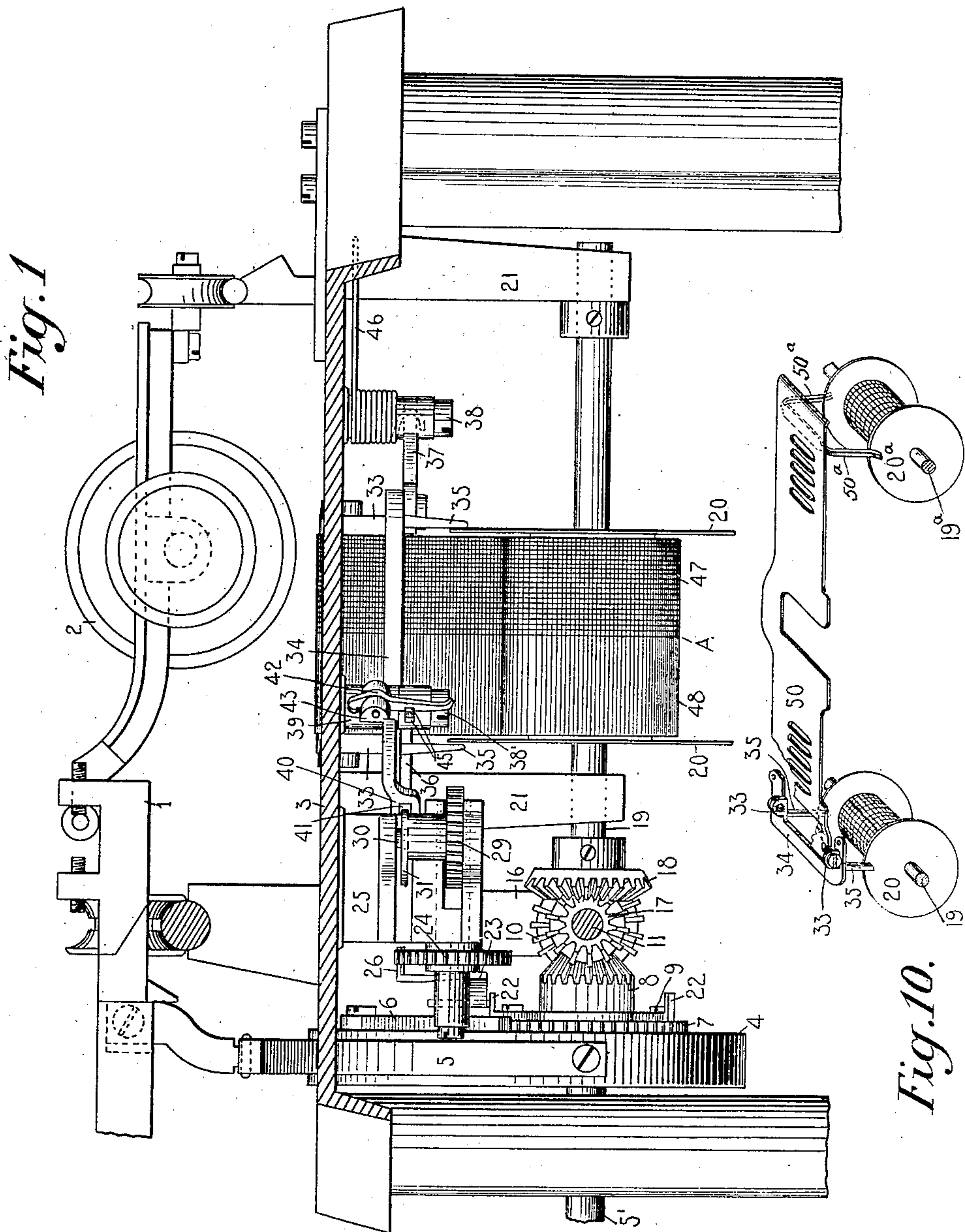


No. 863,697.

PATENTED AUG. 20, 1907.

D. BRIGGS.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 31, 1902.

3 SHEETS—SHEET 1.



WITNESSES

K. V. Monovan.
Charles E. Smith

INVENTOR

Daniel Briggs
by *James Felbel*
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No. 863,697.

