

A. W. SMITH.  
TYPE WRITING MACHINE.  
APPLICATION FILED MAR. 11, 1910.

975,169.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

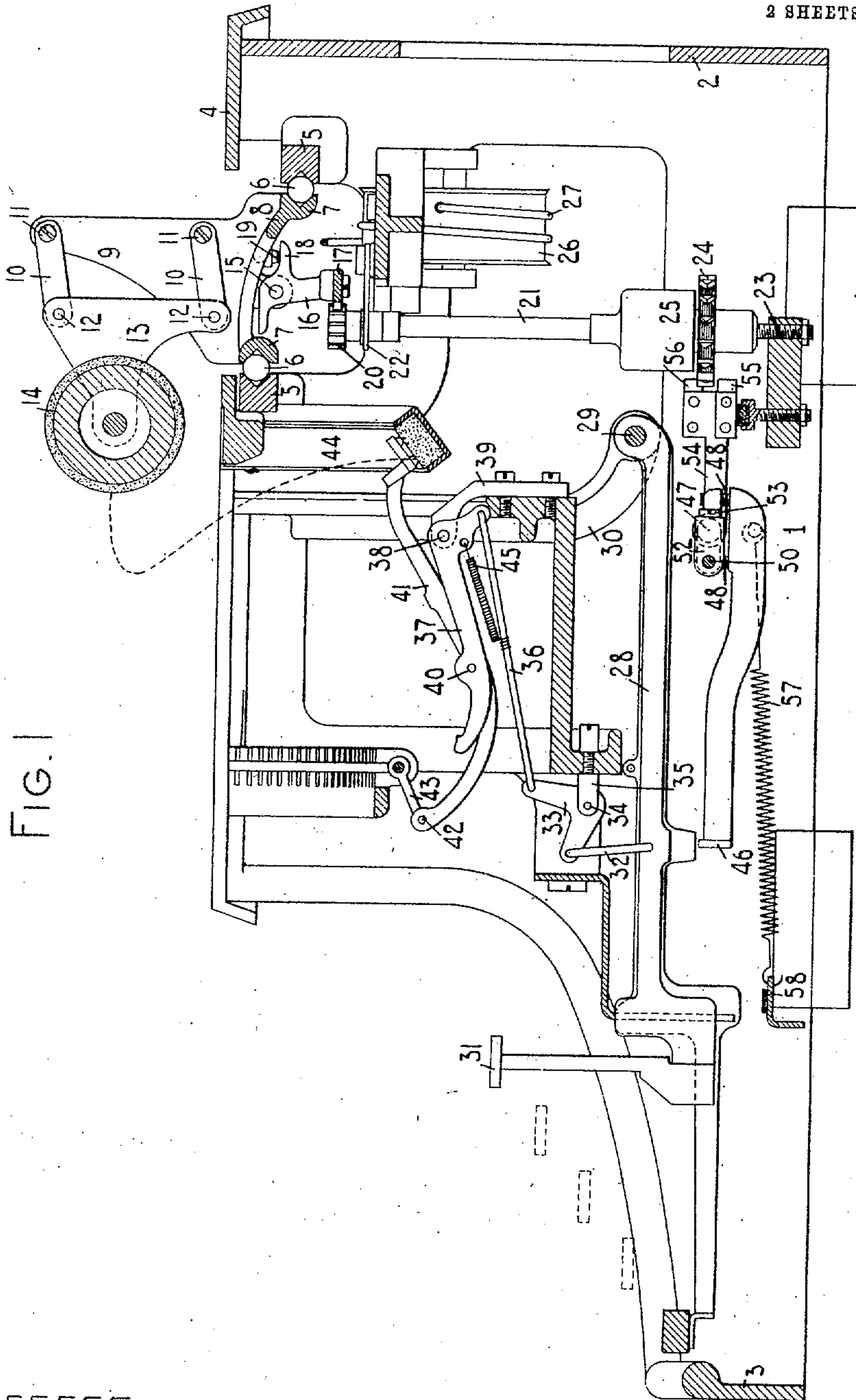


FIG. 1

WITNESSES:

