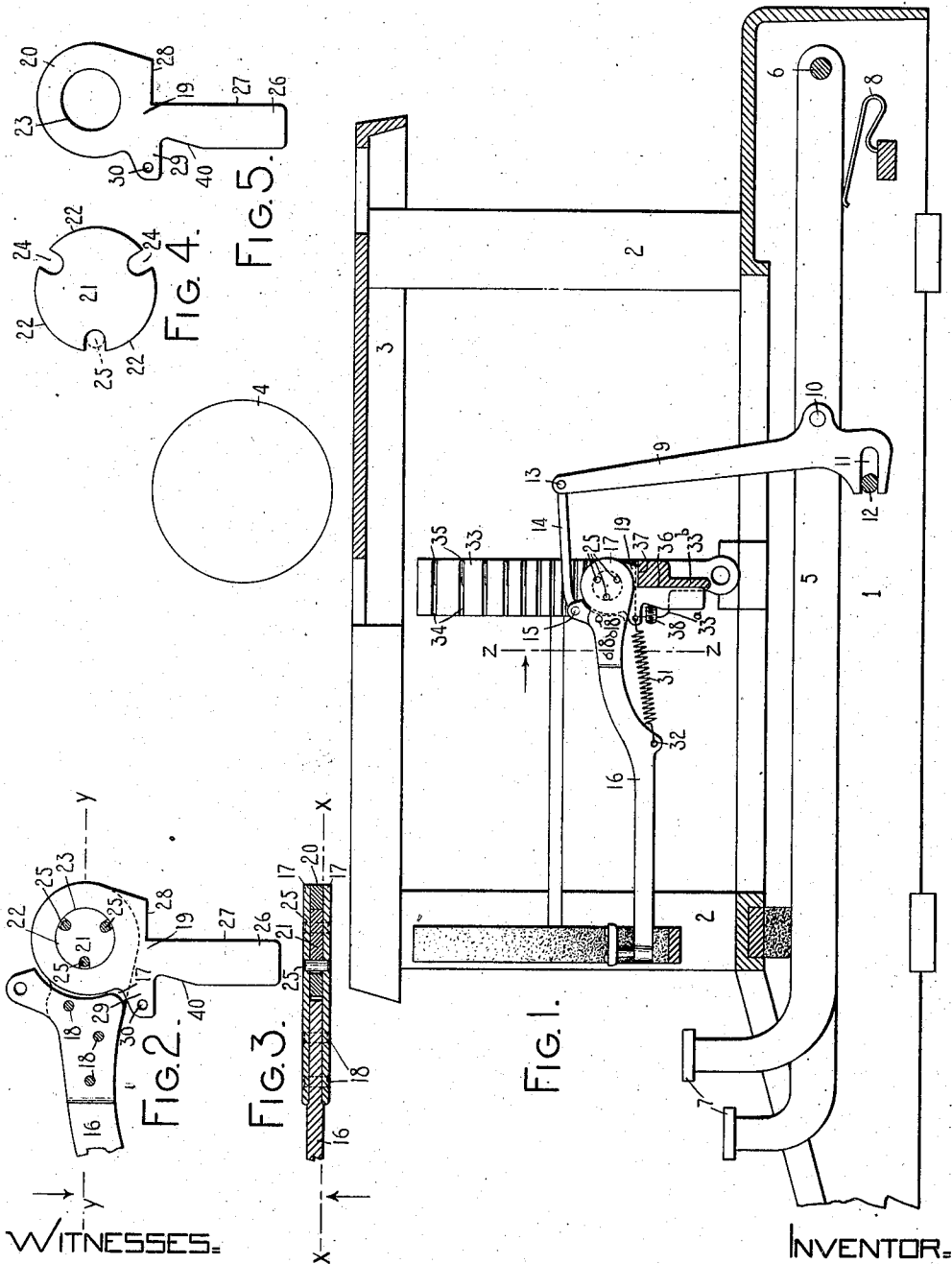


939,583.

E. E. BARNEY.
TYPE WRITING MACHINE.
APPLICATION FILED APR. 4, 1904.

Patented Nov. 9, 1909.
2 SHEETS—SHEET 1.



WITNESSES.

E. M. Wells

Charles Smith

FIG. 1.

