

T. L. KNAPP.  
 RIBBON MECHANISM FOR TYPE WRITING MACHINES.  
 APPLICATION FILED MAR. 14, 1908.

903,823.

Patented Nov. 10, 1908.  
 4 SHEETS—SHEET 1.

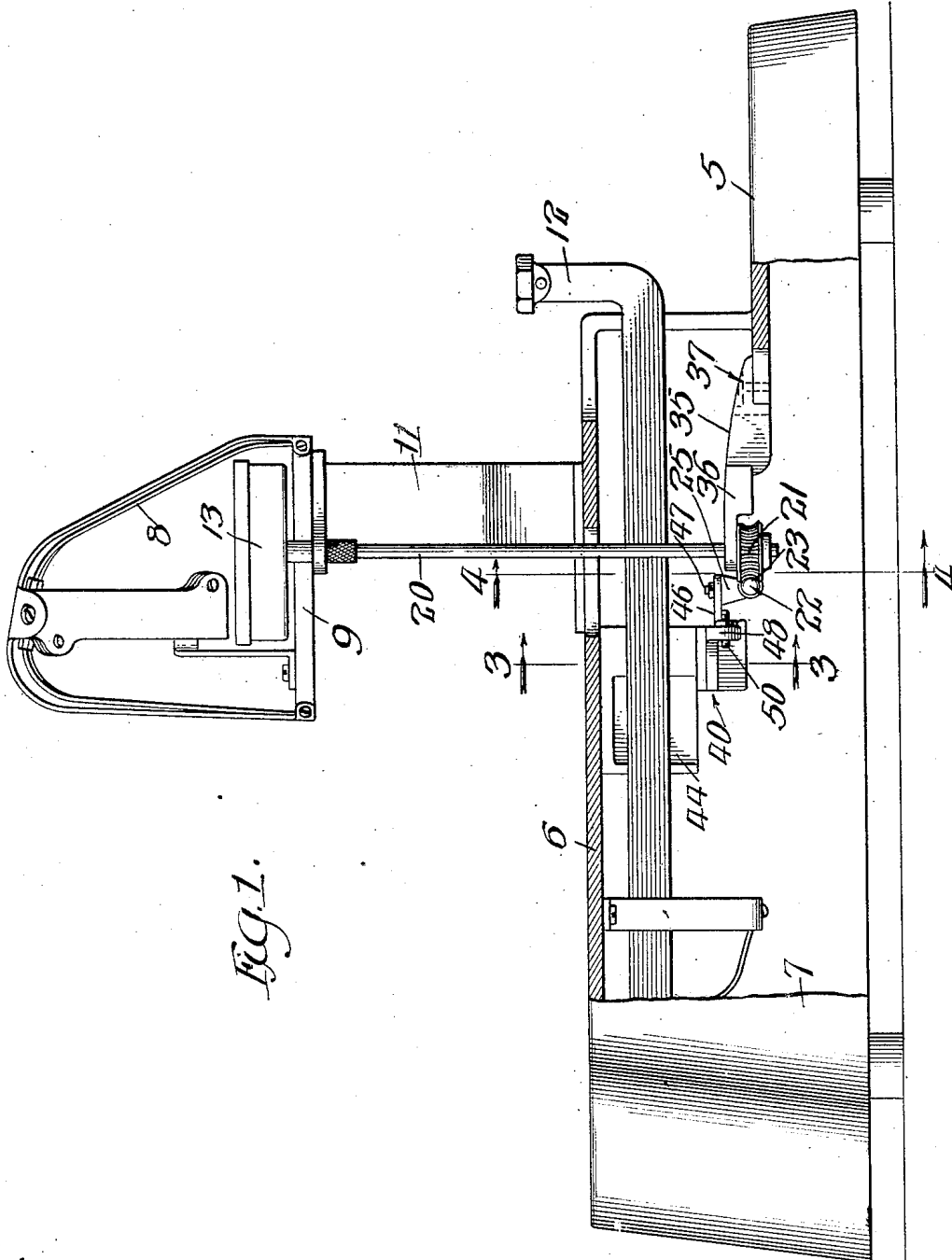


FIG. 1.

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 L. R. Wilkins

Inventor  
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 Attys

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Fig. 2.

