

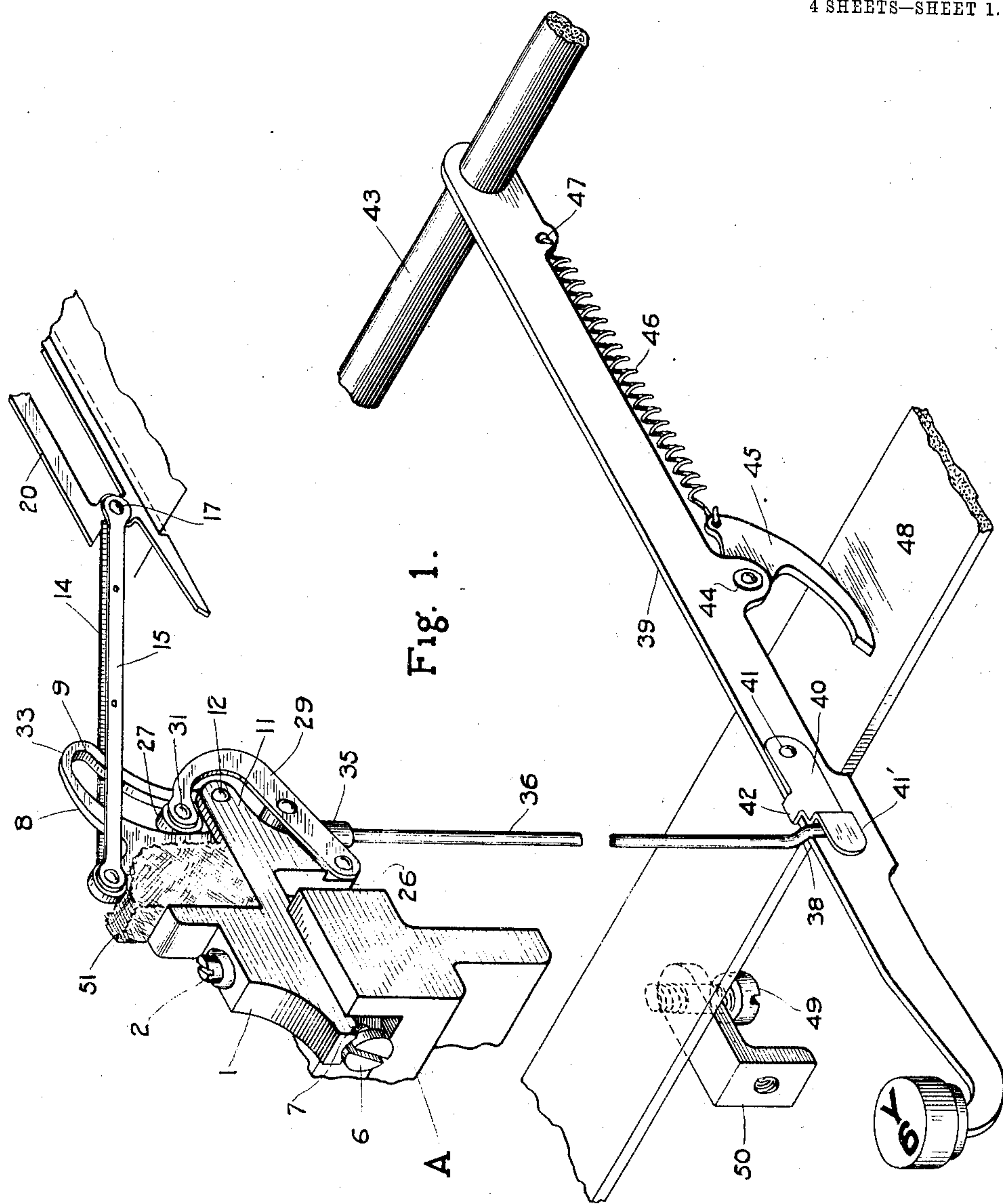
No. 879,207.

PATENTED FEB. 18, 1908.

C. W. SPONSEL.
TYPE WRITER.

APPLICATION FILED AUG. 18, 1905.

