

No. 865,752.

PATENTED SEPT. 10, 1907.

E. E. BARNEY.
TYPE WRITING MACHINE.
APPLICATION FILED JAN. 30, 1906.

2 SHEETS—SHEET 1.

FIG. 1.

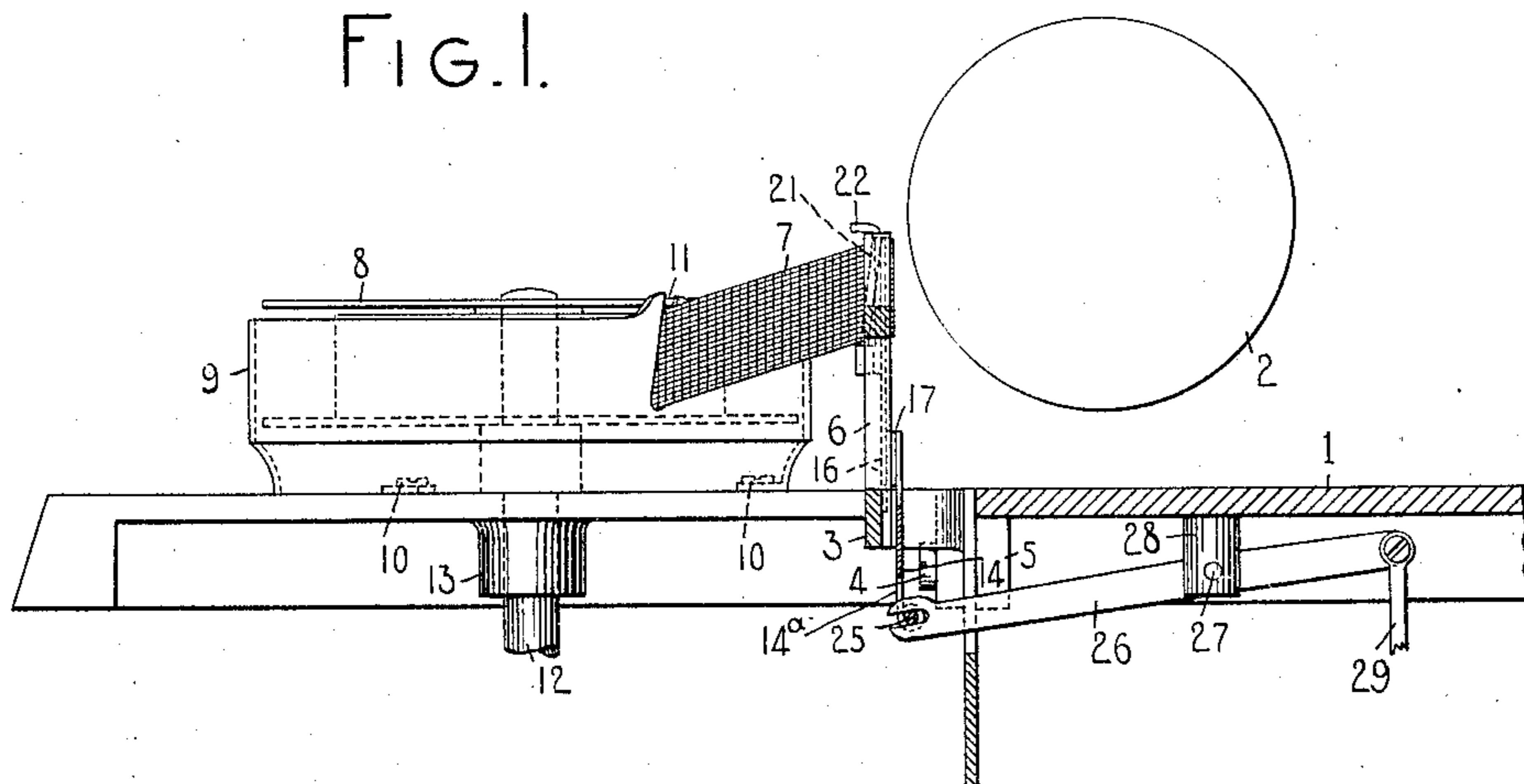


FIG. 2.

