No. 847,450.

PATENTED MAR. 19, 1907.

G. D. WILLIAMS.

FEED HEAD FOR DRILLING MACHINES.

APPLICATION FILED NOV. 9, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

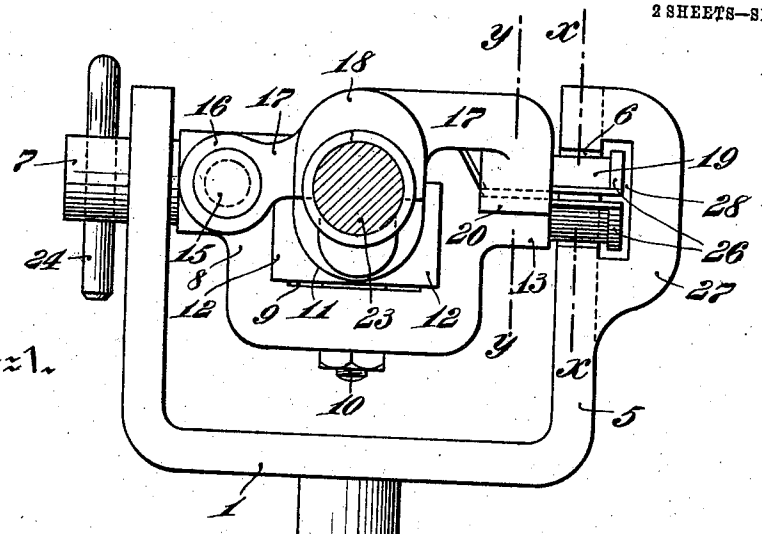


Fig. 3.

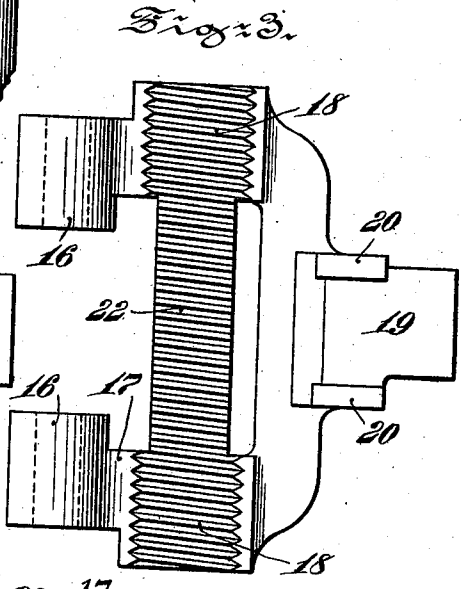


Fig. 2.

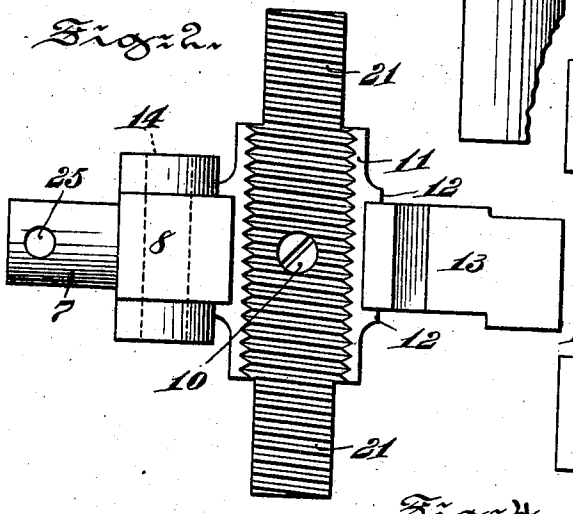
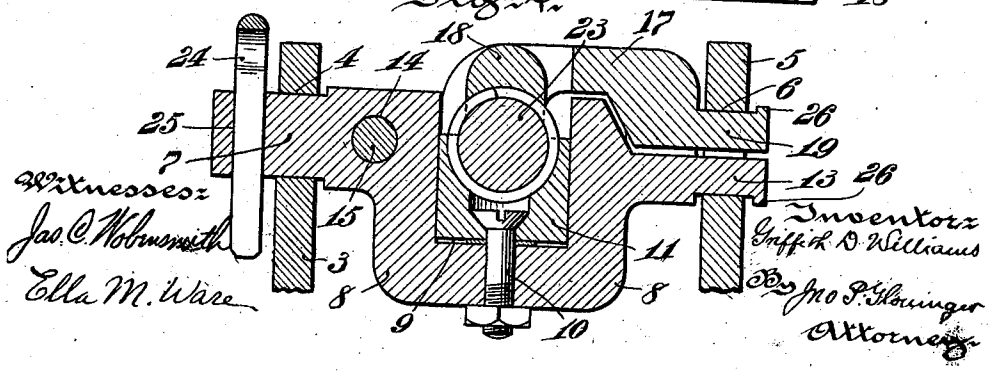


