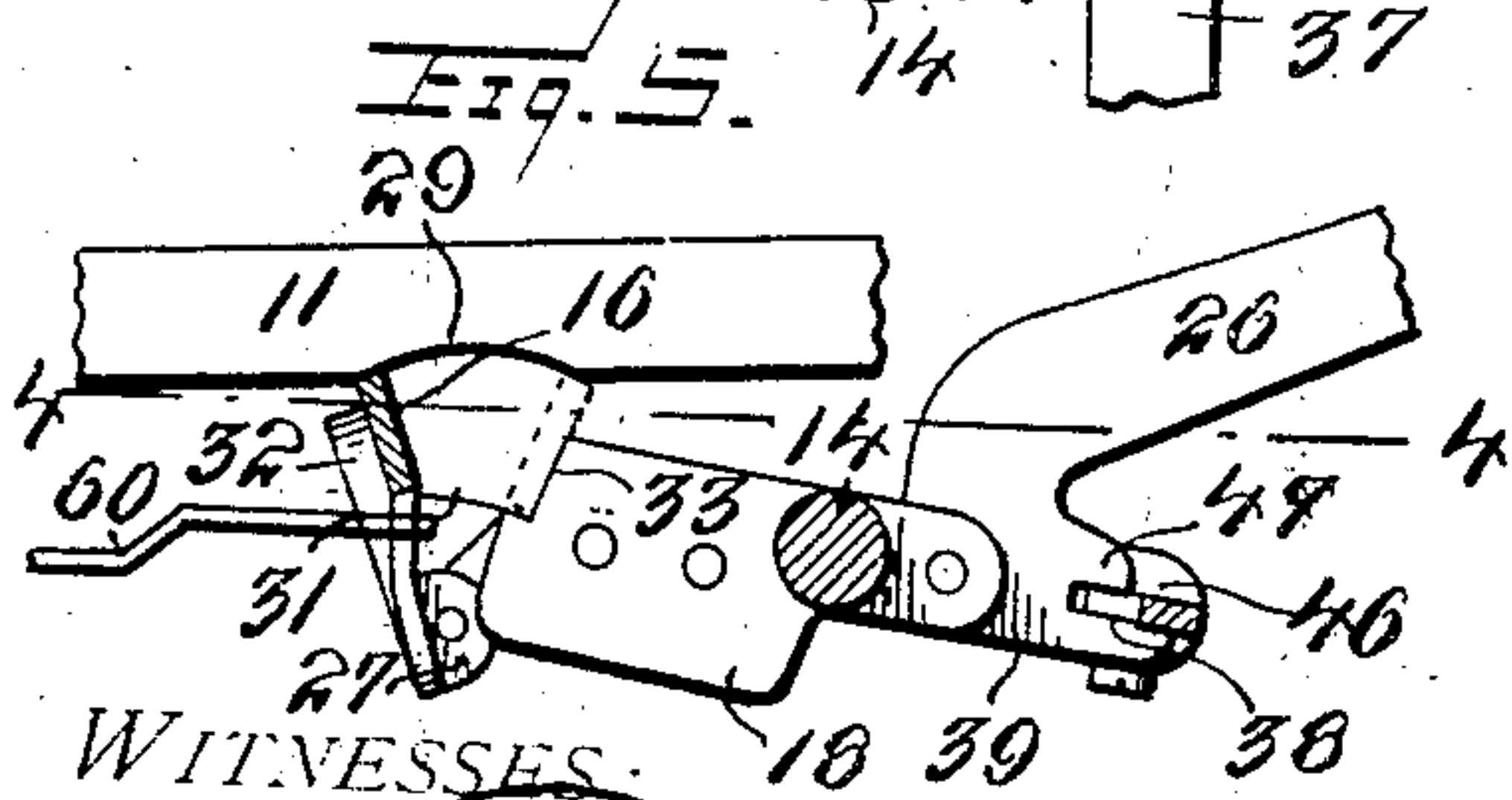
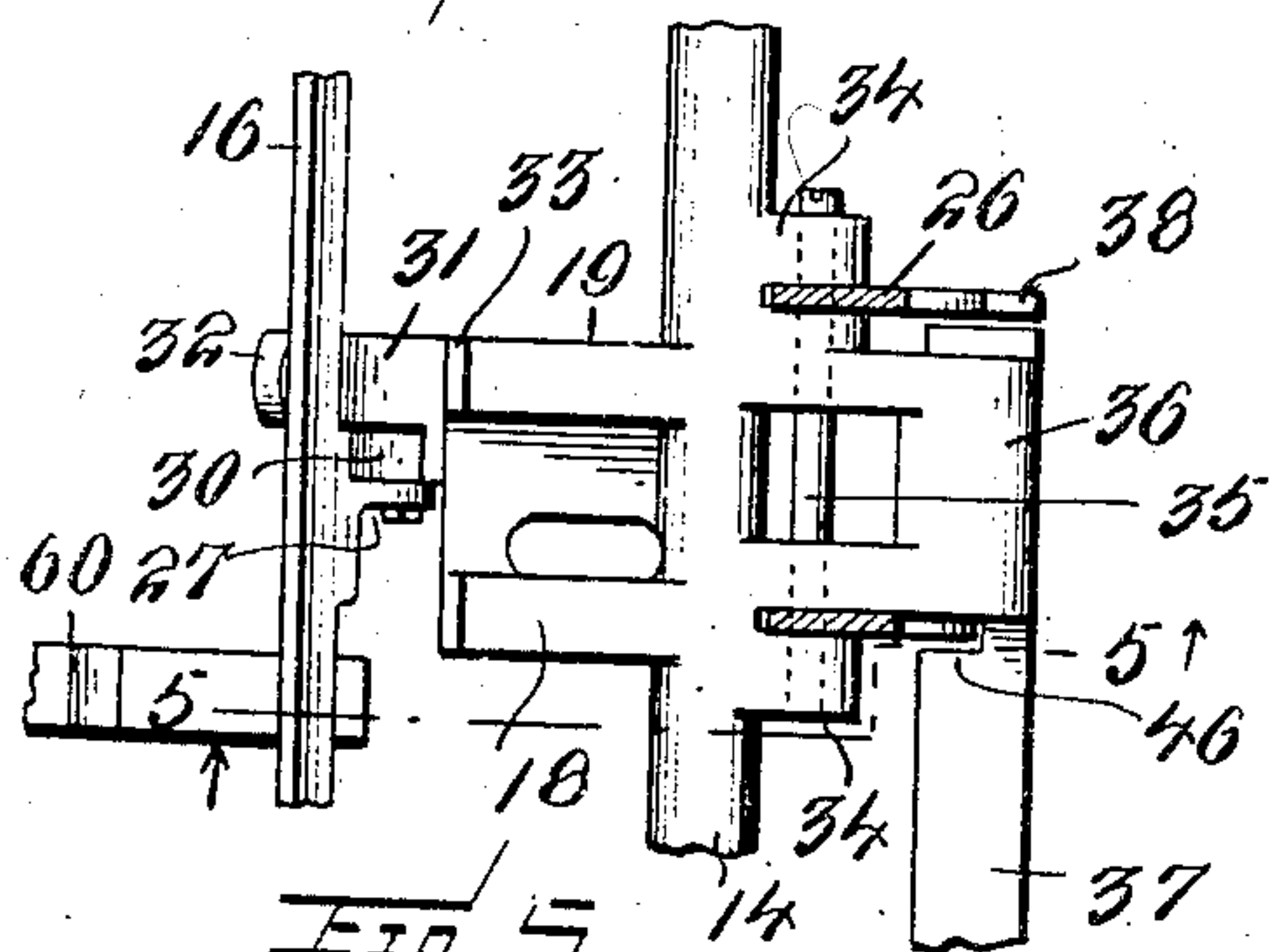
