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E. H. CRAIGE.

MECHANICAL TRACING PEN.

No. 426,987. Patented Apr. 29, 1890.

Fig. 1.

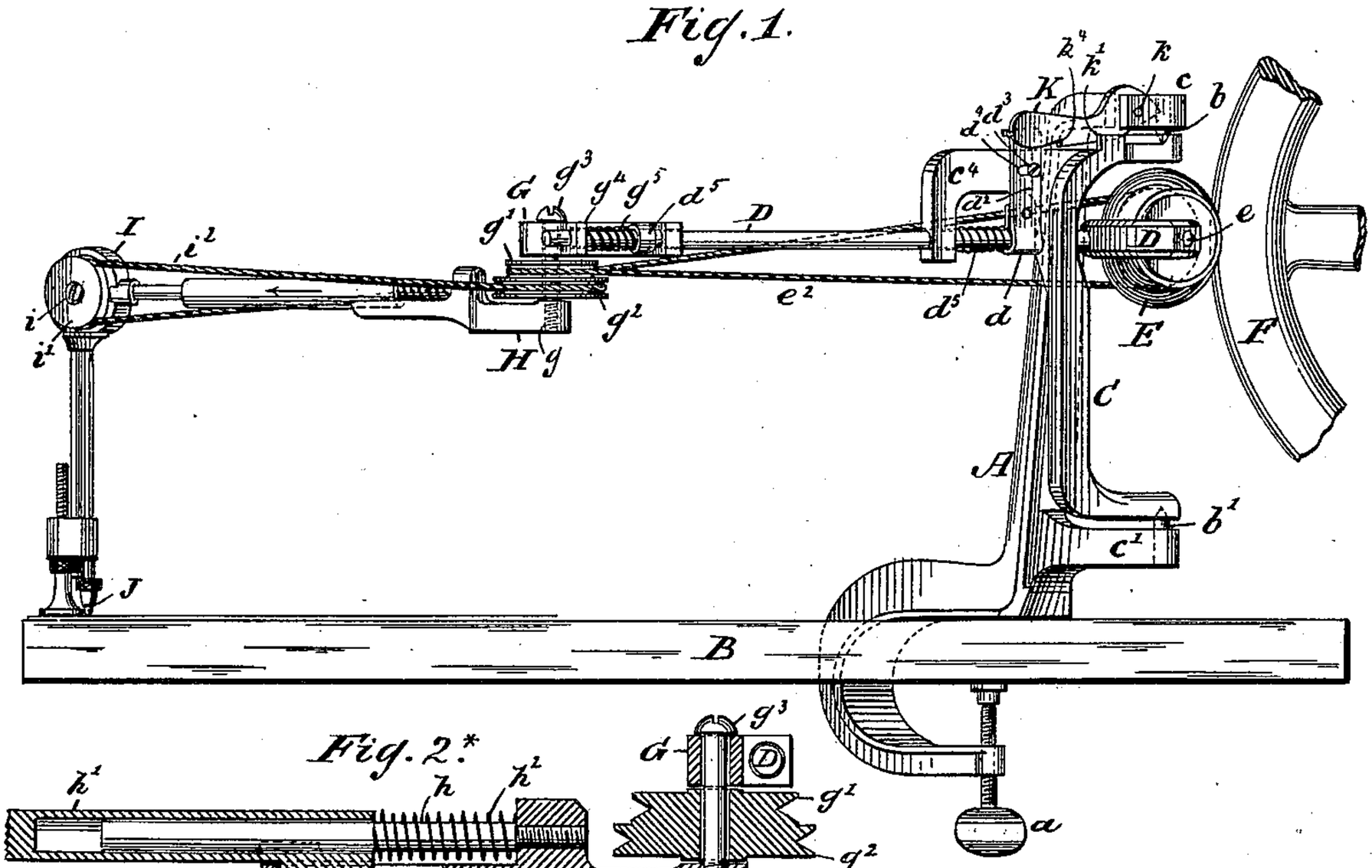
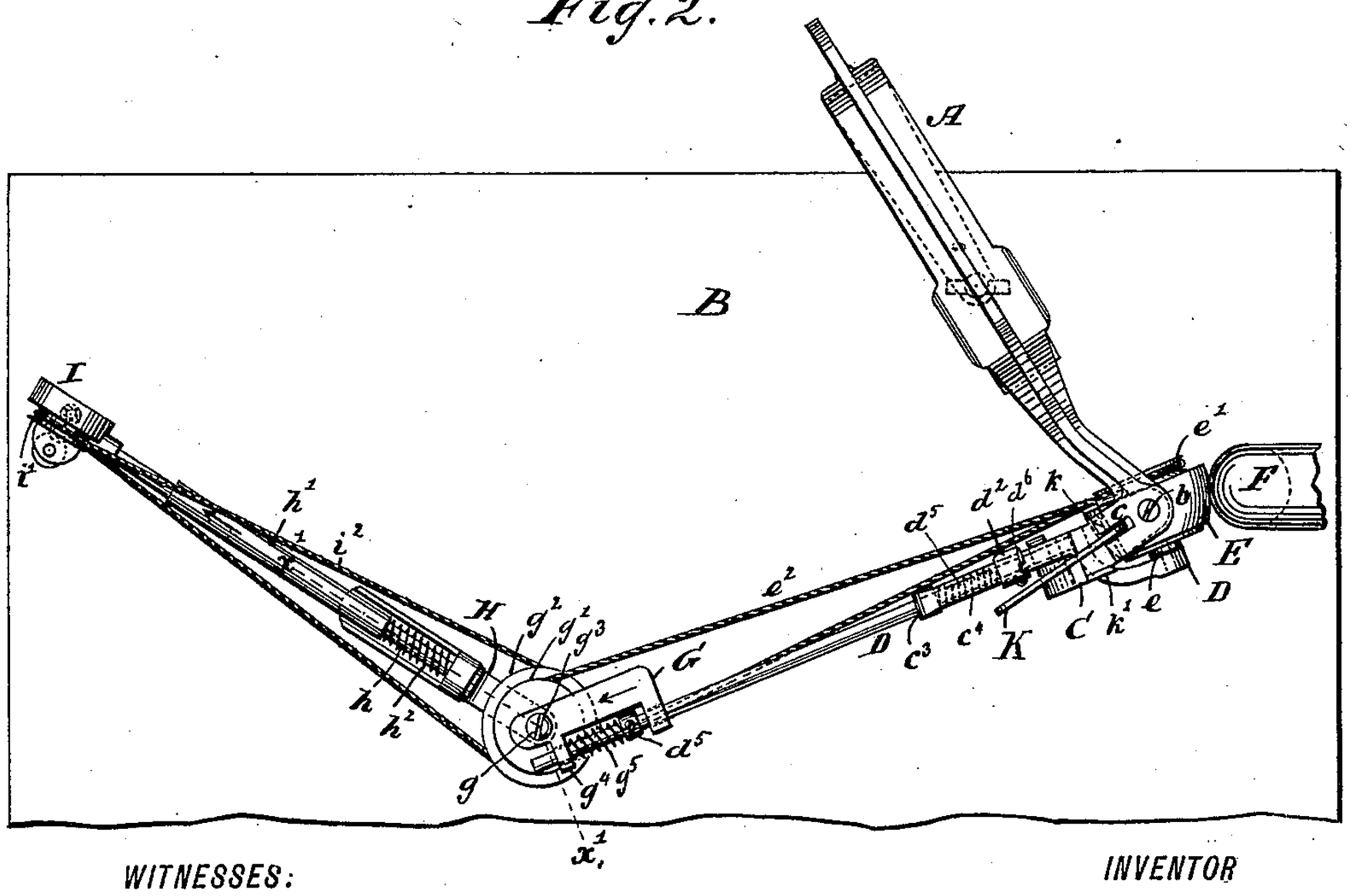


