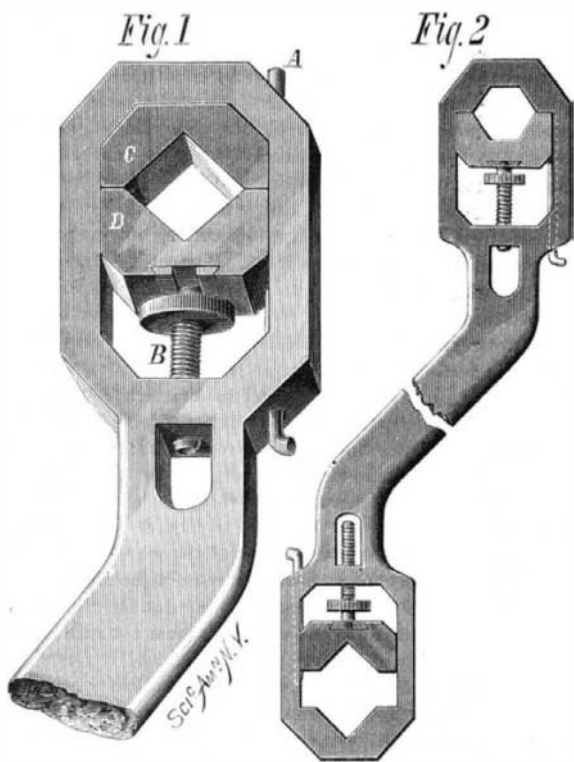


**IMPROVED WRENCH.**

The improved wrench illustrated herewith is so constructed as to prevent slipping and to obtain a large bearing on the nut. It is a strong and durable tool, embodying many mechanical niceties, which will be understood from the following description. The frame has two parallel sides, on the interior at top and bottom, and in it are placed two movable jaws, C D, Fig. 1, which are held therein by a



PHILLIPS' IMPROVED WRENCH.

loose wire, A, along the top, working in a groove, which is cut one half out of the frame, and the remaining half out of the jaws. This wire acts as a rib to prevent the jaws from falling out, and also as a guide for the rear jaw.

The jaw, D, is moved by means of a milled head screw, B, so as to adjust it to different sizes of nuts, the rear end of the screw passing through a tapped hole in the frame. The front end of the screw in the jaw, D, is tapered to a point so as to revolve true, and it causes the jaw, D, to travel forward with it. The backward movement of the jaw is controlled by means of a shoulder or offset cut on the screw, back of which a small slotted plate is inserted and held in place in the jaw by a dovetail. This slotted plate, in connection with the loose wire, is for the purpose of removing the jaws and inserting others to be used for nuts of a different shape.

The wrench can also be made with only one jaw movable. In this case the forward portion of the frame is fashioned to the shape of the nut, as shown in Fig. 2.

The jaws, C D, are so constructed as to obtain a bearing on four sides of the nut, or double that obtained in the ordinary wrench, thus preventing slipping, and preserving the faces of finished nuts. In hexagon nuts, and especially when heavy strain is put on a wrench, the corners are apt to be rounded. This objection is overcome in the Phillips wrench.

Patented April 16, 1878. For further particulars relative to the sale of the entire patent, address the inventor, Mr. Thomas H. Phillips, Kalmia Colliery, Orwin P. O., Schuylkill county, Pa.

**Defying the Burglars.**

A recent patent by a Western jail builder consists in using steel bars with a wrought iron core, and, after cutting them to desired lengths and drilling them, heating them to a red heat and merging