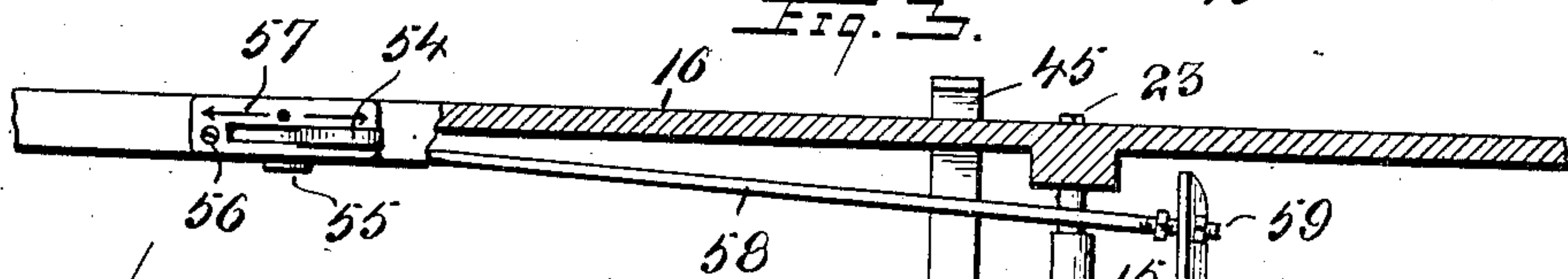


