

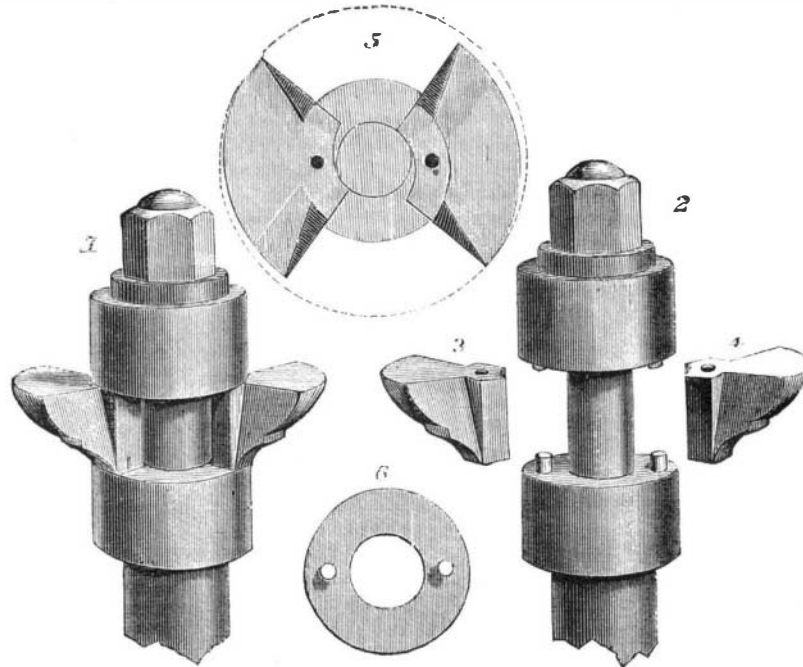
**Molding Cutter Heads.**

Our engraving illustrates an improvement in the construction of that class of "freizing bits," or rotary cutters for wood working machines, which are adapted to reverse, so as to present a cutting edge in either direction.

Fig. 1 is a perspective view of the improved cutter ready for work. Fig. 2 is a perspective view of the same, showing the collars ready to receive the bits. Figs. 3 and 4 represent bits removed from the collars. Fig. 5 is a cross section through the bits and spindle, the dotted lines showing the clearance. Fig. 6 shows the face of a collar, with the pins on which the bits are pivoted. Without further explanation, it will be seen how, by the peculiar shape of the bits and their connection with the collars, they are made to turn on the pivots, according to the direction of rotation, and stop (in either direction) when they present a clear cutting edge in front and clearance in the rear. When desired to reverse the action, the nut seen in the figures is slightly loosened, the bits are placed in proper position, and the nut again tightened.

For manufacturers of moldings, furniture and picture frames, this invention seems well adapted, and the inventor claims it to be equally important to all kinds of wood working. Patented April 16, 1872.

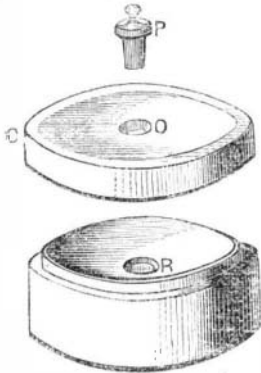
For further information, address Hope Machine Company, 181 West Second street, Cincinnati, Ohio. See advertisement in another column.



**CUTTER HEAD MOLDING MACHINE.**

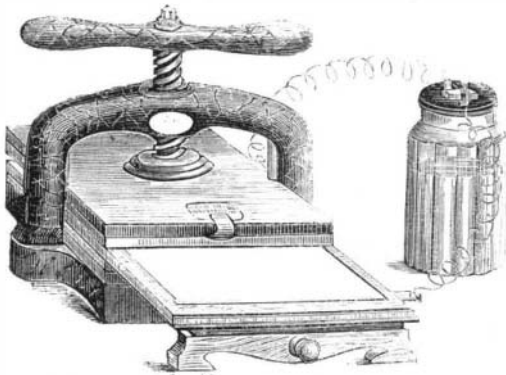
**RESERVOIR PALETTE.**

It is well known to draftsmen that it is evaporation, rather than use, that so rapidly diminishes the liquid, color, or ink; and moreover, the material particles or sediment are prejudicial to high class work. The reservoir palette is designed to remedy these defects, which it does perfectly by simple means. The reservoir is shown at R, in the body of the palette B, and consists simply of a cylindrical cavity filled by a plug, P, so that any water previously poured into it is expelled and rises on to the surface of the palette, where, in the usual way, it is prepared for use by rubbing with the stick of Indian ink or cake of color requisite. After the desired depth of ink, tint, or color is obtained, if left to settle for a short time, the sediment precipitates on the palette, and when the plug is withdrawn, the clear ink or colored fluid flows readily into the reservoir, where it presents a very small proportion of evaporating surface, combined with depth for dipping pens, etc. The cover, C, being put over the palette, the plug may be used to close the orifice, O; or a common marble is dropped on to it, which readily recedes on the insertion of the pen, and settles in its place again on the withdrawal of the pen.



