

No. 618,742.

Patented Jan. 31, 1899.

E. E. SHELDON & J. T. FREEMAN.

SECTION LINER.

(Application filed Mar. 22, 1898.)

(No Model.)

2 Sheets—Sheet 1.

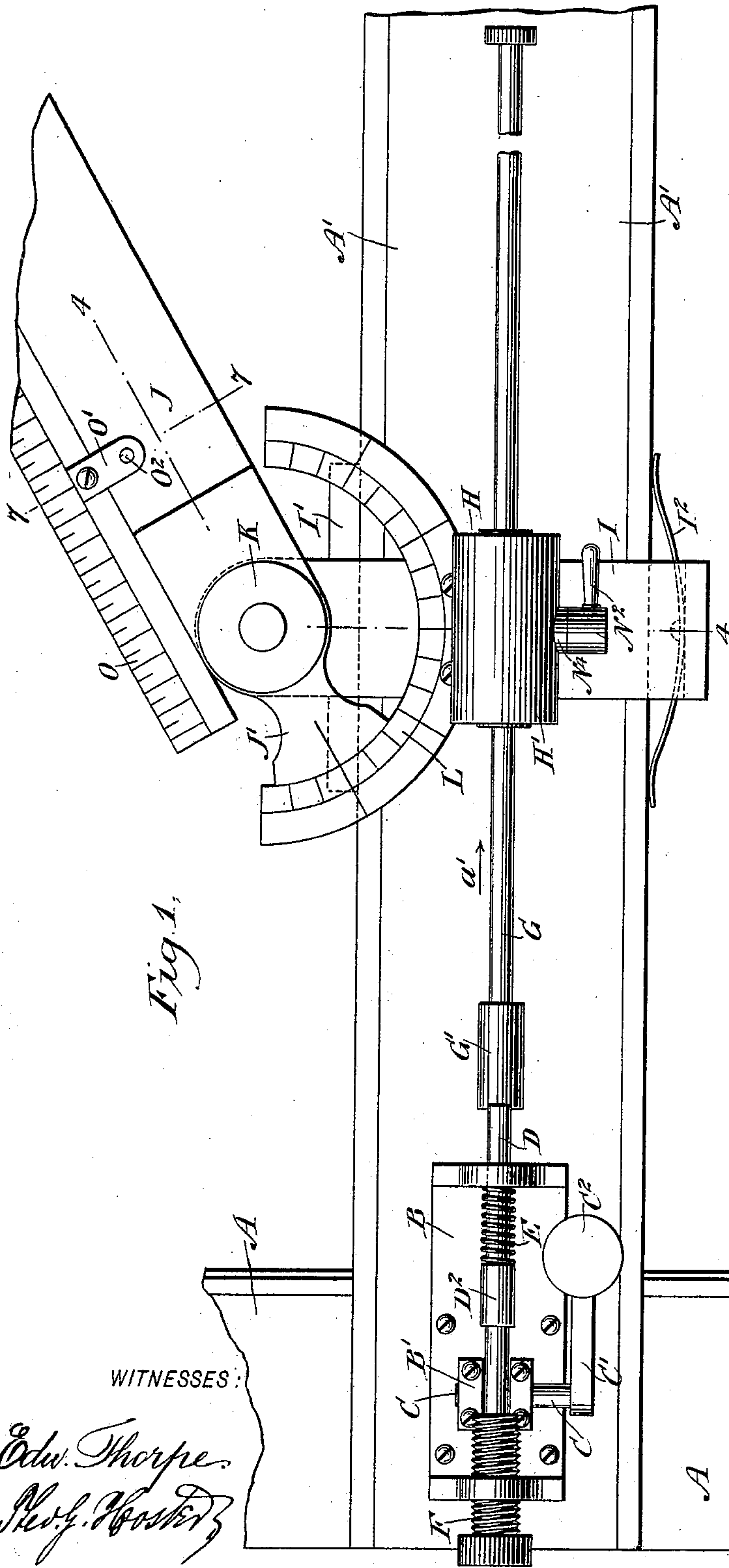


Fig. 1.

