No. 650,190. Patented May 22, 1900.

J. PETRELLI.

DRILLING AND TAPPING ATTACHMENT.

(Application filed Nov. 28, 1898.)

(No Model.)

Fig. 1

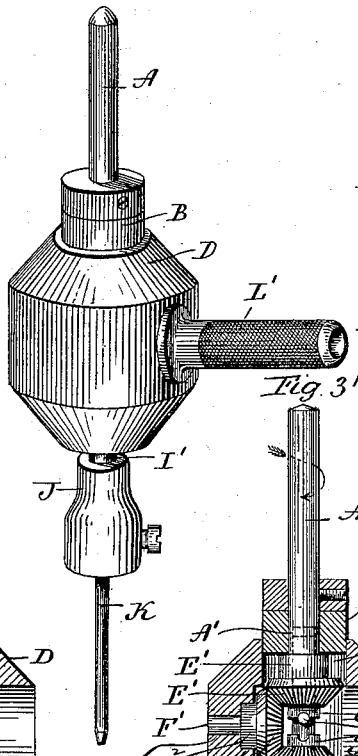


Fig. 2

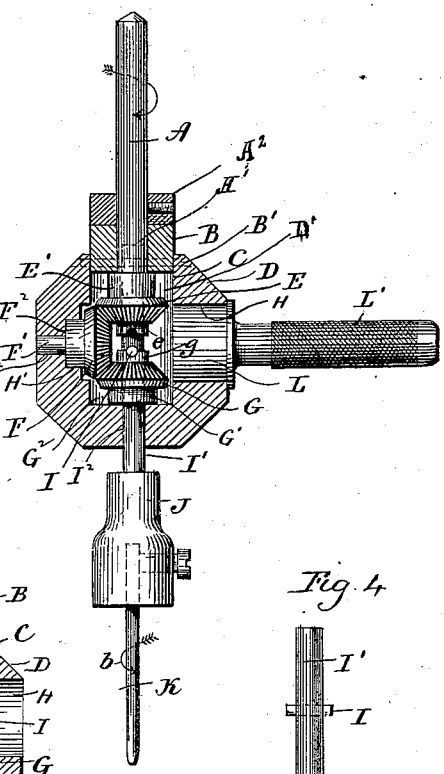


Fig. 3

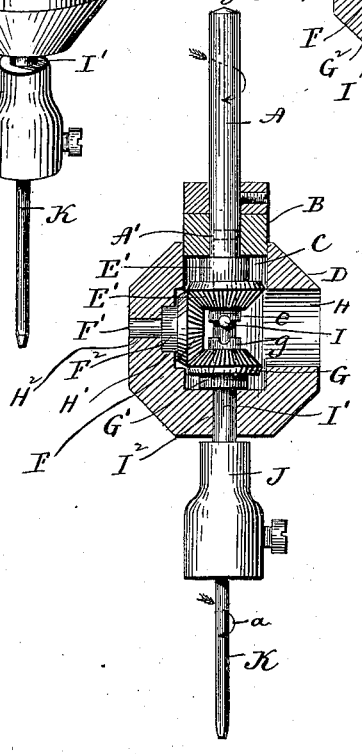


Fig. 5

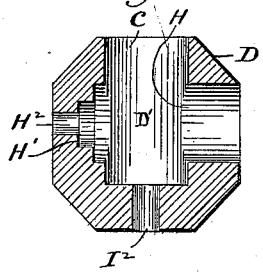
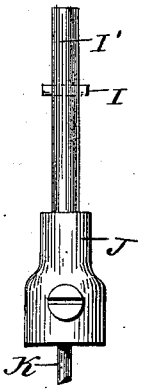


Fig. 4



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JOSEPH PETRELLI, OF NEW HAVEN, CONNECTICUT.

DRILLING AND TAPPING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 650,190, dated May 22, 1900.

Application filed November 28, 1898. Serial No. 697,592. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH PETRELLI, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Drilling and Tapping Attachments; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of one form which a drilling and tapping attachment constructed in accordance with my invention may assume; Fig. 2, a view thereof in vertical section, showing the parts in their reversing or idle positions; Fig. 3, a corresponding view showing the parts in their driving positions; Fig. 4, a detached view of the coupling-spindle together with its coupling-pin and drill-chuck; Fig. 5, a detached sectional view of the chambered head as it appears when stripped.

My invention relates to an improved drilling and tapping attachment for use in conjunction with drill-presses or kindred machines and of the class providing for reversing the drill itself without stopping or reversing the machine, the object being to produce a simple and compact attachment designed with particular reference to simplicity of construction and to the protection of its running parts.

With these ends in view my invention consists in an attachment having certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claim.

