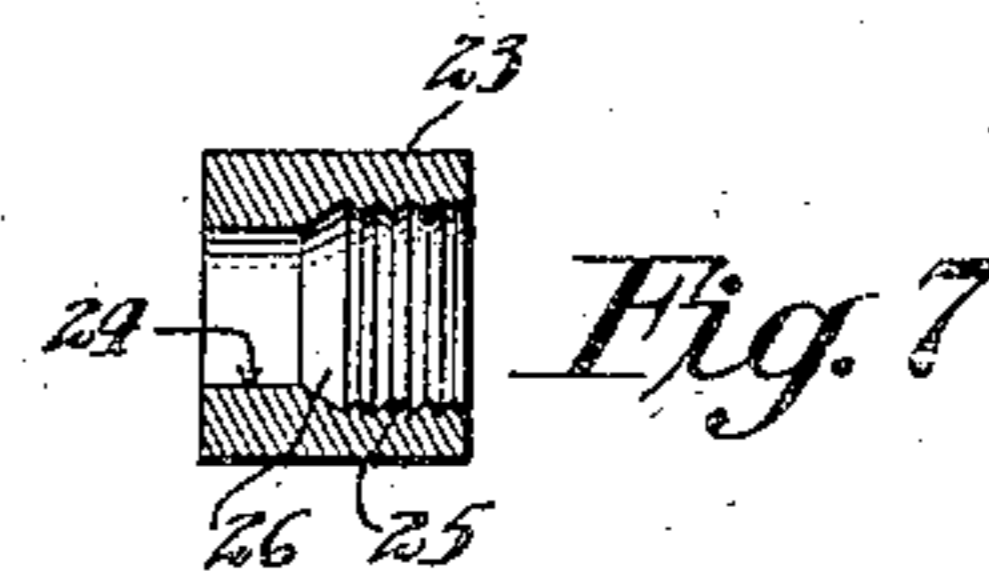