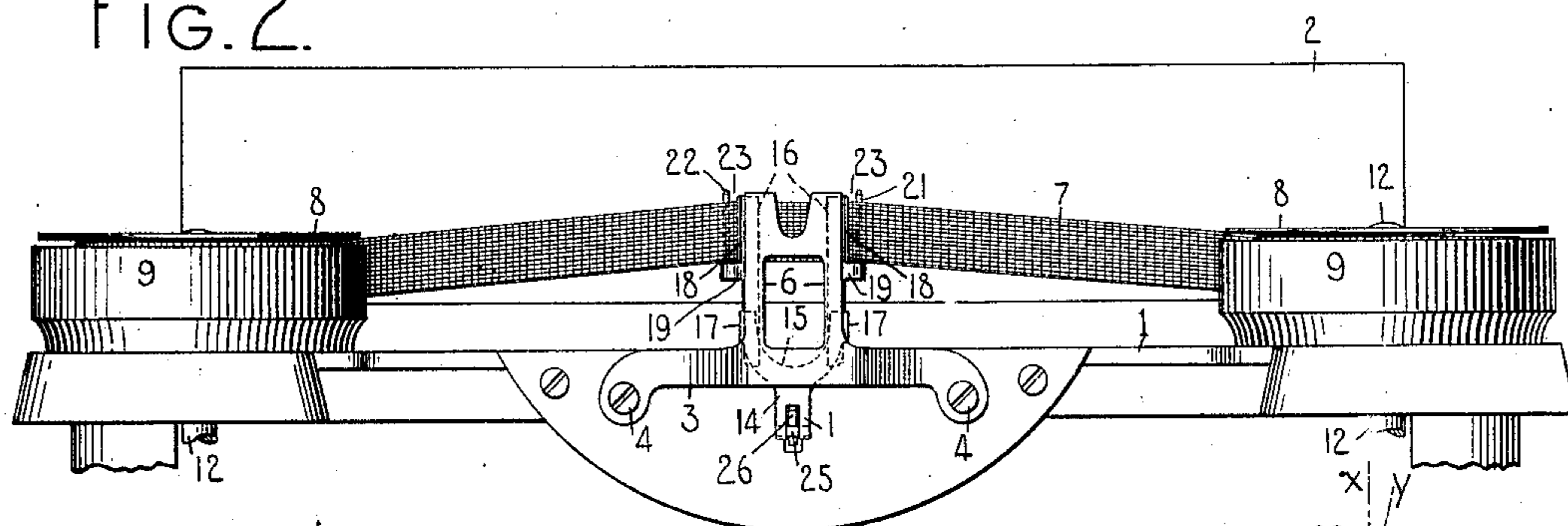


FIG. 3.

