

No. 619,247.

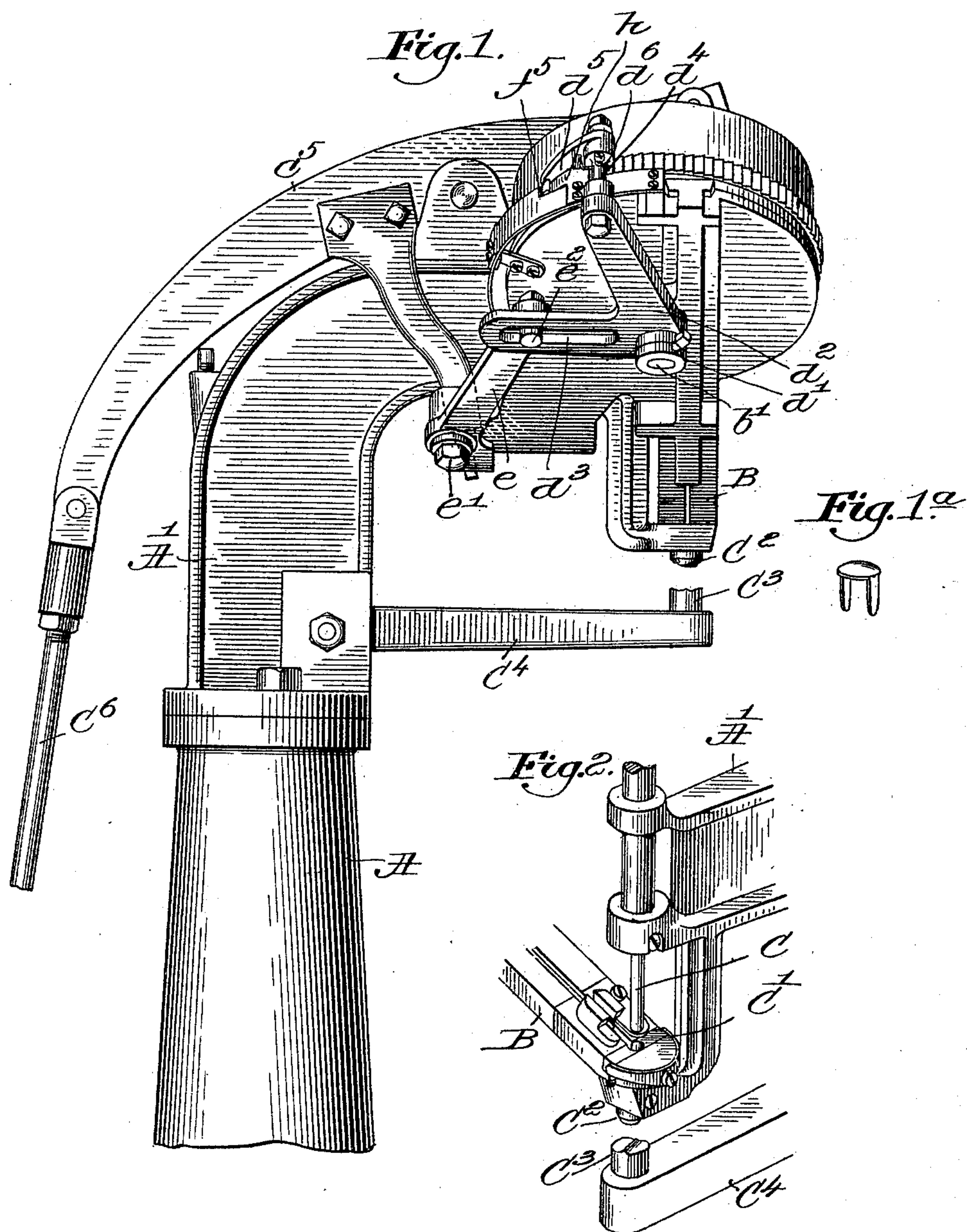
Patented Feb. 7, 1899.

