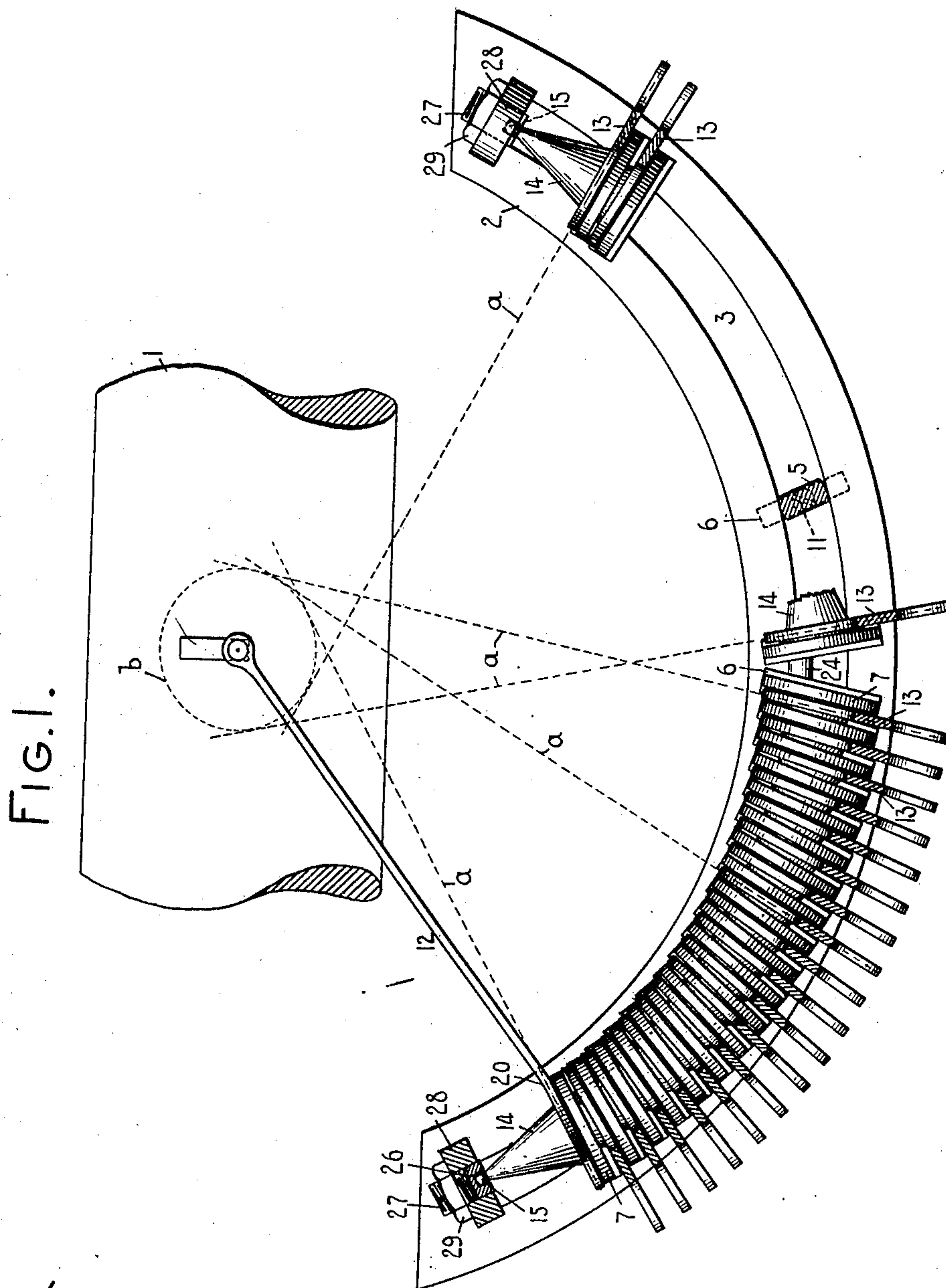


No. 871,371.

PATENTED NOV. 19, 1907.

A. W. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 7, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

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INVENTOR:

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2 SHEETS—SHEET 2.

