L. F. HART.

DIE STOCK.

APPLICATION FILED NOV. 11, 1912.

1,146,871. Patented July 20, 1915.

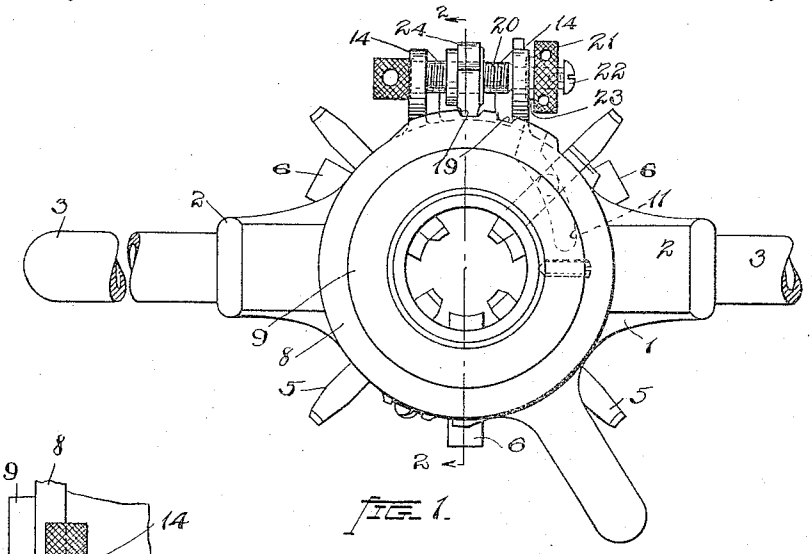

FIG. 1.

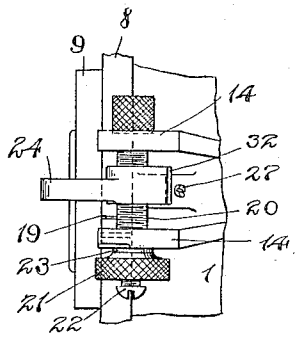

FIG. 3.

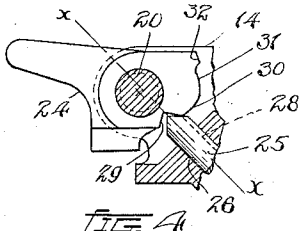

FIG. 4

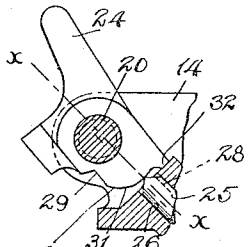

FIG. 5

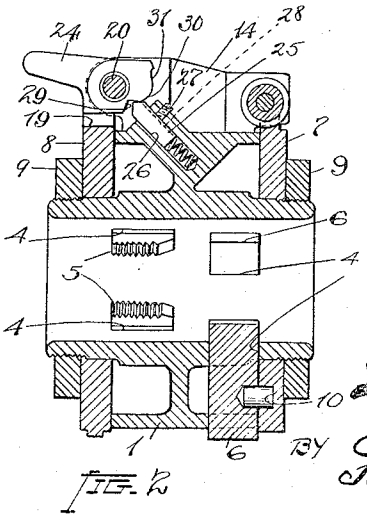

FIG. 2.

WITNESSES=

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UNITED STATES PATENT OFFICE.

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DIE-STOCK.

1,146,871. Specification of Letters Patent. Patented July 20, 1915.

Original application filed November 13, 1911, Serial No. 659,970. Divided and this application filed November 11, 1912. Serial No. 730,556.

To all whom it may concern:

Be it known that I, LOUIS F. HART, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Die-Stocks, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The general object of the present invention is the perfection and refinement of the die stock forming the subject matter of U. S. Patent No. 990,864, issued to me May 2, 1911. Such die stock is characterized by having a rotatable cam-plate for adjusting the dies, which cam-plate has its periphery notched for engagement with a pivotal catch mounted on the body of the die stock, so as to be adjustable along a fixed axis tranverse to that of said cam-plate.

More particularly, the present invention comprehends an improved disposition and form for the aforesaid catch, whereby it is not only rendered more easily operable, but also effectively locks the cam-plate against movement when in proper position.

The means for accomplishing the foregoing and related ends will be hereinafter fully described and particularly pointed out in the claims, the present claims having been divided out of my application Serial No. 659,970, filed November 13, 1911.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1 is a front elevation of a die stock embodying my present improvements; Fig. 2 is a vertical axial section thereof taken as indicated by the line 2—2, Fig. 1; Fig. 3 is a broken plan view of the portion of the device of present interest, shown on a scale somewhat larger than that of Figs. 1 and 2; Fig. 4 is a sectional view, similarly on a larger scale, of this portion of the device shown in the same position as it appears in Fig. 2; and Fig. 5 is a view corresponding with Fig. 4, but showing the parts in a different operative position.

