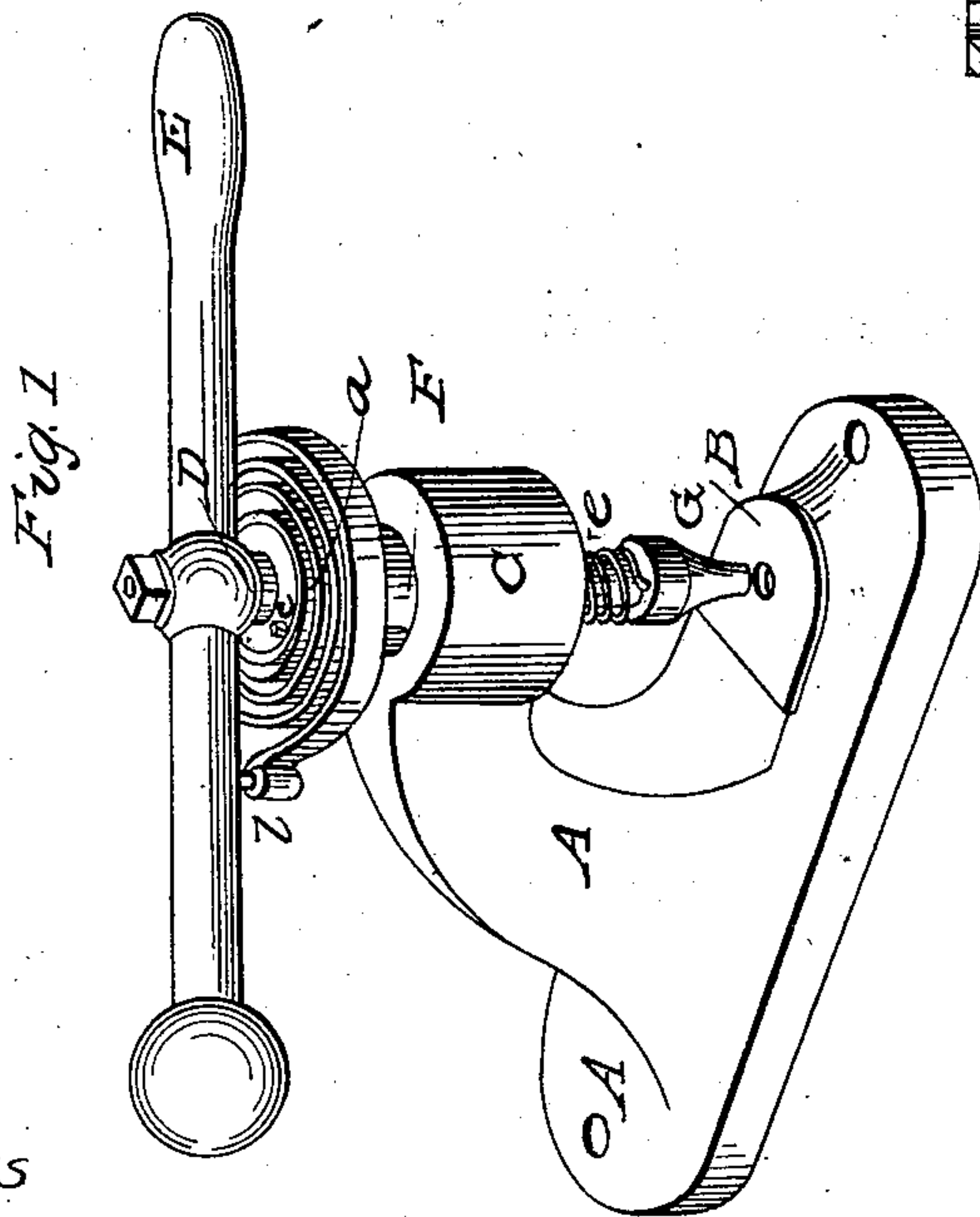
