

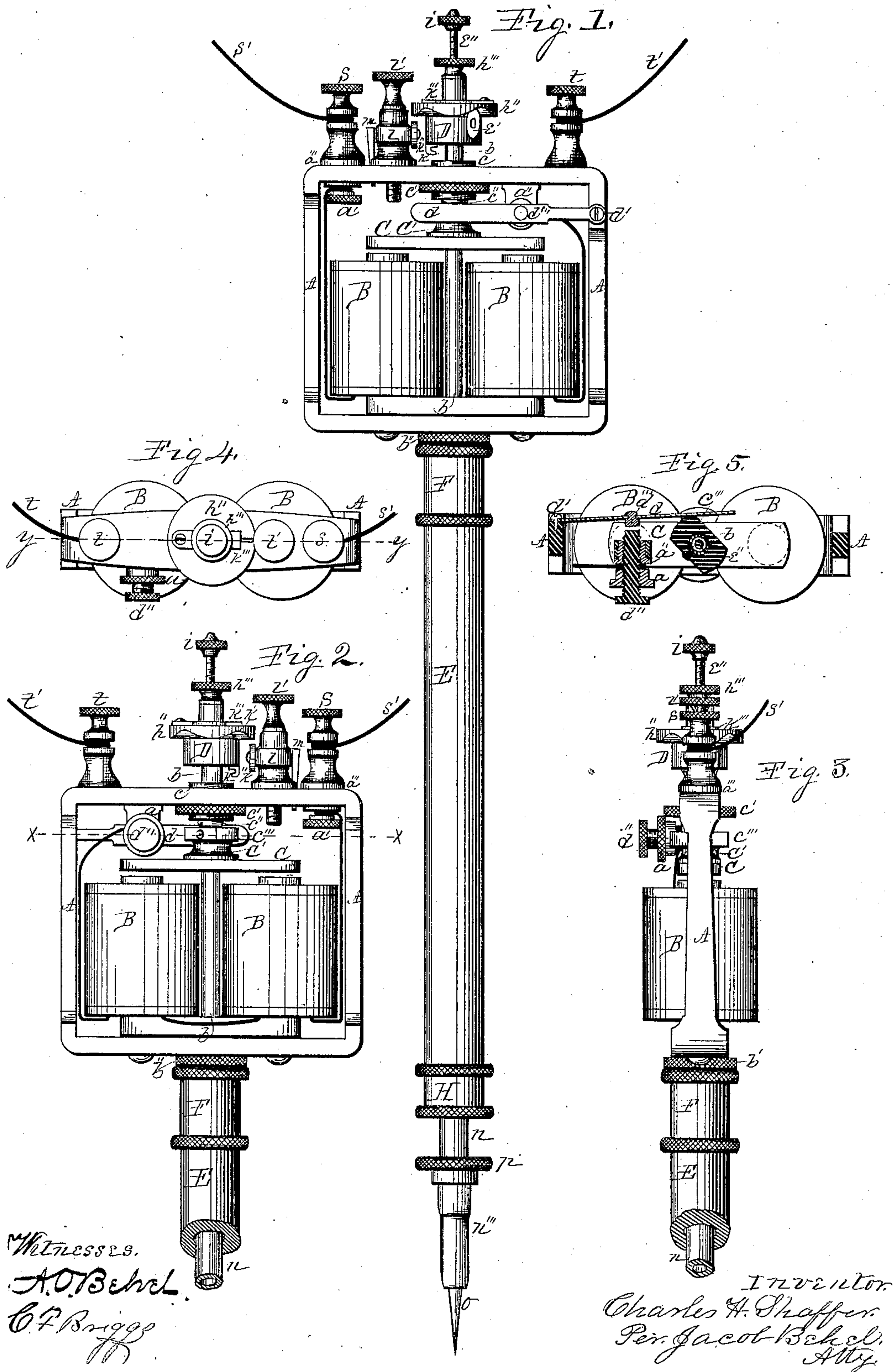
(No Model.)