E. A. BARBER.
RIVET SETTING MACHINE.

(Application filed Jan. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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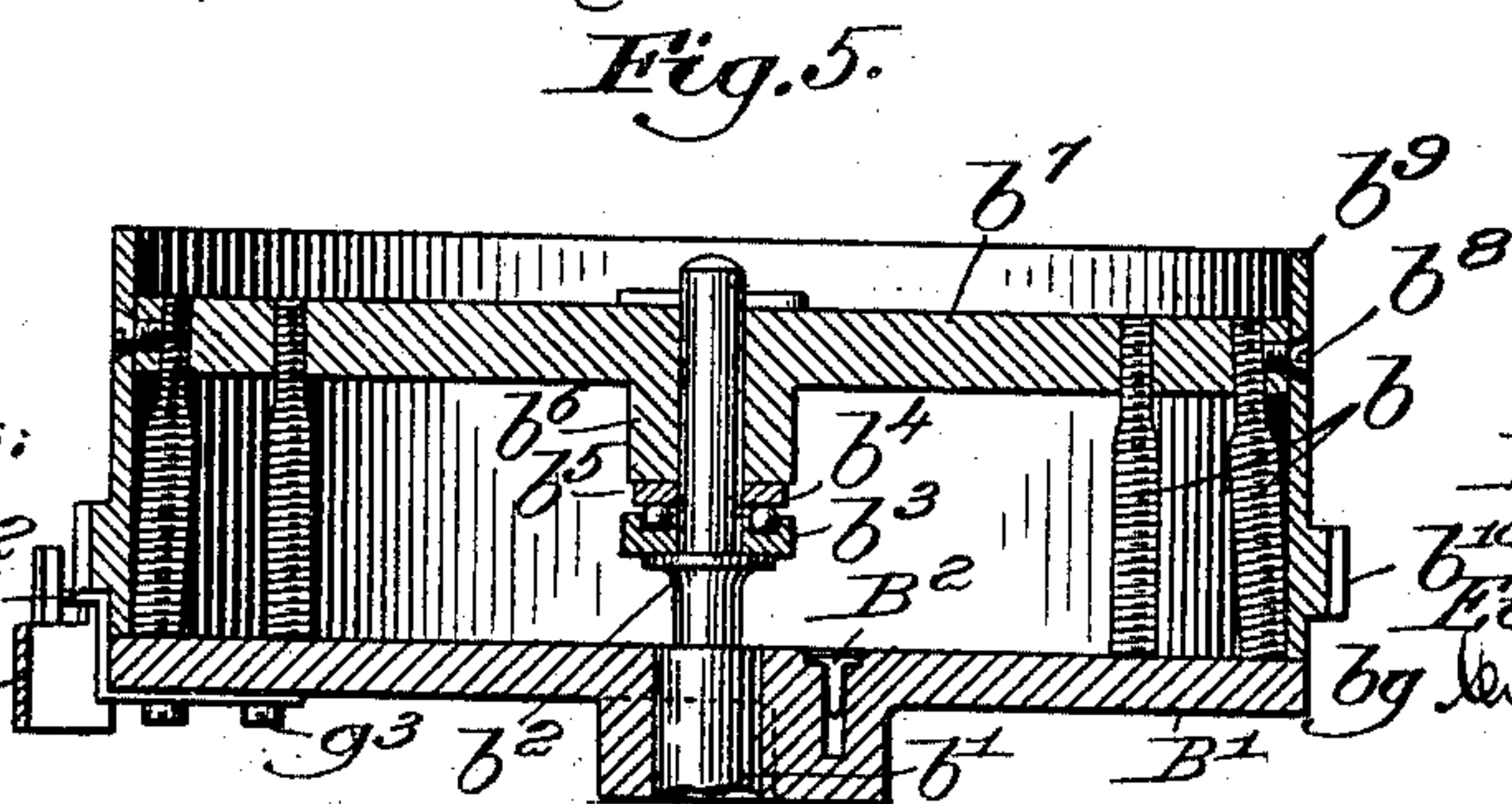
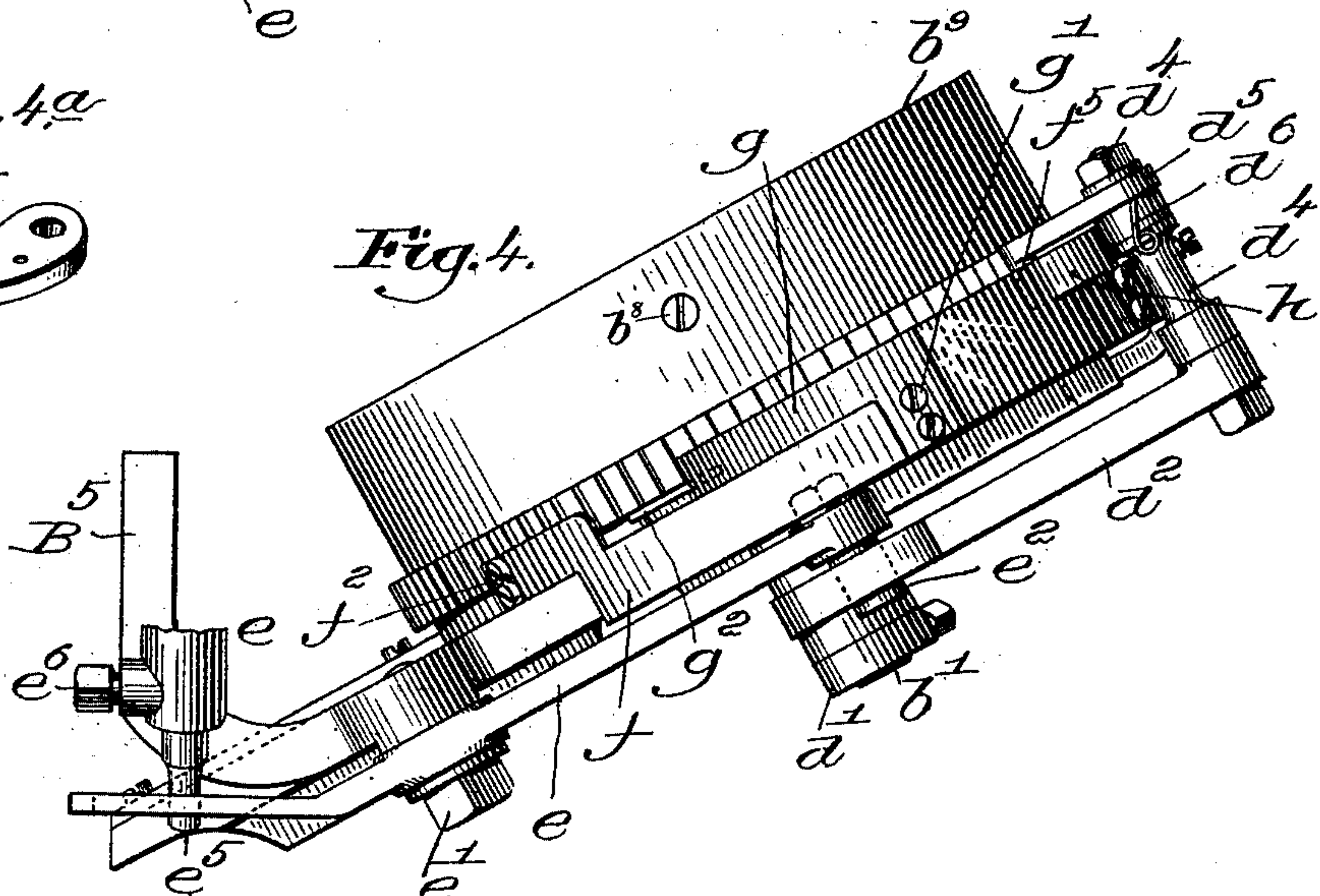
