Inventions New and Interesting

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Another Substitute for Pneumatic Tires

THE effort to find a satisfactory substitute for the pneumatic tire has resulted in scores of inventions covering all sorts of combinations of mechanical parts. The principal difficulty with most of these inventions lies in the fact that they do not distribute the shock over the entire wheel as does a pneumatic tire. When the wheel runs over a stone the impact is concentrated upon those parts which are in immediate contact with the stone, putting them to such a severe strain that sooner or later they must break. In the case of pneumatic tires, however, the compressed air distributes the load over the entire tube, so that the whole tire assists in withstanding the shock.

Recently a new form of pneumatic tire substitute has made its appearance which depends not on springs or pneumatic plungers, but on the resiliency obtained by pliable bands under tension. With a tire of this sort the blows occasioned by striking a stone are not localized, but are distributed over a third or more of the circumference of the wheel.

Fig. 1 shows the tire being assembled on the wheel, also the tools used in mounting it on or removing it from the rim. Normally when the tire is fully assembled an annular guard plate covers the inner tension band. It will be observed that there are three sets of bands. The outer band has a heavy rubber face to give a good tread surface. The body of the band, however, consists of layers of specially prepared canvas. A portion of this tread surface is shown in the insert in Fig. 1. Riveted to the inner surface of this band are a number of aluminium cups arranged in pairs. These are adapted to fit over aluminium blocks projecting from the intermediate part of the tire. This intermediate part (see Fig. 3) consists of two bands made up of canvas layers and connected by tubular blocks which are riveted fast. Intermediate of these blocks on the outer band are the aluminium blocks just referred to, which are adapted to fit the cups on the tread band. A similar set of blocks is attached to the inner periphery of the inner canvas band, and these blocks are arranged to enter cups secured to the rim as shown in Fig. 2. The rim is provided with lugs between which these cups are fitted. Each of the cups is formed with a head at one end to prevent it from being displaced endwise from the rim. The blocks are alternately disposed as indicated in Fig. 2.

When applying the tire the cups are first removed from the rim, then the tire is assembled with the tread in place, and is slipped upon the rim of the wheel. This done, every second cup is slid into place, the bands being raised successively by means of a pair of tools, as shown in Fig. 1. The tools consist of flat bars with the ends turned at right angles, so that by slipping the flat side of the bar under the canvas and then turning the bar at right angles, a powerful lifting action may be secured. After every second cup-shaped block has been fitted into place, the intervening blocks are introduced, making the tire cling very tightly to the rim. Now when the tire rides over a stone, the bands are flexed, increasing their tension, and, owing to their resiliency, causing them to yield to a certain extent. The aluminium bearing blocks on the middle portion of the tire are cylindrical in form, so that they can turn in the cups and yield in this way to the deformation of the tire. The elasticity of the canvas band causes the tire to return at once to its normal condition on passing the stone.

Tires such as these have already been introduced in England, and they are now being demonstrated in this country. The tire is adapted not only to pleasure vehicles

but to motor trucks as well. In the latter case, however, instead of using canvas bands, the bands are made up of steel links and a heavy rubber block tread surface is provided.

It will be evident that if the bands stretch the slack will immediately be taken up by the weight of the car on the wheels. No

New Kind of Eyeglasses Made With Telescopic Lens

By Dr. Leonard Keene Hirshberg.

DR. K. L. STOLL, of Cincinnati, has devised what has proved to be a revolutionary method of correcting poor eyesight. During the first quarter of the nine-

In near vision the myope will approach the objects closely to the eye in an attempt to gain larger images. However, this is not very comfortable, for the images are closer to the eye than the objects in proportion to the strength of the concave glasses. These persons prefer to read without a glass, because they thus obtain larger retinal images and a better angle of distinction. But they are exposed to two dangers; they may lose their binocular vision or increase their myopia by complications resulting from being too close to the objects. The operation will safeguard against the latter danger. The following disadvantages of correction with glasses are to be considered: (1) The usually-worn biconcave glasses do not allow correction of astigmatism of oblique bundles. As a result of this, the field becomes so ill defined at a small distance from the center of the glass that it cannot be used for distinct vision. (2) The field of vision will assume a "barrel shaped" distortion toward the margin of the glass. This is of very special importance. Fig. 1 shows the picture of a landscape. Only the small central portion is well defined, and the outside is misrepresented. This is held responsible for most patients' wearing strong concaves. Elevations and vibrating motions may cause headache, uneasiness and dizziness.

The operation will eliminate astigmatism of oblique rays and distortion, and will reduce these two disadvantages in patients who are compelled to wear glasses so greatly that they need not be considered.

