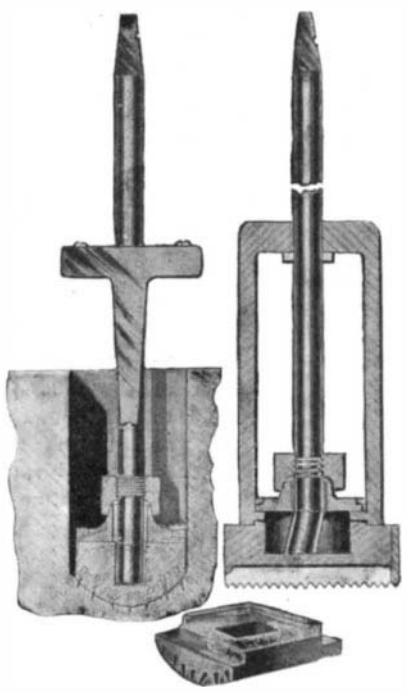
Patent Department

TOOL FOR BORING RECTANGULAR HOLES.

A decidedly novel tool has just been invented, by which a hole may be bored having square or rectangular walls. The accompanying illustration of the tool clearly reveals its construction. A frame is provided, which is designed to be held rigidly in a lathe or the like. This frame comprises two arms which, at their upper ends, terminate in cross bars. The overlapping edges of the latter are riveted together, and they are formed with an opening which provides a bearing for the rotary spindle of the tool. The head of the tool is pivoted to the frames by means of trunnions formed at the ends of the arms. This head, as shown in perspective in one of our views, is formed with a rectangular recess of greater length in the line of the trunnion bearings. The recess is adapted to receive the lower end of the rotating spindle, which it will be noted is bent, so that as the spindle rotates, the tool head will be given a rocking movement on the trunnions. As a bearing for the lower end of the shaft, a plate is secured to the top of the head by means of angular flanges. The flanges on two sides are formed integral with the head, and on the other two sides are fastened to the head with screws after the plate is in position. This plate is formed with a central conical boss, through which is an opening large enough for the spindle to freely operate within it. A collar is threaded on to the spindle, and at its lower end is recessed to receive the conical boss on the plate. In channels formed in the head of the tool a number of blades are fastened, certain of which have a saw edge, as shown, for cutting or boring into the wood, and the others have a smooth edge for clearing away the fragments cut out by the saw blade. In the operation of the tool the spindle is to be engaged with the chuck of a lathe, and the frame held stationary. As the spindle rotates a rocking motion is imparted to the head, so that a rectangular hole may be formed in the wood. The spindle is prevented from longitudinal movement with relation to the frame by means of lugs, which engage with the under side of the cross bars. Miss Clara Smith, of Thomaston, Conn., is the inventor of this improved boring tool.

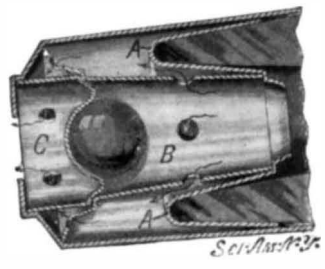


TOOL FOR BORING RECTANGULAR HOLES.

AN IMPROVED BOTTLE CLOSURE.

A patent has recently been granted to Mr. Charles M. Daly, of 538 West 29th Street, New York, on an improved closure for bottles, designed to take the place of a cork and adapted to prevent refilling of the bottles after they have been emptied, thus preventing their reuse after the original contents have been removed. This bottle closure is shown in the accompanying illustration. The parts are such that they can be very easily spun out of suitable metal. A casing, *A*, fits snugly into the mouth of the bottle, and is formed with a petticoat flange cemented to the exterior surface of the bottle neck. The inner end of the casing is rounded to form a valve seat for a ball valve. The ball valve operates within a cylindrical casing, *B*, which is closed at the top by a cupped member, *C*. These parts are all covered by a conical cap piece, which is cemented to the neck of the bottle, and further held by bending it over a shoulder formed on the bottle neck. It will be noted that the upper end of casing *B* is formed with a flange, which fits against the inner wall of the cap piece. Perforations are provided in the flange, also in the main body of the casing, *B*, and in the sides of the cupped member, *C*. When the bottle is tilted the ball valve will roll out of its seat, permitting the contents to flow out of the casing, *B*, then back through the flange into the cupped member, whence they will pour out of the opening in the top of the cap piece. The purpose of providing such a tortuous channel for the liquid is to prevent anyone reaching the ball valve with a wire, and by lifting it to refill the bottle. The opening in the top of the cap piece is closed by a sealing disk provided with an annular flange, which is turned under against the inner face of the cap piece, and thus made fast before the cap piece is applied to the bottle. A rubber washer between the disk and the cap piece insures a perfectly tight joint. The sealing disk may be readily pried off with a suitable instrument.