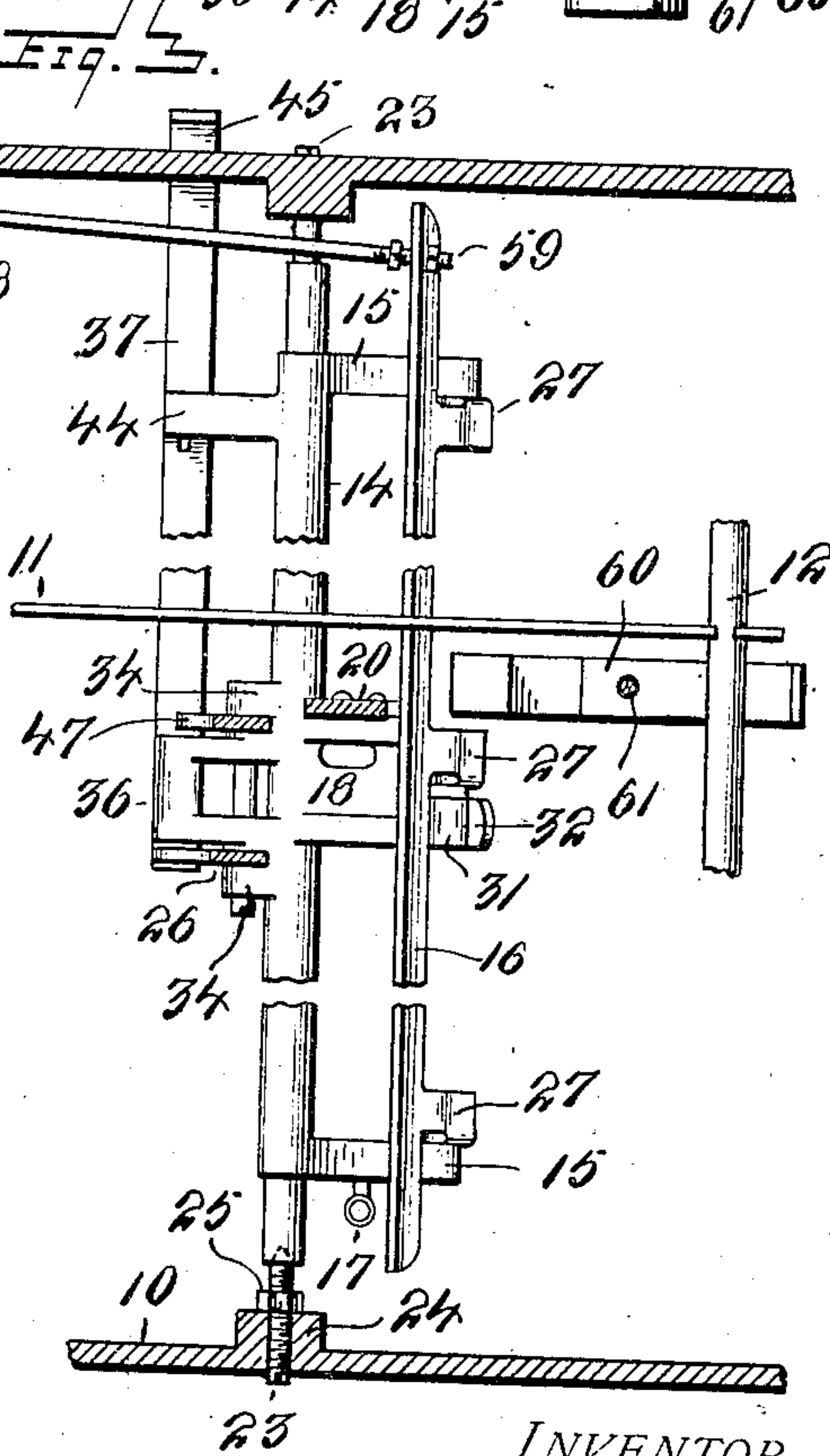
935,280.