**ELECTRO CHEMICAL COPYING PRESS.**

This press, the invention of Signor Zuccato, of Padua, Italy, differs but little in appearance from an ordinary copying



press, and that difference lies mainly in the construction of the upper and lower beds or surfaces of the press, of which the former consists of a plate of copper, and the latter of a plate of copper tinned, both on mahogany beds—the upper one being attached by lugs or clips to the solid iron press plate, and the lower being made to slide out as shown. These plates are placed in the ordinary way in the circuit of a battery, so that when brought into close proximity by the action of the screw, the circuit is completed and a current established over the whole of the surfaces.

But, by the aid of an insulating medium—a varnish—applied to a steel plate and removable by the action of a "style" in writing, printing, drawing, etching, etc., the electric current is confined to those portions only which are so denuded of the insulating protection; and here it is made to leave record of its passage by its continued action on the steel plate and sheets of copying paper specially prepared and damped with a solution of prussiate of potash. The electrolytic action causes the formation of the ferro prussiate known as the "Prussian blue," producing a perfect facsimile of the original manuscript or design wrought on the varnished surface of the plate.

The battery employed consists of a single cell, with zinc and carbon elements in an actuating solution of bichromate

of potash and sulphuric acid; and its positive and negative poles are connected in the usual way, by spiral coils of insulated wire, with the upper and lower beds of the copying press. The moveable steel plates, on which the writing,

expensive. Compared with macadam, it is believed that where the traffic is heavy, asphalt would prove the cheaper of the two. The effect of temperature does not appear likely to prove injurious in London, unless it be in the case of asphaltes of an inferior character.

The steepest gradient for which asphalt has been used in the city appears to be 1 in 46. There is a pretty good prospect that the extensive trial now being given to various descriptions of paving will demonstrate the question whether we have practically any other choice than granite or macadam. The success of asphalt would be an enormous benefit to the metropolis in the cessation of the wearying roar which accompanies the passage of heavy traffic over paved roads, and in the comparative absence of dust and mud. Horseflesh is also to be considered. M. Leon Malo, a French engineer, has computed that, if all Paris were paved with the Val de Travers compressed asphalt, the saving in wear and tear to horses and carriages would be \$1,700,000 per annum. How far the calculation is correct may be difficult to say; but of the economy of asphalt in its effects on horses and vehicles there can be no question. Its general use is a consummation much to be desired, and the present competition will doubtless tend to reduce the cost of this luxurious improvement in the art of road making. Our only fear is whether it will stand the hard work demanded of it; though it must be remembered that granite often has to be patched and

mended, and what is called "relaying" is a formidable affair.

**Remarkable Parasitic Fungus.**

A correspondent, Mr. A. J. B., of Kansas, sends us a box of specimens and says: Please find herewith what to me is a wonder as well as curiosity, in the shape and character of what is, with us in Kansas, known and called a common grub worm. A bed of them was found and dug up recently while setting posts in this town. The grub when found was just as he now appears, having no life or animation whatever, while the sprout, *quee*, or whatever it is termed, growing from near the head of the grub, was in a growing condition, and full of vegetable life and greenness.

We give a drawing of the specimen sent by our correspondent. The grub is the larva of a brown beetle, which feeds upon the roots of grass, corn, wheat, etc. The long sprouts from the head are fungi (probably *Sphaeria* or *Isaria*) which grow at the expense of the nutritive fluids, and therefore of the life of the animal. They are generally found in the interior of the body (hence called *entophyta*) and near the posterior end. The dreaded disease of the silk worm (*Muscardina*) is caused by a fungus. Hosts of the seventeen year locusts are destroyed by a fungous disease. "It is probable," says Dr. Leidy, "that this disease is one of the means of maintaining the equilibrium in the aggregate of the life of the species under existing circumstances." These "vegetable grubs" are something of a mystery to the naturalist, and more light is wanted. Professor Orton noticed a like phenomenon on the western slope of the Andes, near Quito. The fact that all animals are liable to fungous diseases, that there is in fact a *flora* within man, ten different parasitic fungi having been found in him, the recent investigations of able naturalists

on both sides of the Atlantic, and the lectures of Huxley and Tyndall, invest this subject with deep interest and importance.

**Proposed Government Boiler Experiments.**

Judge Bradley, of the United States Supreme Court, has made a valuable suggestion in his late letter to the Secretary of the Treasury on the subject of steam boiler explosions. He points out the absolute necessity of making a trial of steam boilers, of the size and kind generally used, to find the laws governing explosions and the means of preventing them, and cites the few experiments made at Sandy Hook as showing there is much to be learned by this method of investigation. He recommends Congress to appropriate \$100,000 for the purpose, and to authorize the Government to have a system of experiments made under charge of a board of skillful engineers.

**THE CURRANT WORM.**—A small yellow fly, with brown wings, about the size of the common house fly, deposits its eggs about May 1st. The worms appear about the middle of May. Remedy: Hold a pan under the brush and jar the branches; the worms fall into the pan and are easily destroyed. Repeat the operation as often as necessary. The larvae are supposed to burrow in the earth.