*Fig. 2.**

Fig. 2.



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his ATTORNEYS

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Fig. 3.

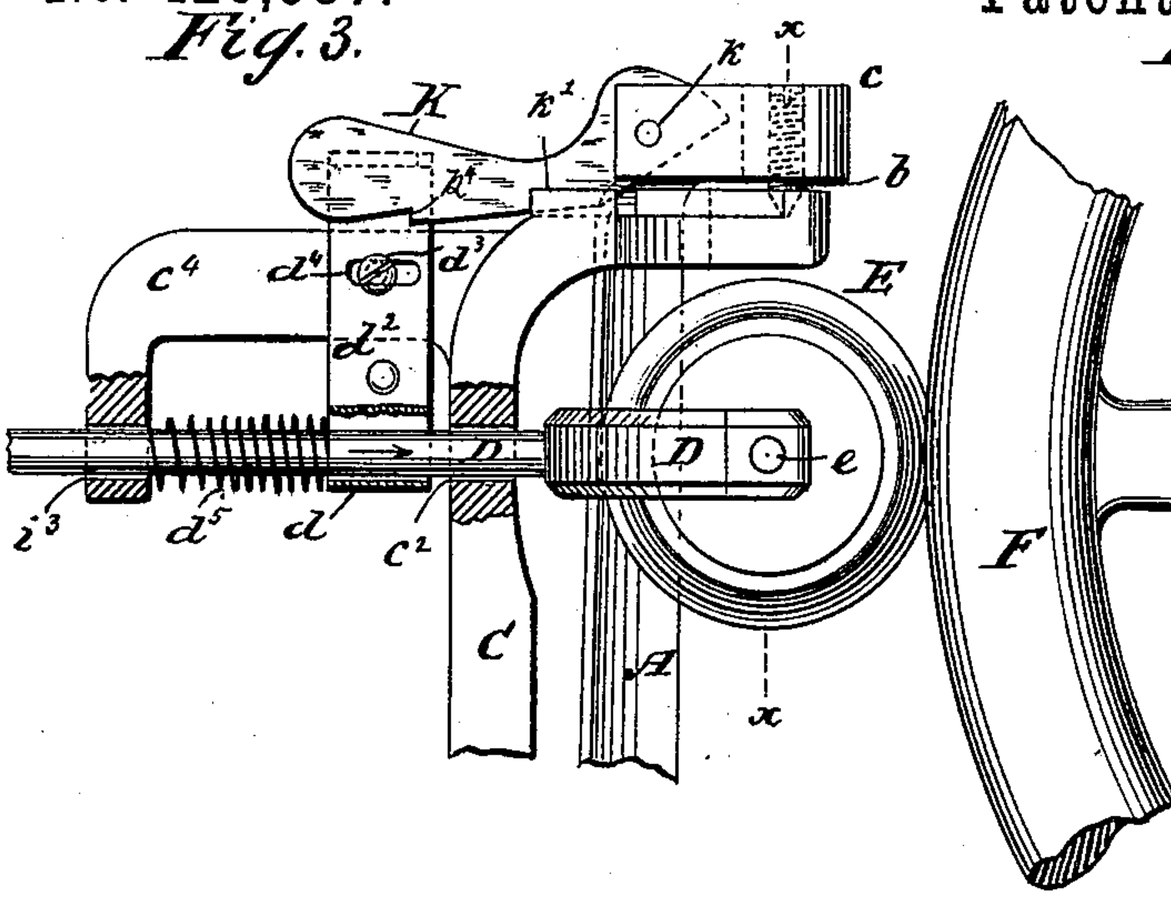

Fig. 4.

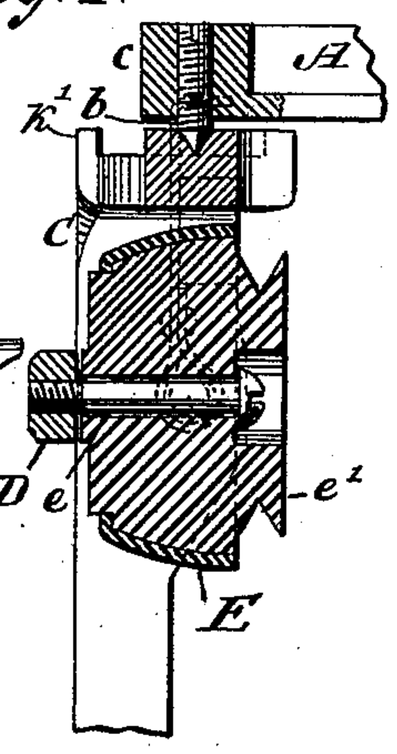

Fig. 5.