2 SHEETS—SHEET 1.



WITNESSES

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INVENTOR

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By

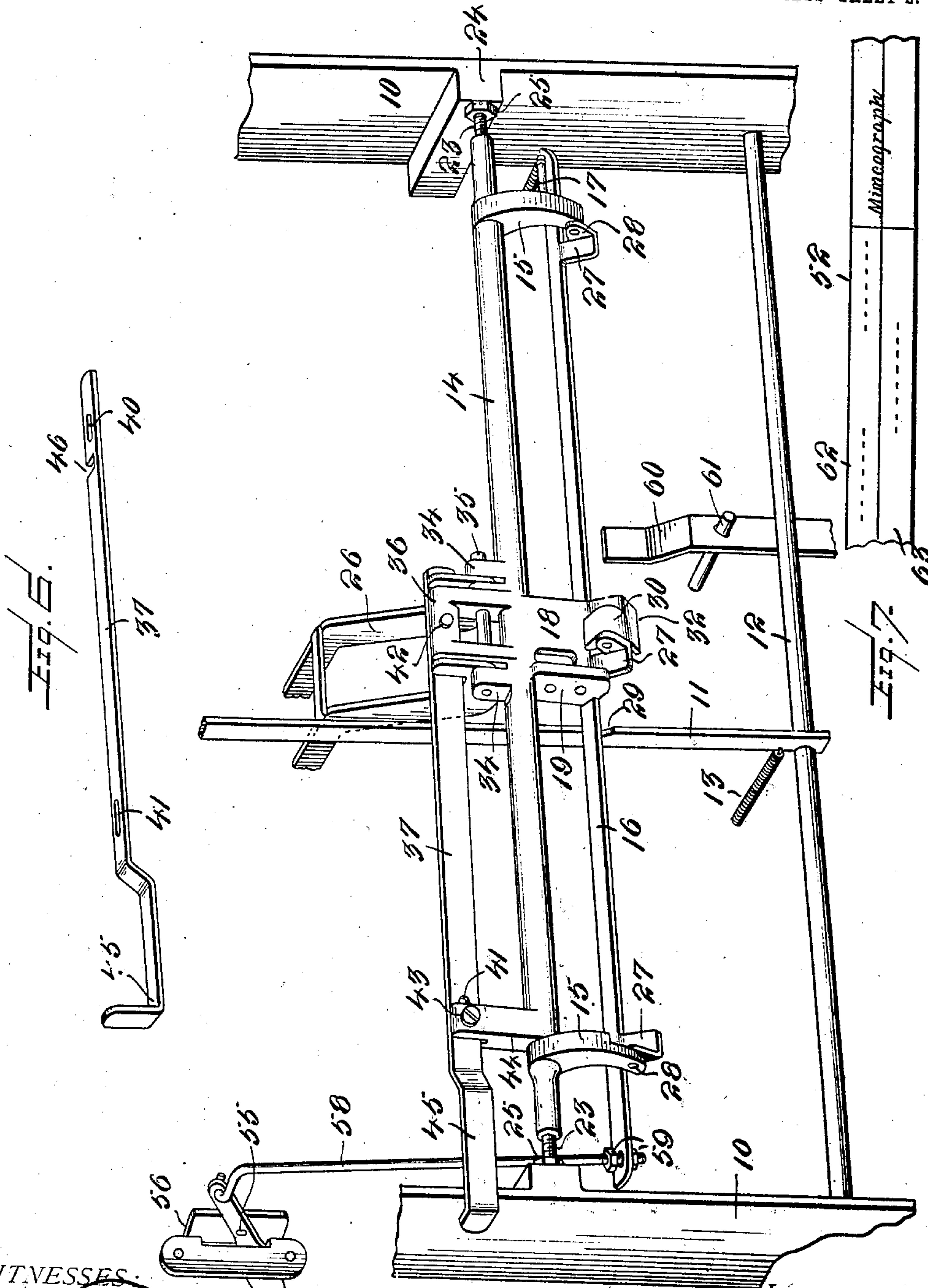
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RIBBON SHIFTING MECHANISM.
APPLICATION FILED MAY 26, 1909.

935,280.

Patented Sept. 28, 1909.
2 SHEETS—SHEET 2.