At present, however, after an experience of about twenty years, the operation is considered to be dangerous and used only in a limited number of cases, especially in those where correction with glasses cannot be obtained.

Nevertheless, the consideration of binocular vision, the degree of the myopia, the age of the patients, and the existing complications will limit the result of the operation to such an extent that a substitute seems desirable.

The images of objects may be enlarged by telescopes as the only means to enable a myopic person to see well at a distance. The weight, reduced field of vision, and clumsiness of the glasses, however, limit their usefulness. A much more perfect instrument is the *Fernrohrbrille*, or telescope spectacles, consisting of a combination of a convex objective with a concave ocular. It has to be fitted to each individual case with special consideration of the turning point of the eye and the attempt to produce as large a field as possible.

These spectacles were applied to a patient, and he was advised to walk toward the Snellen alphabet from a distance at which he could not recognize them until he was close enough to see them distinctly. The letters were hung up in various positions, so as to entirely eliminate the aid of memory. The light was always the same, and the examination took place each time after an equal adaptation to light, lasting half an hour.

The visual field was taken only in the horizontal meridian, using a large gonimeter of five-meter radius, the center of which the patient had to look at with his head fixed. After this the types (Snellen's hooks) were removed to a point where the patient, still keeping his head steady but just moving his eye sideways, could not see them plainly any longer. The latter results were more satisfactory as to vision than those shown in the former. This is caused by the greater accuracy of the method and the types employed.

Herewith is a photograph of the "telescopes." They remind one of automobile goggles, although they are not as conspicuous.

In conclusion it is hoped that with their aid new points may be gained for the study

Fig. 1.—Method of introducing the rim cups. The insert shows a part of the tread band with the bearing cups.

Fig. 2.—A portion of the rim, showing two of the bearing cups in place.

Fig. 3.—The intermediate part, made up of canvas bands rivetted to aluminium blocks.

harm is done by riding with slacked wheels as long as the slackness is kept below a certain maximum. The tension of the bands may be regulated by introducing aluminium shims under every cup on the rim and subsequently, if necessary, under every rim.

teenth century, the telescopic spectacles were used for high myopia, or nearness of sight, but their theory had not been worked out mathematically. This was later performed by Dr. M. V. Rohr, who demonstrated theoretically and by experiment that they may be used with advantage.

Eyeglasses with telescopic lenses.

Magnified view through telescopes.

of the progressiveness of myopia and the prevention of complications.

Notes for Inventors

Rotating a Pump Valve.—In patent No. 1,041,165 Hugh H. Riley of Memphis, Tenn., shows a pump valve with which are connected curved vanes whose outer edges are disposed in the same vertical plane as the outer periphery of the valve, the vanes being adapted to rotate the valve when the latter is reciprocated.

A Food Package Made of Cheese.—A New York city man, James A. Kavanagh, has secured a patent, No. 1,042,119, for a food package which is defined as consisting of a small section of cheese adapted for retail distribution and a paper wrapper perforated at suitable points to provide vents for the escape of the gases created by the fermentation of the cheese.

Phonograph Improvement.—John H. J. Haines of New York city has secured patent No. 1,042,110 for an improvement in phonographs or similar talking machines in which there is a combined recording and reproducing head combined with a weight which may be shifted to and from the head so as to adapt the head for use as a reproducer or as a recorder.

A Neckless Glass Globe.—In patent No. 1,041,886, to Harry A. Schnellbach, Crafton, Pa., assignor to Jefferson Glass Company, of Follansbee, W. Va., is shown a neckless glass shade or globe with an opening at the top. A separate neck extends through the opening and has its lower end enlarged and is also provided with outwardly extending projections on which the shade rests in such manner as to provide a space between the shade and the neck, the neck having means for engagement by the shade-holding devices.

Locating the Source of Sound.—A so-called locophone has been patented, No. 1,035,920, by Frank Della Torre of Baltimore, Md., for a method of determining the direction of a sound wave or of locating a source of sound, and in doing this the waves emanating from such source are divided and the divided parts are compared by bringing first one part and then another through a common conductor. He employs an apparatus including two diametrically opposite receivers, the direction of the source of the sound waves being determined by stopping one of the said receivers, thus indicating into which of the receivers the particular sound wave was received.

Automobile Improvement.—Many roadsters are supplied with a single back seat after the fashion of a rumble. Ordinarily the engine and chassis of this type of machine are adapted to as heavy a load as those of a five or six passenger car. It is believed some provision can easily be made to supply seats on opposite sides of the rumble by means of a suitable frame carrying the extra seats at its ends and attachable to the single or rumble seat. The problem will involve easy application and removal, security when applied, freedom from rattling when in place and out of place, and the provision of proper foot-rests for the occupants of the extra seats.