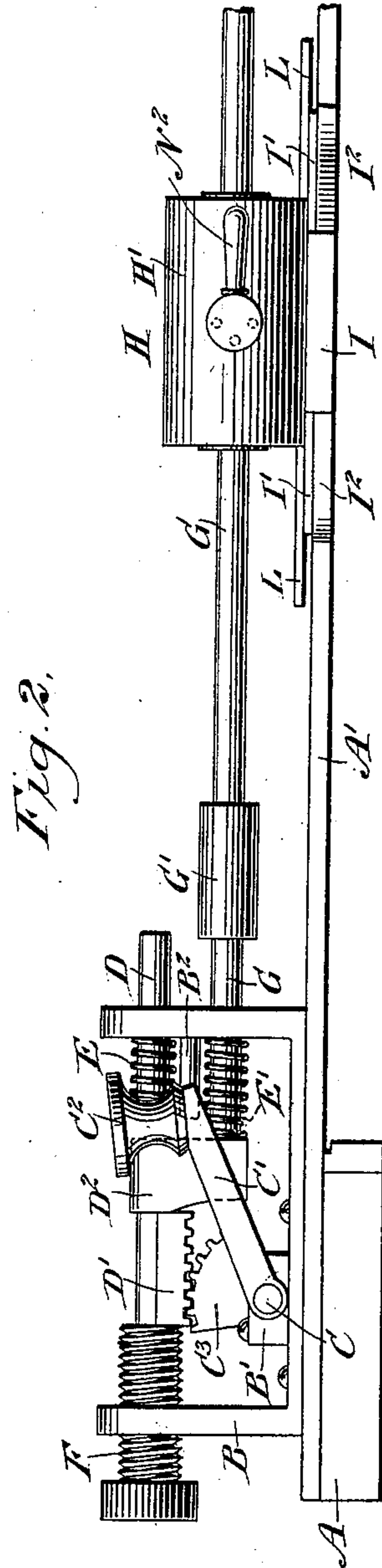


Fig. 2.

