

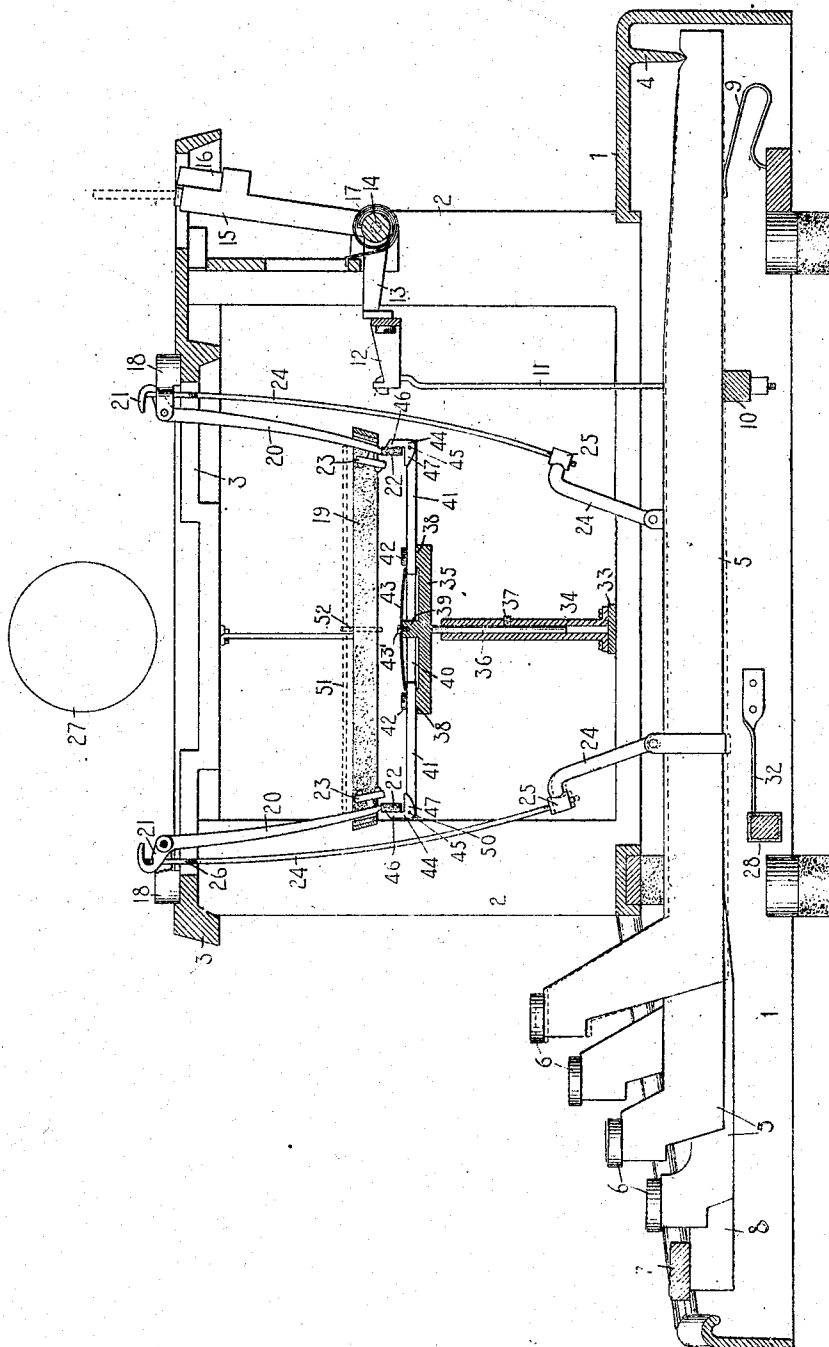
942,109.

A. G. SNYDER.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 25, 1903.

Patented Dec. 7, 1909.

