

**JUDSON'S PATENT LATHE CHUCK.**

This invention is an improved lathe chuck, which is so arranged that the pressure of the screw toward the center also presses the jaw firmly against the face of the chuck, thus holding the work with great security, while the minimum force is expended in turning the screw. It is claimed to be sensitive, strong, durable, to economize power, and never to require re-adjustment in order to take up lost motion.

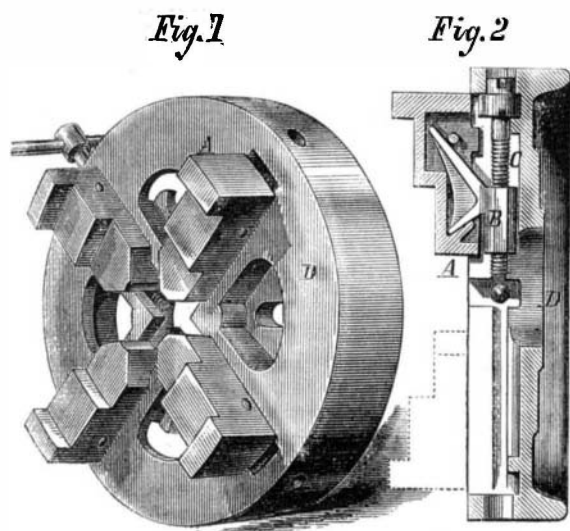
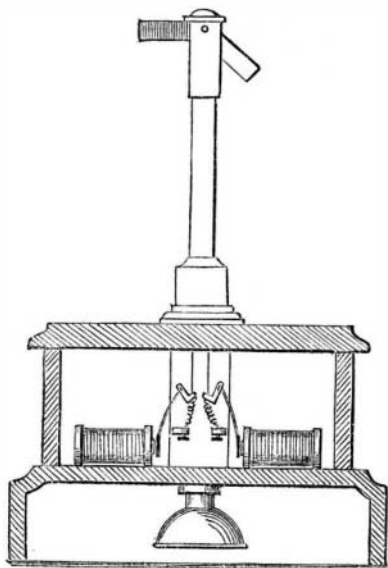


Fig. 1 is a perspective view, and Fig. 2 a vertical section of the device. A is the jaw, B the nut, C the screw, and D the bed of the chuck. The jaw, A, is formed with an angle bearing, against which the nut, B, with a similar bearing, is brought in contact. The nut slides in grooves planed in the bed, D, which allow of its travel in the direction of the length of the screw, C, but guide it in all other directions. The lever for revolving the screw is shown in Fig. 1. This chuck is manufactured and sold by Dwight Roberts, Wythe avenue, between Hewes and Penn streets, Brooklyn (E. D.), N. Y., from whom further particulars may be obtained.

**ELECTRIC RAILWAY SIGNAL.**

We find in *Iron* the accompanying illustration and a description of a new electric semaphore block-signalling instrument, the invention of F. Russell. The apparatus consists in a case within which the armature of an electro-magnet is connected with one end of a rocking crank lever, the other end of the lever being connected with a wire. When the electro-magnet is excited, the armature approaches it, depressing one end of the rocking lever and elevating the end in connection with the wire. The latter rises in a hollow



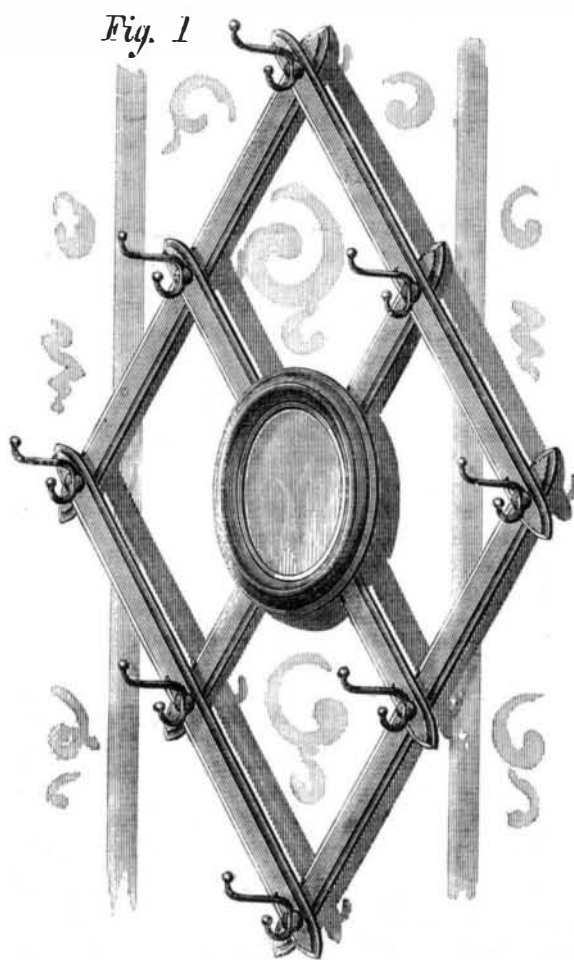
column some 18 inches high, and moves a semaphore arm at its upper extremity. Two of these arms—red and white—and two electro-magnets are employed, as represented in the engraving. On top of the case, a switch lever is arranged which serves to throw the battery current into the line wire. In front of the instrument is a tapper or ringing key for sounding the bell at the other station. The bell is shown at the lower part of the case.

