

**A NEW TOOL.**

The engraving shows an improved tool which can be used either as a monkey wrench or bench vise. The wrench consists of a square bar, having upon one end a fixed jaw, and upon the other end an arm having a screw-threaded opening which receives the screw for moving the adjustable jaw placed on the square bar. The wrench is capable of being used like any ordinary wrench, and when it is desired to employ it as a vise it is held in a bed plate, arranged to clamp the bar of the wrench both lengthwise and sidewise.

This invention will be found very useful to those requiring a wrench and vise occasionally, and by mechanics who are frequently using both tools.

Further information may be obtained by addressing Mr. William H. Love, Love's Station, Miss.

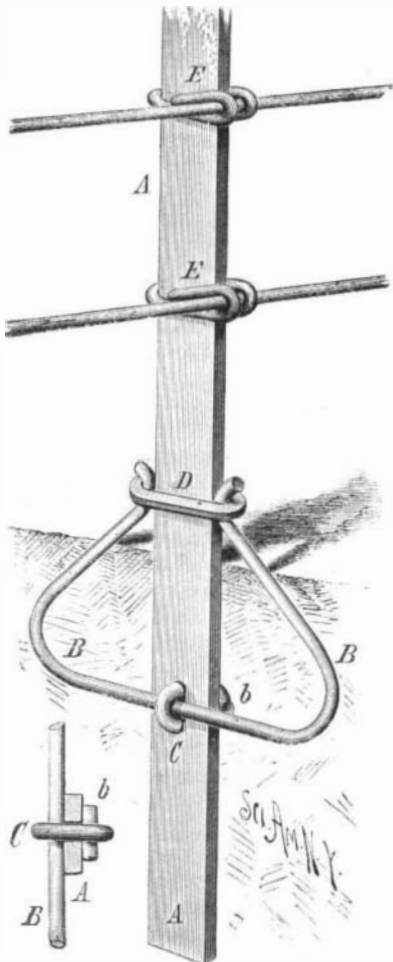
**A Good Day's Work on a Railroad.**

The work of changing the gauge of the Chicago, St. Louis, and New Orleans Railroad, between Cairo and New Orleans, was begun at 4 o'clock of the morning of July 29. The work was finished and trains were running at 3 o'clock in the afternoon of the same day. The work consisted in shifting the west rail  $3\frac{1}{2}$  inches, making the gauge 4 feet  $8\frac{1}{2}$  inches. The length of road changed was 571 miles, exclusive of sidings. About 2,500 experienced workmen were employed in gangs, each gang having charge of eight miles of track. The division from Cairo to Milan, 84 miles, was changed by 8:50 A. M. The division from Canton to New Orleans, 206 miles, was completed at 9:20 A. M. The work was in charge of Col. L. P. Brien, and was accomplished without mishap or delay.

**AN IMPROVEMENT IN IRON FENCES.**

The improvement in iron fences, shown in the annexed engraving, has recently been patented by Mr. Samuel Heaton, of Cedar Rapids, Iowa. It is noteworthy principally on account of its simplicity and cheapness. The post has but one aperture, and that is made so near the lower end as to have no effect on the strength of the post, and the braces and rods or wires are fastened by a very simple and effective means.

The post consists of a piece of flat bar iron, having an oblong hole punched in it near the lower end. The brace

**HEATON'S IMPROVED FENCE.**

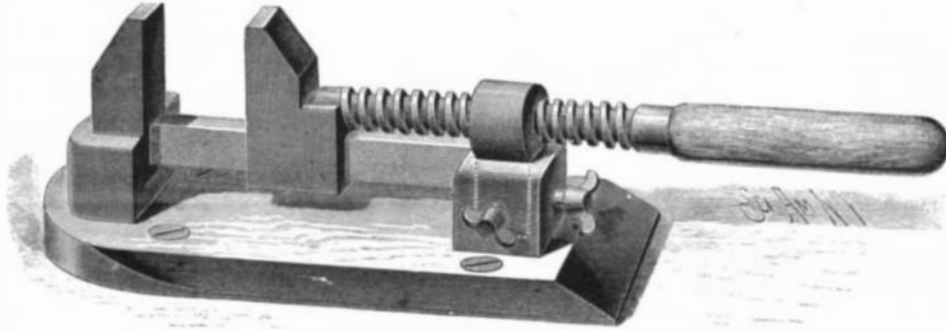
consists of a curved piece of round bar iron, bent into approximately triangular shape, having its ends at the open angle, bent outward to receive the link which binds the ends to the post. The brace is attached by slipping the link over its free ends, and then passing the post through the link between the ends of the brace. The lower part of the brace is secured to the post by a link, previously placed upon it, which passes through the slot in the post and receives a key or wedge upon the opposite side.