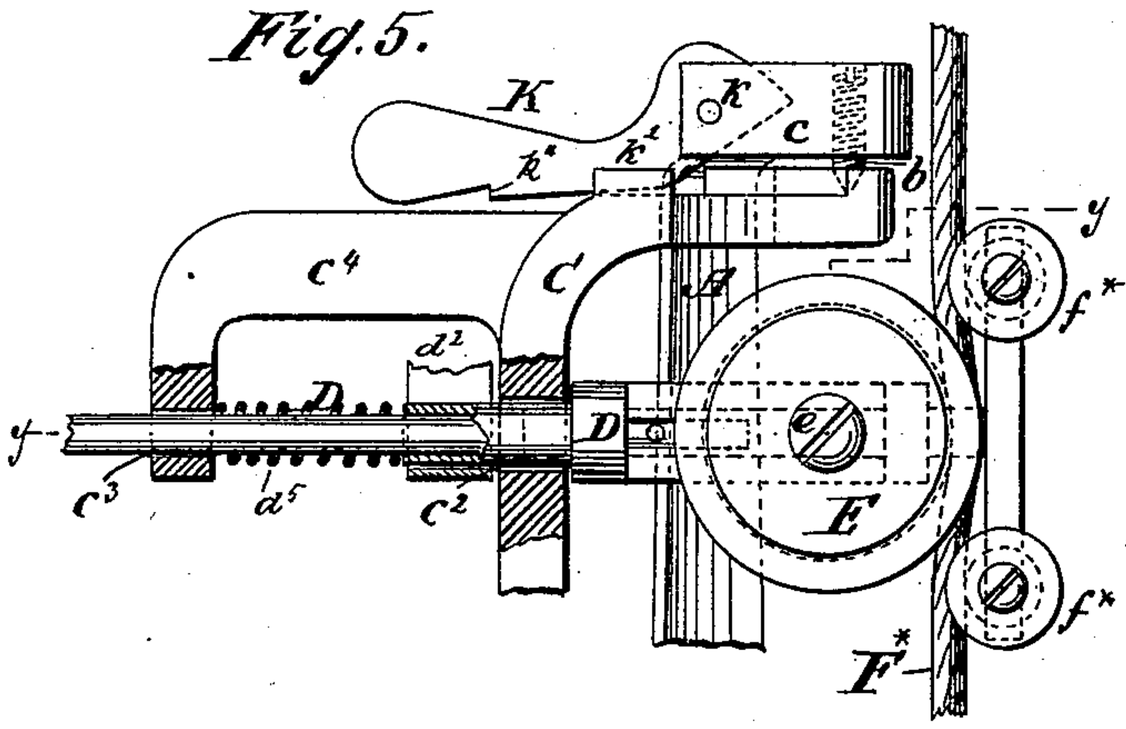

Fig. 6.

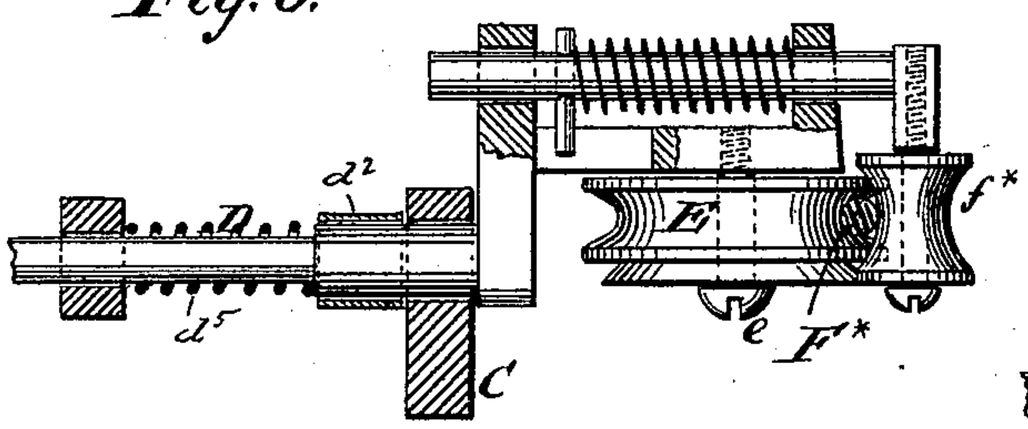

Fig. 7.