4 SHEETS—SHEET 1.



WITNESSES:
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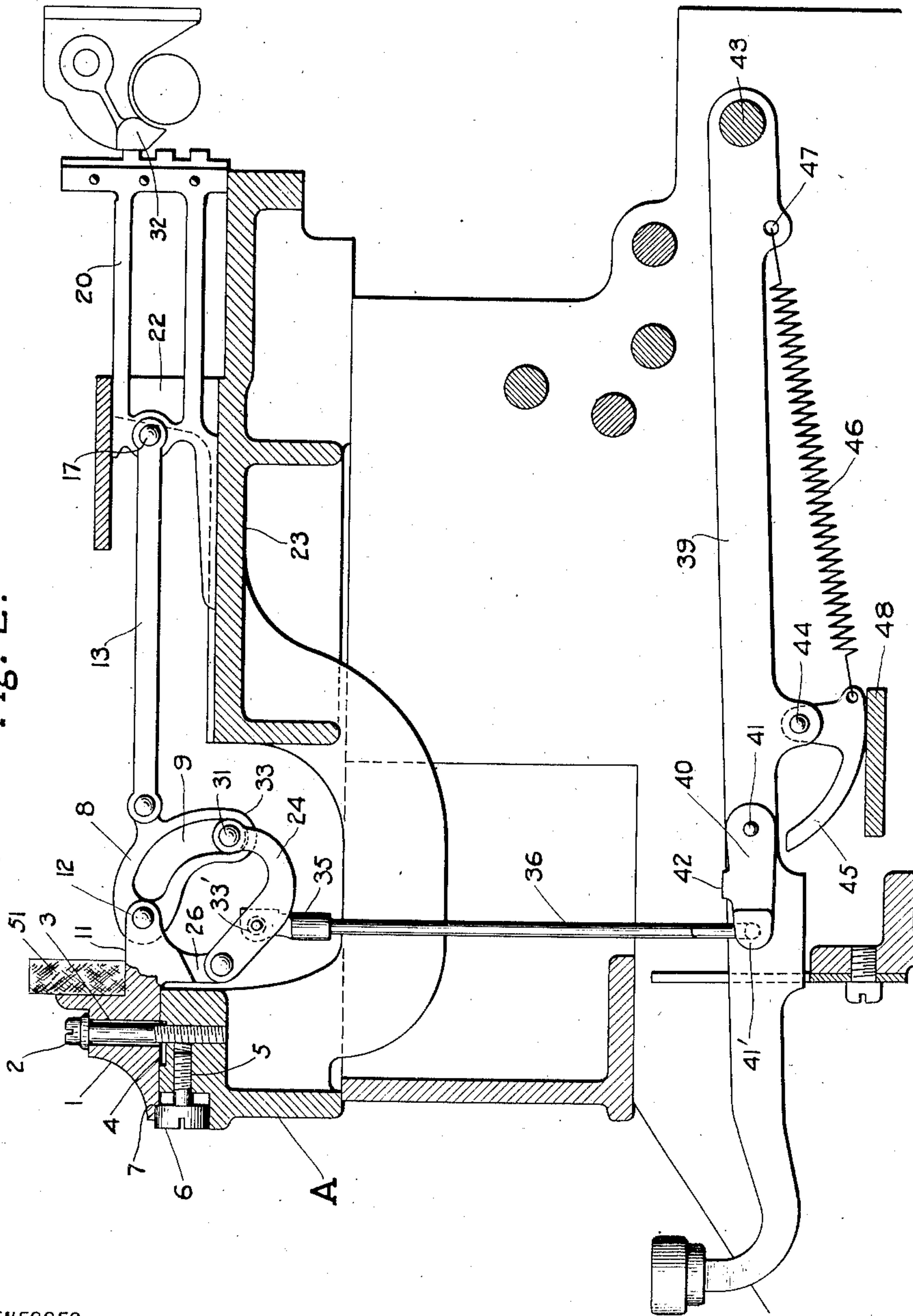
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4 SHEETS—SHEET 2.

Fig. 2.



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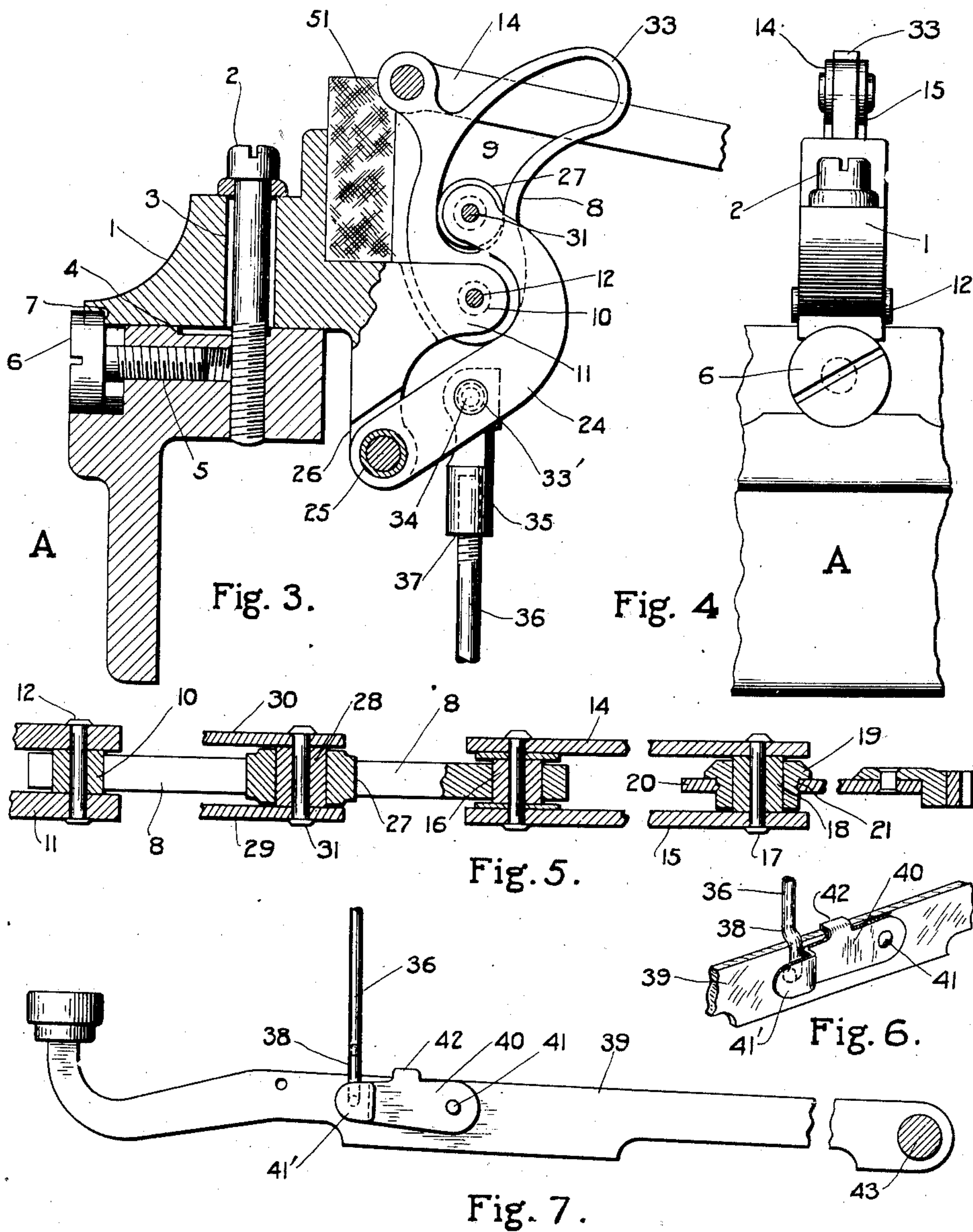
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