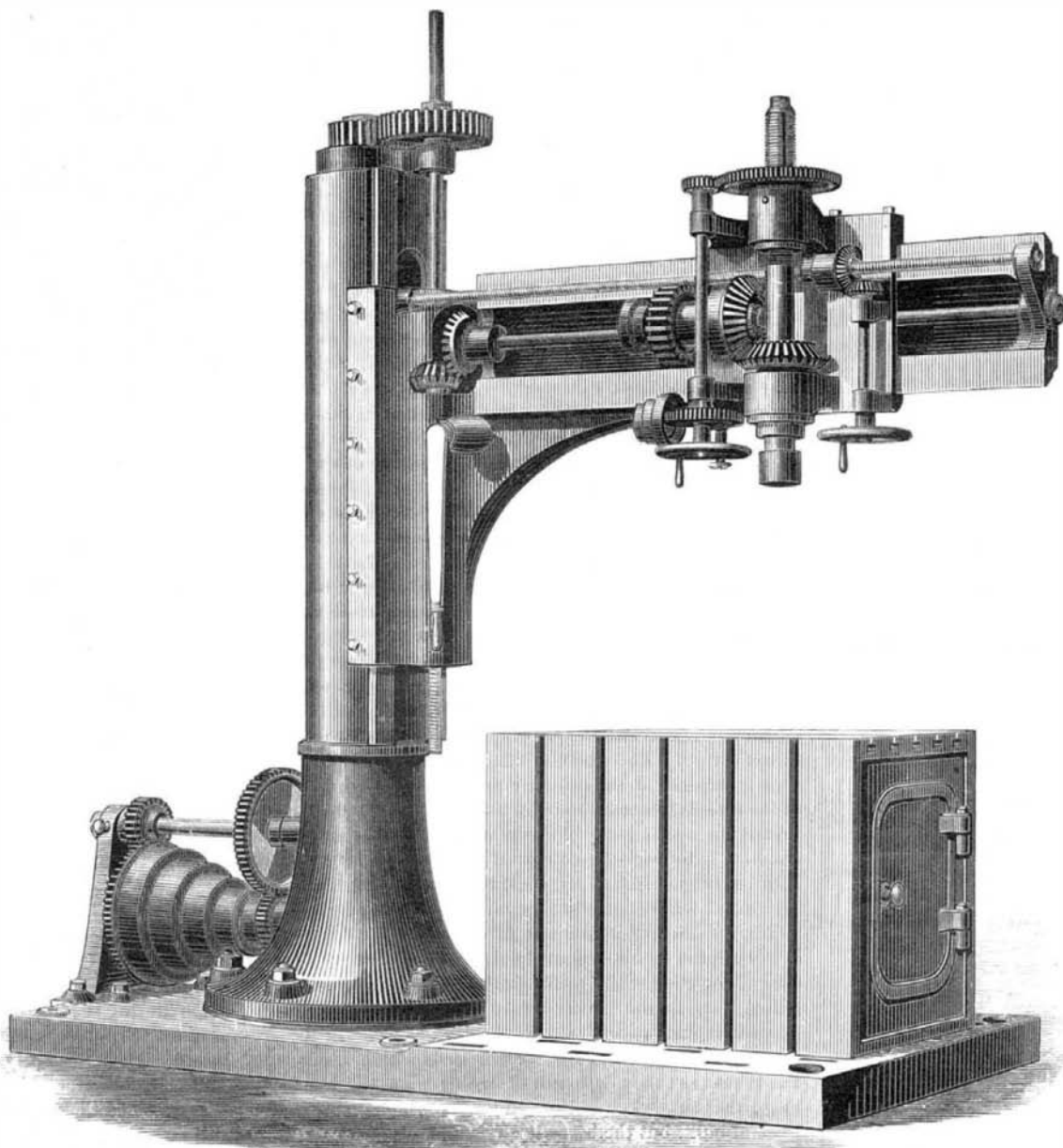
them into water while tightly held in clamps of the exact size, so as to render the edges of the bars as hard as flint, perfectly resisting the file or chisel, and impossible to be broken on account of the iron core. The clamp holds the bar so that warping is prevented.

**A Dry Goods Palace Car.**

A correspondent of the *American Manufacturer* says: "The United States Rolling Stock Company, at their shops in Chicago, are getting up what may be called a new departure. This is a palace dry goods car, to be used on railroads by dealers in dry goods, carrying samples along as well as stock to be delivered when sold. This car is 60 feet long, not including platforms at each end, or 66 feet long over all. Is built as light as possible and yet is strong. The construction of the body is very simple, having only two large windows on each side for lighting purposes, but at each end there is to be a stateroom for the traveling merchants to occupy nights or days, while on the roads. These staterooms are lighted by three small windows each. The inside of the car was not finished for use, so we cannot tell just how it is to be arranged, but no doubt convenient for the purpose. This car has a sub-cellar, as they call it, between the fore and aft trucks, where may be stored large quantities of domestic goods while in transit, and it has what may be called a mansard roof, or double deck, for light and ventilation, giving it the appearance of a sleeping car—except the finish. This is a new enterprise, and it remains to be seen upon trial if it shall prove a successful one."