The wires or rods forming the bars of the fence are secured by loops or staples which embrace the post and are bent around the wire.

The advantages of a post of this description will be readily understood without further description.

**The Faure Battery.**

Some personal feeling must exist in the minds of the French writers on electricity against M. Faure, judging from the way in which they compare his secondary battery with M. Planté's. Any one who chooses to test the Faure cell and the Planté cell cannot fail to be convinced that the former is decidedly the better one. Sentiment, passion, and prejudice enter so largely into what ought to be the calm reason of the French people that one is compelled to receive their conclusions regarding anything with some neutralizing substance—an acid or an alkali, as the case may require.

**LOVE'S COMBINED WRENCH AND VISE.**

In the Faure case the declarations of French electricians must evidently be accepted by minds otherwise constituted not simply with a grain, but with an overwhelming dose of salt. Prof. J. A. Fleming, of the University College, Manchester, England, says candidly that "the enormous superiority of M. Faure's cell over the old form of Planté's cell is evident at once on experimenting with it." And, by the way, Prof. Fleming is justly entitled to the credit of devising the following admirable method of showing large assemblies the action of the Faure battery, about the end of last June, before he had the opportunity of looking over M. Faure's patent papers. His own words are given with one bracketed qualifying clause: Sheets of lead were bent up into the form of shallow trays one foot square and one inch deep; in each of these was placed a layer of red lead, then a layer of flannel, then a layer of red lead, and, lastly, another lead plate. These trays, to the number of six, were then piled one above the other after being filled with dilute acid. The cells, being connected in series, were polarized by a ten cell battery of Grove's cells, and after twenty minutes charging had taken up [or rather had induced conditions of remanifesting] a very large quantity of electricity. At a short lecture during the evening the charged Faure battery was connected with a Gramme machine and drove it round with considerable velocity for some minutes. After thus employing part of the charge the remainder was used for heating several inches of platinum wire, and for driving for a few seconds a simple form of magneto-electric engines. These experiments amply confirmed those present of the practical character of M. Faure's invention.

**MISCELLANEOUS INVENTIONS.**

An improved swimming apparatus has been patented by Mr. William Beeson, of Dillon, Montana Ter. This invention relates to a novel construction of swimming apparatus, and it is in the nature of a detachable suit provided with pockets or receptacles for the body and limbs, and having between the pockets for the limbs a web portion, which acts like wings or fins, which, from the movement of the legs and arms, effect a propulsion through the water.

An improved pillow or bolster has been patented by Mr. William T. Doremus, of New York city. The object of this invention is to prevent the stuffing of pillows and bolsters from being crowded out of place by pressure applied to parts of the pillows or bolsters. The invention consists of a pillow or bolster made with an inner cover filled with stuffing, and an outer cover having a layer of stuffing interposed between it and the said inner cover, whereby the stuffing will be kept in place when under pressure.

An improved switch for butchers' tracks has been patented by Mr. Charles Cole, of West Newton, Mass. This invention relates to an overhead track on which runs trucks provided with hangers, upon which heavy articles can be suspended beneath the track and readily moved from place to place; and its objects are to provide a convenient way to connect the main track with the branches which extend to different parts of the room or inclosure, and to provide a convenient method of shifting such connecting main track from connection with one branch to connection with another.

An improvement in shipping cases has been patented by Mr. Charles R. Peaslee, of Louisville, Ky. This invention is an improvement in the class of shipping cases for large oil cans, in which interior grooves are provided for reception of the gudgeons or pivots of the can for the purpose of protecting them while the can is being shipped.

Mr. James H. French, of Willimantic, Conn., has patented an improved package for fire kindlers which will prevent the evaporation of the turpentine and other volatile substances contained in the kindlers.