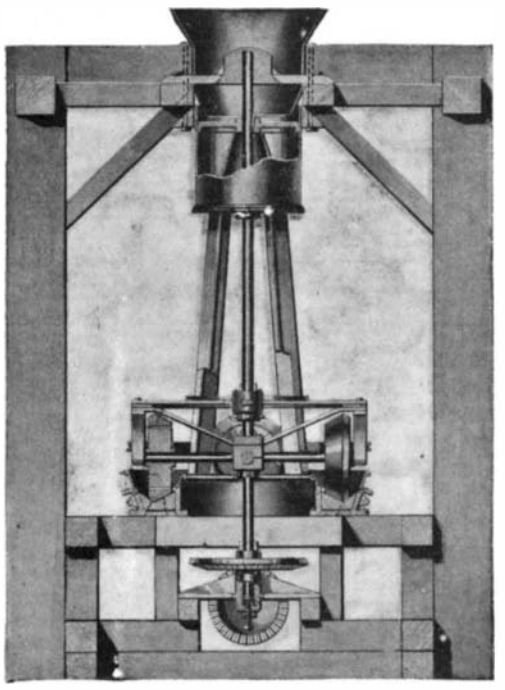
IMPROVED BOTTLE CLOSURE.



An ingenious system of resoling a boot when the existing sole is worn out has been devised by a London inventor. In this boot the outer sole is attached to the inner sole by means of brass screws inserted in a series of eyelet holes round the welt. When it is required to attach a new sole the worn sole is simply unscrewed and the new one substituted. In the case of the heel the screws are driven into holes in the under surface of the heel so that not only do the screws fulfil the function of attaching the new heel, but constitute efficient protectors as well. The attachable soles and heels are standardized in various sizes and can be placed on the market ready for instant attachment. The process of soling and heeling a boot can be accomplished in five minutes. The idea is especially applicable to soldiers' boots where the foot covering is subjected to constant and heavy wear. The main advantage of the device is that no time is lost during the repair of the boot. The American military department has ordered samples of the new boot and proposes to subject them to severe trial by men on active service.

QUARTZ MILL FOR DRY-GRINDING OF ORE.

An improved quartz mill adapted for grinding of ores preparatory to cyaniding, to extract the gold values, has just been invented by Mr. Robert A. Vaughn, 601 Colman Building, Seattle, Wash. In our illustration portions of the mill are broken away to show details. Supported on the lower members of the frame is an annular mortar in which a die is fitted. This die is provided with an annular V-shaped groove. A plate fastened to the inner periphery of the mortar prevents overflow of the material. The outer wall of the mortar is extended by a sectional screen, which may be of any desired mesh. The rollers which operate in the mortar are driven by a vertical shaft, which is journaled in a spider at the upper end and an adjustable step bearing at the bottom. This shaft carries a head from which four arms radiate. Hangers at the ends of these arms and a block on the vertical shaft provide suitable bearings for the shafts on which the rollers are mounted. Each roller consists of a central core, to which annular shells or shoes are keyed. These shoes have inclined faces, to correspond with the die in the mortar. The vertical shaft is driven by a power shaft to which it is geared. By adjusting the step bearing of the vertical shaft, the space between the rollers and the die may be regulated to a nicety. In use the material is fed into a hopper at the top of the mill, whence it passes through a delivery funnel to a feed receptacle, which is keyed to and rotates with the shaft. The conical inner wall of this receptacle directs the material to four chutes, which deliver it to the mortar at the extreme inner edges of the rolls. As the feed of the material progresses, the pulp will rise in the mortar until it passes through the screen, whence it is sucked through a conduit pipe to the cyanide tanks. In use the mill will be inclosed either with matched lumber or metal covering, and a stuffing box will be put around the driving shaft. By this means the air passage is confined to the feed receptacle in such manner as to cause all the fine ore to be lifted or forced out of the mortar, and carried by the conduit pipe to the cyanide tanks. Each tank is closed with canvas except for a central pipe, which leads to the dust room of the mill building. The inclosure of the mill is so constructed that it will be put up in sections, so it can be removed where necessary for cleaning up amalgam. This construction makes it easy and simple to operate without having the nuisance of dust and loss of values in the mill, and prepares the pulp in a thorough and complete condition to get the quickest results and highest saving of values by use of the cyanide. The mill does away with two-stage grinding,