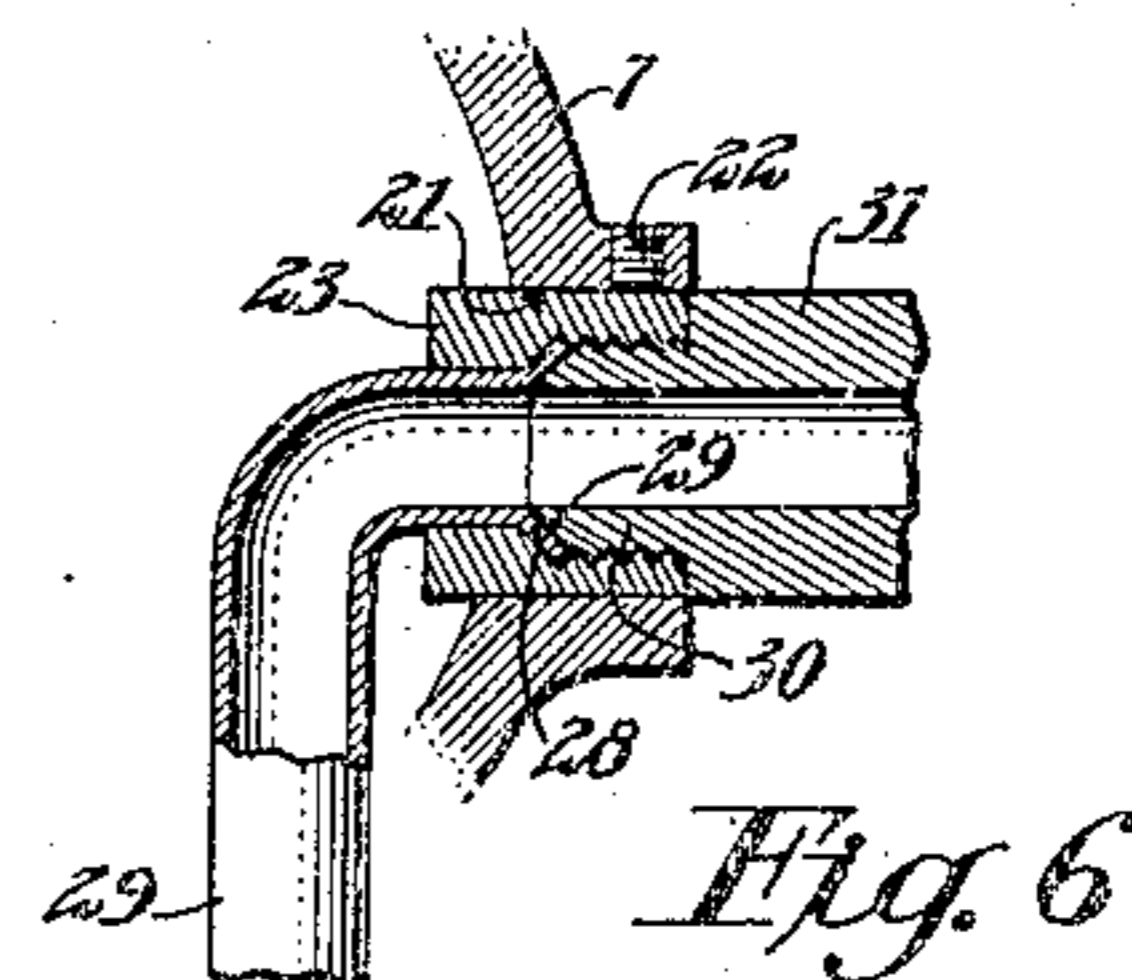
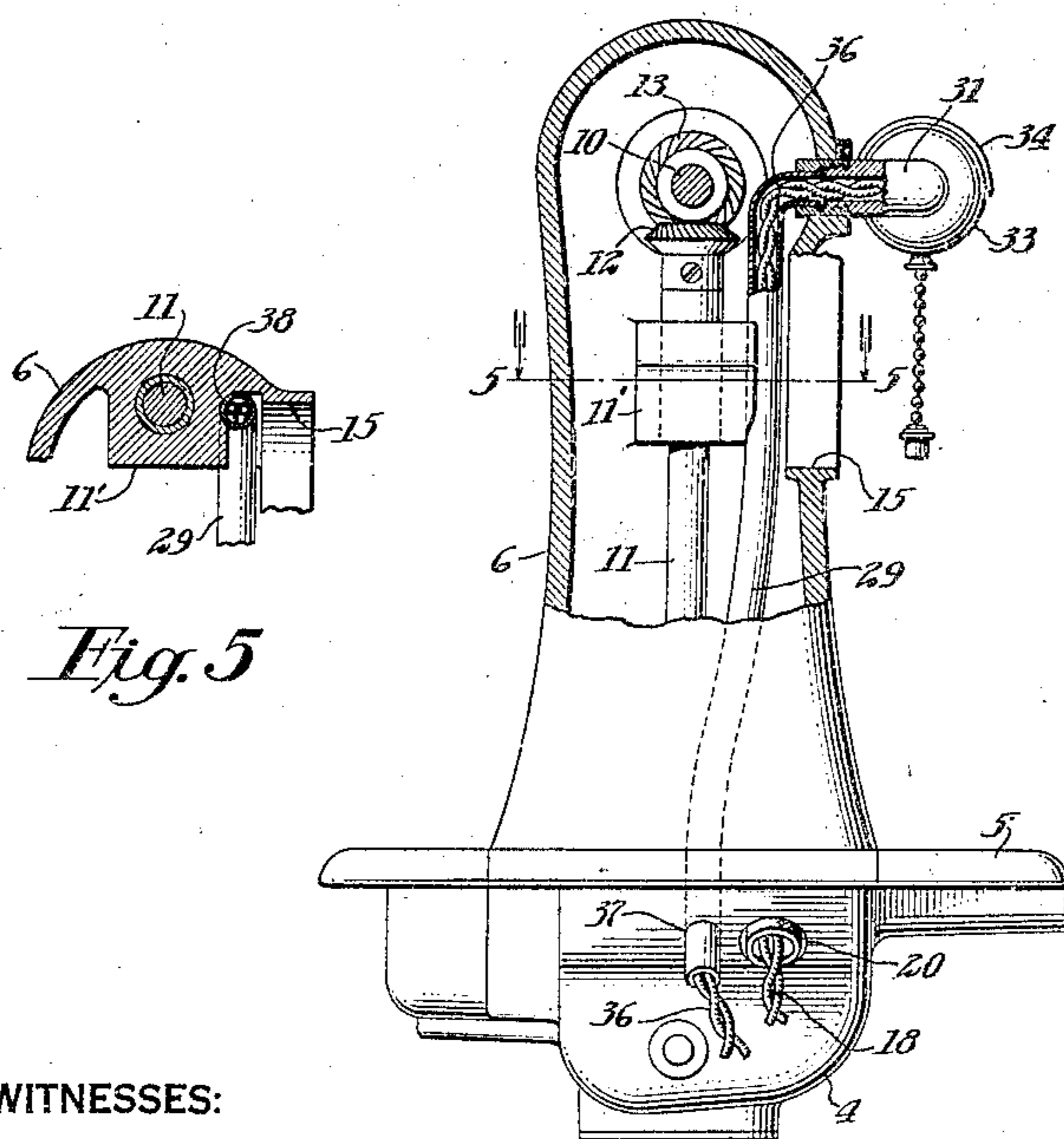
