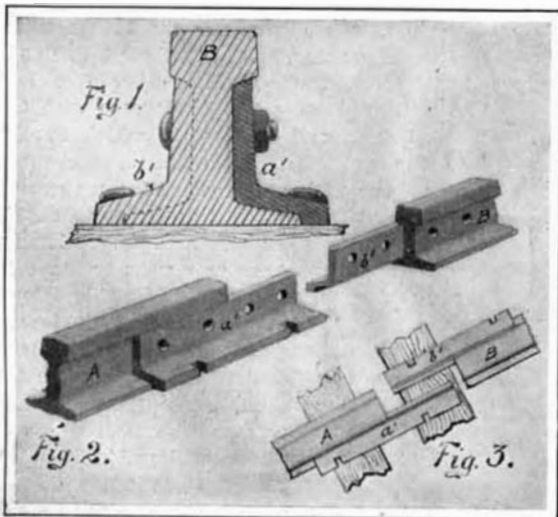


## AN IMPROVED RAIL JOINT.

Pictured in the accompanying engraving is an improved rail joint, which has recently been invented by Messrs. H. Herden, S. E. Fitch, and J. H. Burgoyne, Jr., of Galeton, Pa. It is a well-known fact that a railway, as usually constructed, is very weak at the points where the rails are joined. This defect is much more apparent when the bolts become loose. The improvement here illustrated consists in welding splice bars to each end of a rail, but at opposite sides. The bars will thus form integral parts of the rail. When connecting two rails, A and B, their ends are joined in the usual manner, allowing space for expansion and contraction, and are then fastened with bolts passing through the splice bars *a' b'*. The rails A and B thus virtually overlap each other, the rail B being supported by the splice bar *b'* engaging the flange of the rail A, and the latter being similarly supported by the bar *a'* engaging the flange of the rail B.

After the splice bars are spiked down to the ties, they will keep the rails in proper alinement, even if no bolts are used, and the ends of the rails cannot be depressed when a wheel is passing over that part of the joint. The so-called "hammering" at the joints is thus prevented. It will be evident that this joint, since it can withstand a severe test without the use of bolts, will reduce to a minimum the strains on the bolts, and



AN IMPROVED RAIL JOINT.

prevent their liability of coming loose. The improved joint admits of a short bar, and simplifies the work of track laying. A rail can be readily taken out of the track and reversed, or it can be used in connection with rails which are not equipped with this improvement, by employing loose splice bars.

## "Consider Her Ways."

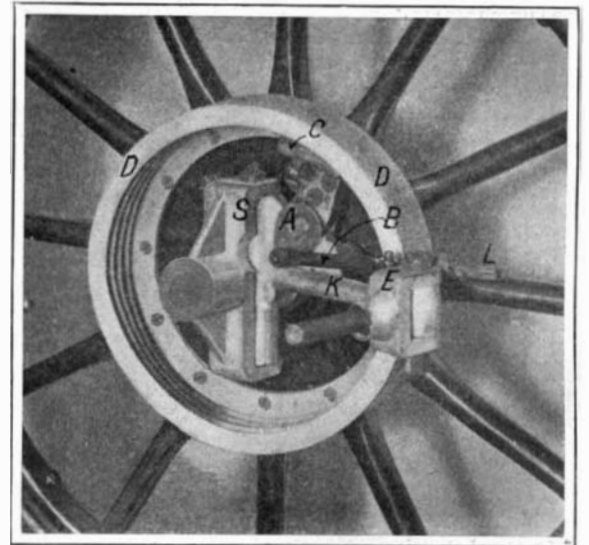
Among the apparently useless evils of the world, the white man has always reckoned the white ant, the greedy devourer of everything vegetable and animal that comes in its way, making many a region unfit for human habitation, but now Dr. Arthur J. Hayes, who has recently visited Abyssinia with the surveying party sent out to set up the marks for gaging the annual rise of the Blue Nile, broaches another theory. He went through the Soudan to Lake Tsana, western Abyssinia, and returned to Egypt by the valley of the Athbara, and in his book, "The Source of the Blue Nile," he records his opinion that it is to the white ants that the mud spread over the Nile delta in the annual floods owes its wonderful fertility. He does not say that the ants supply all the mud that is deposited in the delta, but that its productive property is due to their work in the western borderland of Abyssinia. This discovery, if discovery it be, is as interesting as those of the value of the earthworm, and the possibility of inoculating land for the increase of a desired harvest. Perhaps the humble brown ant, and even the little black ant, are benefactors of the human race, and the mason wasps and ground spider have other uses than to cause naturalists to write delightful books.

## WHEEL-BLOCKING SAFETY DEVICE FOR AUTOMOBILES.

Our illustration shows a novel device recently brought out by the Hayden Automatic and Equipment Company, for the purpose of blocking the wheels of an automobile should it start to descend a hill backward, owing to the brakes failing to hold. We illustrated a ratchet arrangement for this purpose in our recent Automobile Number. The present device can be applied to the front wheels of the machine, and hence it does not form any incumbrance that would interfere with the brakes.