*E. M. Wells*  
*Arthur W. Smith*

INVENTOR

*Arthur W. Smith*

*By Jacob F. Felt*

HIS ATTORNEY

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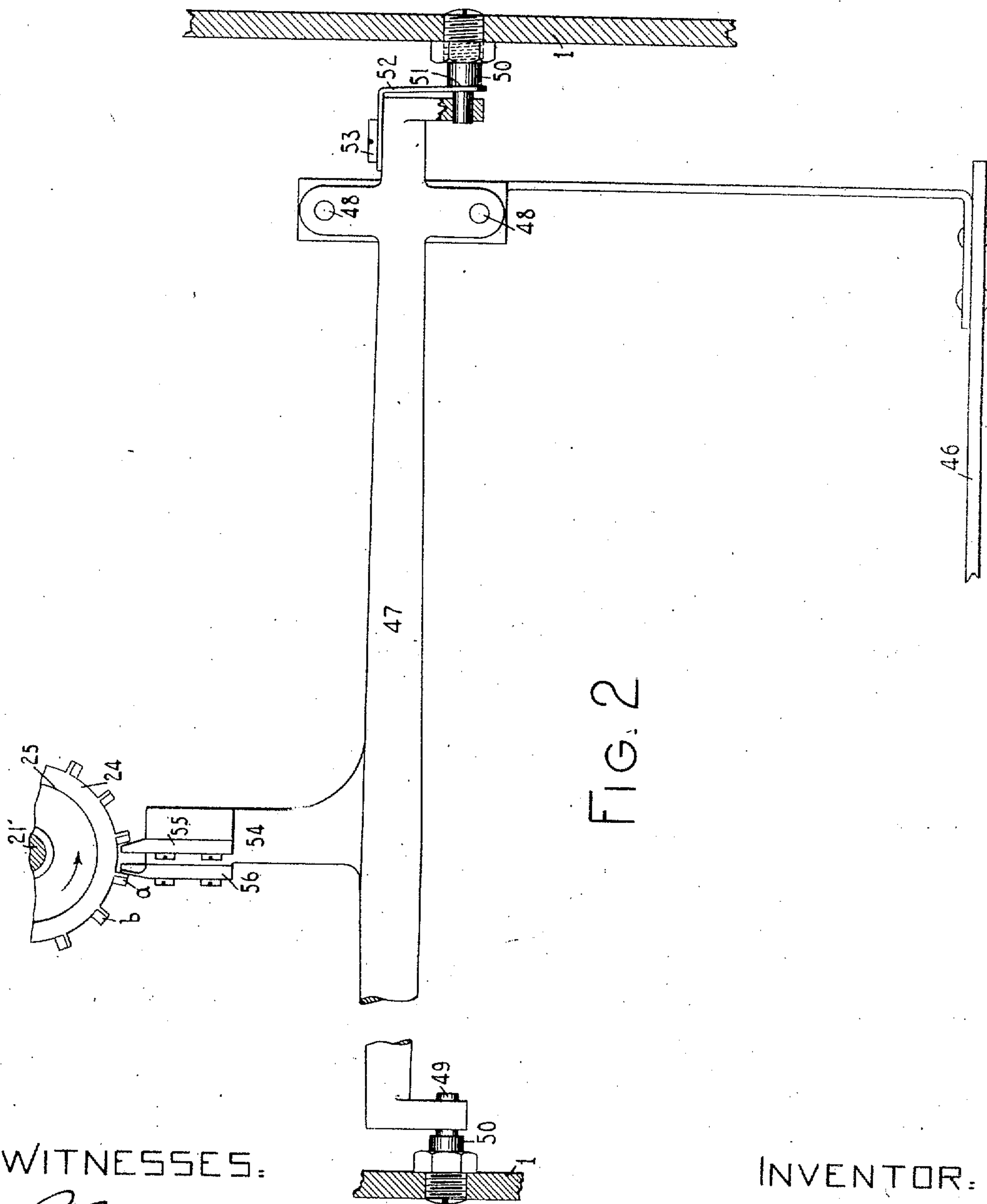


FIG. 2

WITNESSES:

*E. M. Wells*

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INVENTOR:

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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.

975,169.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed March 11, 1910. Serial No. 548,579.

*To all whom it may concern:*

Be it known that I, ARTHUR W. SMITH, 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, and more particularly to escapement devices for such machines.

Heretofore great objection has been found in the noise produced in the carriage escapement mechanism of typewriting machines, the noise ordinarily being most pronounced at each "drop" of the carriage in the letter space movements thereof.

One of the main objects of my invention is to provide simple and efficient mechanism to overcome these objections, the mechanism being so constructed as to greatly reduce or entirely eradicate the noise ordinarily produced by an operation of the escapement devices.

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

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a vertical, central, fore and aft sectional view of one form of typewriting machine embodying my invention. Fig. 2 is a fragmentary, detail, plan view, with parts in section, showing the escapement devices and some of the associated parts.

The present invention has certain of the same objects in view as the construction disclosed in a companion application filed by me of even date herewith and bearing Serial Number 548,578, the present invention being a modified form of the invention disclosed in my said companion application.