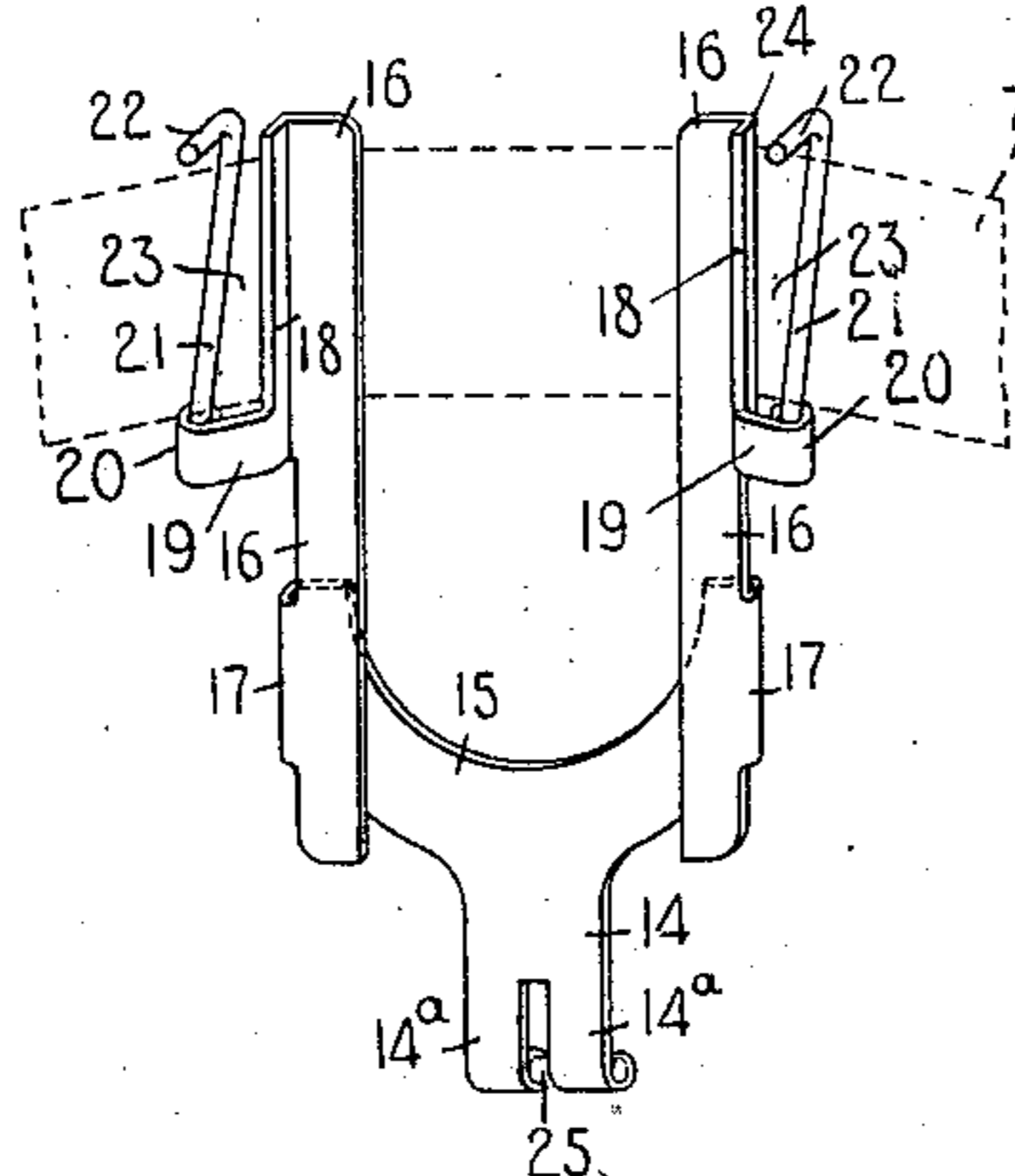
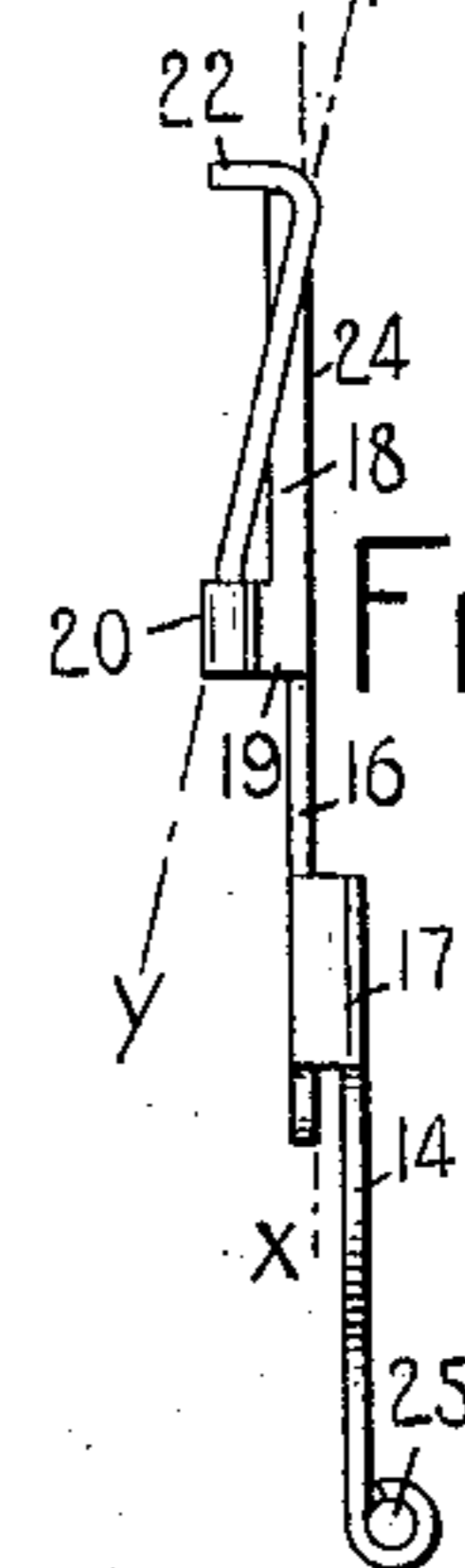


FIG. 4.



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2 SHEETS—SHEET 2.

FIG. 6.

