(No Model.)

# C. HART.

## DIE STOCK FOR CUTTING SCREW THREADS.

No. 263,402. Patented Aug. 29, 1882.

Fig. 1.

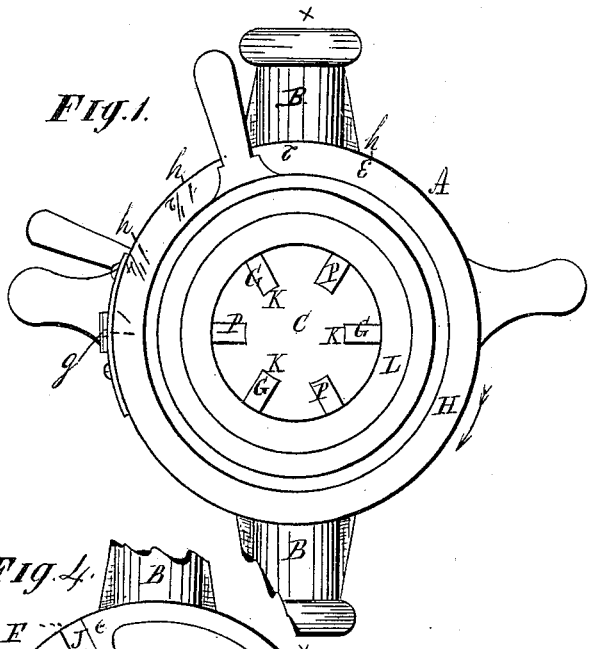


Fig. 2.

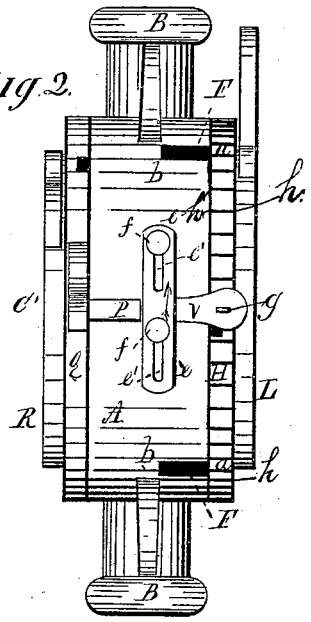


Fig. 4.

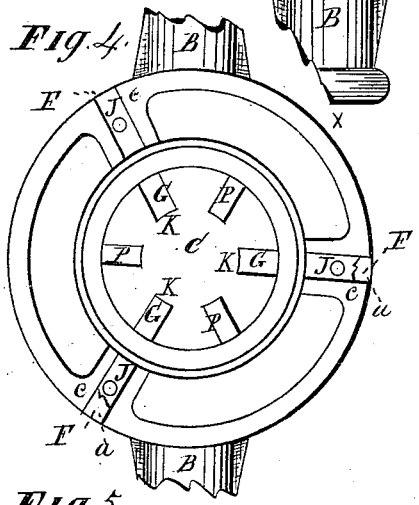


Fig. 6.

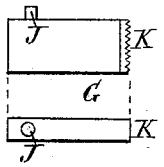


Fig. 3.

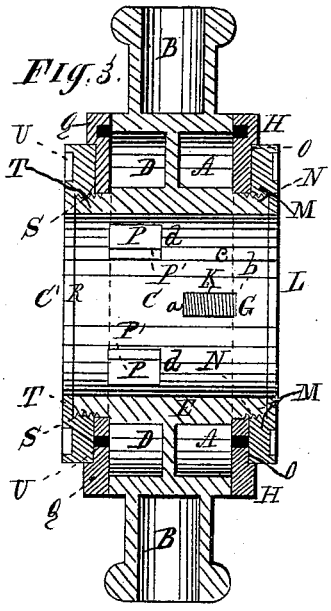
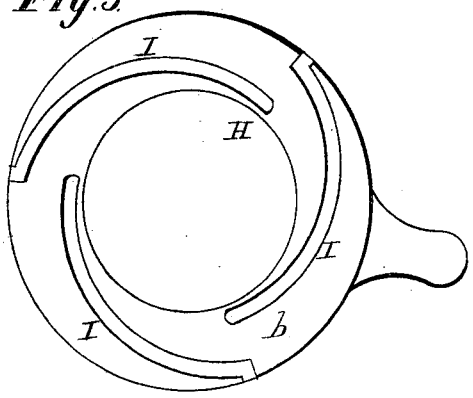


Fig. 5.