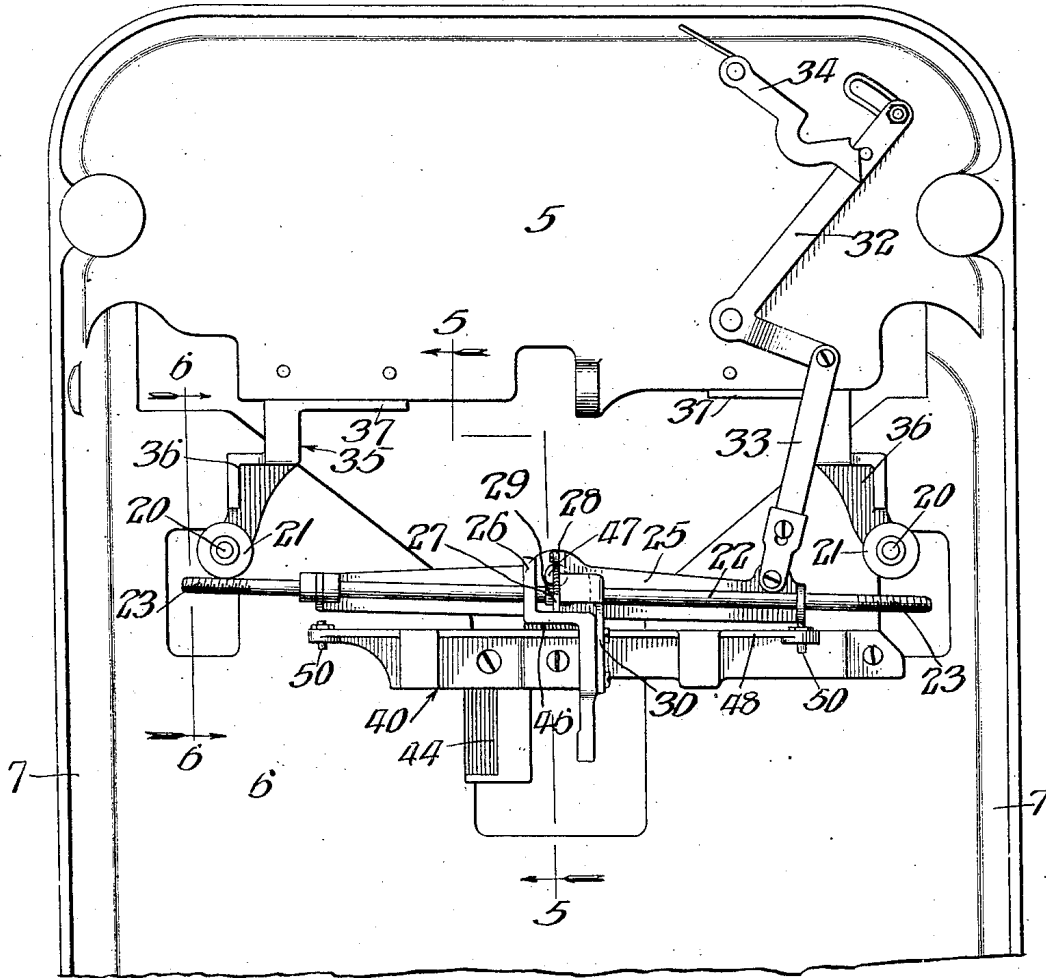
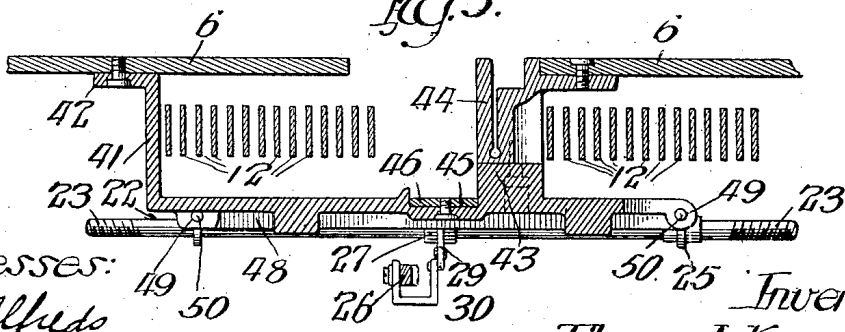


Fig. 3.



