No. 667,277. Patented Feb. 5, 1901.

G. D. WILLIAMS.

FEED HEAD FOR DRILLING MACHINES.

(Application filed June 13, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

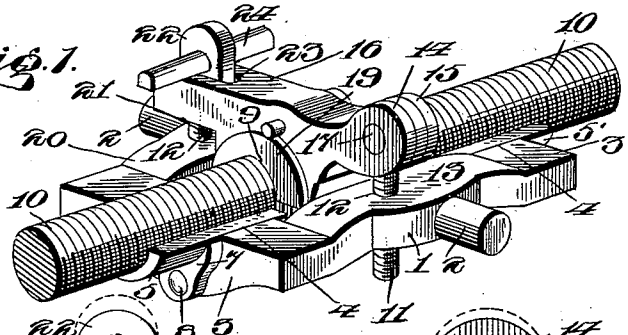


Fig. 2.

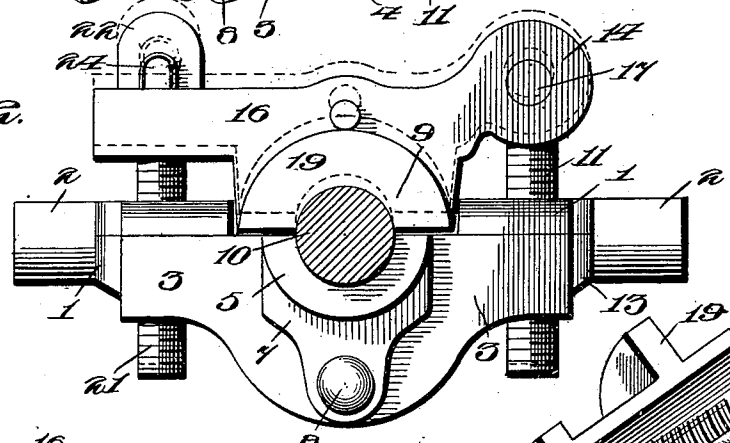


Fig. 3.

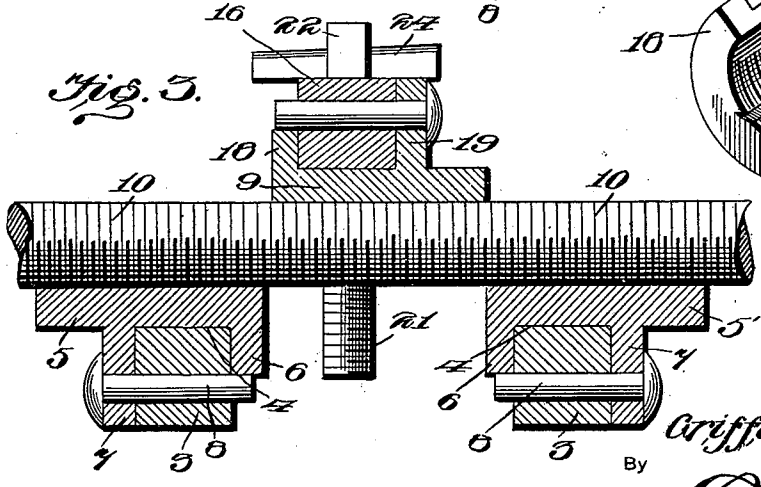
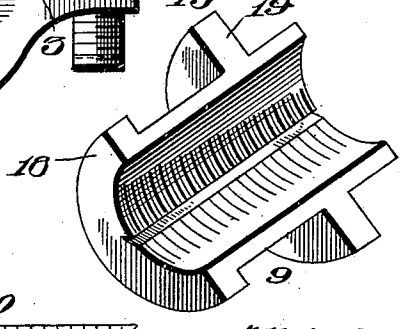


Fig. 4.



Witnesses
Geo. H. Graves
Louis G. Julihn

By Griffith D. Williams.
Inventor

C. G. Sargent
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 667,277. Patented Feb. 5, 1901.

G. D. WILLIAMS.

FEED HEAD FOR DRILLING MACHINES.