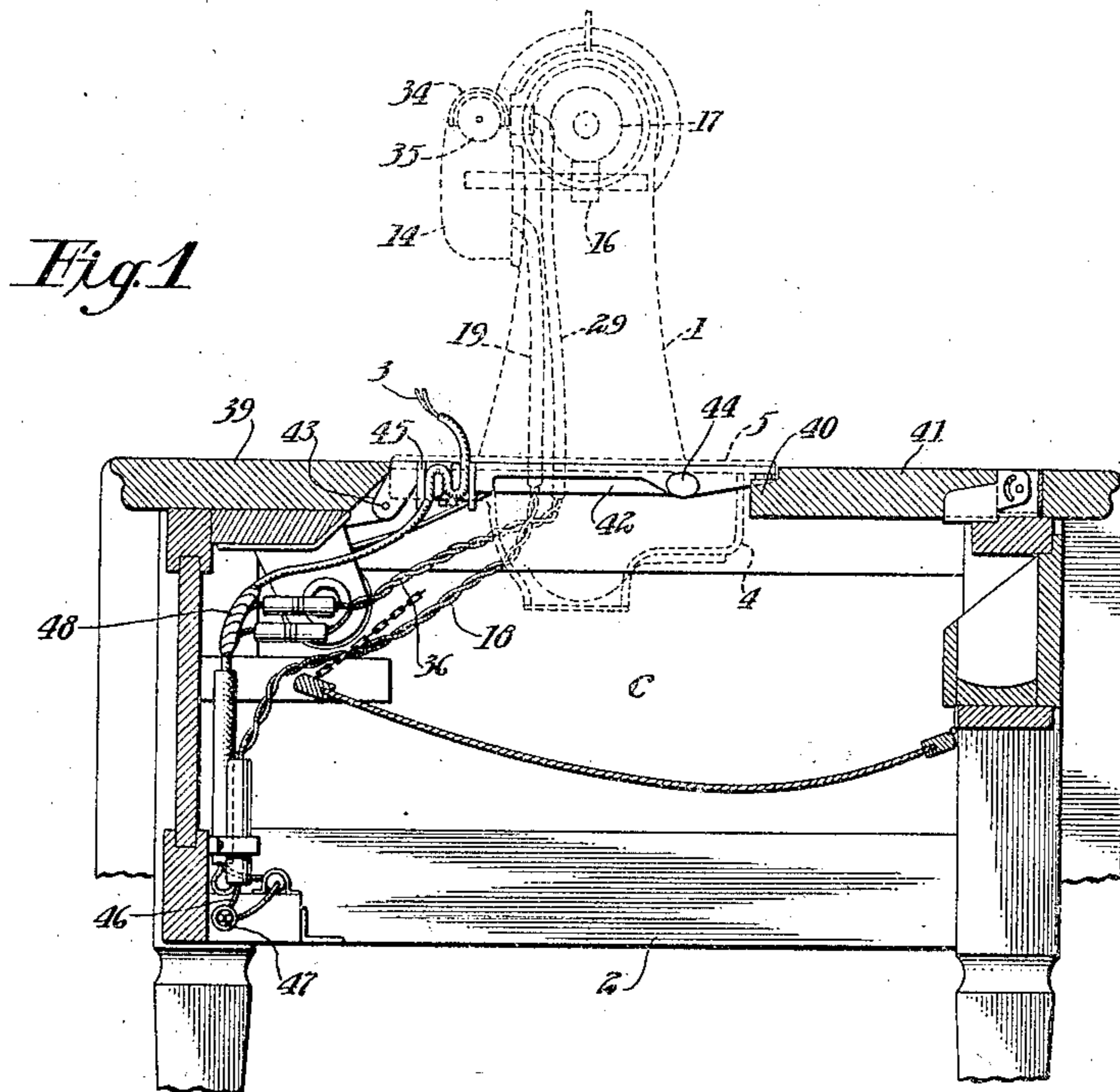


