

No. 762,266.

PATENTED JUNE 14, 1904.

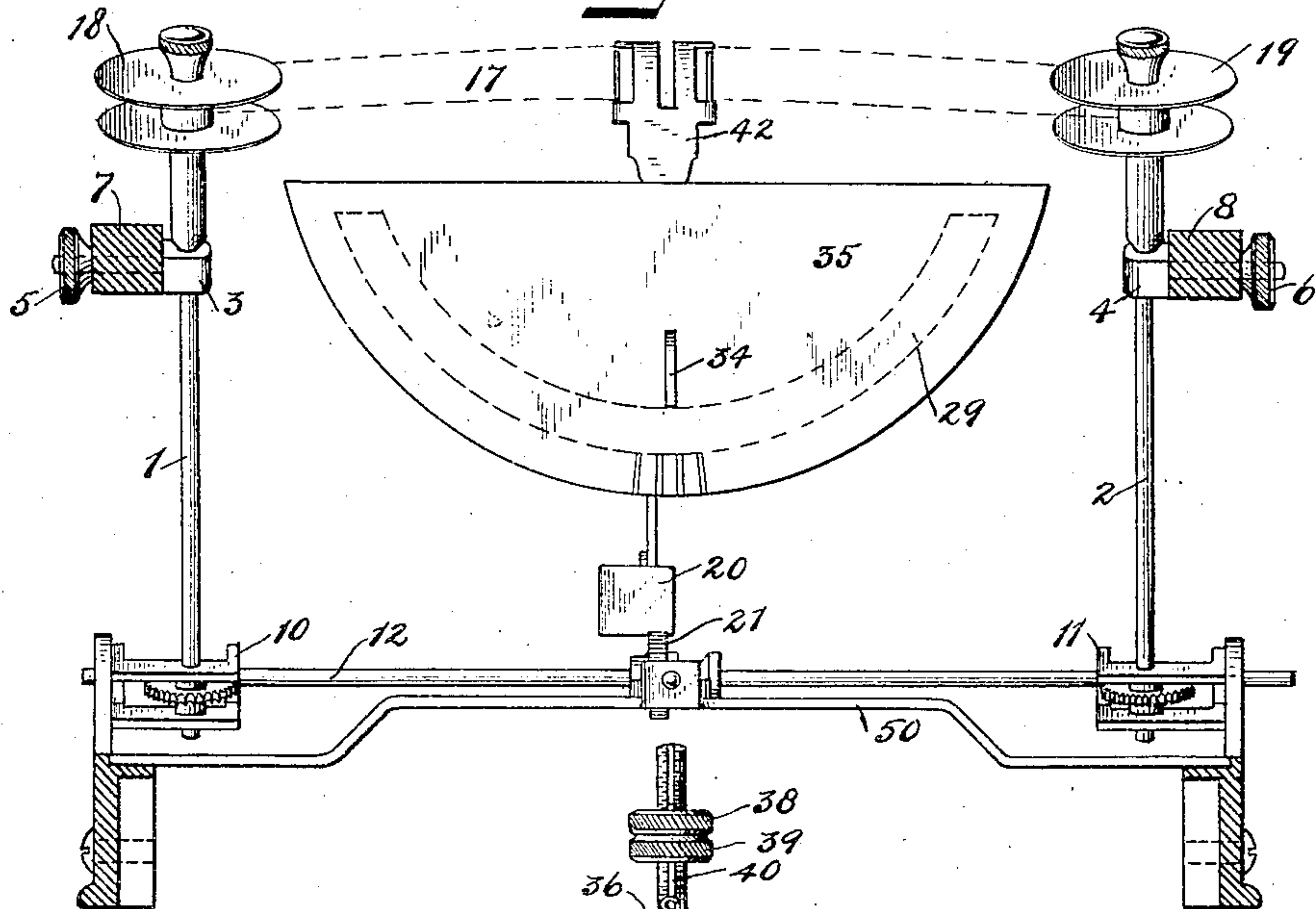
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TYPE WRITER RIBBON OPERATING MECHANISM.

APPLICATION FILED SEPT. 9, 1903.