Witnesses.

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# UNITED STATES PATENT OFFICE.

CHARLES HART, OF CLEVELAND, OHIO.

## DIE-STOCK FOR CUTTING SCREW-THREADS.

SPECIFICATION forming part of Letters Patent No. 263,402, dated August 29, 1882.

Application filed April 24, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES HART, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Die-Stock for Cutting Screw-Threads; and I do hereby declare that the following is a full, clear, and complete description thereof.

My invention relates to die-stocks for cutting screw-threads, as hereinafter shown and described.

For a more full and complete description of the construction and operation of the said invention, reference will be had to the following specification, and to the annexed drawings, making part of the same.

In the drawings, Figure 1 is a front view; Fig. 2, a side view; Fig. 3, a transverse section in the direction of the line *x x*, Fig. 1. Fig. 4 is a view of the stock with screw-clamp and cam-plate removed. Fig. 5 is a view of the face of the cam-plate, showing the cam-grooves. Fig. 6 is a view of the threading-dies.

Like letters refer to like parts in the several views.

To the shell or case A of the die-stock are connected sockets B, Figs. 1, 2, 3, for the insertion of handles in using the said stock, in the central portion of which is an opening or aperture, C, to receive the rod or pipe on the side C′ for threading. This opening extends through from one side to the other, as seen in Fig. 3. The exterior of the case is connected by a web, D, to the interior shell, E, within which is the said opening C. On one side are formed grooves F, Figs. 2 and 4, in which are made to slide the thread-cutters G, and directly over the cutters is fitted the cam-ring H, in which are curved cam-grooves I, Fig. 5. In these grooves are loosely fitted the pins J, which project from the thread-cutters G, as seen in Figs. 4 and 6. By this arrangement of cutters G, in connection with grooves F and the cam-grooves I in the cam-ring H, the cutters are caused to slide radially in the grooves F on turning the cam-ring in the direction of the arrow, Fig. 1. The grooves I, acting on the pins J, cause the thread-cutters G to move toward the center of the opening C, and on a reverse motion of the cam-ring they slide from the center. In this way the thread-cutters are caused to move in radial lines to and from the center of the opening C, which admits of the said cutters being adjusted to cut a thread on bolts or pipes of various diameters. The thread or screw sections on the ends K of the cutters, as seen in Figs. 3 and 6, cut the thread on the bar or pipe by turning the die or screw-stock in the proper direction.

Directly over the cam-ring is a clamping-ring, L, Figs. 1, 2, 3, the central opening, C, passing through it, as seen in Fig. 1. On the inner edge of said ring is formed an annular rabbet, in which is cut a thread, forming a threaded annular rabbet, M, Fig. 3, which is screwed on the end or collar N of the interior shell, E, the ring L fitting down into an annular groove, O, in the upper side of the cam-ring H, as indicated in Fig. 3. By means of this clamp-ring L, in combination with the threaded rabbet M and the screw-collar N, the ring L is forced down upon the cam-ring H on turning it in the proper direction to engage the face of the screws at M N, and on turning the ring L in an opposite direction the pressure upon the cam-ring H is removed, so that it may be turned in either direction for sliding the screw-cutters G. These cutters are securely held in the desired position, so as to cut a series of bolts and pipes of the same uniform given size, by forcing down the cam-ring H upon the edges of the cutters G, which cutters are clamped between the bottoms *a* of the grooves F and the inside face, *b*, of the cam-ring H, as indicated at *a* and *b*, Figs. 2 and 3. The width of the cutters G is a little greater than the depth of the grooves F, so as to slightly project above the face *c*, as indicated at *b*, and by the dotted line *c*, Fig. 3, to allow the cam-plate to be pressed upon their edges.

For the purpose of holding the screw-stock in position upon the bolt or pipe, and for guiding it in cutting the screws, there are connected with the stock three guide-slides, P, Figs. 1 and 3, which are loosely fitted in grooves P′ in the opposite side of the stock from the grooves F. These slides are provided with pins which are received in spiral grooves in the cam-ring Q, which is essentially the same in construction and in its operation in moving the guide-slides P in radial lines to and from the center of the opening C as that de-

scribed in relation to the cam-ring H and the thread-cutters G. The clamping-ring R is provided with an annular threaded rabbet, S, which is screwed on the threaded collar T, Fig. 3, and loosely fitted into the annular groove U of the cam-ring. On turning the cam-ring Q the guide-slides P are adjusted to the diameter of the bolt or pipe to be threaded, and are firmly held in such position by turning down the clamping-ring R on the cam-ring Q, which rests upon outer edges of the guide-slides, which are by this means clamped between the bases *d* of the grooves P′ and the inner face of the said cam-ring Q.