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

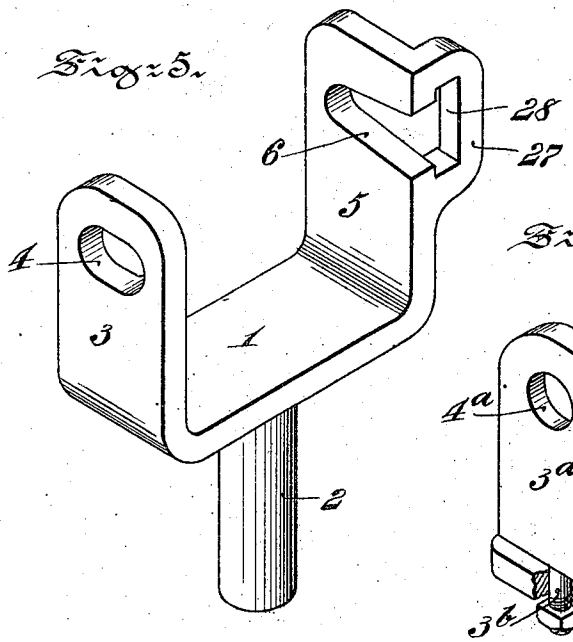


Fig. 6.

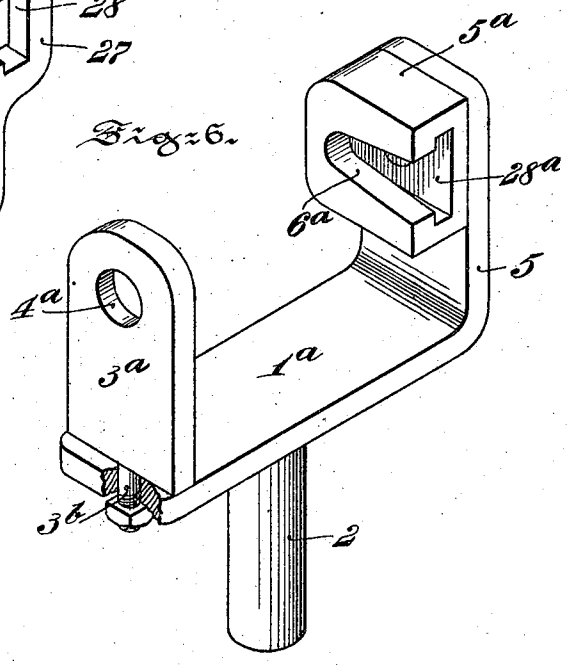


Fig. 7.

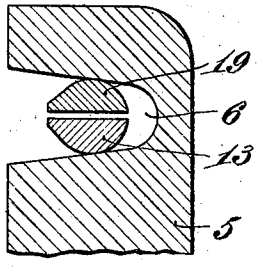
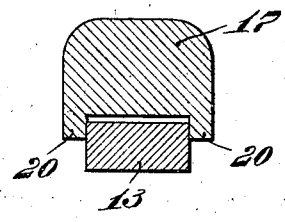


Fig. 8.



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UNITED STATES PATENT OFFICE.