I have shown the invention in the present instance embodied in a Yost visible machine, but it should be understood that the invention may be embodied in various styles of typewriting machines, and that the escapement devices may be variously

arranged, constructed and applied within certain aspects of my invention.

The frame of the machine comprises side plates 1, a rear cross plate 2, a front cross plate 3, and a top plate 4. Grooved carriage rails 5 are fixedly secured to the side plates of the machine and receive anti-friction balls or rollers 6 which are likewise received in oppositely grooved rails 7. The rails 7 are formed as a part of a carriage 8 provided with upwardly extending end plates 9 to which parallel links 10 are pivoted at 11, the forward ends of said links being pivoted at 12 to a platen frame 13 which supports a cylindrical platen 14. The carriage has pivoted thereto at 15 depending arms 16 which carry at their lower ends a feed rack 17. The depending arms 16 are likewise provided with rearwardly extending arms 18 with which leaf springs 19 cooperate to move the arms 16 forwardly around their pivots to maintain the feed rack 17 in mesh with its cooperative feed pinion 20. The feed pinion 20 is fixed to a shaft 21 supported by a bracket arm 22 at the upper end portion thereof, the shaft being supported at its lower end portion by a bearing screw 23. An escapement rack 24, which, in the present instance, is shown as a circular rack or escapement wheel, is operatively connected to the shaft 21 by the usual clutch mechanism contained within a housing 25. A spring drum 26 has a cord or band 27 connected at one end thereto, the other end of the band being connected to the carriage to move it from right to left across the machine under control of the escapement mechanism.

Key levers 28 are pivoted at 29 to the auxiliary frame 30 secured to the main frame of the machine. Each key lever is provided with a finger key 31 and is pivotally connected to an upwardly extending link 32, which in turn is connected at its upper end to a forwardly extending arm of an angular lever 33 pivoted at 34 to a hanger 35. The upwardly projecting arm of each angular lever is connected to the forward end of a pull link 36, which in turn is connected at its rear end to a driver 37 pivoted at 38 to a hanger 39. Each driver 37 is pivoted intermediate its ends, as at 40, to a type bar proper 41. The forward end of the type



bar is pivoted at 42 to a guide link 43, the rear or type carrying end of the bar normally bearing against the face of an ink pad 44.

5 At each depression of a finger key 31 the type carrying end of the associated type bar moves in a path indicated by the dotted line in Fig. 1, and strikes the front face of the platen. The parts of each type action are  
10 assisted in their restoration to normal position by a restoring spring 45.

A universal bar 46 extends beneath the key levers and is adjustably connected to a rock shaft 47 by screws 48. The rock shaft  
15 is mounted on pivots 49 and 50 which are threaded into tapped openings in the side plates 1 of the frame. The right-hand pivot 50 is formed with a circumferential shoulder 51, and the construction of the parts is  
20 such that the rock shaft or dog rocker 47 is adapted to receive an axial or sliding, as well as a pivotal, movement. A leaf spring 52 is secured at one end to the dog rocker  
25 by a screw 53, the leaf spring being bent to pass around to the end of the dog rocker, the spring being apertured at its free end to loosely receive the pivot 50. The spring  
30 resists the sliding movement of the dog rocker and is effective to normally maintain it axially in the position shown in Fig. 2, the pressure of the spring being sufficient  
35 to almost balance or to partly overcome the pressure of the carriage spring exerted through the escapement devices and to resist the axial movement of the dog rocker  
to the right and thus act as a cushion for the dog rocker, for purposes which will hereinafter more clearly appear.

The dog rocker is provided with a rearwardly extending arm 54 provided with two  
40 fixed dogs 55 and 56 which are spaced apart, as indicated in Fig. 2, to cooperate with the escapement wheel 24 and to afford a "half and half drop" of the escapement wheel  
45 and a corresponding feed movement of the carriage. In other words, the construction is such that a depression of a finger key 31 is effective to turn the dog rocker 47 on its  
50 pivots to carry the normally engaged feed dog 56 out of the path of the engaged tooth  $\alpha$  of the escapement wheel and to interpose the dog 55 into the path of the previously  
engaged tooth of the escapement wheel, thus affording a "drop" and half a letter space  
55 movement of the carriage on the depression of a finger key. As the parts are restored to normal position, by a spring 57 connected at one end to the dog rocker and at its opposite end to a plate 58, the dog 56 will be  
60 lowered into the path of the next oncoming tooth  $\beta$  of the escapement wheel and the dog 55 will be disengaged from the tooth  $\alpha$ , thus affording another "half drop" of the escapement wheel to complete the letter space  
65 travel of the carriage. This is the general

form of escapement wheel and dog employed in the Yost visible machine, but so far as my present invention is concerned, various forms of escapement mechanisms proper may be used.