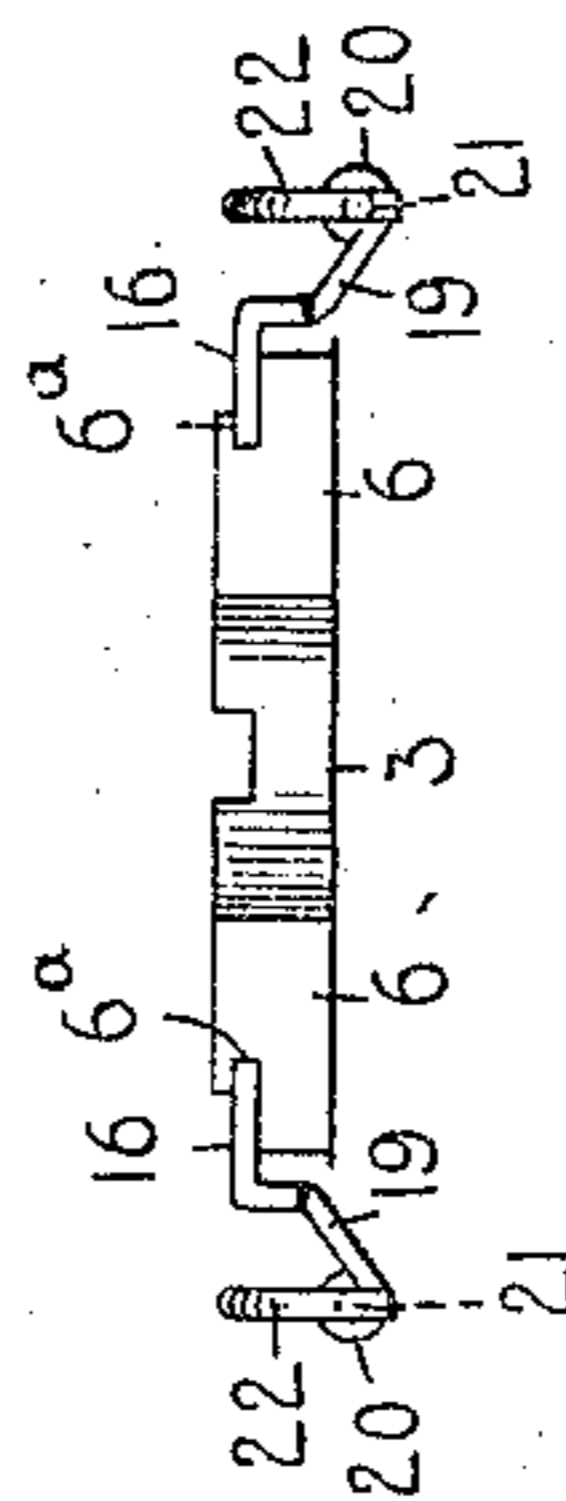
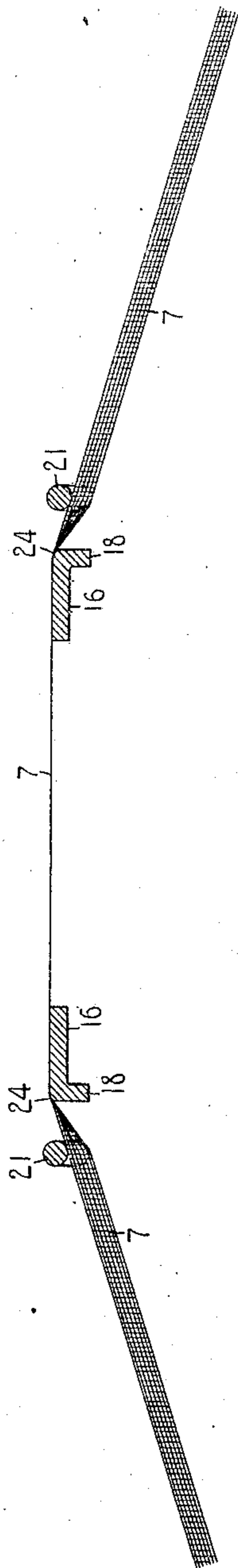


FIG. 5.

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UNITED STATES PATENT OFFICE.

EDWIN E. BARNEY, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 865,752.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed January 30, 1906. Serial No. 298,646.

To all whom it may concern:

Be it known that I, EDWIN E. BARNEY, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga and State of New York, have
5 invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates more especially to ribbon vibrators, guides or carriers of typewriting machines,
10 and its main object is to provide means whereby the ribbon may run or be fed true and even, and without creasing, folding or doubling.

To the above and other ends, the invention resides in the features of construction and combinations and
15 arrangements of parts hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a fragmentary, vertical, sectional view of the upper part of a typewriting machine showing my invention. Fig.
20 2 is a fragmentary front elevation of the upper part of the machine on a smaller scale than that of Fig. 1. Fig. 3 is an enlarged perspective view of my improved ribbon carrier or vibrator. Fig. 4 is an enlarged side elevation of the carrier or vibrator. Fig. 5 is a top
25 plan view of the ribbon carrier or vibrator and its guide bracket, both enlarged, parts of the guide bracket being omitted for the sake of clearness. Fig. 6 is an enlarged diagrammatic view in top plan showing the path of the ribbon in the carrier and as it enters and
30 leaves the carrier.

In the drawings, 1 represents the top plate of the machine above which is suitably mounted a platen 2. A guide bracket 3 is secured by headed screws 4 to lugs 5 depending from the top plate, said guide bracket
35 being provided with two vertically disposed parallel arms 6, the outer edges of which are provided with longitudinal grooves or guide ways 6^a (Fig. 5). An ink ribbon 7 is wound on and has its ends secured to ribbon spools 8 horizontally disposed above the top
40 plate forward of the platen and below the printing point on the latter. Said spools are surrounded by rims or bands 9 secured to the top plate by screws 10 and provided with upwardly and rearwardly inclined slots 11 through which the ribbon 7 passes. Each
45 ribbon spool is supported at the upper end of a rotary shaft 12, said shaft being journaled in fixed bearings 13 and being connected with any suitable construction of mechanism for turning the spools and feeding the ribbon back and forth upon and between them.
50 The central portion of that part of the ribbon which extends across the machine between the spools in front of the platen is preferably maintained normally below the printing point and is, during printing operation, moved to cover the printing point and is there-
55 after moved back to again uncover the printing point.