3 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

H. V. Donovan
E. M. Wells

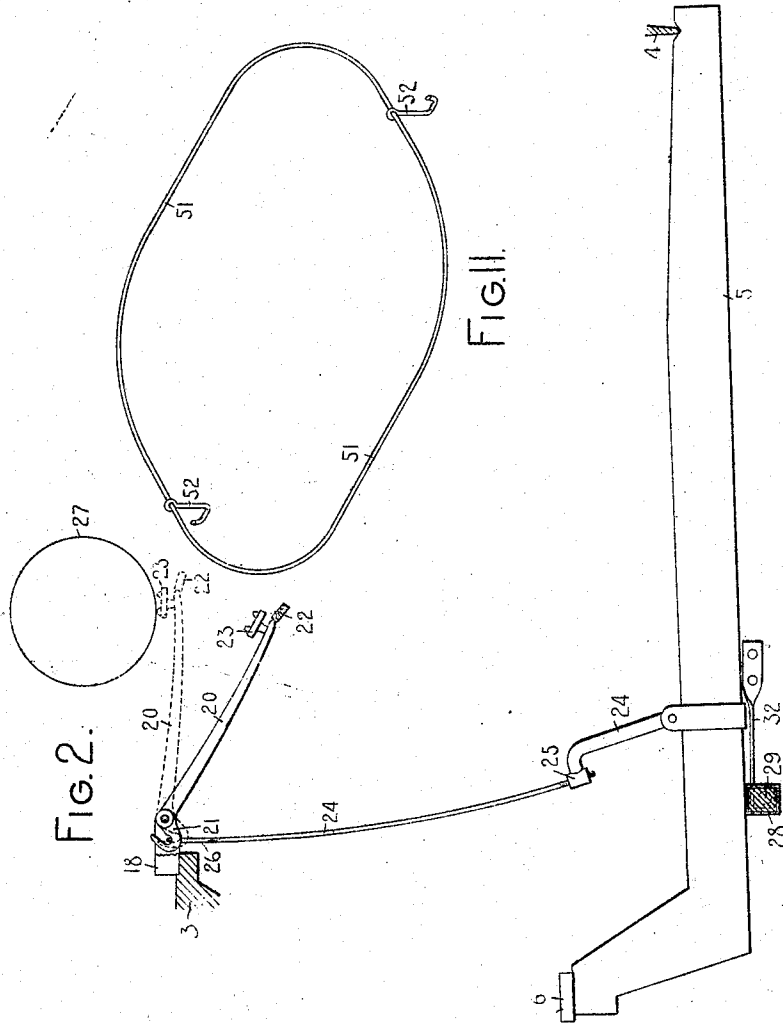
INVENTOR.

Augustus G. Snyder
by *Jacob Feltel*
HIS ATTORNEY

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3 SHEETS—SHEET 2.



WITNESSES.

R. V. Donovan.

E. M. Wells

INVENTOR.