70 It should be understood that the pressure of the escapement wheel on the feed dogs and under the power of the spring drum 26 is, or may be, effective to slightly flex the spring 52 when the parts are in normal  
75 position, although the pressure of the spring drum is insufficient at any time to flex the spring 52 to its fullest extent. The depression of a finger key is effective to afford an actuation of the escapement mechanism in the manner hereinbefore described.  
80 At each "drop" of a tooth of the escapement wheel from one dog to the other, the impact between the tooth of the wheel and the cooperative feed dog is effective to slide  
85 the dog rocker as a whole and cause it to move in unison with the carriage against the pressure of the spring 52, which absorbs the shock, so that the shock is not transmitted to the point of final resistance,  
90 which in the present instance would be the shouldered pivot 50 and the frame of the machine to which it is fixed. It will be seen that the shock, due to the letter feed movements of the carriage, is absorbed at  
95 each half drop of the escapement wheel so that the spring 52 is effective to greatly reduce, or to entirely eradicate, the noise ordinarily incident to an actuation of the escapement mechanism and to the pounding  
100 or impact of the escapement wheel on the feed dogs at the termination of the letter space movements of the carriage. The flexure of the spring 52 under impact of the  
escapement wheel on the feed dogs may  
105 vary in degree, depending on the manner in which the escapement mechanism is actuated, but in all cases the construction will automatically and resiliently, so to speak, absorb the shock incident to the letter space  
110 movements of the carriage and to the impact of the teeth of the escapement wheel on the feed dogs.

While ordinarily the spring 52 wholly resists the movement of the carriage under  
115 power of the spring drum thereof and as a consequence constitutes a cushion or resilient support for the carriage, yet in exceptional circumstances the dog rocker will be moved far enough to the right to bring the  
120 right-hand end of the dog rocker into contact with the shoulder 51 and thus positively arrest the dog rocker and the carriage. This action, however, only takes place on rare occasions as when a positive pressure  
125 is exerted, by hand or otherwise, to move the carriage in the direction of its feed while the feed rack 17 is engaged with its cooperative pinion. The positive arrest of the dog rocker with the shoulder 51 there-  
130



fore only takes place in exceptional circumstances and is intended only to act as a safety device to prevent an over-flexing of the spring 52 and to prevent any injury  
5 which might result therefrom.

When I refer herein to a "spring" or "cushion" in connection with the part 52 it should be understood that these terms are employed in a generic sense and are intended to include any resilient or flexible member which performs the function of the  
10 spring 52.

It will be observed that the devices of my invention are simple in construction and  
15 efficient in use, and that my invention may be readily embodied in existing forms of typewriting machines without changing, or materially changing, the constructions embodied therein. In short, the simple addition of the leaf spring 52 and an adjustment of the pivot 50 is all that is required to embody the invention in the present construction of Yost visible machines.

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

1. In a typewriting machine, the combination of a power driven carriage; escapement devices including a feed dog, a dog rocker to which said dog is rigidly secured, and a  
30 rack; a spring; and means by which said spring is rendered effective to absorb the shock incidental to the letter feed movements of the carriage and when said rack is in engagement with said rigidly secured dog.

2. In a typewriting machine, the combination of a power driven carriage; escapement devices including feed dogs, a dog rocker to which said dogs are rigidly secured, and a  
35 rack; a spring; and means whereby said spring is effective to absorb the shock incidental to the relative letter feed movement between the rack and feed dogs and incidental to the impact of one of said last mentioned parts on the other.

3. In a typewriting machine, the combination of a power driven carriage, escapement devices which afford free movements of the carriage at letter feed operations, a spring  
40 separate from said escapement devices, and means whereby said spring is flexed and thereby arrests the carriage after each free letter feed movement thereof and after the said escapement devices have been brought into engagement to arrest the carriage.

4. In a typewriting machine, the combination of a power driven carriage; escapement devices therefor including a holding dog and a rack which afford free movements of the carriage at letter space operations, one of  
50 said parts being mounted for bodily movement after they are engaged to arrest the carriage; and a spring separate from said movably mounted part and operative to resist the movement thereof after a letter feed  
60 movement of the carriage has taken place

and thus absorb the shock at the termination of each letter feed movement of the carriage.