The device is adapted for use on lines upon which two trains or engines are not allowed to run on the same section of road at the same time. The same signals are used to denote "line blocked" and "line clear" as are actually exhibited to the engineer of the train. In its normal position the instrument denotes "line blocked," that is, with the arms up. So long only as a current is caused to flow from the battery to the line will the arm fall to "line clear," because the moment the current is cut off from any cause, the arm flies up to danger, the whole apparatus being in equilibrium. As the red arm can only be lowered from the station towards which the train is approaching, the signal must be under the sole control of the signalman of that station. The white arm is worked electrically by the switch of its own instrument, and shows the signalman the position in which he has placed the electric signal at the other station. In this arrangement three wires are employed for bell, signals, and arms, for a pair of roads.

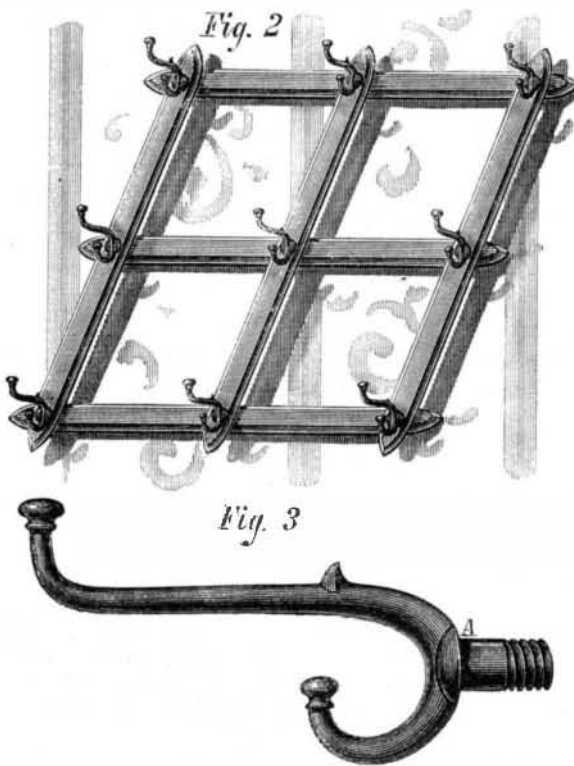
THE use of bronze in the manufacture of field guns has been abandoned both in England and Germany.

**HAT AND COAT HOOK.**

This is a convenient invention, designed to replace the ordinary wooden pin commonly used in expansible and swinging hat and coat racks, and consists principally in the metal hook shown in Fig. 3. A portion of the shank of the device, it will be noted, is threaded, while that part nearest the curve is made plain. The object of this arrangement is to enable the hooks to be secured to the slats or bars forming a hat or coat rack, and at the same time to unite the two sets of slats together without the aid of any other fastening.



Of the bars which constitute the rack, the inner set, Fig 2, next to the wall, remain always horizontal and parallel to each other; the outer slats, though also relatively parallel, can be swung to the right or left, so as to give the frame a diamond or rhomboidal form. As the hooks have upon them the securing device, the putting together of the rack is a very easy matter. Holes are bored through the slats where they cross each other, those through the outer bars being somewhat the larger. The shank of the hook is passed through the hole in the outer slat, and screwed into the hole of the inner one until the shoulder, A, brings up against the wood. The outer slat, therefore, swings freely on the plain portion of the shank, while the inner bar is held by the screw part.

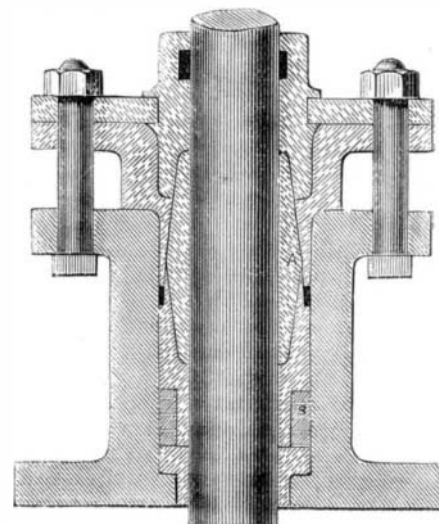


The frame thus united can be hung, as in Fig. 2, thus allowing the use of all its hooks; or it may be provided with a mirror attached to its center and suspended from an angle, as represented in Fig. 1. The hooks necessarily have double the holding capacity of single wooden pegs, are more ornamental, and are claimed to be much stronger and cheaper. The rack can be folded into compact form for shipping, making, the inventor states, a package, without the glass, less than three inches thick and two feet long. It can be readily taken apart when desired.