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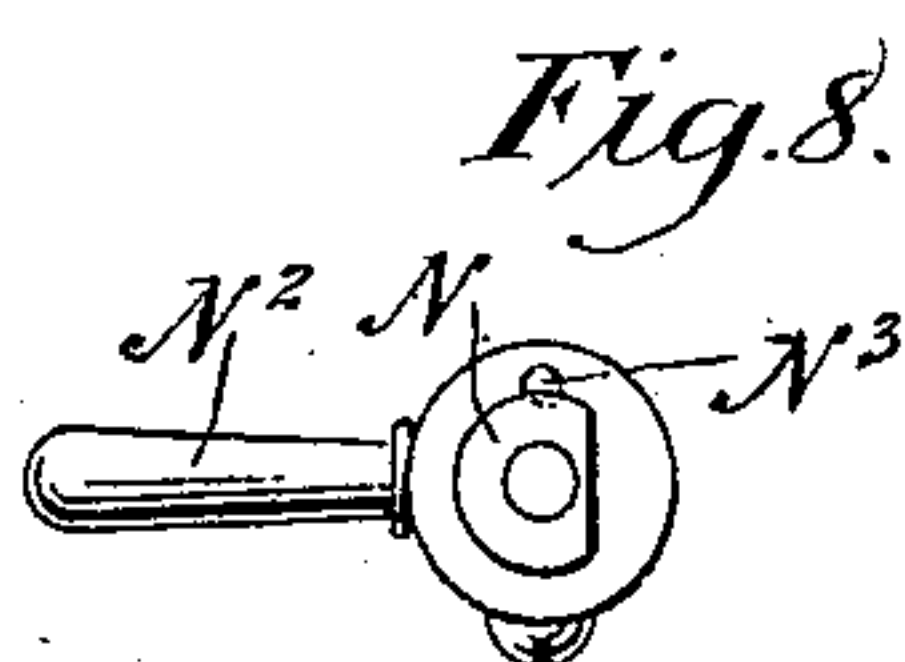
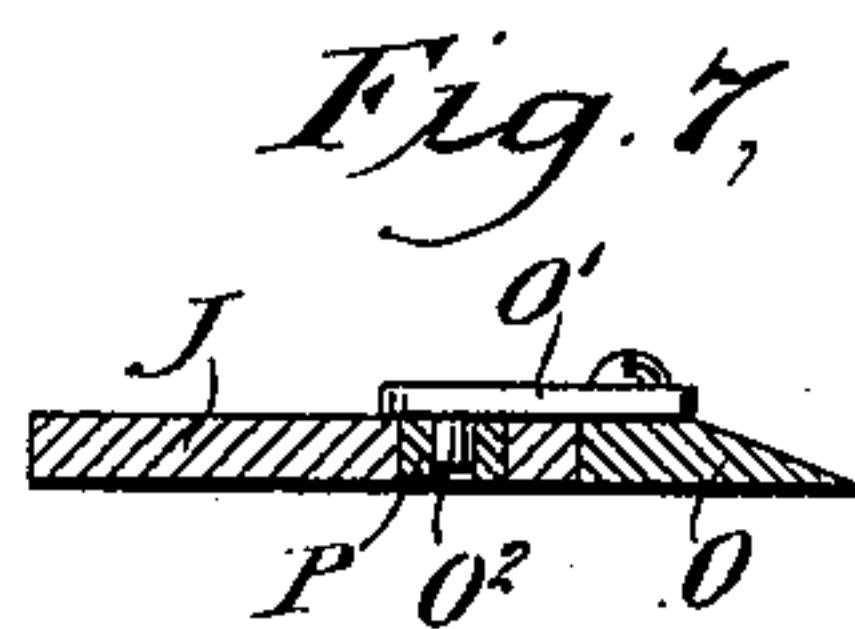
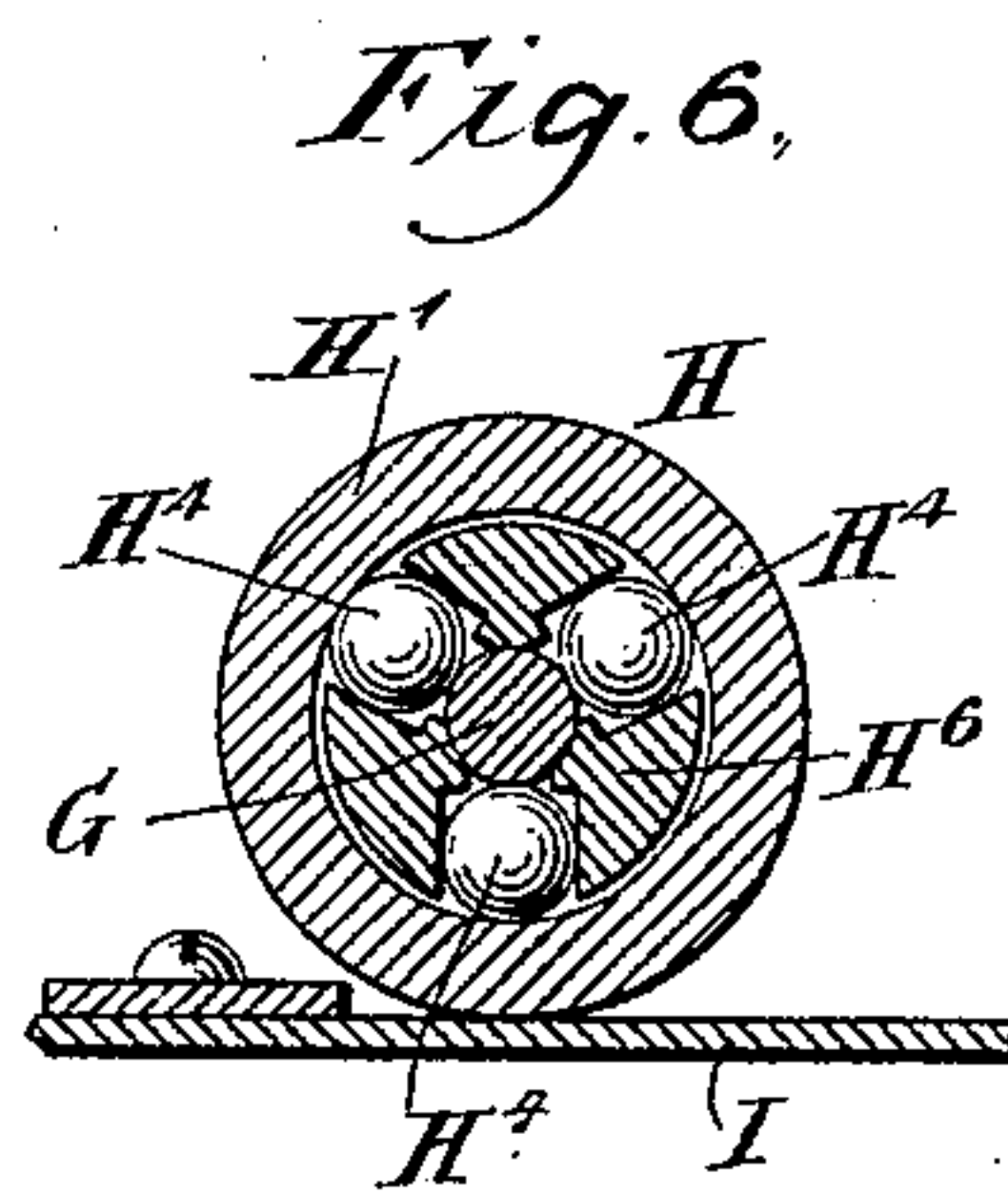