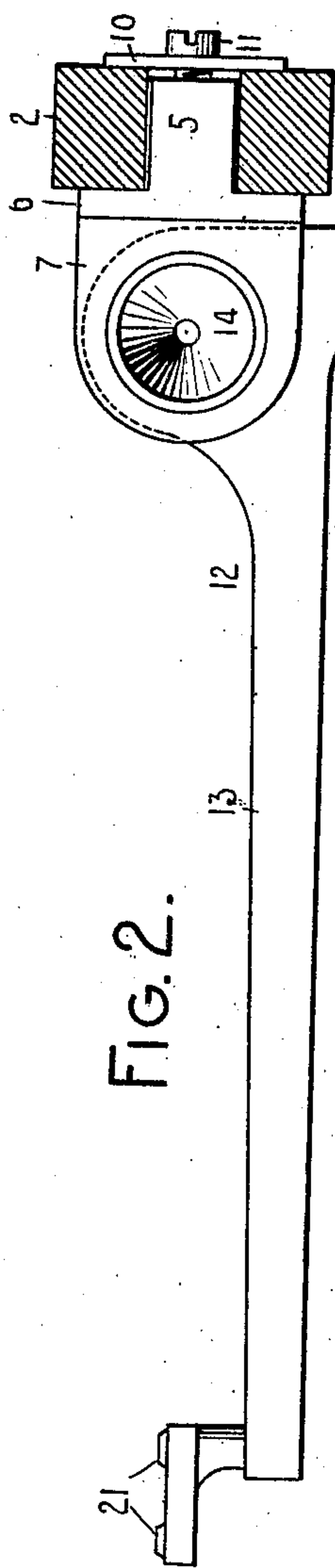


FIG. 2.

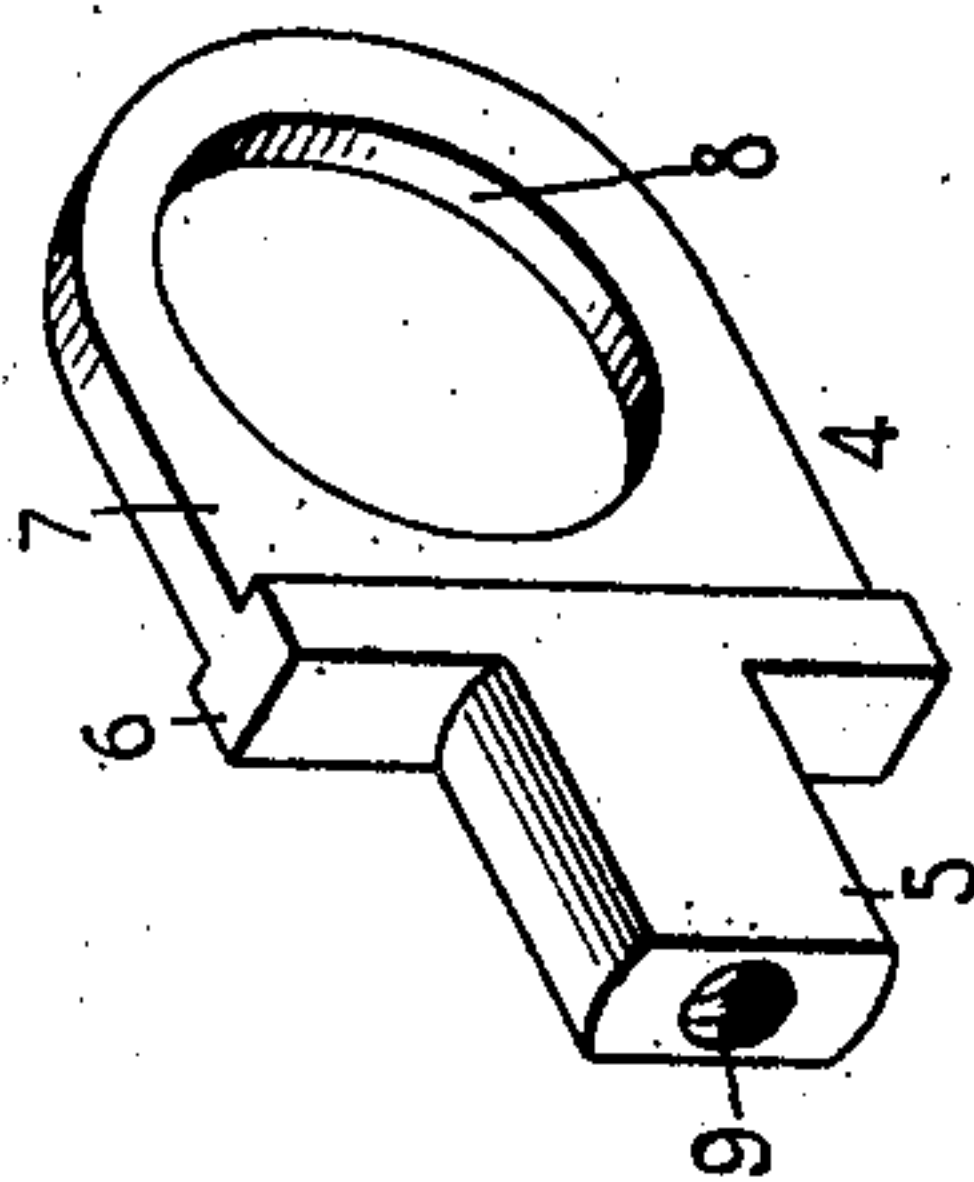


FIG. 3.