Patented March 18, 1873. For particulars regarding the purchase of this article complete, separate hooks, territory, etc., address the inventor, Mr. John Danner, Canton, Ohio.

**IMPROVED METALLIC STUFFING BOX.**

The accompanying illustration represents an improved metallic stuffing box recently patented by Mr. Watteuu, of Middlesborough, England. This invention has been applied in France to nearly one thousand locomotive engines, and stationary engines of every description are daily being fitted up on this system. So says the *English Mechanic*. In forge hammers, which soon burn their packing, the invention has been applied with great advantage. The metallic packing, A, composed of an anti-friction metal, has a double conical shape; by means of the coiled spring, B, in the bottom of



the box, it will always be forced against the piston rod, as it is made in halves. In locomotive engines the metallic packing has been found to last a year without being renewed, while the cost of maintenance is insignificant. After that time the metal can be remelted. It is stated that there is much less friction than with any other packing. After it has been at work for some time, both piston rod and packing acquire a smooth and glassy appearance; and in no case has the metallic packing been found to damage the rods in any way.

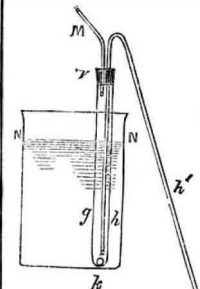
**A New Siphon.**

Jos. Sedlacek says, in *Poggendorff's Annalen*: It is, in many cases, desirable to withdraw liquid from a vessel by means of the siphon, and a form of the instrument used for certain liquids is that in which the longer arm is furnished with a suction tube, in order that no portion of the liquid may enter the mouth (though this object is not always attained). With harmless liquids, a simple bent glass tube may suffice as siphon; but suction with the mouth at the end of the longer arm is somewhat inconvenient.

The following arrangement is simple, and presents certain advantages:—A glass tube *g*, 8 inch wide, and 12 or 16 inches long, contracted at the lower end, has, at its upper end, a cork stopper, in which the mouthpiece, *M*, and the siphon, *h h'*, are fixed airtight. The shorter arm, *h*, of the siphon reaches nearly to the bottom of the tube, and limits the play of the glass ball, *k*, which acts as a valve. The diameter of the ball is about 4 inch, that of the siphon 2 inch.

The instrument thus arranged, being dipped into the vessel to be discharged, the tubes *g* and *h* become filled with liquid to the surface, *N N*. Instead now of sucking, as with the common siphon, one blows into the mouthpiece *M*; and in consequence of the compression of air, the lower opening is shut by the ball *k*, while the liquid rises in *h*, and begins to flow through *h'* in the usual way.

If the vessel to be emptied is not full, or the column of liquid is a small one, it is then necessary, before blowing into the mouthpiece, to suck it slightly, in order to obtain a larger volume of the liquid in *g*; as one condition for the right action of the instrument is that *h h'* should be filled before the column of liquid in *g* sinks to the mouth of the siphon at *k*, when one blows through *M*.



**A Large Casting.**

At the South Brooklyn Steam Engine Works, in Brooklyn, the second immense anchor plate for the East River bridge was recently cast. Four weeks were occupied in forming the mold alone. A circular excavation was first made, twenty-five feet in diameter and three feet deep, at the bottom of which was placed an iron plate. Upon this a course of brick, eight inches thick, was laid in a mortar of fine sand and fire clay; the upper surface was then leveled off and baked with charcoal. This surface served as the base of the mold, which was of loam, secured by brickwork and iron girders built in sections.

The anchor plate is of oval shape, seventeen feet six inches by sixteen feet in dimensions, with a thickness at the ribs of three feet. It weighs 47,000 pounds when cleaned, and its cost is \$3,200. About 60,000 pounds of iron were melted, transferred to a huge tank, and thence allowed to flow into the mold. The casting took place without accident and was allowed one week to cool.

TELEGRAPH SERVICE OF THE UNITED STATES.—For the 1st of January, 1873, the telegraphic system of the United States may be thus approximately estimated: Aggregate nominal capital, \$60,000,000; length of lines, 80,000 miles; length of wire, 180,000 miles; number of stations, 6,300.