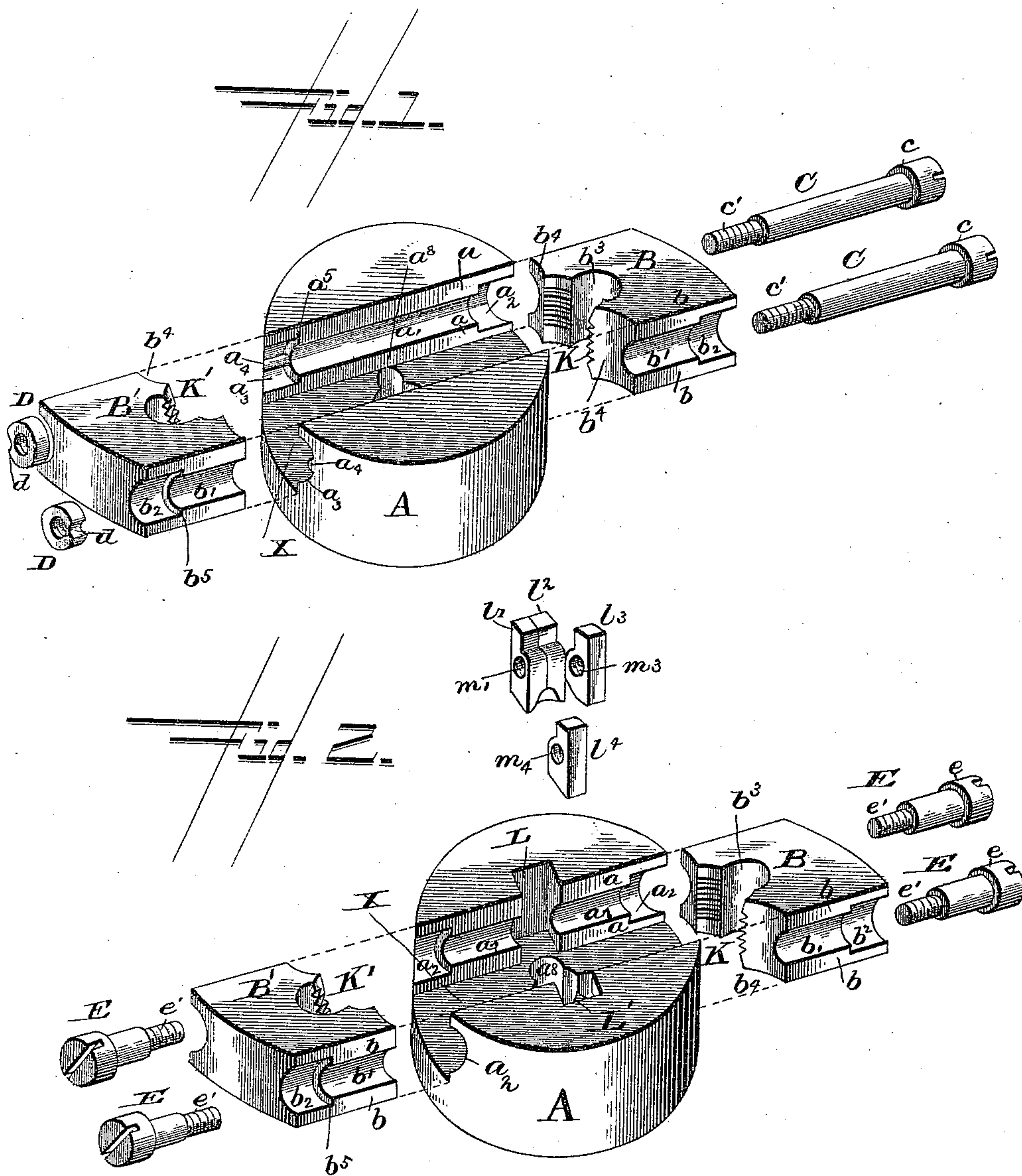


(No Model.)

C. P. RUSSELL.
SCREW CUTTING DIE.

No. 442,828.

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SCREW-CUTTING DIE.

SPECIFICATION forming part of Letters Patent No. 442,828, dated December 16, 1890.

Application filed August 16, 1890. Serial No. 362,206. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. RUSSELL, a citizen of the United States, residing at Greenfield, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Screw-Cutting Dies; 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.