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FILED MAR. 19 1921.

2 SHEETS-SHEET 1



WITNESSES:  
*Adrian De Man.*  
*John F. Hsing*

*Fig. 4*

INVENTOR  
*Friedrich Diehl*  
BY *Henry J. Miller*  
ATTORNEY

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2 SHEETS-SHEET 2

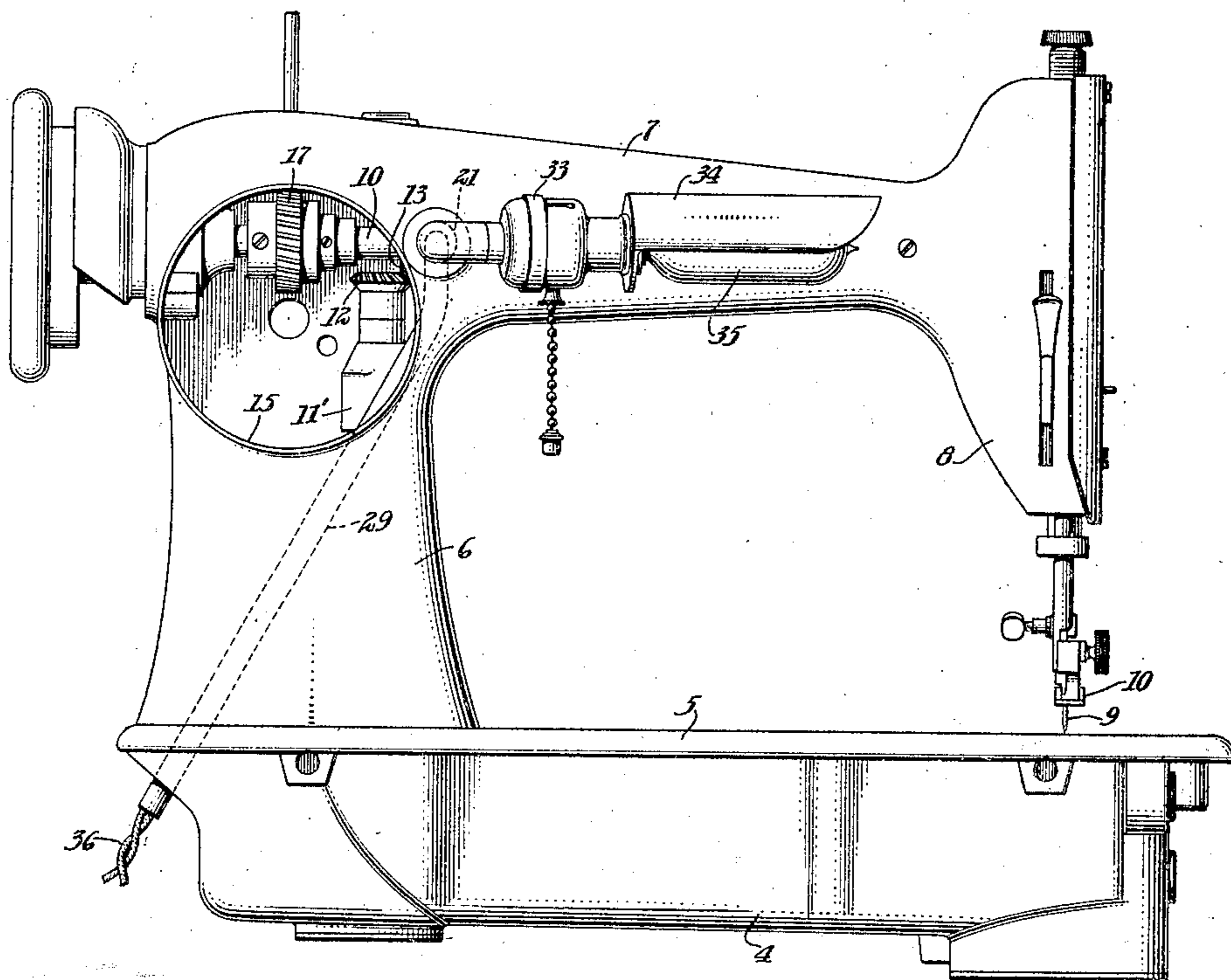


Fig. 2

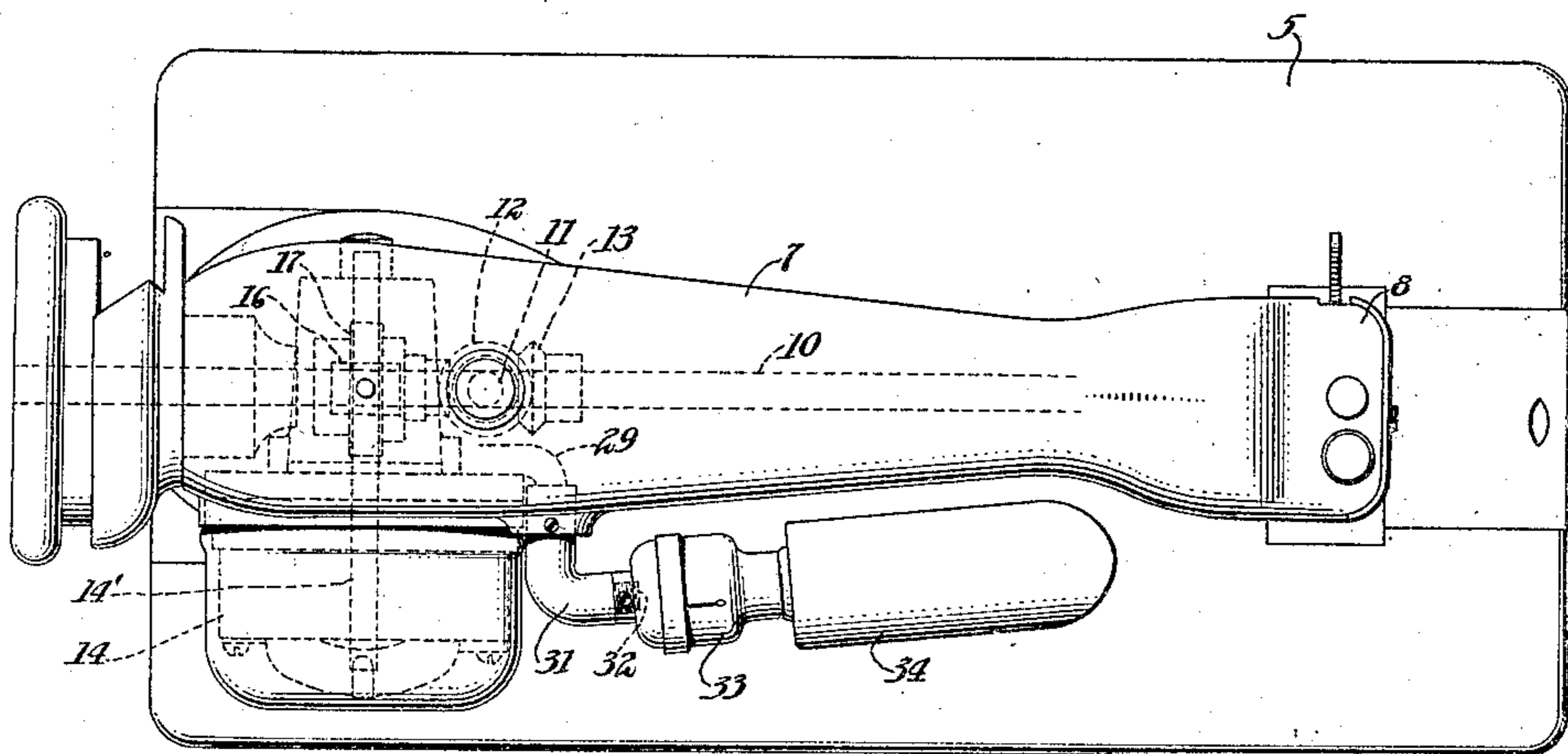


Fig. 3

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# UNITED STATES PATENT OFFICE.

FREDERICK DIEHL, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO DIEHL MANUFACTURING COMPANY, OF ELIZABETH, NEW JERSEY, A CORPORATION OF NEW JERSEY.

ELECTRICALLY-LIGHTED SEWING MACHINE.

Application filed March 19, 1921. Serial No. 453,786.

