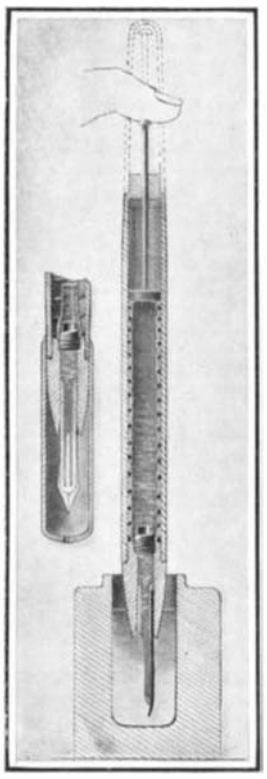
Patent Department

AN IMPROVED FOUNTAIN PEN.

Pictured in the accompanying engraving is an improved fountain pen invented by Mr. Thomas P. Ambrose, of 638 Walnut Street, Cincinnati, Ohio. The improvement lies principally in the provision of means for quickly and efficiently filling the pen with ink.

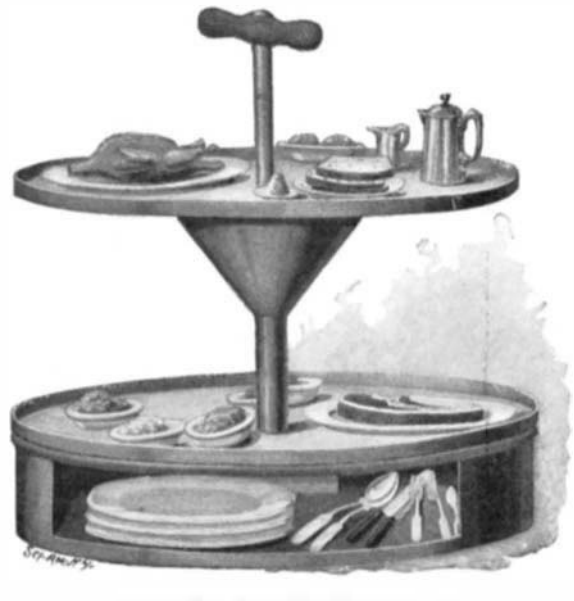


AN IMPROVED FOUNTAIN PEN.

The pen comprises the usual barrel or casing into which the point section is threaded. The ink, however, is not contained directly in the barrel, but in a rubber tube or reservoir which fits into the casing. A water-tight connection is made between the rubber tube and the point section. Coiled around the tube is a spring which bears against a plunger at the upper end of the barrel. The stem of the plunger passes through a perforation at the end of the barrel, and terminates in a button, as shown. In operation the plunger is depressed, compressing the rubber tube. The pen point is then dipped into an ink-well and the button released. The plunger will be raised to the dotted position shown, by the coiled spring, and the rubber tube drawn up with the spring will be expanded. The ink will then flow up into the tube owing to the atmospheric pressure on the ink in the ink-well. When using the pen the ink will readily flow from the tube to the pen point, and in case of an obstruction it can be forced through the pen by the application of a slight pressure upon the button. While fountains with compressible reservoirs have been made before, this invention presents the advantage of providing for the more ready expansion of the reservoir to draw the ink into it and it also provides against the collapse of the reservoir to force ink from the pen faster than would be desired in writing. The plunger is separable from the spring and reservoir, and can be entirely removed from the casing, as is also true of the reservoir itself. The parts are thus readily accessible for cleaning.

AN IMPROVED WAITER'S TRAY.

We have become so accustomed to the busy waiter darting through the crowded restaurant with his huge pile of dishes poised precariously over the heads of the diners, that we forget how crude a system of transportation this is. Even when a tray is used to carry the dishes the conditions are not much better, because the tray, to be properly handled, requires the use of both hands or else it is not even as safe as a pile of dishes carried directly on the arm. A recent invention, however, provides an improved tray which may be safely carried in one hand. Furthermore, the tray is formed with several shelves, so that a large number of dishes may be carried at a single load. The form of the improved tray is shown in the accompanying engraving. It will be observed that the main body of the tray consists of a drum. The circumferential wall is cut away at the forward side to permit of placing articles within the drum, and a transverse wall at the rear prevents the dishes from being shoved too far back into it. A rod rigidly attached to the upper wall of the drum is provided at the top with a transverse head-piece, forming a T-shaped handle. Resting on the beaded upper edge of the drum is a shelf consisting of a pan with a large central opening, to admit the rod, and a sleeve carried thereon. This sleeve is funnel-shaped and at the top it supports a second shelf. In use the waiter may bring in a large meal at a single load by placing the various dishes on the upper and lower shelves. Knives, forks, spoons, etc., may be carried in the drum. When the meal is finished, the plates could be placed within the drum and readily carried back to the kitchen. It will be observed that the center of gravity of the tray lies considerably below the handle, so that there will be no danger of upsetting the dishes. Mr. Ingram A. Merriman, of 117 North Main Street, Bluffton, Indiana, is the inventor of this improved waiter's tray.