3 Sheets—Sheet 1.

C. H. SHAFFER.
RETOUCHING MACHINE.

No. 294,817.

Patented Mar. 11, 1884.



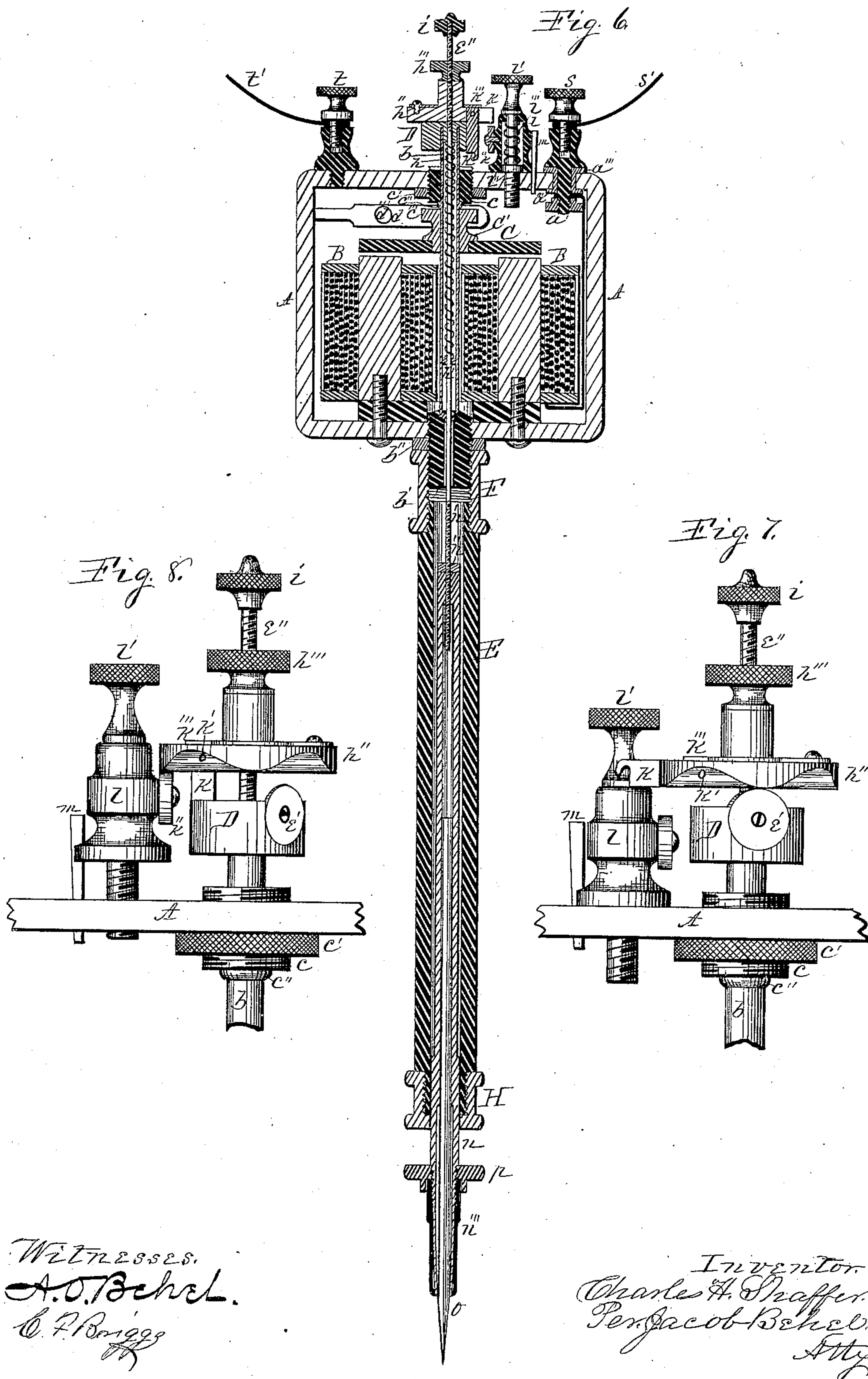