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Fig. 6.

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UNITED STATES PATENT OFFICE.

CHARLES SPIRO, OF NEW YORK, N. Y.

RIBBON-SHIFTING MECHANISM.

935,280.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed May 26, 1909. Serial No. 498,566.

To all whom it may concern:

Be it known that I, CHARLES SPIRO, citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Ribbon-Shifting Mechanism, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to a ribbon shifting mechanism, and particularly to means for varying the extent of movement of the ribbon and adapted for use in connection with polychrome ribbons so as to present either 15 color thereof in the path of the type bar.

The invention has for an object to provide a novel and improved construction by which the extent of travel of the ribbon vibrator may be varied, and comprises a rock shaft 20 provided with a lever arm having a bail mounted thereon for movement toward and from the pivot of said shaft and adapted to be engaged by the key lever to thus determine the extent of oscillation of the ribbon 25 vibrator.

A further object of the invention is to provide means by which the ribbon vibrator may be connected and disconnected from the rock shaft so that in the depression of the key 30 lever the ribbon is not shifted into the path of the key which condition of use is most convenient in mimeographing.

Other and further objects and advantages of the invention will be hereinafter fully set 35 forth and the novel features thereof defined by the appended claims.

In the drawing:—Figure 1 is a central vertical section showing the application of the invention; Fig. 2 is a detail bottom perspective of the rock shaft connections; Fig. 3 is a horizontal cross section of these parts; 40 Fig. 4 is a detail enlarged section on line 4—4, Fig. 5; Fig. 5 is a vertical section on line 5—5, Fig. 4; Fig. 6 is a detail perspective of the connecting bar for the ribbon vibrator; Fig. 7 is a diagram showing the 45 path of the type relative to the ribbon in different adjustments of the vibrator.

Referring to the drawing, 10 designates 50 the frame of a typewriter which may be of any desired construction or configuration and in which the key levers 11 are pivotally mounted at 12 and held in elevated position by means of springs 13. These key levers 55 control the type bars in the usual manner. Beneath the levers 11 and pivotally mounted

in the frame is a rock shaft 14 having the lever arms 15 upon which the universal bail or bar 16 is mounted and is normally held in contact with the key levers by means of the 60 tension spring 17 connected to one of the lever arms. This rock shaft is also provided with the central arm 18 to the side face 19 of which the usual dog mechanism 20 is attached, as shown in Fig. 1. The dog mechanism 65 coöperates with an escapement 21 in the usual manner to control the travel of the carriage. The rock shaft 14 may be mounted in any desired manner, for instance, as here shown, the shaft is pivoted upon the 70 free end of the screw 23 which is threaded into a lug 24 upon the frame 10 and held in its adjusted position by means of the lock nut 25. By this means a proper bearing for the rock shaft is secured and all longitudinal 75 movement thereof obviated.

For the purpose of varying the extent of oscillation of the ribbon vibrator 26 the bail is movably mounted upon the lever arms of the rock shaft, one form of such mounting 80 comprising the pivoting of the bail by means of the lugs 27 extending therefrom to receive the pivot 28 at the outer end of the lever arm. The bail thus swings toward and from the 85 axis of the rock shaft, and for the purpose of allowing that movement the under face of the key levers may be recessed, as shown at 29. The central arm 18 is provided upon its under surface with a depending lug 30 to receive the pivoting lug 27 from the bail, and 90 the upper face of this arm is formed with a recessed portion 31 having the opposite contact walls 32 and 33, as shown in Figs. 1 and 5, which provide a firm support for the bail 16 in either of its adjusted positions. 95

The rock shaft 14 is provided with a series of pivoting lugs 34 at the opposite side from the arm 18 and between these lugs the ribbon vibrator arm 26 is pivotally mounted upon the bolt 35. Intermediate of these pivoting 100 lugs is an extended locking member 36 provided with a longitudinally extending slot adapted to receive the connecting bar 37 which also passes through the slots 38 in the angularly disposed ends 39 of the ribbon 105 shift levers 26. This connecting bar 37, as shown in Fig. 6, is provided with slots 40 and 41 through which the screws or pins 42 and 43, respectively, pass to retain the bar in proper position and limit the travel there- 110 of. The screw 42 passes through the locking member 36 and the screw 43 through the arm

