THE UNIVERSAL BORING MACHINE.

Among the tools used in woodworking establishments, few have been more neglected than the wood-boring machine. As a general rule, shops otherwise well supplied with labor-saving devices lack this important and useful tool, or, when its want becomes felt, seek to supply its place with an apparatus which, perhaps, partly answers for the special object sought, but which lacks the ingenious contrivance to make it advantageously used or even applicable to a great variety of work.

Our engraving represents the Universal Boring Machine, which, the manufacturers inform us, they have made a special study so as to effect the necessary improvements in order to enable it to meet the wants detailed in many inquiries which they have received relative to its adaptability for different uses. The machine is strongly built of iron and steel, and combines, in the small space it occupies, nearly all the facilities needed for boring large and small holes in any desired angle. It is cast with a heavy solid frame and body, and has two cone pulleys with three faces, for giving the mandrel the proper speeds for different sized bits. The mandrel, which is of steel, is made to traverse by a foot lever. The operator can adjust the leverage in a moment, so as to stop at any desired depth up to 11 inches. The adjustable table has a surface of 21 inches in width with 15 inches slide, and it can be raised or lowered 16 inches, enabling one to bore in the center of 32 inches. Adjustable rests upon the table render the work readily placed at any desired angle in the horizontal plane, while the table top itself can be set on an incline towards the bit to any angle not exceeding 45°, and the same can be raised or lowered, and slid forward or back, preserving the inclination given.

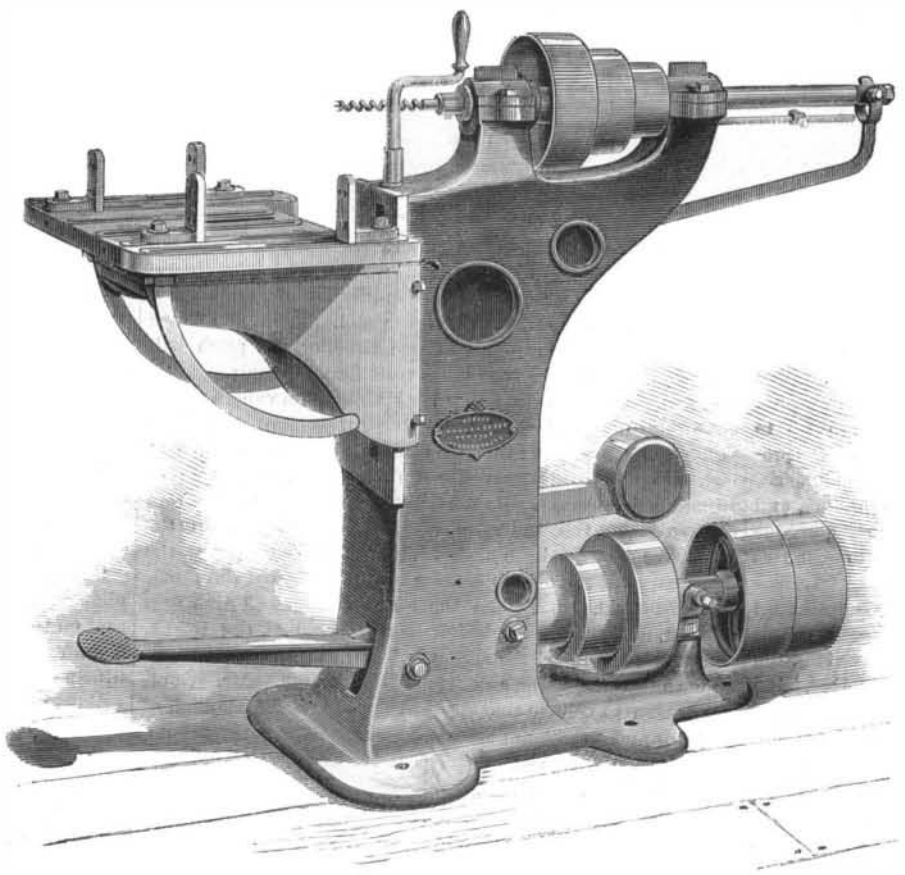
Augers and machine and pod bits of the various sizes can be employed, as an adjustable chuck is fitted to the mandrel for holding the same. The levers are in the inside of the machine, where they are protected, and where no dust and shavings can obstruct their movements. There is no spring connected with these parts to impart return motion, which requires a greater amount of pressure at this point of the operation than is needed to secure a smoothly finished hole.

It will be seen from the foregoing that the machine is always ready for doing either light or heavy boring at any angle desired, with ease and, it is claimed, with great rapidity.

It is claimed that, on machines or devices where the stuff has to be moved up to the auger, there is a liability of twisting, of making a crooked hole, and of breaking the bit, especially if knotty or crossgrained material be used; and that the expense of bits would, in a short time, amount to the cost of the present invention.