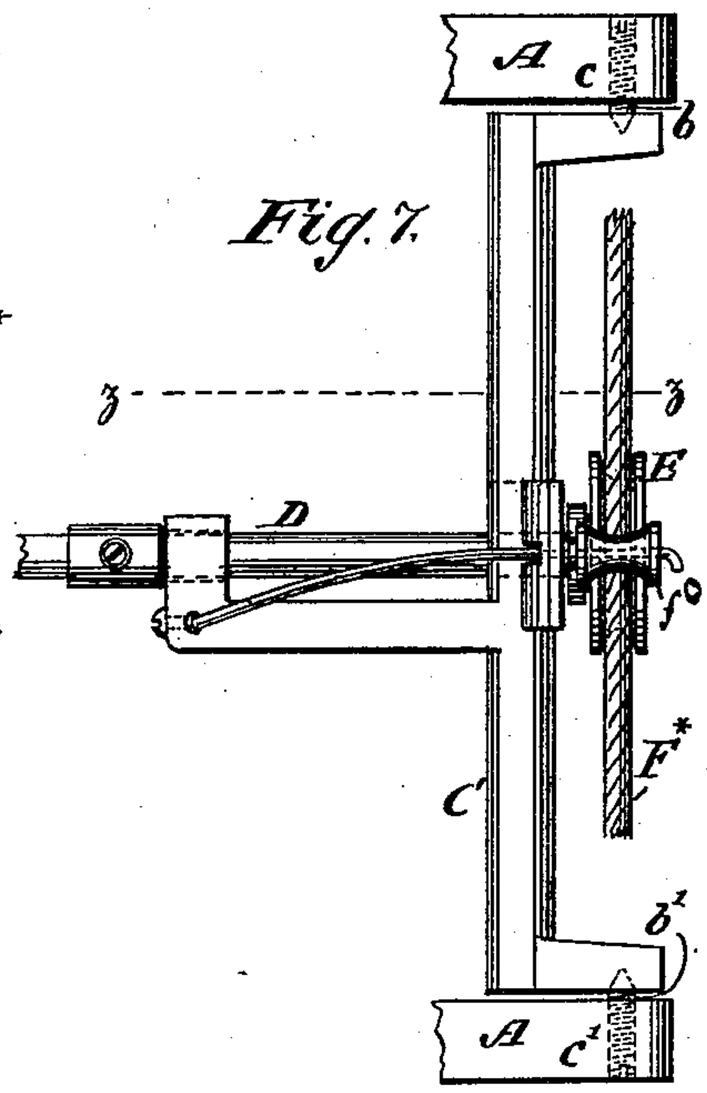

Fig. 8.

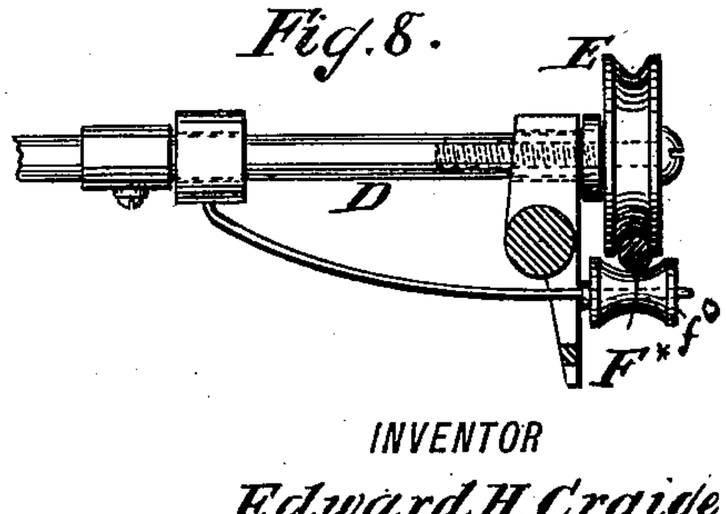

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Fig. 9.

