(No Model.) 2 Sheets—Sheet 1.

H. KUPSCH.

OPEN DIE HEAD.

No. 564,700. Patented July 28, 1896.

Fig. 1.

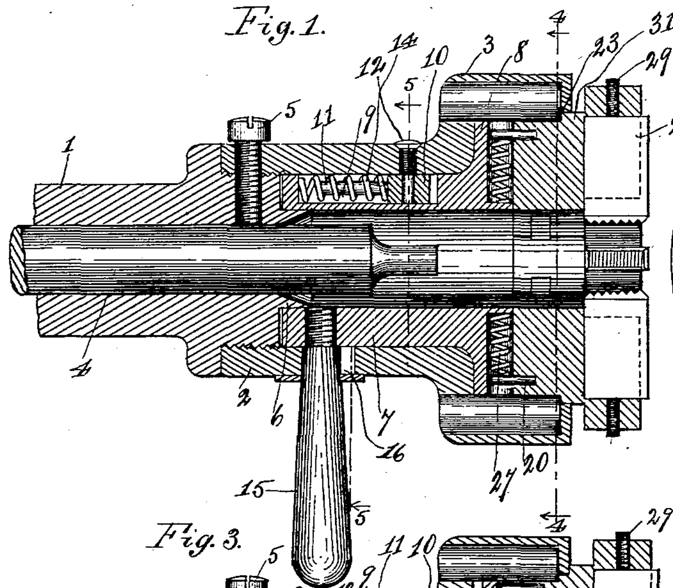


Fig. 2.

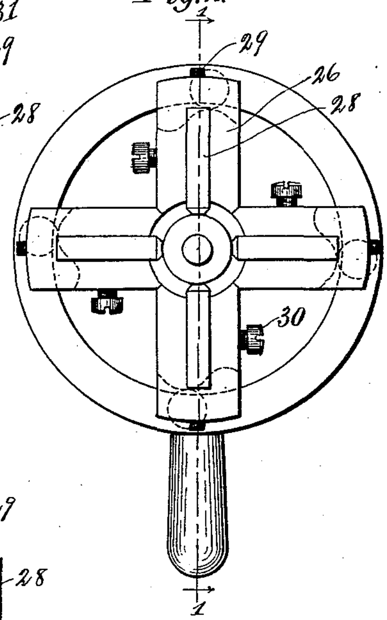


Fig. 3.

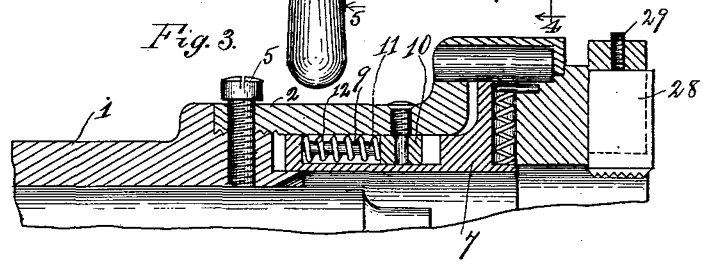


Fig. 4.

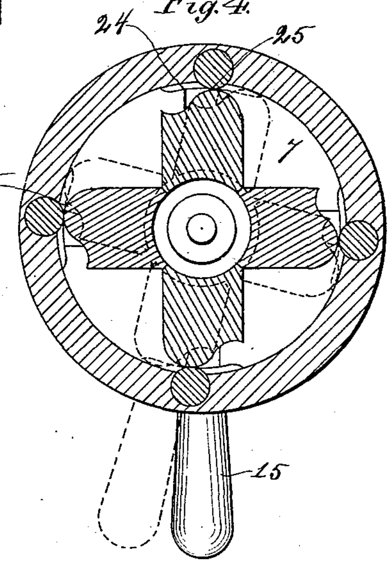
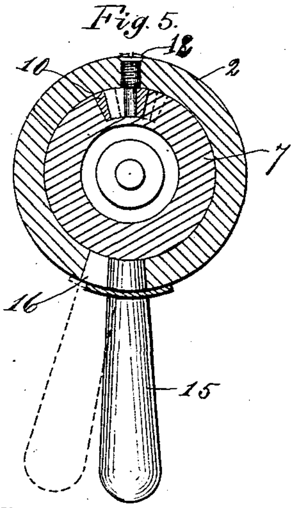


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 6.

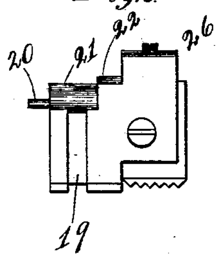


Fig. 7.

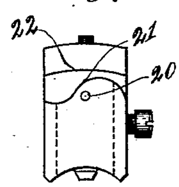


Fig. 8.