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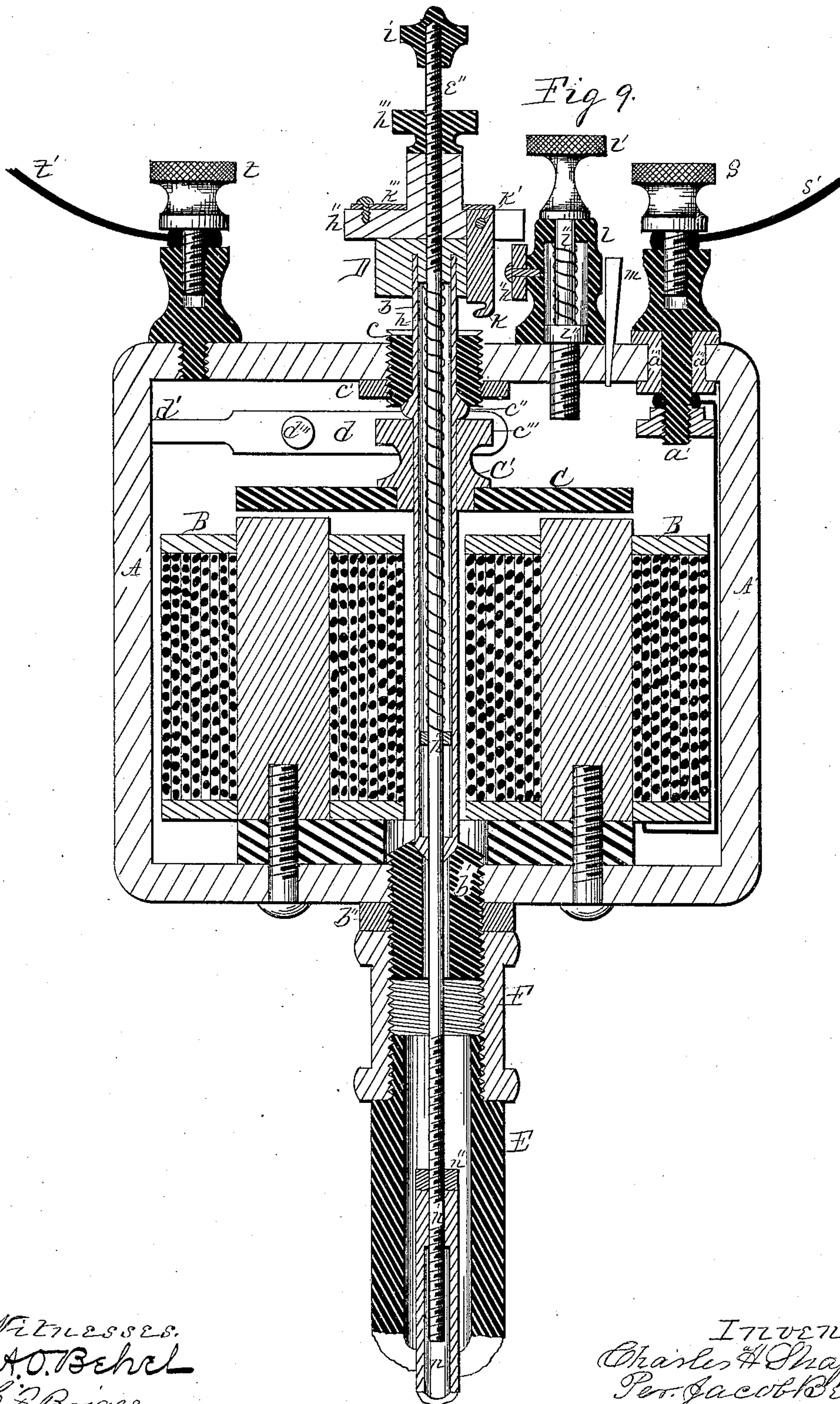
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UNITED STATES PATENT OFFICE.