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By Jacob Felder
HIS ATTORNEY

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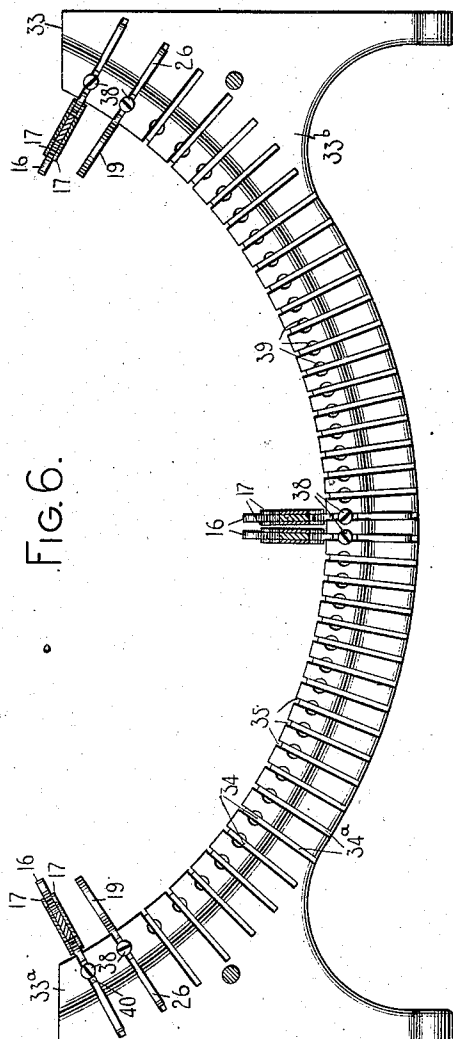


FIG. 6.

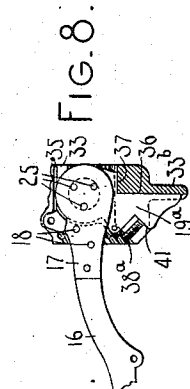


FIG. 8.

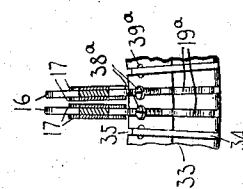


FIG. 7.

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UNITED STATES PATENT OFFICE.

EDWIN E. BARNEY, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-
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TYPE-WRITING MACHINE.

939,583.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed April 4, 1904. Serial No. 201,429.

To all whom it may concern:

Be it known that I, EDWIN E. BARNEY, citizen of the United States, and resident of Syracuse, in the county of Onondaga 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 typewriting machines and more particularly to the type bars and hangers therefor, and the object of my invention is to provide a simple, easy and efficient type bar bearing by which the type bars are guided against lateral deflection in the printing movements thereof and wherein there is little liability of undue wear at the bearings and accurate alinement is provided.

To these and other ends which will hereinafter appear, the invention consists in the features of construction, arrangements of parts and combinations of devices hereinafter described and more particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference numerals designate like parts in the various views, Figure 1 is a front to rear vertical sectional view of sufficient number of parts of a typewriting machine to illustrate my invention. Fig. 2 is an enlarged detail fragmentary sectional view of a type bar and hanger, the section being taken on the line *x—x* of Fig. 3 and looking in the direction of the arrow at said line. Fig. 3 is a transverse sectional view taken on the line *y—y* of Fig. 2, looking in the direction of the arrow at said line but showing both cheek plates of the type bars. Fig. 4 is an enlarged detail side view of one of the bearing disks. Fig. 5 is an enlarged detail side view of one of the type bar hangers. Fig. 6 is a vertical sectional view taken on the line *z—z* of Fig. 1, and looking in the direction of the arrow at said line; the view illustrating in front elevation the type bar segment and some of the type bars and hangers, the type bars being shown in section. Fig. 7 is a fragmentary front elevation of an alternative construction of segment and hanger, the type bars being in section. Fig. 8 is a detail side sectional elevation of the same.