Augustus G. Snyder

by Jacob Felbel

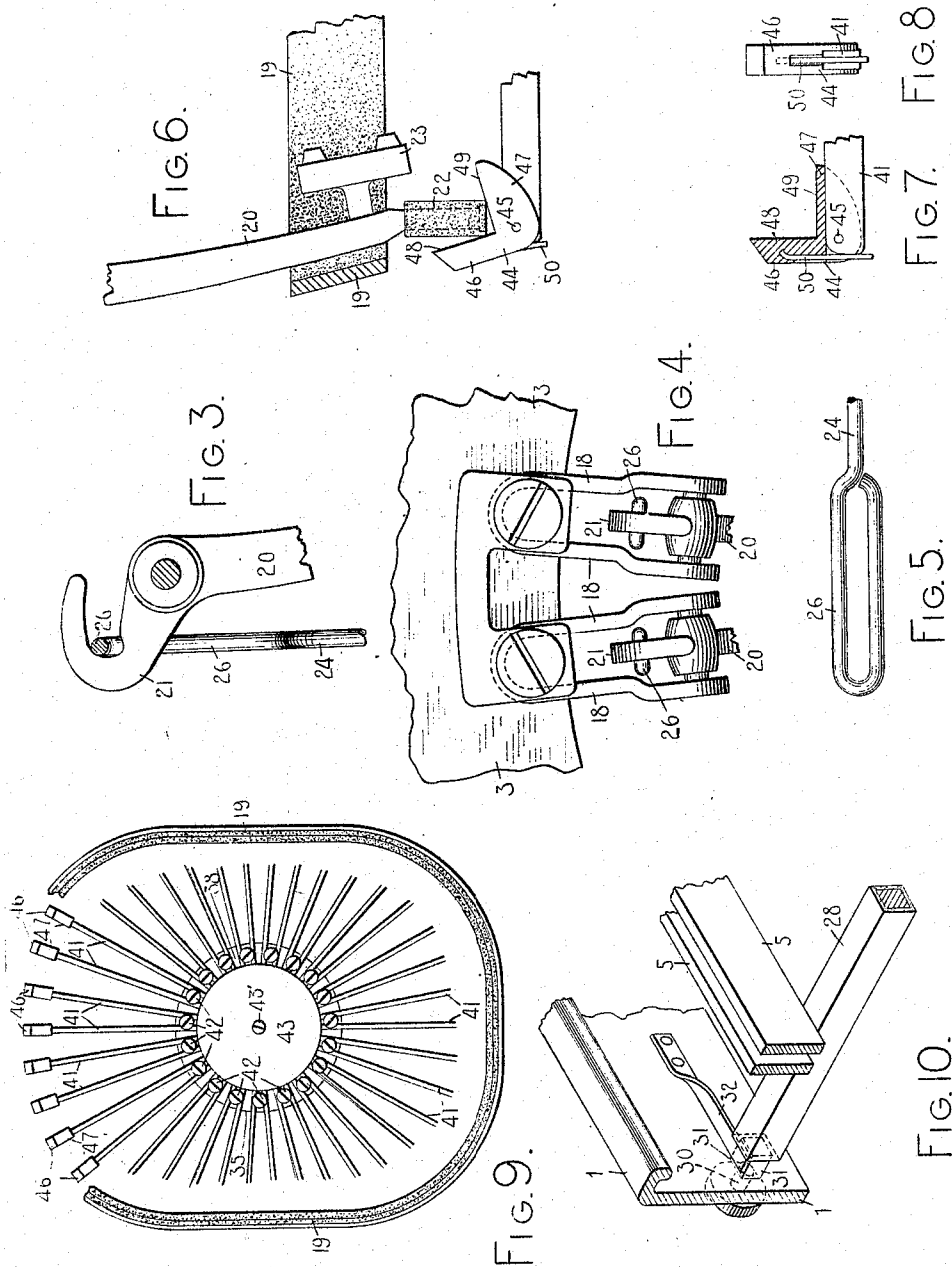
HIS ATTORNEY

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3 SHEETS—SHEET 3.



WITNESSES.

K. V. Donovan.

G. M. Wells

INVENTOR:

Augustus G. Snyder

by Jacob Feller

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

AUGUSTUS G. SNYDER, OF ILION, NEW YORK, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

942,109.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed March 25, 1903. Serial No. 149,580.

To all whom it may concern:

Be it known that I, AUGUSTUS G. SNYDER, citizen of the United States, and resident of Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in typewriting machines which comprise pivoted type-bars, and key-actuated mechanism connected therewith and operative to swing the type-bars on their pivots from their normal to their printing positions, the invention being applicable generally to both understrike machines and to such visible writing machines as are commonly called front strike machines.

Several desirable objects are effected by the invention among these being: first, a key action operative with an extremely light pressure at the beginning of a stroke; second, a short and adjustable stroke of the finger-keys; third, a quick action of the type-bars at the end of their printing movements both in advancing to and receding from the ribbon or paper; fourth, a type-bar action free from liability to interference between the type-bars such as is sometimes caused by a rebound of the type-bars; fifth, readily adjustable connections between the type-bars and key-levers; and sixth, means for locking the type-bars in their normal positions.

The invention consists of various features of construction, combinations and arrangements of parts, all of which are hereinafter fully described and particularly defined in the appended claims.