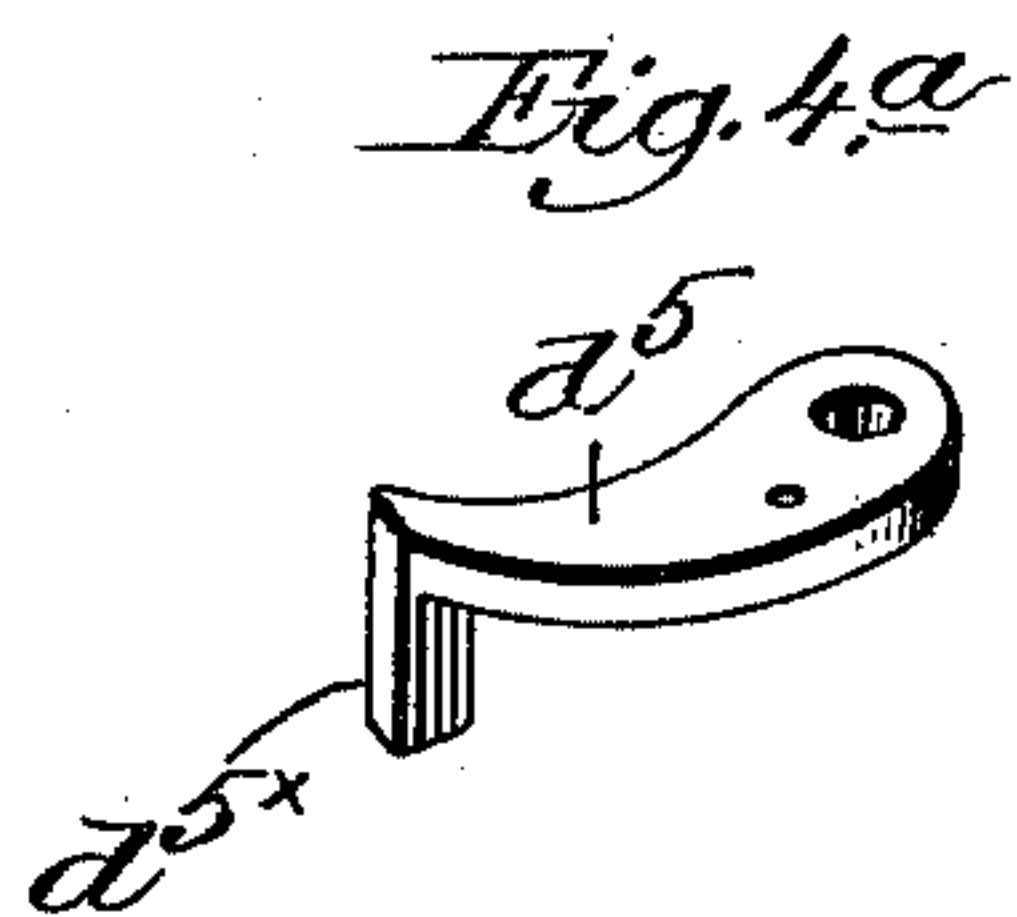
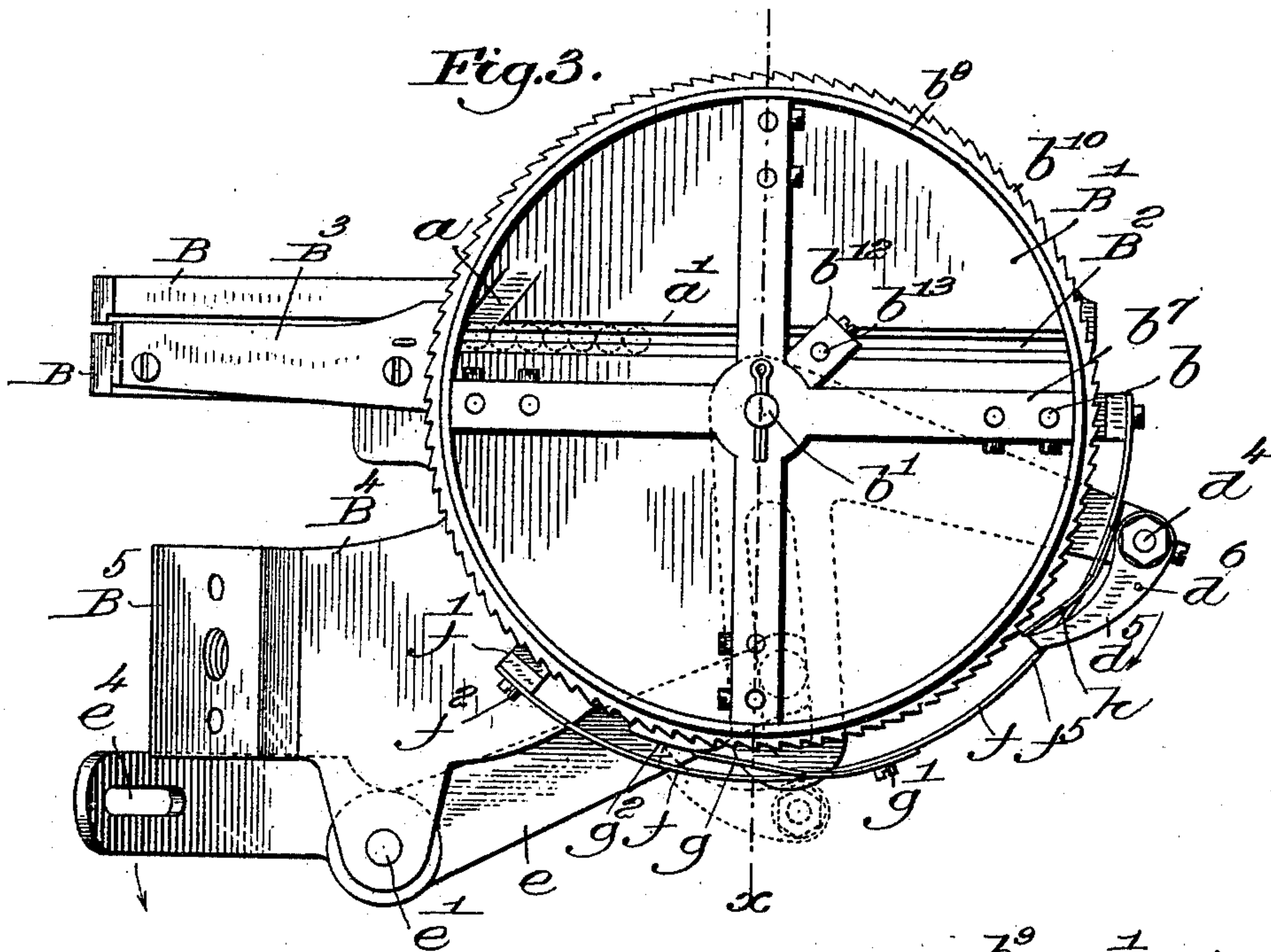
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