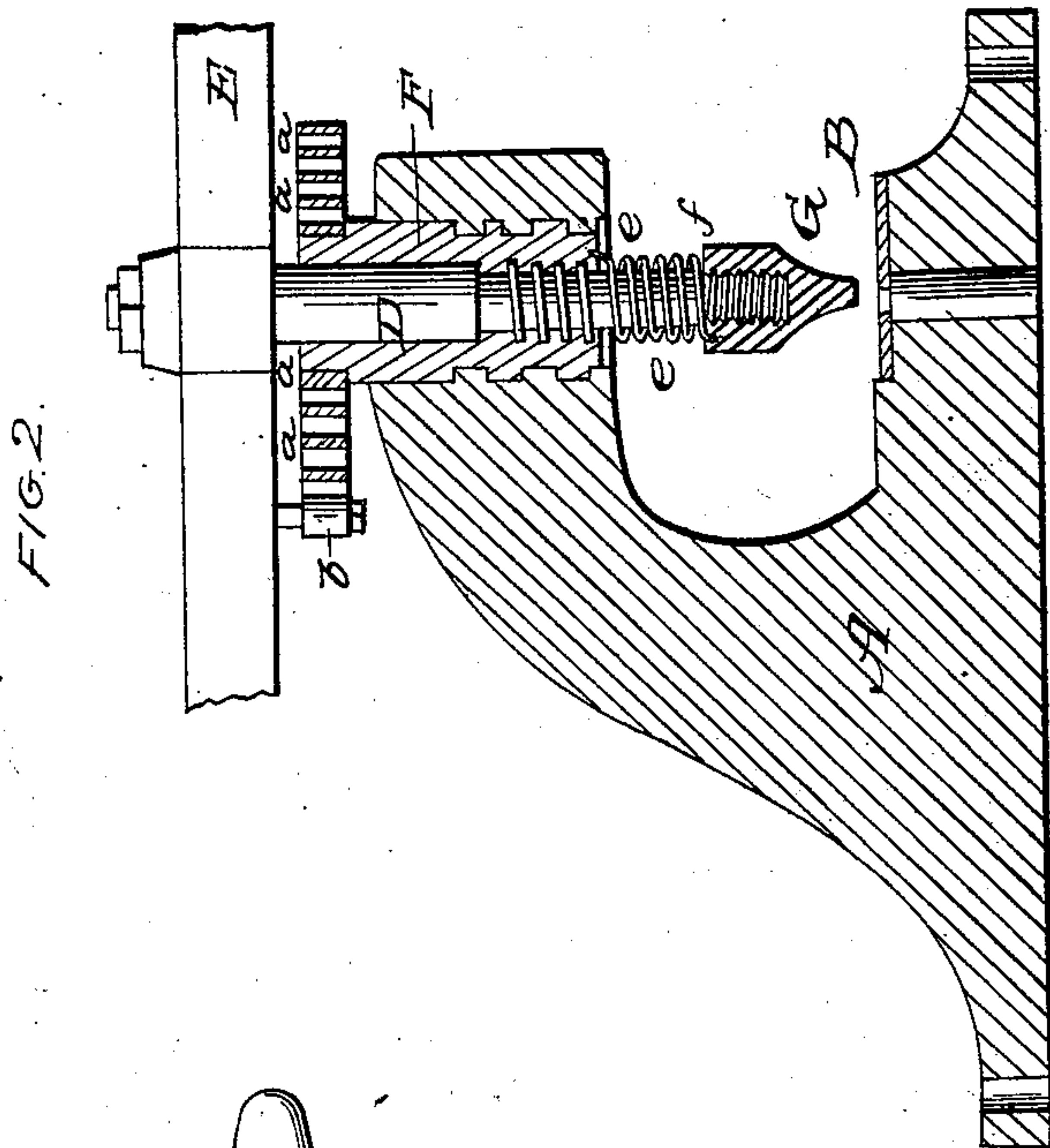