44 from the rock shaft 14. The outer end of the bar 37 is depressed and formed with a hand hold 45 by which it may be conveniently shifted. This bar is also provided with a cutaway portion 46 adapted to be shifted in alinement with the short finger 47 disposed at one side of the slot 38 of the ribbon vibrator. When in the position shown in Figs. 4 and 5, the free end of the bar 37 is withdrawn from one of the slots 38, while the slot 46 in the bar is brought into alinement with the finger 47. The vibrator lever 26 is of usual construction and adapted to contact with the frame at 48 when at rest. When shifted in the opposite direction the pawl 49 carried by the lever 26 engages and feeds the ratchet wheel 50 thus producing through the usual connections a step by step movement of the ribbon spool 51 from which the ribbon 52 passes through the ribbon holder 53 to the opposite spool in the usual manner.

Various means may be used for shifting the bail upon the lever arm, one form being here shown comprising the lever 54 pivoted at 55 in the angle plate 56 adapted to be attached to the side frame of the machine. This plate carries any desired indications 57 to designate the movement of the bail. The lever is connected by means of a link 58 with one end of the bail, this connection being of a loose character by means of the spaced nuts 59 which permit the swinging movement of the bail. The bail in its downward movement contacts with the spring arm 60 which is attached to the rear of the machine frame and guided in its movement by a depending post 61. This arm effects a yielding or cushioning movement in the depression of the bail through the key levers.

Fig. 7 diagrammatically illustrates the path of the type upon the ribbon 52. When the bail is adjusted at its greatest distance from the axis of the rock shaft the shortest extent of vibration of the ribbon arm is secured and impression is made upon the portion 62 of the ribbon, which is preferably used for the black impressions. When the bail is adjusted at its position closest to the pivot, the longest vibration of the shaft lever is secured and the portion 63 of the ribbon is brought into the path of the type bar. When it is desired to operate the typewriter without any impression from the ribbon the connecting bar is pulled outward to disconnect the ribbon vibrator from the rock shaft and therefore no impression is made upon the ribbon, as in mimeographing work.

In the operation of the machine, the bail is normally shifted at its position farthest removed from the arm of the rock shaft so as to produce the shortest area of vibration, and in this position the bail contacts with the cushioning spring. When it is desired to change the color, the bail is shifted from the

full line position, shown in Fig. 5, to that indicated by dotted lines, thus moving the point of contact with the key lever nearer the axis of the rock shaft and producing a longer vibration of the ribbon shifter to present the color desired in the path of the type. It will be obvious that the degree or extent of this movement of the bail may be varied relative to the area of color of a polychrome ribbon. When it is desired to avoid an impression on the ribbon, as in mimeographing work, the connecting bar may be shifted to disconnect the ribbon shifter from operation by the rock shaft and bail. These parts are adapted to be operated by conveniently disposed means at one side of the machine, and the mounting of the bail to shift toward and from the axis of the rock shaft provides a fixed connection with the shaft movable into contact with supporting walls by which the bail is held in its adjusted position owing to its disposition at an angle to the under face of the key lever. It will therefore be seen that the invention presents a simple, economically constructed and very efficient form of ribbon shifting mechanism adapted to be carried by a single rock shaft and applicable to machines already constructed, and provides a positive means for varying the extent of vibration of the ribbon arms by shifting the point of leverage thereof.

Having described my invention and set forth its merits, what I claim and desire to secure by Letters Patent is:—

1. In a typewriter, a frame, a key lever mounted therein, a rock shaft provided with a lever arm, a ribbon vibrator, means for supporting said vibrator and actuating the same from said rock shaft, and a bail mounted upon said arm and movable toward and from the axis of said shaft to determine the extent of oscillation thereof.

2. In a typewriter, a frame, a key lever mounted therein, a rock shaft provided with a lever arm, a ribbon vibrator, means for supporting said vibrator and actuating the same from said rock shaft, and a bail pivotally mounted upon said arm and movable toward and from the axis of said shaft.

3. In a typewriter, a frame, a key lever mounted therein, a rock shaft provided with a lever arm, a ribbon vibrator, means for supporting said vibrator and actuating the same from said rock shaft, a bail pivotally mounted upon said arm and movable toward and from the axis of said shaft, and abutments carried by said arm to engage said bail in its shifted positions.