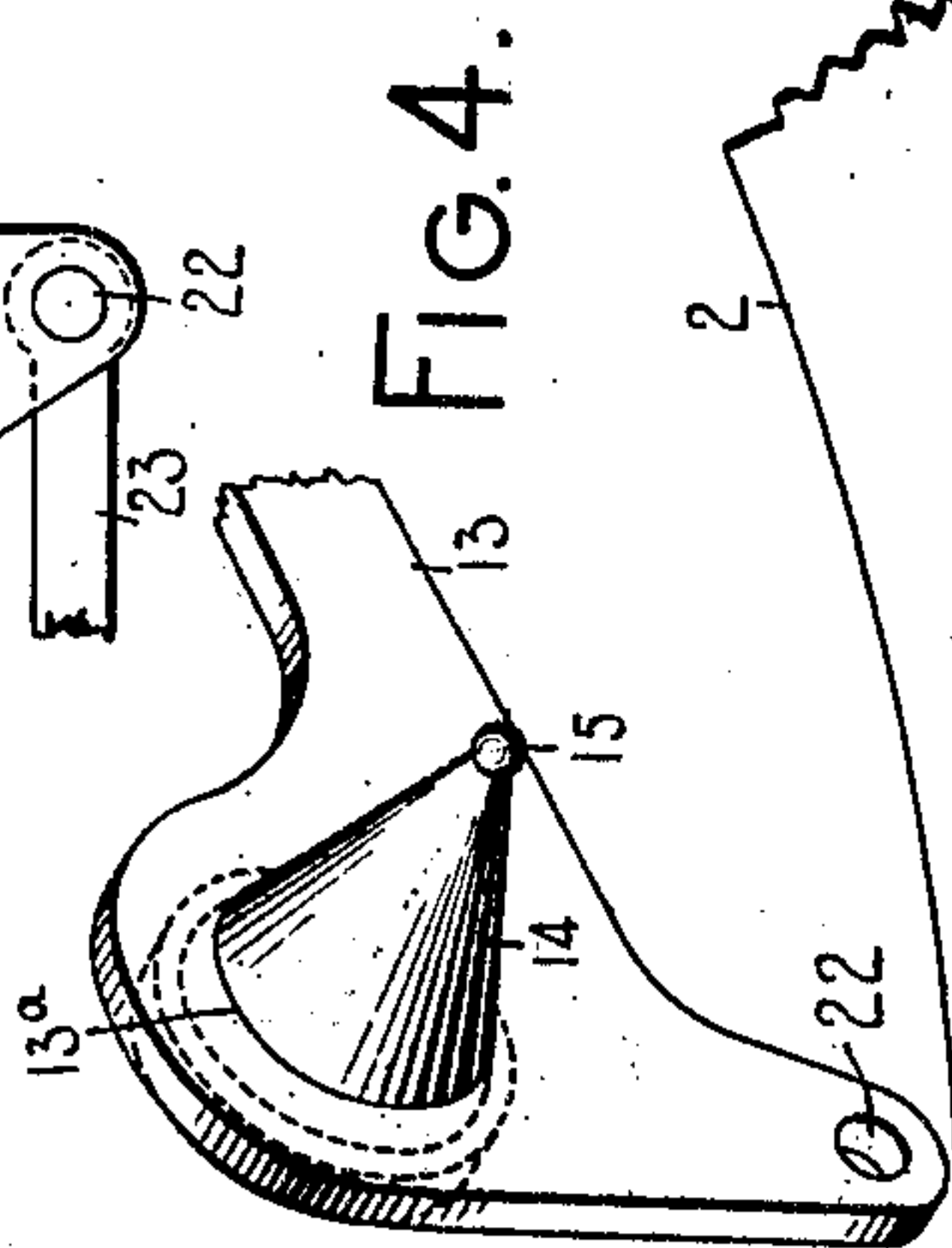


FIG. 4.