In the accompanying drawings, in which like reference numerals designate like parts in different views, Figure 1 is a vertical section from front to rear of the frame of an understrike typewriting machine, an outline of the platen, and a side and sectional elevation of mechanism embodying the invention; Fig. 2, a side and sectional elevation of a type-bar and actuating mechanism connected therewith, and an outline of the platen; Fig. 3, a side elevation and vertical section on an enlarged scale of a fragment of a type-bar including its pivoted end, and of an actuating link connected with the type-bar; Fig. 4, an enlarged plan of a fragment of the top of the frame of the

machine with type-bar hangers attached thereto, and the pivoted ends of the type-bars mounted in the hangers; Fig. 5, a side view of an enlarged loop of which a section and plan are shown in Figs. 3 and 4 respectively, this loop being a portion of the above-mentioned actuating link; Fig. 6, an enlarged fragment comprising portions of a type-bar and the basket, and means to prevent or oppose a rebound of the type-bar; Fig. 7, a sectional elevation of the pivoted device shown in Fig. 6 below the type-bar; Fig. 8, an end view of this device viewed from the left of Fig. 7; Fig. 9, a broken plan of the basket and a support with radial arms to which devices like that shown in Figs. 7 and 8 are secured, a vertical section of this support being also shown in Fig. 1; Fig. 10, a sectional perspective of an adjustable stop composed of a bar and means for securing it in different positions, and of fragments of key-levers on which the bar is operative to limit the depression of the key-levers; and Fig. 11, a perspective of a locking device to secure the type-bars in their normal positions.

The invention is shown applied to a machine whose frame is that of a well-known No. 6 Remington, and whose mechanism is the same in construction and operation as that of the Remington, except with respect to those particular parts and combinations of parts in which the invention claimed herein is embodied. It is therefore unnecessary to describe the whole machine in detail, or to describe the known parts of the mechanism shown otherwise than by naming them and generally stating their functions.

Besides the frame, comprising the base 1, posts 2, and top-plate 3, there are the fulcrum bar 4 on which the key-levers act, the key-levers 5 to actuate links connected with the type-bars, the finger-keys 6 to which pressure is applied to depress the key-levers, the space-bar 7 with a supporting lever 8 at each side of the machine, restoring springs like the spring 9 acting upward on the key-levers and space-bar levers, the universal bar 10, links 11, transverse bar 12, arm 13, rock-shaft 14, and feed-dogs 15 and 16, movable by the key-levers and space-bar levers and constituting a portion of the carriage-feed mechanism, the restoring spring 17 acting on the rock-

shaft 14, the type-bar hangers 18 attached to the top 3, and the basket 19, all of which parts are embodied in the Remington machine in substantially the same forms and relations to one another in which they are here shown.

The type-bars 20 are like the common Remington type-bars between their pivoted ends and the type-blocks, but on their pivoted ends are hook-arms 21, and at their other ends they are provided with extensions 22 which protrude from behind the type-blocks 23. The metal surfaces of these extensions are preferably covered with some soft material, such for example, as rubber or felt. The key-levers 5 are connected by the links 24 with the arms 21 of the type-bars. These links are pivoted at their lower ends to the key-levers and comprise screw-couplings 25 by means of which the links may be readily shortened or lengthened. At the upper end of each link is a loop 26 formed by bending the wire of the link into the shape shown in Fig. 5, and these loops loosely surround the arms 21 on which they are confined between the hooks of the arms and the hubs of the type-bars. The links are so adjusted that when the key-levers are in their normal positions there is a space between the top of each loop and that portion of the edge of the arm which is covered by the loop. Hence when a finger-key is depressed the key-lever is moved a short distance, or to the extent indicated by dotted lines in Fig. 1 for example, before the link acts on the arm 21 to impart motion to the type-bar. The movement of the key-lever to this extent is produced with a very light pressure or blow on the finger-key, because the type-bar does not then offer any resistance to the link. With the further depression of the finger-key motion is imparted to the type-bar to swing it toward its printing position, by the action of the top of the loop on the arm 21, which action continues until the key-lever reaches the limit of its movement. The extent of the lost-motion which occurs before the type-bar is actuated may be varied by lengthening or shortening the link. If the type-bar is swung to or nearly to its printing position and there held, the link may be readily disconnected from the arm 21 by raising the loop 26 and withdrawing it from the arm over the hook, the loop being long enough to allow it to be thus separated from the arm. The link thus freed from the arm is adjustable to the length desired by turning the upper portion of the link in the socket 60 of the coupling 25. By means of this lost-motion connection, it will be seen that the inertia of the key-lever and that of the type-bar are overcome separately instead of both at once, and that the momentum acquired by the key-lever, during its movement to the

dotted line position represented in Fig. 1, supplements and coacts with the pressure on the finger-key in starting the type-bar on its printing movement. Consequently the type-bar is movable from its normal to its printing position with the application to the finger-key of but little more force than is required to overcome the inertia of the key-lever and the resistance of the restoring springs of the key-lever and universal bar, and with the slight increase of the force naturally afforded by the weight of the hand as the key is depressed, so that the machine is operative with a very light touch.

