(Model.)

2 Sheets—Sheet 1.

E. JORDAN.

Sheet Metal Screw Machine.

No. 230,875. Patented Aug. 10, 1880.

Fig. 1.

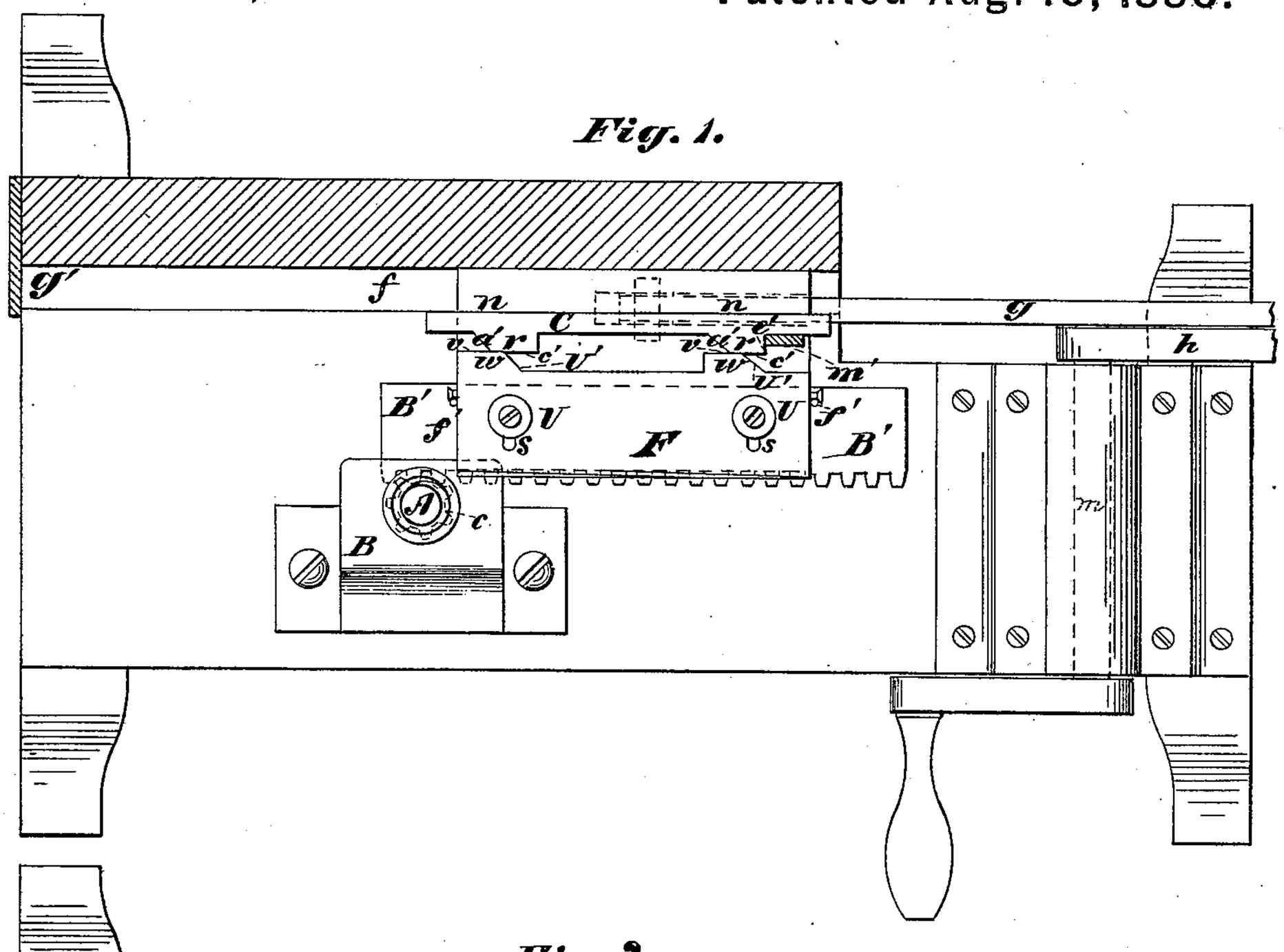
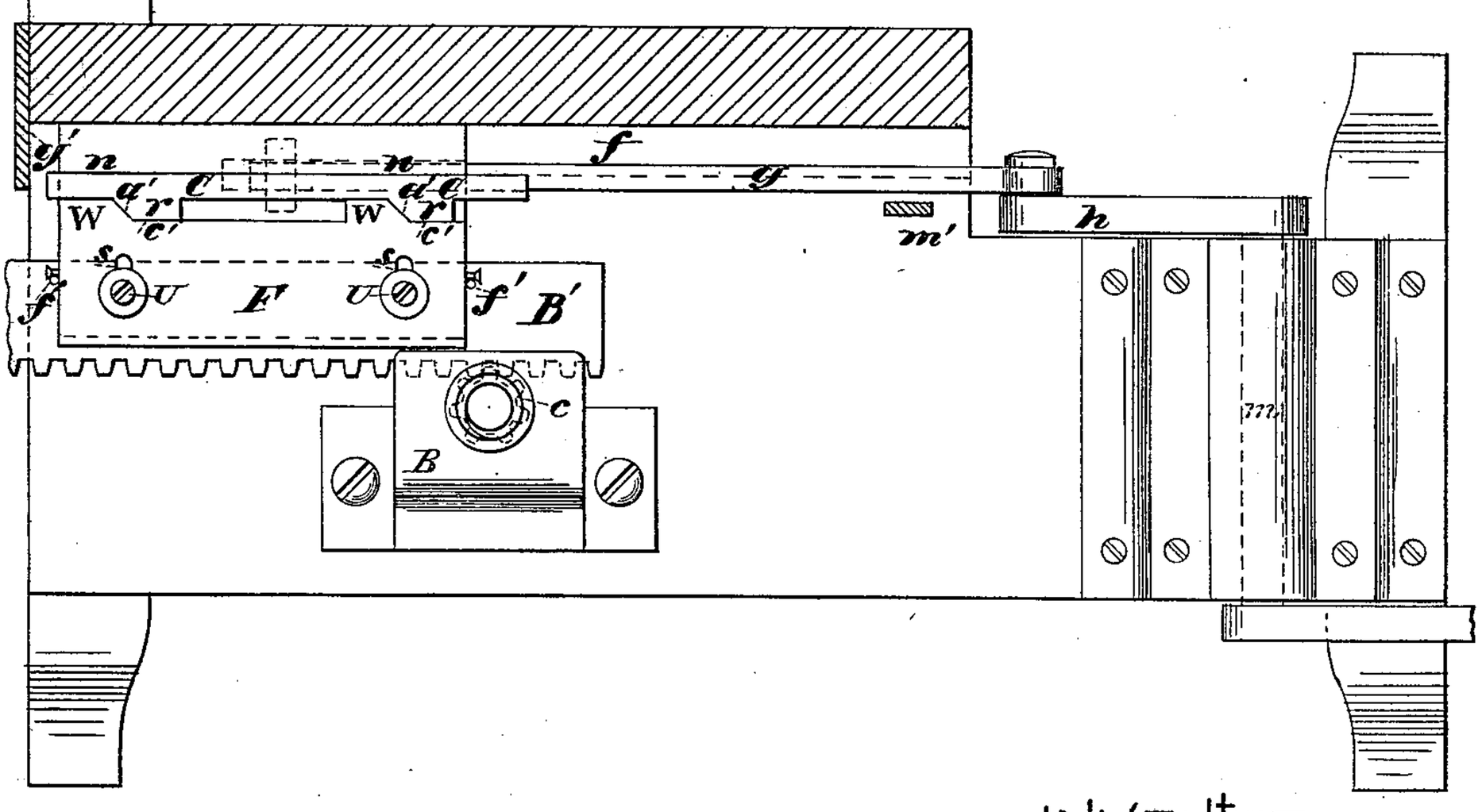