This to-and-fro or vibratory movement of the ribbon is controlled by a vibrator, guide or carrier which is preferably made of sheet metal and preferably comprises a stem 14, a cross head 15 at the top of the stem and a pair of slides 16 carried at the ends of the cross-
60 head. The two laterally extending arms composing the cross-head are folded back on themselves at 17 and the slides 16 are thereby turned towards each other so that they may engage the slotted longitudinal guide ways 6^a in the vertical arms 6 of the guide bracket
65 3. The lower portions of the slides 16 extend below and the upper portions of said slides extend above the cross head. The upper portions of the slides 16 are provided with forwardly extending stiffening flanges or ribs 18 which are adapted to give rigidity
70 to the slides, said flanges being at right angles to the slides proper. Projecting forwardly and laterally from the lower ends of the flanges 18 are extensions or lugs 19, the ends of which are curled or folded, as indicated at 20, to receive the lower ends of angularly
75 disposed fingers or guide wires 21 and hold them securely in position. The guide wires extend upwardly and towards the rear of the machine, lying in a plane transverse of the machine, which plane is at an angle
80 to the general plane of the vibrator. In Fig. 4 the transverse plane of the wires 21 is indicated by the broken line y, and the general plane of the vibrator by the broken line x. The upper ends of the guide wires 21 are bent horizontally and forwardly, forming
85 hook-like portions 22. It will be understood that the guide wires or their equivalents may be connected with the body of the vibrator in any other suitable way which will permit them to be disposed angularly substantially as shown.

The upper outer portions of the slides 16 cooperate
90 with the guide wires 21 to form ribbon guiding slots 23. The ribbon passes from one ribbon spool 8 through the slot 11 in the spool case, and thence rearwardly, inwardly and upwardly to the ribbon carrier, first passing
95 in front of and over the finger or guide wire 21 which forms the outer wall of the slot 23, and then behind the associate slide 16 which forms the inner wall of the slot, the inner edge of said wall being a right-angle corner 24 formed by the slide 16 and the associate stiffening flange
100 18. Thence the ribbon passes across the ribbon carrier behind the other slide 16, over its right-angle corner 24, through the slot 23, over and in front of the associate finger or guide wire 21 to the other ribbon spool through the slot 11 in the associate spool, band or case 9. The
105 path of the ribbon through the carrier is shown clearly in Fig. 6. The lower end of the stem 14 of the carrier is bifurcated to form arms 14^a, secured to the ends of which is a cross pin 25. Engaging the cross pin 25 between the arms 14^a is the slotted forward end of an operating lever 26 fulcrumed at 27 in a lug 28, depending
110

from the top plate. The rear arm of the operating lever 26 is connected by a link 29 with a suitable construction of actuating mechanism which is adapted, at printing operation, to move the ribbon carrier or vibrator 5 from normal position to printing position and thereafter to permit the return of said ribbon carrier to normal position.

Preferably in threading the ribbon in the ribbon carrier a loop of that portion of the ribbon between the 10 spools is passed under the hooks 22 and down through the slots 23, said hooks thereafter serving to prevent the accidental detachment of said ribbon from the ribbon carrier during the operation of the machine. Viewed from the front of the machine, the ribbon guiding slots 15 23 are parallel, as will be understood from an inspection of Figs. 2, 5 and 6, so that planes passed through the slots longitudinally of the machine and contacting with the sides of the slots will be parallel with each other. In end or side view, however, as will clearly appear 20 from an examination of Figs. 1 and 4, the walls of the ribbon guiding slots are not parallel, the inner walls of said slots lying in a vertical transverse plane x which is also the general plane of the vibrator and the outer walls of said slots lying in a transverse plane y which is at an angle with the plane x . The walls of the guide 25 slot are parallel viewed from the front, but lie in transverse planes which intersect each other, said transverse planes being, of course, parallel to a common line such as the longitudinal axis of the platen. The lugs 19 30 form the bottoms of the ribbon guiding slots and the guide wires 21 composing the outer walls of said slots being forward of the plane x and extend towards it, being quite close to said plane at their upper ends. In other words, the distance between the working faces 35 or edges of the walls of each slot at their lower ends is greater than the distance between the working faces or edges of the walls of each slot at their upper ends. This will be understood clearly from a consideration of Figs. 5 and 6. There is, therefore, a greater spread, ex- 40 panse or extent of ribbon between the points where it touches the walls of each slot near the bottom than there is at the top.

The particular advantage of the construction and arrangement of the walls of the ribbon guiding slots, as 45 hereinbefore described, will now be explained.