The construction and operation of the described mechanism for setting and moving the guide-slides P are essentially the same as that herein set forth for the screw-cutter G. The slides P are not threaded, as are the cutters G. When the guide-slides are once set for a pipe or bolt no further movement of the guides is required so long as the same uniform size of the bar or pipe is used for threading. After the thread is cut the cutters G are withdrawn from the bolt or pipe to allow of the screw-stock being readily removed without unscrewing from the bolt, as is the case in solid dies.

Connected to the side of the stock is a spring-gage, V, in the arms *e* of which are slots *e′*, and through which pass the thumb-screws *f f*, Fig. 1, for the purpose of attaching the adjustable gage to the stock and to admit of its being moved in the line of the slots. Near the free end of the gage is a pin, *g*, which catches into the stops or notches *h*, Fig. 2, which stops are used in connection with the figures 1, 1¼, 1½, 2, and 3, marked in the cam-ring, as seen in Fig. 1. The purpose of this arrangement is for gaging or determining the size or diameter of the screw to be cut, so that it will be at all times uniform, and in case of the screw-cutters wearing away the gage is moved correspondingly in the direction of the arrow, Fig. 2, which is readily done by means of the slots *e′ e′* on loosening the set-screws *f f*, which will cause more turn to be given to the cam-plate, thereby causing the screw-cutters to be moved nearer to the center of the aperture C to contract the diameter described by the worn-off cutters.

In case of new cutters being so adjusted in the die-stock as to cut a one-inch screw in diameter, then the cam-plate is turned in the direction of the arrow, Fig. 1, to bring the desired stop *h* to the pin *g*. This stops the further movement of the cam-plate by the engagement of the stop *h* and pin *g*, at which point the cutters will cut a one-inch-diameter bolt, and for one and one-fourth, one and one-half, and so on, as marked on the cam-plate. The stops or notches *h* at these points on the periphery of said plate are turned to engage the pin *g*, which sets the screw-cutters to cut one and one-fourth or one and one-half, &c., as the case may be. As the cutters wear away in use the diameter of the cutters becomes enlarged, and consequently the diameter of the screw. To reduce this enlarged diameter the cutters must be moved toward the center in proportion as they wear away. This is obtained by moving the spring-gage in the direction of the arrow, Fig. 2, along the line of the slots *e′ e′*, which would cause the cam-plate to be turned farther around in the direction of the arrow, Fig. 1, to allow the desired stop *h* and pin *g* to engage. This additional movement of the cam-plate will cause the screw-cutters to be moved nearer to the center—that is, to the original position or diameter for a given size screw. By this means it will be seen that the same uniform diameter can be given to the screws on moving the screw-cutters toward the center in proportion as they are worn away in use. The engagement of the stop *h* with the pin *g* can be adjusted, as before stated, to insure a uniformity in the threads. When the screw is cut upon the bolt or pipe (which is entered in the opening on the side C′) the screw-cutters are drawn back sufficiently to allow the screw-stock to be removed. The cutters are then again moved inwardly by turning the cam-plate to the engagement of the stop and pin *g* at some one of the figures in the index or scale of sizes marked on the cam-ring, as seen in Fig. 1, according to the desired diameter of the screw.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In screw-stocks, the adjustable spring-gage V, provided with pin *g* and arms *e e*, connected to said stock by means of screws inserted through slotted openings *e′ e′* in said arms, in combination with the cam-ring H, having a figured index or scale of sizes marked thereon, and a series of peripheral notches or stops, *h*, substantially as and for the purpose set forth.

2. In a screw-stock, the combination of the cam-ring H, having a series of peripheral notches or stops, *h h*, clamping-ring L, and gage V, provided with slotted arms *e e* and spring-pin *g*, substantially as and for the purpose set forth.

3. The cam-ring H, provided with an index or scale of sizes and a series of stops, *h*, in combination with the adjustable spring-gage V, arranged in relation to the die-stock and screw-cutters, substantially as and for the purpose described.

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

CHARLES HART.

Witnesses:
CHAS. RICHARDS,
J. H. BURRIDGE.