*To all whom it may concern:*

Be it known that I, FREDERICK DIEHL, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Electrically-Lighted Sewing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to sewing machines, more particularly of the electrically driven type, and has for an object to provide a sewing machine with a built-in work-illuminating device, as distinguished from a lighting attachment, which built-in device will retain the advantages inherent in the lighting device disclosed in my copending application Serial No. 449,968, filed March 5, 1921, and will possess additional advantages chief among which are (1) the provision of a single supply circuit leading from the sewing machine outfit through which current is supplied to both the light and the motor; (2) the concealment and protection of the wiring within the hollow sewing machine frame and the cabinet and (3) the peculiar simplicity, rigidity, and efficiency of the construction and its freedom from objectionable vibration.

30 According to the present improvement, in its preferred embodiment, the hollow bracket-arm of the sewing machine is formed in its rear side, adjacent its bend, with spaced apertures in the smaller of which is secured one end of an elbow, the outer end of which is directed forwardly in substantially parallel relation with the bracket-arm and supports an electric lamp socket, lamp-bulb and reflector. The wiring extends from the socket through the elbow and into a conduit leading downwardly through the bracket-arm standard to a point below the sewing machine bed or cloth-plate. The larger of the two apertures in rear of the sewing machine bracket-arm is preferably fitted with a built-in motor unit, the lead wires for which also run downwardly within the bracket-arm.

50 When the sewing head is installed in the usual drop-head cabinet, the lighting wires are connected within the usual cavity of the cabinet to a supply cord leading outwardly from the cavity and terminating in a suit-

able attachment plug. In case the machine is driven by means of an electric motor, the motor control circuit is also led into the cavity of the cabinet and is connected therewithin to the supply cord, whereby the one supply cord suffices to operate both the lighting device and the sewing motor. The connections are so made that the motor can be started and stopped and its speed controlled without interfering with the steady glow of the light. The invention is adapted, more particularly, for incorporation in a sewing machine having a built-in driving motor such as represented in the patent to Dosch et al., No. 1,311,114, of July 22, 1919, the object being to provide a complete unitary electrically driven and lighted sewing machine, while avoiding attachments and the consequent need for attaching brackets, thumb-screws, additional supply cords, etc., common to the prior art.

In the accompanying drawings, Fig. 1 is a transverse vertical sectional view through a sewing machine cabinet outfit embodying the invention. Fig. 2 is a rear side elevation of the sewing head indicated in dotted lines in Fig. 1. Fig. 3 is a top plan view of the sewing head. Fig. 4 is a rear end view of the sewing head, partly in section. Fig. 5 is a fragmentary horizontal section on the line 5—5 of Fig. 4. Fig. 6 is an enlarged fragmentary vertical section of a portion of Fig. 4, and Fig. 7 is a sectional view of the bushing shown in Fig. 6.

In the particular embodiment of the invention chosen for the purposes of the present disclosure, the sewing machine outfit comprises a complete unitary electrically driven and lighted sewing head 1 mounted on a drop-head cabinet 2 and supplied with electrical energy through a single supply circuit 3 adapted for attachment to the usual household lighting fixture or wall receptacle, the light and motor circuits and connections being concealed within the sewing machine frame and the cavity of the drop-head cabinet 2.

The sewing head is preferably constructed substantially in accordance with the disclosure of the Dosch et al. Patent No. 1,304,750, of May 27, 1919 and comprises a hollow trough-shaped bed 4, the open top of which is closed by the removable cloth-plate

5. Rising from one end of the bed 4 is the hollow goose-neck or bracket-arm including the vertical member 6 and horizontal member 7 terminating in the head 8 in which are journaled the usual needle and presser-bars carrying, respectively, the needle 9 and presser-foot 10. The machine mechanism within the bed 4 and goose-neck is driven by means of suitable connections with the main-shaft 10 journaled within and longitudinally of the horizontal member 7; the parts within the bed 4 being connected to the main-shaft 10 through the vertical shaft 11 journaled in suitable bearings one of which is shown at 11' within the vertical frame member 6. At its upper end the shaft 11 carries a bevel gear 12 which meshes with a suitable gear 13 fixed to the main-shaft 10, all as more fully described in said Dosch et al. Patent No. 1,304,750.

The sewing machine is preferably driven by means of an electric motor unit 14 which is built into the machine frame and is connected to the main-shaft 10 in the manner disclosed in the said Dosch et al. Patent No. 1,311,114. To this end the goose-neck is formed in its rear side near its bend or the juncture of the vertical and horizontal members 6 and 7, with an aperture 15 in which is removably fitted the motor-unit 14 having its power shaft 14' directed transversely of the main-shaft 10 of the sewing machine and carrying the worm 16 which meshes with the gear 17 on said main-shaft. The motor leads 18 are extended downwardly through a conduit 19 within the vertical frame member 6 and emerge from the frame through an aperture 20 in the rear end of the bed 4 below the cloth-plate 5. This conduit protects wires 18 from oil and abrasion.

