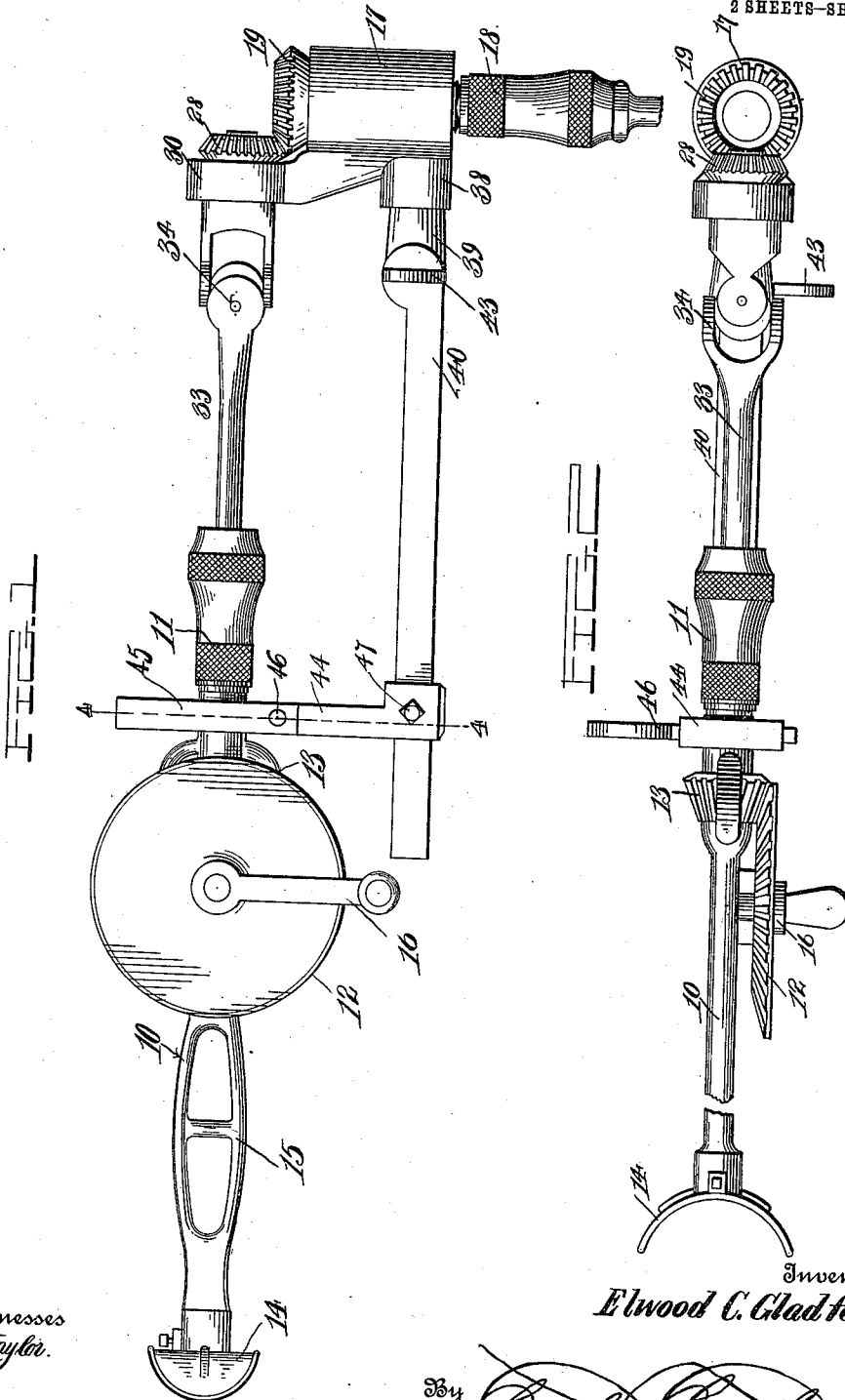


E. C. GLADFELTER.
BREAST DRILL ATTACHMENT.
APPLICATION FILED JUNE 20, 1910.

1,006,932.

Patented Oct. 24, 1911.

2 SHEETS-SHEET 1.



Witnesses
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Inventor
Elwood C. Gladfelter.