The ribbon, it will be noted, lies flat against the rear face of the carrier and moves longitudinally past the printing point, in this case in a vertical plane, while the direction of its movement towards and away from 50 the carrier is oblique to said vertical plane, because the spools at either side of the carrier are forward of and below the horizontal plane of the printing line, and in the arrangement of the parts illustrated in the drawings are also below the guide slots in the ribbon carrier. These 55 guide slots, viewed from the front of the machine, are vertical and parallel and if the walls of said slots were also in the same or parallel transverse planes, as in constructions prior to my present invention, the top edge of the ribbon would become taut while the other edge 60 would be loose and slack. In such prior constructions this loss of uniformity in the tension of different portions of the width of the ribbon has proved objectionable, owing to the tendency of the slack edge of the ribbon to become wrinkled or folded, thereby spoiling the 65 ribbon and preventing clear type impressions from be-

ing made from it. With my improved construction, however, owing to the angularly disposed outer walls of the slots in the ribbon carrier, the slack at the lower edge of the ribbon is taken up and the longitudinal tension is rendered substantially even throughout the 70 width of the ribbon, so that one edge is neither tighter nor looser than the other, and wrinkling or folding is prevented. The angular disposition of the outer walls of the guide slots may be increased or decreased according to the obliquity of the path taken by the ribbon 75 in passing from spool to spool through the carrier. It will be seen, therefore, that the ribbon is conducted through the ribbon carrier past the printing point in a smooth or flat condition, and this whether or not the ribbon carrier constantly covers said printing point. 80 If the carrier is adapted to be moved to and from the printing point during printing operations, the resistance on the part of the ribbon to the lifting action of the ribbon carrier or vibrator in prior constructions having vertical slots has generally taken the form of a longitudinal 85 tension along the upper edge of the ribbon, due to the natural downward drag of said ribbon, while the lower edge thereof has been correspondingly slack, thereby increasing the tendency to crease or wrinkle found in the above described prior constructions of ribbon 90 carriers which are adapted to maintain the ribbon constantly at the printing point. With either style of ribbon carrier, that is, with a ribbon carrier which is fixed or with one which is vibratory, my present invention is adapted to do away with the objectionable lack 95 of uniformity in the tension and the consequent wrinkling of the ribbon. By my invention means are provided whereby the ribbon will run true without creasing or folding not only in the lower normal position of the vibratory carrier but also in the upper or printing 100 position of said carrier as has been determined in practice. When a ribbon is wound swiftly from one spool to another by turning either the spools by hand or by operating the usual hand crank the ribbon is very apt to crease or fold and double in the use of prior con- 105 structions. But with the improved construction herein set forth the objectionable creasing and folding in rapid operation does not occur.

The guide wires 21, composing the outer walls of the ribbon guiding slots, may be so disposed that their 110 lower portions may project far enough forward from the general plane of the carrier to take up as much of the slack at the bottom edge of the ribbon due to the downward inclination of the latter towards the ribbon spool after leaving the ribbon carrier, as may be desired. 115 Stated in another way, this is equivalent to saying that by my arrangement the ribbon may be directed from the slots in the ribbon carrier downwardly and laterally towards the slots in the spool cases. It will be seen from an inspection of Fig. 6 that because of the angular 120 disposition of the fingers or guide wires 21, the ribbon as it passes over them towards the spools will lie in inclined planes extending upwardly and towards the rear of the machine, corresponding with the inclination of the guide wires 21, while between the inner walls of the 125 carrier the ribbon is in a vertical plane. The inclinations of the slots 11 in the spool cases preferably conform to the inclinations just referred to, and the entire extent therefore of the ribbon between either ribbon spool and the nearest guiding slot is preferably con- 130

tained in a single inclined plane extending upwardly and towards the rear of the machine, there being no twist in the ribbon between the spool case and the vibrator.

- 5 So far as I am aware it is novel to provide a ribbon carrier having ribbon guiding slots in which the operative walls of each slot are further apart at one end than at the other and also novel to provide a slotted carrier in which one wall of each slot is angularly disposed to the other wall of the slot; I therefore desire in the sub-
10 joined claims to be understood as claiming broadly a ribbon carrier thus constructed. In the broad aspects of my invention it is not essential that the slots be parallel with each other as shown, nor is it essential
15 that the inclination of one wall in respect of the other wall of each slot should be in the direction shown in the carrier illustrated.

I have illustrated my invention as applied to a front-strike typewriting machine resembling generally in its
20 construction and arrangement the Monarch typewriter, and have not, therefore, deemed it necessary to show and describe those parts of the machine not requisite to a complete understanding of my invention. It will, however, be understood that the invention may be
25 embodied in forms of writing machines, other than front-strike machines, employing a ribbon carrier, guide or vibrator and also in other constructions of front-strike machines employing a guide carrier or vibrator; that it is immaterial, whether such other machines em-
30 ploy a ribbon carrier vertically disposed as described, or disposed at an angle to the vertical. It is also immaterial so far as the main features of my invention are concerned, whether the said ribbon carrier vibrates or whether it be normally fixed against such movement,
35 although I have shown my invention in a machine wherein said carrier is reciprocated or vibrated to cover and uncover the printing point during printing operations so as to leave the last letter written in sight when the parts are in normal position.

- 40 Various changes may be effected without departing from the scope of my invention.

