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PATENTED AUG. 25. 1908.

E. E. BARNEY & H. H. STEELE.
TYPE WRITING MACHINE.

APPLICATION FILED MAY 27, 1907.

4 SHEETS—SHEET 1.

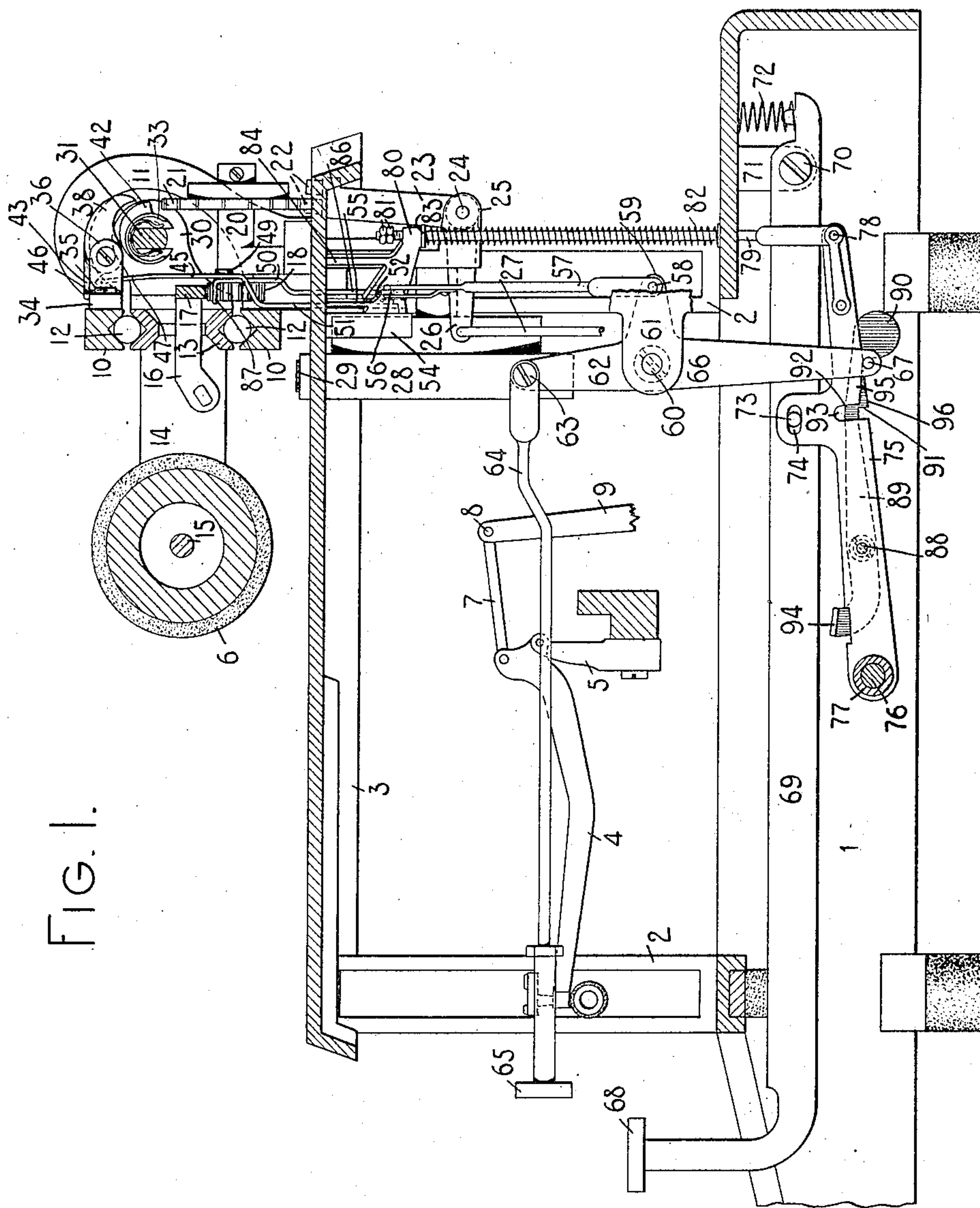


FIG. 1.