(Application filed June 13, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

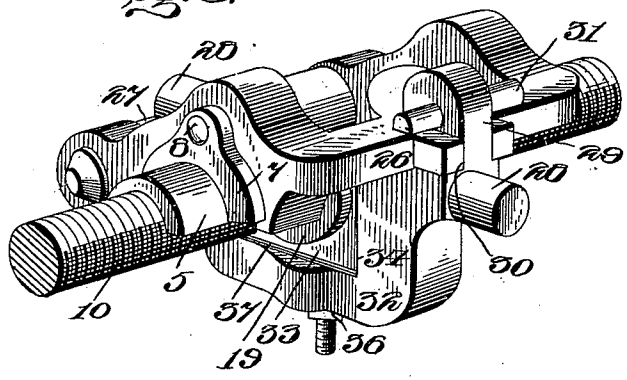


Fig. 6.

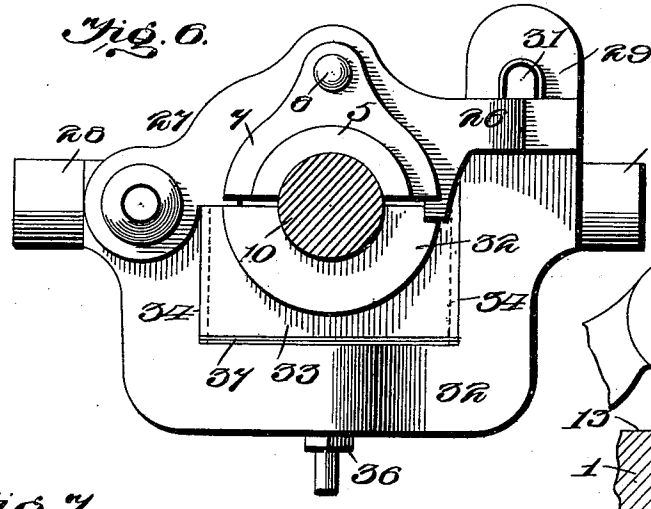


Fig. 8.

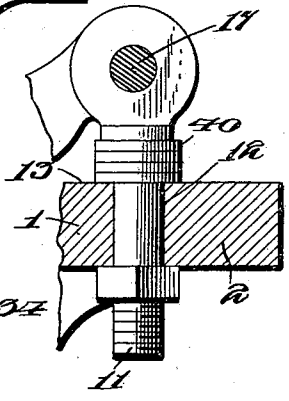
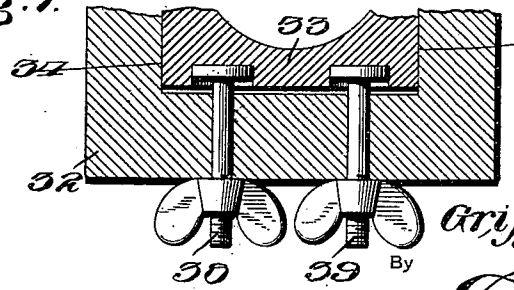


Fig. 7.



Griffith D. Williams
Inventor

By

E. G. Siggers
Attorney

Witnesses
Geo. Gayne
Louis G. Julihn

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GRIFFITH D. WILLIAMS, OF OLYPHANT, PENNSYLVANIA.

FEED-HEAD FOR DRILLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 667,277, dated February 5, 1901.

Application filed June 13, 1900. Serial No. 20,177. (No model.)

To all whom it may concern:

Be it known that I, GRIFFITH D. WILLIAMS, a citizen of the United States, residing at Olyphant, in the county of Lackawanna and State of Pennsylvania, have invented a new and useful Feed-Head for Drilling-Machines, of which the following is a specification.

My present invention relates to improvements in heads or screw-boxes for drilling-machines, and has for its object the production of a head provided with a screw-box which will permit the box or head members to be adjusted from time to time to compensate for the wear of the feed-screw and the threads of the box and to cause the threads of the feed-screw to be recut when necessary.

To the accomplishment of these objects the invention consists in constructing the head in two relatively movable parts or sections connected by adjusting mechanism and carrying opposed nut-sections or half-nuts disposed in alternating arrangement at opposite sides of the feed-screw. This arrangement of the nuts permits of their relative adjustment in the direction of the axis of the screw to compensate for wear without such relative movement being limited or interfered with by contact of the nut-sections, which would result from the direct opposition of the nut-sections as distinguished from that alternating arrangement which is a feature of the present invention.