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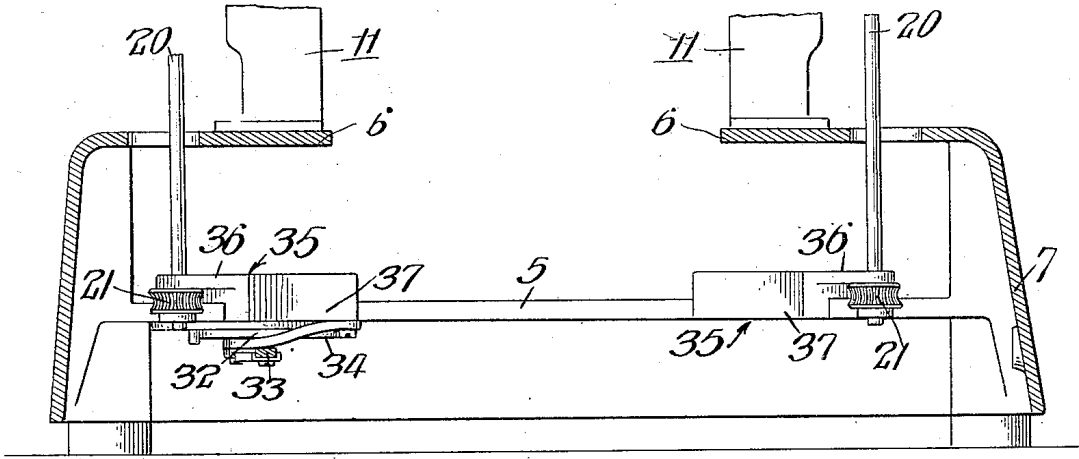


Fig. 4.

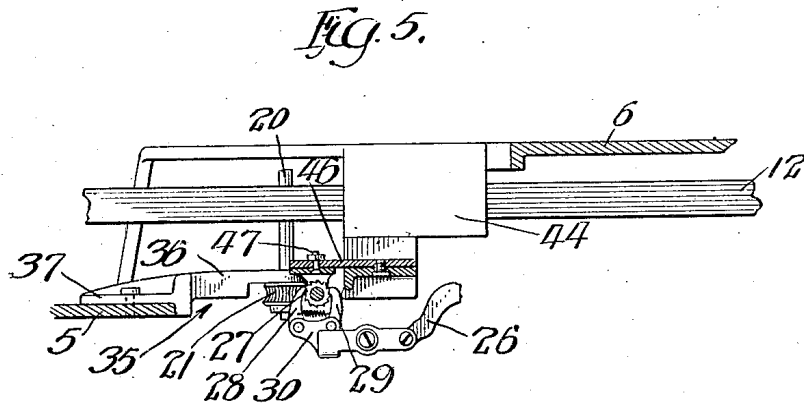


Fig. 5.

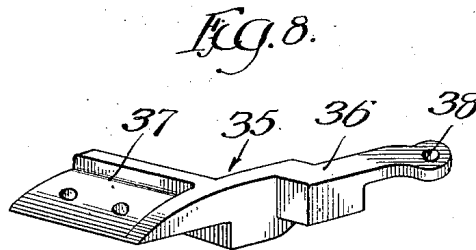
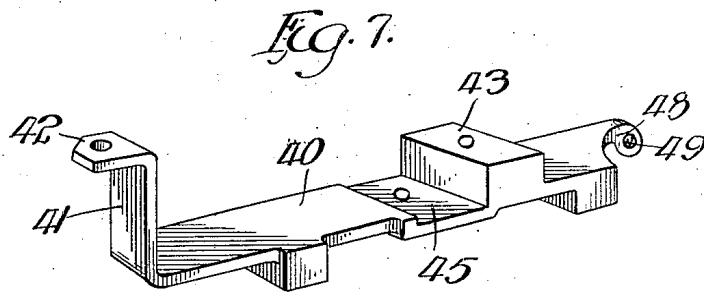
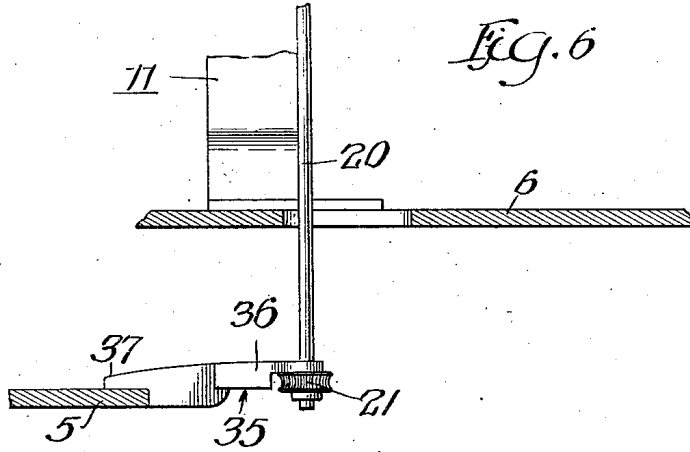
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# UNITED STATES PATENT OFFICE.