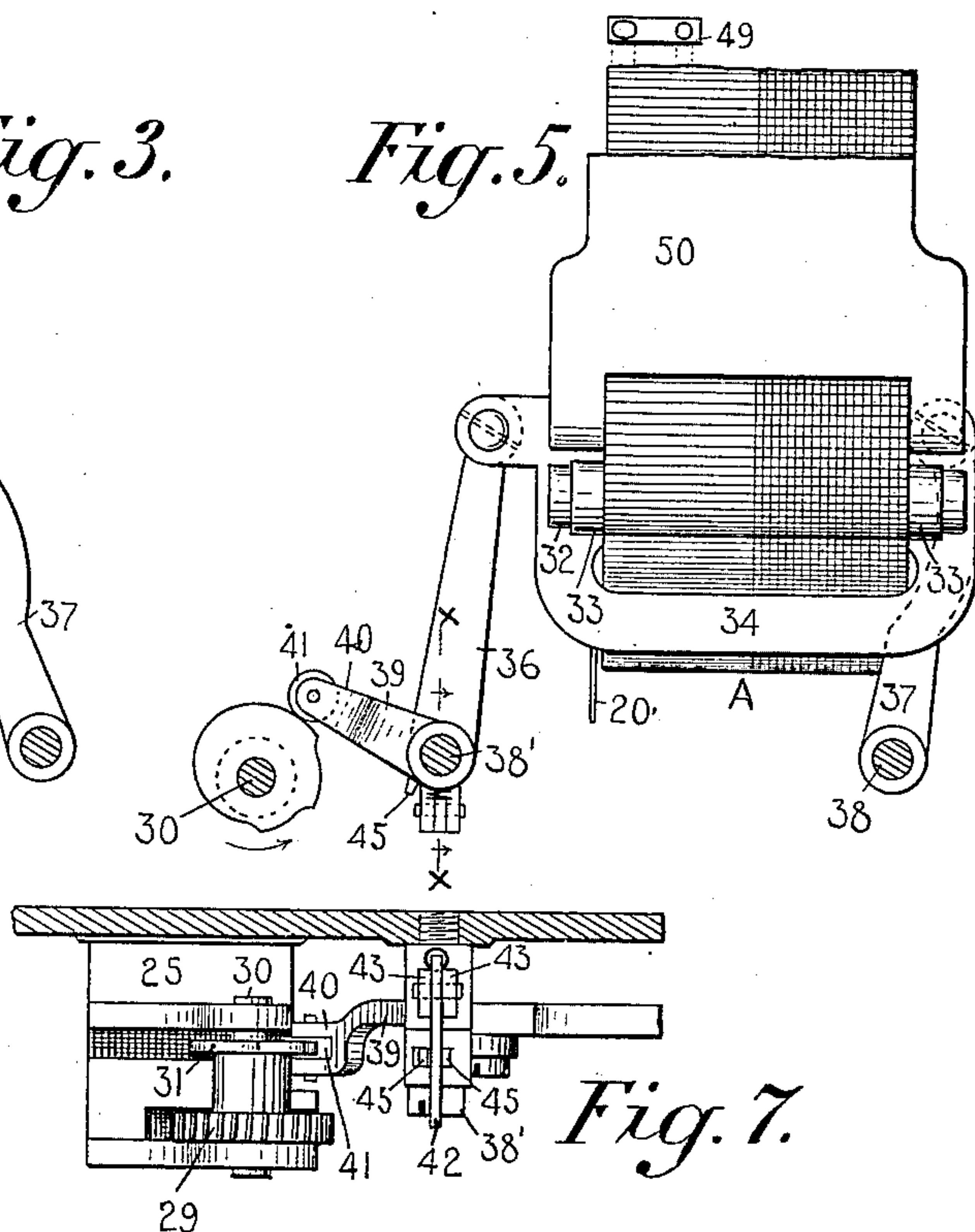
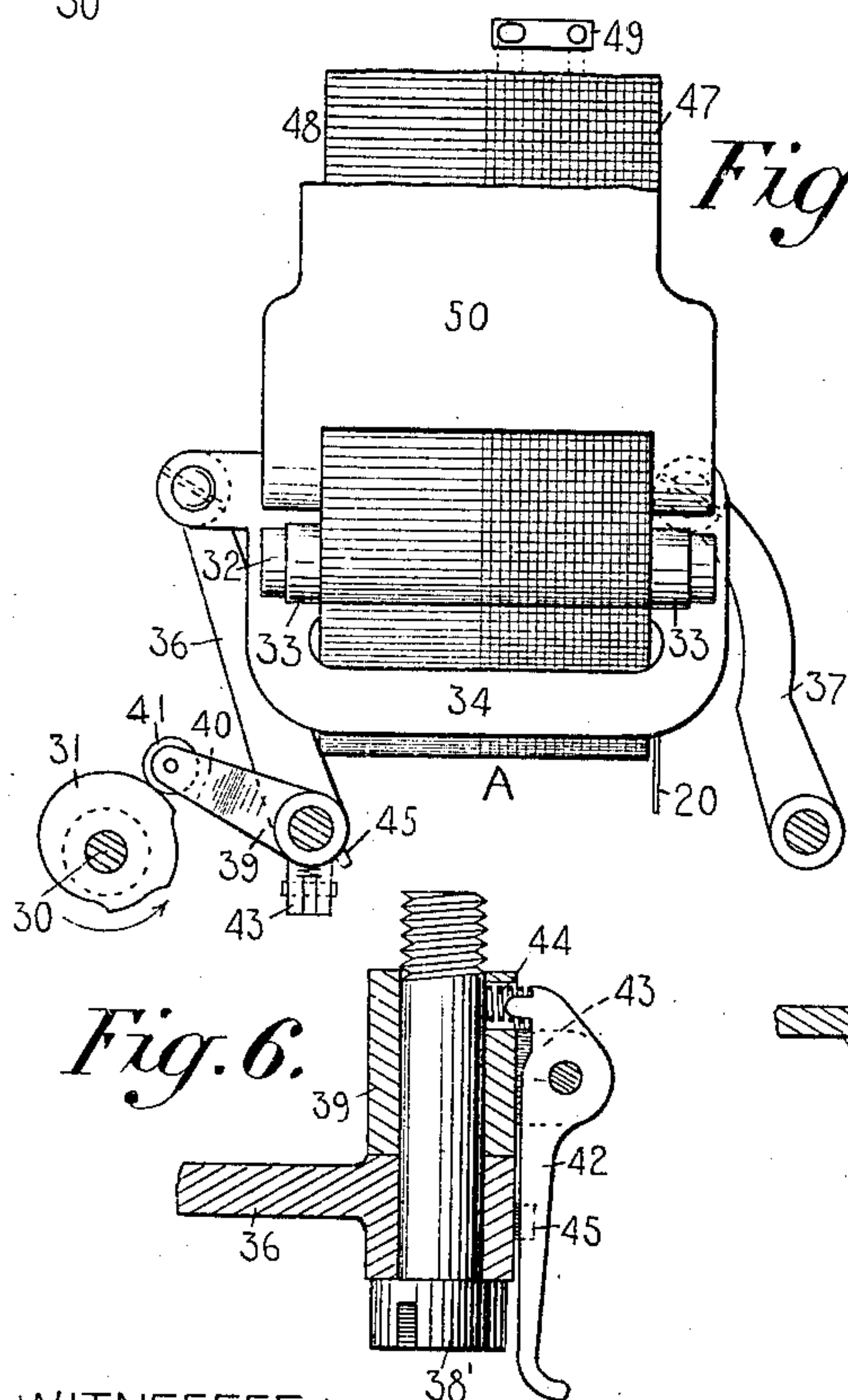
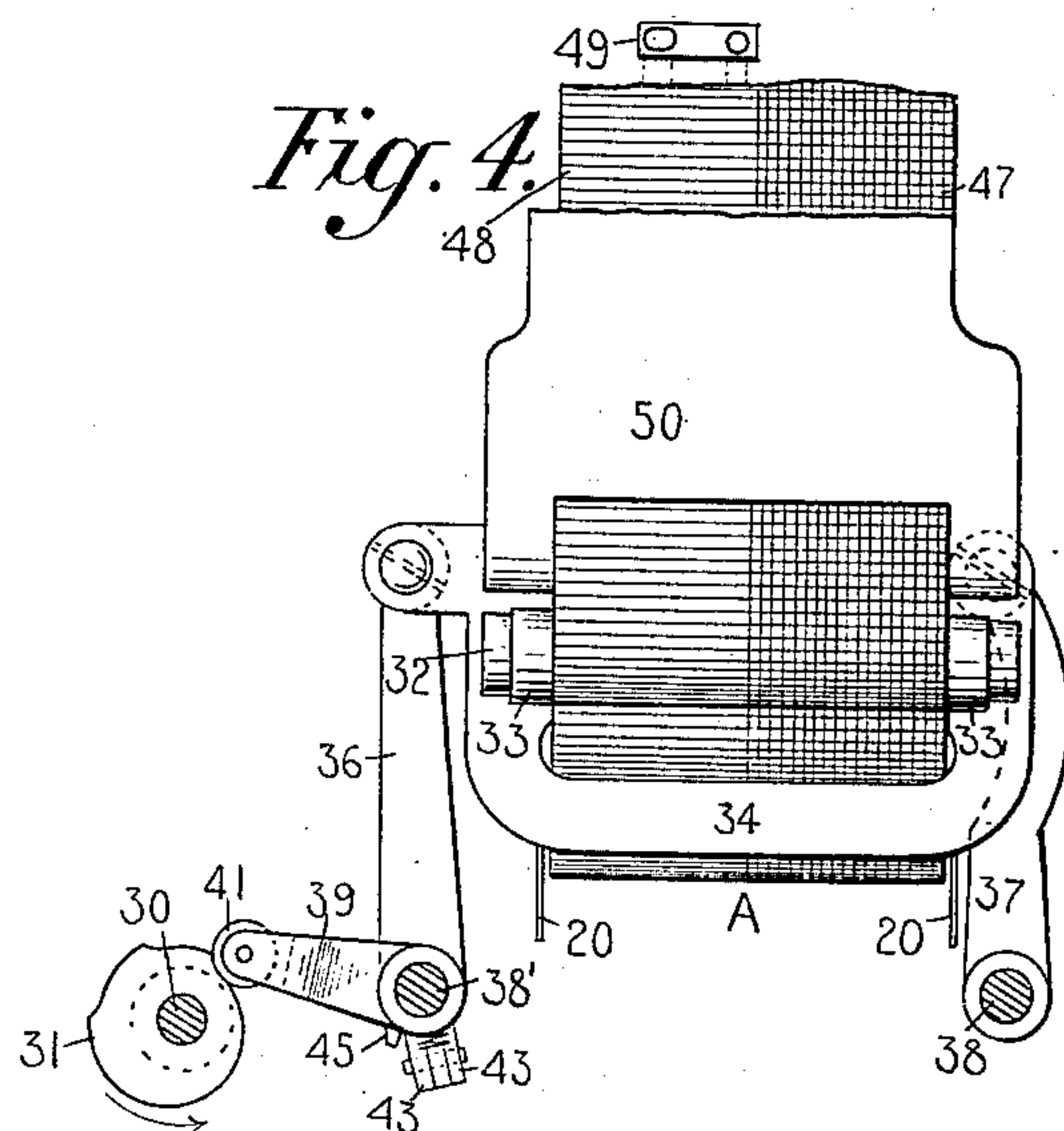