4. In a typewriter, a frame, a key lever mounted therein, a rock shaft provided with a lever arm, a ribbon vibrator, means for supporting said vibrator and actuating the same from said rock shaft, a bail pivotally mounted upon said arm and movable toward and

from the axis of said shaft, abutments carried by said arm to engage said bail in its shifted positions, and a cushioning device disposed beneath the bail in one of its shifted
5 positions.

5. In a typewriter, a frame, a key lever mounted therein, a rock shaft provided with a lever arm, a ribbon vibrator, means for supporting said vibrator and actuating the
10 same from said rock shaft, a bail pivotally mounted upon said arm and movable toward and from the axis of said shaft, abutments carried by said arm to engage said bail in its shifted positions, a cushioning device dis-
15 posed beneath the bail in one of its shifted positions, a feed dog carried by said arm, and a cooperating escapement for said dog.

6. In a typewriter, a frame, a key lever mounted therein, a rock shaft provided with
20 a lever arm, a ribbon vibrator, means for supporting said vibrator, a bail mounted upon said arm and movable toward and from the axis of said shaft to determine the extent of oscillation thereof, and means for
25 connecting said vibrator and rock shaft for oscillation by said bail.

7. In a typewriter, a frame, a key lever mounted therein, a rock shaft provided with
30 a lever arm, a ribbon vibrator, means for supporting said vibrator, a bail mounted upon said arm and movable toward and from the axis of said shaft to determine the extent of oscillation thereof, and a connect-
35 ing bar mounted for movement into and out of engagement with said vibrator and rock shaft.

8. In a typewriter, a frame, a key lever mounted therein, a rock shaft provided with
40 a lever arm, a ribbon vibrator, means for supporting said vibrator, a bail mounted upon said arm and movable toward and from the axis of said shaft to determine the extent of oscillation thereof, and a connect-
45 ing slide bar mounted to engage a lever arm from said vibrator and rock shaft.

9. In a typewriter, a frame, a key lever mounted therein, a rock shaft mounted in
50 said frame, a ribbon vibrating lever connected to said rock shaft, and a bail shiftably mounted upon said rock shaft for movement toward and from the axis thereof.

10. In a ribbon shifting mechanism, a rock shaft, a supporting frame therefor, a
55 lever arm extended from said shaft and provided with opposite abutments at the free end thereof, and a bail movably mounted to travel between said abutments.

11. In a ribbon shifting mechanism, a
60 rock shaft, a supporting frame therefor, a lever arm extended from said shaft and provided with opposite abutments at the free end thereof, and a bail having a depending pivoting lug mounted at the free end of said
65 arm.

12. In a ribbon shifting mechanism, a

rock shaft, a supporting frame therefor, a lever arm extended from said shaft and provided with opposite abutments at the free end thereof, a bail having a depending piv-
70 otting lug mounted at the free end of said arm, a shifting lever, and a link having a loose connection with said bail and said shifting arm.

13. In a ribbon shifting mechanism, a rock shaft, a supporting frame therefor, a
75 lever arm extended from said shaft and provided with opposite abutments at the free end thereof, a bail movably mounted to travel between said abutments, pivoting lugs upon the opposite side of said shaft from
80 said arm, a ribbon vibrating lever pivoted in said lugs, a locking member carried by said rock shaft adjacent said vibrator, and means for connecting said member and vibrator.

14. In a ribbon shifting mechanism, a
85 rock shaft, a supporting frame therefor, a lever arm extended from said shaft and provided with opposite abutments at the free end thereof, a bail movably mounted to travel between said abutments, pivoting lugs
90 upon the opposite side of said shaft from said arm, a ribbon vibrating lever pivoted in said lugs, a locking member carried by said rock shaft adjacent said vibrator, and shift-
95 able connections cooperating with said member to engage and disengage said vibrator.

15. In a ribbon shifting mechanism, a rock shaft, a supporting frame therefor, a lever
100 arm extended from said shaft and provided with opposite abutments at the free end thereof, a bail movably mounted to travel between said abutments, pivoting lugs upon the opposite side of said shaft from said
105 arm, a ribbon vibrating lever pivoted in said lugs, a locking member carried by said rock shaft adjacent said vibrator, and a slidable connecting bar cooperating with said mem-
ber to engage and disengage a lever arm carried by said vibrator.

16. In a ribbon shifting mechanism, a rock
110 shaft provided with pivoting lugs, a supporting frame for said shaft, means for oscillating said shaft, a ribbon vibrator having a lever arm pivoted in said lugs, a longitudinally slotted locking member, and a con-
115 necting bar slidably mounted to move into the slotted member to engage and disengage the arm of said vibrator.

