(No Model.)

G. H. SELLERS.

TWISTING MACHINE.

No. 497,827. Patented May 23, 1893.

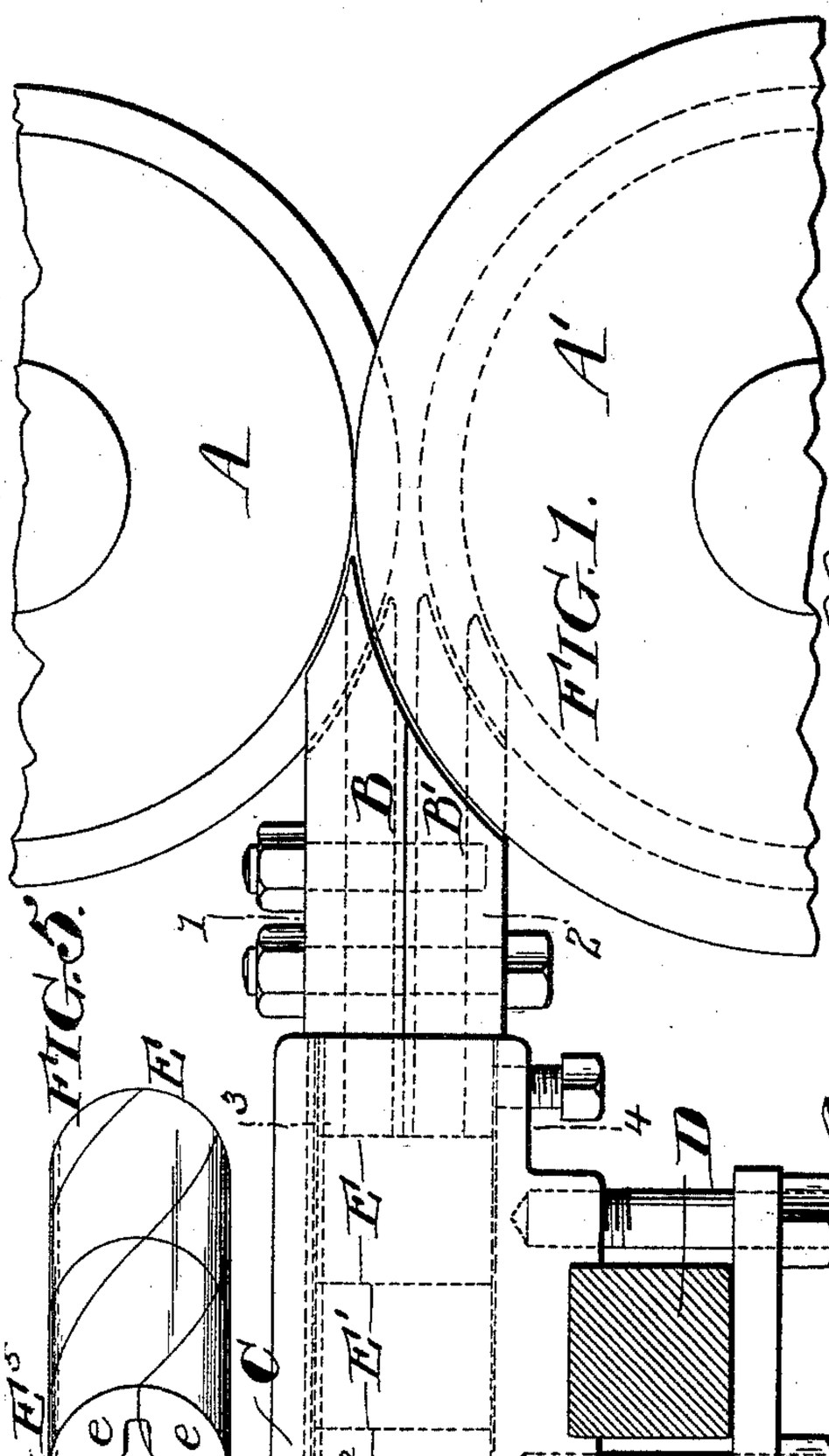

FIG. 1.