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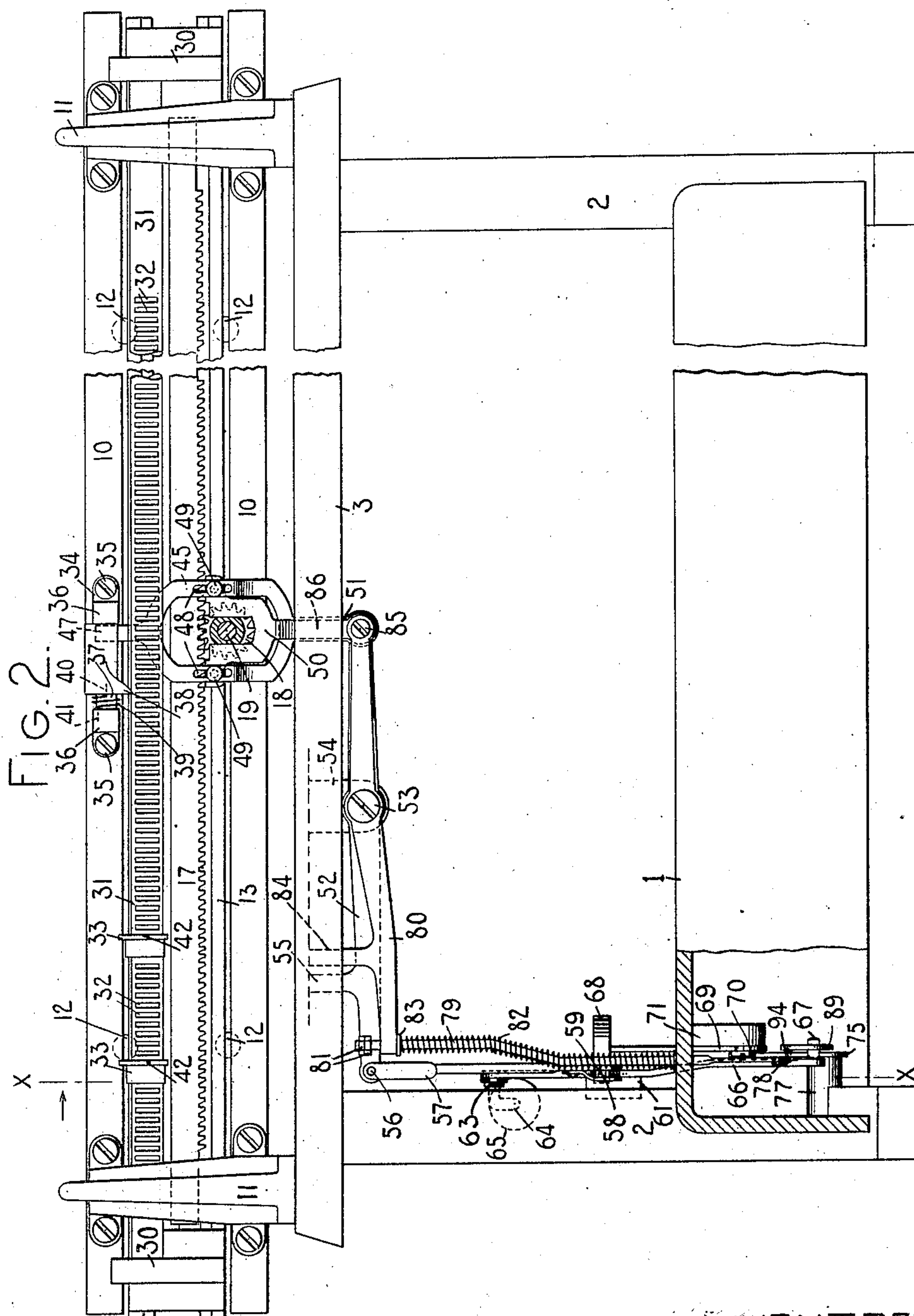
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4 SHEETS—SHEET 2..