17. In a ribbon shifting mechanism, a rock
120 shaft provided with pivoting lugs, a supporting frame for said shaft, means for oscillating said shaft, a ribbon vibrator having a lever arm pivoted in said lugs, a longitudinally slotted locking member, a slidably
125 mounted connecting bar mounted to move into the slotted member and provided with a recess, and a finger carried by said vibrator arm and adapted to aline with said recess when the vibrator is disconnected.

18. A ribbon shifting mechanism compris- 130

ing a rock shaft having a plurality of lever arms, a bail pivotally mounted upon said arms, pivoting lugs carried by said shaft opposite said arms, and a ribbon shifting lever mounted in said lugs.

19. A ribbon shifting mechanism comprising a rock shaft having a plurality of lever arms, a bail pivotally mounted upon said arms, pivoting lugs carried by said shaft opposite said arms, a ribbon shifting lever mounted in said lugs, a longitudinally slotted locking member extending parallel to said lugs, and a connecting bar slidably mounted to move into said slot to engage the vibrator lever.

20. A ribbon shifting mechanism comprising a rock shaft having a plurality of lever arms, a bail pivotally mounted upon said arms, pivoting lugs carried by said shaft opposite said arms, a ribbon shifting lever mounted in said lugs, a longitudinally slotted locking member extending parallel to said lugs, a connecting bar slidably mounted to move into said slot to engage the vibrator lever, and a guide arm carried by said rock shaft to support said connecting bar.

21. A ribbon shifting mechanism comprising a rock shaft provided with means for oscillating the same, pivoting lugs carried by said shaft opposite said oscillating means, a ribbon vibrating lever mounted on said lugs and having a slotted angle arm the upper wall of which is of less length than the lower wall thereof, and a cooperating connecting bar slidably mounted and provided with a recess adapted to be aligned with the shorter wall of said angle arm.

22. A ribbon shifting mechanism comprising a rock shaft provided with means for oscillating the same, pivoting lugs carried by said shaft opposite said oscillating means, a ribbon vibrating lever mounted on said lugs and having a slotted angle arm the upper wall of which is of less length than the lower wall thereof, a cooperating connecting bar slidably mounted and provided with a recess adapted to be aligned with the shorter wall of said angle arm, and a longitudinally slotted locking member disposed intermediate said pivoting lugs and adapted to receive said connecting bar.

23. In a ribbon shifting mechanism, a rock shaft, a ribbon vibrating lever carried thereby, a lever arm projected from said shaft, a bail pivotally mounted upon said

arm to swing toward and from the axis of said shaft, tension means for normally raising said arm and bail, and a key lever disposed above said bail.

24. In a ribbon shifting mechanism, a rock shaft, a ribbon vibrating lever carried thereby, a lever arm projected from said shaft, a bail pivotally mounted upon said arm to swing toward and from the axis of said shaft, tension means for normally raising said arm and bail, and a key lever provided with a recessed under face disposed in the path of travel of said bail.

25. In a ribbon shifting mechanism, a supporting frame, a rock shaft mounted therein, a ribbon vibrating lever carried by said shaft, a lever arm extended from said shaft, a bail pivotally mounted on said arm to swing toward and from the axis of said shaft, and a flat cushioning spring secured to said frame and extended beneath the position of the bail when farthest removed from the axis of the shaft.

26. In a ribbon shifting mechanism, a supporting frame, a rock shaft mounted therein, a ribbon vibrating lever carried by said shaft, a lever arm extended from said shaft, a bail pivotally mounted on said arm to swing toward and from the axis of said shaft, a flat cushioning spring secured to said frame and extended beneath the position of the bail when farthest removed from the axis of said shaft, and a depending guide post carried by the frame and extending through said spring.

27. In a ribbon shifting mechanism, a supporting frame, a rock shaft mounted therein, a ribbon vibrating lever carried by said shaft, a lever arm extended from said shaft, a bail pivotally mounted on said arm to swing toward and from the axis of said shaft, a flat cushioning spring secured to said frame and extended beneath the position of the bail when farthest removed from the axis of said shaft, a key lever mounted above said bail, and a tension spring for normally holding said bail in contact with said lever.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES SPIRO.

Witnesses:

EDWD. E. JONES,
GRANT SHORLIN.