5. In a typewriting machine, the combination of a power driven carriage; escapement devices including an escapement rack and an  
70 escapement dog; a dog rocker mounted for movement in unison with the carriage and under the pressure of the power employed to move the carriage; and a spring to resist such movement.

6. In a typewriting machine, the combination of a power driven carriage; escapement devices including an escapement rack and an escapement dog; a pivoted and sliding dog  
80 rocker, and a spring to resist the sliding movement of the dog rocker.

7. In a typewriting machine, the combination of a power driven carriage, an escapement rack, feed dogs cooperative therewith, a pivoted dog rocker which is likewise  
85 mounted for movement in unison with the carriage and under the pressure of the power employed to move the carriage, and a spring which resists the movement of the dog rocker in unison with the carriage.

8. In a typewriting machine, the combination of a power driven carriage, an escapement rack, feed dogs cooperative therewith, a pivoted dog rocker which is likewise mounted  
95 for sliding movement in unison with the carriage in the movement of the latter in a letter feed direction, and a spring which resists such sliding movement of the dog rocker in unison with the carriage and thus absorbs the shock incidental to the letter  
100 feed movements of the carriage.

9. In a typewriting machine, the combination of a power driven carriage, escapement mechanism including a pivoted rocker which carries a member of the escapement mechanism, the pivotal mountings of the rocker  
105 being such that it is adapted to receive an axial as well as a pivotal movement, and a spring which resists the axial movement of the rocker and absorbs the shock incidental to letter space movements of the carriage.

10. In a typewriting machine, the combination of a power driven carriage, an escapement rack, a pivoted dog rocker mounted  
115 for axial as well as for pivotal movement, two feed dogs fixed to said dog rocker, and a spring which resists the axial movement of said dog rocker.

11. In a typewriting machine, the combination of a power driven carriage, an escapement rack, a pivoted dog rocker mounted  
120 for axial as well as for pivotal movement, two feed dogs fixed to said dog rocker and arranged to afford a "half and half drop," and a spring which resists the axial movement of said dog rocker and absorbs the shock at each "half drop" of the rack  
125 against a dog.

12. In a typewriting machine, the combination of a power driven carriage, an escapement rack, a pivoted dog rocker mounted  
130 for axial as well as for pivotal movement, two feed dogs fixed to said dog rocker, and a spring which resists the axial movement of said dog rocker and absorbs the shock at each "half drop" of the rack against a dog.



nation of a power driven carriage, and escapement devices therefor which afford a free movement of the carriage during letter feed operations, a final point of resistance for limiting the movement of the carriage in a letter feed direction through the escapement devices, and a cushion situated at said point of final resistance to receive and absorb the shock incidental to the free letter feed movements of the carriage.

13. In a typewriting machine, the combination of a power driven carriage; escapement devices which afford a free movement of the carriage during letter feed operations, said escapement devices including a feed dog, a dog rocker to which said dog is rigidly secured, and a rack; a spring; means by which said spring is rendered effective to absorb the shock incidental to letter feed movements of the carriage; and means for limiting the flexion of said spring.

14. In a typewriting machine, the combination of a power driven carriage, escapement devices, a spring separate from said escapement devices, means whereby said spring is flexed and thereby arrests the letter feed movements of the carriage after the said escapement devices have been brought into engagement to arrest the carriage, and means for limiting a flexing of the spring when undue pressure is exerted upon the carriage.

15. In a typewriting machine, the combination of a power driven carriage; escapement devices therefor including a holding dog, and a rack, one of said parts being mounted for bodily movement after they are engaged to arrest the carriage; a spring

separate from said movably mounted part and operative to resist the movement thereof during the letter feed movements of the carriage and thus absorb the shock at the termination of the letter feed movements of the carriage; and means whereby a positive resistance is offered to prevent an undue flexure of the spring when undue pressure is exerted on the carriage.

16. In a typewriting machine, the combination of a power driven carriage; escapement devices including an escapement rack and an escapement dog; a pivoted and sliding dog rocker, a spring to resist the sliding movement of the dog rocker, and means whereby a positive resistance is offered to the sliding movement of the dog rocker when undue pressure is exerted on the carriage.

17. In a typewriting machine, the combination of a power driven carriage, an escapement rack, feed dogs cooperative therewith, a pivoted dog rocker which is likewise mounted for movement in unison with the carriage, a spring which resists the movement of the dog rocker in unison with the carriage, and a stop for positively limiting the movement of the dog rocker in unison with the carriage when undue pressure is exerted on the carriage.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 10th day of March, A. D. 1910.

ARTHUR W. SMITH.

Witnesses:

CHARLES E. SMITH.  
E. M. WELLS.