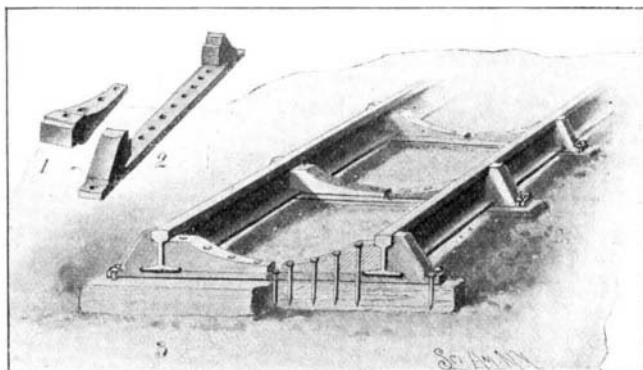


the side of the cabinet. The wheel is provided with blades projecting upward from the periphery and downward from the radial arms or spokes. These blades serve to pass through the sugar, loosening it and, particularly when the quantity in the cabinet is nearly exhausted, carrying it to the opening in the bottom of the compartment. Directly below this opening is the horizontal shaft of the hand-wheel, which is provided with radial arms designed to further break up the sugar. The discharge spout of the lower compartment is normally closed by a slide or gate. In operation the bag or other receptacle for the sugar is placed on a rest which may be supported on



AN IMPROVED RAIL FASTENING.

any of the horizontal guides shown according to the height of the bag used. Now, on opening the gate on the discharge spout, the sugar will pour out into the bag unless packed or caked too tightly, when the hand-wheel may be turned to loosen it. In case too little or too much has been drawn out, the sugar can be taken from or put back into a small compartment, which is shown in our illustration as closed by a small door at the left. To fill the cabinet it is tipped on the hand-wheel shaft as an axis until the opening, which is diagonally placed, lies horizontal, when the upper compartment can be entirely filled. Mr. Michael R. Maher, of 69 Linden Avenue, Zanesville, Ohio, is the inventor of this cabinet.

A PECULIAR TOY HOOP.

A recent invention affords an apt illustration of the saying that there is always room for improvement. One would never think that the ordinary toy hoop could offer any field for invention, yet Mr. William E. Veideman, of 383 West 125th Street, New York, has by a simple alteration in its design constructed a hoop which presents many very surprising optical illusions and should consequently become a great source of amusement and interest to the children. The new hoop differs from the ordinary form of the toy in that it is formed of a flat band with lateral corrugations or waves, that is, with the waves lying flat on the surface of an imaginary cylinder. When the hoop is rolled along the ground it seems to follow a sinuous course suggesting the motion of a snake. In order to show this movement to the best advantage the waves are made very long and quite narrow, the width of the hoop from crest to trough of the waves being about two inches. The hoop rolls longer than the ordinary toy hoop because this wave-like formation gives it a tread which is several times larger than the actual



HOOP WITH WAVE-LIKE FORMATION.

width of the band. A curious optical illusion appears when the toy is held up between two persons with its axis on a line with their eyes. The hoop, if formed with eight waves, will then appear square to one man and diamond-shaped to the other; or if it be formed with six waves, one man will declare that the toy has the form of a triangle, with its base line at the top, while the other will be equally certain that the base line is at the bottom. These peculiar forms are due to perspective which throws the nearest portions of

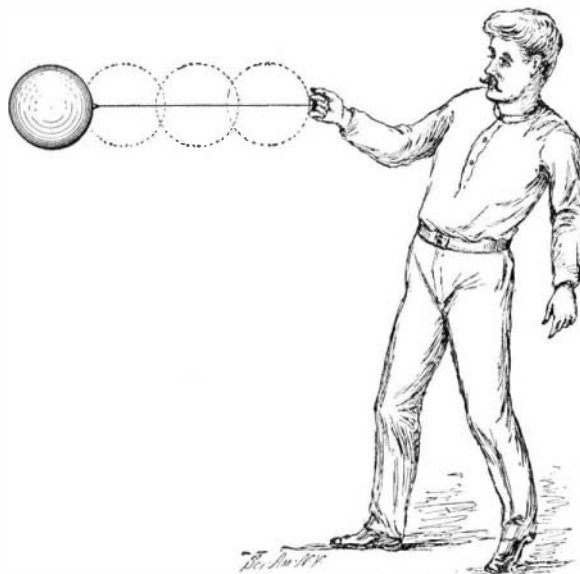
the hoop out radially, while those parts which are furthest removed appear to be drawn closer to the center. The children will find great amusement when rolling the hoop upon a sandy surface, for by its use they can form many artistic and curious designs in the sand.

RAIL FASTENING.

The invention illustrated herewith provides improved means for connecting railway rails to cross-ties. The fastening is very strong, being particularly adapted to withstand the great strain imposed on the outer rail at a curve, and prevents spreading or displacement of the rail. Mr. Robert G. Musgrove, of Jackson, Miss., is the inventor of this device. The fastening comprises a tie-bar shown in Fig. 2 and a pair of rail blocks of the form illustrated in Fig. 1. It will be observed by reference to Fig. 3 that the tie-block extends to opposite sides of the track and is provided with abutments shaped to fit the outer sides of the rails, the top of the abutment lying flush with the tread of the rail. The rail-blocks are shaped to fit snugly against the inner sides of the rails, with their upper surfaces lying below the rail-heads, so as not to interfere with the car-wheel flanges. The tie-bars and rail-blocks are securely fastened together and also to the tie by long spikes, as shown in section in Fig. 3. Aside from this, the tie-bar is individually secured by a spike at the center and three at each end. It will be observed that this form of fastening renders unnecessary the employment of fish-plates and similar devices, and the fastening, furthermore, embodies no parts such as are liable to work loose under shocks and jars to which railway rails are ordinarily subjected.