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

- 45 1. In a typewriting machine, a ribbon guide provided with guiding slots, the walls whereof lie in intersecting transverse planes parallel to the axis of the platen.
2. In a typewriting machine, a ribbon guide provided with guide slots, the walls whereof lie in intersecting transverse planes parallel to the axis of the platen and
50 in parallel longitudinal planes.
3. In a typewriting machine, a ribbon guide provided with guiding slots, parallel viewed from the front but the walls whereof lie in intersecting transverse planes parallel to the axis of the platen.
- 55 4. In a typewriting machine, a vertical ribbon guide provided with guiding slots, the outer wall of each slot comprising an angularly disposed finger extending upwardly and rearwardly.
5. In a typewriting machine, a ribbon guide provided
60 with guiding slots, the outer wall of each slot extending upwardly and rearwardly and the inner wall of each slot extending upwardly.
6. In a typewriting machine, a ribbon guide provided with guiding slots, the outer ribbon contacting wall of
65 each slot lying at an angle to the inner ribbon contacting wall.
7. In a typewriting machine, a ribbon guide provided with guiding slots, the inner wall of each slot lying in the general plane of the guide and the outer wall of each
70 slot lying at an angle to the inner wall.

8. In a front-strike typewriting machine, a ribbon guide having two slots, the inner wall of each slot being substantially vertical and the outer wall of each slot being inclined to the vertical.

9. In a front-strike typewriting machine, a ribbon guide 75 having two slots, the inner wall of each slot being in the general plane of the guide and the outer wall of each slot being inclined to said plane.

10. In a typewriting machine, a vertically disposed ribbon guide provided with vertical slots; the outer wall of 80 each slot being angularly disposed to the general plane of the guide.

11. In a typewriting machine, a vertically disposed ribbon guide provided with vertical slots, the inner wall of each slot lying in the general plane of the guide and the 85 outer wall of each slot being angularly disposed to the general plane of the guide.

12. In a typewriting machine, a vertically disposed ribbon guide provided with guiding slots closed at the bottom and admitting the ribbon at the top, the outer wall of 90 each slot comprising an angularly disposed finger extending upwardly and rearwardly.

13. In a typewriting machine, a ribbon guide provided with vertically disposed slots closed at the bottom and admitting the ribbon at the top, the outer wall of each 95 slot lying in a plane which intersects the general plane of the guide and the inner wall of each slot lying in the general plane of the guide.

14. In a typewriting machine, a ribbon guide provided with slots, the outer wall of each slot beginning forward 100 of the plane which contains the inner walls and extending towards said plane.

15. In a typewriting machine, a ribbon guide provided with slots, the outer wall of each slot beginning forward 105 of the general plane of the guide and extending towards said plane.

16. In a typewriting machine, a ribbon guide provided with slots, the inner walls of said slots lying in the general plane of the guide and the outer wall of each slot 110 beginning forward of said plane and extending towards it.

17. In a typewriting machine, a vertically disposed ribbon guide provided with slots closed at the bottom and admitting the ribbon at the top, the outer wall of each 115 slot beginning forward of the plane which contains the inner walls and extending towards said plane.

18. In a typewriting machine, a vertically disposed ribbon guide provided with slots closed at the bottom and admitting the ribbon at the top, the inner walls of said 120 slots lying in the general plane of the guide and the outer wall of each slot beginning forward of said plane and extending toward it.

19. In a typewriting machine, a ribbon guide provided with slots, the ribbon passing over and in front of the outer edge and behind the inner edge of each slot, the 125 edges of each slot being arranged so that there is a greater expanse of ribbon between them at one end than at the other.

20. In a typewriting machine, a vertically disposed ribbon guide provided with slots closed at the bottom and admitting the ribbon at the top, the edges of each slot 130 being nearer each other at one end than at the other.

21. In a typewriting machine, a vertically disposed ribbon guide provided with slots closed at the bottom and admitting the ribbon at the top, the ribbon passing over 135 and in front of the outer edge and behind the inner edge of each slot, the edges of each of said slots being arranged so that there is a greater expanse of ribbon between them at one end than at the other.

22. In a typewriting machine, the combination of a substantially vertical ribbon guide provided with guiding 140 slots having walls which lie in intersecting planes transverse of the machine; and a pair of ribbon spools, one at each side of the guide and nearer the front of the machine than said guide, the ribbon as it leaves the guide at either side traveling in a plane which is inclined up- 145 wardly and towards the rear of the machine.

23. In a typewriting machine, the combination of a substantially vertical ribbon guide provided with guiding 150 slots which are parallel as viewed from the front of the machine, but the walls whereof lie in intersecting planes

transverse of the machine; and a pair of ribbon spools, one at each side of the guide and nearer the front of the machine than said guide, the ribbon as it leaves the guide at either side traveling in a plane which is inclined upwardly and towards the rear of the machine.

24. In a typewriting machine, the combination of a vertically disposed ribbon guide provided with guiding slots, the outer wall of each slot comprising an angularly disposed finger extending upwardly and rearwardly; and a pair of ribbon spools, one at each side of said guide and nearer the front of the machine than said guide, the ribbon as it leaves the guide at either side passing over one of said angularly disposed fingers and traveling in a plane which is inclined upwardly and towards the rear of the machine.