EVERETT A. BARBER, OF ATLANTIC, MASSACHUSETTS, ASSIGNOR TO THE
STANDARD RIVET COMPANY, OF CONCORD, NEW HAMPSHIRE.

RIVET-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,247, dated February 7, 1899.

Application filed January 29, 1898. Serial No. 668,416. (No model.)

To all whom it may concern:

Be it known that I, EVERETT A. BARBER, of Atlantic, county of Norfolk, State of Massachusetts, have invented an Improvement in Rivet-Setting Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve rivet-setting machines, my invention relating more especially to the means controlling the feed of the rivets at the raceway.

Prior to my invention rotary hoppers containing rivets have been rotated by pawls engaging ratchet-teeth, and said pawls have clicked back over the ratchet-teeth when coming again into their operative positions, thus unnecessarily wearing the said teeth and pawls, and, further, the action of the pawl mechanism has been such as to retard the movement of the hopper after the pawl shall have come to the end of its stroke, whereas for the best results the said hopper should continue to rotate due to the momentum given to it by the action of the pawl. I have improved a rivet-setting machine so that the motion imparted to the hopper by the pawl may be continued, due to the momentum of said hopper, after the pawl has come to rest, and the pawl when it arrives at the end of its thrust is immediately detached or disengaged from the ratchet-teeth of the hopper, and as it is moved back into its normal or starting position the said pawl travels over a guard which prevents it from engaging at all the said ratchet-teeth. I have arranged to actuate the pawl referred to from and by the movement of the lever operating the usual set, thus greatly simplifying the necessary operating devices, and I have also provided the stationary bottom of the hopper with a righting-space communicating with the rivet-receiving groove of the raceway, whereby any rivets wrongly placed may be discharged from said groove before passing under the usual cover-plate of the raceway.

Figure 1 in side elevation represents a sufficient portion of a rivet-setting machine with my improvements added to enable my invention to be understood. Fig. 1^a shows one form of fastening which the machine herein

exhibited is intended to set. Fig. 2 is a detail showing parts of said machine which are not represented in Fig. 1. Fig. 3 is a top or plan view of the hopper and the raceway-plate with its circular upper end forming a part of the bottom of the hopper, together with the pawl and part of its actuating devices for imparting movement to the said hopper. Fig. 4 is a side elevation of the said hopper and parts shown in Fig. 3 in the position they will normally stand when in operation, said figure also showing part of the actuating devices employed for imparting motion to the pawl. Fig. 4^a shows the pawl detached, and Fig. 5 is a cross-section in the line *x*, Fig. 3.