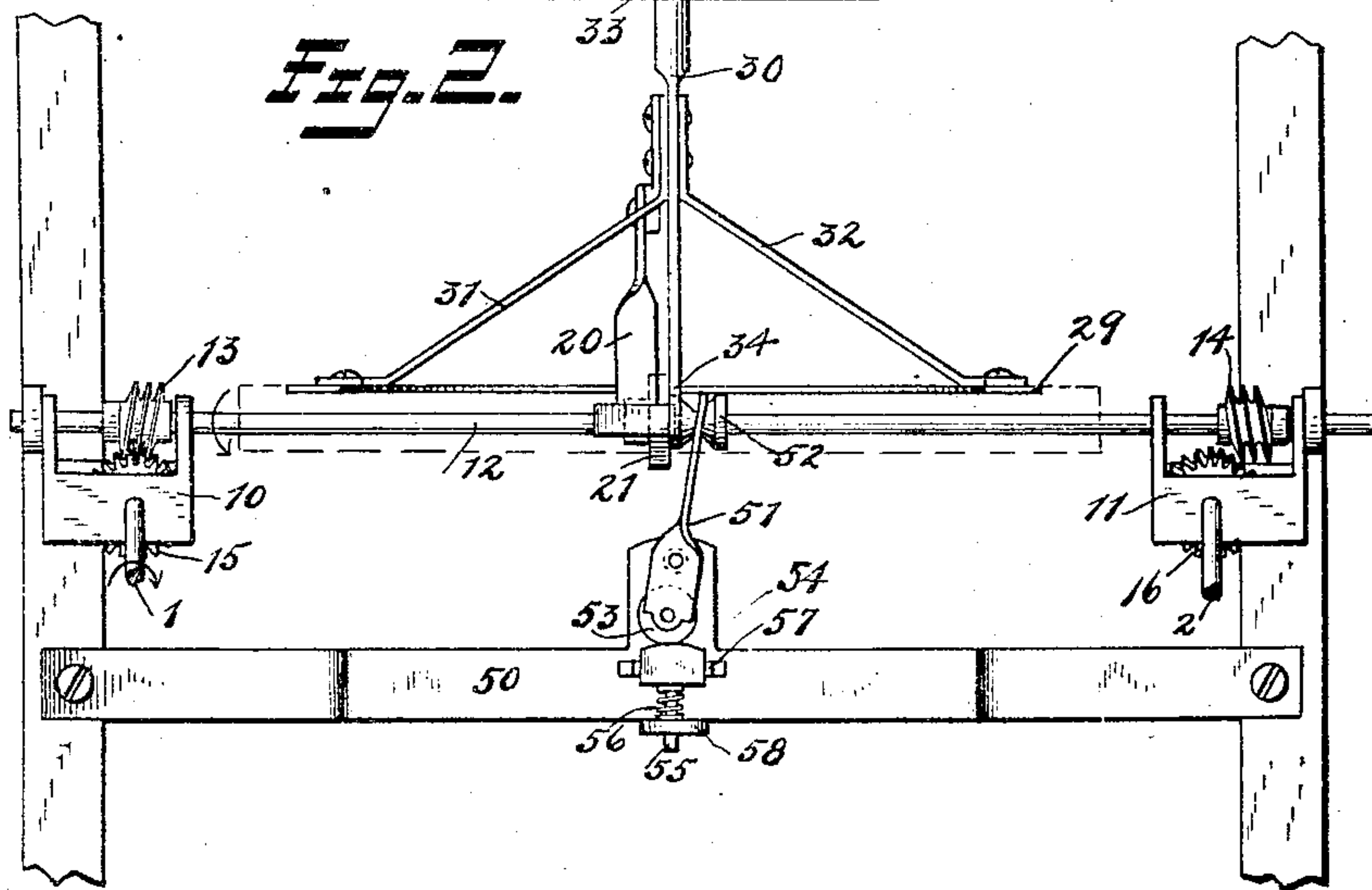
NO MODEL.