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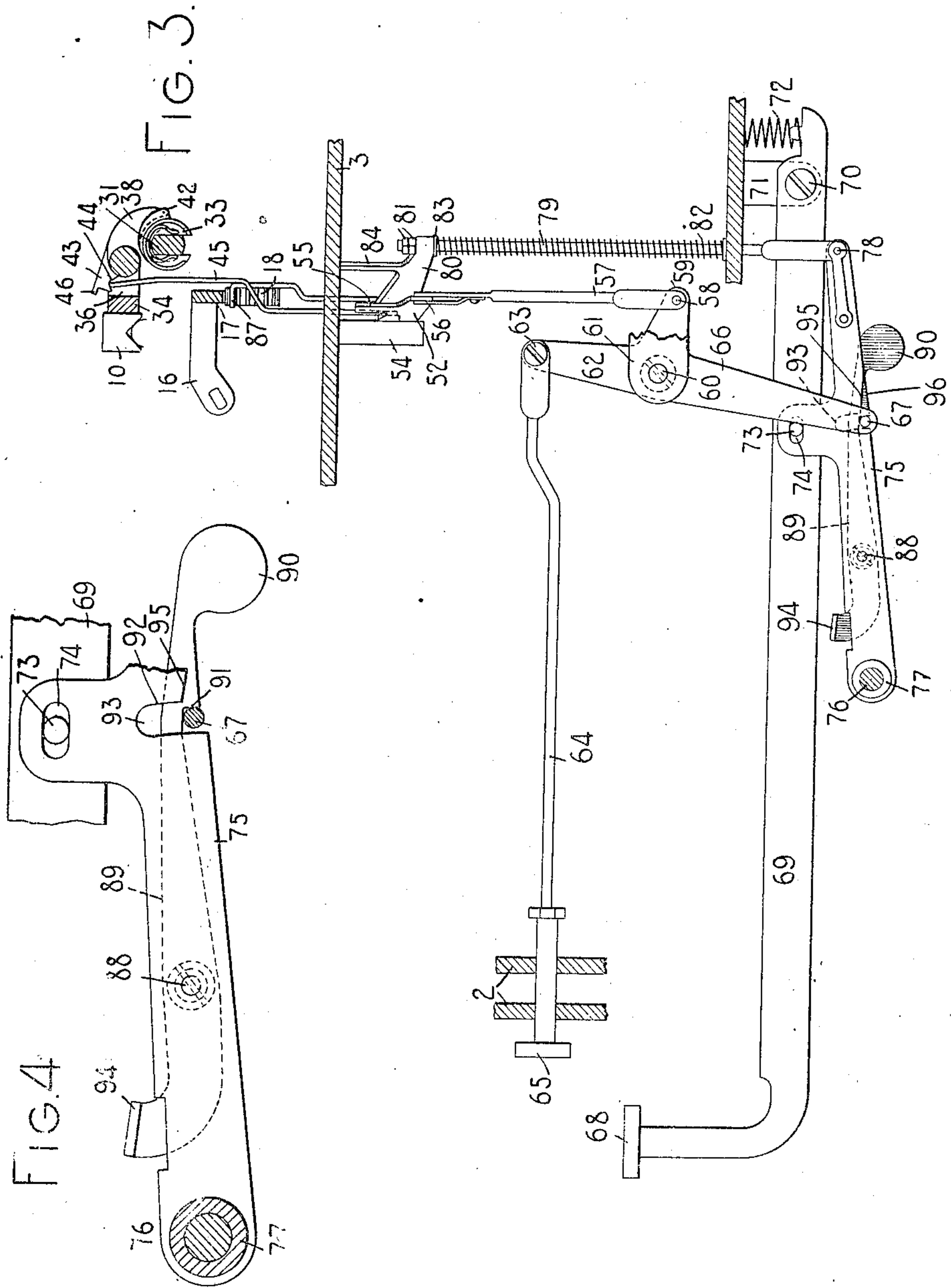
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4 SHEETS—SHEET 3



WITNESSES.

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4 SHEETS—SHEET 4.

FIG. 5.