The loop 26 extends below the arm 21 of the type-bar far enough to render the type-bar movable by its momentum to complete its printing movement after the link has ceased to act on the type-bar. During this portion of the movement of the type-bar the arm 21 travels downward in the loop, the relations of the loop and arm, at the end of the action of the link on the arm, being shown by full lines in Fig. 2, and their relations when the type-bar is in its printing position being shown by the full lines representing the loop and the dotted lines representing the type-bar and arm. The distance of the type-block 23 from the platen 27, at the end of the action of the link on the type-bar, is regulated by means of a stop arranged to limit the movement of the key-levers as the finger-keys are depressed. The stop which is herein shown, and which is thus operative on the key-levers, is a bar 28, pivoted at its ends to the sides of the base 1 of the frame on an axis 29, from which the lateral faces of the bar are unequally distant as appears by Fig. 2, the bar being movable on its axis to turn upward any of its four lateral faces, and being provided with means for securing it in any of its four proper positions. On one of the pivots 30 of the bar, which extend through the sides of the base, is a finger-piece with which to turn the bar. At one end of the bar are formed on it flat surfaces 31, parallel to the lateral faces of the bar, and on the inner face of the base is a spring 32 which bears on the upturned surface 31 to keep the bar in the desired position. This bar, or adjustable stop, is so arranged with relation to the key-levers that these levers are brought by the depression of the finger-keys into contact with the top of the bar, so the length of the stroke, or dip, of a key depends upon which face of the bar is upward, and may be easily changed by turning the bar on its axis and securing it in another position. The dip may thus be rendered very short if desired. Whenever the dip is changed the links are rendered operative on the type-bars to a greater or less extent, and the type-bars are accordingly movable to a greater or less extent by their momentum to complete their printing move-

ments after the links cease to act upon them. Such momentum is easily imparted to the type-bars as to produce a quick action as they complete their printing movements, and an instantaneous recoil from the ribbon or paper.

It is desirable to combine with the type-bars and the actuating mechanism described, means especially designed to prevent or oppose a rebound of the type-bars, such resistance as that which the key-levers and links of a common machine like the Remington afford to the rebound of the type-bars not being afforded by the key-levers and links herein shown, in consequence of the lost-motion connections between these key-levers and the type-bars. The means devised for the purpose specified consists preferably of the extensions 22 of the type-bars, and the apparatus shown in Fig. 1 supported on a bar 33, which extends through the frame of the machine and is attached at its ends to the sides of the base 1. On this bar is fixed a hollow standard 34, which is directly under the printing point on the platen. A vertically adjustable block 35 is mounted on this standard, the block having a stem 36 which fits in the standard in which is a set screw 37 that is driven against the stem 36 to secure the block in a proper position. The block 35 is provided with a rim 38 and hub 39, between which is an annular recess 40. In the rim 38 are cut slots in which radial arms 41 are secured. The upper edges of these arms are a little above the top of the rim 38, and their inner ends are in the recess 40, and the arms are fastened to the block by screws 42 and a plate 43, the screws 42 being driven into the rim so that their heads press upon the arms, as shown in Figs. 1 and 9, and the plate 43 being attached to the hub 39 by a screw 43' and pressed hard against the arms 41 around its margin. To each of the radial arms 41, close to its outer end, a block 44 is pivoted by a pin 45. Each of these blocks has arms 46 and 47, whose faces 48 and 49 form a reentrant angle of ninety degrees or thereabout, and in the arms 47 of the blocks are recesses in which the radial arms 41 fit, as appears by Figs. 7 and 8, the pivot of each block passing through the sides of the recess in the arm 47 and through the radial arm between them. The weight of the arm 47 of each block is greater than that of the arm 46 and the center of gravity of the block, in the position shown in Fig. 6 as well as in the other or normal position shown in Fig. 7, is inside of, or toward the block 35, from a vertical plane containing the axis of the pin 45, so that if the block is turned to the position shown in Fig. 6 and released it is restored to its normal position by gravity. To supplement this action of gravity on these blocks, each block is pro-

