a keeper is secured on the upper face of the lower rail of the upper sash, the latch having an angular post with a pend ent finger adapted to engage a slot in the keeper through which is passed a spring latch bar. The device is simple and inexpensive, automatically locking the window in closed position, while the unlocking is readily effected from within the room.

LOCK.—John Alfors, Hanna, Wyoming. This lock is adapted for use in doors, drawers, etc., where the knobs are fixed to the casing, a key being introduced into either of the knobs instead of into the body of the lock for returning or unlocking the bolt, the construction of the lock being such that when the key is withdrawn the bolt automatically assumes a locked position. The lock bolt is withdrawn by the pressing of a tubular key inward in a tube of the knob, the pressing of the key fully inward holding the bolt permanently back, so that the door may be closed without locking.

DOOR CATCH.—Peter Mickelson, Cedar Valley, Iowa. This is a cheap and simple device especially adapted for use in connection with barn doors, preventing the wind blowing the door closed or against a team. It has a base plate for attachment to the building at the proper distance behind the door, and supporting spring wire holding arms which rock on the plate, and are adapted to close upon the edge of a door when it is opened wide and hold it in open position until the locking arm of the catch is purposely moved outward.

FLOUR AND MEAL BIN AND SIFTER.—Charles P. Alexander, Cleburne, Texas. This is a combination piece of kitchen furniture in which are two bins and a chamber below in which is a sieve adapted to be reciprocated, means being provided whereby any desired quantity of flour or meal may be delivered to the sifter, the latter being readily removed for cleaning. The sieve is given an intermittent reciprocating movement by a cam operated by a crank and a chute delivers the sifted material to a suitable receptacle.

LOCK FOR STOP COCKS.—Albert T. Patrick, New York City. To temporarily or permanently lock the turn key of an ordinary stop cock this inventor has devised a simple and easily applied and removed device, consisting of a slotted hasp adapted to be passed around the stop cock and engage with its slot the turn key, the free ends of the hasp being then locked by a padlock. The device is designed for use on supply pipes at meters and elsewhere, where it is desired to cut off the supply without removing the meters or disturbing the fixtures.

NON-REFILLABLE BOTTLE.—Enos C. Pollard, Holt, Montana. To prevent the refilling of bottles and their re use as original packages, this inventor has devised a bottle of which a portion must be broken off before the contents can be discharged. The neck is made with an integral sealing extension on which a trade mark may be placed, a groove being formed at the junction of the neck and extension to facilitate breaking off the latter. After the liquor has been placed in the bottle a cork is forced into position in the neck below the extension, and a suitable cement placed on the cork, there being embedded in the cement a glass stopper with flared lower end and flanged top, fitting in the top of the extension.

BADGE BUTTONS.—James H. Patterson, Martinsville, Ind. This is a button to be worn in the lapel of the coat to furnish amusement in answer to threadbare and tiresome comments about the weather. It has a front plate, with a cut-out quarter section, beneath which is a revoluble plate divided into quarter sections, the front plate bearing the words "Yes; it is," and the revoluble plate having on each of the quarter sections one of the following: "hot," "cold," "wet," "O. K.," so that by turning the under plate a definite answer is given by the button to ordinary remarks about the weather.

WAIST BELT.—John F. Schotz, New York City. This is a ladies' belt, designed to be worn with comfort while it is also adapted to contract the figure at the junction of the hips with the waist, to lengthen the waist. At each side of the belt is a pocket in which is a spring, reinforced on its inner face by an added strip of spring material of lozenge or diamond shape, the two springs being so connected that they will adapt themselves to the curvature of the body. The belt is adapted to be worn over the corset, and is designed to accomplish what cannot be obtained by the use of a corset, no matter how tightly the latter may be laced.

TRAY ATTACHMENT FOR BEDSTEADS.—Ella F. Fry, Richmond Dale, Ohio. To hold articles for the convenient use of invalids while confined to their beds, this inventor provides a novel device that is readily attachable to the inner face of the side rail of the bedstead, being foldable adjacent to the mattress. A post is pivotally attached to the rail, and adjustable thereon is a standard carrying a hinged bracket plate to which a tray may be secured and held in level position, partly over the bed, the occupant of which is thus enabled to eat with comfort and have the necessary articles within easy reach.

COAL RECEPTACLE AND ASH SIFTER.—Adolph J. Smith, New York City. In a suitable casing, according to this improvement, is a top compartment adapted to receive an ordinary coal pail or scuttle, containing the coal supply, and in the upper front portion of the casing is a downwardly swinging door, allowing coal to be sifted to be poured in upon a downwardly and rearwardly inclined screen through which the ashes pass to a pan beneath, while the cinders are directed to an inclined chute leading to a lower drawer in the bottom of the casing.

SPITTOON.—Richard J. Smith, Love-laceville, Ky. This is a spittoon to be secured in the floor, and especially adapted for use on railroad and street cars, boats, etc. It has a cylindrical body, with top flange resting on the floor around the opening in which the spittoon is set, and has a hinged cover connected by a chain with a bottom swinging cover. When the top cover is raised and thrown back, which may be readily done by the foot, the bottom opening is closed, and when the top cover is closed the bottom cover swings downward and the contents are discharged.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 10 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

UNCLE SAM'S LETTERS ON PHRENOLOGY. New York: Fowler & Wells Company. Pp. 154. Price 50 cents.