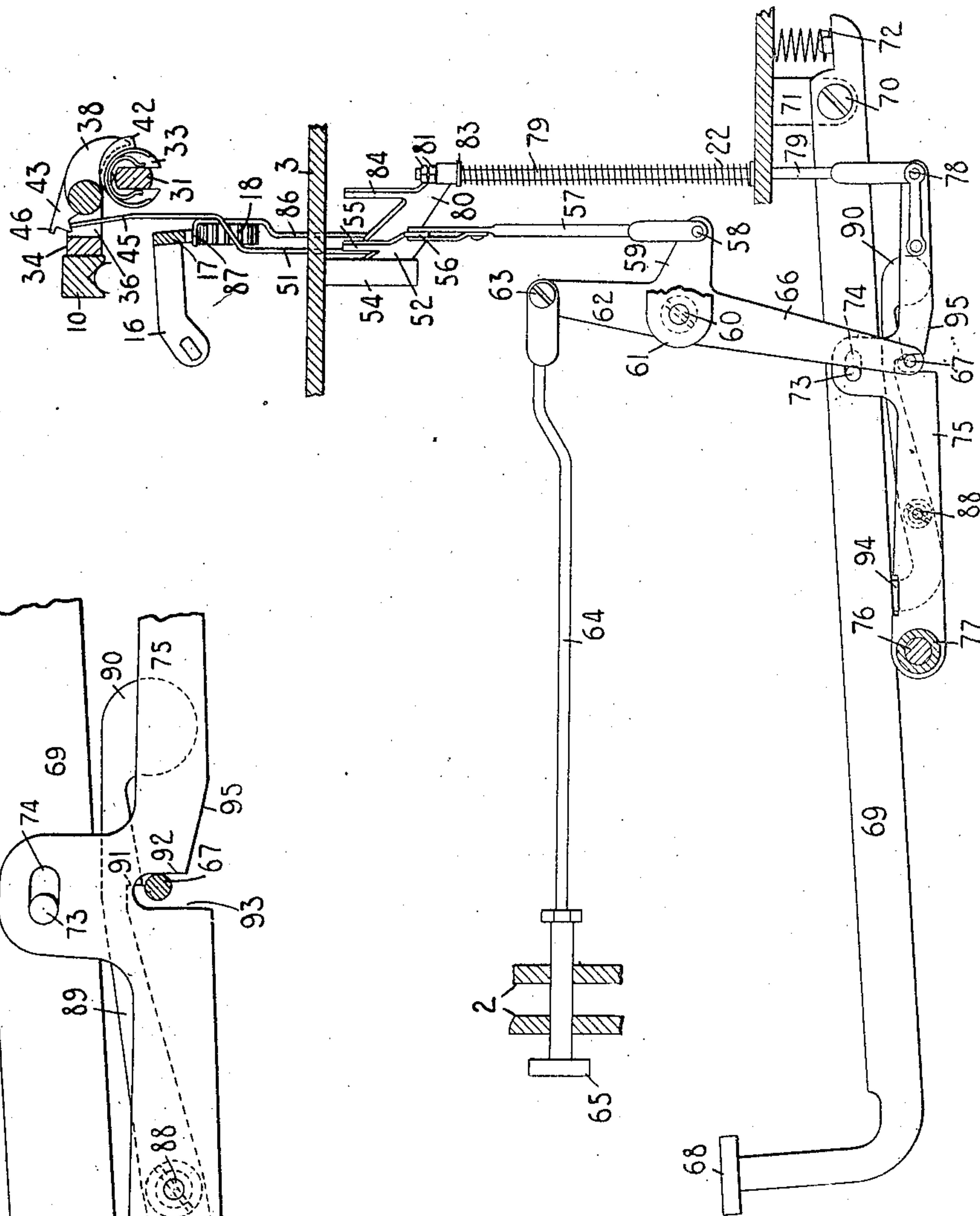
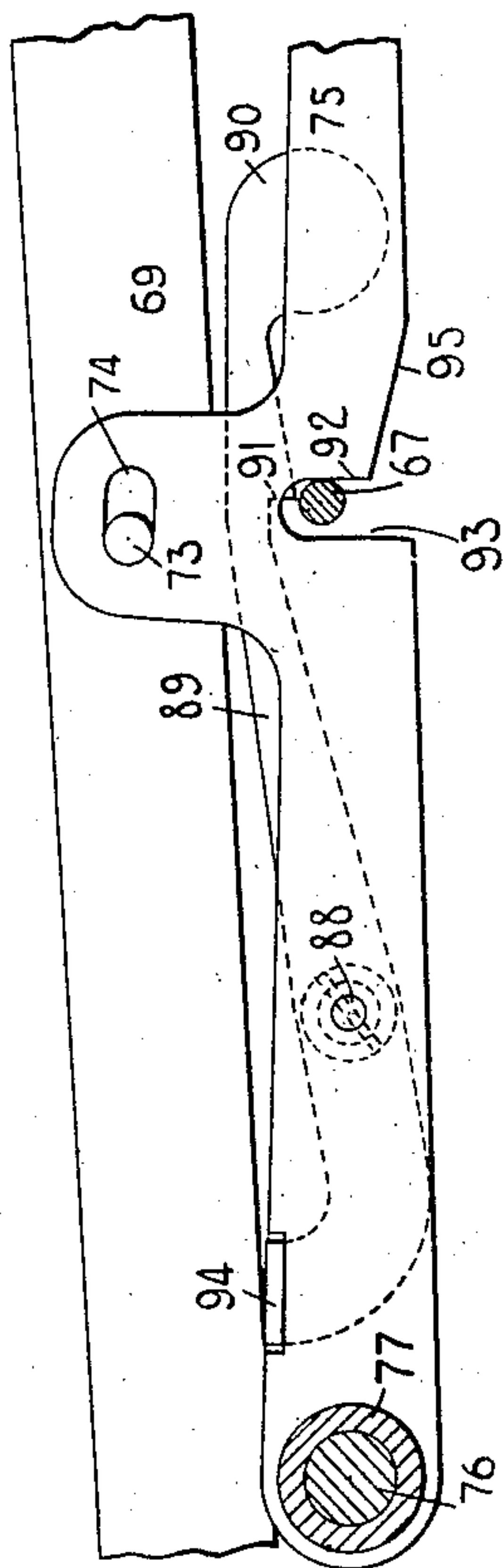


FIG. 6.



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UNITED STATES PATENT OFFICE.

EDWIN E. BARNEY AND HERBERT H. STEELE, OF SYRACUSE, NEW YORK, ASSIGNORS TO THE
MONARCH TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW
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TYPE-WRITING MACHINE.

No. 896,791.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed May 27, 1907. Serial No. 375,982.

To all whom it may concern:

Be it known that we, EDWIN E. BARNEY and HERBERT H. STEELE, citizens of the United States, and residents of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

Our invention relates to typewriting machines and more particularly to tabulating mechanism.

One of the objects of our invention is to provide means separate from the tabulating mechanism for effecting a release of the carriage and for insuring accuracy in the operation.

Another object of our invention is to provide means for automatically locking tabulating stops in coöperative relation.

To the above and other ends which will hereinafter appear, our invention consists in the features of construction, arrangements of parts and combinations of devices 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 different views, Figure 1 is a vertical front to rear sectional view of one form of typewriting machine with the devices of our invention shown applied thereto, the section being taken on the line $x-x$ of Fig. 2 and looking in the direction of the arrow at said line. In this view parts are omitted and parts are broken away. Fig. 2 is a rear elevation of the same with parts broken away and parts omitted. Fig. 3 is a fragmentary side elevation of a tabulating mechanism, carriage releasing mechanism and associated parts, the view showing the disposition of the parts as they appear when the tabulator key is actuated. Fig. 4 is an enlarged detail fragmentary side elevation of some of the parts shown in Fig. 3 and as they appear in said figure. Fig. 5 is a view corresponding to Fig. 3 except that the parts are shown as they are disposed when the release key is depressed after the tabulator key has been actuated. Fig. 6 is an enlarged detail fragmentary side elevation of some of the parts shown in Fig. 5 and as they appear in that figure.