vided with a spring 50, which is secured in a slot in the arm 46 and bears against the end of the radial arm to which the block is pivoted. When the block is turned to the position shown in Fig. 6, the lower end of the spring 50 is forced from the pivot 45 slightly by the rounded end of the radial arm, and the spring exerts a light pressure on the block tending to retard the movement, and then co-acts with gravity in restoring the block to its normal position. These blocks would perform useful functions without the springs 50, but it is regarded as an advantage to supplement the action of gravity on the blocks by means of the springs as described.

When the blocks 44 are in their normal positions the arms 46 are upright, the sides 48 of the reentrant angles being vertical or substantially so and in the paths of the extensions 22 on the type-bars. The extensions normally make contact with the arms 46 as appears by Fig. 1, a little space then being left between the type-bars and the basket. As a type-bar approaches the basket on its return movement, its extension 22 strikes the face 48 of the arm 46 of the block 44 in the path of the extension, and the block is turned by the action thereon of the extension against the forces exerted by gravity and the spring 50 as described, the motion of the type-bar being somewhat retarded by the reaction of the arm 46 on the extension. The block 44 being thus turned, the face 49 of the arm 47 of the block is interposed in the path of the extension and between the extension and the platen, so that if the type-bar rebounds from the basket the extension strikes the face 49 of the arm 47 and the impact counteracts or opposes the rebound of the type-bar. After a block 44 has performed its function as described it is restored to its normal position, and the extension on the type-bar settles against the arm 46, where it remains until the type-bar is again actuated. The soft surfaces of the extensions both render noiseless or nearly so the action of these devices on the blocks 44, and also favorably affect the co-action of the extensions and blocks, since they yield readily to the pressure exerted on them by the faces 48 and 49 of the blocks especially when the type-bars are contiguous to the basket; and when the extensions are compressible at their lower ends between these faces acting on them as indicated by Fig. 6.

Although for the reason above stated the means described for preventing or opposing the rebound of the type-bar is especially useful in combination with the peculiar type-bar actuating mechanism included in this invention, it is obviously applicable to machines in which the type-bars are connected with the key-levers by the ordinary

pivoted links such as the Remington and many other machines contain.

The locking device shown in Fig. 11 consists of a wire ring 51 to which are attached hooks 52. This ring fits snugly between and against the type-bars a little above the basket, as represented by dotted lines in Fig. 1, where it may be secured by engaging the hooks 52 with the lower edge of the basket. The type-bars are locked by it in their normal positions when it is applied to them. This device is useful to help prevent machines from being damaged by transportation, or whenever they are liable to be injured by carelessness in handling them.

Various changes may be made in the mechanism above described without avoiding the spirit of the invention.

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

1. In a typewriting machine, the combination of a pivoted type bar, a key actuated device, an unyielding draw link extending from said key-actuated device to the type bar, a fixed stop operative to prevent the link from actuating the type bar during the latter part of the printing movement of the type bar, and a lost motion link-guiding connection rendering the type bar movable by its momentum to complete its printing action.

2. In a typewriting machine, the combination of a pivoted type bar having an arm on its pivoted end, a key-actuated device, an unyielding draw-link extending from said key-actuated device to the type-bar and comprising a loop engaged with said arm of the type-bar and forming therewith a link guiding connection, and a fixed stop operative to prevent the link from actuating the type-bar during the latter part of the printing movement of the type bar, the arm of the type bar being movable within the loop of the link to allow the type bar to be carried by its momentum to its printing position.

3. In a typewriting machine, the combination of a pivoted type bar, a key lever, an unyielding draw-link extending from the key lever to the type bar, a stop operative on the key-lever to prevent the link from actuating the type-bar during the latter part of the printing movement of the type-bar, and a lost motion link-guiding connection rendering the type-bar movable by its momentum to complete its printing action.