2 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

*Geo. V. Rasmussen*

*[Signature]*

INVENTOR

*Jesse Alexander*

BY

*Reinettehue*

ATTORNEY

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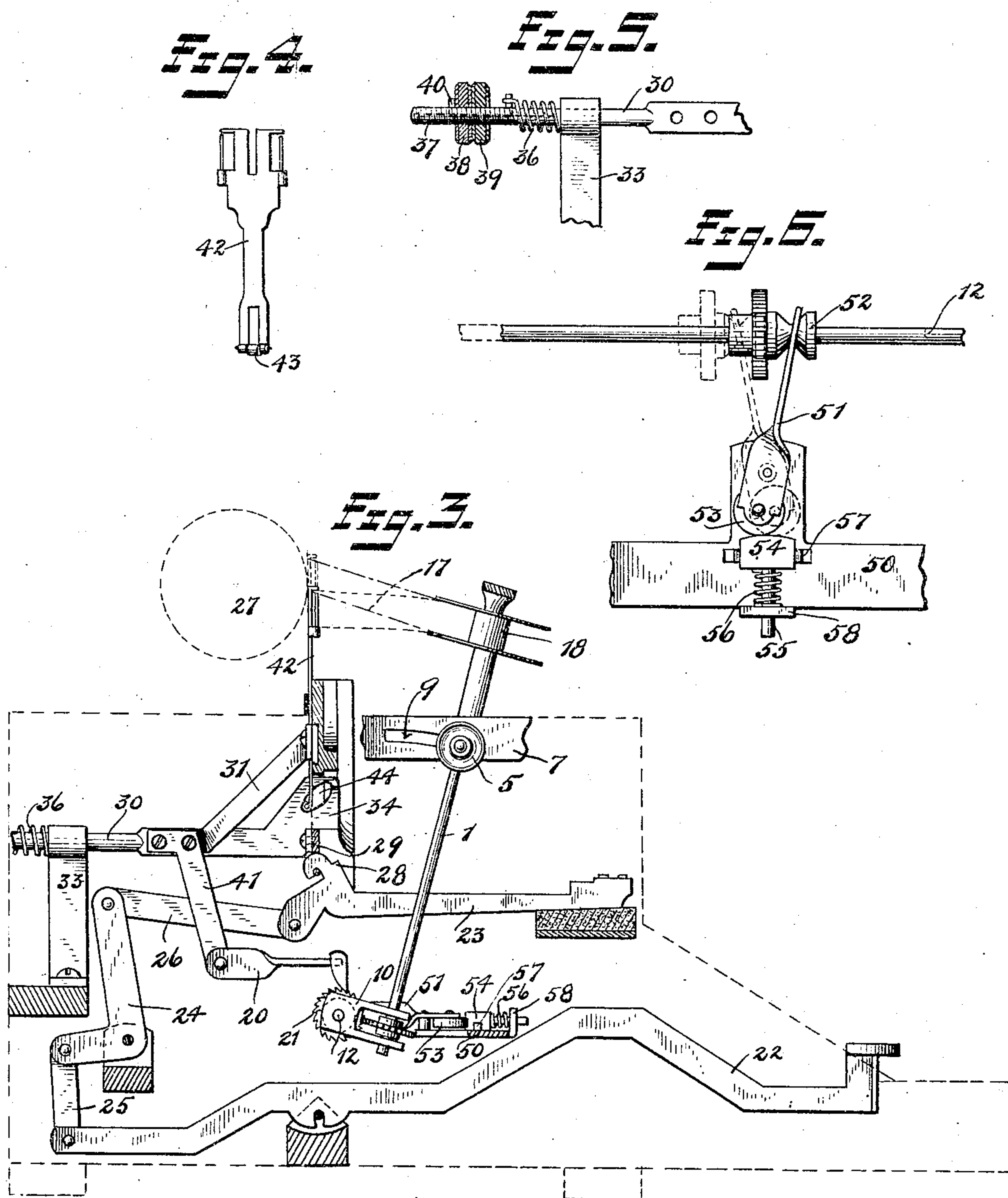
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WITNESSES:

*Geo. V. Rasmussen*  
*J. R. Allen*

INVENTOR

*Jesse Alexander*  
BY *R. C. Mitchell*  
ATTORNEY



# UNITED STATES PATENT OFFICE.

JESSE ALEXANDER, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO WALTER E. SCOTT, OF BROOKLYN, NEW YORK.

## TYPE-WRITER RIBBON-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 762,266, dated June 14, 1904.

Application filed September 9, 1903. Serial No. 172,484. (No model.)

*To all whom it may concern:*

Be it known that I, JESSE ALEXANDER, a citizen of the United States, residing at Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in Type-Writer Ribbon-Operating Mechanism, of which the following is a full, clear, and exact description.

My invention relates to improvements in type-writers, and particularly to the ribbon movement thereof.

This invention consists in an improved method of mounting the ribbon-winding shafts so that they are adjustable in position relatively to the platen, in a method of directly operating the feeding-shaft from the universal bar, in an improved method of adjusting the tension on the universal bar, and in the means for automatically reversing the direction of wind of the ribbon.