The frame of the machine comprises a base 1, corner posts 2 and top plate 3. A carriage (not shown) is mounted above the

top plate and carries a platen 4. Key levers 5 are pivoted in the base of the machine at 6 and are provided with the usual finger keys 7 and restoring springs 8. Sub-levers 9 are pivoted at 10 to the key levers and are each provided with a slot 11 in the lower end portion thereof for the reception of a fixed fulcrum rod 12 which extends beneath the key levers and from side to side of the machine. The upper end of each sub-lever is pivoted at 13 to a forwardly extending link 14 which has its forward end pivoted at 15 to a type bar 16.

Each type bar is preferably made of three pieces, a body portion and two independent cheek plates 17 which latter may be stamped out or formed from sheet metal and are located on opposite sides of the bar and secured thereto preferably by rivets 18, thus forming a bifurcated portion at the pivotal end of the type bar for receiving a type bar hanger 19, preferably made of sheet metal and with smooth or lapped sides. By making the cheek plates 17 of separate pieces, I am enabled to smooth or polish or lap their inner parallel bearing faces before they are attached to the body or shank of the type bar and so that they will cooperate with the smooth sides of the hanger with the minimum amount of friction, thus conducing to the greatest freedom of action of the type bar. If desired, these plates may be hardened and united to the type bar by soft rivets 18. The hanger 19 has an eye 20 which is received within the bifurcated portion of the type bar, and a disk or collar 21 with a peripheral bearing face or edge 22 is seated in the bearing 23 of the eye 20. The disk 21 has its peripheral bearing surface cut away or apertured at 24 so as to provide openings or recesses that extend transversely through the disk. When the disk is seated within the eye 20 and the eye is properly positioned within the bifurcated portion formed by the cheek plates 17 of the type bar, rivets 25 may be inserted through coinciding openings in the cheek plates which register with the openings 24 in the bearing disk and the rivets may be upset or headed on the outer faces of the cheek plates in order to maintain the parts assembled and the type bar and hanger united as shown. The rivets are of such diameter that they do not fill the openings 24 and are situated so that they do not contact with the inner bearing

surface 23 in the eye of the hanger. The disk 21 is preferably made from one-quarter ($1/4$) to one-half ($1/2$) a thousandth of an inch thicker than the hanger, in order to prevent the cheek plates from pressing unduly against the side bearings or faces of the hanger when the rivets are upset or headed in assembling the parts, thus enabling the bars to work freely. It should be understood, however, that the slight excess of thickness of the bearing disk does not preclude the cheek plates from being set close enough to the sides of the eye of the hanger to prevent any lateral shake or movement of the type bar relatively to its hanger.

By extending the rivets 25 through the apertures 24 in the bearing disk in the manner shown, the rivets interlock with the type bar and bearing disk and the latter is positively connected to and obliged to turn with the type bar; the rivets being offset from or arranged on opposite sides of the center of the bearing disk or collar and a shearing strain being exerted by the rivets on the disk. Furthermore, it will be seen that the rivets 25 extend through the disk at or near the peripheral bearing 22 of the disk so that the rivets are enabled to turn the disk with the best possible leverage when the type bar is operated.

The eye portion of the hanger may be comparatively large and the cheek plates comparatively broad so as to provide suitable side bearings for the type bar and prevent as much as possible lateral shake or deflection of the bar during its printing movement; the wider or broader these side bearings are made the steadier and truer will the bar operate, but at the same time these side bearings must not be so large as to cause undue friction, and again pressure between the cheek plates and the eye portion of the hanger should be avoided so as not to interfere with the freely swinging movements of the type bar. If the cheek plates just contact with the eye portion of the hanger or substantially so, without pressing thereupon, the best results are obtainable. Preferably the rivets are headed by a spinning operation instead of by hammering, so as to avoid cupping the cheek plates and causing them to press against the eye portion of the hanger and also causing them to lose their parallelism, for in practice the inner surfaces of the cheek plates should be parallel with each other and with the sides of the hanger, and they, as well as the sides of the hanger, should be smooth and even to get the best results. The disk or bearing 21 may be of any suitable diameter and hence of such size as to provide a comparatively large and durable pivotal bearing for the type bar.

The openings 24 in the peripheral bearing of each disk, are slightly larger than the

diameter of the rivets contained therein as clearly indicated in Fig. 4, and constitute recesses which will collect any particles of dirt or metal that may become disengaged from the bearings, thus preventing their working into the close fitting parts and which would result in a cutting of the bearings and in producing undue friction between the type bar and hanger. The said recesses may also act as cups to hold and supply a lubricant to the bearing.