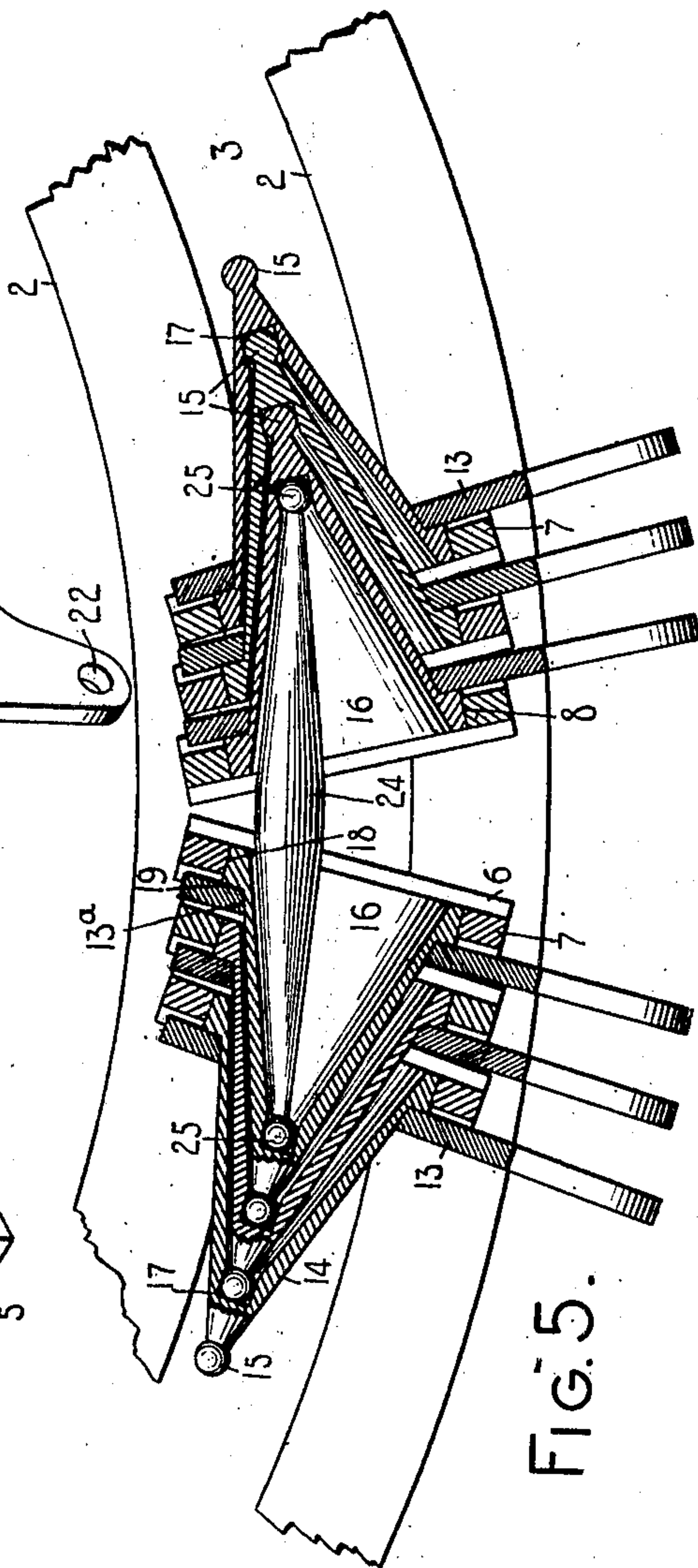


FIG. 5.

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UNITED STATES PATENT OFFICE.

ARTHUR W. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO YOST WRITING MACHINE COMPANY,
OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 871,371.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed December 7, 1905. Serial No. 290,776.

To all whom it may concern:

Be it known that I, ARTHUR W. SMITH, a citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York 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 of the type bar class and has for its main object to provide improved constructions of type bars and type bar hangers for such machines.

Another object of the invention is to provide a set of type bars and hangers for a visible writing machine in which the type bars have exceptionally wide bearings.

A further object is to provide a series of uniform type bars, each type bar having unusually wide bearings and the series of bars being confined within a relatively small space or arc.

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

In the accompanying drawings, Figure 1 is an enlarged fragmentary front view, partly in section, showing a type bar support and a plurality of type bars mounted thereon, one of said type bars being shown in printing position against the platen. Fig. 2 is a side view, partly in section, of one of the type bars and its mounting shown in Fig. 1, but on a still larger scale. Fig. 3 is a perspective view of the type bar hanger shown in Fig. 2. Fig. 4 is a fragmentary perspective view showing the rear or pivotal portion of the type bar shown in Fig. 2. Fig. 5 is a sectional view showing a number of the type bars near the center of the segment, the section being taken on a plane passed through the pivotal axes of the type bars and the view being on a still larger scale than Fig. 2.

Although I have shown my invention as applied to a series of type bars arranged for cooperating with the front face of a platen which is arranged above the segmental support upon which the type bars are mounted and which arrangement corresponds to that of machines commonly known as front-strike typewriting machines, nevertheless, I desire it to be understood that my invention is not limited to such an arrangement but may be

adapted to other kinds or styles of writing machines.

The drawings illustrate a platen 1 below which is vertically arranged a segmental type bar support 2 formed with a slot 3. Mounted on the segment 2 are type bar hangers 4, each of which, as best seen in Fig. 3, comprises a shank 5, a base 6 and a bearing portion 7, the latter being bored out to form a bearing eye 8. The shank 5 is provided with a threaded opening 9 and is received in the slot 3 in the segment. A washer 10 (Fig. 2) bridges the slot behind each hanger 4 and is formed with a hole which permits the passage of a securing screw 11 which takes into the threaded opening 9 in the hanger and secures the latter in place on the segment with the base 6 abutting the front face of said segment above and below the slotted opening 3.

Coöperating with each hanger 4 is a type bar 12, each type bar preferably comprising a body portion 13 and a pivotal portion 14, although, if desired, the type bars may be made in one piece. The rear or pivotal end of each type bar is bored out to form an eye 13^a which receives the pivotal portion 14 of the type bar, said pivotal portion being preferably in the form of a hollow cone-like part which extends transversely of the body portion of the type bar and projects laterally from either side thereof. The apex of the cone is capped by a rounded, spherical or ball-like bearing end 15 which is at some distance from one side of the body of the bar, and the cone-shaped opening 16 within the bearing portion 14 is formed at its top with a cup-like journal or bearing 17, best shown in Fig. 5. The base of the cone-like part 14 terminates in a hollow cylindrical flange 18 which forms a shoulder 19 with the outer surface of the cone-like portion of the part 14, which shoulder abuts against the face of the body portion surrounding the eye 13^a at the opposite side of the bar from the ball-like bearing end 15. When the type bar is made of two parts which, as stated, is the preferred construction, the said two parts 13 and 14 may be secured together in any suitable manner as by soldering.