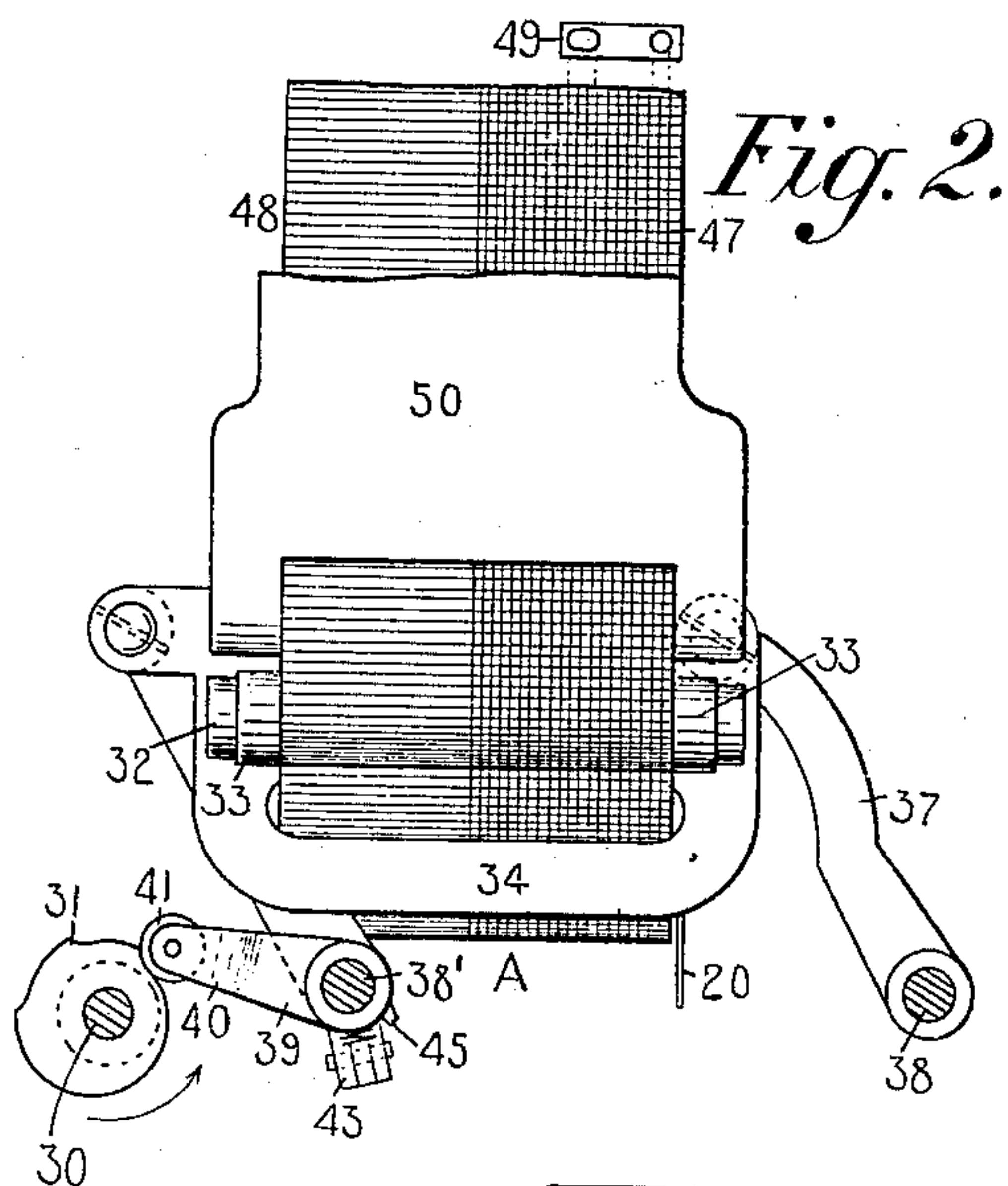
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3 SHEETS--SHEET 2.