In carrying out my invention I employ a spindle A, which is designed to be coupled in any approved manner with the vertically-movable and rotative spindle of the drill-press or other kindred machine with which my improvement may be used. The lower end of the said spindle A is journaled in a bushing B, which is entered into a vertical pinion-receiving opening C, formed in the top of a case D and secured in place by means of a transversely-arranged pin B'. The said case is formed from a single block or piece of metal and contains a relatively-large centrally-arranged pinion-receiving chamber D', and its general form may be said to be cylindrical, although, as shown, its upper and lower edges are beveled. The lower end of the said spindle A enters the upper end of the chamber D' and has mounted upon it a beveled pinion E, which I shall hereinafter speak of as the "driving-pinion." The collar E' of this pinion engages with the lower face of the bushing B before mentioned, whereby the case D is virtually suspended from the spindle A, which thus becomes a "suspension-spindle," by which term I shall hereinafter designate it. The said driving-pinion E, which is thus located in the upper portion of the pinion-receiving chamber D', meshes into a corresponding but vertically-arranged pinion F, located within the chamber D' in a vertical position, and which I shall hereinafter speak of as the "intermediate" pinion. The said intermediate pinion is provided with a short stud F', which turns in a horizontally-arranged stud-hole H^2, formed in the case and leading out of one of the side walls of the chamber D' from the bottom of a recess H', formed in the said wall for the reception of a hub F^2, formed upon the intermediate pinion F and constituting a bearing therefor. The said intermediate pinion F meshes into a horizontally-arranged "reversing-pinion" G, located in the lower portion of the chamber D' at a point directly below the driving-pinion E before mentioned, the hub G, of this pinion resting upon the bottom of a recess G^2, leading out of the lower end of the pinion-receiving chamber D'. It will thus be seen that all of the pinions are located entirely within the said pinion-receiving chamber D'. These three pinions are constantly in mesh, and it will be understood, of course, that on account of the use of the intermediate pinion F the driving-pinion E and the reversing-pinion G will always turn in opposite directions. The said driving-pinion E is provided with a notched coupling-hub *e*, while the said reversing-pinion G is provided with a corresponding notched coupling-hub *g*, the notches of these hubs coacting with a coupling-pin I, transversely mounted in a longitudinally-movable coupling-spindle I', which at its lower end carries a chuck J of any approved construction, the said chuck

receiving the drill or tap K. The spindle I′ passes upward through an opening I^2 in the lower end of the case and through the pinions G and E and enters an axial socket A′, formed for its reception in the lower end of the suspension-spindle A, which is provided with an abutment-collar A^2, which is set to engage with the upper or outer face of the bushing B. The notched hubs *e g* of the pinions E and G are sufficiently separated from each other to permit the coupling-pin I to turn between them, and the coupling-spindle I′ is permitted a sufficient range of vertical longitudinal movement to permit the coupling-pin I to coact with the hub of either pinion.

It will be understood from the foregoing description that when the drill K strikes the object to be drilled the coupling-spindle will be lifted so as to impinge the coupling-pin I against the hub *e* of the driving-pinion E. Then as the said pinion is rotated the pin will soon find its seat in the notches of the said hub *e* of the pinion. The coupling-spindle having thus been coupled with the driving-pinion, the drill will be rotated in the direction of the arrow *a*, shown by Fig. 3, which represents the driving position of the parts. This position of the parts will be maintained as long as any upward pressure is placed upon the drill, which will be as long as the same is doing the work of drilling. Just as soon, however, as the attachment is lifted by lifting the rotary and longitudinally-movable spindle of the press in the usual manner the weight of the drill K and chuck J and coupling-spindle I′ will cause the same to descend by gravity, whereby the coupling-pin I will be disengaged from the hub *e* of the driving-pinion E and engaged with the hub *g* of the reversing-pinion J. As soon as this engagement takes place the drill will begin to rotate in the opposite direction, as shown by the arrow *b* in Fig. 2, although the suspension-spindle A has neither been stopped nor reversed.

For preventing the case D from rotating I employ a hollow radially-arranged stop consisting of a plug L and a hollow handle L′, the plug L fitting into the outer end of a transverse pinion-receiving opening H, formed in the side of the case at a point opposite the pinion F, which may be introduced into and removed from the chamber D′ through the said opening, which is made large enough for that purpose, though, if preferred, all of the pinions may be entered into and removed from the said chamber through the pinion-receiving opening C, which is made large enough for the purpose. If the handle L′ is not long enough to engage with some part of the frame of the drill-press, it may be sufficiently lengthened by the insertion of a rod into it, for which purpose it is made hollow.

It is obvious that in carrying out my invention some changes from the construction herein shown and described may be made, and I would therefore have it understood that I do not limit myself to the exact construction shown, but hold myself at liberty to make such alterations as fairly fall within the spirit and scope of my invention. I am aware, however, that it is old in devices of the class to which my device belongs to employ a case, a beveled driving-pinion, a beveled intermediate pinion, a beveled reversing-pinion, all located within the said case and constantly in mesh with each other, a spindle connected with the driving-pinion, and a longitudinally-movable coupling-spindle depending below the case and extending upward through the reversing and driving pinions and adapted to be coupled with one or the other of them, according to its vertical position. I do not, therefore, claim such a construction broadly.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a drilling and tapping attachment, the combination with a case containing a pinion-receiving chamber and a vertical pinion-receiving opening, and a lateral pinion-receiving opening intersecting the said chamber and providing for the introduction of pinions thereinto, of a beveled driving-pinion, a beveled intermediate pinion and a beveled reversing-pinion, all located in the said chamber and constantly in mesh with each other, a suspension-spindle entering the said chamber through the said vertical pinion-receiving opening, and having the said driving-pinion mounted upon it, a bushing located in the said opening which it normally closes and forming a bearing for the said spindle, a longitudinally-movable coupling-spindle entering the said chamber through the lower end of the case, extending upward through the said reversing and driving pinions and adapted to be coupled with one or the other of them according to its vertical position, and a stop comprising a plug and a handle, the plug being inserted into the said transverse pinion-receiving opening which it normally closes, and the handle forming a stop for the attachment.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH PETRELLI.

Witnesses:
FRED. C. EARLE,
GEORGE D. SEYMOUR.