In its preferred embodiment the invention consists in certain other details of construction and arrangement of parts, all of which will more fully hereinafter appear and which will be illustrated in the accompanying drawings and embraced within the scope of the appended claims.

In said drawings, Figure 1 is a perspective view of the preferred embodiment of my invention with the feed-screw in place. Fig. 2 is an end view showing the adjustment of the upper head member in dotted lines. Fig. 3 is a central longitudinal sectional view therethrough. Fig. 4 is a detail perspective view of a thread-cutting nut-section employed on one of the head members. Fig. 5 is a perspective view of the modified form of my device. Fig. 6 is an end view thereof. Fig. 7 is a detail sectional view illustrating another form of adjusting mechanism for the intermediate nut-section, and Fig. 8 is a modified form of the means for effecting the relative adjustment of the head-sections.

Referring to the numerals of reference employed to designate corresponding parts in the several views, 1 indicates the substantially rectangular cast metal head of a drilling-machine, provided, as usual, with trunnions 2, by means of which it may be mounted upon the drill-stand. (Not illustrated.) The end bars 3 of the head are provided in their upper faces with depressions 4 for the reception of steel or other hard-metal half-nuts or nut-sections 5 and 5′, having their interior faces threaded and cast with parallel drop-flanges 6 and 7, straddling the end bars of the head. The nut-sections 5 and 5′ are preferably secured in place by bolts 8, piercing the flange 7 of each nut-section and passed through the end bar of the head, or, if desired, any other suitable fastening device may be provided, or in some instances the head and nut sections may be cast in a single piece, the construction shown being preferable, however, as it enables me to form the head from brass or other workable metal and the half-nuts from tool-steel, calculated to withstand considerable wear.

It will be observed that the arrangement of the half-nuts 5 and 5′ brings their axes in alinement and in the plane of the upper surface or face of the head, with an intermediate space of an extent approximating the length of one of the sections. The purpose of this arrangement is to accommodate in a plane between said sections a third and relatively movable half-nut or nut-section 9, designed to engage the opposite side of the feed-screw 10, which rests within the nut-sections 5 and 5′ and is clamped into effective engagement therewith by the movable nut-section 9. For the purpose of supporting the nut-section 9 in a manner to permit of its being swung away from the feed-screw to permit the removal of the latter and in a manner which will permit of adjustment to compensate for wear I provide a screw-bolt 11, passed vertically through a threaded aperture 12 in one side bar 13 of the head. The upper end of the screw 11 is enlarged and flattened to be received between

a pair of ears 14 and 15, formed at one end of an upper or movable head-section 16. The upper end of the screw-bolt 11 and the ears 14 and 15 are pierced by a pintle 17, which constitutes the hinge of the head-section 16, supporting the nut-section or half-nut 9, provided, like the nut-sections 5 and 5', with flanges 18 and 19, one of which is bolted to the head-section 16.

The opposite side bar 20 of the head 1 is pierced vertically by a screw-bolt 21, having a flattened apertured head 22, designed to pass through a slot 23 in the free end of the head member 16 when the latter is turned down to present the nut-section 9 to the feed-nut, the parts being secured in this position—that is to say, in engagement with the feed-screw—by passing a key 24 through the head 22 immediately above the section. With the parts organized as shown in Fig. 1 of the drawings the feed-screw will be fed forward by its rotation in the usual manner and the compression of the feed-screw between the nut-sections will be regulated by turning the screw-bolts 11 and 21 in the desired direction to cause the elevation or depression of the nut-section 9 when in its normal position. The threads of the nut-section 9 are preferably divided by a kerf 25, which constitutes the member 9 a die, with which the threads of the feed-screw may be trimmed or recut when mutilated or reduced materially by wear.