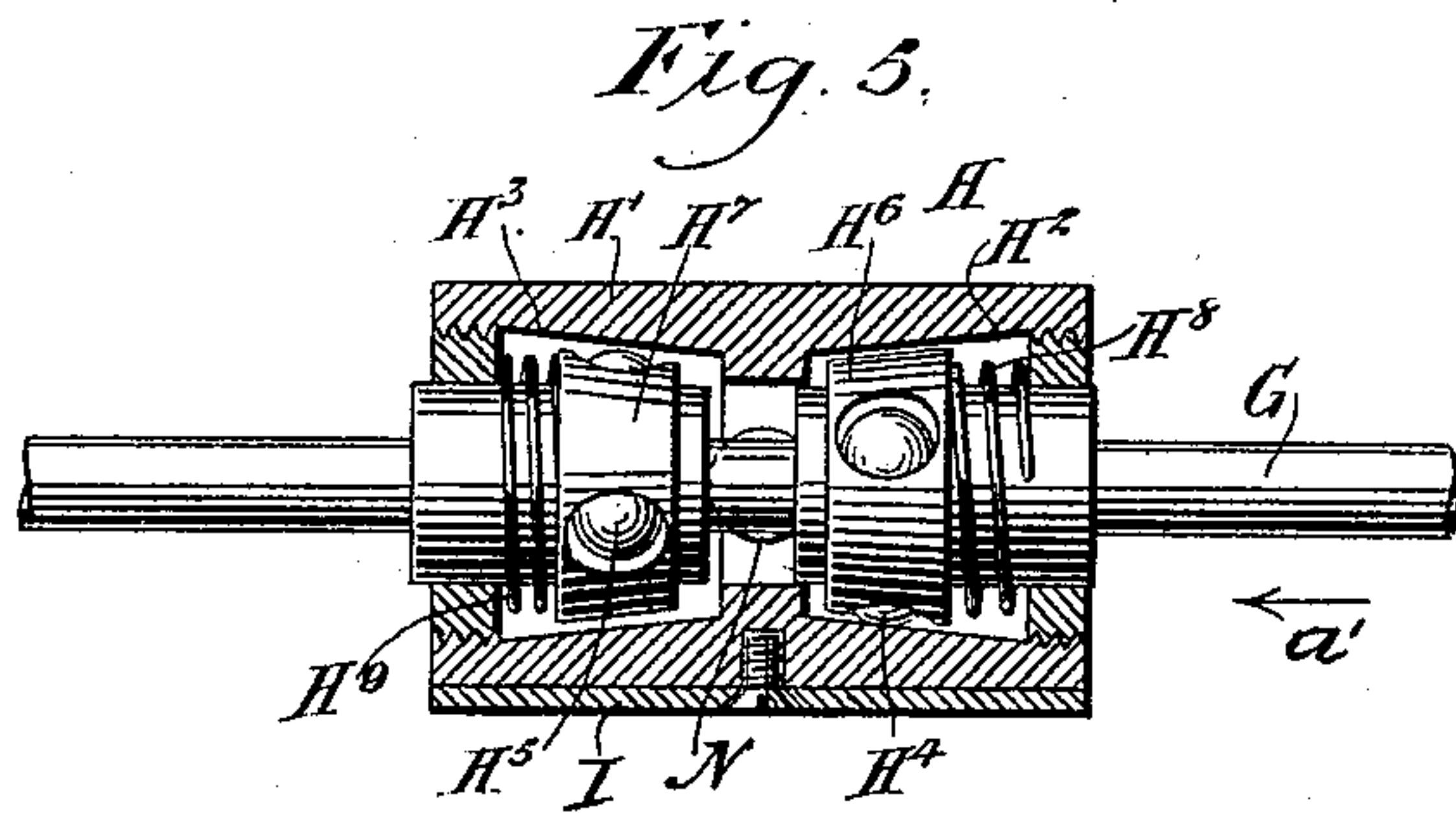
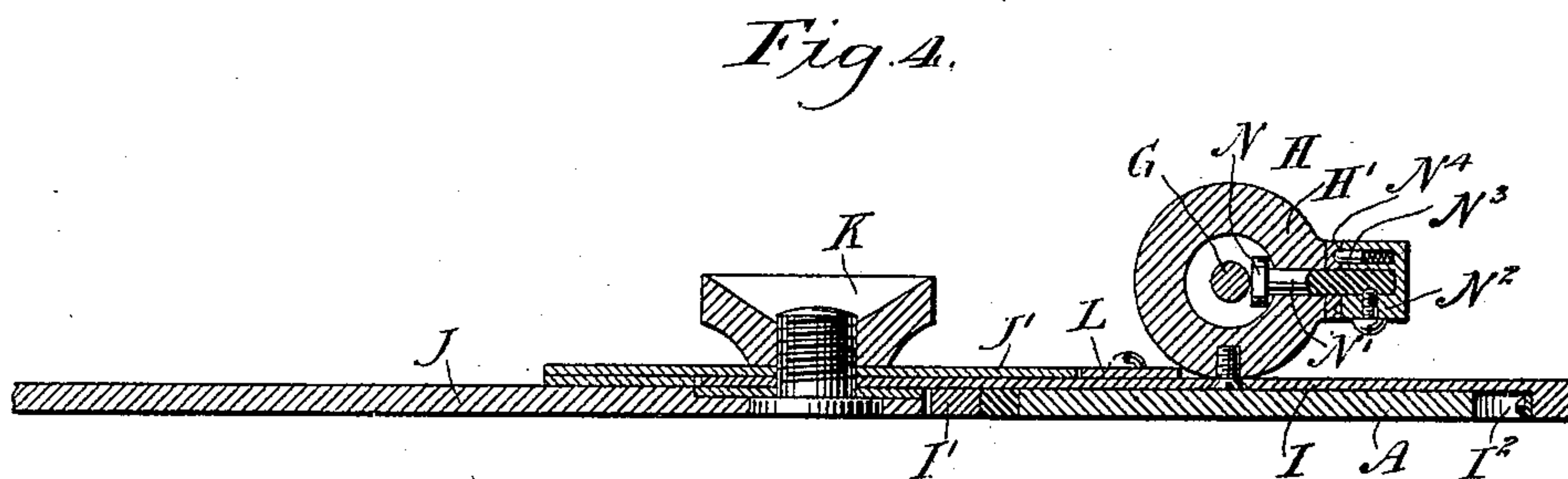
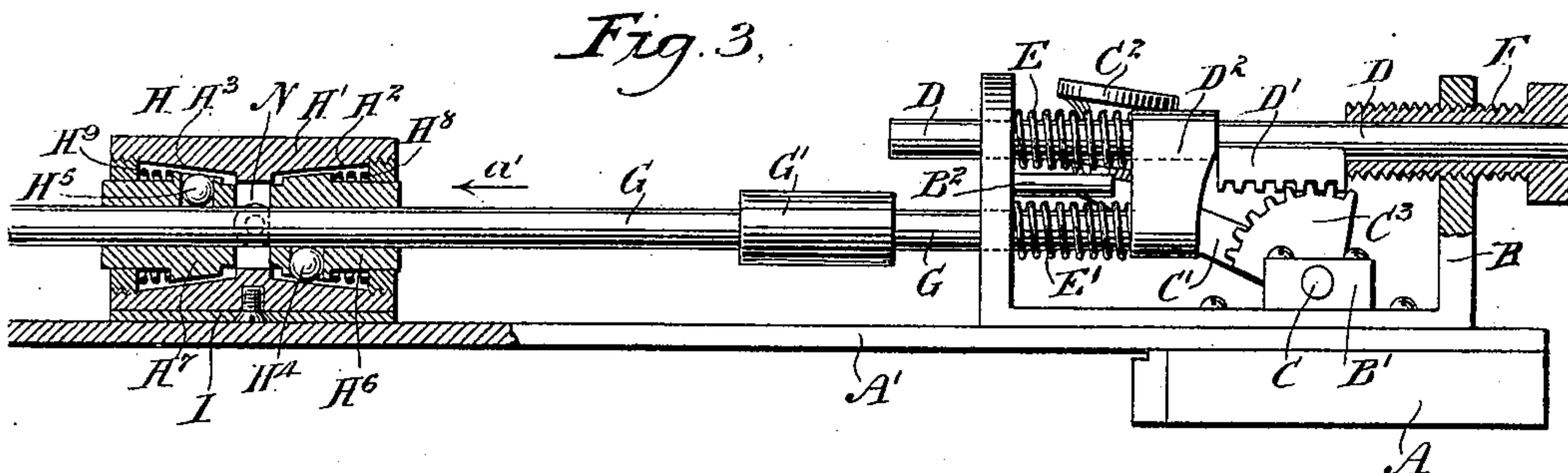
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2 Sheets—Sheet 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD ELLIS SHELDON AND JOSEPH THORN FREEMAN, OF ROCHESTER,
NEW YORK.