It will be seen that the construction is such that a close joint is formed between each type bar and hanger and that it is difficult for any dust, grit or rubbings that may drop from the front face of the platen to gain access to the pivotal bearings of the type bars.

Each hanger is provided with a depending stem 26 which has a rear bearing edge 27, and also a bearing shoulder or edge 28 that extends at right angles to the bearing edge 27. A forwardly extending ear 29 is perforated at 30 for attachment of one end of a coiled restoring spring 31, the other end of said spring being connected to the type bar at 32.

A type bar segment 33 has radial grooves or slots 34 in the front face thereof, and horizontally disposed grooves or slots 35 are formed in the upper face of the segment, the horizontal slots alining with the slots in the front face of the segment so that the horizontal and radial slots are arranged in pairs, one slot extending at an angle to the other and each pair of slots being adapted to receive a hanger.

It will be seen that the bottom wall 36 of each slot 34 in the front face of the segment is at substantially right angles to the bottom wall 37 of the associated slot in the top of the segment. The stem 26 of each hanger is received within a radial slot 34 in the front face of the segment and extends substantially throughout the length of said slot, and the bearing edge 27 of the stem 26 is seated against the bottom wall 36 in the slot 34 in which the hanger is seated. The part 28 of the hanger is received within the alined horizontal slot 35 and bears against the bottom wall 37 of said horizontal slot. It will be seen that by this construction a twisting movement of the hanger around the longitudinal axis of its stem is prevented and the hanger is properly positioned by the walls of its horizontal slot 35, whereas the associated slot 34 in the front face of the segment contains the stem 26 throughout its length and properly positions the hanger in a radial direction and prevents any side-wise movement of the stem of the hanger. A set screw 38 is provided for each hanger and is received within a threaded opening 39 in the front face of the segment and at a slot 34 therein and said screw bears at its

rear end against the inclined edge 40 of its associated hanger and secures it in position in the slotted segment and together with the walls of the slot prevents any movement of the hanger in any direction. By providing slots in the segment at right angles to each other and providing cooperating portions on the hangers which are seated in said slots and extend at right angles to each other, the hangers are properly positioned and guided against lateral movement or twisting in any direction, and an accurate positioning of the hangers may be secured and maintained.

It has been found in practice that without the slots 35 there is a tendency for the hanger to twist or move out of proper radial position when the set screw is driven home, provided there be the slightest looseness or play between the hanger and the sides of the radial slot 34, and provided also the axis of the screw does not enter or register accurately with the longitudinal center line of the hanger and which would enable the screw to force the hanger sidewise or twist it in such manner that the rear edge 27 of the hanger would come at an angle to the rear wall of the slot 34, whereas it should be parallel and in contact for the full length of the stem or shank of the hanger. It will be understood, of course, that if the hanger be thus twisted or turned aside from the true position the type end of the type bar will be thrown out of proper radial position and the type will not print in alinement. But by providing the slots 35 in the segment and seating the shoulders 28 therein, the screws are unable to twist the hangers or move them out of proper radial position.

That portion of the segment wherein the tapped holes 39 for the screws are provided is made or formed in the nature of a forwardly projecting flange 33^a, while the body or web portion 33^b of the segment is arranged in rear of said flange portion 33^a. Heretofore the radial slots for receiving the hangers have been made only in the said flange portion 33^a and these were found to be insufficient to maintain the hangers properly in their radial positions when the retaining screws were tightened up.

It will be observed that I have provided not only the horizontal slots or grooves 35 but that I have also cut the radial grooves 34 entirely beyond the flange and into the body or web of the segment, and at the same time I have made these grooves in the body or web portion longer than the grooves in the flange portion and have increased the lengths of the hangers correspondingly, this increased length of both grooves and hangers reducing liability of twisting or lateral motion of the hangers to the minimum.

The radial grooves which extend through and beyond the flange into the body or web of the segment have been designated as a

whole by the numeral 34, but it may be considered that the grooves in the flange for the reception of the hangers constitute one set of grooves and the grooves in the web or body constitute another set of grooves. The last mentioned set of grooves are represented in Fig. 6 by the reference 34^a.