The countershaft attached to the machine rests in adjustable boxes, and has a tight and loose pulley of eight inches diameter and three and a half inches face, and should make 900 revolutions per minute.

Messrs. Bentel, Margedant & Co., of Hamilton, Ohio, the makers of a great variety of woodworking tools, descriptions and illustrations of which have already appeared in our columns, are also the manufacturers of this machine. Letters for further particulars may be directed to their address.



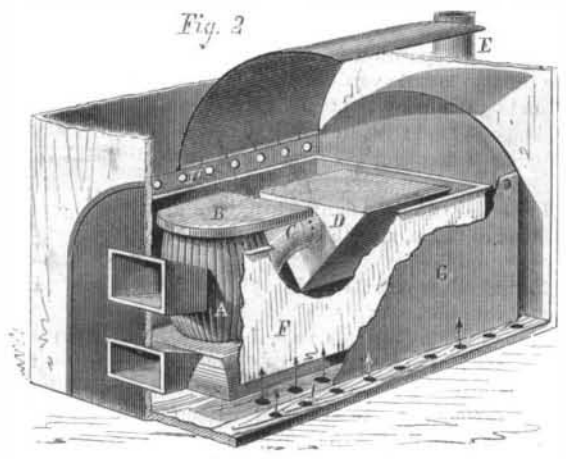
THE UNIVERSAL BORING MACHINE.

COMBINED COOKING, HEATING, AND DRYING APPARATUS.

The inventor of the device illustrated in the annexed engravings claims to have succeeded in producing a combination of useful apparatus relating to the operations of cooking, drying, house-warming, and ventilation. To families generally, and more especially to those residing in circumscribed quarters, notably French flats, this invention, it is believed, will prove of much utility, as it is practically a complete kitchen compressed into dimensions no larger than those of an ordinary good sized refrigerator. It serves as a range and, at the same time, as a heating furnace, while it exceeds the capabilities of both in its application to drying fruits, vegetables, or clothes. Paints and chemicals, we are told, may be similarly heated with success, and japanning, it may be added, is accomplished with great facility.

Fig. 1 represents the device with its attachments, and Fig. 2 the interior arrangements, portions of which are depicted as broken away. In the latter engraving, A is the fire box surmounted by an iron plate, B. The smoke and gases from the former pass through a tube, C, in which perforations are made, so that air is thus drawn in, which mingles with and insures the more complete combustion of the products within the hollow iron prism, D. With the latter communicates the chimney flue, E.

Surrounding the portions first described is a shield of sheet iron, F, and outside of this is another envelope, or, as it is termed, deflector, G. The upper part of the latter is arched and provided with suitable hinged covers. There is also a number of perforations, H, near its upper edge. At I are two sets of orifices in the bottom plate, the inner of which lies between the shield and deflector, and the exterior row without the latter. A double current of cold air is thus constantly drawn in from below (as indicated by the arrows) and between deflector and shield, which, while preventing the atmosphere from direct contact with the heated iron within, maintains a constant and even circulation. The warm current emerges at a suitable register in the top of the casing, and, if desired, may be conducted into another apartment by the flue shown. In weather during which it is not necessary to warm the room, the register and flue may be closed, when the current



will escape into the chimney flue by the pipe, J, Fig. 1. The vessel shown surrounding the chimney flue in the last mentioned engraving is a hot water receptacle, and the perforated tube, K, is designed to draw in the heavy and foul gases which sink to the floor of the room, thus, it is claimed, providing efficient and healthy ventilation.