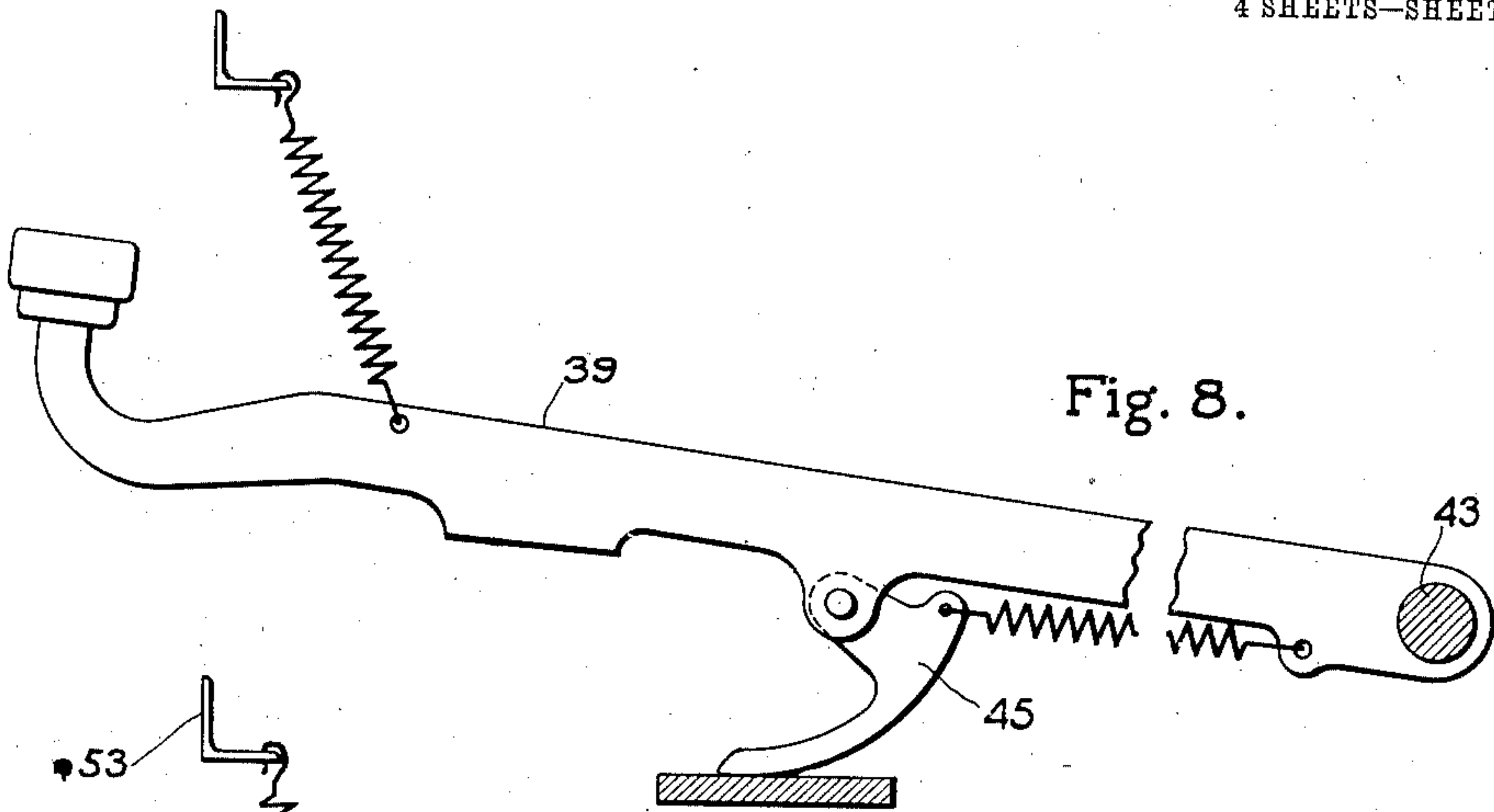


Fig. 8.