The body 1 of the die stock is in general of familiar form, being provided with sockets 2 for the reception of handles 3 as usual. Such body is also provided with two sets of radial, or substantially radial, openings 4 that constitute guides for the chaser dies 5 and the guide jaws or blocks 6. It is with the means for locating or positioning these dies that the improvements in hand are more particularly concerned. Four such dies and three guide jaws are shown, but it will be understood that the number of these may be varied in die stocks of a different size, or for a different use, than the particular one illustrated. The cam plate or ring 7 for positioning the guide jaws 6 is rotatably mounted upon the rearwardly extending portion of the body 1, while the dies are similarly positioned by means of a cam plate 8 mounted on the forwardly extending portion of such body. These cam plates are held in place on the body by retaining rings 9, respectively threaded on the latter and locked in place by set screws so as to retain the plates against endwise movement, while still permitting them to rotate. Of the cam grooves 10 and 11 in the plates 7 and 8, respectively, whereby the guide blocks, or dies, as the case may be, are positioned in the radial slots in the die stock, only one is illustrated in connection with each plate (see Figs. 1 and 2), in order not to confuse the drawing.

The specific operating means for rotating the cam plate 7 to adjust the guide jaws 6 are not of present interest, forming as they do the subject matter of aforesaid original application, Serial No. 659,970, and so no further mention of this feature of the die stock will be made in this connection.

The cam plate 8 which engages with, and serves to position the chaser dies, as in the

case of my issued patent, is provided with one or more notches 19 in its periphery, two being illustrated in Fig. 1. Rotatably supported in brackets 14 on the die stock body, projecting over said cam plate 8, is a capstan headed screw 20 directly over the line of contact between faces of the cam plate and the die stock body, such screw being disposed transversely with respect to the axis of the stock and of such cam plate. This screw is secured in the brackets in question by means of a retaining nut 21 threaded on its end, removal of such nut being prevented by means of a second screw 22 threaded in the end of the capstan headed screw, as shown in Fig. 1. Between the nut 21 and the adjacent bracket 14 is interposed a spring washer 23, the effect of which is to, at all times, retain the screw with its head held snugly against the bracket adjacent to such head, even when the nut is loosened in order to permit rotation of such screw.

Threaded upon, and oscillatory about screw 20 intermediate between the brackets, is a catch 24 of the form most clearly illustrated in Figs. 2 and 5, which catch is capable of transverse adjustment within the space between the two brackets by rotating the screw in one direction or the other; while at the same time said catch is oscillatory about said screw as an axis to engage and disengage either of the notches in the cam plate. The preferred form and arrangement of these notches, and of the cooperating portion of the catch, are the same as that described in my co-pending application filed August 25, 1910, Serial No. 578,850, and so need not be described in detail here. Attention is, however, directed to the formation of the rearwardly extending portion of the catch wherewith a spring-pressed plunger 25 engages, the function of which will appear from the following description. This plunger is reciprocably held in a suitable socket 26 in the body of the die stock, inclining forwardly at an angle of approximately 45 degrees, and has its projecting end doubly beveled with its bevel faces maintained in transverse relation to the rear end of the catch, by means of a screw 27 engaging a groove 28 in the side of said plunger. When the catch is in engagement with the cam plate, such plunger engages an angular notch 29 in the rear face of the same, bearing against one edge of said notch as shown in Figs. 2 and 4, so as not only to lock the catch against any but a sudden and considerable turning moment, but also so as to impart a rotative tendency thereto in a direction to keep said catch securely in the bottom of the notch in the cam plate. Next adjacent to such notch 29 in the catch is an inclined cam face 30 of such steepness that when the plunger engages therewith, a similar turning tendency is produced; in other words, the catch will snap into place under the pressure of the plunger when the latter bears against such portion. The remainder 31, however, of the rear edge of the catch is substantially on the arc of a circle, having the screw as its axis, so that when the plunger is in engagement with this portion of the catch the latter will remain at rest. Undue rotation of the catch in rearward direction is prevented by a lug 32 thereon butting up against the raised portion of the die stock body in which the socket for the plunger is formed. It is in such inoperative position that the catch is illustrated in Fig. 5. Another feature to be noted in the disposition and operation of the plunger 25 is the manner in which its outer end bears against the different portions of the catch just referred to. Thus, when engaging either with the concentric portion 31, or with the inclined face 30, of said catch, it is the sharpened end of the plunger that is in actual contact, as shown in Fig. 5; whereas, in the locking position of the catch (see Fig. 4), in which the plunger engages notch 29, it is the rear portion or heel of the bevel on said plunger that bears against the edge of the notch, thus producing a maximum turning effect; while in order to still further accentuate the torque produced by said plunger, it is also preferably disposed with its center line (marked x—x in Figs. 4 and 5) above the axis of the catch.