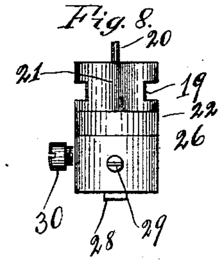


Fig. 9.

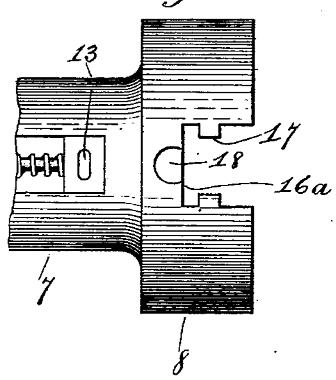
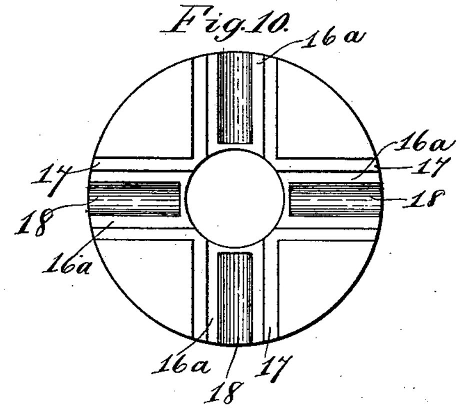


Fig. 10.



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UNITED STATES PATENT OFFICE.

HERMANN KUPSCH, OF CHICAGO, ILLINOIS.

OPEN DIE-HEAD.

SPECIFICATION forming part of Letters Patent No. 564,700, dated July 28, 1896.

Application filed July 5, 1894. Serial No. 516,593. (No model.)

To all whom it may concern:

Be it known that I, HERMANN KUPSCH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Open Die-Heads; 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.

This invention relates to a novel construction in a die-head for cutting screw-threads on bolts and the like, the object being to provide a die-head so constructed that when the screw-thread is cut to the requisite length the die will be automatically thrown out of engagement with the piece being acted upon, so that the same can be readily removed, and also devices for regulating the extent to which the screw-threads shall be cut.

To this and other useful ends hereinafter to be described my invention consists and in the features of construction and combinations of parts hereinafter fully described, and specifically pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a central longitudinal sectional view of a die-head constructed in accordance with my invention and taken on the line 1 1 of Fig. 2. Fig. 2 is a face view of the same. Fig. 3 is a fragmentary detail view in central longitudinal section, showing the parts in the position they assume after the screw-threads are cut and the dies have been automatically released. Fig. 4 is a vertical transverse section on the line 4 4 of Fig. 1. Fig. 5 is a vertical transverse section taken on the indirect line 5 5 of Fig. 1. Fig. 6 is a side elevation of the die-holder. Fig. 7 is a rear elevation of the die-holder. Fig. 8 is a top plan of the die-holder. Fig. 9 is a top plan of the head for holding the die-holders. Fig. 10 is a front elevation of the same.

Referring now to said drawings, 1 indicates a hollow spindle carrying the die-head and connecting with the lathe. The said spindle is conveniently screw-threaded at its forward end to receive the interiorly-screw-threaded stock 2, which is also hollow and is provided with an enlargement 3 at its open outer end. Located within the spindle 1 is a regulating-pin 4, that extends into the stock 2 and is held in its adjacent position by a set-screw 5, passing through the rear end of the stock 2 and forward end of the spindle 1. The said spindle 1 is provided at its forward end and around the opening therein with a flange 6, which, in conjunction with the stock 2, forms a guide for the rear end of the head 7. The said head 7 fits nicely within the stock 2 and is provided at its forward end with an outwardly-extending flange 8, that fits within the enlargement 3 of the stock. The said head is shorter than the stock, that is to say, when its rear end encounters the forward end of the spindle 1 its forward end is located back of the forward end of the stock, but the said head can slide as well as turn to a limited extent with relation to the stock, and this extent of movement is controlled in the following manner: At its upper side the rear portion, or the part located within the small portion of the stock, is provided with a longitudinal recess, as shown at 9, and within the forward end of this recess is located a block 10, carrying a rearwardly-extending pin 11, and around this pin and bearing at its opposite ends against the block 10 and the rear wall of the recess 9 is a spring 12. The said block 10 is provided with a transverse slot 13, that receives a pin 14, rigid with the stock. In this way it will be seen that the block cannot move longitudinally with relation to the stock, but can rotate to a certain extent with relation thereto, by reason of the slot 13, in which the pin is located. In this way it will be seen that the head 7 can be moved a little distance forward against the tension of the spring 12, while it can rotate to the extent of the length of the slot 13 under the torsional strain incident to screw-threading, and also under control of the handle 15. This handle 15 passes through an opening 16 in the stock and is rigidly connected with the rear end portion of the head 7. The said opening 16 in the stock is made large enough to permit the handle to move longitudinally and transversely to the extent of movement of the head, and it will be noted that the spring 12 constantly exerts a tension to hold the head 7 at the rearward limit of its movement. The said head 8 is hollow and is provided at its enlarged end 8 and in its front face with four sockets 16^a to receive the die-holders.