Theron L. Knapp, of Woodstock, Illinois, assignor to the Oliver Typewriter Company, of Chicago, Illinois, a corporation of Illinois.

## RIBBON MECHANISM FOR TYPE-WRITING MACHINES.

No. 903,823.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Original application filed December 13, 1907, Serial No. 406,338. Divided and this application filed March 14, 1908. Serial No. 421,242.

To all whom it may concern:

Be it known that I, Theron L. Knapp, a citizen of the United States, of the city of Woodstock, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Ribbon Mechanism for Type-Writing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to ribbon actuating mechanism for typewriting machines intended more particularly for application to machines of the kind known as the "Oliver" typewriter, such as is shown and described in the prior patent granted to Thomas Oliver, No. 599,863, dated March 1st, 1898. Some of the improvements herein described and claimed are, however, applicable to machines differing in construction from said "Oliver" machine.

The invention consists in the matters hereinafter described and pointed out in the appended claims.

My invention may be more readily understood by reference to the accompanying drawings, in which,—

Figure 1 is a view partially in side elevation and partially in section of a typewriting machine embodying my invention. Fig. 2 is a view from beneath of the forward part of the machine. Fig. 3 is a transverse, vertical detail section taken upon line 3—3 of Fig. 1. Fig. 4 is a transverse vertical section taken upon line 4—4 of Fig. 1. Fig. 5 is a detail vertical section taken centrally through the machine on the line 5—5 of Fig. 2. Fig. 6 is a detail section taken on line 6—6 of Fig. 2. Fig. 7 is perspective view of a transverse, horizontal frame-bar forming part of my invention. Fig. 8 is a perspective view of one of the bracket members forming part of my invention.

First referring briefly to the general features of construction in the machine illustrated in the accompanying drawings, these correspond with the machine shown in said prior patent No. 599,863, and in the patent to Cross & Griffiths No. 834,565, dated October 30th, 1906.

As shown in the drawings, the base-plate

of the machine is provided with a horizontal, lower forward portion 5 and with a horizontal rear, elevated portion 6, both made integral with a depending marginal base-flange 7 extending entirely around the base-plate.

8 indicates one of the type-bars of the machine which is like those of the said "Oliver" typewriter and is mounted in a supporting frame 9. In said "Oliver" machine the type-bars are arranged in two groups, located one at each side of the center line of the machine, upon two supporting frames like the frame 9 illustrated.

The supporting frames for the two groups of bars are attached to the upper ends of two standards, shown in Figs. 1 and 4 of the drawings and therein indicated by 11, 11. Said standards 11, 11 are rigidly attached to and rise from the rear, horizontal, elevated part 6 of the base-plate near the forward edge of said elevated part and at opposite sides of the base-plate.

12, 12 indicate the key-levers of the machine, which extend in a direction from front to rear thereof with their forward ends above the lower, horizontal part 5 of the base-plate and their rear portions beneath the rear, elevated, part 6 of said base-plate. Said key-levers are arranged in two laterally separated groups, located on opposite sides of the center line of the machine, and have operative connection with the type-bars, as usual in the said "Oliver" machine.

13, (Fig. 1) indicates one of the ribbon spool cases, which is supported on the frame 9. 20, 20 indicate two upright ribbon-spool shafts, arranged one at each side of the machine, and through the medium of which the inking ribbon spools of the machine are turned or actuated. Said ribbon spool shafts 20, 20 are mounted at their upper ends in bearings on the frame-standards 11, 11 as shown in connection with one of said shafts in Fig. 1. The lower ends of said ribbon spool shafts 20, 20 are provided with gear pinions 21, 21 which are rigidly attached to the shafts.