SECTION-LINER.

SPECIFICATION forming part of Letters Patent No. 618,742, dated January 31, 1899.

Application filed March 22, 1898. Serial No. 674,828. (No model.)

To all whom it may concern:

Be it known that we, EDWARD ELLIS SHELDON and JOSEPH THORN FREEMAN, of Rochester, in the county of Monroe and State of New York, have invented a new and Improved Section-Liner, of which the following is a full, clear, and exact description.

The invention relates to drawing instruments; and its object is to provide a new and improved section-liner which is simple and durable in construction, easily manipulated, and readily attached to any T-square, straight-edge, or the like, and arranged for accomplishing accurate work, such as section-lining, laying off distances and ordinates, spacing, obtaining angles, &c.

The invention consists of novel features and parts and combinations of the same, as will be described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement as applied to a T-square. Fig. 2 is a side elevation of the same. Fig. 3 is a rear elevation of the same with parts in section. Fig. 4 is a transverse section of the improvement on the line 4 4 of Fig. 1. Fig. 5 is an enlarged sectional side elevation of the clutch mechanism. Fig. 6 is a transverse section of the same. Fig. 7 is a transverse section of the ruling-edge and scale, the section being taken on the line 7 7 of Fig. 1; and Fig. 8 is a rear end elevation of the cam for manipulating the clutch.

The improvement illustrated in the drawings is applied to a T-square having the usual head A and a blade A', the device being provided with a frame B, secured by screws or other means to the blade A' at or near the head A. The frame B is provided with bearings B', in which is mounted to turn a transversely-extending shaft C, carrying at one outer end an arm C', provided at its free end with a finger-piece C², adapted to be engaged and pressed by the thumb of the left hand of the operator when the device is used.

On the shaft C is secured a segmental gear-wheel C³ in mesh with a rack D', secured to

the under side of a rod D, extending longitudinally and parallel with the blade A' and fitted to slide at one end in a bearing carried by the frame B, the other end having a screw F, screwing in the frame B and serving to form a stop for the rod D by the outer end of the rack D' abutting against the inner end of the said screw. By adjusting the screw F, more or less throw is given to the rod D, as hereinafter more fully described. A spring E is coiled on the rod D and rests with one end against the frame B and with its other end abuts against a head D², secured to the rod D and extending downwardly to carry a rod G, fitted to slide in the frame B and preferably made in sections connected with each other by a coupling G' of any approved construction. A spring E' is also coiled on the end of the rod G, one end resting against the frame B and the other end abutting against the head D² to reinforce the spring E, both springs E E' serving to normally hold the rod G in an innermost position, the rack D' abutting against the screw F. The outward movement of the rod G is limited by a stop-pin B², carried by the frame B and adapted to be engaged by the head D², so that the motion of the rod G is limited between the screw F and the said stop-pin B². Thus when the operator presses the finger-piece C² the turning of the shaft C causes the segmental gear-wheel C³ to impart a forward motion to the rack D' and the rod D until the head D² abuts against the pin B², and when the operator releases the pressure on the finger-piece C² the springs E E' return the rods D and G back to their forward position—that is, until the rack D' abuts against the screw F. By screwing the screw F inward or outward, more or less throw can be given to the rods D and G.