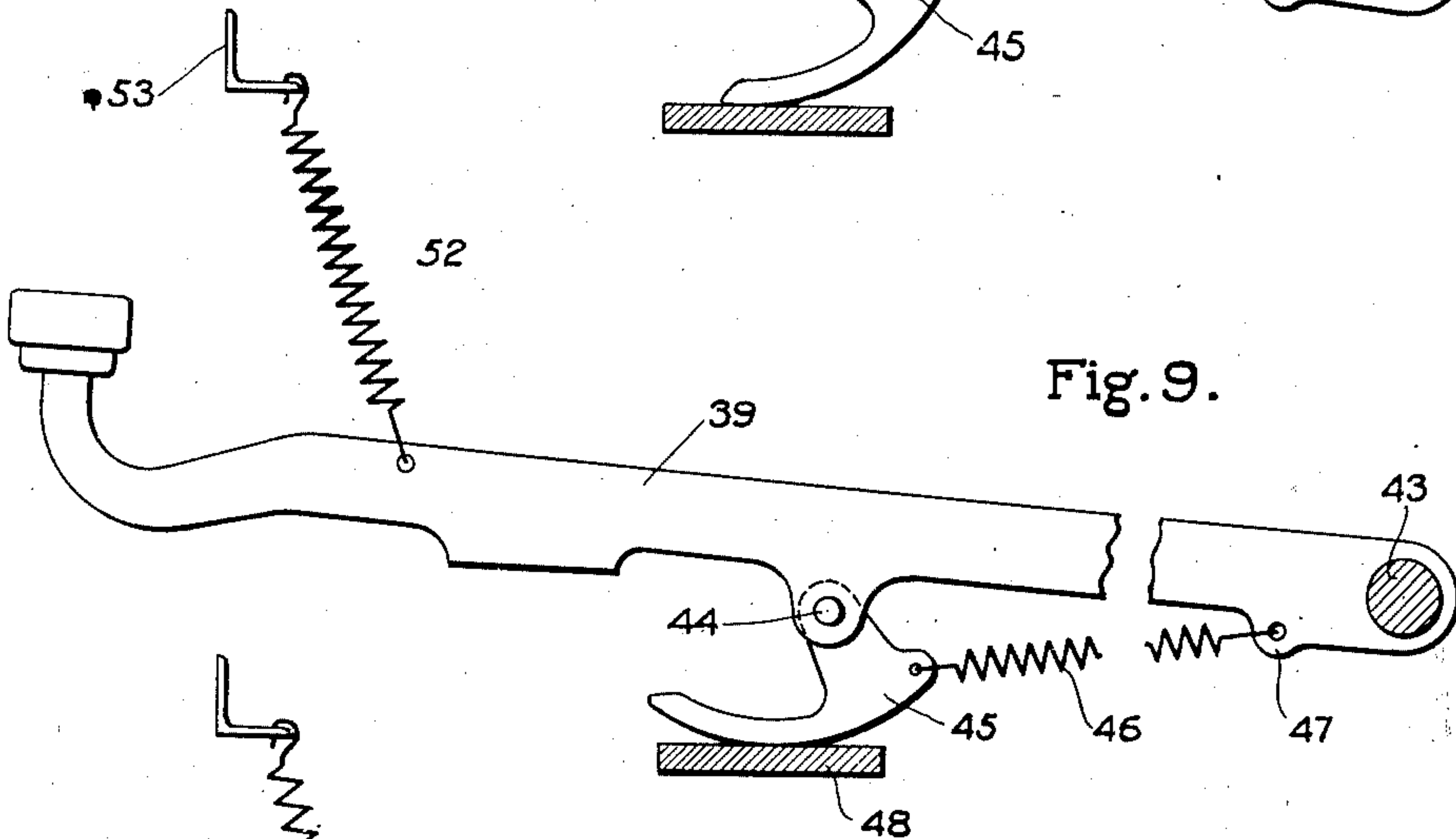


Fig. 9.

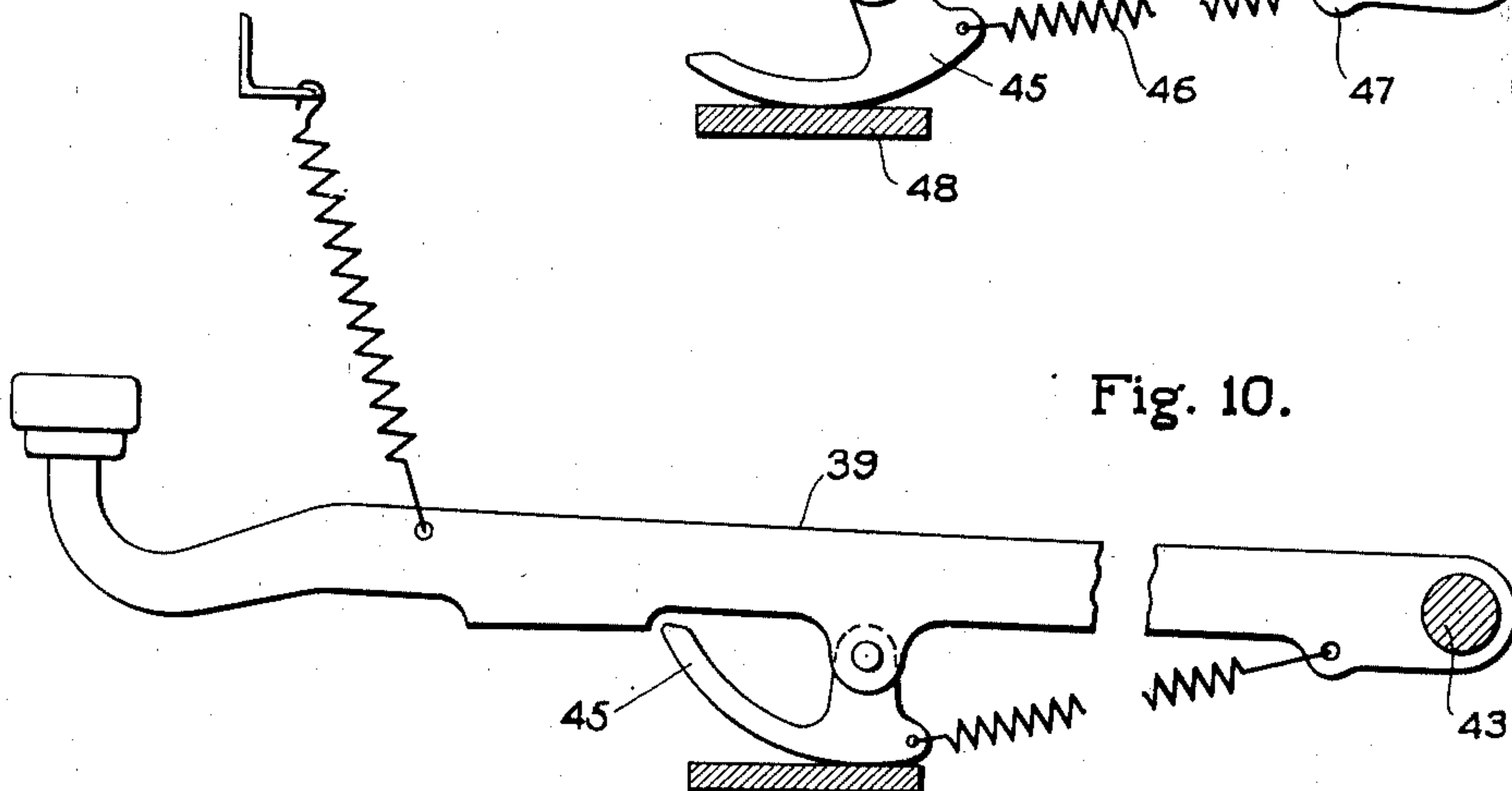


Fig. 10.

