(No Model.)

W. HARGRAVE.

SCREW CUTTING IMPLEMENT.

No. 293,868. Patented Feb. 19, 1884.

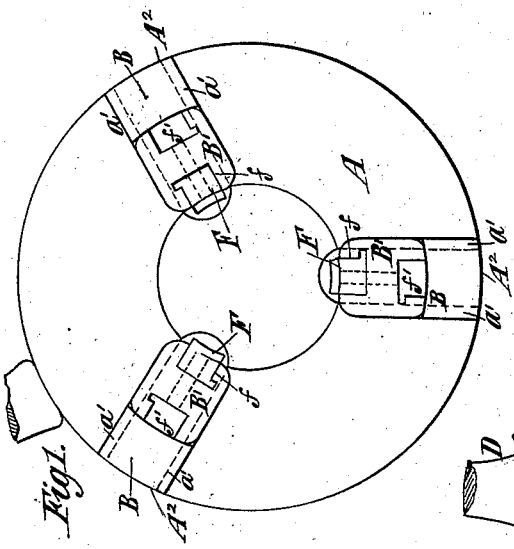

Fig. 1.

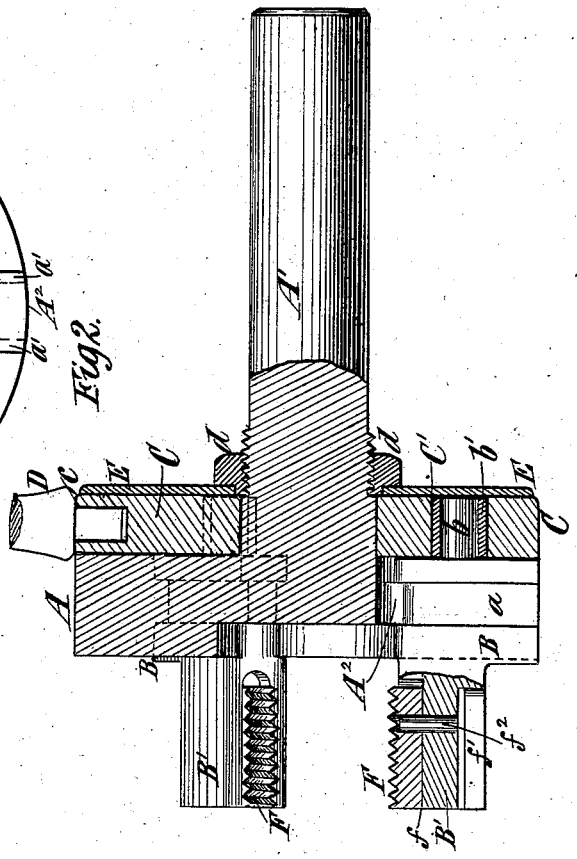

Fig. 2.

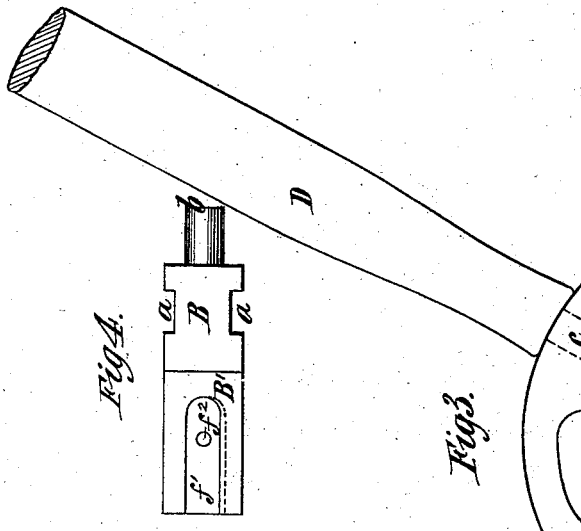

Fig. 4.