By

Charles Chandler

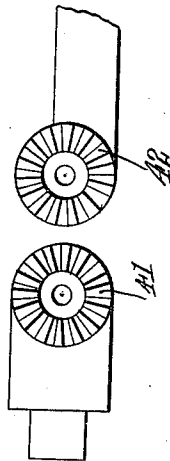
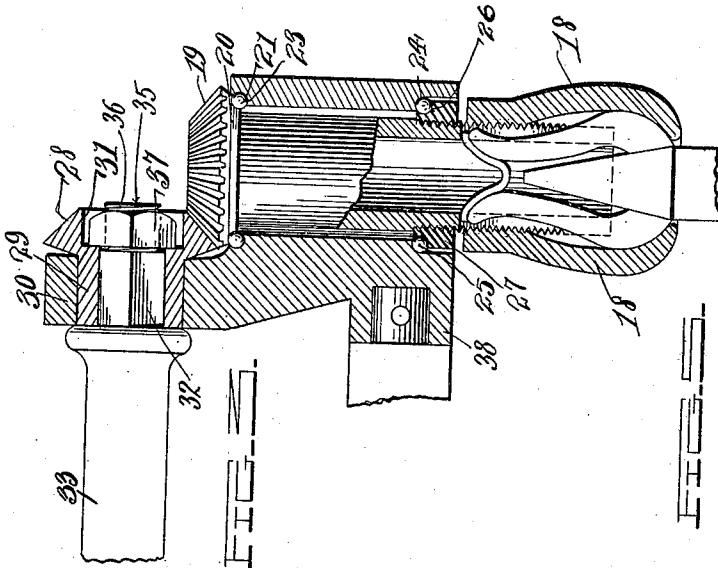
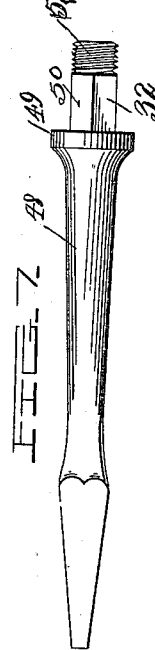
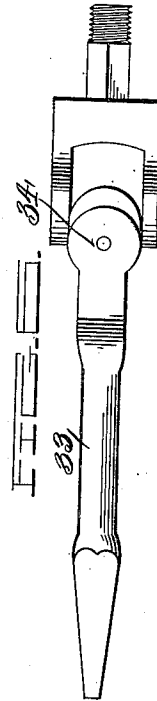
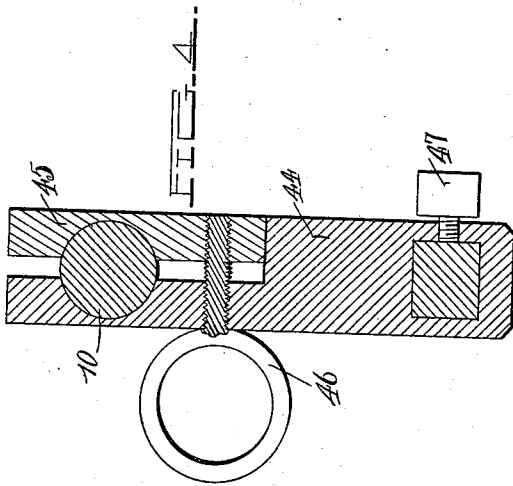
Attorneys

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UNITED STATES PATENT OFFICE.

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BREAST-DRILL ATTACHMENT.

1,006,932.

Specification of Letters Patent.

Patented Oct. 24, 1911.

Application filed June 20, 1910. Serial No. 567,916.

To all whom it may concern:

Be it known that I, ELWOOD C. GLADFELTER, a citizen of the United States, residing at Lima, in the county of Allen, State of Ohio, have invented certain new and useful Improvements in Breast-Drill Attachments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a drill attachment and more particularly to the class of attachments for breast drills.

The primary object of the invention is the provision of an attachment of this character in which holes may be bored in a piece of material at varying angular pitches relative to the disposition of the drill stock to which the attachment is applied, thus enabling the proper working of the drill in contracted places.

Another object of the invention is the provision of a drill attachment in which a drill may be held in adjusted angular positions for the boring of holes by a breast drill of the ordinary well-known construction, the attachment being clamped to the breast drill and is capable of adjustment at will.

Another object of the invention is the provision of a drill attachment in which a drill may be held at varying angles or at substantially right angles to the drill stock and is clamped fast thereto so that upon operation of the drill stock the said drill may be rotated for boring a hole, the attachment being capable of mounting upon drills of the ordinary well known constructions.

With these and other objects in view the invention consists in the construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, disclosing the preferred form of embodiment of the invention and pointed out in the claims hereunto appended.

In the drawings:—Figure 1 is a side elevation of a breast drill with the invention applied thereto. Fig. 2 is a top plan view thereof. Fig. 3 is a fragmentary vertical longitudinal sectional view through the attachment. Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 1. Fig. 5 is a detail view of a portion of the adjustable

brackets looking toward the ratchet faces formed thereon. Fig. 6 is a side elevation of one of the detachable bit shanks. Fig. 7 is a side elevation of a modification thereof.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings by numerals 10 designates generally a breast drill stock of the ordinary well-known construction having the usual rotatable drill chuck 11 operated through the medium of a driving gear 12 and a pinion 13 meshing with the latter, the drill stock being provided with the ordinary breast plate 14 and hand grip 15. The gear 12 has fixed to its spindle a hand crank 16 whereby the said gear may be rotated for operating the breast drill.