22 indicates a horizontal, transversely arranged worm-shaft having at its end worms 23, 23 adapted for engagement with one or the other of the two gear pinions 21, 21 on the ribbon spool shafts. Said worm-shaft 23 is mounted on a horizontally oscillating

bearing member 25 which is pivotally supported at its center so as to swing in a horizontal plane and is provided with depending bearing lugs in which said worm-shaft is mounted. The said worm-shaft is turned or rotated by a pawl and ratchet mechanism from the universal bar of the machine, a portion of which latter is indicated by 26 in Figs. 2, 3 and 5.

As illustrated, a ratchet wheel 27 is secured to the central part of the worm-shaft and is engaged by two pawls 28 and 29 which are arranged at opposite sides thereof and are pivoted to a bracket arm 30 attached to the universal bar 26. It will of course be understood that said universal bar has rising and falling movement imparted to it by the key-levers of the machine as usual in machines of this type. Said bearing member 25 is adapted to be swung or oscillated horizontally so as to bring one or the other of the two worms on the ends of the worm shaft into engagement with one or the other of the gear pinions 21, 21. The shifting worm shaft, operating in connection with one or the other of the gear pinions on the two ribbon-spool shafts, enables one or the other of said shafts to be positively driven and the other released from the driving devices as required to enable the inking ribbon to be wound first upon one and then upon the other of the two ribbon spools. The gear wheels, the worm shaft and bearing member 25 are arranged at a considerable distance below the level of the rear elevated part 6 of the base-plate of the machine so as to leave room beneath said elevated part of the machine frame and the said worm-shaft for the key-levers of the machine.

For giving shifting movement to the bearing member 25, a lever 32 (Fig. 2) is pivotally supported beneath the forward, lower part of the frame plate, and is connected with one end of said bearing member 25 by means of a connecting bar 33. A pivoted spring actuated detent 34 is arranged in such manner as to hold the lever 32 and the bearing member 25 yieldingly at either limit of the shifting movement thereof.

Now referring to features illustrated which relate more particularly to the present invention, the same are constructed as follows: In order to afford bearings for the lower ends of the ribbon spool shafts, a pair of bracket members 35, 35 are arranged at opposite sides of the base-plate and are attached to and extend rearwardly from the rear margin of the lower horizontal forward part 5 of said base-plate. Each of said bracket members (Fig. 9) comprises a bracket portion 36 which extends rearwardly from the rear margin of the part 5 of the base-plate and a horizontal base portion 37 arranged at right angles to the

bracket portion 36. Said base portion 37 extends transversely of the machine and is arranged to rest upon the rear marginal part of the said part 5 of the base-plate, to which it is secured by screws or bolts. The bracket portion 36 of each bracket member is provided at its rear end with a vertically arranged bearing aperture 38 in which the lower end of the associated ribbon-spool shaft has bearing.

Another novel feature of my invention relates to the means for supporting from the base-plate of the machine the oscillating bearing member 25 of the worm-shaft, the same being made as follows:

40 indicates a transversely arranged, horizontal frame bar which is located beneath and at a considerable distance below the rear elevated part 6 of the base-plate and is rigidly attached thereto. Said frame-bar 40 extends transversely beneath the key-levers 12, and has at its right hand end an upwardly extending part or member 41 which rises at a point laterally outside of the key-levers to the horizontal part 6 of the base-plate and is bent at its upper end to form a horizontal portion 42 which is attached to said part 6 by a screw or bolt. At a point near the center of the machine said frame-bar 40 is provided with an integral upwardly extending lug 43 which is adapted to bear at its upper end against and is secured to a block 44 (Fig. 3) which is rigidly attached to and depends from the elevated part 6 of the base-plate between the two groups of key-levers. Said frame-bar 40 is also provided near the middle of its length at one side of the lug 43 with a recess 45 (Fig. 3) in which is fitted and secured the rear end of a forwardly extending horizontal bracket plate 46 which is pivoted by a vertical pivot stud 47 the transversely arranged horizontal bearing member 25 for the worm-shaft 22. Said recess 45 in the bar 40 is formed to provide vertical shoulders at the sides thereof by means of which said bracket plate 46 is held from lateral displacement. Said frame bar 40 is also provided on its lower forward edge with a longitudinal, vertical rib or flange 48 in the ends of which are transverse horizontal openings 49, 49 through which are inserted screw studs 50, 50 which are located in position for contact with the ends of the bearing member 25 and serve as adjustable stops for limiting the swinging movement of said bearing member.