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UNITED STATES PATENT OFFICE.

CHARLES W. SPONSEL, OF HARTFORD, CONNECTICUT, ASSIGNOR TO PARKER MACHINE COMPANY, OF BUFFALO, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITER.

No. 879,207.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed August 18, 1905. Serial No. 274,650.

To all whom it may concern:

Be it known that I, CHARLES W. SPONSEL, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to typewriters and the like and is especially adapted for use in machines known as "silent typewriters" of the type of that shown in United States patent to W. P. Kidder, No. 567,241, September 8, 1896. It will be obvious, however, that various features of the present invention while particularly adapted for the production of a silent typewriting machine are capable of use in a variety of relations with different types of machines.

One of the objects of this invention is to provide mechanism so constructed as to eliminate impact or concussion of the moving parts during the operation of the machine.

Another object is to provide means whereby the type-actuating devices may be easily adjusted toward and from the platen and maintained rigidly in such adjusted position.

Another object is to so construct the mechanism employed to control the movements of the type bars that the bearing parts will operate with a minimum of wear.

Another object is to provide a connection between the type operating mechanism and the key levers such that the friction therebetween is reduced and the parts may be easily detached for purposes of adjustment, repair or renewal.

Another object is the provision of a stop adapted to arrest the motion of the key levers without impact or concussion, and, therefore, noiselessly.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the mechanism hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein are illustrated several of the various possible embodiments of my invention, Figure 1 is a perspective view of a portion of one of the

same. Fig. 2 is an elevation of the same partly in section. Fig. 3 is an elevation partly in section showing the adjusting mechanism for the type actuating devices. Fig. 4 is an end elevation of the same. Fig. 5 is a plan view of the toggle mechanism showing the manner of constructing the joints. Figs. 6 and 7 are details showing the connecting means between the type-actuating mechanism and the impression levers. Fig. 8 is an elevation of a different embodiment of the wiper cam mechanism. Figs. 9 and 10 are elevations showing the embodiment illustrated in Fig. 8 in different positions.

Similar reference characters refer to similar parts throughout the several views.

As tending to render better understood several of the various features of my invention, it may here be noted that in machines of this type, particularly those wherein the printing is done by pressure and not by impact, it is necessary to adjust the type carrying mechanism to and from the platen of the machine in order that the type may be brought to a uniform printing position, and it is also necessary that the parts be so constructed as to be capable of being held rigidly after adjustment. The different mechanisms employed to operate the printing devices being in almost constant use, considerable friction necessarily takes place, and it is therefore desirable to construct the bearings of the moving parts in such a manner that as little wear as possible may result. It is also desirable to provide means for connecting the type-actuating mechanism with the impression levers, whereby easy detachment may be made to allow adjustment. I have, also, found it desirable to arrange stops for the impression levers or other movable mechanism whereby motion may be arrested without impact or concussion, thus eliminating the disagreeable element of noise prevalent in machines of other types. The above and other advantages are secured in constructions of the nature of that hereinafter described.

Referring now to the drawings, a bracket 1 is secured to the frame A of the machine by means of a screw 2 passing through an enlarged hole 3 in the bracket 1, which bracket is adapted to slide in a groove 4 in alignment with a toggle joint mechanism hereinafter described. There is also provided an adjusting screw 5 which is tapped into the

frame A below bracket 1 and having a large circular head 6 bearing against a shoulder 7 formed by a cut away portion of said bracket 1 and which cut away portion also rests on the circumference of the head 6 of screw 5. Swinging lever 8 of hardened steel and provided with a cam path 9 is journaled upon a hardened steel collar 10 secured between the bifurcated ends of extension 11 on bracket 1 by means of a soft steel rivet 12. Link 13 consisting of members 14 and 15 has secured therebetween at one end a collar 16 of hardened steel upon which is journaled the swinging lever 8, and at its opposite end a soft steel rivet 17 secures between said members 14 and 15 a collar 18 of hardened steel operating to space apart members 14 and 15 and upon which a bushing 19 is journaled. Bushing 19 is provided with a circumferential groove and is knurled at one side as at 21. Type bar 20 having an opening at one end is adapted to receive bushing 19 therein. Some of the material of type bar 20 is then spun into the groove in said bushing and firmly holds the parts against rotation. Type bar 20 is adapted to slide to and from the platen in guides 22 positioned upon bed 23. Cam roll 24 secured to a hardened steel bracket 1 is provided with a hardened steel cam roll 27 journaled upon a hardened steel collar 28 which is secured between the members 29 and 30 of said cam roll lever 24 by means of soft steel rivet 31. Cam roll 27 is adapted to traverse the cam path 9 of swinging lever 8, thereby swinging the same on its pivot to straighten the toggle constituted by said lever 8 and link 13 and operating to project the end-thrust type bar 20 toward the platen 32 to impression with a uniformly retarded velocity. Said type bar 20 is adapted to reach the "impression point", as this point may be termed, at the instant of the straightening of the toggle as shown in Fig. 2, insuring a pressure of the printing devices without impact or concussion against the printing surface. Cam roll 27 at this point reaches a position near the end of cam path 9, further movement of the type bar being prevented by the dwell in the end of swinging lever 8.

The dwells 33 and 33¹ at each end of cam path 9 respectively are secured by so shaping the surface of the cam path at these points that when swinging lever 8 is in normal position or in an extended position, the said surfaces will be on arcs substantially the same as the arc traveled by cam roll 27. It will therefore be seen that cam roll 27 is allowed a slight play in each end of the cam path 9 without effecting a movement of swinging lever 8, and is prevented from contacting with the closed ends of said cam path.