The rod G extends over the blade A' at or near the middle thereof, as plainly indicated in the drawings, and passes through a clutch H, having a casing H', secured to a slide I, extending transversely of the blade A' and guided thereon by a longitudinal bar I', engaging one edge of the blade. A spring I², carried by the slide, engages with its free ends the other edge of the said blade.

On the end of the slide I, carrying the guide-bar I', is fulcrumed the ruling-edge J, adapted

to be swung into any desired angle relatively to the blade A', according to the angle desired to be given to the lines to be drawn, it being understood that the lines are drawn
5 along one side of the said ruling-edge. A clamping-screw K serves to clamp the ruling-edge J to the slide I, and the pivotal end of the said edge is provided with a pointer J', indicating on a graduated protractor L, carried by the slide I, so that the operator is enabled, by means of the pointer J' and the said protractor L, to set the ruling-edge J to any desired degree relatively to the blade A' of the T-square.

15 The clutch H is so arranged that the reciprocating motion given to the rod G upon pressing and releasing the finger-piece C², as above explained, moves the clutch and the slide I, with the ruling-edge J, either forward
20 or backward on the blade A'. For this purpose the clutch is arranged as follows: The casing H' is provided at the inside with two conical surfaces H² H³, having their base ends toward the outer ends of the casing, as plainly indicated in Figs. 3 and 5. The surfaces H²
25 and H³ are adapted to be engaged by balls H⁴ H⁵, held in collars H⁶ H⁷, respectively, fitted to slide loosely on the rod G, the collars being pressed on by springs H⁸ H⁹, respectively, abutting with their outer ends against the heads
30 of the casing. A cam N, having a flat surface on one side, as shown in Fig. 8, extends between the inner adjacent ends of the collars H⁶ H⁷, and this cam N is provided with a stem N', extending transversely and mounted to slide in suitable bearings in the casing H'. The outer end of the stem N' is provided with a handle N², under the control of the operator, for throwing the cam into one of three
40 positions—that is, to throw one collar, with its balls, in mesh with the corresponding surface, while the other is held out of engagement therewith, or vice versa, or to throw both collars, with their balls, out of engagement with the surfaces H² and H³ of the casing H', so that the operator is enabled to shift the clutch, with the slide I and ruling-edge J, by hand forward or backward on the blade A' without interference from the clutch.

50 When the cam N is in the position shown in Figs. 3 and 5, then the forward clutch-collar H⁷ is pressed outward by the cam N, so that its balls H⁵ are out of contact with the surface H³ of the casing, while the flat edge of the cam N is next to the inner edge of the clutch-collar H⁶, so that the latter is pressed inward by its spring H⁸ to bring the balls H⁴ in frictional contact with the surface H². When the finger-piece C² is pressed
60 and a forward sliding motion is given to the rod G in the direction of the arrow a', then the balls H⁴ in binding on the surface H² and the rod G carry the latter along in the direction of the arrow a', and when the operator releases the finger-piece C² and the rod G moves in the inverse direction of the arrow a' then the collar H⁶, with its balls H⁴, re-

leases the rod G as the pull of the said rod G tends to move the collar H⁶ against its spring H⁸, so that the balls H⁴ do not bind on the surface, and consequently the casing H', with the slide I and ruling-edge J, remains stationary during the return stroke of the rod G. As the movement of the latter is regulated by the screw F, as previously explained,
75 it is evident that on each forward stroke of the rod G the ruling-edge J is moved a corresponding distance forward for drawing the next line.

When it is desired to move the slide I in the inverse direction of the arrow a' during the return stroke of the rod G, the operator throws the handle N² over into an opposite position, so as to move the collar H⁶ outward against the spring H⁸ to render this collar and its balls inactive and to allow the spring H⁹ to press the collar H⁷ inward and bring its balls H⁵ in frictional contact with the surface H³ and the rod G. During the forward stroke of the rod G in the direction of the arrow a' the collar H⁷ yields on its spring H⁹; but on the return stroke of the said rod the collar H⁷ and the balls H⁵ are turned in the same direction, and consequently the balls bind on the surface H³ and rod G, so that the casing H' is carried along and with it the slide I and ruling-edge J.