This is a little work originally published in 1842, and, being thought too good to be lost, is now presented in revised form. The letters were written by a Presbyterian minister, and treat with considerable discrimination of the advantages of phrenology.

PRACTICAL GUIDE FOR FIREMEN. By W. H. Wakeman. Bridgeport, Conn.: American Industrial Publishing Company. Pp. 74.

This is a little handbook of instructions and suggestions for the care and management of steam boilers, pumps, injectors, etc.

IOWA GEOLOGICAL SURVEY. Volume V. Annual Report, 1895, with accompanying papers. Samuel Calvin State Geologist, H. Foster Bain Assistant State Geologist. Des Moines: Published for the Iowa Geological Survey. 1896. Pp. 452.

This very excellently reproduced geological report is devoted to the geology of six counties of Iowa. It is published by the Geological Board of the State, which consists of the governor and auditor and three other members, Samuel Calvin being the State geologist. It is very finely printed, and will find naturally a place in colleges and geological libraries.

TWENTIETH YEAR BOOK OF THE NEW YORK STATE REFORMATORY FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1895. With illustrations and anthropometric tables. Elmira, N. Y. 1896.

This report is, it appears to us, too short for the ground it covers. Its topics are of the deepest interest and are most excellently treated, except for their brevity. The study of criminal statistics, the accumulation of data, the influence of heredity and of association upon character, the physical traits of the class of humanity who have an enforced seclusion in Elmira reformatory, are the topics which the report covers. The institution was, by some recent investigations, brought somewhat prominently before the public. It seems to have survived the criticisms then excited. Two papers, one on the School of Letters, by the late Prof. James R. Monks, the other, "Observations and Notes," by Dr. H. D. Wey, are particularly to be commended, as are also the excellently selected illustrations.

We have received from F. A. Bradley, of New Haven, Conn., a handsome binder or temporary cover adapted to conveniently hold the numbers of the SCIENTIFIC AMERICAN as they are successively published. It has a Russia leather back and is carefully made by hand, promising to do excellent service in everyday use.

Business and Personal.

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Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated: correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
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Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(6954) D. C. T. McM. writes: I found a common toad endeavoring to make his escape from some pursuers. I saw also one of his hind legs dragging, and merely hanging by the tendons and ligaments of the second joint. I was astonished to see a black bug seize hold of the toad at the seat of the wound. He now got a secure hold on his victim. The frog was exhausted and demoralized. It (the bug) seemed to be a black beetle, such as live in decayed stumps and rotten timber. Does your entomologist know such propensities in any kind of beetle, Coleoptera or Scarabæus? I rescued his frogship from his savage assailant, when he made his escape with his foot dangling. Please let me know if such an attack from a bug on such a large victim is common. A. The United States Department of Agriculture says: In the accompanying letter Dr. C. T. McMannen, of White Springs, Florida, refers undoubtedly to one of the large predaceous ground beetles, and probably to the species known as *Pasimachus strenuus*. This beetle feeds on all sorts of animal matter, including living insects and the dead bodies of larger animals. I cannot say that I have heard of exactly such an occurrence as that described by your correspondent. From the habits of the insect, however, this is not at all unlikely to have occurred, and the observation is a very interesting one.

(6955) E. B. O. writes: I have a telephone plant built with a common return wire, but haven't it grounded. To ground it in the city I get too much noise on the lines, caused by the electric street car lines and electric light plant having lines grounded. Now, I have a subscriber living three miles east of the city and one living three miles west. I was thinking of grounding the return wires at these two points. How would it act? Would it make more or less cross talk on the lines? A. You will have to try it. Possibly no return wire will be needed. 2. What wires on a telephone switchboard should be German silver and what ones copper, and why? A. Make all connections with copper wire. 3. How do you measure the ohms in an induction coil the number? A. By the Wheatstone bridge. 4. Which is the best for a common return wire, bare or insulated, No. 12 copper or No. 6 copper for an exchange of 300? A. Use copper wire, the larger the better, not necessarily insulated.

(6956) J. G. K. says: Will you please give through the columns of the SCIENTIFIC AMERICAN a formula for making Japan ink, such as is used by many of the professional penmen? A. 1. Take of Aleppo galls, $\frac{1}{2}$ pound; logwood chips and copperas, each $\frac{1}{4}$ pound; gum arabic, 3 ounces; sugar, 1 ounce; sulphate of copper, $\frac{1}{2}$ ounce; sugar candy, $\frac{1}{2}$ ounce. Put the galls and logwood in 6 quarts water. Boil slowly until the water is reduced in volume one-half. Strain through cotton flannel, and add the other ingredients. Keeping the solution warm, stir until all the ingredients added are dissolved. It should then be placed in a deep glass vessel and allowed to settle. The ink may be removed from the settlings by pouring off carefully, or using a siphon. The gloss of the ink may be increased or diminished by increasing or diminishing the amount of gum used in the recipe. If carbolic acid be added until its odor is just perceptible, it will prevent moulding. Oil of cloves added will also effect the same result, and it gives the ink a less offensive odor. 2. Dissolve in $\frac{1}{2}$ pint soft water $\frac{3}{4}$ ounce of potassium bichromate, and add the solution to 6 ounces of logwood extract, dissolved in 1 gallon of water; then dissolve in 1 gallon water by continued boiling, borax, 6 ounces; shellac, $\frac{1}{2}$ ounces. Mix all together while warm and add 3 ounces of ammonia.

TO INVENTORS.

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