S. P. RUGGLES.

Metal Punch.

No. 23,864.

Patented May 3, 1859.



WITNESSES

G. H. Smith
Thomas Ruggles

INVENTOR

Stephen P. Ruggles

UNITED STATES PATENT OFFICE.

STEPHEN P. RUGGLES, OF BOSTON, MASSACHUSETTS.

PUNCHING AND STAMPING PRESS.

Specification of Letters Patent No. 23,864, dated May 3, 1859.

To all whom it may concern:

Be it known that I, STEPHEN P. RUGGLES, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and
5 useful Improvement in Presses for Punching, Stamping, &c.; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a
10 part of this specification, and which show the principle of operation embraced in the invention, and in which drawings—

Figure 1 represents a perspective view of a punching press, and Fig. 2 represents a
15 section through the same.

Similar letters of reference where they occur in the separate figures denote like parts in both figures.

My invention consists in the use of two
20 screws—a fine threaded one, and a coarse threaded one, so combined with a lever or its equivalent for operating a press, as that when the coarser screw runs out of action, the finer one will come into action, and vice
25 versa, by the same lever or motive power, the object being to avail myself of a coarse screw for speed, or for obtaining a greater distance between the punch or die, and the bed for the insertion of the material to be
30 acted upon, and a fine screw for power when a greater power is required to drive the punch or die through or against the material to be acted upon.

To enable those skilled in the art to make
35 and apply my invention, I will proceed to describe the same with reference to the drawing.

A, represents a frame, on which an anvil, bed, or counter die B, is placed. Through
40 the hub or enlarged portion C, of the frame, passes the die or punch stock D, which may have attached to it a lever E, for operating it, though any other known mechanical power may be used instead of a lever.

45 A coarse-threaded sleeve or boss F, runs upon a similarly coarse female screw cut in the hub C, and the lever E, is connected to this sleeve or boss, by a stout helical spring a, fastened to the lever at b, and to the sleeve
50 at c, said lever being also, as above stated, connected to the punch stock D. On the inside of the boss or sleeve F, there is cut a fine screw, in which the fine screw on the punch stock runs. The action of these
55 screws will be explained in the operation of the press. On the lower end of the punch

stock D, may be screwed or otherwise attached, the punch, die (G) or whatever may be used, and a helical spring e, may be connected with it, and with the sleeve or boss F, 60 as more particularly shown in Fig. 2. The operation and effect of this mechanism is as follows: Suppose a plate of metal were to be punched, it is placed on the anvil or bed B, and the lever E, is turned so as to bring 65 the punch down upon it, which is done by very little motion of the lever, inasmuch as it is the coarse screw that starts and operates first, and which screw from its coarseness has speed, but not power. When the 70 punch is resisted by the metal to an extent greater than the resistance of the heavy coiled spring a, then the coarse screw F, stops, and as the lever E continues to move the punch stock or fine screw D, which has 75 great power with slow motion, commences to operate, winding up the coiled spring a, and drives the punch, or against the material to be acted upon. The action of these screws in a properly constructed machine is so perfect 80 that it is impossible to detect when the coarse screw ceases to act and the finer one begins to act, the power of one so evenly runs into that of the other. By this arrangement of screws a greater space be- 85 tween the anvil, block, or counter die, and the movable part of the press is obtained, by less motion of the lever, than by any other mechanism known to me, where the same amount of power is expended or used. 90

It may be desirable sometimes to give the punch more turns than it would receive from its stock or the screws simply as herein represented. To effect this, gearing may be in- 95 terposed between the lever and screws so as to multiply the motion.

The purpose of the spring e, is to connect the punch or die G, to the punch stock D, so as to make said die G revolve with said punch stock, until the die is resisted by the 100 material to be acted on to an extent greater than the power of the spring e, at which time the die G, stops revolving, and the fine screw f, on the lower end of the punch stock, begins to turn within the punch or die G, 105 and is thus screwed into the punch G, though at a slower speed than it moves through the boss or sleeve F, winding up the spring e, and forcing said punch or die, through or against the material to be acted on. 110

The two screws F, D, may be sufficient for general use, but the addition of the finer

screw *f* gives it greater range of speed and power, and shows that the invention is not restricted to two screws only, nor to screws working one within the other, but may be
5 multiplied to suit the circumstances of the case, or the use of the machine.

Having thus fully described the nature and object of my invention what I claim therein as new and desire to secure by Letters Patent is—
10

So combining, in a press for punching, stamping, &c., a coarse and fine threaded

screw, with the power that drives the press, as that the coarse screw may be in action when speed or motion is required, and the
15 fine screw when power is required, the former ceasing its action, and the latter coming into action according to the resistance against the punch or die substantially as described.

STEPHEN P. RUGGLES.

Witnesses:

S. C. GUILD,

THOMAS RUSSELL.