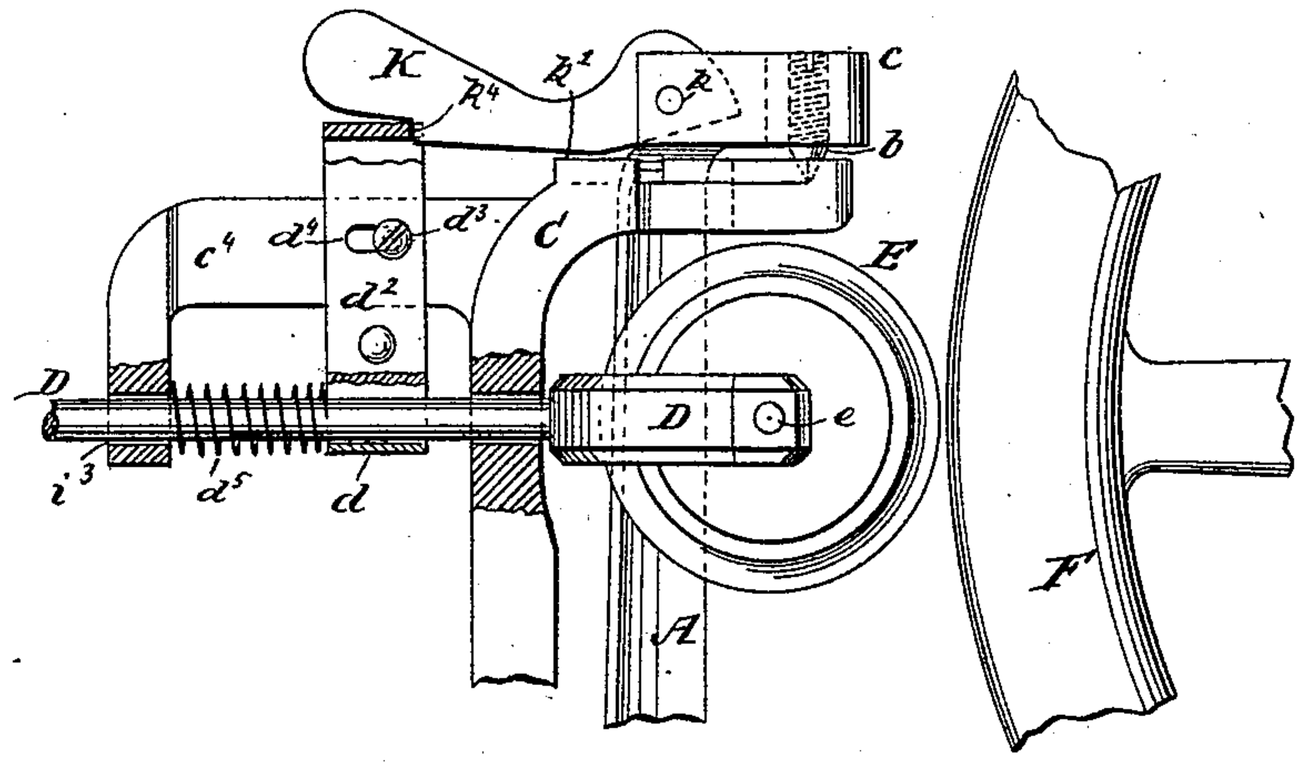
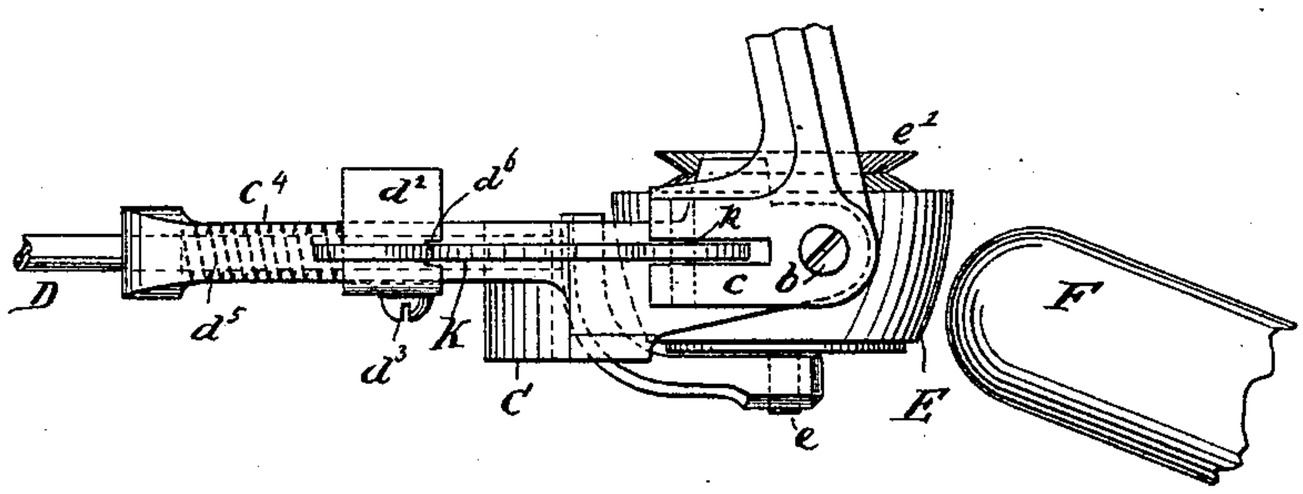


