No. 869,290. PATENTED OCT. 29, 1907.

W. R. BRADFORD.

BENCH CLAMP.

APPLICATION FILED SEPT. 18, 1905.

Fig. 1.

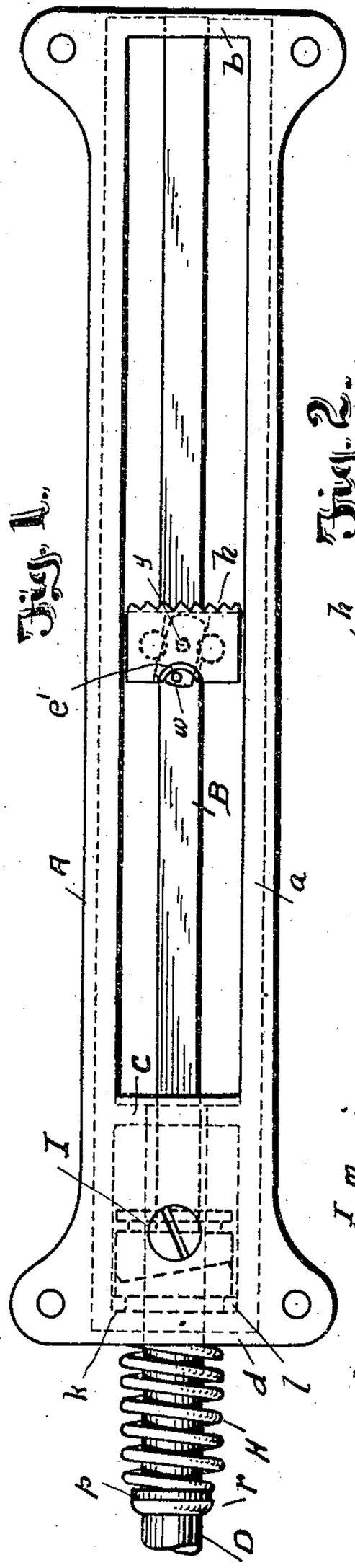


Fig. 2.

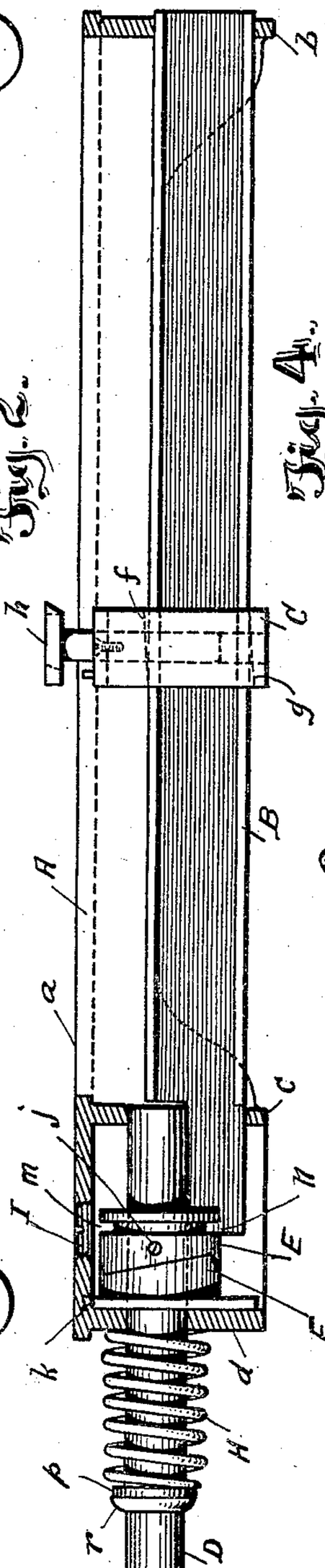


Fig. 4.

Fig. 5.