My invention relates to a screw and bolt cutting die, and has for its object the providing of a holder adapted for easily changing the various sizes of dies, which can be securely held therein, and wherein each die can be readily adjusted for "wear" or for other causes within the limits of the adjustment.

My invention consists of a die composed of two sections mounted between the vertical walls of a holder, and having bolts fitting in a grooved or angular slot cut partly out of the side of the die-plate and partly out of the adjacent portions of the holder, said bolts holding the two sections of the die securely against lateral pressure and at the same time acting as spline-screws, holding the die firmly in the holder against the vertical pressure in cutting the thread. In similar devices hitherto patented, in order to resist the vertical pressure on the die it has been customary to make the sections of the dies with beveled edges sliding in dovetailed slots in the holder; but in my invention I have vertical edges or walls of both dies and holders, rendering it cheaper to manufacture and more convenient to use, and I secure the dies against both vertical and longitudinal strains by the bolts already described.

Reference is had to the accompanying drawings, wherein the same parts are indicated by the same letters.

Figure 1 represents a perspective view of the different parts of my invention ready for assembling. Fig. 2 represents a perspective view of the different parts of another form of my invention ready for assembling.

A represents the holder, which in the drawings is represented as a collet; but the external shape of the holder is immaterial, and any convenient form may be adopted.

B and B' represent the die-blocks with cutting-edges K and K'.

C C, Fig. 1, represent the combination tie-bolts and spline-screws.

D D, Fig. 1, represent the nuts engaging the ends c' of the said bolts.

The holder A has a rectangular score cut in it with vertical walls a , scored at a' , to allow the bolt C to enter. At each end of the score is a chamber a^2 for the head of the screw and a^3 for the nut. This nut should be preferably polygonal, square, or eccentric to the screw, fitting closely in a correspondingly-shaped chamber; but in the drawings I have shown a device where to keep the nut from turning a small key a^4 is secured in the chamber a^3 , said key engaging in the recess d in the side of the nut; but with polygonal or square nuts, or nuts eccentric to the screw, this key would not be required. Each of the chambers a^2 and a^3 has a shoulder a^5 , against which bears the shoulder c of the screw or that of the nut.

b^3 , b^4 , and a^8 are hollowed out to allow the fragments of the cut thread to fall through. There is also a hole in the bottom of the holder to allow the bolt to be threaded to pass through. The die-blocks B have also vertical walls b and b' with scores b' and chambers b^2 , registering with the walls, scores, and chambers of the holder A.

When the parts shown in Fig. 1 are in place, the die-blocks B and B' fit snugly between the vertical walls of the holder, and the cutting-faces K and K' are held at the right distance apart by the shoulders c of the screws and the inner faces of the nuts bearing against the shoulders b^5 of the die-block B'. The shoulders a^5 hold the nut when the blocks B and B' are being brought closer together by the bolts C. There is nothing to keep these blocks from moving inward toward each other until they touch; but this is unnecessary, for they can be easily separated by the fingers should they come together, and as soon as the bolt is inserted and the screw-thread cutting begins there is a strong pressure away from the center.

The bolts C C act both as tie-bolts, preventing the blocks B and B' from being forced apart, and also as spline-screws, preventing

them from being forced up vertically. The vertical walls of the holder give necessary resistance to lateral strains. By screwing up or easing off on either one or both of the screws C the die-blocks may be adjusted to the desired distance.

Fig. 2 represents another form of my invention where I use four screws and nuts instead of two. The only differences in the holder between this form and that shown in Fig. 1 are that at the center of the slot a' I have a rectangular chamber L, into which fit snugly the two blocks, acting as nuts i' and i'' . On the opposite side are corresponding nuts i^3 and i^4 .

The die-blocks B and B' are the same in both Figs. 1 and 2. In Fig. 2 the short screws E engage in the nuts i' and i^3 and i'' and i^4 . Each die-block then has two independent screws with corresponding nuts. The outward pressure in screw-threading bolts is resisted by the shoulders e on the screws, while the other end of the screw is held fast by its nut, which is kept in place by the side walls of the chamber L and by the other nut in the same chamber. Adjustment is had by screwing up or easing off on either one or both screws of each pair of screws. The shorter screws in Fig. 2 also perform the same duties as the longer ones in Fig. 1, as spline-screws in resisting upward pressure.