Fig. 10.



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UNITED STATES PATENT OFFICE.

EDWARD H. CRAIGE, OF BROOKLYN, NEW YORK.

MECHANICAL TRACING-PEN.

SPECIFICATION forming part of Letters Patent No. 426,987, dated April 29, 1890.

Application filed June 13, 1889. Serial No. 314,092. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. CRAIGE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Mechanical Tracing-Pens, of which the following is a specification.

This invention relates to a novel construction of the mechanism employed for imparting and controlling the motion of a mechanical tracing-pen or other tool, as pointed out in the following specification and claims and illustrated in the accompanying drawings, in which—

Figure 1 represents a side view. Fig. 2 is a plan or top view. Fig. 2* is a vertical section on the plane x' x', Fig. 2, on a larger scale than the previous figures. Fig. 3 is a side view of a portion of the driving-gear. Fig. 4 is a vertical section in the plane x x, Fig. 3. Fig. 5 is a plan or top view showing a modification of the driving-gear. Fig. 6 is a horizontal section on the plane y y, Fig. 5. Fig. 7 is a plan or top view of another modification of the driving-gear. Fig. 8 is a horizontal section in the plane z z, Fig. 7. Fig. 9 is a side view similar to that shown in Fig. 3, representing the parts in a different position. Fig. 10 is a plan or top view of the same.

Similar letters indicate corresponding parts.

In the drawings, the letter A designates a standard, which is so constructed that it can be securely fastened in the desired position. In the example shown in the drawings said standard is provided with a clamping-screw a, by means of which it can be secured to a table B—such, for instance, as a sewing-machine table. In this standard is mounted a swivel-support C, which swings in a horizontal plane on pivots b b', secured in arms c c', which project from the standard. (Best seen in Fig. 1.) In the swivel-support C is mounted a rod D, which is guided in eyes c^2 c^3, one of which passes through the body of the support C, while the other is formed in the end of an arm c^4, which extends from the swivel-support C.

In the example shown in Figs. 1 to 4, inclusive, the rod D is provided with a collar d, from which extends a tappet d^2, which is held in position by a screw d^3, passing through a slot d^4 and tapped into the arm c^4, so that the collar d is free to move back and forth with the rod D within the limits of the slot d^4. Between the eye c^3 of the arm c^4 and the collar d is placed a spiral spring d^5, which has a tendency to force said rod in the direction of the arrow marked thereon in Fig. 3. In the rod D is firmly secured a pin e, (best seen in Fig. 4,) which forms the bearing for a friction-wheel E, and to this friction-wheel is firmly connected a grooved pulley e'. The standard A is secured in such a position that the spring d^5 presses the friction-wheel E up against the rim of a fly-wheel F, which may be the fly-wheel of a sewing-machine, so that when motion is imparted to this fly-wheel the friction-wheel E and the pulley e' are caused to revolve with great velocity. The face of the frictional wheel is convex, and it may be made tapering, as shown in Fig. 4, so that it can readily adapt itself to the rim of the fly-wheel F when the swivel-support C is swung around in a horizontal plane on its pivots b b'.