As can be seen from the cut, the arrangement consists of a grooved drum, D, which is attached to the spokes of the wheel by means of screws. The movable

member, K, of the steering knuckle, S, has a suitable bracket upon which is pivoted, at A, a cam arrangement, C, having grooves corresponding to the ridges in the drum. A rod, B, and a bell crank, L, are used for moving C forward toward the steering knuckle when it is desired to free the wheels so that the machine can be run backward. At all other times C is drawn to the right so that it contacts slightly with the drum, by means of a small coiled spring (not shown). If, under these conditions, the wheel starts to revolve backward, it instantly jams against C and is held stationary. The bell crank, L, is connected to a suitable lever near the driver's seat, for the purpose of releasing the cam when the machine is reversed. This lever can be made to interlock with the reverse gear-shift lever if desired. The device is extremely positive in action, there are no teeth to break, and the slight rubbing action of the cam against the drum can be depended upon to keep the latter free from mud or grit. Some such device of this kind should be fitted to every high-powered automobile, and even on a light car it will sometimes be found very useful, such as when the machine stops on a hill from the stalling of the engine. In such a case the car will be held until the engine can be started again without the application of the brake.



A FRICTION SAFETY WHEEL-LOCK FOR AUTOMOBILES.

## RECENTLY PATENTED INVENTIONS.

## Electrical Devices.

**SELECTIVE CALL FOR TELEPHONES AND TELEGRAPHS.**—W. PALMER, JR., Ricon, New Mex. The object of this invention is to provide a call by which the central office may call any subscriber on the line without ringing the bells of the others and by which the two subscribers when called may be enabled to communicate with each other without permitting the other subscribers on the same line to hear their conversation.

## Of Interest to Farmers.

**COTTON-CHOPPER.**—J. I. ROBERTS, Sparta, Ga. The invention is an improvement in that class of choppers which are adapted for use in thinning out rows of cotton-plants, thus leaving a series of stands of such plants duly spaced apart. It may be employed for scraping the surface of a cultivated field for removing small weeds and leaving fresh soil exposed, as is sometimes required in cultivating certain crops.

**FERTILIZER-DISTRIBUTER.**—C. K. JOHNSON, Florence, S. C. The distributor is intended especially to be used by cotton planters in fertilizing fields with guano. The machine is adapted to be advanced along the furrows in which the cotton is to be planted. The object of the invention is to provide means for controlling the feeding of the fertilizer from the distributor.

## Of General Interest.

**SKIRT-SUPPORTER.**—H. C. DEANE, Salt Lake City, Utah. It is sought by this invention to provide a device for use in securing a skirt to a shirt-waist, and to provide for holding the skirt and shirt-waist with the proper set in the back. Placing of these garments with the holder may be readily and conveniently accomplished. The holder being formed of thin flat plates which lie close to the body will not present an objectionable appearance when the belt is placed over the same.

**LOG-HOOK.**—J. D. VAUGHAN, Zwolle, La. Mr. Vaughan's invention relates to a log-hook; and the principal object thereof is the provision of means for securing logs and the like which can be readily disengaged to permit the weight supported to drop, even when a large weight is engaged by the device.

**SAFETY-ENVELOP.**—J. PELLERIN, Catalia, Alaska. In the present patent the object of the invention is the provision of novel details of construction for an envelop which will prevent the opening of the envelop if sealed without tearing the parts of the same, and thus exposing the felonious attempt.

**DEVICE FOR BENDING FORE-AND-AFT SAILS.**—J. H. MITCHELL, Westerly, R. I. It has been the custom to bind the luff of a fore-and-aft sail to the mast-hoop by spun-yarn or marline. This is tedious and insecure. Further, the luff sags away from the mast and interferes with the set of the former. To overcome this objection the mast-hoop is provided with a shackle which is arranged to engage directly in the eyelet-hole of the sail, thus not only securely holding the sail in proper position, but enabling it to be very quickly bent and unbent.

## Heating and Lighting.

**OPEN FIREPLACE.**—H. C. CLEAVER, 3 Eden street, London, N. W., England. The fireplace consists, essentially, of a forwardly-inclined open grate or apertured screen over which the burning fuel descends by gravity, a combined hopper and chute for continuously and automatically supplying the fuel to upper portion of grate by gravity, a fence or kerb situated at the lower margin of grate for limiting descending movement of fuel over the same, and flue (or flues) controlled by damper (or dampers) or other means leading from space beneath the grate to the chimney.

**LIFT-PLATE.**—E. C. COLE, Chicago, Ill. The invention is an improvement in ranges, and has for its object to provide a novel construction whereby the lift-plate may be tilted to hold it any desired position whenever required. In combination with the lift-plate and lifter, is an ornamental bracket having a vertically-elongated opening through which the lifter is passed, and a hook or hooks for engagement with the lifter.