The series of type bars is preferably divided into two sets one at each side of the center of the segmental support 2 and the cone-like bearing parts of the type bars of each set are nested one within the other, the

ball-like bearing end 15 of one type bar of the set being received within the bearing cup 17 of the adjacent type bar in which the first type bar is nested, while the ball-like end 15 of the type bar adjacent to the other side of the first type bar, and which nests within the first type bar, is received in the bearing cup 17 of the latter. This arrangement will best be understood from a consideration of Fig. 5. It will be further seen from an examination of said figure that the cylindrical bearing portion 18 of each type bar bears in the bearing eye 8 in the hanger 4 associated with said type bar, so that each type bar has two bearings spaced apart, one at each side, one of said bearings being in a hanger and the other in an adjacent type bar. It will also be seen that each pivotal part 14 is supported at its ends, and that the ball 15 of the next type bar is pivoted to said pivotal part between the ends of the latter. At one side the bearing consists of the eye 8 formed in the hanger of said type bar; at the other side the bearing is a double one comprising the bearing cup 17 formed in the type bar in which the first type bar is nested and comprising also the bearing end 15 of the type bar which nests within the first type bar. Furthermore, the body portion of each type bar is interposed between its own hanger eye and the hanger eye of an adjoining type bar.

It is to be understood that while I have shown the part 14 as a complete hollow cone, my invention is not limited to the precise form shown, and that the term "cone" or "cone-like" comprehends any equivalent construction which enables two oppositely disposed bearings, as 15 and 17, to be offset from the body of the bar and so that the type bars may be nested as described. It is also to be understood that although I have shown and described the base of the part 14 as "cylindrical", yet I do not desire to be limited to this precise shape. The term "cylindrical" is to be understood as comprehending any shape which is circular in cross-section and the center whereof lies in the pivotal axis of the type bar, said cross section being at right angles to said axis.

The center of the ball-like end 15 of each type bar of the set lies in the axis of the cone-like part 14 within which said end 15 is contained, so that the type bar of which said ball-like end is a part will not be disturbed when the type bar in which it bears is given rotary motion; or in other words, one type bar is pivoted on another at the point of intersection of the pivotal axes of the two type bars. Because of this necessary arrangement the bearing parts 14 of the type bars of each set are all disposed at angles on the segment 2 such that planes (indicated by *a* in Fig. 1), passing through the rear of the body portions of the bars and perpendicular to the pivotal axes of said bars

will all be tangent to a circle *b* (Fig. 1) lying in the perpendicular plane passed through the printing line and having its center at or near the printing point. Consequently the body portion of each type bar forward of the pivotal end will be bent or off-set as indicated at 20 (Fig. 1) so as to bring the types 21 on the ends of the type bars into position to properly cooperate with the printing point on the platen when the respective type bars are actuated to print. The type bars are connected at 22 (Fig. 2) by a part 23 with any suitable form of type bar actuating mechanism.

The two sets of type bars comprising the series are oppositely disposed from the center of the segment outwardly towards the sides thereon and the innermost type bars of the two sets may be maintained properly spaced apart by any one of a variety of means. In the present instance, I have shown a double-ended bearing member 24 (Fig. 5), said bearing member terminating in ball-like bearing ends 25 which bear in the bearing cups 17 of the inner type bars. Resting and bearing on the first or innermost type bar of each set is a second type bar, a third bearing on the second, and so on outwardly to the last type bar of each set. As best seen in Fig. 1 the bearing end 15 of the last or outermost type bar of each set is seated in a bearing cup or opening 26 formed in the inner end of a screw-like end bearing member 27 which is threaded exteriorly and engages in a threaded opening in an ear 28 fixed to or integral with the segment 2, one of said ears being near each end of the segment. The bearing member 27 is provided with a check or locking nut 29. By screwing the end member 27 in or out, pressure upon each bearing end 15 of the bars of the associate set may be decreased or increased, this pressure being in some degree transmitted to the type bars of the opposite set through the bearing member 24. It will, therefore, be understood that by one or two adjustments the bearing ends of all of the type bars may be properly adjusted when the parts are assembled and that said bearing ends may be properly maintained in adjustment in a similar manner.

It will be seen that by the construction and arrangement above described I am enabled to provide a set of type bars, the body portions of which lie very close together, but which have, at the same time, wide bearings at a considerable distance laterally from the sides of the bars, thereby greatly conducing to the stability of the latter.