Brain of a Patent Expert.—In a recent publication Dr. Edward Anthony Spitska, the brain specialist of Philadelphia, is reported to have credited the late Edward H. Knight with having the largest American brain of record. Mr. Knight was well known, especially in Washington city, where prior to his entry into the Patent Office he was connected with the office of Munn & Co., and was occupied in the preparation and prosecution of patent applications. At the same time he was busy with the preparation of his Mechanical Dictionary. He entered the Patent Office January 1st, 1872, and remained in such office until August, 1876. Mr. Knight's brain with a weight of 1,814 grammes compared well with that of Turgenev, Russia's poet and novelist, at 2,012 grammes, and said to be the heaviest of record, and the next heaviest recorded American brain, that of Gen. B. F. Butler, the weight of which is given as 1,758 grammes.

RECENTLY PATENTED INVENTIONS

These columns are open to all patentees. The notices are inserted by special arrangement with the inventors. Terms on application to the Advertising Department of the SCIENTIFIC AMERICAN.

Pertaining to Apparel.

REMOVABLE HEEL.—L. KALINA, care of Midget Manufacturing Co., 23 Duane St., Room 410, New York, N. Y. This improvement relates to heels for shoes, and an object is to provide a shoe having a replaceable heel of leather, rubber or composition, so that even a person unskilled in the art may readily remove a worn heel and replace the same by a new one.

Of Interest to Farmers.

ROLLER HARROW.—J. E. CARLSON and G. J. NASON, Box 14, Rosedale Rural, Bakersfield, Cal. The invention relates to harrows in which rollers are provided with fingers so arranged as to harrow the ground. The invention provides means for clearing the rollers of trash, since the effectiveness of the roller harrow is greatly lessened by the collection of weeds and trash on the teeth.

Electrical Devices.

TELEPHONE ATTACHMENT.—D. W. LEPERT, 1045 3rd Ave., Manhattan, N. Y., N. Y. In this case the invention refers to an attachment adapted to be secured to a telephone instrument, so that a strip of writing material, such as paper, can be unrolled, and any conversation coming over the telephone taken down.

Of General Interest.

CUSHIONED HORSESHOE.—G. E. McKINNON, Little Falls, N. J. This invention comprises means for cushioning the footfall of the animal wearing the horseshoe. This end is attained by detachably securing to the under side of the shoe a strip of rubber or other suitable material, which forms a resilient tread for the shoe.

Hardware and Tools.

TOOL HANDLE.—ARCHIE McDERMID, Deming, New Mexico. This invention provides a handle for use on saws and other tools, and is arranged to permit the operator conveniently to attach the handle to the tool in any position to suit the convenience of the user of the tool. As shown in the illustration,

TOOL HANDLE.

the saw is provided at the end with two handles alike in construction. Each of the handles proper contains a nut engaging a screw rod. The flattened end of the rod carries a lug adapted to engage an aperture in the saw. When the handle proper is turned the screw rod draws the saw up against a grooved bearing mounted on the end of the handle.

DRAWING INSTRUMENT.—J. W. WHALEN, Graymont, Ill. This instrument permits measuring in degrees an arc of a circle of unknown dimension and whose center is not located; insures accuracy in arc and angle measurements; measures line segments and radii and expresses their length in a certain exponent; finds the limits of each successive arc and center of its respective circle in any curve, so that any curve may be inked with a

DRAWING INSTRUMENT.

compass; analyzes any curve into measured arcs and radii for a complete record; uses such record for reproducing segments of curves or symmetrical curves of the same on enlarged or reduced scale; builds complex and compound curves and figures of straight lines and curves; forms designs composed of similar curves of varying sizes; expresses the exponents of the algebraic expression (abⁿ); and performs other measurements. The engraving shows a face view of the instrument.

NUT LOCK.—B. G. PATTERSON, 1136 W. 14th St., Oklahoma, Okla. In this invention a dog or locking device is arranged in a slot or recess in the nut and adapted when in a certain position to engage the thread of the bolt, and when in a reverse or opposite position, is out of engagement therewith. Fig. 1

shows an enlarged sectional view representing a nut and bolt and locking device applied as in use. Fig. 2 is a cross section of a bolt and nut showing the dog or locking device in a non-locking position. Figs. 3, 4 and 5 show

NUT-LOCK.

diagrammatically the different positions of the locking device which is in the form of a scalene triangle, one corner of the base being acute-angled and the other right-angled, and its biting edge is adapted to conform to the thread of the bolt. The bottom of the slot is formed to describe an obtuse angle, the apex of the angle constituting a fulcrum for the dog on which the latter is adapted to rock in assuming different positions. On one side the slot is much deeper than the other, and the inner acute angle of the dog enters this part when the dog is engaged with the thread.