We have shown our invention in connection with a Monarch machine, though it

should be understood that the devices of our invention may be applied to other styles of writing machines.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. Type bars 4 are pivoted to hangers 5 to swing upwardly and rearwardly to strike against the front face of a platen 6. The type bars are segmentally arranged and each bar is connected to a pull link 7, the rear end of which is pivoted at 8 to an upright sub-lever 9 connected in the usual manner to an associated printing key (not shown). Fixed carriage rails 10 are secured to yoke-like brackets 11 which are attached to the top plate of the machine. These fixed rails are grooved on oppositely disposed faces for coöperation with anti-friction balls 12 which are likewise received in oppositely disposed grooved faces in a rear carriage bar 13.

The carriage comprises the bar 13 and end plates or arms 14 provided with bearings to receive a platen shaft 15 on which the platen 6 is mounted. Arms 16 are pivoted to the end bars of the carriage and are connected at their rear ends to a feed rack 17 which meshes with a feed pinion 18 secured to the forward end of a shaft 19 which turns in a bearing 20 secured to the top plate of the machine. The shaft 19 is operatively connected at its rear end to an escapement wheel 21 by the usual pawl and ratchet mechanism (not shown). The escapement wheel coöperates with feed dogs 22 carried by a dog rocker 23 pivoted at 24 to a depending bracket 25 secured to the top plate of the machine. The dog rocker has a forwardly projecting arm 26 to which the upper end of a link 27 is connected, the lower end of said link being connected in the usual manner to the universal bar frame (not shown) so that each actuation of a printing key is effective to actuate the dog rocker to afford a letter space movement of the carriage in the direction of the feed under the control of a spring drum 28 connected to the carriage by a strap or band 29. The rear cross bar of the carriage is provided with rearwardly extending bracket arms 30 near each end thereof, said bracket arms being provided with bearings for a rock shaft or column stop rod 31. This stop rod is slotted on opposite sides thereof as indicated at 32 for coöperation with bifurcated adjustable col-

umn stops 33 which may be attached to the column stop rod at any point in the length thereof. The upper fixed rail 10 has a bracket 34 secured thereto by screws 35.

5 Rearwardly projecting arms 36 project from the bracket and are perforated to form bearing openings for the reception of a short rock shaft 37 to which a tabulator stop 38 is secured or forms a part. A coiled spring 10 39 surrounds the shaft 37 and is secured at one end 40 to the stop 38 and at its opposite end 41 to one of the bracket arms 36. The pressure of this spring is exerted to normally maintain the stop 38 out of the path of the 15 stop portions 42 of the cooperating column stops 33 as shown in Fig. 1. The stop 38 is provided with a tail piece 43 which extends on the opposite side of the rock shaft from the stop 38 and is notched at 44 for coöperation with an actuating device 45. A finger 20 46 projects forwardly from the stop 38 and in the normal position thereof is adapted to bear upon the bracket 34 as shown in Fig. 1 to arrest the tabulator stop 38 in its normal position. The actuating device 45, as shown 25 in Fig. 2, comprises a frame-like member with an opening in the center thereof through which the feed pinion 18 and bearing 20 extend, the upper end of the member 45 terminating in a finger 47 which directly co-acts with the notch 44 in the tail-piece 43 of the tabulator stop. Each side arm of the 30 member 45 is slotted at 48 for the reception of a headed pin 49 which is connected to a carriage releasing device 50. The lower stem-like member 51 of the device 45 is pivotally connected to the left-hand end of a lever 52 pivoted at 53 to a bracket 54 35 which extends downwardly from the top plate. The right-hand end portion of the lever 52 is provided with an upwardly extending finger 55 which constitutes a stop that normally bears against the top plate of the machine to limit the movement of the 40 lever and the parts connected thereto in one direction. The right-hand end of the lever 52 is pivotally connected at 56 to a depending link 57, the lower end of which is pivoted at 58 to a rearwardly extending arm 59 of a 50 three-arm lever pivoted at 60 to a bracket 61 secured to the rear right-hand corner post of the machine. An upwardly extending arm 62 of said lever is pivoted at 63 to a forwardly extending actuating link or rod 55 64 which at its forward end extends through openings in the right-hand forward corner post and is provided with a finger piece or button 65. A third or downwardly extending arm 66 of the three-arm lever extends 60 to a point below the printing keys of the machine and the lower end of said lever arm is provided with a laterally projecting abutment or locking pin 67. The construction is such that when the operator pushes the key 65 rearwardly the three-arm lever 59—62—66 will be vibrated to pull down the link 57, rock the lever 52 and elevate the actuating device 45 to turn the tabulating stop 38 on its pivot into the path of the column stops 33.