The column A in practice rests upon a suitable base at the floor, said base being provided with a suitable treadle (not shown) and the head A' mounted on said column, the raceway B having a circular plate B', provided with a groove B², in which are deposited the rivets or other pronged instruments to be delivered from the end of the raceway in position to be acted upon by a set, the top set C, adapted to descend in the opening C' at the end of the raceway, said opening enabling the set to meet said rivet and drive it through the nose C², causing the prongs of the rivet to strike the anvil C³ and to be clenched thereon, said anvil being carried by a suitable horn C⁴, the lever C⁵, connected with and operating the set C, and the connecting-rod C⁶, in practice extended down to and attached to the usual treadle referred to, are and may be all substantially as old and common in this class of machines, with the exception that herein one wall of the groove B² of the bottom plate is provided with a "righting-space" *a*, the mouth of said groove being made by removing or cutting away a part of the side wall *a'* of the groove B², so that any rivet or fastening wrongly placed in said groove and on its way down into the raceway under the usual cover B³ thereof may be struck by one of the agitators *b*, to be described, and be wiped readily into the mouth of said space *a* and up its inclined bottom onto the top of the circular plate B'. This righting-space obviates the clogging of the machine and causes the rivets to descend properly and uniformly down the raceway, so that there may always be a rivet

at the end of the raceway under the descending set.

The bottom plate B' has an extended arm B⁴ flanged at B⁵ and having suitable holes to receive suitable bolts or screws by which to attach the said arm to the head A' of the machine to thereby support the plate B' and raceway in proper operating position. This plate B' receives in it a stud b', having a flange b², on which, in this instance of my invention, rests a grooved washer b³, provided with a series of antifriction-rolls b⁴, on which rests a second washer b⁵, interposed between said rolls and the end of the hub b⁶ of the revolving spider b⁷, carrying the agitators b, and having secured to it by screws b⁸ the hopper b⁹, provided with ratchet-teeth b¹⁰, said antifriction-rolls b⁴ serving to sustain the weight of the spider and the hopper. The washers b³ and b⁵ might, it is obvious, be dispensed with, and the flange b² might be grooved and the hub b⁶ of the spider b⁷ rest directly on the said antifriction-rolls; but such construction would not be as durable and as cheap as the employment of the two washers b³ and b⁵, and preferably the said washers will both occupy a fixed position.

The agitators b are herein shown as composed of wire bent into spiral or spring form and preferably presenting two diameters. These wire agitators have been found in practice to be quite durable.

The stud b' has applied to its outer end a collar d', and said stud above said collar constitutes the fulcrum for the pawl-carrier d², said pawl-carrier in this present embodiment of my invention being represented as a sort of elbow-lever having a long slot d³ in one of its arms and having at its opposite arm a stud d⁴, upon which is mounted the pawl d⁵, said pawl being controlled by a suitable spring d⁶, which normally keeps the said pawl pressed toward and so as to engage the teeth of the ratchet-wheel when not prevented from so doing, as will be hereinafter described. This pawl-carrier derives its movement, as herein shown, from a lever e, free to turn on a stud-screw e', supported in an ear of the said arm B⁴, one end of said lever having a roller-stud e², which enters the slot d³ of the said lever d², while the opposite end of the lever has a slot e⁴, which is entered by a finger or projection e⁵, connected by a suitable set-screw e⁶ with an arm e⁷, attached to and moving with the said operating-lever C⁵, so that whenever the operator puts his foot upon the treadle to move the lever C⁵ to depress the set the said lever e is moved to actuate the pawl and cause it to move in the direction of the arrow near it in Fig. 3 to engage the teeth b¹⁰ of the hopper and start the same rapidly in rotation, so that the agitators carried by the spider b⁷ thereof will strike and agitate the rivets in the hopper, thereby keeping a part of the groove B² properly filled to supply correctly the raceway.