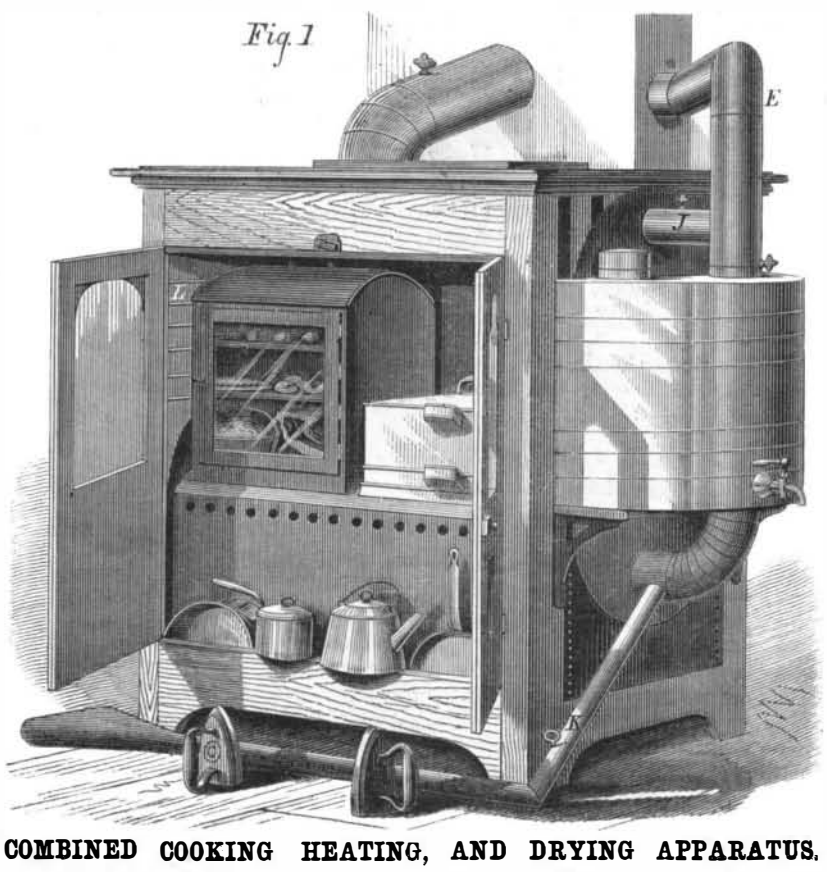
Within the case, which may be of wood, marble, or any other suitable material, and on the left is the oven, the bottom of which is so constructed as to deflect the warm air to its sides and top. It is provided with a glass door in order that the process of baking may be watched, and with suitable shelves for the reception of the articles. It is readily removable, and, when in place, rests above the arched portion of the deflector as shown. To the right is a boiler similarly located; on this being taken out and the cover below lifted, the upper surface of the prism is exposed. The latter, together with the plate, B, Fig. 2, serves to receive sadirons for heating, or may be used for any of the culinary operations usually carried on on top of an ordinary range.

For drying fruit, the oven and boiler are removed and iron rods are placed on the ledges, L, Fig. 1. These support suitable shelves on which the material is placed, and which, in the aggregate, give a large amount of heating surface. It is claimed that the ordinary family sized heater will solidify from three to four bushels of fruit in from eight to ten hours, and that the substance gains from 32 to 35 per cent in weight as well as greatly in appearance over common dried fruit. An economy is, besides, effected in the cost of cans, sugar, labor, etc., as it is stated that the flavor and nutriment of the article heated is perfectly preserved.

For clothes drying, rods are provided over which the garments are hung, inside the case. The operation, we are informed, is completed in one and a half hours, during which period the irons may be thoroughly heated, so that the laundress can proceed at once with the pressing as the garments are removed. In baking, the oven is stated to be economical and rapid.

During culinary operations producing smoke, the latter is confined in the casing and passes freely off through the flue. There are no range lids to lift, and breathing the heated fumes arising from an open coal fire is avoided. The device may be adapted to burn either coal, wood, or coke.

Invented by Mr. J. K. Boswell, of Ohio. Applications for territory or for further particulars should be addressed to S. R. Wells, publisher of the *Phrenological Journal*, 389 Broadway, New York city, or to Dr. R. T. Trall, 1,516 Chestnut street, Philadelphia, Pa.



COMBINED COOKING HEATING, AND DRYING APPARATUS.

The Inter-Oceanic Canal.

The Secretary of the Navy in his annual report states that the expeditions authorized by Congress to survey the Isthmus of Darien, with a view toward the completion of a canal between the Atlantic and Pacific Oceans, have finished their labors. The preliminary operations to actual construction are therefore completed, and it now remains for Congress to determine whether the routes, indicated by the officers engaged for so long in this arduous duty, present sufficient advantages to warrant the undertaking by the Government of this very important enterprise.

Two surveys have been made. The Darien expedition, under Commander T. O. Selfridge, has selected a route including 100 miles of river navigation of the Atrato, which stream has been found to offer a sufficient depth of water for the heaviest class of vessels. Between this river and the Pacific a canal is necessary, 28 miles in length; 22 miles of this distance is over a plain having a gradual rise of 90 feet. Finally, there will be three miles further of open cut, and three miles of tunneling to reach the Pacific. It is estimated that the work will cost from $50,000,000 to $60,000,000, and could be completed within ten years.

Commander Lull, in charge of the Nicaragua expedition, has determined a practicable route for an interoceanic ship canal; having Lake Nicaragua as its summit level. It is proposed to connect this lake with the Pacific by a canal 16·33 miles in length, beginning at the mouth of the Rio del Medio, and terminating at Brito. The first 7·5 miles will require an excavation averaging 54 feet in depth, and will constitute the most expensive part of the work. Ten locks and one tide lock will be required, and there will be 56 miles of lake navigation.

The San Juan river will be navigated to the mouth of the San Carlos, and will be improved by four dams, in order to get around three of which short canals must be built. From the fourth dam to Greytown, an independent canal 41·9 miles in length is needed. The total length of the canal is 61·74 miles, of which 47·34 miles are an embankment and excavation. No tunneling is required, and it is believed that Lake Nicaragua will supply 38 times the maximum demand of water. The route surveyed by Commander Selfridge seems to be much more direct and easier to construct.