A release key 68 is connected to the forward end of the release key lever 69 pivoted 70 at 70 to an arm 71 secured to the base of the machine. The lever 69 extends rearwardly of its pivot and coöperates with an expansion spring 72 which bears at one end 75 against the rear end of the key lever 69 and at its other end against the base of the machine in order to restore the release key lever 69 and the parts connected therewith to normal position. A laterally projecting 80 pin 73 projects from the key lever 69 and extends into a slot 74 formed in a sub-lever 75 pivoted at its forward end as at 76 to a laterally projecting stud 77 which extends inwardly from the base of the machine. 85 The rear end of this sub-lever is pivoted at 78 to an upwardly extending link 79 which extends through an opening in the base of the machine and is connected at its upper end to the right-hand end of a carriage release lever 80. The connection between 90 the link 79 and the lever 80 is effected by the upper end of said link passing freely through an opening formed in the lever, nuts 81 being threaded onto the upper end 95 of the link 79 above the lever 80. A coiled spring 82 surrounds the link 79 and bears at its upper end against the washer 83 which surrounds the link and bears against the bottom of the lever 80, the lower end of the 100 spring bearing against the base of the machine. The pressure of this spring is exerted to force the right-hand end of the lever 80 upwardly and to cause the stop or projection 84 thereon to bear against the top plate of 105 the machine and thus maintain the lever 80 and the releasing device 50 connected thereto in their normal positions. The left-hand end of the lever 80 is pivoted at 85 to a depending stem 86 formed on the releasing device 50. The upper end portion of the releasing device is bifurcated as shown in Fig. 2 110 to straddle the shaft 19 and the bearing 20 thereof and is bent forward at the upper ends of the arms of the bifurcated portion as indicated at 87 in Figs. 1, 3 and 5. These portions 87 constitute rack lifting shoes which extend beneath the feed rack of the machine and are adapted to coöperate therewith when 115 the releasing device is elevated, to turn the feed rack around the pivots of the arms thereof in order to disengage the latter from its feed pinion. The sub-lever 75 has pivoted thereto at 88 a gravity latch 89. The rear end of this latch is provided with a 120 weighted portion 90 and a locking shoulder 91 which extends just forward of the rear wall 92 of a locking slot 93 formed in the sub-lever 75. The forward end of the latch 89 extends upwardly and is bent to the right to 130

overlap the sub-lever 75 and to form a contact shoe 94 with which the lower edge of the release lever 69 is adapted to cooperate. The laterally projecting locking pin 67 extends beneath the sub-lever 75 and the locking latch and supports the weighted end of said latch as indicated in Figs. 1 and 2. The contact face 95 at the lower edge of the sub-lever 75 with which the locking pin 67 cooperates is substantially in an arc of which the pivot 60 is a center so that the sub-lever 75 is normally locked against depression by the locking pin 67 but said pin is free to move when the key 65 is actuated from the position shown in Fig. 1 to that indicated in Figs. 3 and 4 where the locking pin registers with the slot 93. This movement of the three-arm lever and locking pin to the position shown in Fig. 3 from the position shown in Fig. 1 is effective to elevate the rear end of the latch by the cooperation of the pin 67 with the cam edge 96 of the latch until the notched portion adjacent to the locking shoulder 91 is reached when the rear end of the latch 89 will drop to the engaging position shown in Figs. 3 and 4. In this position the shoulder 91 engages the rear side of the locking pin and locks the three-arm lever and the parts connected therewith against movement.

It will be observed that the locking shoulder 91 is substantially in an arc of which the pivot 88 is a center and that when the parts are in the locked positions, represented in Fig. 3, the locking pin 67, the pivot 88 and the pivot 76 are substantially in a straight line so that the tendency of the three-arm lever 59—62—66 and the parts connected therewith to move to the normal position is resisted by a dead center pull on the fixed pivot 76. On the other hand, when the parts are in the normal position shown in Fig. 1 a depression of the release key 69 and the parts connected therewith is resisted by the lever 59—62—66 effecting a dead center pull against its fixed pivot 60 so that the release key 68 and the parts connected therewith are normally locked against operation and cannot be moved until the tabulator key 65 is actuated. When the tabulator key is actuated, the tabulator stop 38 will be moved into cooperative relation with one of the column stops 33 and the parts will be locked in the operative position by the gravity latch 89. The act of operating the tabulating mechanism is effective to move the locking pin into register with the slot 93, thus automatically releasing the release key 68, the sub-lever 75 and the parts controlled thereby so that the release key may at this time be depressed. The effect of depressing the release key is to depress the rear end of the sub-lever, thus actuating the carriage releasing device and allowing the carriage to be moved by its spring drum until one of the