## Household Utilities.

**SCREEN.**—J. B. MOSELEY, Danville, Va. A special object of the inventor is the provision of a screen which is simple in construction and which may be readily attached to or detached from a table and which will at the same time be easily manipulated to enable articles to be removed from or placed under the screen.

## Machines and Mechanical Devices.

**TURPENTINE-BOX-CUTTING MACHINE.**—R. L. IVEY and R. D. McDONALD, DeLand, Fla. In this invention the machine is adapted to cut in the side of the sap-bearing tree a pocket forming the so-called "turpentine-box," having inwardly-converging walls and a flaring mouth to facilitate access to the sap accumulated in the box for convenience in removing the same.

**PAN-AND-ROLLER MILL FOR CRUSHING**

**AND GRINDING.**—J. C. WEGERIF, Rawreth Rectory, Battlesbridge, Essex, England. One of the main objects in this case is to enable equality of pressure to be maintained throughout the entire length of line of bite or mutual contact between pan and roll in direction normal to the surfaces of both and to insure as far as possible the maintenance of equal rate of wear of the grinding-surfaces of both pan and roll or rolls throughout their entire width. Another, is to subject particles under treatment not only to usual crushing stress, but also to cross-grinding or tensile stress tending to tear each individual particle asunder.

**MEAT-CUTTER.**—A. W. JOHNSON, New Brunswick, New Jersey. The chief objects of the invention are to provide means for guiding a rank cutting-blade in such a manner as to prevent it from coming into contact with the bed and to force it to cut uniformly-thin slices, to provide means for guiding three kinds of sharpening-stones, so as to properly sharpen a blade without mechanical skill, and to provide for firmly holding and regularly feeding the meat.

**GRABOT-MACHINE.**—J. D. BRAZIER and D. O. SULLIVAN, Vicksburg, Miss. The invention has reference to a grabot-machine for separating cotton locks and seeds from the hulls as the material comes from the boll-screen. The objects are to provide for the rapid and effective separation of the materials mentioned and the distribution thereof in separate places.

**MOLDING-MACHINE.**—H. BÖSSER, Alpena, Mich. The principal objects of this inventor are to provide means for rapidly disassembling the mold parts of a machine so as to free the molded object with little effort and in a very short time, to provide means for molding articles of various sizes and shapes by simple adjustments of the mold parts. It relates to a machine for molding plastic materials to form building-blocks, and other articles capable of being formed of a plastic substance.

## Prime Movers and Their Accessories.

**CARBURETER.**—J. MCINTOSH, Lansing, Mich. The invention relates to a carbureter or vaporizer designed particularly for use in connection with internal-combustion engines, but useful in other connections. The leading object is to provide devices for automatically regulating action of carbureter upon excessive sucking efforts therein, so that when the engine runs at high speed the ratio of air to fuel will be increased proportionately. A further object is to insure thorough spraying of the liquid fuel, and consequently to attain thorough admixture of air and fuel. Further, to easily adjust the float, so action of oil or spirit supply

valve may be readily regulated to suit specific gravity of oil or spirit.

## Railways and Their Accessories.

**GRAIN-DOOR.**—J. E. DRAKE, Blue Rapids, Kan. Mr. Drake's invention relates to a new grain door for railway cars which is an improvement on his previously patented invention. The door is formed of two sections so arranged that either the upper section or both sections may be conveniently swung up and secured in open position. The car may be filled through the upper section. A panel in the lower door section may be raised to permit the contents of the car to flow out before the door is opened. A special feature is means for locking the door sections in open position.

## Pertaining to Recreation.

**GAME APPARATUS.**—R. D. MARTIN, Tampa, Fla. In this case the object is to provide a game apparatus which is simple and durable in construction, not liable to get out of order, and arranged to afford amusement to the players and to require considerable skill to successfully propel a disk of hard wood, metal, or other material over the surface of a board, by the use of a finger or a mallet, in the least number of strokes.

**GUN-SIGHT.**—L. HILLBRANDT, Johnstown, N. Y. One purpose of the invention is to provide a rim-sight which is of circular form and to provide therefor a removable fine and auxiliary sight which is preferably in the nature of a ring having a spider inner section including vertical and horizontal bars and a central peep or which may be in the form of a disk provided with a peep-hole or scratch-sight.

## Designs.

**DESIGN FOR A COVER-DISH.**—R. L. JOHNSON, Stoke-Upon-Trent, England. This designer produces an oblong formed cover-dish whose body tapers with a beautiful curve to the bottom, which is encircled with a waved edge. Handles are on the ends. The cover has an exquisitely twisted handle, and the descent of the former to its bottom edge is in fine proportion to the whole effect. Mr. Johnson has also designed another cover-dish. The form is oblong. Scrolled handles are on the ends of the dish, the body of which symmetrically dips to the scrolled edge at the bottom. The cover is surface puffed and ornamentally fluted at the edge.

**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.