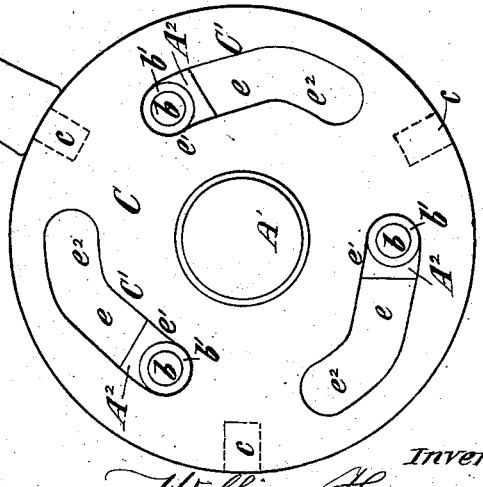

Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM HARGRAVE, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO JAMES GREGORY, OF SAME PLACE.

SCREW-CUTTING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 293,868, dated February 19, 1884.

Application filed October 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HARGRAVE, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Screw-Cutting Implements, of which the following is a specification.

My invention is applicable to implements which are designed to be held stationary in a monitor-head or other suitable support while the work is rotated, or to be fixed on the live-spindle of a lathe or screw-cutting machine while the work is held against rotating; and it relates to that class of screw-cutting implements in which the inside or outside chasers are capable of contraction or expansion to free them from the thread after it is cut.

My invention consists in certain novel features in the construction of the several parts, and in the manner of combining them, as hereinafter particularly described, and set forth in the claims, whereby I provide a durable and simple implement which will cut threads upon shafts or tubes of much greater diameter than can be threaded with implements of equal size now in use.

In the accompanying drawings, Figure 1 is a face view of my improved implement. Fig. 2 is a longitudinal section of the implement. Fig. 3 is a back view thereof, with the shield which covers the back of the implement removed; and Fig. 4 is a detail view of one of the jaws which carry the chasers detached from other parts.

Similar letters of reference designate corresponding parts in all the figures.

A designates the body or stock piece of the implement, which, in this example of my invention, has a rearwardly-projecting shank or arm, A′, whereby it is supported when in use. The body here shown is constructed to carry three chasers; but it might have two or any number greater than two.

If the implement were designed to screw upon the end of a lathe-spindle, the body A would be provided at the back with a hub or socket having a female screw-thread.

In the body A are formed radial channels or slots A^2, each of which receives a sliding block or piece, B, which is held therein against movement in the direction of the axis of the body by means of grooves *a* in the block or piece fitting ribs *a′* on the body. The channels or slots and blocks or pieces might be otherwise rabbeted or dovetailed for a like purpose. Each block or piece B has a forward extension, B′, which projects beyond the front face of the body A, and a stud or projection, *b*, which projects beyond the rear face of the body, as best shown in Fig. 2. The forward extensions, B′, are provided with chasers, while the rearward projections or studs, *b*, are shown as provided with rollers *b′*, and enter slots C′ in a disk or plate, C, which fits against the back face of the body A, as best shown in Fig. 2. The disk or plate C is fitted upon the portion of the shank or spindle A′ immediately adjacent to the body A, and may be turned relatively to the body by means of a bar or pin, D, inserted in any one of a number of sockets, *c*, in the said disk or plate.

Behind the disk or plate C is a shield or guard-plate, E, which covers the slots C′, and the disk or plate C and shield or guard-plate are held in place by a nut, *d*, screwed upon the shank or spindle A′. Each slot C′ comprises a cam-like or eccentric portion, *e*, a concentric portion, *e′*, at the inner end thereof, and a concentric portion, e^2, at the outer end thereof, as shown in Fig. 3, and when the plate or disk C is adjusted or turned into the position shown in Fig. 3 the rollers and studs *b b′* and the blocks B will be held in their most contracted position, while, when the disk or plate is turned so that the rollers and studs will be in the outer concentric portions of the slots, the blocks B will be held in their most expanded position.