Heating and Lighting.

SHADE HOLDER.—HENRY GOODFRIEND, address 124 N. Jefferson St., Chicago, Ill. In this patent No. 1,039,519 the invention relates to shade holders for incandescent and other lamps, and the construction enables the shade to be readily and easily attached in position with reference to the lamp globe or bulb, and as readily removed therefrom in case of damage or whenever removal is necessary. The improvement securely engages and releases a shade by simply turning a ring; there

SHADE HOLDER FOR INCANDESCENT AND OTHER LAMPS.

are no springs, wires, clamps, screws or any parts that can get out of order; it does away with the unsightly appearance of screws which are often lost in handling; it prevents breakage of glass by allowing for expansion by heat; it can be stamped out of sheet metal at small cost in any size and shape and in a large variety of designs; and it may be used on gas as well as on electric fixtures in upright or in vertical position. A side elevation of the shade-holder partly in section is shown herewith.

Household Utilities.

CLOTHES LINE HANGER.—L. KALMANOVITS, 629 Tinton Ave., Bronx, N. Y., N. Y. This device comprises a pair of spaced plates, a roller journaled between the same and adapted to have a line pass around it, and a guide movably mounted relative to the plates, and adapted to engage clothes pins or other projections or objects on the line, and to guide

CLOTHES LINE HANGER.

and maintain them in normal positions as they pass partly around the hanger, whereby the line is supported at the clothes pins by the guides. The plan view shows clothes line hangers in use for supporting an endless clothes line.

Machines and Mechanical Devices.

RIFLE TRYING DEVICE.—J. LIVTSCHAK, St. Petersburg, Russia. The invention relates to improvements in this inventor's former device, whereby the present device is simplified. The rifle is permitted to move in the direction of the recoil, after which it can be returned by hand to the initial position. The fire arm

is held truly square in initial position by providing on the front supports two parts, of which one above the barrel and gunstock is provided with a notch for the bed of back-sight on the barrel and the other part beneath the rifle guides a champing ring on the rifle.

MULTIPLE LOOM.—G. GRATREAU, Paris, France. This invention relates to five improvements in multiple looms, whereby numerous drawbacks in other looms are avoided, so that the simultaneous weaving of two or several pieces of fabric is rendered easy and safe, while the examination of the lower pieces of fabric during the work is rendered possible.

MACHINE FOR CASTING AND COMPOSING TYPE.—F. SCHIMMEL, 103 Rue du Sergeant Blandan, Nancy, Meurthe-et-Moselle, France. This invention refers to an arrangement of matrices for casting and composing separate types, adapted to be applied to all kinds of machines for casting and composing type one by one, and adapted to permit a mixed composition of type of different fonts or characters, requiring, as in linotype machines, a large number of matrices for each font or character.

BENDING MACHINE.—F. T. ROOT, care of Defiance Machine Works, York, Pa. The object here is to provide a machine arranged to automatically impart a gradual traveling motion to the head blocks during the bending operation to compensate for the increase in length of the timber incident to the bending thereof, thus allowing the timber to hug the form very snugly and thereby insuring the formation of accurately bent timber.

PACKING MACHINE.—G. H. CAUGHREAN, Ketchikan, Alaska. This device is particularly useful in packing canned goods into cases preparatory to shipment. An object of the invention is to provide machinery for automatically filling the cases with cans, thereby economizing in time in an operation which is generally performed by hand. The cans are automatically deposited in layers, and the case containing the cans discharged when the case becomes filled.

SIPHON FILTER.—J. A. CASE, Salida, Colo. Mr. Case's improvement is in siphon filters and has for its object the provision of a mechanism especially designed to thoroughly filter liquids, while at the same time facilitating the withdrawal of the liquid from the receptacle.

EMBROIDERY MACHINE.—E. FRIEDMAN, 2838 Fulton St., Brooklyn, N. Y. The invention relates to hand or power embroidery machines having a fabric-carrying frame adapted to be shifted according to the design of a pattern plate for the needles and thread to produce the desired embroidery on a piece of fabric. The machine secures accurate alignment and stretching of fabric material in in-

EMBROIDERY MACHINE.

dividual frames, and exposes only the surface portion of the fabric material to be embroidered; thus permitting the accommodation of a large number of single frames on one machine at a time, thereby increasing the output of the machine. The engraving shows a front elevation of a series of fabric frames mounted on the main frame of the embroidery machine.

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

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