GRIFFITH D. WILLIAMS, OF PECKVILLE, PENNSYLVANIA.

FEED-HEAD FOR DRILLING-MACHINES.

No. 847,450. Specification of Letters Patent. Patented March 19, 1907.

Application filed November 9, 1906. Serial No. 342,621.

To all whom it may concern:

Be it known that I, GRIFFITH D. WILLIAMS, a citizen of the United States, and a resident of Peckville, in the county of Lackawanna, State of Pennsylvania, have invented certain new and useful Improvements in Feed-Heads for Drilling-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is a bottom plan view of my improved feed-head. Fig. 2 is an elevation of the inner half-nut-carrying member detached. Fig. 3 is a view similar to Fig. 2 of the other half-nut-carrying member detached. Fig. 4 is a horizontal section looking in the same direction as Fig. 1 and taken on a line medially of the half-nut-carrying members. Fig. 5 is a perspective view of the preferred form of clevis, (being the form shown in Figs. 1 and 4,) the half-nut-carrying members having been removed. Fig. 6 is a view similar to Fig. 5 of a modified form of clevis. Fig. 7 is a vertical section on the line $x\,x$, Fig. 1. Fig. 8 is a vertical section on the line $y\,y$, Fig. 1.

This invention relates to improvements in feed-heads for drilling-machines, and more particularly to the class of feed-heads a type of which is shown and described in United States Letters Patent No. 667,277, granted to me February 5, 1901.

The object of my present invention is to provide a feed-head of the type referred to which shall be simple in construction and which may be readily and easily operated.

To this end the invention consists in providing a feed-head of this type in which the half-nut-carrying members or sections are so connected to each other and so mounted in a suitable supporting clevis or frame that any wear, either of their screw-threads or of the threads of the feed-screw of the drill, will be automatically taken up, thus always insuring a perfect mesh between the feed-screw and the threads of the half-nuts.

The invention also consists in so mounting the half-nut-carrying members or sections in the supporting clevis or frame that when it is desired to separate these members to release the feed-screw therefrom the same may be readily and quickly effected.

The invention also consists in providing threaded extensions from said half-nut-carrying members, respectively, the extensions of one member coming opposite the half-nut section or sections of the other member and said threaded extensions being considerably less than a half-nut, whereby a greater threaded bearing is afforded for the feed-screw, and also affording means of cleaning the threads thereof. Other features of the invention relate to details hereinafter duly pointed out.

In the drawings, 1 is a clevis having a stem 2 for mounting the same upon the usual drill-stand. One of the limbs 3 of the clevis 1 is provided adjacent its free end with a hole 4, and the other limb 5 of the clevis 1 is provided with an approximately **V**-shaped slot 6, as shown most clearly in Figs. 5 and 7, and for a purpose hereinafter appearing. Extending through the hole 4 is a trunnion 7, extending outwardly from a bar 8, the diameter of which trunnion is such as to fit the depth of said hole, so as to find a bearing therein; but the hole is elongated laterally of the limb 3, for a purpose hereinafter appearing. Within a **U**-shaped depression 9 of the bar 8 is seated and secured, by means of a bolt 10, a half-nut or nut-section 11. This nut-section 11 is provided with flanges 12, that straddle the sides of the bar 8 to prevent longitudinal displacement of said half-nut. Extending outwardly from the bar 8 and through the slot 6 is an arm 13, whose upper surface is substantially plane and whose under surface where it engages the lower wall of said slot 6 is substantially semicircular in cross-section, as seen in Fig. 7. The bar 8 is provided with a hole 14, through which passes a pin or shaft 15, which pin or shaft 15 also passes through bosses 16, extending from the bar 17, thereby pivotally securing said bar 17 to the bar 8. The bar 17 is provided on its under surface with two half-nuts 18, that are out of alinement with the half-nut 11 upon bar or member 8. The bar 17 is provided at its free end with an arm 19, which is complementary and similar to the arm 13, extending from the bar 8. The semicircular surface of this latter arm 19 engages the upper wall of the slot 6. The bar 17 is also provided with lugs 20, that will straddle an extending portion of the bar 8, for a purpose hereinafter appearing.