WITNESSES:

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Fig. 8.

Daniel Briggs

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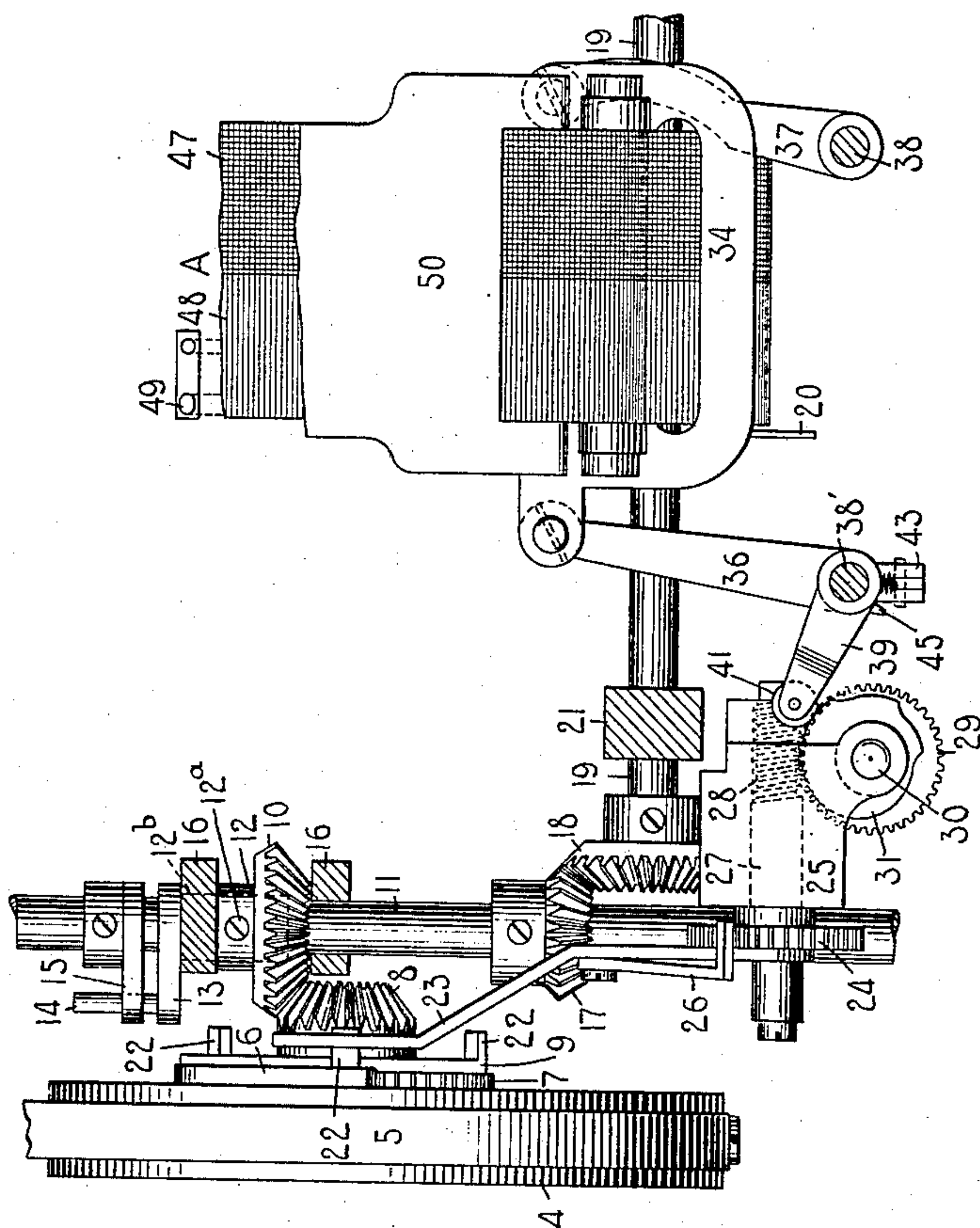
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3 SHEETS—SHEET 3.

FIG. 9.



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UNITED STATES PATENT OFFICE.

DANIEL BRIGGS, OF NEW YORK, N. Y., ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF
ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 863,697.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed October 31, 1902, Serial No. 129,549.

To all whom it may concern:

Be it known that I, DANIEL BRIGGS, a citizen of the United States, and a resident of the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to certain improvements in ribbon mechanism for typewriting machines and the main object of the invention is to provide simple and efficient means whereby any of a plurality of inking surfaces having different colors or characteristics may be readily brought to the operative position where it will cooperate with the types.

A further object of the invention is to provide means for automatically feeding the inking surfaces during the operation of the machine so as to efficiently use every portion of an inking surface and so nevertheless that the particular inking surface which has been moved to the operative position will alone be brought into use.

To the above and other ends which will hereinafter appear my invention consists of the features of construction, arrangements of parts and combinations of devices to be hereinafter described and claimed.