In Figs. 5 and 6 I have illustrated a modification of my invention which is practically an inversion of the arrangement shown in the preceding figures, inasmuch as the rectangular head-section 26, carrying a plurality of nut-sections, is hinged upon a smaller head-section 27, corresponding generally to the section 16 of the preferred embodiment of the invention and provided with trunnions 28 and an apertured lug 29, which latter is designed to extend through a slot 30 in the head-section 26, which latter is retained by a key 31. The distinguishing difference between these forms of invention, aside from the inversion, is that the relative adjustment of the nut-sections is secured by the direct adjustment of one of said sections upon its member as distinguished from the relative adjustment of the head members or sections, as in the construction shown in the first four figures of the drawings.

As shown in Fig. 6, the intermediate nut-section 32 is in this embodiment carried by an adjustment-block 33, movable between guides 34 and retained by a bolt 35 passing through the nut-section 32, the block 33, and the bottom of the head section or member 27, being provided upon its lower extremity with a nut 36. When it is desired to compensate for wear between the contact-surfaces of the feed-screw and nut-sections, the bolt 35 is loosened and one or more filling-strips 37 are inserted between the adjustment-block 33 and the contiguous face of the member 27, after which the nut 36 is screwed up to retain the nut-section 32 securely in its adjusted position.

In Fig. 7 I have shown a modification of this adjusting mechanism for the nut-section 32, which modification consists in passing a pair of adjustment-screws 38 and 39 through the bottom of the member 37 and having their upper ends headed and swiveled in the adjustment-block 33, the adjustment of which is effected by the rotation of the adjustment-screws, which obviously effects the advance or recession of the latter to properly position the nut-section 32.

From the foregoing it will be observed that I have produced a simple, durable, and efficient feed head or box for drilling-machines and comprehending nut-sections mounted and arranged in a manner to permit of their adjustment to compensate for the wear of the feed-screw and to permit the ready removal of the latter from the machine; but while the several constructions illustrated and described are believed to comprehend preferable embodiments of the invention I wish to reserve the right to effect such changes, modifications, and variations as may fall within the spirit of the invention, the essential characteristic of which is the alternate arrangement of relatively-adjustable nut-sections for the retention of the feed-screw of a drilling-machine.

In Fig. 8 I have shown still another modification of the means for effecting the relative adjustment of the nut-sections. This form comprehends the employment of an eye-bolt in lieu of the threaded bolts 11 and 21 (shown in Fig. 1) and the provision of removable washers or circular spacers 40, any number of which are designed to be interposed between the heads of the eyebolts and the lower member of the drill-head.

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

1. A head for drilling-machines provided with opposed nut-sections in alternating arrangement.

2. A head for drilling-machines provided with opposed nut-sections in alternating arrangement, and means for effecting the relative adjustment of said nut-sections.

3. A head for drilling-machines comprising relatively movable head members each carrying one or more nut-sections, the nut-sections of one member being arranged to alternate with those of the other member.

4. A head for drilling-machines comprising a pair of hinged head members each carrying one or more nut-sections, the sections of one member being arranged to alternate with those of the other member and one of said nut-sections having an adjustment independent of the hinge connection of the members.

5. A head for drilling-machines comprising a pair of head members, a screw-bolt adjustably supported by one member and pivotally

supporting the other member, nut-sections carried by the members, and means for retaining the hinged member against movement.

6. A head for drilling-machines comprising a pair of head members, a screw-bolt adjustably carried by one member and pivotally supporting the other member, and adjustable means for retaining the free end of the pivotally-supported member.

7. A head for drilling-machines comprising a pair of head members, one of which is provided with a pair of separated nut-sections and with a pair of adjustable screw-bolts, the other of said head members being pivotally mounted upon one of said screw-bolts and having a nut-section located in a plane between the nut-sections of the other member and a slot adjacent to its free end for the reception of the second screw-bolt, and the key retained by the last-named screw-bolt to hold the movable head-section in place.

8. A head for drilling-machines comprising opposed nut-sections in alternating arrangement, one of said nut-sections having its threads divided by a kerf, whereby the recutting or truing of the threads of the feed-screw is effected without necessitating the removal of the latter from the head.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GRIFFITH D. WILLIAMS.

Witnesses:

J. SPITZENBERGER,

WILLIAM W. WATKINS.