In either form of my invention it will readily be seen that the die-blocks can be easily removed and others of any desired gage substituted therefor. A few sizes of said holders can be adapted to hold a great many sizes of dies. Since the spline-screws hold equally well against downward as well as upward strains, it will also be seen that the bottom X of the rectangular slot in the holder, while of some trifling use as a guide in assembling the parts, acts merely as a means of resistance against lateral strains, and that it might be replaced by two separate holders, one for each half of the holder A, and that by having the holder A in two sections, capable, like the jaws of a vise, of being adjusted to any distance apart, a much larger scope would be given to the holder, for die-blocks of any desired width could then be used, whereas when the walls of the holder are immovable only one width of die-block may be used.

I claim as new—

1. A screw-cutting die composed of two sections, said sections being held against lateral motion by two vertical walls on either side of the said sections, against vertical motion by bolts fitting partly within the sides of the said sections and partly within the said vertical walls, and against longitudinal motion by heads and nuts on the opposite ends of said bolts, substantially as described.

2. In a screw-cutting die, the combination of a die composed of two blocks or sections and having scores in its vertical sides, with two strong vertical walls bearing against the

said vertical sides of the blocks, said walls having scores registering with those in the blocks, and bolts fitting in the said scores, both of the blocks and vertical walls, and holding the said blocks against both longitudinal and vertical motion, substantially as described.

3. In a screw-cutting die, the combination of a die composed of two blocks or sections, and having a semi-cylindrical score cut in the vertical sides of said sections, and having an enlarged chamber at the outward ends of said semi-cylindrical scores, with two strong vertical walls bearing against the vertical sides of said blocks, said walls being cut with a semi-cylindrical score, and chambers registering with those of the die-block, and bolts fitting in the said scores, and heads and nuts fitting in the said chambers, as and for the purposes described.

4. In a screw-cutting die, the combination of a die composed of two blocks or sections, and having a semi-cylindrical score cut in the vertical sides of said sections, and having an enlarged semi-cylindrical chamber with rectangular shoulder at the outward ends of said semi-cylindrical scores, with two strong vertical walls bearing against the vertical sides of said blocks, said walls being cut with a semi-cylindrical score, and chambers registering with those of the die-block, the outer chambers having a key or lug at the outer end, and bolts fitting in said scores, and bolt heads and nuts fitting in the said chambers, the said nuts being held from turning by a key or lug in the chamber, said bolt being turned in the fixed nut by means of the slot in the head thereof, substantially as described.

5. In a screw-cutting die, the combination of a base-plate having a rectangular slot across the face thereof and a score in each of the vertical walls of said slot, with a die composed of two blocks or sections having a score in the vertical sides of said blocks registering with the said score in the wall of the slot, and bolts fitting in the said scores and holding the said blocks against both longitudinal and upward motion, substantially as described.

6. In a screw-cutting die, the combination of a base-plate having a rectangular slot across the face thereof and a semi-cylindrical score in each of the vertical walls of the said slot and an enlarged chamber at each end of the score, with a die composed of two blocks or sections having a semi-cylindrical score in the vertical sides of the said blocks, and an enlarged chamber at each end of the score registering with the said score and chambers in the wall of the slot, and bolts fitting in the said scores and holding the said blocks against both longitudinal and upward motion, and bolt heads and nuts fitting in the said chambers, substantially as described.

7. In a screw-cutting die, the combination of a base-plate having a rectangular slot cut across the face thereof and a semi-cylindrical

score cut in each of the vertical walls of the
said slot, and an enlarged semi-cylindrical
chamber with rectangular shoulder at each
end of the score, that at the left end having
5 a lug or key therein, with a die composed of
two blocks or sections having a semi-cylindrical
score in the vertical walls of the said
blocks, and an enlarged semi-cylindrical
chamber with rectangular shoulder at the
10 outward ends of said score registering with
the scores and chambers, respectively, in the
vertical walls of the said slot, and bolts with

cylindrical heads fitting in the said scores,
with heads fitting in the said chambers, and
cylindrical nuts held against turning by the 15
lug or key fitting in the opposite chambers,
substantially as described.

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

CHARLES P. RUSSELL.

Witnesses:

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