By the term "impression point", as herein used in the specification and claims, I mean that point or location assumed by a printing

device during the operation of printing a character upon a surface. While in this embodiment of my invention, I have constructed a swinging lever 8, the collars 10, 16, 18, 25 and 28, the bushing 19 and cam roll 27 of hardened steel and the several rivets employed of soft steel, I do not intend to limit myself to the employment of any particular material. It is sufficient for the accomplishment of the purposes of my invention to construct the first-mentioned parts of a comparatively hard material, or any material adapted to resist wear resulting from friction, while the rivets may be made of any suitable material capable of being headed or upset as is necessary in the process of riveting. I prefer to spin the type bar 20 into the bushing 19, as shown, but do not wish to be understood as limited to this specific form of attachment, as the parts may be secured together in any desired manner, although the form shown is peculiarly advantageous in this construction.

On a preferably hardened steel collar 33' secured between the members 29 and 30 of cam roll lever 24 by soft steel rivet 34, a hardened steel member 35 is journaled. Such parts may, however, be constructed of any suitable substance adapted to accomplish the results above set forth. An adjustable connecting rod 36 is threaded into member 35 at 37 and is provided with a bent end 38 entering an opening in a key lever 39 and maintained in connection therewith by means of clip 40 pivoted at 41 to said key lever, and provided with an offset portion 41' to engage the bent end and having a turned over portion 42 resting on the upper edge of key lever 39. The clip 40 is adapted to be turned upwardly on its pivot to release said connecting rod 36 when it is necessary to adjust the same and can then be swung to the position shown to maintain the parts in engagement. Key lever 39 is pivotally mounted at its end upon rod 43 and has pivoted thereto at 44 a wiper cam 45 provided with a spring 46 attached to key lever 39 at 47. It will, of course, be understood that key lever 39 is one of a series, the others of the series being similarly constructed, but are omitted in the interest of clearness of illustration. Placed below the wiper cam 45 is an adjustable bar or plate 48 preferably hardened, and I also preferably harden wiper cam 39. Bar or plate 48 extends the entire length of the machine beneath the key levers and is supported by means of adjusting screws 49 which are threaded through brackets, one of which is shown at 50, said brackets being secured to a fixed portion of the framing of the machine. It will be understood that adjusting screws 49 may be manipulated to raise or lower said plate, thereby regulating the throw of the key levers inasmuch as wiper cams 45 rest upon plate 48 and are swung to arrest the

downward movement of the key levers by engagement with said plate when said key levers are depressed.

Figs. 1 and 8 show the impression lever in its upward position. In this position, the projecting end of wiper cam 45 rests on plate 48, and in its downward position, said wiper cam is slid forward against the influence of spring 46 until it assumes the position shown in Figs. 2 and 10 of the drawings, when the key lever 39 comes to a stop. By reason of the constant engagement between the wiper cam 45 and plate 48, the downward movement of the key lever is gradually retarded and finally arrested without concussion or impact. Spring 46 acting through the medium of wiper cam 45 operates to return the key lever to its upward position, and with it the toggle, as clearly shown in Fig. 1, withdrawing the printing devices from the impression point. A cushion 51 is positioned upon the bracket 1 and is adapted to be engaged by the swinging lever 8 in returning to the position shown in Fig. 1 in order to noiselessly arrest the returning movement of the actuating parts.

In Figs. 8, 9 and 10 I have illustrated a different arrangement of the wiper cam. In this modification I pivot wiper cam 45 to the key lever as before, in such position as to engage bar or plate 48 and attach to key lever 39 an additional auxiliary spring 52, connecting the same with a fixed part of the machine at 53. By this arrangement I can materially diminish the tension of spring 46, inasmuch as spring 52 assists in returning the key lever to initial position. It will be also noted that this arrangement will materially diminish the friction between key lever 39 and bar or plate 48, insuring a more accurate stop for said lever at the end of its stroke.

It will thus be seen that I have provided a construction whereby the toggle carrying the printing devices may be easily adjusted toward or from the platen to provide for a uniform pressure to be exerted by said printing devices against the printing surface. The construction of the bearings of the mechanism constituting the type bar actuating devices, insures an operation with a minimum of wear. The connecting rod 36 is easily detached from the key lever mechanism for purposes of adjustment, and readily secured in position to operate with little friction. The downward movement of the key levers is uniformly retarded and finally arrested noiselessly without impact or concussion.

While I have shown and described my invention as applied to a typewriter of the silent type, I do not intend to limit the employment of certain features thereof to this type, nor, in fact, to any particular type, they being applicable in a variety of relations to many other forms of machines.

As many changes could be made in the

above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a typewriting machine, in combination, a typebar, means adapted to carry a typebar, means for adjusting said means to or from the platen, and means acting on the first-named means to clamp the second-mentioned means in position after adjustment.

2. In a typewriting machine, in combination, a typebar, means adapted to carry a typebar, screw-threaded means for adjusting the first-mentioned means toward or from the platen, and means acting on said first-mentioned means to clamp said screw-threaded means in position after adjustment.

3. In a typewriting machine, in combination, a typebar, a bracket adapted to carry a typebar, means adapted to adjust said bracket toward or from the platen, and means acting on the bracket to cause the same to clamp said adjusting means in position after movement.

4. In a typewriting machine, in combination, with the frame of a typewriter, a bracket, means carrying type devices positioned upon the bracket, means engaging the frame and also engaging the bracket to adjust the same toward or from the platen, and means engaging the bracket to cause the same to clamp said adjusting means after adjustment.

5. In a typewriting machine, in combination with the frame thereof, a bracket, means carrying a type device positioned upon the bracket, a screw operating in the frame and having a head adapted to engage the bracket and also adapted when the screw is rotated to adjust the bracket with respect to the platen, and means extending through the bracket and engaging in an opening in the frame adapted to cause the bracket to clamp said screw in position after rotation.

6. In a typewriting machine, in combination with the frame thereof, a bracket, means carrying a type device positioned thereon, a shoulder located upon the frame, a screw operating in the frame and being provided with a head adapted to rest on the shoulder and also adapted to engage the bracket and by a rotation thereof to adjust the same with respect to the platen, and means extending through the bracket operating in the frame adapted to clamp said screw-threaded means between said shoulder and said bracket to prevent movement thereof after rotation.

