

RECENTLY PATENTED INVENTIONS.

Pertaining to Apparel.

SHOULDER-BRACE.—M. W. FERRIS, South Orange, N. J. The braces tend to hold the body of the wearer in proper upright position, with a view to insure an upright, healthy carriage at the same time allowing sufficient yielding for comfort, protecting the arm straps against perspiration, preventing the shoulder straps from accidentally sliding off the shoulders, and allowing convenient adjustment to accurately fit the body.

POCKET FOR SHIRTS.—S. ELBAUM, Bayonne, N. J. The invention relates to outer shirts for working men, mechanics and other persons, and its object is to provide a pocket for shirts, which is provided with separate compartments, one for general storage purposes, one for the safe housing of a watch, and one for containing a lead pencil, rule or the like.

Electrical Devices.

AUTOMATIC FIRE-ALARM SYSTEM.—C. J. FOX, 11 Queen Street Place, London, England. The invention consists of a combined electric bell service and automatic fire alarm system; that is to say, a system in which the leads for the electric bell installation serve also as leads for the fire alarm thermostat circuit, so that the leads appertaining to the thermostat in any apartment will be tested each time the electric bell in said apartment is used.

Of Interest to Farmers.

CHURN.—A. BARBER, Watsonville, Cal. More particularly the invention relates to churns such as are provided with improved dashers whereby a more effective action is brought about in churning. The device is provided with a dasher having three vertical blades, the intermediate blade serving pivotally to mount the dasher in position and to facilitate its rotation.

COTTON-COMPRESS.—T. B. LEE, Charlotte, N. C. This improvement provides a dense and uniform bale and completes it before releasing any pressure. It provides means for neatly and conveniently covering the bale with bagging and securely hooping the same with tie wires or bands. It also provides a bale which can be sampled at any part of the same, so as to show the character of the cotton in the entire bale, leaving no chance for false packing.

BALE-TIE.—D. MARGOLIUS, Norfolk, Va. The improvement is more especially in such ties as are employed on cotton bales, the improved feature residing primarily in the connection between the ends of the tie. The fastening between the overlapping ends of the tie is made so that the tie will not catch in the press. It is applicable not only to joining the ends of new ties, but also in joining one or more pieces of an old tie together.

COTTON CHOPPER AND CULTIVATOR.—R. H. PURNELL, Rosedale, Miss. A special feature of this machine lies in the means for preventing stubble, weeds, or trash of any kind from being drawn inward by the hoe in its revolutions, whereby the latter would become clogged and its work rendered imperfect. Another is the rotary bevel disks that when set in one position serve to throw dirt toward the row of cotton plants, whereas when arranged at an opposite inclination they serve to scrape the sides of the cotton row. It is an improvement upon the machine for which Mr. Purnell formerly obtained Letters Patent.

Of General Interest.

METHOD OF TREATING HIDES.—W. J. WARD, West Philadelphia, Pa. This invention refers to the treatment of hides or leather, preliminary to the tanning process, for the purpose of removing hair and grease, and of ultimately improving the quality of the leather to be made. The method makes plumper leather and it does not "pipe with the grain."

SAFETY ROPE-GRIP.—C. F. SINCLAIR, Jersey City, N. J. The object in this instance is to provide a rope or grip for attachment to the wrist of a person and for connection with one of the guide ropes of the bathing place, to allow the user to safely venture into the water for bathing and swimming purposes, and to aid the user in learning to swim.

PROCESS OF MAKING CANDY.—L. HIRSCHFELD, New York, N. Y. This process is designed to impart to pulled candy a peculiar consistency, rendering the candy less strenuously tough than ordinarily and permitting the candy after a time to completely dissolve in the mouth, and a further purpose is by means of the process to obtain a product that will retain its consistency for a great length of time.

LOGGING-JACK.—C. D. MOORE, South Bend, Wash. In this patent the improvement is in that class or type of jacks in which a rack-bar is raised by means of a pivoted lever provided with a pawl adapted to engage a rotatable ratchet which is in turn connected with the rack-bar through the medium of a pinion.