It will further be seen that by my novel arrangements I provide type bars which serve as journals or bearings for other type bars at one time (that is, when said other type bars are actuated) and which also turn in said other type bars at another time. An

additional advantage of my novel arrangement is that type bars are nested or housed in adjoining type bars, thereby having their bearings protected from dust, grit and falling particles.

Various changes may be made in the construction and arrangement of the parts without departing from the scope of my invention.

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

1. A type bar having a hollow cone-like bearing portion projecting laterally from its side near its pivotal end and constructed to enter and also to receive similar cone-like bearings on contiguous type bars.

2. A type bar having a hollow cone-like bearing portion projecting laterally from its side near its pivotal end and having a cylindrical bearing portion projecting oppositely from the cone-like portion.

3. A type bar having a portion projecting from it near its pivotal end, said projecting portion being provided with an inside and an outside bearing part near its end, the bearings in said part being oppositely disposed and outside of the plane of rotation of the type bar.

4. A type bar having a portion projecting from it near its pivotal end, said projecting portion being provided with an inside and an outside bearing part near its outer end, said type bar having a cylindrical bearing portion projecting from it oppositely from the first named portion.

5. A type bar having a hollow cone-like projecting portion near its pivotal end, the apex of the cone being provided with a rounded bearing tip.

40 6. A type bar having a hollow cone-like projecting pivotal portion, the apex of the cone-like portion being provided with a rounded bearing tip and being further provided on the inside near the apex with a bearing cup.

7. A type bar having a hollow cone-like projecting pivotal portion, the apex of the cone-like portion being provided with a rounded bearing tip, said type bar having a hollow cylindrical bearing portion projecting from it oppositely from said cone-like portion.

8. A type bar comprising a body portion formed with an eye at its pivotal end, and a hollow cone-like bearing portion seated in said eye and secured to the body portion, the end of said bearing portion furthest from the body of the bar serving as a bearing.

9. A type bar comprising a body portion formed with an eye at its pivotal end, and a hollow cone-like bearing portion secured in said eye, the apex of the cone being provided with a rounded bearing tip and the base of the cone with a cylindrical bearing part.

65 10. A type bar comprising a body portion

formed with an eye at its pivotal end, and a hollow cone-like bearing portion seated in said eye, the apex of the cone being provided with a rounded bearing tip and the base of the cone with a cylindrical bearing part, the rounded tip being at one side of the body of the bar and the cylindrical base at the other side of the body of the bar.

11. A type bar comprising a body portion formed with an eye at its pivotal end, and a hollow cone-like bearing portion seated in said eye, the apex of the cone being provided with a rounded bearing tip and the base of the cone with a cylindrical bearing part, the inside of the cone near its apex being provided with a bearing cup.

12. A type bar comprising a body portion formed with an eye at its pivotal end, and a hollow cone-like bearing portion seated in said eye, the apex of the cone being provided with a rounded bearing tip and the base of the cone with a cylindrical bearing part, the rounded tip being at one side of the body of the bar and the cylindrical base at the other side of the body of the bar, and the inside of the cone near its apex being provided with a bearing cup.

13. In a typewriting machine, the combination of a type bar support, a plurality of type bars mounted thereon, each of said type bars having a bearing on an adjoining type bar.

14. In a typewriting machine, the combination of a type bar support, and a plurality of type bars mounted thereon, each of said type bars having a hollow cone-like bearing end nested within the cone-like end of an adjoining type bar.

15. In a typewriting machine, the combination of a type bar support and a plurality of type bars mounted thereon, each of said type bars having a hollow cone-like bearing end, the bearing ends of the several bars being nested and each type bar being adapted when actuated to bear on the coned portions of the adjoining bars, one of said coned portions being outside the coned portion of the actuated bar and the other inside the coned portion of the actuated bar.

16. In a typewriting machine, the combination of a type bar support, and a plurality of type bars mounted thereon, each type bar being provided with a pivotal ball-like portion and with a bearing opening adapted to receive the ball-like portion of an adjacent bar, the several type bars being nested so that the ball-like portion of one rests in the bearing opening in another.

17. In a typewriting machine, the combination of a type bar support, and a plurality of type bars mounted thereon, each type bar being provided with a pivotal ball-like portion and with a bearing opening adapted to receive the ball-like portion of an adjacent bar, the several type bars being nested so

that one receives in its bearing opening the ball-like portion of the adjoining bar at one side while its own ball-like portion rests in the bearing opening of the bar at the other side.

18. In a typewriting machine, the combination of a type bar support, and a plurality of type bars mounted thereon and nested together, the arrangement being such that each type bar has a bearing in the type bar adjacent to it at each side.

19. In a typewriting machine, the combination of a type bar support, and a plurality of type bars mounted thereon, each type bar having a portion adapted both to serve as a bearing or journal for an adjacent type bar when the latter is actuated and further adapted to serve as a bearing part for its own type bar when the latter is actuated.

20. In a typewriting machine, the combination of a type bar support, and a plurality of type bars mounted thereon, each type bar having a portion adapted both to bear in an adjacent type bar and also to serve as a journal or bearing for said adjacent bar.