A VEST POCKET PUNCHING BAG.

A convenient and very efficient little exerciser has recently been invented which is calculated to develop those muscles which are used in boxing. The device consists of a thin rubber bag with an elastic cord at-



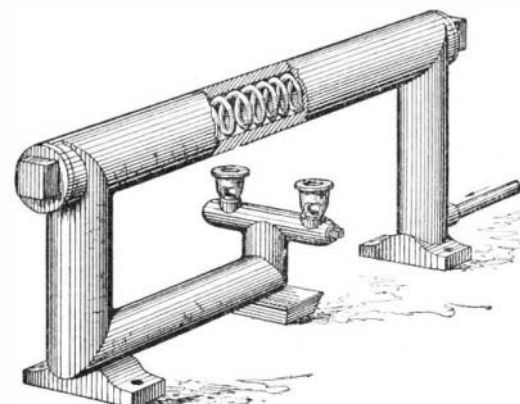
VEST POCKET PUNCHING BAG.

tached thereto and may be readily folded up and carried in one's vest pocket. When it is desired to use the exerciser the bag is blown up to a diameter of about eight inches. The free end of the cord is then grasped in the hand and the device is used as shown in our illustration. The bag on being punched out with the fist, stretches the cord until its momentum is overcome, when it bounces back toward the operator, who endeavors to punch the bag again. Considerable skill is required to successfully punch the elusive little device, and in acquiring that skill one also becomes very alert and accurate, while at the same time his muscles are well developed. After learning to operate the device with one fist a man may practise using both fists. To vary the speed of the exercise the cord may be shortened or lengthened, the short cord resulting in a quicker return and *vice versa*. The punching bag is made by the M. Lindsay Rubber Works, of 298 Broadway, New York city.

AN IMPROVED OIL BURNER.

A neat little burner adapted to burn mixed oil and air is shown in the accompanying illustration. It is the invention of Mr. Milton C. Henley, 1394 Lexington Avenue, New York, N. Y. The burner is noted for its simplicity of construction and the arrangement whereby the gas may be quickly generated to form a very hot flame. The device will be found very useful in furnaces, stoves, ranges, and the like. Owing to its compact form, it will also be found applicable as a foot-warmer in automobiles or any other vehicle carrying a supply of oil. As illustrated, it comprises four tube sections connected to form a quadrangle, the lower horizontal tube, however, ending midway of the upright members in a pair of Bunsen burner tips. The

flames from these tips are adapted to envelop the upper horizontal tube, vaporizing the liquid oil as it passes therethrough, so that it arrives at the burner as a heated gas ready for rapid combustion. The longitudinal bore of the upper horizontal member of the device may be opened at either end, for cleaning or other purposes, by the removal of screw plugs. Within this bore a coiled spring is located, which is compressed by the screw plugs, so that on removal of a plug the coil will spring outward and can then be easily grasped and withdrawn. The purpose of the spring is to enlarge the heat-carrying capacity or area of the chamber. The spring will also, when with-



A SIMPLE OIL BURNER.

drawn from the tube, assist in removing any impurities deposited by the oil on the walls of the chamber.

Brief Notes Concerning Patents.

William H. Noyes, formerly a member of the Legislature of the State of Minnesota and a well-known newspaper man, has abandoned both politics and journalism in order to devote his time to the promotion of an invention for which, he says, he sees a great future. This invention is his own, and consists of a means of locking a locomotive when at rest, so that no one except the person holding the secret can start the engine. Mr. Noyes formerly lived at Duluth, but he has recently taken up his residence at St. Paul, where he will engage in his new business.

Howard H. Tunis, an engineer of Baltimore, Md., is the inventor of a monorail system which will in all probability be exploited by the erection of an experimental line between Washington and Baltimore; and if this programme should be adhered to, the inventor expects to carry passengers from one city to the other at the rate of five cents each and make money by it. He has been for some time experimenting with the monorail, and has built a model line on a farm near the city. This was large enough to carry a number of passengers, and by its operation he acquired many ideas for improvements, and a small model of the perfected line was recently displayed in Baltimore to a number of gentlemen who have become interested. A company has been formed for the purpose of promoting the invention.

William Lloyd Wise, M. P., a magistrate and deputy lieutenant of the county of Essex, England, has been recently visiting this country, and stopped at Washington quite a long time for the purpose of making a close examination into the American system of patents. He says that he intends to introduce a bill into Parliament upon his return, making some radical changes in the manner of granting patents in that country, which are based on his observations of the systems of a number of different countries which he has visited. He said, "I propose not to attempt to decide beforehand whether a patent will be valid either for lack of utility or novelty of subject-matter. The applicant will take his patent at his own risk, leaving the courts to decide the question of its validity, if ever questioned."

We have heard of many novel uses to which the overhead carrier system has been put, but probably the most ingenious of them all is that of a St. Louis hardware merchant who moved the greater part of his stock from one store to another, which was located on the other side of the street, almost directly opposite. A steel cable 1½ inches thick and tested for 600 pounds, was thrown across the street from the window of one establishment to the other, a span of 81 feet. On this there was strung a steel box, and as the goods were taken from the shelves in one establishment, they were placed in boxes and marked. These were loaded in the cage. Gravity carried the load across the street, and the box was brought back by the aid of a hand windlass. The steel box made a round trip every minute and the daily average was 500 per day. The average load was 300 pounds. In this manner all the shelf goods were handled, and the operation was performed without the slightest confusion, the goods practically going direct from their place in the old store to their permanent location in the new establishment.