Fig. 2



Witnesses.
H. F. Parker
Chas. H. J. Doxat

Inventor.
Edmund Jordan
per James A Whitney
Atty.

(Model.)

2 Sheets—Sheet 2.

E. JORDAN.

Sheet Metal Screw Machine.

No. 230,875. Patented Aug. 10, 1880.

Fig. 3.

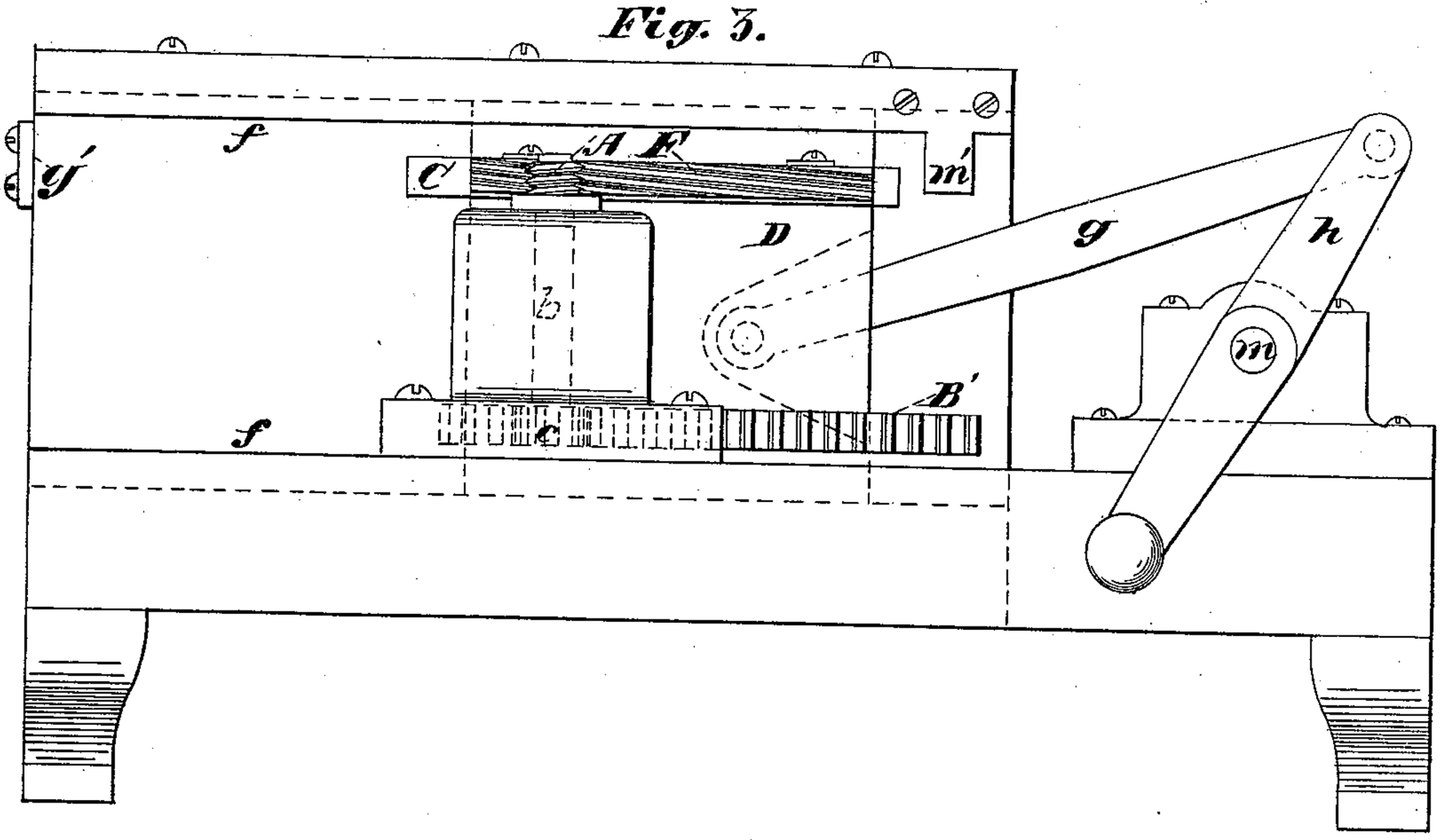
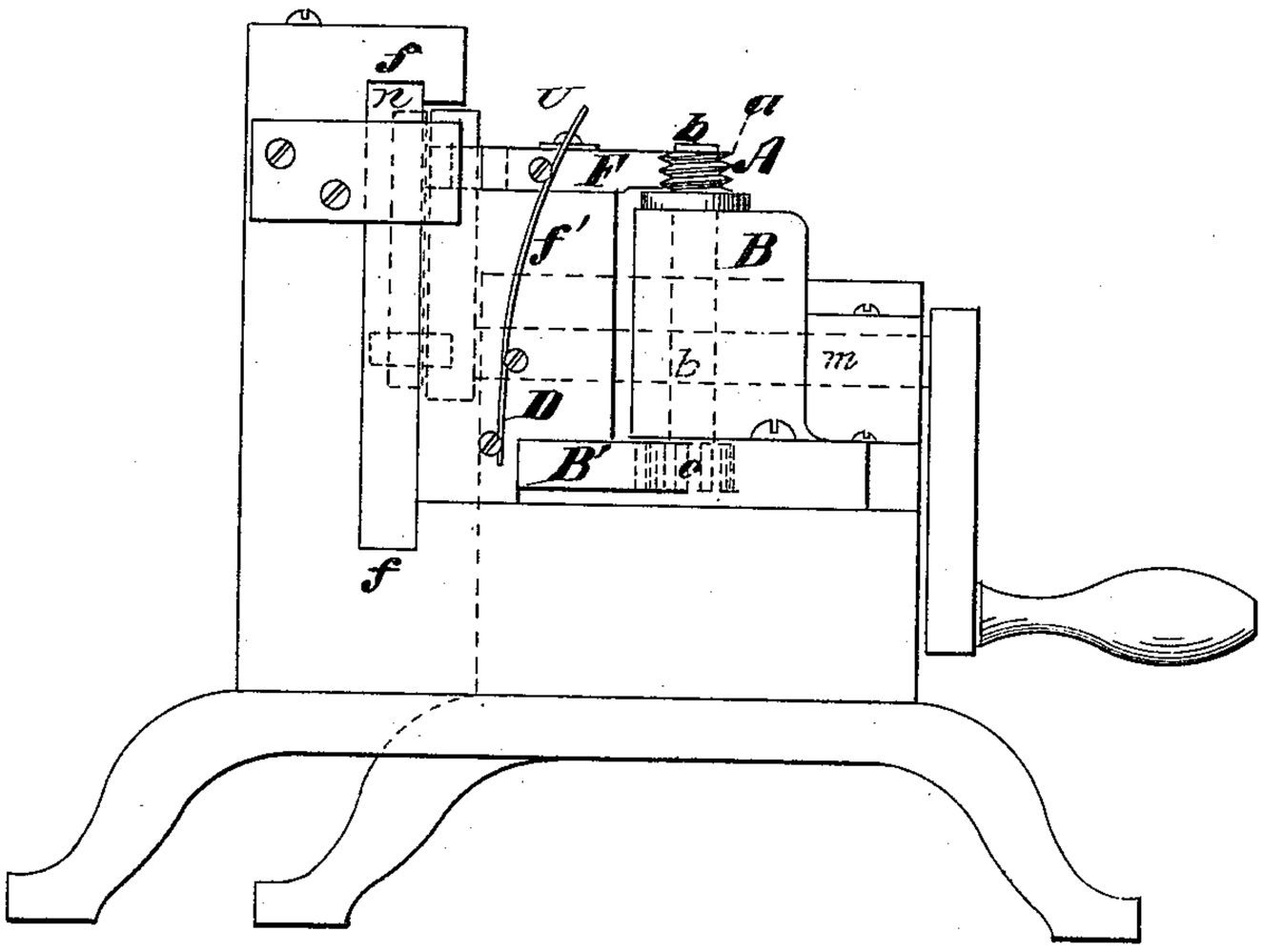