21. In a typewriting machine, the combination of a type bar support, a plurality of type bar hangers thereon, and type bars mounted in said hangers, each type bar having a hollow cone-like bearing portion projecting laterally from one side near its pivotal end and having a cylindrical bearing portion projecting oppositely from the cone-like portion, said cylindrical portion bearing in the associate type bar hanger and said cone-like portion bearing in the cone-like portion of an adjacent type bar.

22. In a typewriting machine, the combination of a type bar support, a plurality of type bar hangers thereon and type bars mounted in said hangers and nested together, each type bar having a portion projecting from it near its pivotal end, said projecting portion being hollow and being provided with an inside and an outside bearing part near its end and each type bar having also a hollow cylindrical bearing portion projecting oppositely from the first named portion, the cylindrical portion of said type bar bearing in the type bar hanger associated with said type bar and the first recited projecting bearing portion having bearings in the corresponding portions of the type bars at each side of it.

23. In a typewriting machine, the combination of a type bar support, a plurality of type bar hangers thereon, and type bars mounted in said hangers and nested together, each type bar having a portion projecting from it near its pivotal end, said projecting portion being hollow and being provided with an inside and an outside bearing part near its end and each type bar having also a hollow cylindrical bearing portion projecting oppositely from the first named portion, the cylindrical portion of said type bar bearing

ing in the type bar hanger associated with said type bar and the first recited projecting bearing portion being received in the adjacent type bar at one side and receiving the type bar at the opposite side.

24. In a typewriting machine, the combination of a type bar support, a plurality of type bar hangers thereon, and type bars mounted in said hangers and nested together, each type bar having a hollow cone-like projecting portion near its pivotal end, the apex of the cone being provided with a rounded bearing tip and said type bar having a hollow cylindrical bearing portion projecting oppositely from said cone-like portion, said cylindrical bearing portion of the type bar bearing in the associate type bar hanger and said bearing tip being journaled in the inside of the cone-like portion of the adjacent type bar at one side, the bearing tip of the adjacent type bar at the other side being journaled in the inside of the cone-like portion of the first named type bar.

25. In a typewriting machine, the combination of a type bar support, a plurality of type bar hangers thereon, and type bars mounted in said hangers, each type bar comprising a body portion formed with an eye at its pivot end, and a hollow cone-like bearing portion seated in said eye, the apex of the cone being provided with a rounded bearing tip outside and a bearing cup inside and the base of the cone with a cylindrical bearing part, which latter coöperates with a bearing eye formed in the associate type bar hanger, the cone-like portions of said type bars being nested one within another so that the rounded bearing tip of one type bar rests within the bearing cup of an adjacent type bar.

26. In a typewriting machine, the combination of a type bar support, a plurality of type bar hangers thereon, and type bars mounted in said hangers, each type bar comprising a body portion formed with an eye at its pivot end, and a hollow cone-like bearing portion seated in said eye, the apex whereof is formed with a rounded tip and the base whereof is provided with a cylindrical face, the rounded tip being at one side of the body of the bar and the cylindrical face at the opposite side of the body of the bar, the cone-like portions of the type bars being nested one within another so as to enable each type bar to provide a bearing for an adjacent type bar and also to be journaled in said adjacent type bar, and the cylindrical face of each type bar bearing in the associate type bar hanger.

27. In a typewriting machine, the combination of a type bar support, and a plurality of type bars mounted thereon, each type bar having a hollow cone-like bearing portion projecting laterally from its side and into the corresponding part of an adjoining type bar.

28. In a typewriting machine, the combination

nation of a type bar support, and a plurality of type bars mounted thereon, each type bar having a hollow cone-like bearing portion projecting laterally from it near its pivotal end and having a hollow cylindrical bearing portion projecting laterally from its opposite side, the type bars being nested together and the arrangement being such that the body portion of each type bar is interposed between its own cylindrical bearing portion and the corresponding cylindrical bearing portion of an adjacent type bar.

29. In a typewriting machine, the combination of a type bar support, and a series of type bars mounted thereon, said series comprising two sets extending oppositely from each other, each type bar comprising a body portion and a laterally projecting hollow cone-like bearing portion, the bearing portions of each set being nested one within another.

30. In a typewriting machine, the combination of a type bar support, a series of type bars mounted thereon, said series comprising two sets extending oppositely from each other, each type bar comprising a body portion and a laterally projecting hollow cone-like bearing portion, the bearing portions of each set being nested one within another, and a bearing member adapted to cooperate with the inmost type bar of each set.

31. In a typewriting machine, the combination of a type bar support, a series of type bars mounted thereon, said series comprising two sets extending oppositely from each other, each type bar comprising a body portion and a laterally projecting hollow cone-like bearing portion, the bearing portions of each set being nested one within another, and a bearing member adapted to cooperate with the inmost type bar of each set, said member serving as a bearing for the inmost type bar of each set and also serving to maintain said sets of type bars a fixed distance apart.