Extending outwardly from the half-nut 11, at each end thereof, are threaded extensions 21 of considerably less than a semicircle in cross-section, and extending between the half-nuts 18 on the bar 17 is a threaded connection 22, which is likewise of less cross-section than a semicircle. Said

extensions 21 and said connection 22 therefore each constitute considerably less than a half-nut section. The extensions 21 are opposite the half-nuts 18 and the threaded connection 22 is opposite the half-nut 11, all for a purpose hereinafter described.

Having now described the principal features of my invention, I shall proceed to the description of the manner of use thereof, at the same time pointing out certain details of construction not hereinbefore described.

It being desired to put the feed-head into use, the arms 13 and 19 are withdrawn from the mouth of the slot 6, the elongation of the hole 4 permitting the trunnion 7 to move laterally that this may be effected. The bar member 17 is rotated backwardly on its pivot-shaft 15. The feed-screw 23 of the drill is then placed so that its thread will be in mesh with the half-nut 11 and extensions 21. The bar 8 is then rocked forwardly upon its pivot-shaft until its half-nuts 18 and connection 22 engage the thread of said feed-screw, at which time the lugs 20 will straddle the bar 8, whereby the said two bars are secured against any longitudinal movement. The two contiguous arms 13 and 19 are then entered into the V-shaped slot 6. As the pressure comes upon the drill in using the same these arms 13 and 19 are always kept forced backwardly into the said slot, thereby tending to draw the said bars 8 and 17 toward each other, and so to cause the threads of the half-nuts to closely engage the thread of the drill feed-screw, and if the same or the half-nut threads wear the wear will be taken up by a corresponding backward movement of said arms into said slot.

By providing the extensions 21 from the half-nut 11 and the connection 22 between the half-nuts 18 and making the same so as to constitute considerably less than half-nuts, not only is greater thread-bearing provided for the feed-screw 23, but the threads of the said extensions 21 and connection 22 assist in keeping the feed-screw threads clean.

In order to prevent the trunnion 7 from being withdrawn through the hole 4 when the feed-screw is being removed from or replaced between the arm members 8 and 17, a suitable device is provided on the outer end of said trunnion—such, for instance, as a cotter-pin 24, passed through a hole 25 in said trunnion. This cotter-pin also serves to prevent the trunnion from being withdrawn from said hole should the clevis-limbs 3 and 5 spread for any reason, flanges 26 on the arms 13 and 19, respectively, serving this latter purpose for said arms. In order to strengthen and support the open end of the slot 6, I would provide the limb 5 of the clevis with a bridge-piece 27, as seen in Figs. 1 and 5, provided with a slotway 28 for the passage of said flanges 26.

As will be readily observed, when the device is in use the upper members 8 and 17, constituting the screw-blocks for the feed-screw, will be rocked as required upon the trunnion 7 in the hole 4 and the semicircular surfaces of the arms 13 and 19, which arms, in effect, constitute a trunnion.

In Fig. 6 I have shown a modified form of clevis in which the limb 3^a (corresponding with limb 3 of the clevis shown in the other views) is pivotally secured to the body portion 1^a of the clevis upon a stem 3^b, the hole 4^a (corresponding with hole 4) being of the same diameter as the trunnion 7, and instead of making the slot 6 directly in the limb 5 and providing the bridge-piece 27 I have made a V-slot 6^a and a slot 28^a (corresponding with said slot 28) in a block 5^a, which I secured adjacent the free end of the limb 5. By this modified construction when the arms 13 and 19 are withdrawn from the V-slot 6^a the trunnion 7 will cause the limb 3^a to rotate upon its pivot on the body 1^a of the clevis.

Other modifications of the invention may be made by persons skilled in the art without departing from the essential principles thereof.