Fig. 4.



Witnesses.
H. F. Parker.
Chas. H. Doxat

Inventor.
Edmund Jordan
per. James A Whitney
Atty.

UNITED STATES PATENT OFFICE.

EDMUND JORDAN, OF BROOKLYN, NEW YORK, ASSIGNOR TO ELIPHALET W. BLISS AND JAMES H. WILLIAMS, OF SAME PLACE.

SHEET-METAL-SCREW MACHINE.

SPECIFICATION forming part of Letters Patent No. 230,875, dated August 10, 1880.

Application filed January 2, 1880.

To all whom it may concern:

Be it known that I, EDMUND JORDAN, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Machinery for Making Sheet-Metal Screws, of which the following is a specification.

This invention is designed for making sheet-metal screws, such, for example, as are frequently used for nozzles and caps of oil-cans and the like. The invention is designed to insure greater excellence and cheapness in the manufacture of such articles than have hitherto been attained, and it comprises the several novel combinations of parts hereinafter specified.

Figure 1 is a horizontal plan and partial section, representing a machine embracing my said invention. Fig. 2 is a similar view, but showing the parts in a somewhat different position. Fig. 3 is a front view, and Fig. 4 an end view, of the said machine.

A is the circular die, of a size and shape corresponding to the interior of the screw-threaded article to be shaped thereon. Said die, being of circular form, is provided with the screw-threads *a*, as more fully shown in Figs. 3 and 4. This circular die A is secured upon the upper end of a shaft, *b*, which works in a suitable fixed bearing, B, and which has upon its lower end a spur-pinion, as shown in dotted lines at *c* in Figs. 3 and 4.

D is a sliding bed-plate or carrier, which moves in guides *f* for and in the frame of the machine. Upon the lower part of this carrier D is attached a rack, B′, which gears into the pinion *c*. The carrier D receives a reciprocating motion in the guides *f* by means of a pitman, *g*, and crank *h*. The shaft *m* of the latter may receive its rotary motion from a pulley or other suitable appliance. Extending up from the back edge of the carrier D is a straight flange or shoulder, *n*, against which bears the rearmost side of a bar, C, upon the front side of which are formed the projections *r*, each presenting an inclined plane, *a′*, and also a flat surface, *c′*.