4. In a typewriting machine, the combination of a pivoted type bar having an arm on its pivoted end, a key-lever, an unyielding draw-link extending from the key-lever to the type-bar and comprising a loop engaged with said arm on the type-bar and forming therewith a link-guiding connection, and a stop operative on the key-lever to prevent the link from actuating the type-bar

during the latter part of the printing movement of the type-bar, the arm of the type-bar being movable within the loop of the link to allow the type-bar to be carried by its momentum to its printing position.

5. In a typewriting machine, the combination of a pivoted type-bar, a key-actuated device, an unyielding draw-link extending from said key-actuated device to the type-bar, a stop operative to prevent the link from actuating the type-bar during the latter part of the printing movement of the type-bar, and a lost motion link-guiding connection rendering the key-actuated device movable at the beginning of a stroke while the type bar is at rest, and rendering the type-bar movable by its momentum in the latter part of its printing action.

6. In a typewriting machine, the combination of a pivoted type-bar, a key-actuated device, an unyielding draw-link extending from said key-actuated device to the type-bar, an adjustable stop operative to prevent the link from actuating the type-bar during the latter part of the printing movement of the type-bar, a lost motion connection rendering the key-actuated device movable at the beginning of a stroke while the type bar is at rest, and rendering the type-bar movable by its momentum in the latter part of its printing action, and adjusting means to vary the extent of movement of the key-actuated device before the type bar is actuated.

7. In a typewriting machine, the combination of a pivoted type bar, a key-actuated device, an unyielding draw-link extending from said key-actuated device to the type-bar, a stop operative to prevent the link from actuating the type bar during the latter part of the printing movement of the type-bar, said stop being adjustable in different positions to render its action variable, and a lost motion connection rendering the type-bar movable by its momentum to complete its printing action.

8. In a typewriting machine, the combination with a pivoted type-bar, of mechanism comprising a link connected with the type-bar, a key-actuated device connected with said link, a lost-motion connection rendering the key-actuated device movable a certain distance before the link acts on the type-bar and rendering the type-bar movable by its momentum to complete its printing movement after the link ceases to act on the type-bar, adjusting means to vary the extent of the lost-motion before the type-bar is actuated, and an adjustable stop to variably limit the movement of the key-actuated device.

9. In a typewriting machine, the combination of a pivoted type-bar, a key-lever, an unyielding draw-link extending from the key-lever to the type-bar, a stop operative on the key-lever to prevent the link from actu-

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ating the type-bar during the latter part of the printing movement of the type-bar, said stop being adjustable in different positions to render the depression of the key-lever variable, and a lost motion connection rendering the type-bar movable by its momentum to complete its printing action.

10. In a typewriting machine, the combination with a pivoted type-bar, of mechanism comprising a link connected with the type-bar, a key-lever to which the link is pivoted, a lost-motion connection rendering the key lever movable a certain distance before the type bar is actuated and rendering the type bar movable by its momentum, adjusting means to vary the extent of the lost-motion, and an adjustable stop to variably limit the movement of the key-lever.

11. In a typewriting machine, the combination of a pivoted type-bar, a key-actuated device, an unyielding draw-link extending from said key-actuated device to the type-bar, a stop operative to prevent the link from actuating the type-bar during the latter part of the printing movement of the type-bar, said stop being adjustable in different positions to render its action variable, and a lost-motion connection rendering the key-actuated device movable at the beginning of a stroke while the type bar is at rest, and rendering the type-bar movable by its momentum in the latter part of its printing action.

12. In a typewriting machine, the combination with a pivoted type-bar, of mechanism comprising a link connected with the type-bar, a key-lever to which the link is pivoted, a lost-motion connection rendering the key-lever movable a certain distance before the link acts on the type-bar and rendering the type-bar movable by its momentum to complete its printing movement after the link ceases to act on the type-bar, adjusting means to vary the extent of the lost-motion before the type-bar is actuated, and an adjustable stop to variably limit the depression of the key-lever.