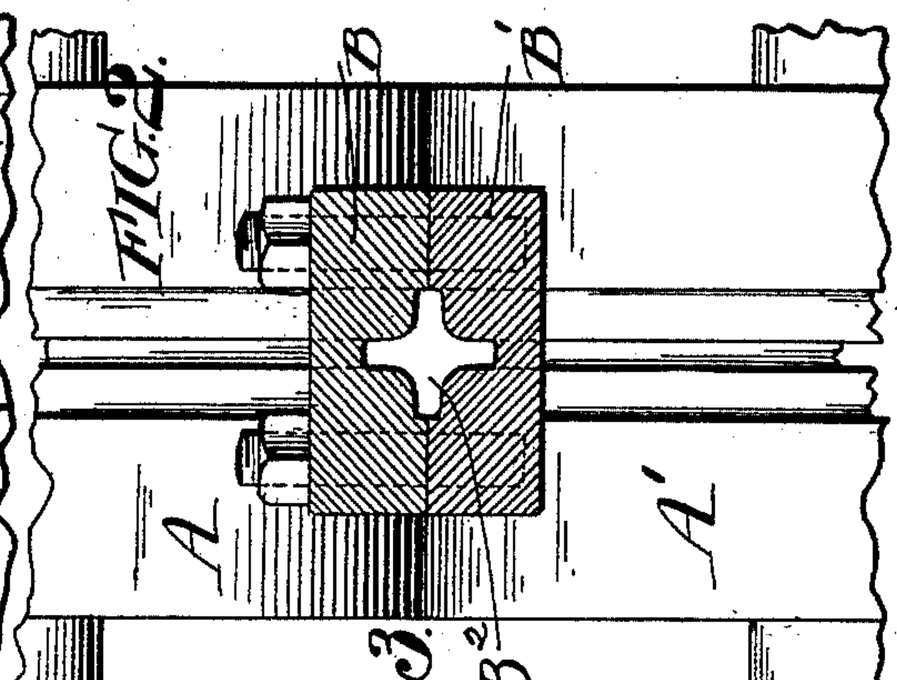

FIG. 3.

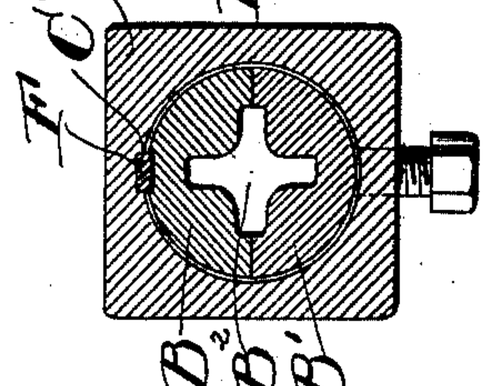

FIG. 4.

FIG. 5.

FIG. 7.

FIG. 8.

FIG. 9.

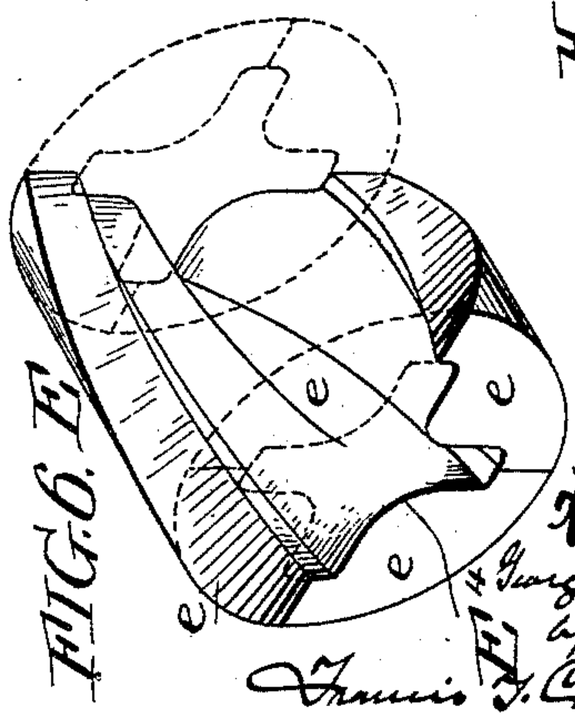

FIG. 6.

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UNITED STATES PATENT OFFICE.

GEORGE H. SELLERS, OF WILMINGTON, DELAWARE.

TWISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,827, dated May 23, 1893.

Application filed May 7, 1892. Serial No. 432,137. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. SELLERS, of 1301 Rodney street, in the city of Wilmington, county of New Castle, State of Delaware, have invented a certain new and useful Improved Twisting-Machine, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to mechanism intended for twisting flanged bars, and is especially intended and adapted for use in the manufacture of drills, &c., such as are used and described in the patent granted to me December 23, 1890, No. 443,297; the object of my invention being to provide simple and easily operated mechanism by which straight flanged bars can be twisted with rapidity and precision to the required spiral form.

The nature of my invention will be best understood as described in connection with the drawings in which it is illustrated, and in which—

Figure 1 is a side elevation showing the operative parts of the machine constructed in accordance with and embodying my improvement. Fig. 2 is a cross-section on the line 1—2 of Fig. 1. Fig. 3 is a cross-section on the line 3—4 of Fig. 1: Fig. 4 an end elevation of the die holder and connected parts; Fig. 5 a perspective view of two of the sectional dies. Fig. 6 is a perspective view of one of the sectional dies with two sections removed and showing the internal construction. Fig. 7 is a perspective view of the flanged bar; Fig. 8 a perspective view of the flanged bar after it is twisted, and Fig. 9 is a view of a drill made from the twisted bar.

A A′ are grooved rolls used in forming and feeding the flanged bar H.