DISPLAY-RECEPTACLE.—M. GIANINI, New York, N. Y. Candy boxes are often arranged with trays or divisions for different kinds of candy, but they are not all in view. A box constructed according to the present invention is especially useful for this purpose, as the

box may be opened out to expose the contents of all its divisions. While intended especially to be used as a candy box, it may be used for other purposes.

FASTENING DEVICE.—A. C. GODDARD, New York, N. Y. The invention relates to metallic door casings, base boards, chair rails and the like, and its object is to provide a device for fastening the metallic parts in position without the use of screws, nails and the like and without showing the fastening means exteriorly.

EASEL.—GENEVIEVE BOOTH, New York, N. Y. The invention relates to improvements in devices for use in supporting pictures, pamphlets, books, and the like, and relates more particularly to that type of holder formed of sheet metal and serving not only to support the picture, pamphlet, book, or copy, in a substantially upright position, but also serving to hold it in an open position.

HORSESHOE.—P. W. CARNEY, Norfolk, Va. In this patent the invention is an improvement in horseshoes having for an object the provision of an attachable and detachable attachment having calks, and which can be readily applied to ordinary horseshoes when necessary and removed therefrom when the necessity for calks no longer exists.

VAGINAL SYRINGE.—O. KATZENBERGER, San Antonio, Texas. The purpose of this invention is to provide details of construction for a syringe, which adapt it for a very convenient service, and enable the internal application of a suitable medicinal liquid or powder for the disinfection or cure of diseased tissue, the said liquid or powder being preferably employed as a remedial agent.

HOOF-PAD.—D. T. BARBER, Gustavus, Ohio. In the present patent the invention is an improvement in that class of hoof-pads which are formed of elastic material and are arranged beneath a metal shoe and are secured to the animal's hoof by the same nails that hold the shoe.

CAN-OPENER.—C. E. SANDS, Palatka, Fla. In operation the pointed end of the long arm is inserted in the can top, at approximately the center thereof, and bent downwardly until the cutting wheel is in contact with the tin. The arm is now revolved around the edge of the top, the cutting wheel being held firmly in contact therewith, thus severing the center of the top from the margin.

ANIMAL-TRAP.—L. HORINKO, New York, N. Y. The purpose here is to provide a device for catching small animals, such as mice, rats, etc., which embodies in its construction a cage, an auxiliary cage open at both ends and having means adapted to hold the bait, and a trap door in the top of the cage, forming the bottom of the auxiliary cage.

Heating and Lighting.

CLEANING DEVICE FOR FEED-WATER HEATERS.—T. V. ELLIOTT, New York, N. Y. In this case the object of the inventor is to provide a new and improved cleaning device, more especially designed for effectively cleaning feed water heaters whenever desired, without requiring shutting off the feed water from the boiler.

Household Utilities.

WASTE FOR BATH-TUBS, BASINS, AND LIKE FIXTURES.—P. F. GUTHRIE and T. HAYES, Nutley, N. J. The object of the invention is to provide a waste for bath tubs, basins, and like fixtures, arranged to prevent contaminated water rising into the fixture when filling the same with water. It relates to wastes such as shown and described in the Letters Patent of the U. S., formerly granted to Messrs. Guthrie and Hayes.

Machines and Mechanical Devices.

BOAT-HANDLING DEVICE.—L. TANNING and W. J. RYAN, New York, N. Y. The invention pertains to boat-handling devices, the more particular object being to enable a boat carried on shipboard, to be readily raised from the chocks, normally supporting it, and otherwise made ready for immediate action upon the water.

APPARATUS FOR COALING SHIPS AT SEA.—A. JOHAN, New York, N. Y. Transferring is done by placing a collier in tow of the vessel and providing one or more traveling cables between them, on which the coal or other material is carried, said cables having means to maintain them under constant and equal tension during rolling and pitching, the tension on the cables being maintained irrespective of the tension on or slackness of, the hawser connecting the two boats together.

STOKER.—T. V. ELLIOTT, New York, N. Y. The object of the present invention is to provide a new and improved stoker for use in automatically feeding coal and like fuel to a furnace, to automatically remove the ashes, to insure at all times a proper uniform combustion of the fuel.