The grooves 35 are in the same radial planes as the grooves 34 although they are cut at right angles to the latter and parallel with the axis of the internal cylindrical face of the segment.

In Figs. 7 and 8 I have shown a preferred form of construction embodying my invention. In these figures I have illustrated a hanger 19^a, similar to that previously described except that said hanger is provided with a shoulder 41 that extends at an angle to the bottom walls of both slots 34 and 35 in which the hanger is received, and a set screw 38^a is disposed in an inclined position and is received within a threaded opening 39^a in the segment and bears at its inner end against the shoulder 41 on the hanger. A pressure exerted by the screw 38^a on its hanger will force it both downwardly and rearwardly until both bearing faces of the hanger, which are at right angles to each other, are firmly seated against the bottom walls 36 and 37 of their slots, which are also at right angles to each other, thus firmly seating and securing the type bar hanger in place.

Various changes may be made without departing from the gist of my invention and certain features thereof 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 type bar having a bifurcated portion, a hanger having an eye that is adapted to be received within the bifurcated portion of said type bar, a bearing disk received within said eye, and a plurality of rivets that extend through said disk and connect it to the bifurcated portion of the type bar and unite the type bar and hanger.

2. In a typewriting machine, the combination of a type bar and a hanger, one of said parts being bifurcated to receive the other, a disk arranged within an opening in the part that is contained within the bifurcated portion and having a direct peripheral bearing on the wall of said opening, and means positively connected to the bifurcated portion and disk and interlocking therewith for positively preventing relative rotation between said disk and the bifurcated portion.

3. In a typewriting machine, the combination of a type bar, a hanger, a disk carried by one of said parts and having a peripheral bearing for direct cooperation with the other part, and connecting means off-set

from the center of rotation of the type bar to positively connect the bearing disk to the part that carries it.

4. In a typewriting machine, the combination of a type bar having a bifurcated portion, a hanger having an eye that is adapted to be received within the bifurcated portion of said type bar, a bearing disk received within said eye and which is thicker than said eye and affords a peripheral bearing for the type bar in the eye of the hanger, and means that extend through said disk extraneous to the pivotal center of the type bar and positively connect it against rotation relatively to the bifurcated portion of the type bar and unite the type bar and hanger.

5. In a typewriting machine, the combination of a type bar and hanger, one of said parts being bifurcated to receive the other, the part received within the bifurcated portion being in the nature of an eye, a disk having a peripheral bearing portion seated within said eye and which constitutes the pivotal connection between the bifurcated portion and eye, and rivets that are offset from the pivotal center of the type bar and pass through said bearing disk and unite the sides of said bifurcated portion.

6. In a typewriting machine, the combination of a type bar and hanger, a disk carried by one of said parts and having a peripheral bearing surface for cooperation with the other part, and rivets that secure the disk to the part that carries it and which are connected to the disk near the peripheral bearing thereof.

7. In a typewriting machine, the combination of a type bar and a hanger, one of said members comprising a body portion, and cheek plates independent thereof but secured to said body portion, an independent bearing disk contained between said cheek plates and firmly secured thereto, the other member being received between said cheek plates and pivotally connected thereto by the bearing disk.

8. In a typewriting machine, the combination of a type bar and a hanger, one of said members comprising a body portion, and cheek plates independent thereof but secured to said body portion and having inner parallel bearing surfaces, a bearing disk contained between said cheek plates and firmly secured thereto, the other member being received between said cheek plates and pivotally connected to the bearing disk, the thickness of said disk being greater than the distance between the inner parallel bearing surfaces of said cheek plates.

9. In a typewriting machine, the combination of a type bar and hanger, one of said parts being bifurcated to receive the other, a disk that has an opening therethrough at or near the periphery thereof, and a peripheral pivotal bearing with which one of said

members cooperates, and rivets that extend through the openings in said disk and connect the sides of the bifurcated portion and unite the type bar and hanger.

10. In a typewriting machine, the combination of a type bar and hanger, a disk secured to one of said parts and having a peripheral bearing and transverse openings in the bearing portion of said disk, means for securing said disk to one of said type bar and hanger members, and bearing means on the other member which cooperates with the peripheral bearing on said disk.