CHARLES H. SHAFFER, OF ROCKFORD, ILLINOIS, ASSIGNOR OF ONE-HALF
TO JONES, WOODRUFF & CO., OF SAME PLACE.

RETOUCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 294,817, dated March 11, 1884.

Application filed August 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SHAFFER, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Retouching-Machine, of which the following is a specification.

This invention relates to that class of machines known as "retouching-machines;" and its object is to produce a machine capable of use mainly in the fine arts for the purpose of retouching crayonings, negatives, and other work requiring retouching to produce the desired effects. For this purpose I have designed and constructed the machine represented in the accompanying drawings, in which—

Figure 1 is a side elevation, showing the parts in position as a rotary machine. Fig. 2 is also a side elevation, showing the opposite side to that shown in Fig. 1. Fig. 3 is an edge elevation. Fig. 4 is a plan view of head end. Fig. 5 is a transverse section on dotted line *x* on Fig. 2. Fig. 6 is a lengthwise central section on dotted line *y* on Fig. 4. Fig. 7 shows the parts adjusted in position to be employed as a reciprocating machine. Fig. 8 shows the parts adjusted in position to be employed as a combined rotary and reciprocating machine. Fig. 9 is an enlarged lengthwise central section on dotted line *y*, Fig. 4.

In the figures, A represents a supporting-frame, rectangular in outline form, and of proper dimensions to support an electro-magnetic engine of a suitable capacity. Within this rectangular frame is mounted an electro-magnetic engine of one of the well-known forms, consisting of the temporary magnets B, of ordinary construction, fixed in position on the lower end beam of the frame, preferably with the axis of the cores in the plane thereof.

At *a* and *a'* are represented binding-posts, insulated from the supporting-frame by non-conducting bushings *a''* and *a'''*. These posts receive the ends of the wires coiled upon the magnets.

At *b* is represented a tubular shaft supported to revolve between the magnets in the plane of their axis, having a foot-journal of conic form supported to revolve in a conic

seat in a bearing, *b'*, having a screw-thread connection with the supporting-frame, by which it is made adjustable, and is provided with a jam-nut, *b''*, to fix it in position when adjusted. This tubular shaft is also supported to revolve in a bearing, *c*, having a screw-thread connection with the supporting-frame in the side thereof opposite to the bearing *b'*. This bearing *c* is also provided with a jam-nut, *c'*, by which to fix it in position when adjusted, and its inner end is produced in hollow conic form to furnish an end bearing to the tubular shaft. The tubular shaft at its junction with its bearing *c* is provided with a collar or an enlargement, *c''*, produced in conic form, to engage the conic-formed end seat in the bearing *c*.

At C is represented an armature of proper dimensions, having its center portion provided with a hub, *C'*, bored to receive the tubular shaft *b*, on which it is mounted in position to revolve therewith in a plane at right angles to the axis of the cores of the magnets a suitable distance from their polar ends. The outer portion of the hub *C'* is produced in disk form, as at *c'''*, having segments cut from its opposite sides on an angle at about forty-five degrees relatively with a radial line passing through the lengthwise center of the armature, producing a cut-off cam which, in connection with a cut-off spring, *d*, serves to make and break the circuit twice in each revolution of the armature. This cut-off spring is fixed at the point *d'* to the side beam of the supporting-frame, from which point it extends transversely toward the center thereof, over the cut-off cam.

At *d''* is represented a circuit-closing screw supported in the axial center of the insulated binding-post *a*, having a screw-thread connection therewith, by which it is made adjustable endwise. This circuit-closing screw is designed to engage a stud, *d'''*, projecting from the inside of the cut-off spring, and, in connection with the cam *c'''*, serves to make and break the circuit to impart a rotary movement to the armature.

At D is represented a clutch-head of collar form, fixed to the projecting end of the tubular shaft to revolve therewith. One side of

this clutch-head is slotted radially in the lengthwise direction of its axis, to receive a lever clutch-arm, *k*. It is also provided on one side with an anti-friction wheel, *e'*, to revolve on a journal-support, having its periphery rising above the outer end face of the head.