**RADIAL DRILLING MACHINE.**

In the annexed engraving is shown a double-gear independent radial drilling and boring machine, exhibited at Paris by Messrs. Sharp, Stewart & Co., of Manchester, England. The machine is provided with a prolonged base plate, which carries the main standard and outer bearing for the double gear, and which is also planed to receive large articles. The table is movable, and is, when required, mounted on the base plate, as shown, so that small objects may be readily and accurately set and fixed to it. The table forms a cupboard for drills, etc. The radial arm which carries the drill spindle swings through an arc of 280°, while radially the spindle can be adjusted from a radius of 2 feet 7 inches to one of 6 feet. The shifting of the spindle carriage on the radial arm is effected by a hand wheel close to the spindle itself, so that the man in charge of the machine can make the adjustment while keeping his eye on the drill. The radial arm is also adjustable vertically by either hand or power, so as to enable the machine to take in objects from 4 feet to 6 feet in height. *Engineering*, to which we are indebted for the illustration, speaks highly of the workmanship of all the parts.

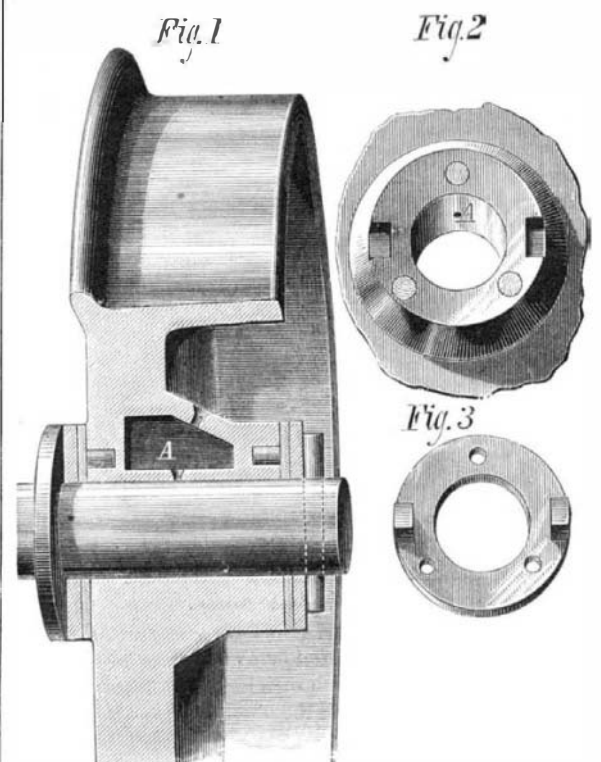


ENGLISH RADIAL DRILLING MACHINE.

**IMPROVED SELF-OILING CAR WHEEL.**

We illustrate herewith a new self-oiling car wheel, which is so constructed as to retain the lubricating oil, and to be easily removed when desired, so that another wheel may be substituted in its place.

Fig. 1 is a vertical section, and Figs. 2 and 3 are details of the parts. The hub is formed with an interior oil chamber, A, having an inlet on the outer side of the wheel, and



PHILLIPS' SELF-OILING CAR WHEEL.

an outlet within the hub, for the passage of the oil to the axle. Into each end of the hub are cast a sufficient number of openings of any suitable shape, into which are driven wooden plugs, and their ends made flush with the face of the hub. Next to the hub is placed a washer of gum, cork, or other suitable packing, which binds tight around the spindle; over this washer there is placed the iron washer, Fig. 3, and by means of common screws, screwed into the wooden plugs, it is drawn against the packing and an oil-tight joint thus secured. These screws pass through holes in the iron washer, and have their heads countersunk in it, so as to be flush with its face.

On the iron washer are cast two lugs, which enter corresponding recesses in the hub, and in the revolutions of the wheel they serve to take the strain off the screws. The packing, while it serves to retain the oil, also prevents the admission of dirt and grit from the outside.

This device is simple and inexpensive, and, we are informed, can be adapted to wheels without necessitating any change in the axle or in the framing of the car. It allows the wheel to have free lateral motion on the axle, offers no impediment to "spragging," and in case of accident the old wheel can be removed and a new one substituted, by the simple withdrawal of the linch pin, an important feature in and around collieries where time is an object.

Patented April 16, 1878. For further particulars address the inventor, Mr. Thomas H. Phillips, Kalmia Colliery, Orwin P. O., Schuylkill Co., Pa.

**Brain Feeding.**

We are glad to find some small tokens that the need of "brain feeding" is beginning to be recognized by the lay public. For example, it is at length perceived that to perform intellectual work thoroughly men must be supplied with fresh air. This scrap of wisdom has been excogitated in connection with the contro-