column stops is brought into contact with the tabulator stop 38. The first portion of the depression of the release key lever 69 is effective to bring the lower edge thereof into contact with the shoe 94 on the locking latch and to turn said latch on its pivot 88 out of locking engagement with the locking pin 67 as shown in Figs. 5 and 6. The locking pin will be freed from the latch at the full depression of the release key 68 and will move when released from the locking shoulder 91 into engagement with the contact wall 92 of the slot in the sub-lever 75 as shown in Fig. 6, so that when the carriage release lever 68 is released the pin 67 can not be again engaged by the locking latch and the parts will be restored to the normal position shown in Fig. 1. When the parts have been restored to normal position the locking pin becomes again effective to prevent an actuation of the carriage releasing mechanism. It will be understood that the release lever or sub-lever 75 extends in a direction at substantially right angles to the tabulator stop actuating lever 59—62—66, so that the pivot of each lever is effective to resist the movement of the other lever, and that each of said levers is effective to lock the other against operation, and that an actuation of one lever is effective to release the other.

The mechanism described assures the correct operation of the parts and assures the proper interpositioning of the stop before the carriage can be released.

In the operation of the devices, the tabulator key 65 is first pushed inwardly thus automatically releasing the carriage releasing mechanism from locking engagement and locking the projected tabulator stop 38 in cooperative relation with one of the column stops; that is to say, in a position where the stop 38 is in the path of the column stops and is operative to co-act with one of them when the carriage is released. The release key 68 is then depressed, thereby releasing the carriage and affording a movement thereof until one of the column stops is brought into engagement with the tabulator stop 38. When pressure on the release key 68 is released the tabulator stop 38 will be automatically released from its locked position and the parts will be restored to normal position when the release key will be automatically locked until the tabulating key is again actuated.

From the foregoing description it will be understood that the locking of the stops in cooperative relation is effected independently of and is not dependent upon pressure maintained upon the finger key of the release, and that the locking of the release is effected independently of and is not dependent on pressure of the finger maintained on the key of the tabulator and that the release key cannot be actuated until the tabulator is actuated.

For the purpose of our present invention the character of the tabulating mechanism employed is immaterial and from certain aspects of the invention some features of the invention may be employed without others.

Various changes may be made without departing from the spirit and scope of our invention.

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

1. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, key actuated tabulating mechanism including coöperative stops, means for locking said stops in coöperative relation, key actuated means for releasing the carriage from its escapement mechanism, and means for locking the carriage releasing mechanism against actuation until the tabulating means are actuated, the locking in each case being effected independently of pressure maintained on the key of the other means.

2. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, key actuated tabulating mechanism including coöperative stops, means for locking said stops in coöperative relation, key actuated means for releasing the carriage from its escapement mechanism, means for locking the carriage releasing mechanism against actuation until the tabulating mechanism is actuated, and means under control of the carriage releasing means for automatically releasing the means for locking said stops in coöperative relation, the locking in each case being effected independently of pressure maintained on the key of the other means.

3. In a typewriting machine, the combination of a carriage, escapement mechanism, a carriage releasing device, a release key independent of the printing keys and space key of the machine and connected with said carriage releasing device, means for normally locking said key against actuation, key actuated tabulating mechanism including coöperative tabulating stops, locking means for automatically locking said stops in coöperative relation, and means controlled by said release key for automatically releasing said locking means, the locking in each case being effected independently of pressure on the key of the other means.

4. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a key controlled tabulator lever connected with certain of said stops, a locking abutment carried by said lever, and a key controlled releasing lever connected with said carriage releasing device and normally locked against actuation by said locking abutment but releasable therefrom by an actuation of said tabulator lever, the locking in each case being effected independently of pressure on the key of the other means.

5. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a key controlled tabulator lever connected with certain of said stops, a locking abutment carried by said lever, a key controlled releasing lever connected with said carriage releasing device and normally locked against actuation by said locking abutment but releasable therefrom by an actuation of said tabulator lever, and means for locking said stops in coöperative relation and for automatically releasing the stops from such relation after a release of the carriage is effected, the locking in each case being effected independently of pressure on the key of the other means.

6. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a key controlled tabulator lever connected with certain of said stops, a key controlled releasing lever connected with said carriage releasing device, a pin on one of said levers, and a slot in the other of said levers, said pin and slot being normally out of register so that one lever locks the other out of operation, the locking in each case being effected independently of pressure on the key of the other means.

7. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a key controlled tabulator lever connected with certain of said stops, a key controlled releasing lever connected with said carriage releasing device, and means associated with said levers for enabling each lever to lock the other, the locking in each case being effected independently of pressure on the key of the other means.

8. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a key controlled tabulator lever connected with certain of said stops, a key controlled releasing lever connected with said carriage releasing device, and means associated with said levers for enabling each lever to lock the other and for releasing each lever by an actuation of the other, the locking in each case being effected independently of pressure on the key of the other means.

9. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a key controlled tabulator lever connected with certain of said stops, a key controlled releasing lever connected with said carriage releasing device, and means associated with said levers for enabling each lever to lock the other and the parts controlled thereby and for automatically effecting a release of each lever and the parts controlled thereby by an actuation of the other lever,

the locking in each case being effected independently of pressure on the key of the other means.

10. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a tabulator key for controlling the relation between said stops, a releasing key controlling said carriage releasing device, and means for automatically locking each key against actuation, the locking in each case being effected independently of pressure on the key of the other means.

11. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a tabulator key for controlling the relation between said stops, a releasing key controlling said carriage releasing device, and means for automatically locking each key and the parts controlled thereby against actuation and for automatically releasing each key and the parts controlled thereby by an actuation of the other key, the locking in each case being effected independently of pressure on the key of the other means.

12. In a typewriting machine, the combination of a carriage, escapement mechanism therefor, a carriage releasing device, tabulating stops, a key controlled tabulator lever connected with certain of said stops, a key controlled releasing lever connected with said carriage releasing device, a locking abutment carried by one of said levers, and a notch formed in the other of said levers, said abutment and notch being normally out of register to cause one lever to lock the other lever against operation until said abutment and notch are brought into register, the locking in each case being effected independently of pressure on the key of the other means.

13. In a typewriting machine, the combination of a carriage, escapement mechanism, a releasing device for releasing the carriage from its escapement mechanism, a release key independent of the printing keys and the space key of the machine for actuating said releasing device, tabulating stops, a tabulator key for controlling the relation between said tabulating stops, means for automatically locking said stops in coöperative relation, such locking being effected independently of pressure on the release key and means operative by said release key for releasing the locked stop.

14. In a typewriting machine, the combination of a carriage, escapement mechanism, a releasing device for releasing the carriage from its escapement mechanism, a release key independent of the printing keys and the space key of the machine for actuating said releasing device, tabulating stops, a tabulator key for controlling the relation between said tabulating stops, and an automatically operating latch for locking said tabulating

stops, such locking being effected independently of pressure on the release key, said latch being unlocked by said release key.

15. In a typewriting machine, the combination of a carriage, escapement mechanism, a releasing device for releasing the carriage from its escapement mechanism, a release key for actuating said releasing device, tabulating stops, a tabulator key for controlling the relation between said tabulating stops, and an automatically operating gravity latch for locking said tabulating stops in coöperative relation, such locking being effected independently of pressure on the release key, said latch being movable by said release key against gravity to the unlocking position.

16. In a typewriting machine, the combination of a carriage, a carriage releasing device, a key actuated releasing lever having a slot therein, a connection from said releasing lever to said releasing device, tabulator stops, a key actuated tabulator lever, a locking pin carried by said tabulator lever and coöperative with said releasing lever and normally out of register with the slot therein, connections from said tabulator lever to one of said tabulator stops, and a latch pivoted to said releasing lever and coöperative with said locking pin.

17. In a typewriting machine, the combination of a carriage, a carriage releasing device, a key actuated releasing lever, a sub-lever controlled by said releasing lever and having a slot therein, a connection from said sub-lever to said releasing device, tabulator stops, a key actuated tabulator lever, a locking pin carried by said tabulator lever and coöperative with said sub-lever and normally out of register with the slot therein, connections from said tabulator lever to one of said tabulator stops, and a latch pivoted to said sub-lever and coöperative with said locking pin.

18. In a typewriting machine, the combination of a carriage, key controlled tabulating mechanism including a tabulating lever, separately key controlled carriage releasing mechanism including a releasing lever that extends at substantially right angles to the tabulating lever, and means associated with said levers to enable one lever to lock the other, the locking of the tabulating lever being effected independently of pressure maintained on the key of the releasing mechanism and the locking of the release lever being effected independently of pressure maintained on the key of the tabulating mechanism.

19. In a typewriting machine, the combination of a carriage, key controlled tabulating mechanism including a tabulating lever, separately key controlled carriage releasing mechanism including a releasing lever that extends at substantially right angles to the tabulating lever, and means associated with

- said levers to enable one lever to lock the other and to effect a release of one by an actuation of the other, the locking of the tabulating lever being effected independently of pressure maintained on the key of the releasing mechanism and the locking of the release lever being effected independently of pressure maintained on the key of the tabulating mechanism.
- 10 20. In a typewriting machine, the combination of a carriage, key controlled tabulating mechanism including a tabulating lever, separately key controlled carriage releasing mechanism including a releasing lever that
- 15 extends at substantially right angles to the tabulating lever, and means associated with said levers, so as to effect a dead center pull of each lever on the pivot of the other and thus enable each lever to lock the other.
- 20 21. In a typewriting machine, the combi-

nation of a carriage, key controlled tabulating mechanism including a tabulating lever, separately key controlled carriage releasing mechanism including a releasing lever that extends at substantially right angles to said tabulating lever, and means associated with said levers so as to effect a dead center pull of each lever on the pivot of the other and thus enable each lever to lock the other and for automatically releasing each lever by an actuation of the other.

Signed at Syracuse, in the county of Onondaga, and State of New York, this twenty-third day of May A. D. 1907.

EDWIN E. BARNEY.
HERBERT H. STEELE.

Witnesses:

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JOHN H. MAMEL.