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

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

2. In a feed-head for drilling-machines, the combination of a supporting-clevis having a substantially V-shaped slot in one of its limbs, the hinged members pivotally mounted in said clevis, the nut-sections carried by said hinged members in alternating arrangement relative to each other, each of said members being provided with an arm extending through and bearing in said V-shaped slot of the clevis, substantially as and for the purpose set forth.

3. In a feed-head for drilling-machines, the combination of a supporting-clevis having a substantially V-shaped slot in one of its limbs, the hinged members pivotally mounted in said clevis, the nut-sections carried by said hinged members in alternating arrangement relative to each other, each of said members being provided with an arm, extending through and bearing in said V-shaped slot of the clevis, said arms being provided on their free ends with peripheral flanges, substantially as and for the purpose set forth.

4. In a feed-head for drilling-machines, the combination of a supporting-clevis having a substantially V-shaped slot in one of its limbs, the bridge-piece connecting the sides of the entrance to said slot, the hinged members pivotally mounted in said clevis, the nut-sections carried by said hinged members in alternating arrangement relative to

each other, each of said members being provided with an arm of substantially semicircular cross-section, extending through said V-shaped slot of the clevis, substantially as and for the purpose set forth.

5. In a feed-head for drilling-machines, the combination of a supporting-clevis having a substantially V-shaped slot in one of its limbs, the bridge-piece connecting the sides of the entrance to said slot, the hinged members pivotally mounted in said clevis, the nut-sections carried by said hinged members in alternating arrangement relative to each other, each of said members being provided with an arm, substantially semicircular in cross-section, extending through said V-shaped slot of the clevis, said arms being provided on their free ends with peripheral flanges, and said bridge-piece being provided with a slot permitting the passage of said flanges, substantially as and for the purpose set forth.

6. In a feed-head for drilling-machines, the combination of a supporting-clevis, the hinged members carried thereby, said hinged members being provided with opposed half-nut sections in alternating arrangement, and with threaded sections opposite to said half-nut sections, said threaded sections being less than a half-nut, substantially as and for the purpose set forth.

7. In a feed-head for drilling-machines, the combination of a supporting-clevis, the hinged members carried thereby, said hinged members being provided with opposed half-nut sections in alternating arrangement, and with threaded sections opposite to said half-nut sections, said threaded sections being less than a half-nut, together with means for automatically effecting relative adjustment of said hinged members, substantially as and for the purpose set forth.

8. In a feed-head for drilling-machines, the combination of a supporting-clevis, the inner member having the trunnion extending from one end thereof, and journaled in the adjacent limb of said clevis, the opposite limb of said clevis being provided with a substantially V-shaped slot, the outer member hinged to said inner member, adjacent the trunnion-carrying end thereof, said members being provided respectively with nut-sections, and also being provided with oppositely-disposed arms, extending through and engaging the wall of said V-shaped slot, substantially as and for the purpose set forth.

9. In a feed-head for drilling-machines, the combination of a supporting-clevis, the inner member having the trunnion extending from one end thereof, and journaled in the adjacent limb of said clevis, the opposite limb of said clevis being provided with a substantially V-shaped slot, the outer member hinged to the said inner member, adjacent the trunnion-carrying end thereof, said members being provided respectively with nut-sections, and also being provided with oppositely-disposed arms, extending through and engaging the wall of said V-shaped slot, and means for preventing longitudinal movements of said members relative to each other, substantially as and for the purpose set forth.

10. In a feed-head for drilling-machines, the combination of a supporting-clevis, the inner member having the trunnion extending from one end thereof, and journaled in the adjacent limb of said clevis, the opposite limb of said clevis being provided with a substantially V-shaped slot, the outer member hinged to said inner member, adjacent the trunnion-carrying end thereof, said members being provided respectively with nut-sections, and also being provided with oppositely-disposed arms, extending through and engaging the wall of said V-shaped slot, the outer member being provided with inwardly-projecting lugs, adapted to straddle and engage a portion of said inner member, substantially as and for the purpose set forth.

In testimony whereof I have hereunto affixed my signature.

GRIFFITH D. WILLIAMS.

Witnesses:
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S. W. ARNOLD.