At *e''* is represented a center shaft, supported in the axial center of the tubular shaft in the end bearings thereof in a manner capable of a free endwise movement, and to permit an independent rotary movement of the tubular shaft. This shaft *e''* within the tubular shaft is surrounded with a compression spiral spring, *h*, having a foot-support, *h'*, of collar form fixed on the shaft, and its opposite end rests against the clutch-head *D* on the outer end of the tubular shaft.

At *h''* is represented a disk-formed cam, having its inner face produced in corrugations radiating from its axial center. This disk-formed cam has a screw-thread connection with the shaft *e''*, by which it is made adjustable thereon to increase or lessen the holding force of the spring *h*, and when adjusted is fixed in place by means of a jam-nut, *h'''*.

At *i* is represented a thumb-nut fixed on the extreme outer end of the shaft *e''*, by means of which it may be rotated in its screw-connection with the disk-cam for the purpose of adjustment.

At *k* is represented a clutch-latch of blade form, having a pivotal connection at *k'* with the disk-cam in position to enter the radial slot in the clutch-head when the latch is turned in a position parallel with the shaft, as shown in Figs. 1, 2, 6, 8, and 9, and serves to connect the center shaft, *e''*, with the tubular shaft *b*, to cause them to revolve together. This pivoted clutching-latch *k* is capable of adjustment to a radial position, as shown in Fig. 7, in which position its free end will engage the adjustable support of the anti-friction wheel *k''*, to prevent rotation of the center shaft.

At *k'''* is represented a plate-spring fixed to the outer face of the disk-cam, with its free end overlapping the pivoted end of the clutching-latch in a manner to hold it in its open or closed position. From this construction, and with the clutching-latch in its open position and the parts properly adjusted, it will be seen that the action of the spring *h* within the tubular shaft will operate to hold the disk-cam in contact with the anti-friction wheel *e'* on the clutch-head, the rotations of which will impart an endwise reciprocating movement to the center shaft.

At *l* is represented a tubular support, on the side of which the anti-friction wheel *k''* is mounted to revolve on a suitable journal-support.

At *l'* is represented a thumb-screw passed through the axial center of the tubular support, and is provided with a collar, *l''*, to freely enter the enlarged chamber of the support. This thumb-screw within the chamber of the

support is surrounded with a compression spiral spring, *l'''*, having one end thereof resting against the end of the chamber and its other end against the collar on the screw. This support is adjustably fixed on the supporting-frame by means of a screw-thread connection of the thumb-screw *l'* therewith in such position thereon that the wheel *k''* will engage the corrugated inner face of the disk-cam when adjusted for the purpose. The base rim of the tubular support *l* is grooved on its periphery to receive a guide-bar, *m*, fixed in the frame in a manner to permit of an endwise movement of the tube and prevent rotary movement thereof. By this construction and arrangement of the parts, with the clutch-blade engaged with the clutch-head and the anti-friction wheel *k''* adjusted to engage the disk-cam, it will be seen that a rotary movement of the armature will impart a rotary and reciprocating movement to the center shaft. The object of the spiral spring *l'''* in the tubular support *l* is to permit the tubular support to yield slightly under the stroke of the cam in its rapid revolutions over the anti-friction wheel *k''*, mounted on the tubular support, to relieve the concussion or jar.

At *E* is represented a hand portion of tubular form, preferably of non-conducting material, having a suitable connection with the supporting-frame—in this instance by means of the screw-threaded ferrule *F*, having a screw-threaded connection with the hand portion *E*, and with the screw-threaded bearing *b'* of the tubular shaft. The free end of this hand portion is also provided with a ferrule, *H*, having an axial opening to serve as a bearing to an inner pencil-tube.