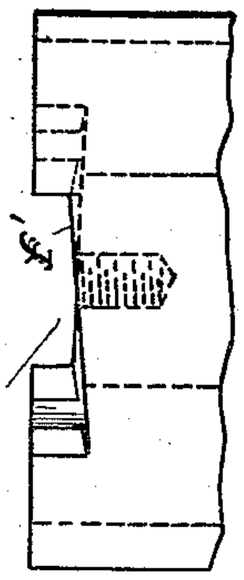
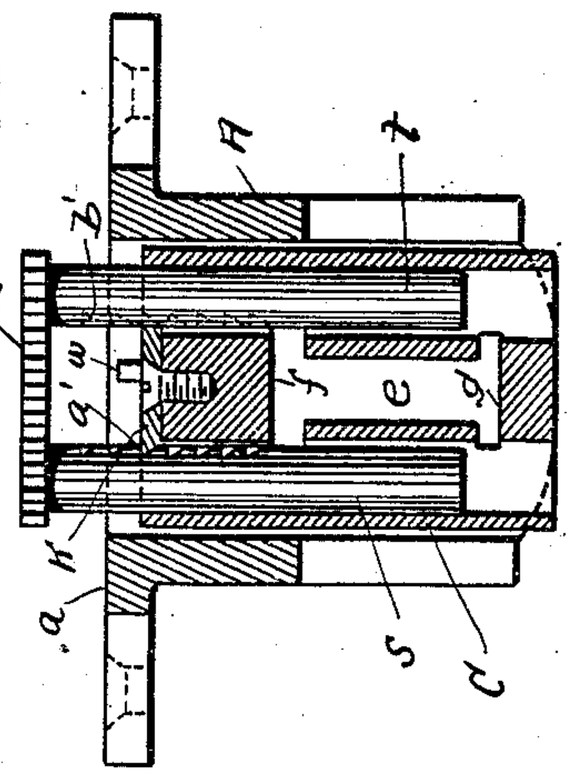


Fig. 3.



WITNESSES

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BENCH-CLAMP.

No. 869,290. Specification of Letters Patent. Patented Oct. 29, 1907.

Application filed September 18, 1905. Serial No. 278,874.

To all whom it may concern:

Be it known that I, WILLIAM RICHARD BRADFORD, a citizen of the United States, residing at Calumet, county of Houghton, State of Michigan, have invented a certain new and useful Improvement in Bench-Clamps, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification.

My invention relates to improvements in bench clamps and has for its object to provide means whereby material to be operated upon may be rapidly and firmly secured upon a work bench.

The invention consists in the particular combination and arrangement of the various parts to be hereinafter described and particularly pointed out in the appended claims.

In carrying out my invention, reference may be had to the accompanying drawing, in which:

Figure 1 is a plan of the assembled machine. Fig. 2.—shows a longitudinal section, illustrating the internal arrangement. Fig. 3.—is a transverse section through the frame and dog-block. Fig. 4—is a plan view of the dog-block, showing the two extreme positions of the latch. Fig. 5—is a view of the upper end of the dog-block showing the helical form of the surface upon which the latch rests.

Referring to the accompanying drawing: A. represents the main frame, comprising an upper horizontal plate *a*, having ribs depending therefrom. The laterally extending ribs *b*, *c*, and *d*, of said frame being adapted to furnish support and act as guides for the movable parts to be hereinafter referred to.

B, is a beam, movably carried in the ribs *b*, and *c*, and adjustably mounted upon said beam is the dog-block C. The opening *e*, through the dog block is made to conform to the cross section of the beam, and it will be readily observed that any other suitable shape may be employed without affecting the spirit and scope of my invention.

At *f*, *g*, the upper and lower walls of the opening *e* through which the beam passes are beveled as shown, to produce a gripping effect upon the said beam, as the jaw *h*, is forced backward in the operation of clamping an object and when released, to permit the block to be moved freely along the beam.

The mandrel D, is journaled in the ribs *c*, *d*, and carried upon its inner end is the helix block E, which is firmly secured thereto by means of the screw *j*. This helix block is arranged to engage with a similar one F, secured to the frame by means of the lugs *k*, *l*, projecting into the top plate *a*.