In the drawings illustrating these improvements, Figure 1 represents the upper part of the left-hand end of a type-writing machine with part of the frame broken away to more clearly illustrate my invention. Fig. 2 is a plan view of the left-hand spool of the typewriting machine, showing the shifting frame, the supporting links, the shifting lever and cam, one of the colored sections of the ribbon having reached its limits in the lateral movement in one direction. Fig. 3 is a similar view but showing the same colored section occupying the opposite limit of its lateral movement. Fig. 4 is a similar view but showing the other colored section at the printing center or line and at its extreme limit in the lateral movement in one direction. Fig. 5 is a view similar to Fig. 4 but showing the same colored section of the ribbon at its opposite limit in the lateral movement. Fig. 6 is a vertical section through the hubs of one of the supporting links and adjacent shifting lever showing the locking lever. Fig. 7 is a detail side view of the shifting device occupying a different position from that shown in Fig. 1. Fig. 8 is a plan view of the supporting link used in conjunction with the shifting lever. Fig. 9 is a plan view of certain of the parts illustrated in Fig. 1 and showing the mechanism arranged for automatically producing the lateral feed within one color or section of the ribbon. Fig. 10 is a detail perspective view of the ribbon spools and guide or carrier.

I have illustrated my invention applied to a No. 6 Remington machine, though it should be understood

that it may be applied to other characters of writing machines.

The typewriting machine shown in the drawings is of that class which has a carriage 1 in which is mounted a platen 2, the carriage being arranged to travel along the top plate 3 from side to side of the machine and being propelled by the carriage driving drum 4 through the agency of a strap or band 5 and a spring within the drum. The carriage driving drum 4 revolves freely on a supporting shaft 5' and is provided on its front side with a pawl 6 which engages the teeth of a ratchet wheel 7 also loosely mounted on the shaft 5'. With the movement of the carriage 1, in the direction of its feed or from right to left, the revolving drum and its pawl 6 turn the ratchet wheel 7, but when the carriage is returned to its starting point, the drum revolves in the opposite direction and the pawl 6 failing to act upon the ratchet wheel 7, leaves it at rest. The automatic actuation of the ribbon mechanism being effected from the ratchet wheel 7, it will be understood that during the return movement of the carriage from left to right no movement is transmitted to the ribbon, which is desirable in order to afford impact of the types throughout every portion of the ribbon with a consequent production of uniform impressions in the writing. The ratchet wheel 7 carries on its hub a bevel gear and a spider 9. The object of the latter will be described hereafter, but it will be seen that the gear 8 engages a similar bevel gear 10 mounted on the shaft 11, the object of this shaft 11 in this class of typewriting machines being well-known as the means by which the ribbon spools are alternately wound to change the direction of longitudinal feed of the ribbon. I do not think it necessary to more fully illustrate this feature of the construction, it being understood, that the direction of longitudinal feed of the ribbon depends on which bevel gear on the shaft 11 meshes with its associated gear on a ribbon spool shaft and this is determined by the longitudinal disposition of the shaft and that these devices constitute parts of the automatic reversing mechanism employed in the No. 6 Remington machine and which is disclosed in the patent to Webb No. 599,428 dated February 22, 1898.

In Fig. 9 the bevel gear wheel 10 will be seen attached to a sleeve 12, that receives a sleeve 12^a which is connected thereto by a set screw 12^b. The sleeve 12^a loosely surrounds the shaft 11, and has a crank arm 13 projecting therefrom and from which extends a pin 14, the pin extending parallel with the shaft 11 and passing loosely through a slot or opening in the end of a crank arm 15 secured to the shaft 11. This construction permits of the longitudinal movement of the shaft 11, whether effected automatically or by hand, independently of the sleeves 12 and 12^a, the bevel gear 10, and the crank arm 13, which parts are held against longitu-

dinal movement by depending brackets 16, 16 through one of which the sleeve 12^b extends. The crank arm 13 and 15, through the medium of the pin 14, rotate together so that a rotation of the gear 10 will be transmitted to the shaft 11 irrespective of the longitudinal position thereof.

The shaft 11 extends from side to side of the machine and is provided at the left-hand end portion thereof with a bevel gear wheel 17 secured thereto and meshing with a similar wheel 18 on the shaft 19, which latter shaft carries the ribbon spool 20 and is in turn carried in brackets 21, 21. It will be understood that another like gear is carried near the opposite end of the shaft for coöperation with the gear of the other ribbon spool shaft 19^a (Fig. 10).

The spider 9 is provided with several lugs 22, 22, which project outwardly, and as the ratchet wheel 7 and the spider 9 revolve, they strike the outer end of a lever 23 fulcrumed on the shaft of a ratchet wheel 24 carried by a bracket 25 hanging from the lower side of the top plate 3. The lever 23 carries a pawl 26 which engages the teeth of ratchet wheel 24 and as the lugs 22, 22 strike the outer end of the lever, cause it to rise and fall, the pawl playing in the teeth of the ratchet wheel 24 and causing it to slowly revolve and turn its shaft 27 and a worm 28 thereon. The worm 28 engages a worm wheel 29 on a vertical shaft 30 carried by the bracket 25, and the shaft 30 at its other end carries a cam 31 which has about half its face stepped while the balance is a regular and steady rise. The spools 20 and 20^a slide freely on the shafts 19 and 19^a but each spool is caused to revolve with its shaft by means of a spline on the shaft or any well-known or desired means which I have not considered necessary to show, and the ribbon A passes from the left hand ribbon spool, up and over a guide pin 32 and then over the type well to the other ribbon spool. The guide pin 32 is carried by two ears 33 of a frame 34, and the latter has depending from its lower side two fingers 35, which span the associated spool and control its movement along the shaft 19. The frame 34 is carried by two supporting links 36, 37 which are pivoted on vertical posts 38, 38' secured to the underside of the top plate 3. These links 36 and 37 are provided at their pivotal ends with sleeves surrounding the posts 38, 38' which afford an easy swinging movement while their outer ends are pivoted to different sides of the shifting frame 34 and allow it to move fore and aft of the machine during the swing movement of the links. This movement is imparted to the links and shifting frame 34 by means of the small rocking lever 39 having a forked end 40 which carries a roller 41 designed to ride over the face of cam 31. The other end of the lever 39 is pivoted on the post 38', which also carries the supporting link 36 and by means of the lever 42 is locked with the link 36 and moves with it about the pivot post 38'.