7. In a typewriting machine, in combination with the frame thereof provided with a

groove, a bracket adapted to slide in said groove, a shoulder located upon the frame, a screw operating in said frame having a head adapted to rest on said shoulder, said
5 head also being adapted to engage said bracket to adjust the same with respect to the platen, means extending through the bracket and operating in the frame to cause said bracket to clamp said screw-threaded
10 means against said shoulder to hold the same against rotation.

8. In a typewriting machine, in combination with the frame thereof, a shoulder on said frame, screw-threaded means operating
15 in the frame and provided with a head resting on said shoulder, a bracket resting on the frame and sliding in a groove therein and also resting on said screw head and adapted to be adjusted thereby with respect to the platen,
20 said bracket being provided with an opening therethrough, and means extending through said opening and operating in the frame to cause said bracket to clamp said screw-threaded means against rotation.

25 9. In a typewriting machine, in combination with the frame thereof, a shoulder on said frame, screw-threaded means operating in the frame and having a head adapted to rest on the shoulder, a bracket resting on
30 said frame and also on the head of said screw-threaded means, said bracket having an opening therethrough, screw-threaded means of substantially smaller diameter than said opening extending therethrough and operat-
35 ing in the frame and adapted to cause said bracket to clamp the first-mentioned screw-threaded means against said shoulder to prevent rotation after adjustment.

40 10. In a typewriting machine, in combination with the frame thereof, said frame being provided with a shoulder and a groove, screw-threaded means operating in the frame and provided with a circular head adapted to rest
45 on a similarly shaped surface on said shoulder, a bracket sliding in the groove in the frame and adapted to rest on said frame and also on the head of screw-threaded means, a shoulder on said bracket adapted to be engaged by the head of said screw-threaded
50 means to adjust the bracket, said bracket being provided with an opening therethrough, screw-threaded means of substantially smaller diameter than said opening and extending therethrough to operate in the
55 frame, and being provided with a head adapted to engage said bracket to cause the same to clamp the head of the first-mentioned screw-threaded means against the shoulder on said frame to prevent rotation after adjust-
60 ment.

11. In a typewriting machine, in combination with the frame thereof provided with a shoulder, screw-threaded means having a circular head operating in the frame and
65 adapted to rest upon a curved surface lo-

cated upon the shoulder, a bracket sliding in a guiding groove on said frame and resting thereon, and also resting upon the head of said screw-threaded means, and having a curved surface for engagement therewith, a
70 shoulder on said bracket adapted to be engaged by the head of said screw-threaded means, said bracket being adapted to be adjusted with respect to the platen by a rotation of said screw-threaded means, and
75 means for causing the bracket to clamp the head of said screw-threaded means against movement and also adapted upon a different operation to release said screw-threaded means whereby the bracket may be adjusted.
80

12. In a typewriting machine, in combination with the frame thereof provided with a shoulder, screw-threaded means provided with a circular head operating in the frame and adapted to rest upon a curved surface on
85 the shoulder, a bracket sliding in a groove on said frame and resting thereon, and also resting upon the head of said screw-threaded means and having a curved surface for engaging therewith, a shoulder on said bracket
90 adapted to be engaged by the head of said screw-threaded means, said bracket being adapted to be adjusted with respect to the platen by a rotation thereof, said bracket being also provided with an opening, screw-
95 threaded means of substantially smaller diameter than that of said opening extending therethrough to engage a threaded opening in the frame and adapted to engage the bracket to cause the same to clamp the head
100 of the first-mentioned screw-threaded means to permit a movement after adjustment and also adapted upon a different operation to release said bracket from the afore-mentioned screw-threaded means whereby the
105 bracket may be adjusted.

13. In a typewriting machine, in combination, a pair of members, a collar of comparatively hard material, a rivet extending through said collar and said members and
110 holding the parts in immovable relation with respect to one another, a bushing of comparatively hard material journaled on said collar, and a member spun into said bushing.

14. In a typewriter, in combination, a link,
115 means extending through said link, a hardened steel collar secured to said link by the afore-mentioned means, a hardened steel bushing journaled on said collar, and a member secured to said bushing.
120

15. In a typewriter, in combination, a link,
125 means extending through said link, a hardened steel collar secured to said link by the afore-mentioned means, a hardened steel bushing journaled on said collar, and a member spun into said bushing.

16. In a typewriting machine, in combination, a toggle, one of the elements thereof comprising a pair of members, a rivet of comparatively soft material joining said members,
130

a collar of comparatively hard material secured therebetween by means of said rivet, a bushing of comparatively hard material journaled upon said collar, and a member spun into said bushing.

17. In a typewriting machine, in combination, a toggle, one of the elements thereof comprising a pair of members, a rivet of comparatively soft material joining said members, a collar of comparatively hard material secured therebetween by means of said rivet, a bushing of comparatively hard material journaled upon said collar, a member spun into said bushing, and a type bar carried by said member.

18. In a typewriting machine, in combination, actuating means for the printing devices, a key lever, a rod secured to said actuating means and having a bent end entering through an opening in the key lever, and pivoted means carried by said key lever adapted to engage said bent end to maintain said rod and key lever in engagement.

19. In a typewriting machine, in combination, a key lever, a rod carried thereby, and means pivoted to said key lever adapted to swing over said rod to maintain the same in engagement with said key lever and capable of a different operation whereby said rod may be disengaged.

20. In a typewriting machine, in combination, a key lever, type actuating devices, an adjustable connector for said actuating devices, said connector having a bent end entering an opening through the key lever, and a clip pivoted on said key lever adapted to be swung over the bent end of said connector to maintain the same in engagement with said lever.

21. In a typewriting machine, in combination, type-actuating devices, a key lever, a connector adjustably secured to said type actuating devices and having a bent end adapted to extend through an opening in the key lever, and a clip provided with an offset portion adapted to engage said bent end to maintain the same in engagement with the key lever.