ATTACHMENT FOR KEY-OPERATED MACHINES.—J. V. Y. DIAZ, Habana, Cuba. The invention relates to improvements in typewriters or other machines having a plurality of keys adapted to be manually operated, and the object of the invention is to provide means for locating and defining the keyboard by other than the sense of direct sight, whereby the operator instinctively retains the hands in the proper position in respect to the keyboard

while reading copy and operating the machine simultaneously.

Railways and Their Accessories.

MOLD.—J. WILSON, Rochester, N. Y. This improvement is for use more especially for chilled car wheels, and has in view primarily a molding flask by which the variation at present experienced in the thickness of flanges and the weight of the wheels, will be eliminated, and a uniform and well balanced wheel produced.

MAIL-HANDLING APPARATUS.—M. M. MILLER and G. S. STEINBERGER, Allentown, Pa. The invention relates more particularly to apparatus which is used with mail or other railroad cars for securing and delivering mail bags, and is adapted to be arranged adjacent to a railroad track, and which has means for receiving mail bags from a train while the latter is in motion.

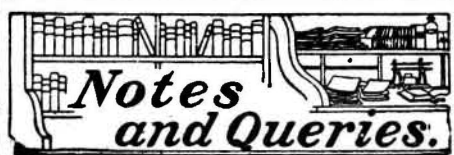
Pertaining to Recreation.

AQUATIC MERRY-GO-ROUND.—H. E. RIEHL, New York, N. Y. The invention refers to amusement apparatus, such as are used in parks, exhibition grounds, pleasure resorts, and the like. The object of the inventor is to provide a new and improved aquatic merry-go-round, arranged to provide an exceedingly novel and highly interesting ride.

Pertaining to Vehicles.

SWINGLETREE AND DOUBLETREE.—G. P. SIMPSON, Marysville, Idaho. The invention is applicable to swingletrees, doubletrees, neck-yokes and similar constructions. The construction is simple, easily applied, reinforces and strengthens the body and protects the rear side of said body when the latter is used as a swingletree against injury from coming in contact with the wheels or other portions of the running gear of the vehicle.

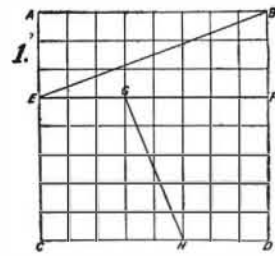
NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.



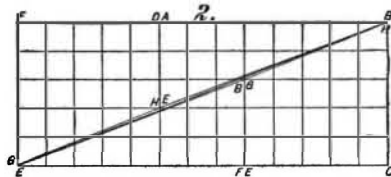
Full hints to correspondents were printed at the head of this column in the issue of November 14 or will be sent by mail on request.

(10994) G. L. P. writes: H. J. F. asks if a piece of paper 8 by 8 inches square can be cut so as to make 65 square inches. You say: "No, by no conceivable means." Now you will find enclosed a piece of paper 8 by 8 inches, which you are to cut on the lines and put together as lines shown on the smaller piece, and then measure. I think you will find it to be 5 by 13 inches, which equals 65 square inches. I am unable to explain where the square inch comes from, but it is there. A. No, friend, it is not there. We exceedingly regret that any of our correspondents should think us capable of believing that a square of eight inches on a side can be cut into pieces and put together in another way so that its area shall be increased 1 square inch. We are having a deluge of letters on this point, of which we print one, many criticising us more or less severely for saying that this cannot be done. But of course it cannot be done. We repeat it—No, by no conceivable means. It transcends common sense to ask it. Try it with pennies, or kernels of corn, or any convenient similar pieces. Lay out 64 in a square of eight on a side. Then change them to a figure of 5 rows of 13 on a side. There will be a missing kernel or coin. You cannot complete the second figure. It is the same if you cut a piece of paper of the same dimensions; 8 x 8 cannot be anything but 64, and can never be 65. Why not settle one's self first upon simple foundations? Then one will not say, as our confident correspondent does, "But it is there." That begs the question. It is not there, and cannot be there. There is evidently a fallacy here somewhere. Now, this is no new trick. It has been traveling around for an unknown period of time, and has been shown up as often as it appears. The SCIENTIFIC AMERICAN had it a generation ago. Still, apparently, there are a host of intelligent people who have never seen the exposure. Hence we will give it, not following the usual mode of treatment, but giving our own explanation of the falsity of the proposition. This is not a puzzle, for a puzzle should have a rational solution, and this thing has no such solution. It is a trick, to make the false seem true. The proper attitude of mind toward it is to seek for the reason of its falsity, since it cannot be true. Only one of our correspondents even suggests that it cannot be true. When you see a juggler perform an impossible thing, such as cutting a man's head off, pulling a great quantity of dry goods out of a hat, or doing the curious box trick, you do not immediately demand that all these shall be accepted as realities; on the contrary you seek the method of the deception. That is the right attitude of mind toward a physical impossibility, and is applicable here. Perhaps the