The improvements will be more readily understood upon an inspection of the accompanying two sheets of drawings and the following specification.

Figure 1 is a front elevation of those parts of a type-writer which embody the improvements of my invention. Fig. 2 is a plan view of my improvements, the upper part of the ribbon-winding shafts and spools being broken away and the type-bar pivot-plate removed. Fig. 3 is a side elevation of the mechanism involving the improvements of my invention, the tension-adjusting device being broken away. Fig. 4 is a detail of the ribbon-guide. Fig. 5 is a fragmentary side elevation of the tension-adjusting device. Fig. 6 is a plan view of part of the automatic reversing mechanism.

1 and 2 are the ribbon-winding shafts, which are pivotally mounted and supported at the upper ends by adjusting-blocks 3 and 4. These blocks have screw-threaded stems engaged by the set-nuts 5 and 6, which operate on the outside of the upper side frames of the machine 7 and 8, the frames being slotted, as shown at 9 in Fig. 3. The lower ends of the shafts are carried by yokes 10 and 11, which are pivotally supported on the feeding-shaft 12. This shaft 12 is rotatable and longitudinally mov-

able. At its ends it carries worm-wheels 13 and 14, adapted to mesh with the worm-gears 15 and 16, carried by the two winding-shafts. The direction of movement of the ribbon 17, which may be wound upon the spools 18 or 19, depends upon which set of worm-gearing is in operative engagement. In the position shown in the drawings the left-hand ribbon-spool 18 is operating to wind up the ribbon, the gears 13 and 15 being in engagement for this purpose.

The rotation of the feeding-shaft 12 is accomplished by the movement of the pawl 20 in engagement with the ratchet 21 on the shaft 12. The operation of the pawl is effected by the key and type bar mechanism, which consists of a key-bar 22, type-bar 23, the intermediate lever 24, and connecting-links 25 and 26. The key and type bar mechanism is shown more fully and claimed in another application filed by me herewith. The depression of the key-bar 22 causes the type-bar 23 to be raised to the printing position at the front of the platen 27. As it approaches this position the heel 28 of the type-bar strikes against the universal bar 29 and forces it to the rear.

The universal operating mechanism consists of the semicircular bar 29, the horizontal rod 30, and the two braces 31 and 32. The rod 30 is guided in the bearing 33, which is supported at the rear of the machine. The front end 34 of the universal rod is guided in the type-bar plate 35. In its normal position the universal member is pressed toward the back of the type-bar plate by the tension of the spring 36.

The construction of the tension member is shown in Figs. 2 and 5. The end of the rod 30 is screw-threaded at 37 and provided with an adjusting-nut 38 and a set nut 39.

40 is a connecting-pin guided in a slot in the top of the rod 30 and having its two ends bent upward, the back end resting against the adjusting-nut 38 and the front end attached to the tension-spring 36. The other end of the tension-spring is attached to the post 33. It will thus be seen that the rod 30 is forced forward by the tension of the spring 36. Its tension can be adjusted by simply



releasing the set-nut 39 and changing the position of the adjusting-nut 38 so as to move the connecting-pin to increase or decrease the tension of the spring 36.

5 It will be noted that the universal member has a straight-line movement in the support of its forward end 34 and its rear part in the support 33. The adjusting device for the tension-spring extends out to the rear beyond  
10 the main body of the machine, so as to be more readily accessible.

41 is a bracket which is connected to the rod 30 and extends downward, carrying the pivoted pawl member 20. The pawl rests  
15 upon the teeth of the ratchet 21 and by the movement of the type-bar is moved to the rear each time the type-bar is struck. When the type-bar is released, the tension of the spring 36 forces the universal member forward,  
20 and thus the pawl 20 rotates the ratchet 21 step by step.

Since this machine is of the front-strike class, it is desired that the ribbon be guided in such a manner as to be retracted from the  
25 printing position at all times except at the instant of printing. For this purpose I have provided the guide-frame 42 in the forks at the top of which the ribbon passes. The lower end of this frame 42 carries the roller  
30 43, which rests in a cam-slot 44 in the front end 34 of the universal rod. The guide-frame 42 is supported at the rear of the type-bar plate 35, and when the universal rod 30 is operated the lower edge of the cam-slot 44  
35 operates to raise the guide-frame 42 to the printing position. I have found that it is not necessary to make the length of the cam-surface sufficient to raise the guide-frame its full extent. The usual operation of the machine  
40 is at such a speed that a slight upward impulse given to the frame 42 will cause it to jump the entire distance necessary without having it forced upward throughout its entire movement. In other words, the frame  
45 being light the momentum is such as to give it a sufficient upward movement.