25. In a typewriting machine, the combination of a vertically disposed ribbon guide provided with slots; and a pair of ribbon spools, one at each side of said guide and nearer the front of the machine than said guide, the outer wall of each slot of the ribbon guide lying at an angle to the inner wall and the ribbon as it leaves the guide at either side passing over said outer wall and traveling in a plane which is inclined upwardly and towards the rear of the machine.

26. In a typewriting machine, the combination of a vertically disposed ribbon guide provided with guiding slots; and a pair of ribbon spools, one at each side of said guide and nearer the front of the machine than said guide, the inner wall of each of said ribbon guiding slots lying in the general plane of the guide and the outer wall of each slot lying at an angle to the inner wall, such that as the ribbon leaving the guide passes over said outer wall, said ribbon travels in a plane which is inclined upwardly and towards the rear of the machine.

27. In a typewriting machine, the combination of a substantially vertical ribbon guide provided with guiding slots and a pair of ribbon spools forward of said guide, one being at either side thereof, the inner walls of said ribbon guiding slots lying in a substantially vertical plane transverse of the machine and the outer wall of each slot beginning forward of said transverse plane and extending towards it, the ribbon, as it leaves the guide at either side, passing over said outer walls and traveling in planes which extend upwardly and towards the rear of the machine.

28. In a typewriting machine, the combination of a ribbon guide provided with guiding slots; and a pair of ribbon spools forward of said guide, one being at either side thereof, the inner walls of said ribbon guiding slots lying in the general plane of the guide and the outer wall of each slot beginning forward of said plane and extending towards it, the ribbon as it passes out of the guide and over said outer wall traveling in a plane which extends upwardly and towards the rear of the machine.

29. In a typewriting machine, the combination of a substantially vertical ribbon guide provided with guiding slots; and a pair of ribbon spools forward of said guide, one of said spools being at either side thereof, the outer and inner edges of each guiding slot being nearer each other at one end of the slot than at the other end and the ribbon as it leaves the guide at either side passing over the outer edge of each slot and traveling in a plane which is inclined upwardly and towards the rear of the machine.

30. In a front-strike typewriting machine, the combination of a platen; a vertically disposed ribbon guide provided with guiding slots and a pair of ribbon spools forward of said guide, one being at either side thereof, said

ribbon spools lying below the printing line on the platen, the ribbon passing over and in front of the outer edge and behind the inner edge of each guiding slot, the edges of each slot being further apart at the bottom than at the top so that there is a greater expanse of ribbon between said edges at the bottom than at the top and the ribbon as it leaves the guide at either side travels in planes which extend upwardly and towards the rear of the machine.

31. In a typewriting machine, the combination of a vertically disposed ribbon carrier provided with guiding slots; a pair of ribbon spools forward of said ribbon carrier, one being at either side thereof; and slotted spool cases inclosing said spools, the inner walls of the guiding slots in the ribbon carrier lying in the general plane of the latter and the outer walls of the slots lying in a plane transverse of the machine, which plane is at an angle to the general plane of the carrier, the slots in the spool cases lying at substantially the same inclination as the outer walls of the slots in the carrier and the ribbon as it passes from the carrier at either side to the spools traveling at substantially the same inclination as the slots in the spool cases in the ribbon carrier.

32. In a typewriting machine, a ribbon guide of sheet metal comprising slides, lugs extending laterally from said slides and guide wires secured in said lugs, said guide wires extending upwardly and rearwardly in a plane at an angle to the general plane of the guide and terminating at the top in forwardly projecting hook-like portions.

33. In a typewriting machine, a ribbon guide formed of sheet metal and comprising a stem, a cross head carried thereby, slides formed at opposite ends of the cross head and provided with lateral extensions or lugs, angularly disposed guide wires in said lugs, said guide wires terminating at the top in forwardly projecting hook-like portions and serving as the outer walls of the ribbon guiding slots.

34. In a typewriting machine, a ribbon guide formed of sheet metal and comprising a stem, a cross head carried thereby, slides formed at opposite ends of the cross head and provided with stiffening flanges and laterally disposed lugs, and angularly disposed guide wires supported in said lugs and terminating at the top in forwardly projecting hook-like portions, said guide wires serving as the outer walls of the ribbon guiding slots of the ribbon guide.

35. In a front-strike typewriting machine, the combination of a platen; a vertically disposed sheet metal ribbon guide; and a pair of ribbon spools seated below the printing line on the platen and forward of said guide, one of said ribbon spools being at either side of the guide, said ribbon guide comprising a stem, a cross head, slides at opposite ends of the cross head, said slides being provided with laterally and forwardly extending lugs and guide wires supported in said lugs, said guide wires extending upwardly and towards the rear of the machine and terminating in horizontally forwardly projecting hook-like portions, the ribbon as it leaves the ribbon carrier at either side passing over said guide wires and traveling in planes which extend upwardly and towards the rear of the machine.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 26th day of January, A. D. 1906.

EDWIN E. BARNEY.

Witnesses:

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JOHN S. MITCHELL.