The sewing machine goose-neck has built into it a device for illuminating the work being stitched and to this end is formed adjacent the motor aperture 15 with a smaller aperture 21 in which is secured by set-screw 22 the bushing 23. The axis of the aperture 21 is preferably spaced in advance of and is substantially parallel with the axis of the aperture 15. The bushing 23 has an inner reduced aperture 24 and an outer internally threaded aperture 25 which meet internally of the bushing at the conical seat 26. The inner aperture 24 receives the upper end 28 of the conduit 29, preferably of some soft metal such as lead or annealed copper, said upper end 28 being flared outwardly and clamped against the seat 26 by the conical or tapered extremity 29 of the inner male-threaded end 30 of the elbow 31, the other end of which is also male-threaded at 32, Fig. 3, and is directed longitudinally toward the free end of the goose-neck or substantially parallel with the horizontal member 7 thereof.

Screwed on the threaded end 32 of the

elbow is the usual chain- or pull-socket 33 fitted preferably with the semi-cylindrical reflector 34 and tubular lamp bulb 35 located substantially horizontally and closely in rear of and alongside the arm 7 between the head 8 and vertical member 6, whereby the arm 7 functions as a shade to shield the eyes of the operator from the flare of the lamp, and whereby the light is directed obliquely upon the work adjacent the sewing point from the operator's right, thus avoiding the casting of objectionable shadows upon the work by the head 8 or machine parts carried by the arm 7, as explained in my said copending application Serial No. 449,968. The conduit 29 which includes the lighting wires 36 is led downwardly within the vertical member 6 of the goose-neck and out through an aperture 37 adjacent the aperture 20 in the bed 4. The upper bearing bracket 11' for the vertical shaft 11 is slightly recessed at 38, Fig. 5, to afford a clear passage for the conduit 29 without obstructing the aperture 15.

The complete electrically driven and lighted sewing head 1, as above described, is preferably stationed upon a drop-head cabinet 2 such as disclosed in the U. S. patent to Kopf & Hemleb, No. 1,349,678, of August 17, 1920. The means incorporated in the cabinet for supporting the sewing head 1 so that it may be swung or dropped into the cavity *c* below the cabinet top 39 are constructed substantially in accordance with the disclosure in the U. S. patent to Diehl at al. No. 541,474, dated June 25, 1895; the rear side of the sewing machine bed being hinged to the cabinet top 39 and the front side resting upon the lip 40 of the hinged leaf 41. When the machine is to be dropped within the cavity *c* the head 1 and leaf 41 are first lifted to carry the lip 40 out of range of the front edge of the sewing machine bed, whereupon the head 1 may be lowered into the cavity. The cabinet is equipped with the usual spring supported lifting plate 42 hinged at 43 and having the lateral lug 44 which is adapted to extend under the end of the sewing machine bed.

The supply circuit 3 is preferably passed downwardly through an insulating block 45 constructed substantially in accordance with the disclosure in my copending application Serial No. 444,969, filed March 5, 1921 and secured to the lifting plate 42. From the insulating block the supply circuit is led within the cavity *c* to the distributing point 46 from which point the controller leads 47 extend to a suitable knee or treadle-operated motor controller, not shown. The motor leads 18 are also extended to the distributing point 46. The lighting wires 36 are connected in multiple with the supply circuit 3 within the cavity *c* at a point 48 on the supply side of the motor-controller circuit.

cuit 37; the purpose being to supply full voltage to the light at all times regardless of the starting and stopping of the motor, or a variable voltage at the motor terminals caused by the operation of the usual motor controller or rheostat in the circuit 47.

In preparing to use the outfit, it is thus merely necessary to attach the single supply circuit 3 to a wall receptacle or lighting fixture, the self-contained connections within the outfit taking care of the motor and lighting circuits. With prior outfits having motor and lighting devices in the nature of attachments it is customary to run two supply circuits, one for the light and one for the motor, a requirement which is troublesome to meet in the usual household establishment. Further, the exposed wiring of such outfits detracts from their appearance and increases the liability of wire breakage, short-circuits, and other similar annoyances which are likely to render the electrical equipment inoperative.