It will be noted on inspection of Fig. 3 that the ribbon when in the printing position, which is shown in dot-and-dash lines, is pulling  
50 straight from the ribbon-spool 18, the only twist occurring in the ribbon being occasioned by the angle which the ribbon takes in passing through the forks of the guide-frame. In this manner the ribbon is caused  
55 to wind and unwind on the spools in an even manner at all times. The angle at which the ribbon is wound and unwound may be adjusted by tilting the winding-shafts about their pivots on the feeding-shaft 12, thus  
60 bringing the spools nearer to or farther from the platen.

As the end of a ribbon is reached in unwinding from one spool the tension will become so great (the ends of the ribbon being  
65 fastened to the spools) that the winding-shaft

1 will not turn, but the worm 13 will act as a screw and pull the feeding-shaft to the left, disengaging the left gears.

The shifting movement is assisted by the jump device. (Shown in Fig. 6.)

50 is a bar extending across the machine, to which is pivoted an arm 51. The back end of this arm is forked and engages a stop 52, carried by the feeding-shaft 12. To the other  
75 end of the arm is pivoted the wheel 53.

54 is a block having a stem 55 and spring 56, so that the block engages the wheel 53 to hold the arm 51 and stop 52 to the right.

57 and 58 are guides.

When the feeding-shaft starts to move longitudinally, the arm 51 is moved to the left and the wheel 53 rolls over the curved face of the block 54. As soon as the leverage of the spring on the arm 51 is transferred to the opposite side of its pivot the device will assist  
80 to jump the shaft 12 the remaining distance to the left and throw the right-hand gears 14 and 16 into mesh. Of course the feeding-shaft will then act to wind the right-hand ribbon-shaft 2. The reversal is therefore effected automatically.

What I claim is—

1. A ribbon-operating mechanism including a pair of ribbon-winding shafts pivotally mounted so as to swing toward and from the  
95 platen, and means for securing the winding-shafts in position at various angles relative to the platen.

2. A ribbon-operating mechanism including a pair of ribbon-winding shafts, side  
100 frames having slots therein, blocks forming bearings for said shafts and cooperating with the slotted portion of the frames, and set-nuts for holding the blocks in position, said shafts being mounted at an inclined angle toward  
105 the front of the machine but adjustable in regard to their angle of inclination.

3. A ribbon-operating mechanism including a feeding-shaft, yokes pivotally carried thereby, ribbon-winding shafts having bearings in said yokes, and means for securing the  
110 winding-shafts in position.

4. A ribbon-operating mechanism including a feeding-shaft, yokes pivotally carried thereby, ribbon-winding shafts having bearings in said yokes, and adjusting-blocks forming bearings for said shafts near their upper  
115 ends.

5. A ribbon-operating mechanism including a longitudinally-movable and rotatable  
120 feeding-shaft, yokes pivotally mounted with respect to said shaft, worm-wheels carried by said shaft adjacent said yokes, winding-shafts pivoted in said yokes, gears carried by said winding-shafts and adapted to engage with  
125 said worm-wheels, and means for adjusting the angular position of the winding-shafts.

6. A ribbon-operating mechanism including a longitudinally-movable and rotatable  
130 feeding-shaft, yokes pivotally mounted with



respect to said shaft, worm-wheels carried by said shaft adjacent said yokes, winding-shafts pivoted in said yokes, gears carried by said winding-shafts and adapted to engage with said worm-wheels, and means for adjusting the angular position of the winding-shafts, comprising adjusting-blocks forming bearings for the shafts and set-nuts coacting therewith.

7. A ribbon-operating mechanism including a feeding-shaft, means for rotating the same, a pair of ribbon-winding shafts, gears carried by said shafts for operating one or the other of the winding-shafts according to which set of gears is in engagement, and a device for assisting in shifting the longitudinal position of the feeding-shaft comprising a pivoted arm, a wheel carried thereby, and a spring-pressed block coacting with the said roller, for the purpose specified.