When the handle N² is thrown into a vertical position—that is, midway between the two positions previously described—then the cam N holds both collars H⁶ and H⁷ in an outermost position to prevent their balls from binding on the rod G and the surfaces H² and H³ and allow forward or backward movement of the casing and slide, as above mentioned.

In order to securely hold the cam N in any of its positions, we provide the handle N² with a spring-pressed pin N³, adapted to engage one of three apertures in a disk N⁴, carried by the casing H', the apertures being arranged relatively to the three positions of the handle, as above mentioned. A scale O is adapted to be removably secured to the ruling-edge J at one side thereof, the said scale being for this purpose provided with rearwardly-extending arms O', having downwardly-extending pins O², adapted to engage eyelets P, carried by the ruling-edge J. Now by simply placing the scale O against the side of the ruling-edge and pressing the pins O² into the eyelets the said scale is securely held in place on the ruling-edge for use in profile and other work.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. A drawing-tool provided with a reciprocating rod, a clutch on said rod, and comprising a casing through which said rod passes loosely, and formed at its inside with a beveled surface, a spring-pressed collar on the casing, and through which the rod passes, and balls held in the collar and adapted to bind on the said casing-surface and the rod, substantially as shown and described.

2. The combination of a reciprocating rod, and a double clutch working therewith and comprising a casing having oppositely-beveled surfaces, collars in the said casing and through which said rod extends loosely, springs for pressing the collars in opposite directions, and balls in the said collars for binding on the said surfaces and the said rod, substantially as shown and described.

3. The combination of a reciprocating rod, and a double clutch working therewith and comprising a casing having beveled surfaces, collars in the said casing and through which said rod extends loosely, springs for pressing the collars in opposite directions, balls in the said collars for binding on the said surfaces and the said rod, and means under the control of the operator, for manipulating the said collars to move either or both out of action, substantially as shown and described.

4. The combination of a reciprocating rod, and a double clutch working therewith and comprising a casing having oppositely-beveled surfaces, collars in the said casing and through which said rod extends loosely, springs for pressing the collars in opposite directions, balls in the said collars for binding on the said surfaces and the said rod, and a cam between the said collars, for throwing either or both out of action, the cam being provided with a stem journaled in the casing and provided at its outer end with a handle, substantially as shown and described.

5. The combination of a reciprocating rod, and a double clutch working therewith and comprising a casing having oppositely-beveled surfaces, collars in the said casing and through which said rod extends loosely, springs for pressing the collars in opposite directions, balls in the said collars for binding on the said surfaces and the said rod, a cam between the said collars, for throwing either or both out of action, the cam being provided with a stem journaled in the casing and provided at its outer end with a handle, and means for locking the cam in position, upon adjustment of the handle, substantially as shown and described.

6. The combination of a bearing, a recip-

rocal rod mounted therein, means for driving the rod, a clutch mounted on the rod and adapted to be advanced step by step thereby, and a ruler having connection with the clutch and moved in unison therewith.

7. The combination of a bearing, a rod mounted therein, a spring pressing the rod to hold the same in a normal position, the rod being reciprocal in the bearing against the spring, a rack attached to the rod, a sector mounted to swing on the bearing and meshing with the rack of the rod, a second reciprocal rod also mounted in the bearing and having connection with the first-named rod, the clutch coacting with the rod and moved thereby, a slide in connection with the clutch, and a ruler carried on the slide.

8. The combination of a rod, a spring pressing the rod in one direction, a hand-operated device for moving the rod against the spring by which means the rod is reciprocated, a clutch coacting with the rod and serving to engage and disengage the same, whereby the clutch may be advanced step by step by the movement of the rod, and a ruler having connection with and moved by the clutch.

9. The combination with a base, of a rod, means for imparting reciprocal or back-and-forth movement to the rod, and a clutch mounted to slide over the base and on the rod, and coacting with the rod, to engage and disengage the same, by which means the clutch may be advanced step by step by the movement of the rod.

10. The combination with a base, of a rod mounted thereon to have limited reciprocal movement, and a two-part or double clutch adapted to slide over the base and coacting with the rod, by which to move the clutch in either direction longitudinally with the rod, one part of the clutch acting to move the clutch in one direction and the other part of the clutch acting to move the clutch in the other direction.

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