32. In a typewriting machine, the combination of a type bar support, a series of type bars mounted thereon, said series comprising two sets extending oppositely from each other, each type bar comprising a body portion, and a laterally projecting hollow cone-like bearing portion, the bearing portions of each set being nested one within another, a bearing member adapted to cooperate with the inmost type bar of each set, and bearing members adapted to cooperate with the outermost type bars of the two sets.

33. In a typewriting machine, the combination of a type bar support, a series of type bars mounted thereon, said series comprising two sets extending oppositely from each other, each type bar comprising a body portion, and a laterally projecting hollow cone-like bearing portion, the bearing portions of each set being nested one within another, a

central bearing member adapted to cooperate with the inmost type bar of each set, and end bearing members adapted to cooperate with the outermost type bar of each set, said end bearing members being adjustable and adapted when adjusted to increase or decrease the pressure of the bearings of each type bar of the set of type bars with which said bearing member is associated.

34. In a typewriting machine, the combination of a slotted type bar support, type bar hangers adjustable in the slots of said support and provided with bearing eyes, type bars mounted in said hangers and having bearing portions adapted to cooperate with said bearing eyes, said type bars having bearing portions oppositely disposed from the first mentioned bearing portions and adapted to cooperate with the corresponding bearing portions of adjacent type bars.

35. In a typewriting machine, the combination of a slotted type bar support, type bar hangers adjustable in the slots of said support and provided with bearing eyes, type bars mounted in said hangers and having bearing portions adapted to cooperate with said bearing eyes, said type bars having cone-like bearing portions oppositely disposed from said first named bearing portions, the type bars comprising a series divided into two sets, said sets being oppositely disposed and the cone-like bearing portions of the type bars of each set being nested one within another.

36. In a typewriting machine, the combination of a slotted type bar support, type bar hangers adjustable in the slots of said support and provided with bearing eyes, type bars mounted in said hangers and having bearing portions adapted to cooperate with said bearing eyes, said type bars having oppositely disposed cone-like bearing portions, the type bars comprising a series divided into two sets, said sets being oppositely disposed and the cone-like bearing portions of the type bars of each set being nested one within another, a double headed bearing member adapted to cooperate with the inmost type bar of each set to maintain the two sets spaced apart, and end bearing members adapted to cooperate with the outermost type bars of the two sets.

37. In a typewriting machine, the combination of a slotted type bar support, type bar hangers adjustable in the slots of said support and provided with bearing eyes, type bars mounted in said hangers and having bearing portions adapted to cooperate with said bearing eyes, said type bars having oppositely disposed cone-like bearing portions, the type bars comprising a series divided into two sets, said sets being oppositely disposed and the cone-like bearing portions of the type bars of each set being nested one within another, a double headed bearing

member adapted to cooperate with the innermost type bar of each set to maintain the two sets spaced apart, and end bearing members adapted to cooperate with the outermost type bars of the two sets, said end bearing members each being adjustable and adapted when adjusted to increase or decrease the pressure of the bearings of all of the type bars of the set with which said bearing member is associated.

38. In a typewriting machine, the combination of a series of type bars, each type bar pivotally mounted, and a single adjusting device for adjusting the pivots of all of said type bars simultaneously and thereafter maintaining them against accidental displacement.

39. In a typewriting machine, the combination of a type bar support, and a series of type bars mounted on said support, each of said type bars being pivoted to said support and each of said type bars being also pivoted to an adjacent type bar.

40. In a typewriting machine, the combination of a type bar support, and a series of type bars mounted on said support, each of said type bars being pivoted at one point to said support and at another point to an adjacent type bar, said pivot points being spaced apart.

41. In a typewriting machine, the combination of a type bar support, and a series of type bars mounted on said support, each of said type bars having a transversely disposed pivotal part that is pivoted at its ends, one end of each of said pivotal parts being pivoted to the pivotal part of an adjacent type bar between the ends of the last named pivotal part.

42. In a typewriting machine, the combination of a type bar support, and a series of type bars mounted on said support in segmental arrangement, each of said type bars being pivoted to said support and each of said type bars being also pivoted to an adjacent type bar at the point of intersection of the pivotal axes of the two type bars.

43. In a typewriting machine, the combination of a type bar support, and a series of type bars mounted on said support in segmental arrangement, each of said type bars having two pivot points spaced apart, said type bar at one of said points being pivoted to said support and at the other of said points to an adjacent type bar, the latter of said pivot points being at the point of intersection of the pivotal axes of the two type bars.

44. In a typewriting machine, the combination of a type bar support, and a series of type bars mounted on said support, each of said type bars having a pivot which is housed or covered by a type bar adjacent thereto at one side.

45. In a typewriting machine, the combination of a type bar support, and a series of type bars mounted thereon, each of said type bars being provided with a hollow pivotal part which is adapted to house or cover a pivot of another type bar.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 6th day of December A. D. 1905.

ARTHUR W. SMITH.

Witnesses:

M. F. HANSEWEBER,
J. B. DEEVES.