The attachment comprises a cylindrical housing or body 17 in which is mounted a rotatable bit chuck 18 which latter is adapted to receive the shank portion of an ordinary bit (not shown), the tubular portion of the bit chuck being rotatably mounted in the said housing or body and has fixed at one end thereof a beveled gear 19 the latter being formed with a cone surface 20 traveling upon bearing balls 21 disposed in a raceway 23 formed in one end of the housing or body 17, the opposite end of this housing being also formed with a raceway 24 in which are arranged a series of bearing balls 25 the latter contacting with a cone face 26 on an adjusting collar 27 threaded upon and surrounding the tubular portion of the said bit chuck 18 of the attachment.

Meshing with the gear 19 is a beveled pinion 28 the latter being provided with a hub 29 rotatably fitted in an ear 30 having its opening receiving the hub 29 at right angles to the bore in the housing 17, the said hub 29 being provided with a centrally located squared opening, one end intersecting a counterbore 31 in the said pinion 28 and this squared opening is adapted to receive the squared reduced end 32 of a bit shank 33 the latter being detachably connected at its opposite end in the chuck 11 of the breast drill. This drill shank 33 is provided intermediate its ends with a knuckle joint connection 34 which permits one end of the shank to be swung at an angle relative to the remaining end. The reduced end 32 of the bit shank is provided with a further reduced

circular shaped portion 35 having external screw threads 36 engaged by a locking nut 37 adapted to fit within the counterbore 31 in the pinion 28 for detachably securing the said bit shank 33 to the pinion.

Formed on the housing or body 17 is an outwardly extending boss 38, provided with a suitable socket in which is received the reduced end portion of an adjustable bracket comprising inner and outer sections 39 and 40, the inner section 39 being provided with a ratchet face 41 which is engaged by a corresponding ratchet face 42 formed at one end of the section 40 of the bracket, the ratchet face 41 and 42 of the said sections being locked together by means of a thumb screw 43 the latter serving to lock the outer face 40 of the bracket in adjusted position. Slidably fitted upon the outer section 40 of the bracket is a post 44 the same being provided with clamping jaws 45 for embracing the breast drill stock 10 whereby the attachment may be securely mounted upon the said breast drill. The clamping jaws 45 of the posts 44 are controlled by a thumb screw 46 whereby they may be separated for detaching the breast drill stock or brought together to clamp the same, the post carries the usual set screw 47 adapted for engagement with the outer section 40 of the bracket whereby said post may be locked in adjusted position, the said post being longitudinally adjustable on the bracket.

In Fig. 7 there is shown a slight modification of bit shank the same comprising a stem 48 provided near one end with a circular shoulder 49, and adjacent the shoulder squared as at 50 to fit within the squared opening in the pinion 28 when the said bit shank is to be substituted in lieu of the bit shank 33, the said reduced end 50 being provided with a circular externally threaded terminal 51 for engagement with the locking nut 37 whereby the said stem 33 may be secured to the pinion. When the stem 33 is fitted or attached to the pinion 28 and to the breast drill 10, the chuck 18 of the attachment will be held at right angles to the chuck 11 of the said breast drill so that the bit carried by the chuck 18 will be held at right angles to the chuck 11 of the breast

drill for the boring of a hole when the latter is being operated.

It will be readily seen with the construction shown in Figs. 1 to 6 that the drill or bit to be operated by the attachment may be held at varying angles relative to the breast drill upon adjustment of the adjusting bracket through the medium of the set screw 43 on using the bit shank 33.

What is claimed is:—

1. An attachment for breast drills comprising a clamping post for attachment to a breast drill stock, said clamping post being formed with a socketed end, a bracket member adjustable on the socketed end of said clamping post, a second bracket member pivoted to one end of the first bracket member, a housing having a socket to receive the outer end of the second bracket member, engaging beveled gears journaled on the housing, a chuck connected with one of said beveled gears, and a stem having a universal joint connected with the other beveled gear and adapted to be connected with the chuck of a breast drill.

2. In a breast drill attachment, a clamping post adapted to engage the stock of a breast drill, said post being formed with a reduced end, a clamping jaw movable on the reduced end of the post, a screw holding said clamping jaw to said reduced end, a squared bracket member slidable on the other end of the clamping post, a bracket member pivoted at one end to the first bracket member and adapted to be clamped thereto, said second bracket member being formed with a rounded terminal, a housing having a boss formed with a socket to receive the rounded terminal of the second bracket member, engaging beveled gears journaled on the housing, a universal joint connection secured to one of the beveled gears and a drill holding chuck secured to the other beveled gear.

In testimony whereof, I affix my signature, in presence of two witnesses.

ELWOOD C. GLADFELTER.

Witnesses:

CARRIE BROWN,
JOE. J. HOVER.