The present machine is believed to be the first complete electrically lighted and electrically driven sewing machine outfit having the wiring concealed and out of the way, together with a single supply circuit leading from the machine for attachment to the usual household fixture.

Having thus set forth the nature of the invention, what I claim herein is—

1. A sewing machine having, in combination, a frame including a bed and hollow goose-neck, stitch-forming mechanism incorporated in said frame, an electric motor mounted on said frame and connections for operating said mechanism, an electric light mounted on said frame to illuminate the sewing point and motor and lighting circuits extending downwardly within the hollow goose-neck to a point below the level of said bed where they are adapted for independent connection to a supply circuit.

2. A sewing machine stand formed with a cavity, a sewing machine received within said cavity and adapted to be elevated to operative position above the latter, electric driving and lighting devices applied to said sewing machine, driving and lighting circuits concealed within the sewing machine frame and leading into said cavity, and a single supply circuit leading into said cavity and flexibly connected therewithin to the motor and lighting circuits, thereby permitting raising of the sewing head to operative position without disturbance of the electrical connections to the source of supply.

3. A sewing machine having in combination, a frame including a bed and hollow goose-neck, stitch-forming mechanism incorporated in said frame and including operating connections within said goose-neck, a conduit projecting from said goose-

neck and communicating with the space therewithin, an electric light supported by said conduit, and a lighting circuit extending within said conduit and thence downwardly within the hollow goose-neck.

4. In combination, a sewing machine frame including a bed and overhanging hollow goose-neck, a hollow elbow rigidly attached to the rear side of said goose-neck and communicating with the space therein, said elbow having its free end disposed horizontally and directed toward the free end of the goose-neck, an electric lighting socket carried at the free end of said elbow, and a current conductor extending from said socket within said elbow and downwardly within said hollow goose-neck.

5. A sewing machine having a frame including a hollow goose-neck formed at the rear side thereof adjacent the bend with spaced horizontal apertures, an electric motor seated in the larger of said apertures and connections for operating the machine mechanism, and an electric lighting fixture including a supporting conduit entering the other of said apertures.

6. A sewing machine having a frame including a hollow goose-neck formed with an aperture at its rear side and a lighting fixture including a lighting socket and a circuit-enclosing conduit entering said aperture.

7. A sewing machine having a frame including a hollow goose-neck formed with an aperture at the rear side and a lighting fixture including a lighting socket and a socket supporting conduit entering and fixedly secured within said aperture in a position such that the light is disposed in rear of the goose-neck where it is invisible to an operator stationed at the front of the machine.

8. A sewing machine having a frame including a hollow goose-neck formed with an aperture at the rear side and a lighting fixture including a lighting socket and a socket supporting oil-tight metallic conduit passing through and fixedly secured within said aperture and extending downwardly within the goose-neck.

9. A sewing machine having a frame comprising a hollow goose-neck including horizontal and vertical members connected by a bend and formed at its rear side adjacent its bend with a lateral aperture communicating with the space within said goose-neck, an elbow having one limb entering and fixedly secured in said aperture and the other limb extending horizontally and forwardly substantially in parallelism with the horizontal member of the goose-neck, and a horizontally disposed electric light socket carried by said elbow.

10. A sewing machine comprising a frame having a hollow goose-neck formed in its rear wall with apertures having spaced par-

allel axes, and electric lighting and motor driving devices mounted, respectively, in said apertures.

11. A sewing machine frame comprising  
5 a bed and hollow goose-neck rising therefrom, said goose-neck being formed at its rear side adjacent its bend with spaced parallel motor- and lighting fixture-receiving apertures the lighting fixture aperture being  
10 smaller than the motor-aperture and located between the latter and the free end of the hollow gooseneck.

12. A sewing machine having a frame including a cloth-plate and hollow goose-neck,  
15 electric lighting and electric driving devices applied to said sewing machine above said

cloth-plate and including motor and lighting circuits extending from above to below the level of the cloth-plate, and a single current supply circuit extending from above 20 to below the level of the cloth-plate and connected to said motor and lighting circuits.

13. A sewing machine having a multiple recessed goose-neck, built-in motor driving and lighting devices received within said re- 25 cesses, and a single supply circuit leading to said machine and connected to operate said devices.

In testimony whereof, I have signed my name to this specification.

FREDERICK DIEHL.