8. A ribbon-operating mechanism including a feeding-shaft, means for rotating the same, a pair of ribbon-winding shafts, gears carried by said shafts for operating one or the other of the winding-shafts according to which set of gears is in engagement, and a device for assisting in shifting the longitudinal position of the feeding-shaft comprising an arm having a slotted end engaging the feeding-shaft, a wheel carried by the opposite end of said arm, a block having a curved surface, and a spring for pressing the block in contact with the wheel for the purpose specified.

9. A ribbon-operating mechanism including a feeding-shaft, means for rotating the same, a pair of ribbon-winding shafts, gears carried by said shafts for operating one or the other of the winding-shafts according to which set of gears is in engagement, and a device for assisting in shifting the longitudinal position of the feeding-shaft comprising a pivoted arm having one end adapted to engage said shaft, a block coacting with the opposite end of said arm and a spring for pressing said block into its operative position.

10. A ribbon-operating mechanism including a rotatable feeding-shaft, a universal bar, a vertical type-bar plate, a universal rod mounted at the rear thereof, a stationary guide to the rear of said plate said rod being also guided at its front end in said plate, and means for pressing the universal bar normally toward the plate and a pawl carried by said rod for operating the feeding-shaft.

11. A ribbon-operating mechanism including a rotatable feeding-shaft, a universal bar, a vertical type-bar plate, a universal rod mounted at the rear thereof, a stationary guide to the rear of said plate said rod being also guided at its front end in said plate, a spring secured to the stationary support, said rod having a screw-threaded portion beyond the support provided with a slot, a connecting-pin mounted in said slot one end engaging said spring, and an adjusting-nut mounted on

said rod engaging with the other end of said connecting-pin for pressing the universal bar normally toward the plate and a pawl carried by said rod for operating the feeding-shaft.

12. A ribbon-operating mechanism including a longitudinally-movable universal rod, ribbon-operating shafts, mechanism whereby the movement of the universal rod is transmitted to the ribbon-operating shafts, a stationary guide for said rod, an adjusting-nut operating on said rod, and a tension-spring secured at one end to said stationary guide and coöperating at the other end with the adjusting-nut for the purpose specified.

13. A ribbon-operating mechanism including a universal rod, a ribbon-feeding shaft, mechanism whereby the movement of the universal rod shall operate the feeding-shaft, a stationary guide for said rod, an extension from said rod to the rear of said guide having a screw-threaded portion and a slot extending longitudinally thereof, an adjusting-nut operating on the screw-threaded portion of said rod, a connecting-pin coöperating with the outer side of the adjusting-nut and seated in said slot, a spring surrounding said rod having one end secured to said guide and the other end secured to the inner end of the connecting-pin.

14. A ribbon-operating mechanism including a horizontally-movable universal rod, stationary guides for the front end and the rear end of said rod, a feeding-shaft and means of coöperation between the rod and the shaft, a semicircular universal bar, braces extending from the outer ends of the universal bar backward to the central portion of the universal rod, and means for holding the universal rod in its normal operating position and returning it thereto.

15. A ribbon-operating mechanism including a semicircular type-bar plate, a universal bar mounted at the rear thereof but horizontally movable and having a slotted portion therein, a ribbon guide-frame mounted to have a vertical movement and coacting at its lower portion with the slotted portion of the universal bar whereby the horizontal movement of the universal bar shall be translated directly into vertical movement of the ribbon guide-frame.

16. A ribbon-operating mechanism including a semicircular type-bar plate, a universal bar mounted at the rear thereof but horizontally movable and having a slotted portion therein, a ribbon guide-frame mounted to have a vertical movement and coacting at its lower portion with the slotted portion of the universal bar whereby the horizontal movement of the universal bar shall be translated directly into vertical movement of the ribbon guide-frame, the said slotted portion of the universal bar being furnished with a cam-surface inclined at such an angle that a partial movement of the universal bar shall throw the



ribbon guide-frame to its highest point of movement.

17. A ribbon-operating mechanism including a vertical semicircular type-bar plate, a pair  
5 of ribbon-winding shafts mounted in front thereof and inclined forwardly at an angle thereto, a vertically-movable ribbon guide-frame mounted to move vertically, the relative heights of the ribbon guide-frame and the

winding-shafts and their angular relation being such that the ribbon carried by the winding-shafts will be pulled in substantially a straight line from the ribbon-spool at the moment of its feeding operation.

JESSE ALEXANDER.

Witnesses:

ROBT. S. ALLYN,  
L. VREELAND.