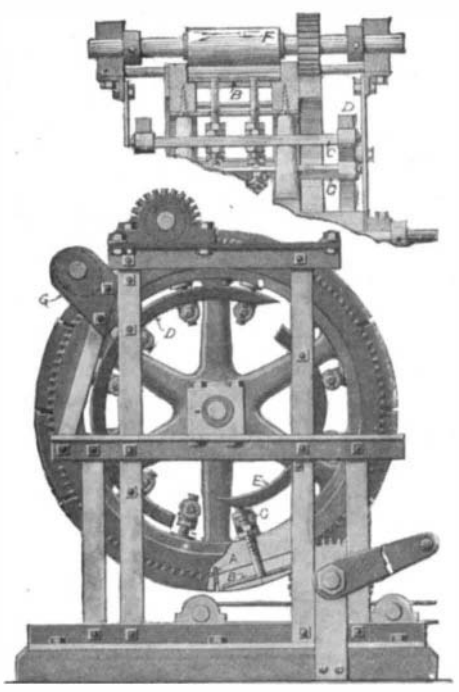


QUARTZ MILL FOR DRY-GRINDING OF ORES.

as it is capable, at all times, of grinding to any desired fineness for a high extraction of the values.

MACHINE FOR MOLDING PLASTIC MATERIALS.

Pictured in the accompanying engraving is an improved machine for molding articles from plastic materials, such as concrete blocks, bricks, ornaments, and the like. The construction of the machine is very simple. It can be easily operated, and is designed to carry on the work very rapidly. It comprises two large wheels keyed to the same shaft, and having their rims connected at intervals by transverse strips *A*. In this way the molds are formed, with the rims serving as the side walls and the transverse strips as the end walls. The bottoms of the molds are formed of plates, *B*, which are adapted to rest on shoulders on the rims, as best indicated in the section view. These bottom plates are adapted to be moved into the mold, to force out the material after it has been molded. To guide the plates in these movements, they are provided with pairs of screw rods, which pass through guide strips attached to the inner periphery of the rim. Firmly secured to each pair of screw rods is a bar, *C*, which is provided with rollers at its outer ends. These rollers are adapted to engage one or the other of two guide tracks, *D* and *E*, which are bolted to the main frame of the machine. Arranged above the molds is a pressing roller, *F*, which is geared to the main mold wheel. This roller is designed to press the material tightly into the molds as they pass under it. As this roller would give a slightly convex outer surface to the material, a second roller, *G*, of oval section is provided, which may be used when desired to give the material a flat surface. In operation as the machine rotates, the plates will be held in their lower or inner positions by the track, *D*, engaging the rollers on the bars, *C*. As each mold reaches the lowest position of the mold wheel, the bottom plate is forced outward by the track, *E*, which forces the molded material out onto an endless traveling belt, and the latter carries the blocks away. Mr. George Stewart, of 433 Fifty-first Street, Brooklyn, New York, is the inventor of this machine.



MACHINE FOR MOLDING PLASTIC MATERIALS.