B and B′ are two parts of a guide situated in front of the grooved rolls and adapted to receive the flanged bar as it passes from between the rolls and carry it to the twisting dies. The cavity B^2 in the guides is such as will receive and support the bar, preventing it from buckling under the pressure applied to it.

C is a die holder supported as shown upon the rest bar D arranged in line with the rolls and supporting the guides B B′ as shown. The construction of the holder must be such that it will support the sectional dies used in twisting against the strains to which they are exposed; and, at the same time, permit of their ready insertion and removal. As shown, the holder is provided with a cylindrical cavity, at the top of which is formed a key seat C′, and it is also adapted to receive at its delivery end a stop or gate G, the function of which will be hereinafter described.

E is a sectional twisting die which is made up of a number of sections equal to the number of flanges in the bar to be twisted, and each of which is adapted to lie between adjacent flanges of the bar, and is given a curvature such as it is desired to impart to the bar; thus, each sectional part of the die has itself a spiral form, and I prefer to make the length of the die, and of each section of it, equal to one-fourth of the length taken up by a single turn imparted to the bar. Thus, for instance, where the bar is twisted so as to make one complete turn in nine inches, the length of a die E would be two and one-fourth inches. A single sectional die of this proportion may be used alone or it may be supplemented by additional sectional dies as indicated at E′, E^2 and E^3. When four are used, as shown in Fig. 1, the bar is completely within the die for a distance of that equal to one twist. As shown in the drawings, the exterior form of the die is cylindrical; the diameter being such as will enable it to be inserted in the cylindrical cavity of the holder, and as shown, a groove or key-seat E^5 is formed along the periphery of the dies, so that when the dies are inserted in the holder and arranged in proper alignment they can be locked against rotary movement by the inserting of a key F engaging the groove in the dies and the groove in the holder. In order to hold the dies against longitudinal movement in the holder, a stop or gate, as indicated at G, can be thrust down through a proper passage in the holder, which, will rest against the outermost die, preventing the dies from being pushed out while forming the bar, and issue partly through the spiral cavity E^4 formed by the abutting sections.

I have indicated the flanged bar by the letter H; the flanges by the letters *h h*, &c.

The spirally twisted bar is indicated at H′, and at H^2, Fig. 9, I have shown the end of the

spirally twisted bar as cut to form a drill such as is described in my former patent.

The operation of my apparatus is readily followed, and may briefly be described as follows: The die sections properly assembled are slipped into the holder and held in place therein in any convenient way, such, for instance, as by the device above described. The rolls A A′ are then set in operation feeding a straight flanged bar through the guides B B′ which register with the cavity of the die E in the said die and pushing it through the die; thus, necessarily twisting it to the desired form. After leaving the die E the spirally twisted bar will continue through the dies E′ E², &c., finally issuing from the end of the die system, and the holder, as soon as the bar has passed from the bite of the rolls, its forward motion will stop, and then by releasing the holding device which holds the die sections in place, as shown, the key F and gate G, the dies together with the twisted bar can be readily removed from the holder, and in the same way another set of dies at once introduced into the holder to act upon another bar.

It will be obvious that by making my die E sectional and removable from their holder, I provide a ready and simple device for withdrawing the twisted bar from them, while with a solid die the bar would have to be twisted out of the die, and it will also be seen that by my sectional construction I avoid the danger due to dies bursting under the pressure to which they are subjected which exists with solid dies.

I may mention that while I show a four flanged bar I do not confine myself to any specific construction, and my invention is applicable to twisting flat bars which may be considered as having two flanges.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As a device for twisting flanged bars, a sectional twist die E made up of parts *e e e e* equal to the number of flanges on the bar and each adapted to lie between adjacent flanges.

2. As a device for twisting flanged rods, a sectional twist die E made up of parts *e e e e* equal to the number of flanges on the bar, and each adapted to lie between adjacent flanges in combination with a box C adapted to hold the die sections together while permitting their ready removal with a twisted bar.

3. As a device for twisting flanged rods, a series of sectional twist dies E E′, &c., each made up of parts *e e e e* equal in number to the flanges on the bar to be twisted, and each section adapted to lie between adjacent flanges, in combination with a holder adapted to hold the dies in position while permitting their removal with a twisted bar.

4. As a device for twisting flanged rods, a pair of grooved rolls A A′ in combination with a die holder C situated in front thereof, and a twist die or dies E made up of sections *e e e e* equal to the number of flanges on the bar to be twisted, and each adapted to lie between adjoining flanges, said sectional die or dies being held in the holder C, but adapted to be readily removed therefrom.

5. As a device for twisting flanged rods, a pair of grooved rolls A A′ in combination with a die holder C situated in front thereof, a guide B B′ leading from the rolls to the die holder, and a twist die or dies E made up of sections *e e e e* equal to the number of flanges on the bar to be twisted and each adapted to lie between adjoining flanges, said sectional die or dies being held in the holder C, but adapted to be readily removed therefrom.

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