AN IMPROVED WAITER'S TRAY.

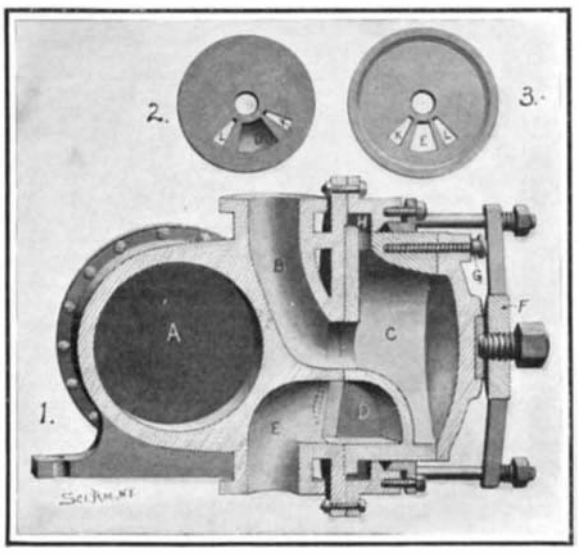
DRYING APPARATUS.

In the accompanying engraving we illustrate an improved drying apparatus recently invented by Mr. George Stiff, of 44 Lenox Avenue, Bridgeport, Conn. The apparatus is of the vacuum type and is so constructed that the material to be treated may be easily placed in it or removed therefrom. The drier comprises a double casing, between the spaced walls of which a steam chamber is formed. The inner casing, which is adapted to receive a number of pans or trays, *A*, is closed by a steam-tight door at the front. These trays are mounted on wheels which travel on tracks, *B*, formed on the inner walls of the inner casing. Each tray is provided with a double bottom, forming a chamber for the heating agent. This chamber is divided by a longitudinal, central partition, *C*, which, however, does not extend to the forward end of the tray, so that an opening is provided between the two chambers at the forward end. Communicating with the double bottom at the rear is a steam box, *D*, provided with an inlet tube, *E*, which has a cone-shaped head designed to engage a correspondingly-shaped inlet port, *F*, in the rear wall of the apparatus. The tube, *E*, is held yieldingly in its box by means of a coil spring. At the opposite side of the tray is an exhaust box, *G*, identical in construction with the steam box. The tube leading from this box is adapted to engage an exhaust port, *H*, in the rear wall of the casing. It will be evident that there is an inlet port for each tray, and these ports lead out from a common chamber, *I*, supplied with steam from a valve-controlled pipe, *J*. The exhaust ports also open into a common chamber, *K*, from which communication is had with the steam chamber through a number of perforations, *L*. In use the material to be treated is placed on the trays, which are then rolled into the inner chamber. The door is now closed against the trays, pushing them into place so that the cone-headed inlet and exhaust tubes are seated firmly against their respective ports, making complete steam connection. Then the steam is turned on and it circulates from each steam box through the double bottom of the tray, around the forward end of the central partition, *C*, to the exhaust box and thence the steam passes through the exhaust chamber, *K*, to the steam chamber. The water of condensation from the steam flows out through pipe, *M*. The vacuum in the apparatus is produced by a pump, which is connected with the inner chamber by a pipe, *N*. We are informed that the drying process is completed in much less time than is taken by many of the other types of vacuum driers and the temperature never exceeds 140 deg. F., thereby saving the destruction of material under operation, as is experienced, for instance, in drying tannic acid, dyewood extracts, rubber, and other substances.