When the implement is at work, there will be an outward pressure on the blocks B if a male thread is cut, or an inward pressure on the blocks if a female thread is being cut; and it will be readily understood that if at such time the rollers *b′* were in the eccentric or cam-like portions *e* of the slots C′ such pressure might have a tendency to turn the disk or plate C, and thus relieve the blocks B and their chasers. In such case a lock or catch would be needed to guard against the turning of the disk or plate. In my implement, however, the rollers *b′*, when the implement is in use, are always in the concentric portions *e′* or e^2

of the slots, and hence any outward or inward pressure will be directly radial to such concentric portions, and will have no tendency to turn the disk or plate. No lock or catch is therefore needed to hold my disk or plate against turning.

F designates the chasers, which might be formed upon the forward extensions, B′, of the blocks or sliding pieces B, but which, as here shown, are made separate therefrom and are detachably secured thereto. In the present example of my invention the forward extensions, B′, have formed in their inner and outer sides rabbeted grooves or slideways *f f′*, and the chasers F are tongued to fit the rabbets, and inserted into said grooves or slideways. Said chasers are held against movement lengthwise by pins f^2, inserted through them, as best shown in Fig. 2. As here shown, the chasers F are fitted in the slideways or grooves *f* in order to adapt them for cutting an outside or male thread; but chasers may be inserted in the slideways *f′* for cutting an inside or female thread, and different chasers may be inserted in either of the slideways *f* or *f′*. The pins f^2 may be driven in and out from the side of the extension B′ opposite the chasers, and hence there is no danger of mutilating the thread of the chasers. Set-screws may be applied to the chasers, instead of the pins f^2.

Many advantages result from arranging the chasers upon forward extensions of the sliding blocks and entirely forward of and outside the body A. The implement is thus adapted for cutting inside or female threads on articles, which could not be done if the chasers were arranged entirely or almost entirely within the body. Such construction also obviates the necessity of forming in the body a hole large enough to receive the largest article upon which an outside or male thread is to be cut, and enables a much larger male thread to be cut with an implement of a given size than would be possible if the article on which it is cut was necessarily received while cutting in a hole in the body.

The arrangement of the disk or plate C at the back of the body is advantageous, because it then supports the sliding blocks B, through their studs *b*, on the side of the slideways A^2 opposite the chasers, and tends to prevent canting of the chasers and blocks. It also enables the whole implement to be made smaller, for if the disk or plate C were arranged at the front of the body it would have to have a hole or aperture through it sufficiently large to receive the forward extensions, B′, and chasers F, and the studs *b* and slots C′ would be outside of or beyond the said hole or aperture.

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

1. The combination, with the body or stock piece, constructed with radial slots, of sliding blocks fitting in said slots, having projecting beyond the face of said body forward extensions provided with chasers, and having rearwardly-projecting studs extending beyond the back of said body, and a disk or plate at the back of the body, having cam-like or eccentric slots receiving said studs, substantially as and for the purpose described.

2. The combination, with the body or stock piece, constructed with radial slots, of sliding blocks fitting in said slots, and having forward extensions projecting beyond the face of the body and provided with chasers, and rearwardly-projecting studs extending beyond the back of the body, and a disk or plate at the back of said body, having cam-like or eccentric slots, which receive said studs, and are provided at the ends with concentric portions, substantially as and for the purpose described.

3. The combination, with the body A, having radial slots A^2, of the sliding blocks B, having forward extensions, B′, with chasers, and rearwardly-projecting studs *b*, the disk or plate C at the back of said body, having cam-like or eccentric slots C′, and the shield or guard-plate E, all substantially as described.

4. The combination, with the body A, having radial slots A^2, and the shank or spindle A′, of the sliding blocks B, having chasers and rearwardly-projecting studs *b*, the disk or plate C at the back of the body, having cam-like or eccentric slots C′, the shield or guard-plate E, and the nut *d*, all substantially as described.

5. The combination of the sliding blocks B, constructed with forward extensions, B′, in which are slideways *f*, the chasers F, and pins f^2, for detachably securing the chasers in said slideways, substantially as described.

6. The combination of the sliding blocks B, constructed with forward extensions, B′, in the outer and inner sides of which are slideways *f f′*, the chasers F, and the pins f^2, all substantially as described.

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