The locking lever 42 is clearly shown in Fig. 6, where it will be seen fulcrumed in two ears 43, projecting from the sleeve of lever 39, its upper end bearing against and being forced out by a spiral spring 44 seated in a socket in that end of the sleeve while the lower end of the lever 42 engages lugs 45, projecting from the sleeve of the supporting link 36. Fig. 8 shows three of these lugs and the longer end of the lever 42 is designed to lie on either side of the middle lug and in the space between the middle and one of the end lugs, so that the lever and the

link may be positively locked with relation to each other in either of the two positions shown in Figs. 2 and 4. The spring 46 is wound about the pivot post 38 above the sleeve of supporting link 37 and one of its ends bears against the depending rim of top plate 3. The other end bearing against link 37 tends to force it and the shifting frame 34 with link 36 and lever 39 in the opposite direction and cause the roller 41 to ride on the face of cam 31. The top plate supports a ribbon guide plate 50 of the usual or any suitable construction.

The inking surfaces comprising the ribbon A are shown as two fields 47 and 48. These fields may be inking surfaces of two different colors such for instance as black and red, or they may have different characteristics; thus the field 47 may be copying ribbon, whereas the field or section 48 may be record ribbon, though for convenience the sections will be referred to as of two different colors black and red. In Figs. 2 and 3, the types 49 act upon the black field or section of the ribbon while Figs. 4 and 5 show the red section in use.

The operation of the mechanism above described will now be explained: The revolutions of the ratchet wheel 7 through the letter space movement of the carriage in the direction of the feed causes the lugs 22 of the spider 9 to strike the free end of the lever 23 and the pawl 26 thus intermittently actuated turns the wheel 24 and worm 28. The worm wheel 29 is turned by the rotation of the worm 28 carrying with it the cam 31 whose cam face causes the lever 39 and link 36 to swing about the post 38', moving the frame 34 laterally and shifting the spool 20 on the revolving shaft 19. The frame 34, through the ribbon guide plate 50, also shifts the ribbon spool 20^a at the other end of the machine by the usual depending finger 50^a carried by the plate 50 (see Fig. 10). The extreme movements of the black ribbon are shown in Figs. 2 and 3; in Fig. 2 the roller 41 rests on the shortest radius of the cam 31 and the types 49 are using one side of the ribbon and in Fig. 3 the cam has revolved and the roller 41 bears on the greatest radius, having gradually shifted the ribbon across the printing center and to its limit in the other direction. This shifting is slow and intermittent during the longitudinal feed of the ribbon and eventually the entire colored section of the ribbon both widthwise and lengthwise considered is presented to the action of the types. The change of the colored sections of the ribbon from black to red is as follows:

The relation of the lever 39 and the link 36 are seen to differ in Figs. 2 and 4, and this is brought about by shifting the locking lever from the space 51 (Fig. 8) to the space 52 between the lugs 45, 45. This is done by lifting the lever 42 out of the space 51 against the pressure of spring 44, shifting the link slightly to the right and dropping the end of the lever 42 into the space 52, as seen in Fig. 4. The relation of the lever 39 and its roller with the cam 31 is the same but the link 36 has carried the shifting frame and the black section of the ribbon past the printing center and placed the red section in the position to be used. The action of the cam 31, lever 39 and link 36 is now identical with that of these parts when the black section was used and it will be seen in Figs. 4 and 5 how the revolution of the cam 31 throws the red section to the extremes of its width with relation to the types.

The ribbon used by the above described device I

have shown as being equally divided in its coloring through its entire length and but two colors being used. It is readily seen, however, that by a slightly different arrangement of the lugs 45, on the sleeve of link 36, three or more colors or sections may be used.

It will be observed that the lengthwise motion of the ribbon in either direction is in no way interfered with and the change of color or character of the printing surface is readily effected without touching the ribbon. While a single ribbon or inking surface is here shown and described, it is obvious that I may employ two or more ribbons or other inking surfaces, each of a single but different color or character.

From the foregoing description it will be observed that I have provided simple and efficient means for affording an automatic feed of the ribbon or inking surface in two directions at substantially right angles to each other and that the feed is nevertheless such that only the field which is in the operative position will be presented to the types for cooperation therewith; that the link 36, lever 39 and the connections between the two constitute essentially a bell crank lever, the separate arms (36 and 39) of which are adapted to be adjusted relatively one to the other to bring an inking field of one or another characteristic into operative position and to afford an automatic movement of the ribbon or inking surface so as to present only the field in the operative position to the action of the types; that the guide plate 50 and the associated parts constitute a ribbon carrier which is operatively connected to and is actuated by the means for automatically moving the ribbon in a direction transverse to its length.

Various changes may be made without departing from the spirit of my invention and certain features may be employed without the others.

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

1. In a typewriting machine, the combination of a ribbon having longitudinally extending fields of different characteristics, ribbon spools mounted to rotate and to move axially, means for automatically moving said spools axially and for confining the transverse feed of the ribbon to each longitudinal field, and separate means operable independently of said axially moving means for effecting a rotation of said ribbon spools to feed the ribbon longitudinally.

2. In a typewriting machine, the combination of a ribbon having longitudinally extending fields of different characteristics, ribbon spools mounted to rotate and to move axially, an automatically actuated rotary cam for moving said spools axially to effect a transverse feed of the ribbon within the limits of each field, and separate means operable independently of said cam for effecting a rotation of said ribbon spools.

3. In a typewriting machine, the combination of a ribbon having longitudinally extending fields of different characteristics, ribbon spools mounted to rotate and to move axially, an automatically actuated rotary cam for moving said spools axially to effect a transverse feed of the ribbon within the limits of each field, a lever arm which bears against said cam, a second lever arm actuated by said first mentioned lever arm, means for operatively connecting said second lever arm to the ribbon spools, means for changing the relation between said lever arms, and means for rotating said ribbon spools.