At *m*, the helix block E, is grooved to receive an upward extending lug *n*, formed at the inner end of the beam B, so that as the arbor is rotated by means of the handle G, the beam B, is forced longitudinally through the medium of the helix and engaging lug above referred to. In order that the arbor and beam may be quickly returned to and maintained in their proper starting position for a following operation, I provide the spring H, which is arranged to engage between the web *d*, of the frame and the collar *r*, formed integral with the arbor D. A washer *p*, is inserted between the said spring and shoulder to furnish a better bearing for the engaging parts in their rotating movement.

When the machine is inlaid in the upper surface of a work bench, the top of the plate *a*, is flush with the top of the bench and all parts are obscured excepting the upper surface of said top plate. In order to facilitate the operation of assembling or disassembling the helix and arbor, the screw I, is provided above the parts as shown.

In adjusting the dog block to engage different sizes of material, it is necessary to provide for the varying thicknesses. To accomplish this rapidly and positively, I construct the dog as shown, with the two notched standards *s*, *t*, adapted to be moved freely in the vertical openings U, V, formed in the dog block and having secured at their upper ends, the jaw *h*, which engages the material to be clamped. The standards *s*, *t*, are notched at *a'*, *b'*, to receive the edges *c'*, *d'*, of the latch K, as it is turned to the position shown by the full lines in Fig. 4. The dotted lines illustrate the position of the latch when it is desired to release the said dog, for adjustment. The latch is secured to the block by means of the screw *y*, and is operated through the medium of the knob *w*, which is secured to or may be formed integral with the latch.

L, represents a groove in the upper end of the dog block, in which the said latch rests. The walls of said groove forming stops for the latch in its two extreme positions. To prevent the latch from being disengaged by the vibration resulting from working upon the material held by said dog, I provide the helical seat *f'*. This is so constructed that the said latch tends to work towards the standards *s*, *t*, thus maintaining a positive locking position until it is desired to release the said dog. In order that the knob may be readily accessible when the dog is in its lowermost position I provide the notch *e'* in the jaw *h*. This engages over the knob, which may be readily operated as above described.

In the operation of my device it is necessary that some form of fixed stop be employed at the opposite end of the bench to oppose the clamping action of the said dog. However, as this part of the work bench is common and well known I have deemed it unnecessary to illustrate it. The material to be clamped, is placed against the fixed pin or block, above referred to, and the dog then moved forward upon the beam until its jaw engages the piece. If necessary the said dog, may be raised to any desired height by merely grasping the

said jaw and lifting it upward, whereupon the latch can be turned to its locking position and the parts secured. The handle may then be turned to force the beam, which has been firmly gripped by the dog block, forward in its guides, and carrying with it the said dog to the required position. It will be obvious that the helix must be of such a pitch that the parts will remain in the clamping position until it is desired to release them by reversing the handle G. With this reversing movement the spring H acts to force the arbor and adjoining parts back to their original starting positions.

It will be apparent from the above description that some slight modifications may be made without materially altering the results or departing from the spirit and scope of my invention. I therefore desire to have it understood that although I prefer the particular construction shown I do not wish to be limited thereto.

Having thus described my invention, what I desire to claim is:

1. In a bench clamp, the combination with a frame, a beam movably carried in said frame, a mandrel journaled in the frame, a helix-block secured thereto, a similar helix-block mounted upon said mandrel and arranged to engage with the helix-block secured to the frame, whereby a rotative movement of said mandrel will produce a longitudinal movement thereof, means whereby the longitudinal movement of the mandrel is communicated to said beam, and a dog adjustably mounted upon said beam, substantially as described.

2. In a bench-clamp, the combination of a frame, a beam movably carried in said frame, means for actuating said beam, a dog-block constructed to engage over the said beam, having vertical openings therethrough and provided with a helical seat, a dog provided with notched vertical standards adapted to adjustably engage within the vertical openings in said dog-block, a latch made to rest upon said helical seat and arranged to engage with the notches in the standards of said dog whereby the said dog is held in its vertically adjusted position, substantially as described.

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

WILLIAM RICHARD BRADFORD.

Witnesses:
LOTTIE WEARNE,
WILLIAM JOHNSON.