F is the reciprocating die, the front edge of which is formed with inclined threads, (more fully represented in Fig. 3,) and which in shape, slant, and pitch correspond to the shape, slant, and pitch of the spiral thread on the circular die A. This die F rests upon the flat upper surface of the carrier D, and has formed in it vertical transverse slots *s*. Broad-headed bolts U are passed through these slots and secured in the carrier D in such a manner as to prevent the die F from moving longitudinally upon the said carrier D, and yet at the same time to permit a lateral movement of the said die—that is to say, in a direction to or from the circular die A. Upon the rearmost edge of the said die F are projections *w*, each provided with an inclined plane, U′, and a flat surface, *v*. Springs *f′* are applied to compress the said die F back toward the rearmost edge of the carrier D. It is manifest that by changing the position of the inclined planes of the said die F with reference to the inclined planes of the bar C the said die F will be pushed forward toward the circular die A, or permitted to draw back away from the said die A, according as the parts may be in the position shown in Fig. 1, or in that represented in Fig. 2. At one end of the guide *f* is a stop, *g′*, and at the opposite end thereof is another stop, *m′*.

In the operation of the machine the circular sheet-metal blank upon which the screw-thread is to be formed, and which is made in the usual or any suitable manner, is placed upon the circular die A, the straight reciprocating die being in a position away from the said die A—as, for example, at the end of its stroke, as represented in Fig. 1. The shaft *m*, being then rotated, as hereinbefore explained, operates, through the crank *h* and pitman *g*, to give a rectilinear motion to the carrier D, the die F having being brought to a forward position by the inclined planes *a′ c′*, as represented in said Fig. 1. The just mentioned movement of the carrier and the die F thereon brings the latter past the circular die A, with the inclined threads of the die F meshing and coincident with the spiral threads of the die A, as the latter is rotated. By the movement of the carrier, communicated through the rack B′ and pinion *c*, the circular die A is rotated one or more times, according to the length of the die F, during one rectilinear movement of the said die F. By this means the circular blank

has its circumference compressed between the two dies F A, and shaped into a spiral thread of which the interior is shaped by the die A and the exterior by the die F. At the end of this stroke of the carrier D and the die F, carried thereby, the end of the bar C strikes against the fixed stop g', so that the studs or projections r on said bar C are pushed off from the corresponding projections w on the back of the die F, whereupon the springs f' throw back the die F away from the line of its previous travel, so that on the return movement of the carrier D and the aforesaid die F thereon, the said die F passes the die A at some little distance therefrom. During this reversed movement of the die F the operator grasps the completed sheet-metal screw as it rests upon the die A, and inasmuch as the rotary motion of the die A is reversed by the reversed movement of the carrier D, it follows that the threaded sheet-metal screw is rapidly unscrewed or turned off from the die A into the hand of the operator. When this reversed stroke of the carrier D has nearly reached its limit the opposite end of the bar C, or, in lieu thereof, a shoulder, e', strikes against the fixed stop m', whereupon the slightly continued movement of the carrier D causes the inclined planes U' a' to throw forward the die F in the position represented in Fig. 1, and requisite to the operation of forming the thread upon the sheet-metal blank, as hereinbefore explained, there being allowed, however, when the die F is in this position, a sufficient space between the end of the die F and the circumference of the die A to permit the placing of another blank upon the die A, whereupon the operation of forming a screw-thread is repeated.

What I claim as my invention is—

1. In an apparatus for making sheet-metal screws, the combination of the spirally-threaded circular die A, the reciprocating die F, having slanting threads coincident with those of the circular die aforesaid, and mechanism, substantially as described, for causing the two dies to move in unison, all substantially as and for the purpose herein set forth.

2. The combination of the circular spirally-threaded die A, having the pinion c attached to its shaft, the reciprocating die F, having slanting threads coincident with the spiral threads of the die A, and the carrier D, having the rack B', all substantially as and for the purpose herein set forth.

3. The combination of the reciprocating die F, having the slanting threads and inclined planes U', the bar C, having the inclined planes a', the stops g' m', and the spirally-threaded circular die A, all substantially as and for the purpose herein set forth.

4. The combination of the springs f' with the reciprocating die F, having inclined planes c' and slots s, the bar C, having inclined planes a', the stops g' m', the carrier D, and the circular spirally-threaded die A, all substantially as and for the purpose herein set forth.

EDMUND JORDAN.

Witnesses:

CHAS. H. DOXAT,

H. F. PARKER.