At *n* is represented a pencil-receiving tube, having its inner end screw-threaded to receive the screw-threaded end portion, *n'*, of the center shaft, on which the tube may be adjusted endwise, and when adjusted is fixed in position by means of a jam-nut, *n''*. This pencil-receiving tube is fitted to revolve freely in the end bearing in the ferrule *H*, and is also capable of an endwise movement therein. The end portion of this pencil-receiving tube *n* projects from the free end of the hand portion, and its projecting end is provided with a pencil-holding device, *n'''*—in this instance substantially such as are found in the trade and are in common use, but may be any of the known varieties capable of use in this connection, for the purpose of holding the pencil *o*, which may be of any of the known varieties capable of use in the retoucher.

At *p* is represented a wheel of disk form, having a screw-threaded connection with the projecting end of the pencil-receiving tube, near the free end of the hand portion, in a convenient position for the operator to employ his finger to start, stop, and control the rotary and reciprocating movement of the pencil.

At *s* is represented a binding-post, with

which one of the poles of the battery is connected by means of a wire, s' . This binding-post is supported on the frame, but is insulated therefrom by means of the non-conducting bushing a''' , inserted in the frame, and the binding-post is supported therein.

At t is represented a binding-post fixed in the metallic supporting-frame, and is connected by a wire, t' , to the pole of the battery opposite the pole connected to the binding-post s , and serves to connect the battery and machine in complete circuit.

From the foregoing it will be seen that I have produced a retouching-machine in which the pencil is capable of a rotary movement, or a reciprocating movement, or a combined rotary and reciprocating movement.

In the use of my improved retouching-machine the pencil or crayon is properly adjusted and fixed in the machine; its free projecting end is then properly pointed, being reduced by grinding or otherwise, which fits the machine for use, to be employed by the operator in the manner of using pencils or crayons in retouching negatives, producing, retouching, and finishing crayons in all varieties.

I claim as my invention—

1. The combination, with the tubular shaft, with an armature mounted thereon and capable of a rotary movement, of a center shaft supported in the axial center of the tubular shaft and capable of an endwise reciprocating movement therein, substantially as and for the purpose set forth.

2. The combination, with the tubular shaft, with an armature mounted thereon and capable of a rotary movement, and with the center shaft supported in its axial center, of a clutching mechanism to connect the center shaft with the tubular shaft, or disconnect it therefrom, substantially as and for the purpose set forth.

3. The combination, with the center shaft supported in the axial center of the tubular shaft and capable of a rotary motion therewith, of a spring within the tubular shaft, and a cam

to engage an anti-friction wheel to impart an endwise reciprocating movement to the shaft in its rotary movement, substantially as and for the purpose set forth.

4. The combination, with the spring within the tubular shaft, and a cam mounted upon the central shaft, of an anti-friction wheel having an adjustable support to vary the throw of the shaft in its endwise reciprocating movements, substantially as and for the purpose set forth.

5. The combination, with the anti-friction wheel having an adjustable support, of a spring within the adjustable tubular support, substantially as and for the purpose set forth.

6. The combination, with the adjustable tubular support of the anti-friction wheel, having its base grooved, of a guide-bar to engage the groove in the base of the support, substantially as and for the purpose set forth.

7. The combination, with the cam mounted upon the center shaft and clutch-head, of a pivoted lever-latch capable of radial position, substantially as and for the purpose set forth.

8. The combination, with the cam and with the clutching-latch pivoted therein, of a spring to hold the latch in its clutching or radial positions, substantially as and for the purpose set forth.

9. The combination, with the cam mounted upon the center shaft and disengaged from the clutching-head, of an anti-friction wheel supported in the clutch-head to impart an endwise reciprocating movement to the center shaft, substantially as and for the purpose set forth.

10. The combination, with the center shaft and with the hand-piece, of a pencil-receiving tube having its projecting end provided with a pencil-holder, said tube suitably connected with the center shaft and supported in the axial center of the hand-piece, and capable of a rotary and reciprocating movement therein, substantially as and for the purpose set forth.

CHARLES H. SHAFFER.

Witnesses:

A. O. BEHEL,
DAN MILLES.