4. In a typewriting machine, the combination of a carriage, a ribbon having longitudinally extending fields of different characteristics, ribbon spools adapted to rotate and to move axially to effect both a transverse and longitudinal feed of the ribbon within each field, a cam that is rotated during the travel of the carriage, a lever that bears

against and is actuated by said cam, means for effecting a change in the relation of the arms of said lever, means for operatively connecting said lever to the ribbon spools to effect an axial movement of the ribbon spools, and means for automatically rotating said spools for effecting a longitudinal feed of the ribbon.

5. In a typewriting machine, the combination of a carriage, a ribbon having longitudinally extending fields of different characteristics, ribbon spools adapted to rotate and to move axially to effect both a transverse and longitudinal feed of the ribbon within each field, a cam, intermittently actuated means for turning said cam, means controlled by said cam for effecting an axial movement of the ribbon spools, said controlling means including means for changing the relation of the parts to determine which field of the ribbon shall be presented to the action of the types, and separate automatically actuated means for turning said ribbon spools.

6. In a typewriting machine, the combination of a carriage, a ribbon having longitudinally extending fields of different characteristics, ribbon spools adapted to rotate and to move axially to effect both a transverse and longitudinal feed to the ribbon within each field, a rotary cam, means that are intermittently actuated by the feed movement of the carriage for turning said cam, intermediate connections between said cam and ribbon spools for effecting an axial movement of the ribbon spools, said connections including means for changing the relation of the parts and for locking them in the changed relation to determine which field of the ribbon shall be presented to the action of the types, and separate automatically actuated means for turning said ribbon spools.

7. In a typewriting machine, the combination of a carriage, a ribbon having longitudinally extending fields of different characteristics, ribbon spools adapted to rotate and to move axially to effect both a transverse and longitudinal feed of the ribbon within each field, a rotary cam, intermittently actuated means controlled by the feed movement of the carriage for operating said cam, said intermittently actuated means comprising an intermittently actuated pawl and a cooperating ratchet, adjustable means between said cam and the ribbon spools and which are operative to change the relation between the parts and thus determine which field shall be presented to the action of the types, and separate means for automatically turning said ribbon spools.

8. In a typewriting machine, the combination of a carriage, a ribbon having longitudinally extending fields of different characteristics, ribbon spools adapted to rotate and to move axially to effect both a transverse and longitudinal feed of the ribbon within each field, geared connections between said carriage and the ribbon spools for rotating said spools by the feed movement of the carriage, a cam, means for automatically actuating said cam, intermediate connections between said cam and the ribbon spools for effecting an axial movement of the ribbon spools, and means for changing the relation between the parts of said intermediate connections to determine which field of the ribbon shall be brought to and maintained in the operative position.

9. In a typewriting machine, the combination of a ribbon having longitudinally extending fields of different characteristics, ribbon spools, ribbon spool shafts with which said spools are adapted to turn and along which they are adapted to move axially, geared connections for automatically turning said ribbon spool shafts, an automatically actuated cam for moving said spools axially along said shafts irrespective of which inking field is in the operative position, and means between said cam and ribbon spools to determine which field shall be presented at and maintained in the operative position, said means including parts whose relations may be changed.

10. In a typewriting machine, the combination of a ribbon having longitudinally extending fields of different characteristics, ribbon spools, ribbon spool shafts with which said spools are adapted to turn and along which they are adapted to move axially, geared connections for automatically turning said ribbon spool shafts, an automatically actuated cam for moving said spools axially along said shafts, and controlling means between said cam

and ribbon spools, said controlling means comprising a lever and being operative to determine which field shall be presented at and maintained in the operative position, and means for changing the relation of the arms of said lever.

11. In a typewriting machine, the combination of a ribbon having longitudinally extending fields of different characteristics, ribbon spools, ribbon spool shafts with which said spools are adapted to turn and along which they are adapted to move axially, a shifting frame, links for supporting said shifting frame, geared connections for automatically turning said ribbon spool shafts, a cam, a crank arm actuated by said cam and operatively connected to one of said links, and means for changing the relation between said crank arm and the link to which it is connected to determine which field of the ribbon shall be presented at and maintained in the operative position.

12. In a typewriting machine, the combination of a carriage, a ribbon having longitudinally extending fields of different characteristics, ribbon spools, ribbon spool shafts with which said spools are adapted to turn and along which they are adapted to move axially, geared connections for automatically turning said ribbon spool shafts, a cam for moving said spools axially along said shafts irrespective of which inking field is in the operative position, intermittently actuated means for actuating said cam during the feed movement of the carriage, and means between said cam and ribbon spools to determine which field shall be presented at and maintained in the operative position, said means including parts whose relations may be changed.

13. In a typewriting machine, the combination of a ribbon having longitudinally extending fields of different characteristics, ribbon spools, ribbon spool shafts with which said spools are adapted to turn and along which they are adapted to move axially, a shifting frame, links for supporting said shifting frame, geared connections for automatically turning said ribbon spool shafts, a cam, intermittently actuated means for automatically operating said cam, a crank arm actuated by said cam and operatively connected to one of said links, and means for changing the relation between said crank arm and the link to which it is connected to determine which field of the ribbon shall be presented at and maintained in the operative position.

14. In a typewriting machine, the combination of a carriage, a spring drum, a gear operatively connected to said spring drum to be actuated thereby, ribbon spool shafts, ribbon spools mounted on said shafts to rotate therewith and to move axially along said shafts, geared connections between said ribbon spool shafts and said gear, an inking ribbon having longitudinally extending fields of different characteristics, and automatically actuated means for effecting an axial movement of said ribbon spools irrespective of which of said longitudinally extending fields is in the operative position, said axially moving means including means for changing the relation between certain of the parts to determine which inking field shall be presented at and maintained in the operative position.

15. In a typewriting machine, the combination of a carriage, a spring drum, a gear operatively connected to said spring drum to be actuated thereby, ribbon spool shafts, ribbon spools mounted on said shafts to rotate therewith and to move axially along said shafts, geared connections between said ribbon spool shafts and said gear, an inking ribbon having longitudinally extending fields of different characteristics, and automatically actuated means for effecting an axial movement of said ribbon spools irrespective of which of said longitudinally extending fields is in the operative position, said axially moving means including a cam, a link operatively connected to said ribbon spools, a crank arm actuated by said cam and operatively connected to said link, and means for changing the relation between said crank arm and link, to determine which field of the ribbon shall be presented at and maintained in the operative position.