easiest way to show the falsity of the question under discussion, is to draw a figure 5 x 13, divide it into squares and draw a diagonal line across the figure as in Fig. 2.



Our Fig. 1 shows the square of 8 inches divided for the purpose of the puzzle. Draw the perpendiculars as shown and the points HE and BG do not fall at the corners of squares. They cannot. Yet the so-called solution which all our correspondents send us, shows the same thing—that the lines EG, BF, AE, BF, which should be 3 inches long, are more than 3 inches long. In every figure



this is so. You should be sharper than to draw a figure like that and send it to us if you are to convict us of error. There is an error, but you are in error. The diagonal of your long figure, 5 x 13, must be a straight line, if you are correct, but the four pieces of paper when put together do not give a long straight diagonal, as any one can see who will put the pieces together, then use his eyes and look for himself. If your eyes will not show it to you, take a straight ruler and it will disclose the truth for you. The long, sloping line of the pieces of paper is not straight. The four pieces of paper do not cover the area which they seem to cover. There is a long, narrow strip in the center which is not covered. The area of this strip is just one square inch, the square inch you think you gain. You put your rulers on and draw a long straight line sweeping from one corner of the 5 x 13 figure quite across to the other corner, and say "There it is, I have made 64 square inches into 65 square inches." Great act! But you have not. Now turn to the square of 8 inches on a side, our Fig. 1. The line BE slopes 3 inches in 8, or 3/8 of an inch in 1 inch. The line GH slopes 2 inches in 5 inches, or 2/5 of an inch in 1 inch. And you ask us to believe that a line whose slope is 3/8 should form a straight line with one whose slope is 2/5. We cannot do it. The reason anyone is deceived is that the pieces are rarely cut with a high degree of accuracy. They are often cut out of thin paper, and will not lie flat. When they are put together they seem to cover the space as well as could be expected and so the deception takes effect. If the trick were approached from the other side, that is, cut the pieces from the piece which is 5 x 13, and put upon a square carefully drawn to be 8 x 8, the pieces would then more than cover the square figure and deception would not be so easy.

(10995) G. R. M. asks: Will you kindly answer the following through the columns of Notes and Queries in your valuable paper, and oblige a faithful reader: 1. What causes the changes of the moon? A. The phases of the moon are produced by the moon's revolution around the earth. The sun shines upon the moon all the time. When the moon in its motion around the earth comes between the sun and the earth, the sun is shining upon the side of the moon which is farthest from the earth. The dark half of the moon is toward the earth. That is the time of new moon. About two weeks later the moon has traveled around so that it is farther from the sun than the earth is, and the earth is between the moon and the sun. The lighted side of the moon is toward the earth. That is full moon. As the moon has changed from showing no lighted surface to the earth to showing the entire lighted surface to the earth, there was a time when she showed half her lighted surface to the earth. That was first quarter. Similarly there will be a time between full and new moon, when she will show half her lighted surface to the earth. That is last, or third quarter. If you will look up this matter in astronomies in your city library, you can read about it, and see the illustrations of it in the books, which will give you a much better idea than mere description in words. Ask the librarian about it. 2. Why does the mercury in the barometer stay higher when storms come from an easterly direction than it does when they come from any other direction? I have noticed this time and again and some of our largest and worst storms come from the east, and still the mercury will stay away up. I have wondered if the ocean had anything to do with it. As regards the power of a telescope, what is meant when manufacturers say they magnify 20, 33, or 50 diameters? A. We were not aware that a storm coming with an easterly wind was characterized by a higher barometer than one which comes with the wind from a southerly quarter. Storms always travel from west to east around the world. In crossing our country the paths