An improved cushion has been patented by Mr. William T. Doremus, of New York city. The object of this invention is to prevent the displacement and the packing of the stuffing in cushions for beds, lounges, chairs, and other arti-

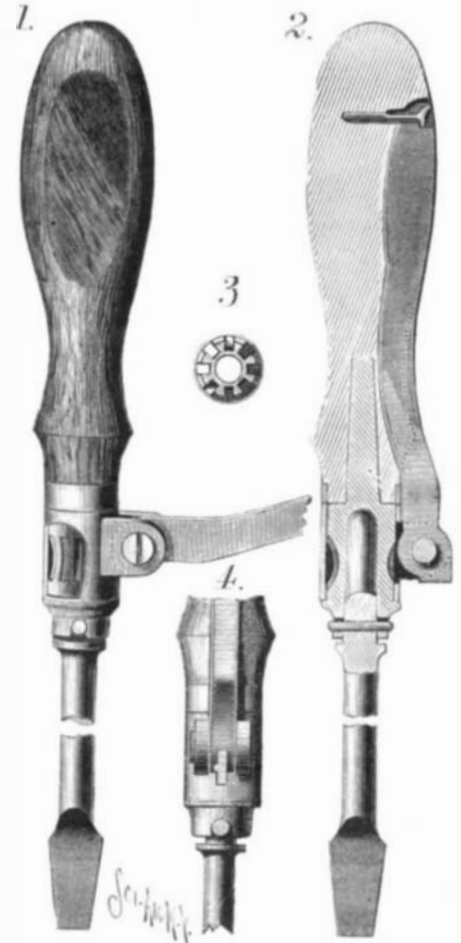
cles of furniture. The invention consists of a cushion made of two or more small elastic parallel rolls connected along their adjacent sides, whereby the elastic material forming the stuffing is kept from being displaced and becoming packed.

**A HANDY TOOL.**

Slotted head machine screws, which leave the work flush by sinking the heads, are much used in machinery and tool construction, and sometimes are of so large diameter and such length of threaded portion as to present considerable resistance when nearly seated. The use of a wrench on the blade of the screw driver to give additional leverage is a coarse and makeshift method of overcoming the resistance, and, in many instances, is inconvenient, as the crowded position of the screw makes it difficult to get the necessary half or quarter turn.

The object of the improvement shown in the engraving is to obviate these difficulties and provide a handy and useful implement, which will not only take the place of the screw driver and wrench, but will serve as a substitute for the cumbersome and heavy ratchet wrench. It has all the advantages of a ratchet wrench in making short movements, and all the uses of the screw driver in driving the screw in the ordinary manner by means of the usual style of handle.

It is really a screw driver handle, with fixed steel socket, to receive the shanks of the screw driver blades, or of socket wrenches, as desired. On the socket is a sleeve that turns freely and covers a ratchet, or rather a square-toothed pinion, secured rigidly to the steel socket. There is pivoted to the sleeve a steel lever, which, when not in use, shuts into a recess in the wooden handle, and when thus shut the entire implement is only an ordinary screw driver, neither the ratchet nor the pivoted lever taking any part in its action. When used thus, as an ordinary screw driver, it merely drives the screw until the resistance becomes too great, when the lever, in connection with the ratchet, is brought into action. For this purpose the lever is allowed to swing out of the handle, and as it assumes a horizontal position its pivoted end, as a tooth, engages with the toothed ratchet inside the sleeve, and gives means for a leverage corresponding with the length of the arm, which may be nearly

**SCREW DRIVER WITH LEVER ATTACHMENT.**

that of the screw driver handle. A very slight movement of the lever serves to disengage it from one tooth and engage with the next, or with any other, the gradations depending on the number of teeth in the ratchet. A movement of one eighth of an inch, demanding eight teeth, is generally sufficient for the most cramped position. But a larger number of teeth in the ratchet, and a consequent shorter movement of the lever, may be had if necessary, or, if circumstances warrant, the lever may be swung so as to get one-quarter or one-half, even, of the circle.

Mr. L. E. Rhodes, the inventor, is a practical mechanic, in the employment of the celebrated Pratt & Whitney Company, Hartford, Connecticut. The implement has had sufficient trial and use to establish its value in the shop.