16. In a typewriting machine, the combination of a carriage, a spring drum, a gear operatively connected to said spring drum to be actuated thereby, ribbon spool shafts, ribbon spools mounted on said shafts to rotate

therewith and to move axially along said shafts, geared connections between said ribbon spool shafts and said gear, an inking ribbon having longitudinally extending fields of different characteristics, and automatically actuated means for effecting an axial movement of said ribbon spools irrespective of which of said longitudinally extending fields is in the operative position, said axially moving means including intermittently actuated means operated from said spring drum, a cam actuated by said intermittently actuated means, a link operatively connected to said ribbon spools, a crank arm actuated by said cam and operatively connected to said link, and means for changing the relation between said crank arm and link to determine which field of the ribbon shall be presented at and maintained in the operative position.

17. In a typewriting machine, the combination of a carriage, a spring drum therefor, an inking ribbon having longitudinally extending fields of different characteristics, a train of mechanism from said spring drum for automatically effecting a longitudinal feed of the ribbon, a separate train of mechanism from said spring drum for automatically effecting a transverse feed of the ribbon irrespective of the field of the ribbon which is in the operative position, and means for determining which field of the ribbon shall be presented to and maintained in the operative position.

18. In a typewriting machine, the combination of a carriage, a spring drum therefor, an inking ribbon having longitudinally extending fields of different characteristics, a carrier for said ribbon, a train of mechanism from said spring drum for automatically effecting a longitudinal feed of the ribbon, a separate train of mechanism from said spring drum to said carrier for automatically effecting a transverse feed of the ribbon irrespective of the field of the ribbon which is in the operative position, and means for controlling the position of said carrier for determining which field of the ribbon shall be presented to and maintained in the operative position.

19. In a typewriting machine, the combination of a carriage, a spring drum therefor, an inking ribbon having longitudinally extending fields of different characteristics, ribbon spools, a train of mechanism from said spring drum for automatically rotating said ribbon spools for effecting a longitudinal feed of the ribbon, a separate train of mechanism from said spring drum to said ribbon spools for moving the ribbon spools axially irrespective of the field of the ribbon which is in the operative position in order to effect a transverse feed of the ribbon, and means for determining which field of the ribbon shall be presented to and maintained in the operative position.

20. In a typewriting machine, the combination of a carriage, a spring drum therefor, an inking ribbon having longitudinally extending fields of different characteristics, ribbon spools, a train of mechanism from said spring drum to said ribbon spools for rotating them during the feed movement of the carriage and thereby effecting a longitudinal feed of the ribbon, a shifting frame cooperating with said ribbon spools to move the spools axially in order to effect an automatic transverse feed of the ribbon irrespective of the inking field that is presented to operative position, and a separate intermittently actuated train of mechanism from said spring drum to said shifting frame for intermittently moving said shifting frame, said last mentioned train of mechanism including means for determining which inking field shall be presented to and maintained in operative position.

21. In a typewriting machine, the combination of a multi-colored inking ribbon, connected ribbon spools adapted to travel laterally, a spool shifting frame controlling one of said spools, a pair of supporting links carrying the shifting frame at their ends, and means to limit the lateral movement of said frame, spools and the ribbon within a given color.

22. In a typewriting machine, the combination of a multi-colored inking ribbon, a pair of connected ribbon spools adapted to travel laterally, a spool shifting frame controlling one of said spools, a pair of supporting links carrying the shifting frame at their free ends, and means for altering the swing of said links and changing the colored fields.

23. In a typewriting machine, the combination of a

multi-colored inking ribbon, a pair of connected ribbon spools adapted to travel laterally, a spool shifting frame controlling one of said spools, a pair of supporting links carrying the shifting frame at their free ends, and means for altering the swing of said links and locking same in their altered position.

24. In a typewriting machine the combination of a multi-colored ribbon, a pair of ribbon spools, a pair of ribbon spool shafts, a spool shifting frame for one of the said ribbon spools, a ribbon guide frame attached to said spool shifting frame at one end and having at its other end means for shifting the other ribbon spool, a pair of pivoted supporting links pivotally attached to said spool shifting frame, a lever carried on the pivot of one of the supporting links, provided with a locking lever to secure it to said link and carrying an anti-friction roller at its other end, a cam acting on said anti-friction roller, and means for turning said cam connected to the carriage driving drum.

25. In a typewriting machine, the combination of a multi-colored inking ribbon, a pair of ribbon spools connected together, a pair of ribbon spool shafts, a ribbon spool shifting frame with depending fingers, a pair of pivoted supporting links pivotally attached to said spool shifting frame, a lever provided with a locking device and carrying an anti-friction roller, a cam having a rising face and a stepped face adapted to operate with said roller, a worm wheel and worm for turning said cam, and a pawl and ratchet mechanism for turning said worm.

26. In a typewriting machine, and in a mechanism for laterally changing the position of the colored fields of a multi-colored inking ribbon, the combination of a multi-

colored ribbon, ribbon spools, ribbon spool shafts, a spool shifting frame, supporting links, the pivoted end of one being provided with lugs, a lever swinging on the pivot of the supporting link and carrying at its pivot end a spring actuating locking lever to engage said lugs, and permitting a change of relation of the link and lever on the pivot, and an anti-friction roller on the free end of said lever actuated by a cam provided with suitable driving mechanism.

27. In a typewriting machine, the combination of a multi-colored ribbon, a pair of ribbon spools connected together, a shifting frame controlling one of the said spools a pair of pivoted links pivotally attached to said shifting frame, a lever with a locking device designed to hold it and one of the links in varied relations as to the radii of their common pivot, a cam acting against the free end of said lever in one direction, and a spring acting against said links to move them in an opposite direction.

28. In a typewriting machine, the combination of a multi-colored ribbon, a ribbon spool adapted to slide laterally, a ribbon spool shaft, a spool shifting frame, supporting links, a rocking lever carried by the pivot of one of the links, and a locking device whereby the relative position of the link and lever may be altered and locked.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York this 28th day of Oct., A. D. 1902.

DANIEL BRIGGS.

Witnesses:

K. V. DONOVAN,
E. M. WELLS.