These sockets 16^a are cut diametrically extending from the opening through the center of the head through its periphery, and these sockets 16^a are also provided with guides 17 on their side walls to engage grooves in the die-holders. In the rear wall of each of these sockets and extending from the periphery to to a point near the opening of the center of the head are pockets 18.

The die-holders are shown in detail in Figs. 6, 7, and 8, and consist of a block having straight sides to fit within the sockets 16^a, said sides being provided with grooves 19 to receive the guides 17 of these sockets. At the rear ends of these blocks or die-holders is a pin 20 to enter the pockets 18 of the head, and the rear end portions of the die-holders are curved to form a cam-surface 21, while just forward of the cam-surface 21 is a face 22, curved to conform to the curvature of the interior forward end of the stock, where it is enlarged. The outer end portion 23 of the enlargement 3 of the stock is a little greater in diameter than the rear portion of said enlargement, corresponding to the distance between the high part of the cam-face 21 and the curved surface 22 of the die-holder. The interior face of the contracted portion of the enlargement 3 of the stock is provided with projections disposed to correspond with the die-holders, and the exterior face of the flange 8 of the head is notched, as at 24, at intervals to correspond with these projections 25 of the stock, which conveniently consist of pins driven into openings in the enlargement 3 of the stock. These notches 24 permit a limited movement on the part of the head, as shown in dotted lines in Fig. 4. The die-holders 26, it will be noted, can slide diametrically within the sockets 16^a of the head and are limited by stops, one of which consists of a spring 27, located within the pocket 18 and engaging the pin 20 of the die-holder, said spring exerting a tension to press said die-holder outwardly, while the face 23 of the stock and the stop 25 serve to limit the outward limit of said die-holder. The die-holders 26 carry the dies 28 in a familiar manner, said dies being held in position by set-screws 29 and 30.

The parts being constructed and arranged as described, the operation of my die-head is as follows: We will assume that the parts of the die-head stand in the position shown in Figs. 1 and 2, and that the end of the bolt to be screw-threaded is engaged by the dies 28. As the bolt is turned and advances the screw-threads will be cut therein by the dies, which are held to their work by reason of the engagement of the outer end of the head with the outer end of the stock. The regulating-pin 4 having been set and secured, it will be noted that when the bolt encounters the end thereof it will be prevented from advancing farther. The bolt now turning and being engaged by the dies 28 will draw the head 7 forward against the tension of the spring 21 until the enlarged end 31 of the head passes beyond the end of the stock. When this point is reached, the springs 27 will press the die-holders outwardly, it being noted that the head stands in the position shown in dotted lines in Fig. 4, by reason of the torsional force exerted by the rotating bolt. In this way the dies are removed by the bolt and the latter can be removed and replaced by another. When it is desired to bring the parts into operative position, the operator turns the head 7 and die-holders 26 so that the projections or pins 25 ride to the high part of the cam 21, and this will bring the die-holders inwardly, so that the enlarged ends 31 thereof can pass within the end of the stock. The head and die-holders are then moved rearwardly by the spring 12 or handle 15, if desired.

I claim as my invention—

1. In a die-head, a stock having a regulating-pin, a longitudinally-movable head rotatably mounted within said stock, devices for turning said head and moving the same longitudinally, radial guides in the end of said head, die-holders in said guides, cam-faces on said die-holders, projections on said stock to encounter said cam-faces to force said die-holders radially inwardly, springs situated between said head and die-holders for forcing said die-holders radially outwardly, and projections on said die-holders adapted to abut against the inner face of said head to keep said die-holders at the inner limit of their movement, substantially as described.

2. In a die-head the combination with a spindle having a regulating-pin, of a hollow stock secured to said spindle and provided with an enlarged end portion 3 and enlarged end 23, said enlarged end portion 3 carrying projections 25, a head 7 fitting within said stock and projecting beyond the end of the same and having a flange 8, a recess 9 in said head, a block 10 located within said recess and provided with a transverse socket 13 to engage a pin 14 upon the stock, a spring located between said block 10 and the rear wall of the recess 9, a handle 15 secured to said head and projecting through an opening 16 in said stock, sockets 16 in the ends of said head, die-holders 26 located within said slots and provided with cam-faces 21 to engage said projections 25, springs 27 for pressing said die-holders outwardly, and an enlarged end 31 upon said die-holders to engage the enlarged face 23 of the stock, substantially as described.

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

HERMANN KUPSCH.

Witnesses:
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HARRY COBB KENNEDY.