The pawl d⁵ referred to, it being shown separately in Fig. 4^a, has a depending lug d^{5x},

which when the pawl is moving in the direction stated in its actuating stroke passes behind the shield f, attached to a suitable upright or lug f', rising from the arm B⁴, by suitable screws f², and said pawl is kept in engagement with said teeth toward the latter end of its stroke by means of a spring g, connected with said shield by suitable screws g'; but just before said pawl arrives at the end of its stroke the lug d^{5x}, extended therefrom, meets a projection g², (see Figs. 3 to 5,) the shape of said projection being best shown in Fig. 5, it being held in operative position by suitable screws b³, inserted in the bottom of the plate B', the action of said lug against said projection effectually disengaging the teeth of the pawl from the teeth of the ratchet, so that the hopper which was started by a quick thrust of the pawl and given very considerable momentum may continue to turn by momentum after the said pawl has been disengaged from the said teeth. The teeth of the pawl having been disengaged from the teeth of the hopper and the movement of the pawl in the opposite direction having started, the said lug immediately rides onto the outer face of the spring g and travels backward over said spring and shield f until it arrives at the shoulder f⁵ of said shield, when it drops into a notch, and the free end of said pawl thereafter rests on a pawl-support h, it not meeting the teeth again until after the movement of the pawl-carrier is again started to actuate the hopper. In this way all the movement imparted to the hopper by the pawl, however actuated, is retained and expended in momentum.

The spider has, in this instance of my invention, a short arm b¹², which receives in it an agitator b¹³, the upper end of which is shown only in Fig. 3, said agitator being the same as the agitators b, fully shown in Fig. 5. This agitator b¹³ sweeps the groove B² close to the stud b' and prevents the accumulation of rivets at the stud, which would close the groove, so that rivets put into the upper part of the groove might not have ready access and free chance to descend into the said groove toward the raceway and its cover-plate.

I have herein referred to rivets as being set by the machine herein described; but it will be understood that this apparatus is adapted to set any usual pronged or other fastenings, such as used in connection with boots or shoes, and the term "rivet" used in the claims is therefore employed in its broad sense to represent any usual pronged or legged device which is to be controlled by a raceway and automatically set by a top set or driver.

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

1. In a rivet-setting machine, a raceway having a connected circular plate B' provided with a rivet-receiving groove, one side of said groove being notched or cut away to constitute a righting-space a, having an inclined bottom;

combined with a circular wall arranged at one side of said plate, and an agitator, and actuating means therefor to cause said agitator to sweep the rivets within said wall about on
5 said plate, said agitator removing from the said groove through said righting-space any rivet wrongly placed at the point where it should pass freely under the cover-plate of the raceway, substantially as described.

10 2. In a machine for setting rivets, a bottom plate provided with a groove in communication with a raceway, and a stud carried by said bottom plate, combined with a spider carrying agitators and a hopper, attached to
15 and moving with said agitator, and antifric-tion-rolls to sustain the weight of said spider and hopper, substantially as described.

3. In a bottom plate, a rotatable hopper provided with ratchet-teeth and connected
20 agitators, combined with a pawl, means to actuate said pawl to first engage said ratchet-teeth and then start in rotation said hopper, and means to effect the disengagement of said pawl from said ratchet-teeth substantially as
25 the said pawl completes its stroke whereby said hopper is permitted to rotate freely due to the momentum given to it by the action of said pawl, substantially as described.

4. The hopper provided with a series of
30 ratchet-teeth, a series of agitators connected

therewith, a spring-pressed pawl, means to actuate it, a rest for said pawl in its retracted position, means to detach said pawl quickly from said ratchet-teeth, and a shield to pre-
vent the contact of said pawl with said ratchet-
35 teeth while the pawl is on its back stroke, substantially as described.

5. In a machine of the class described, a rotating hopper having a series of ratchet-
teeth, a connected spider having agitators, a
40 bottom plate supporting the rivets to be set, a pawl-carrier to sustain said pawl, a lever engaging said pawl-carrier, a set, a lever for actuating it, and connections between the lever for actuating the set and the lever for
45 actuating the pawl-carrier, means to disengage the pawl from the ratchet-teeth of the hopper at the end of its actuating stroke, and a shield to prevent the contact of said pawl with said ratchet-teeth while returning into
50 its inoperative position, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EVERETT A. BARBER.

Witnesses:

GEO. W. GREGORY,
MARGARET A. DUNN.