It is not believed necessary to set forth the general mode of operation of the die stock, nor to describe certain accessory details which are not of interest in the present connection. It may be remarked in conclusion, however, that the several novel features of construction exemplified in the tool as herein described may be utilized separately, or in combination with other different features, if desired. This applies particularly to the mounting of the centering jaws and to the mechanism for operating the same.

The convenience and utility of the novel construction of the catch for retaining the cam plate against rotation should be self-evident; while by the location of the axis of said catch directly over the line of contact of said plate with the body member of the die stock (or, in other words, substantially in the plane of said cam plate), the sidewise strain to which the catch and its mounting are subjected is much less likely to produce distortion, or looseness in the parts. Moreover, even if the catch does, through wear, become somewhat loose on the screw that supports it, the amount of its

play is reduced to a minimum; and, what is of equal or greater importance, such catch will remain in secure engagement with the notch in the cam plate under all these circumstances. The various other features of construction hereinbefore pointed out, all contribute toward making the die stock not only convenient, but also certain, in its adjustment and operation.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In mechanism of the character described, the combination of a body member; dies movable in said member; a cam-plate rotatably secured to one end of said member and adapted to position said dies therein, said member being provided with a bracket projecting over said cam-plate; and a catch pivotally supported from such bracket about a fixed axis transverse to the axis, and lying substantially in the plane, of said cam-plate, said catch being adapted to engage and secure said cam-plate against rotation.

2. In mechanism of the character described, the combination of a body member; dies movable in said member; a cam-plate rotatably secured to said member and adapted to position said dies therein, said cam-plate having its periphery notched and said member being provided with two brackets projecting over said cam-plate; and a catch pivotally supported between such brackets about a fixed axis transverse to the axis, and lying substantially in the plane, of said cam-plate, said catch being adapted to engage a notch in said cam-plate to secure the latter against rotation.

3. In mechanism of the character described, the combination of a body member; dies movable in said member; a cam-plate rotatably secured to said member and adapted to position said dies therein, said cam-plate having its periphery notched and said member being provided with two brackets projecting over said cam-plate; a screw rotatably mounted in said brackets about an axis transverse to the axis, and substantially in the plane, of said cam-plate; and a catch threaded on said screw between said brackets and adapted to engage a notch in said cam-plate to secure the latter against rotation.

4. In mechanism of the character described, the combination of a body member; dies movable in said member; a cam-plate rotatably secured to said member and adapted to position said dies therein; a catch pivoted on said member about a fixed axis transverse to that of said cam-plate, said catch being adapted to engage and secure said cam-plate against rotation; and a forwardly inclined, spring-pressed plunger in said body member disposed to engage said catch to one side of its pivotal axis, said catch being formed with a notch, that is thus engaged when the catch is in engagement with said cam-plate, and with an inclined face adjacent to such notch and so inclined that said plunger, when engaging therewith, may throw said catch into engagement with said cam-plate.

5. In mechanism of the character described, the combination of a body member; dies movable in said member; a cam-plate rotatably secured to said member and adapted to position said dies therein; a catch threaded on said screw and adapted to engage a notch in said cam-plate to secure the latter against rotation; and a forwardly inclined, spring-pressed plunger in said body member disposed to engage said catch to the rear of its pivotal axis, said catch being formed with a notch, that is thus engaged when the catch is in engagement with said cam-plate, and with an inclined face adjacent to such notch and so inclined that said plunger, when engaging therewith, may throw said catch into engagement with said cam-plate.

6. In mechanism of the character described, the combination of a body member; dies movable in said member; a cam-plate rotatably secured to said member and adapted to position said dies therein; a catch pivoted on said member about a fixed axis transverse to that of said cam-plate, said catch being adapted to engage and secure said cam-plate against rotation; and a forwardly inclined, spring-pressed plunger in said body member disposed to engage said catch to one side of its pivotal axis, said catch being formed with a notch, that is thus engaged when the catch is in engagement with said cam-plate, the engaging end of said plunger being beveled and said plunger being so disposed as to bear with the heel of such bevel against the edge of the notch in said catch.

7. In mechanism of the character described, the combination of a body member; dies movable in said member; a cam-plate rotatably secured to said member and adapted to position said dies therein; a catch pivoted on said member about a fixed axis transverse to that of said cam-plate, said catch being adapted to engage and secure said cam-plate against rotation; and a forwardly inclined, spring-pressed plunger in said body member disposed to engage said catch to one side of its pivotal axis, said catch being formed with a notch, that is thus engaged

when the catch is in engagement with said cam-plate, and with an inclined face adjacent to such notch and so inclined that said plunger, when engaging therewith, may throw said catch into engagement with said cam-plate, the engaging end of said plunger being beveled and said plunger being so disposed as to bear directly with its end against such inclined face of said catch but to bear with the heel of such bevel against the edge of the notch in said catch.

Signed by me this 7th day of November, 1912.

LOUIS F. HART.

Attested by—
D. T. DAVIES,
JNO. F. OBERLIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."