22. In a typewriting machine, in combination, type actuating devices, a key lever, a connector adjustably mounted in said type actuating devices and having a bent end adapted to extend through an opening in said key lever, a clip pivoted to said key lever and adapted to be swung over the bent end of said connector to maintain the same in engagement with said key lever, and means carried by the clip adapted to limit the pivotal movement of the same on said key lever.

23. In a typewriting machine, in combination, a key lever, a wiper cam pivoted to said key lever, and means carried by the frame of the machine adapted to constantly engage said wiper cam, said cam, by reason of its engagement with said means being adapted

to gradually retard and ultimately to arrest without concussion the downward movement of said key lever.

24. In a typewriting machine, in combination, a key lever, a wiper cam pivoted to said lever, and a plate fixed to the frame of the machine adapted to be constantly engaged by said wiper cam, said cam by reason of its engagement with said plate being adapted to gradually retard and ultimately arrest without concussion the downward movement of said key lever.

25. In a typewriting machine, in combination, a key lever, a wiper cam of comparatively hard material pivoted to said key lever, and a plate of comparatively hard material adjustably secured to the frame of the machine, said wiper cam by reason of its engagement with said plate being adapted to gradually retard and ultimately arrest without concussion the downward movement of said key lever.

26. In a typewriting machine, in combination, a key lever, a wiper cam pivoted thereon, an adjustable plate secured to the frame of the machine and adapted to be constantly engaged by said wiper cam, and means attached to the key lever acting on said wiper cam to cause a constantly increasing resistance to the downward movement of said key lever.

27. In a typewriting machine, in combination, a key lever, a wiper cam pivoted thereto, a plate adjustably secured to the frame of the machine, and a spring attached to said key lever and also attached to said wiper cam and operating in conjunction therewith to furnish a constantly increasing resistance and ultimately arrest the downward movement of the key lever.

28. In a typewriting machine, in combination, a key lever, a wiper cam pivotally secured thereto; an adjustable plate secured to the frame of the machine and adapted to be constantly engaged by said wiper cam, and a spring connected to the key lever and also to said wiper cam and adapted in conjunction with said wiper cam to oppose and ultimately arrest the downward movement of said key lever and also adapted to return said key lever to its normal position after the completion of said downward stroke.

29. In a typewriting machine, in combination, a key lever, a stop, means interposed between said key lever and said stop adapted to interpose a constantly increasing resistance and ultimately arrest the downward movement of said key lever, and means connected to said key lever and to a fixed part of the machine adapted to return said key lever to its normal position after the completion of its downward stroke.

30. In a typewriting machine, in combination, a key lever, a stop, a wiper cam interposed between said key lever and said stop,

a spring adapted through the medium of said cam to interpose a constantly increasing resistance and ultimately arrest the downward movement of said lever, and a spring connected to said key lever and to a fixed part of the machine operating to return said key lever to its normal position after the completion of its downward stroke.

31. In a typewriting machine, in combination, a key lever, a stop, a pivoted cam interposed between said key lever, a spring attached to said cam and to a fixed part of the machine, said cam acting in conjunction with said spring operating to furnish a constantly increasing resistance and ultimately to arrest the downward movement of said key lever and to return said key lever to its normal position after completion of its downward stroke, and auxiliary means attached to said key lever adapted to assist the carrying of said key lever to its normal position.

32. In a typewriting machine, in combination, a key lever, a stop, a pivoted cam interposed between said stop and said lever, a spring secured to said cam and attached to a fixed part of the machine, said cam acting in conjunction with said spring to interpose a constantly increasing resistance and ultimately to arrest the downward movement of said key lever, and an auxiliary spring attached to said key lever and also attached to a fixed part of the machine operating to assist said cam and said first-mentioned spring to return said key lever to its normal position after completion of its downward stroke.

33. In a typewriting machine, in combination, a bracket, a toggle for operating the printing devices positioned thereon, a key lever, an adjustable connector between said toggle and said key lever, a cam carried by said key lever, and a stop adapted to furnish a constantly increasing resistance and finally arrest without concussion the downward stroke of the key lever.

34. In a typewriting machine, in combination with the frame thereof, an adjustable bracket positioned thereon, means for adjusting said bracket to and from the platen, means engaging the bracket to fasten said adjusting means against movement, type-actuating means carried by said bracket, a

key lever, adjustable means connecting said type-actuating devices with said key lever, a cam pivoted to said key lever, and a stop adapted to be constantly engaged by said cam and also adapted to furnish through the medium of said cam a constantly increasing resistance to the downward stroke of the key lever.

35. In a typewriting machine, in combination with the frame thereof provided with a groove, an adjustable bracket sliding in said groove resting upon said frame, screw-threaded means operating in the frame and adapted to adjust said bracket with respect to the platen, means extending through said bracket adapted to clamp the same against said screw-threaded means to prevent a movement thereof after adjustment, a toggle mechanism adapted to carry the printing devices pivoted to said bracket, one of the members of said toggle being provided with a cam path, means traversing the said cam path to straighten the toggle to project the printing devices with a uniformly retarded velocity toward the platen and to cause the same to reach the impression point at the instant of the straightening of the toggle, the member provided with the cam path being so constructed as to prevent a further movement of the printing devices when they have reached the impression point, a key lever, an adjustable connector between the toggle mechanism and the key lever, a cam pivoted to said key lever, an adjustable stop, and means connected to said cam and also to the key lever and engaging said stop to maintain said key lever in its upward position, said means being adapted through the medium of said cam to interpose a constantly increasing resistance to the downward motion of the key lever and adapted also through the medium of the cam to return the said key lever to its upward position upon the completion of its downward stroke.

In testimony whereof I affix my signature, in the presence of two witnesses.

C. W. SPONSEL.

Witnesses:

WM. H. HONISS,
NELLIE PHOENIX.