The horizontal frame-bar, arranged as described, being itself of rigid structure and connected rigidly with the part 6 of the base-plate above it, affords a suitably strong and rigid support by which said bearing member is properly supported beneath the key-levers. Said frame-bar also affords supports for the adjustable stops located in proper position

for contact with the end portions of the said bearing member 25.

I claim as my invention:—

1. In a typewriting machine, the combination of substantially horizontal key-levers, a base-plate having a forward, lower, horizontally extending portion which extends beneath the forward end of the key-levers, and a rear, higher horizontal portion which extends over the rear portions of the key-levers, a ribbon actuating mechanism embracing two upright ribbon spool shafts, located one at each side of the machine, and two bracket members located at opposite sides of the machine and attached to and extending rearwardly from the rear margin of the said forward, lower, horizontal portion of the base-plate, said bracket members affording bearings for the lower ends of said ribbon spool shafts.

2. In a typewriting machine, the combination of a horizontal base-plate, longitudinally extending, horizontally arranged key-levers located below the base-plate, upright spool shafts provided at their lower ends with gear-pinions, a transversely arranged worm-shaft having worms at its ends adapted to engage said gear-wheels, a horizontally oscillating bearing member for said worm-shaft, and a horizontal frame-bar extending transversely beneath the key-levers and rigidly connected by upright connecting members with the horizontal base-plate, said frame-bar affording pivotal support for the said oscillating bearing member.

3. In a typewriting machine, the combination of a horizontal base-plate, longitudinally extending, horizontally arranged key-levers located below the base-plate, upright spool shafts provided at their lower ends with gear-pinions, a transversely arranged worm-shaft having worms at its ends to engage said gear-pinions, a horizontally oscillating bearing member for said worm-shaft, a horizontal frame-bar located transversely beneath the key-levers and rigidly connected by upright connecting members with the horizontal frame-plate, and a bracket-plate attached to and extending forwardly from said frame-bar, on which said oscillating bearing member is pivotally supported.

4. In a typewriting machine, the combination of a horizontal base-plate, longitudinally extending, horizontally arranged key-levers located below the base-plate, upright spool shafts provided at their lower ends with gear-pinions, a transversely arranged worm-shaft having worms at its end adapted to engage said gear-pinions, a horizontally, oscillating bearing member for said worm-shaft, a horizontal frame-bar extend-

ing transversely beneath the key-levers and rigidly connected by upright connecting members with the horizontal frame-plate, and adjustable stops on said frame-bar for limiting the swinging movement of said oscillating bearing member.

5. In a typewriting machine, the combination of a horizontal base-plate, longitudinally extending, horizontally arranged key-levers located below the base-plate, said key-levers being arranged in two groups at opposite sides of the center of the machine, upright spool-shafts provided at their lower ends with gear-pinions, a transversely arranged worm-shaft having worms at its end adapted to engage said gear-pinions, a horizontally oscillating bearing member for said worm-shaft, a horizontal frame-bar extending transversely beneath the key-levers, a connecting member rising from the frame-bar between the two groups of key-levers and rigidly connecting said frame-bar with the horizontal base-plate, and a connecting member rising from one end of the said frame-bar and rigidly connecting the same with said horizontal base-plate, said frame-bar affording pivotal support for said oscillating bearing member.

6. In a typewriting machine, the combination of a horizontal base-plate, longitudinally extending, horizontally arranged key-levers located below the base-plate, said key-levers being arranged in two groups at opposite sides of the center of the machine, upright spool-shafts provided at their lower ends with gear-pinions, a transversely arranged worm-shaft having worms at its end adapted to engage said gear-pinions, a horizontally oscillating bearing member for said worm-shaft, a horizontal frame-bar extending transversely beneath the key-levers, said frame-bar being rigidly connected with the base-plate by upwardly extending members located one between the groups of key-levers and the other laterally outside of the said key-levers, a bracket arm rigidly attached to and extending forwardly from said frame-bar and affording pivotal support for said oscillating bearing member, and set screws inserted horizontally through said frame-bar and affording adjustable stops to limit the swinging movement of said oscillating bearing member.

In testimony, that I claim the foregoing as my invention I affix my signature in presence of two witnesses, this 10th day of March, A. D. 1908.

THERON L. KNAPP.

Witnesses:

BART. C. YOUNG,  
WM. H. O'BRIEN.