11. In a typewriting machine, the combination of a type bar having a bifurcated pivotal end that forms cheek plates, a hanger having an eye that is received between the cheek plates of the type bar, a disk that has a peripheral bearing and transverse openings in said bearing, and means for securing said disk to and between the cheek plates and so that the disk will constitute a pivotal connection between the type bar and hanger.

12. In a typewriting machine, the combination of a type bar segment having slots, the bottom walls of which are at angles to each other, and a hanger seated in said slots.

13. In a typewriting machine, the combination of a type bar segment having slots which extend at substantially right angles to each other, and a type bar hanger that cooperates with and is seated in each pair of slots that extend at substantially right angles to each other.

14. In a typewriting machine, the combination of a type bar segment having slots the bottom walls of said slots being at substantially right angles to each other, and hangers each of which has bearing faces that cooperate with the bottom walls of a pair of slots in the segment.

15. In a typewriting machine, the combination of a type bar segment having slots that extend at angles to each other, and which are arranged in aligned pairs with the bottom walls of each pair of associated slots disposed at an angle to each other, and a type bar hanger arranged in each pair of associated slots and having bearing faces that are disposed at an angle to each other, and means for detachably securing the hangers in place.

16. In a typewriting machine, the combination of a segment having radially disposed slots in the front face of the segment, horizontally disposed slots in the top of the segment, the slots in the front face and the top of the segment being aligned, and type bar hangers each of which extends into one of said horizontal slots and a portion which extends into the associated or aligned slot in the front face of the segment.

17. In a typewriting machine, the combination of a type bar segment having slots,

the bottom walls of which are at angles to each other, a hanger that is received within said slots, and an inclined set screw for securing said hanger in place.

18. In a typewriting machine, the combination of a type bar segment having slots which extend at substantially right angles to each other, a type bar hanger that cooperates with and is seated in each pair of slots that extend at substantially right angles to each other, and an inclined set screw that is adapted to bear against each hanger and secure it in place.

19. In a typewriting machine, the combination of a type bar segment having slots that extend at angles to each other, with the bottom walls of each pair of associated slots disposed at an angle to each other, a type bar hanger arranged in each pair of associated slots and having bearing faces that are disposed at an angle to each other, and a set screw for each hanger, each set screw being carried by the segment and inclined to the bottom walls of the slots in which the associated hanger is received.

20. In a typewriting machine, the combination of a segment having radially disposed slots in the front face of the segment, horizontally disposed slots in the top of the segment, the slots in the front face and the top of the segment being alined, type bar hangers each of which extends into one of said horizontal slots and a portion which extends into the associated or alined slot in the front face of the segment, and inclined set screws that take into the segment and each of which bears at its end against a hanger and forces it against the bottom walls of the horizontal and vertical slots in which it is received.

21. In a typewriting machine, the combination of a type bar segment having a flange and a body or web portion and radial slots

in both the flange and body portion, and type bar hangers received within said slots. 45

22. In a typewriting machine, the combination of a type bar segment having a forwardly projecting segmental flange with radial slots that extend entirely through said flange and into the body portion of the segment and below the flange, hangers received in said slots, and means for securing the hangers in place. 50

23. In a typewriting machine, the combination of a type bar segment having radial slots and also auxiliary slots that are in the same radial planes as the radial slots, and hangers seated in said slots, each hanger being received in a radial slot and also in its associated slot in the same radial plane. 55 60

24. In a typewriting machine, the combination of a vertically disposed type bar segment having slots in the upper curved edge thereof and which are located in radial planes and extend fore and aft of the machine, type bar hangers seated in said slots, and set screws for forcing said hangers down against the bottom walls of said slots and for securing them in place. 65

25. In a typewriting machine, the combination of a hanger; a type bar comprising a body portion, two cheek plates that are riveted to the body of the type bar near the pivotal end thereof, said cheek plates having inner parallel bearing faces, and an intermediate bearing disk between said cheek plates; and rivets that pass through said cheek plates and the intermediate disk and pivotally connect the type bar to the hanger. 70 75

Signed at Syracuse, in the county of Onondaga and State of New York, this 29th day of March A. D. 1904. 80

EDWIN E. BARNEY.

Witnesses:

JOHN W. LYNCH,
CHAS. H. COOKE.