On the rod D is loosely mounted a head G, which carries an arbor g, on which are loosely mounted two pulleys g' g^2, which are firmly connected together, so that they are compelled to move together. The arbor g is firmly secured in the head H, and it is provided with a head g^3, which prevents it from slipping through the head G. (Best seen in Fig. 2*.) On the rod D is secured a collar d^5, and between this collar and a shoulder g^4 of the head G is placed a spring g^5, which has a tendency to push said head out in the direction of the arrow marked thereon in Fig. 2. From the pulley e' of the friction-wheel E extends a belt e^2 round the pulley g' on the arbor g, and the spring g^5 serves to preserve the tension of this belt.

In the head H is firmly secured a rod h, which extends into the tubular rod h', Fig. 2*, and on which is placed a spiral spring h^2, which has a tendency to press the tubular rod h' outward in the direction of the arrow marked thereon in Figs. 1 and 2.

On the tubular rod h' is firmly secured a projection h^3, which engages a slot h^4 in the head H and forms a stop to limit the outward motion of the rod h', Fig. 2*. To the outer end of this rod is firmly secured the casing I, which carries the tracing-pen J or another

tool, and through which extends a shaft i, from which the required motion is transmitted to the tracing-pen by any suitable connection. On the shaft i is mounted a pulley i', from which extends a belt i^2 round the pulley g^2. The spring h^2 serves to preserve the tension of the belt i^2.

It will be noticed from the above description that the rod or arm h', which carries the tracing-pen, can be freely swung round the arbor g without disturbing the operation of the belt i^2; but it is desirable that the swiveling movement of the support C shall be limited, since if said support should be swung round beyond a certain limit the friction-wheel E would be liable to lose its grip on the fly-wheel F. I have therefore connected with the standard A a stop K, which swings on a pivot k and when lowered rests between the tappet d^2 and a lip k', formed on the swivel-support C, Figs. 1, 2, and 3, so that the tappet limits the motion of the support in one and the lip k' in the opposite direction.

If it is desired to throw the friction-wheel E out of gear with the fly-wheel F, the tappet d^2 is forced back to the position shown in Figs. 9 and 10 and the shoulder k^4 of the stop K is brought to engage a notch d^6 in the horizontal portion of the tappet d^2, Fig. 10. When the stop K is thrown up, so as to release the notch d^6, the spring d^5 throws the friction-wheel in contact with the fly-wheel F.

In the example shown in Figs. 5 and 6 the friction-wheel E, instead of being pressed up against the rim of a fly-wheel F, is held in contact with a moving belt or rope F*, and in order to preserve the contact said belt is subjected to the action of spring-pressed rollers f^* f^*.

In the example shown in Figs. 7 and 8 the moving belt or rope F* is held in contact with the friction-wheel E by a single spring-pressed roller f°.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the standard A, of the swivel-support C, swinging in a horizontal plane on independent pivots, the rod D, carried by said support, the friction-wheel E, the pulley e', attached to this wheel, the head G, carried by the rod D, the arbor g, the head H, the pulleys g' g^2, mounted on this arbor, the rod h h', carried by the head H, the casing I, carried by the rod h h', the pulley i', carried by the casing I, and the belts e^2 i^2, substantially as shown and described.

2. The combination, with the standard A, of the swivel-support C, the rod D, carried by said support, the spring d^5, made to act on said rod, the convex friction-wheel E, and the stop K, substantially as shown and described.

3. The combination, with the standard A, of the swivel-support C, swinging in a horizontal plane on independent pivots, the rod D, carried by said support, the friction-wheel E, the pulley e', secured to the friction-wheel, the head G, mounted loosely on the rod D and subjected to the action of the spring g^5, the arbor g, the head H, the pulleys g' g^2, mounted on this arbor, the rod h, firmly secured in the head H, the tubular rod h', the casing I, carried by the rod h', the pulley i', carried by the casing I, and the belts e^2 i^2, substantially as described.

4. The combination, with the standard A, of the swivel-support C, the rod D, the spring d^5, the convex friction-wheel E, and the fly-wheel F, substantially as described.

5. The combination, with the standard A, of the swivel-support C, the rod D, the spring d^5, the convex friction-wheel E, the movable tappet d^2, the stop K, and the fly-wheel F, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

EDWARD H. CRAIGE. [L. S.]

Witnesses:

J. VAN SANTVOORD,

ERNST F. KASTENHUBER.