A new and interesting process which should prove of great value to decorative metal workers has been discovered by Mr. S. Cowper-Coles, of London. The method consists of fusing one metal into another in a temperature below the melting point of any of the metals used. By this means some novel effects can be produced similar in appearance to fine damascened work, or, in larger pieces, bold designs in vari-colored metals, such as zinc inlay on steel that has been blued to protect it against rust; or zinc on copper that by the metal fumes has been given the color of gold bronze. Any shades of color from silver-white to red copper may be obtained, according to the metals used, the preliminary treatment, and the varying length of stoving.

NEW ROTARY VALVE FOR STEAM ENGINES.

A new rotary valve for steam engines has recently been invented, which is designed to relieve the valve seat of boiler pressure, and to keep the balance of the valve without regard to the pressure in the boiler. The manner in which this result is obtained will be readily comprehended by reference to the accompanying engraving, which illustrates a section through a steam engine equipped with the improved valve. The cylinder is shown at *A*, and *B* is the port admitting steam from the boiler into the combined valve and steam chest, *C*. The bottom of the steam chest or valve, as illustrated in Fig. 2, is formed with a central opening communicating with the steam supply port, *B*, and is also provided with two radial openings, *K* and *L*, between which is a cut-away port, *D*. The valve seat, which is shown in Fig. 3, is similarly formed with radial ports, the port, *K*, communicating with one end of the cylinder, and port, *L*, with the other, while between them is the exhaust port, *E*. The bottom of the valve is formed with a flange which projects into an annular balancing chamber, *H*, formed by a cylindrical casing bolted to the valve seat. Communication between the interior of the valve and this chamber is had through the port shown. A steam-tight joint is made between this casing and the valve. The valve is mounted to rock in the casing and is held under pressure by a screw in the spring-pressed spider, *F*. The link which connects the valve with the rocker is shown at *G*. In operation the cut-away port, *D*, alternately connects the ports *K* and *L* with the exhaust port, *E*. The flange at the bottom of the valve extends into the balancing chamber to an extent sufficient to balance the excess of outward pressure due to the ports cut in the bottom of the valve, so that the valve is held down properly on its seat. It will be understood, of course, that the valve seat must be fitted to a ground joint in order to secure the desired action and that if the area of the flange be equal to the area of the ported openings a perfect balance will be secured at all times. Mr. John Cruikshank, of Yorktown, Pa., is the inventor of this improved rotary valve.



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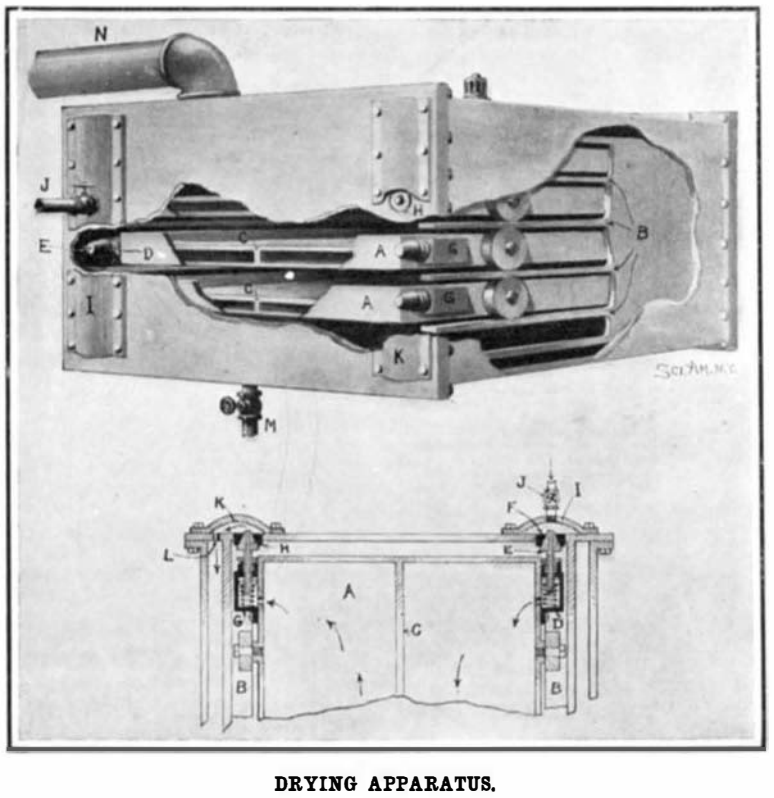

DRYING APPARATUS.