13. In a typewriting machine, the combination of pivoted type-bars, key-actuated devices, draw-links extending from said key-actuated devices to the type-bars, a stop bar operative on said key-actuated devices to prevent the links from actuating the type-bars during the latter part of the printing movements of the type-bars, said stop bar being adjustable in different positions to render its action variable, and lost motion connections rendering the type bars movable by their momentum to complete their printing actions.

14. In a typewriting machine, the combination of pivoted type bars, key-actuated devices, draw-links extending from said key-actuated devices to the type-bars, a stop bar operative on said key-actuated devices to

prevent the links from actuating the type-bars during the latter part of the printing movements of the type bars, said stop bar being mounted on an axis extending lengthwise of the bar and being adjustable to vary its relation to the key-actuated devices, and lost motion connections rendering the type bars movable by their momentum to complete their printing actions.

15. In a typewriting machine, the combination of pivoted type-bars, links connected with the type-bars, key-actuated devices connected with the links, lost-motion connections rendering the type-bars movable by their momentum to complete their printing movements after the links cease to act on the type-bars, and a bar to limit the movement of the key-actuated devices, the bar being adjustable on an axis extending through the bar lengthwise and lying at different distances from different portions of the lateral surface of the bar, to vary its relation to the key-actuated devices.

16. In a typewriting machine, the combination of pivoted type-bars, links connected with the type-bars, key-actuated devices connected with the links, lost-motion connections rendering the type-bars movable by their momentum to complete their printing movements after the links cease to act on the type-bars, and a bar to limit the movement of the key-actuated devices, the bar having flat lateral faces and being adjustable on an axis extending through the bar lengthwise and lying at different distances from the lateral faces thereof, to subject said lateral faces separately to contact with the key-actuated devices.

17. In a typewriting machine, the combination of pivoted type-bars, key-levers, draw links extending from said key-levers to the type-bars, a stop bar secured under the key-levers and limiting the depression thereof to prevent the links from actuating the type bars during the latter part of the printing movements of the type-bars, said stop bar being adjustable to vary its relation to the key-levers, and lost motion connections rendering the type-bars movable by their momentum to complete their printing actions.

18. In a typewriting machine, the combination of pivoted type-bars, key-levers, draw links extending from said key-levers to the type-bars, a stop bar secured under the key-levers and limiting the depression thereof to prevent the links from actuating the type-bars during the latter part of the printing movements of the type-bars, said stop bar being mounted on an axis extending lengthwise of the bar and being adjustable to vary its relations to the key-levers, and lost motion connections rendering the type-bars movable by their momentum to complete their printing actions.

19. In a typewriting machine, the combination of pivoted type-bars, key-levers, draw links extending from said key-levers to the type-bars, a stop bar secured under the key-levers and limiting the depression thereof to prevent the links from actuating the type bars during the latter part of the printing movements of the type-bars, said stop bar being adjustable to vary its relation to the key-levers, and lost motion connections rendering the type-bars movable by their momentum to complete their printing actions.

nation of pivoted type-bars, links connected with the type-bars, key-levers to which the links are pivoted, lost-motion connections rendering the type-bars movable by their momentum to complete their printing movements after the links cease to act on the type-bars, and a bar under the key-levers to limit the depression of the key-levers, the bar being adjustable on an axis extending through the bar lengthwise and lying at different distances from different portions of the lateral surface of the bar, to vary its relation to the key-levers.

20. In a typewriting machine, the combination of pivoted type-bars, links connected with the type-bars, key-levers to which the links are pivoted, lost-motion connections rendering the type-bars movable by their momentum to complete their printing movements after the links cease to act on the type-bars, and a bar under the key-levers to limit the depression of the key-levers, the bar having flat lateral faces and being adjustable on an axis extending through the bar lengthwise and lying at different distances from the lateral faces thereof, to subject said lateral faces separately to contact with the key-levers.

21. In a typewriting machine, the combination of pivoted type-bars, links connected with the type-bars, key-actuated devices connected with the links, lost-motion connections rendering the type-bars movable by their momentum to complete their printing movements after the links cease to act on the type-bars, a bar to limit the movement of the key-actuated devices, the bar being adjustable on an axis extending through the bar lengthwise and lying at different distances from different portions of the lateral surface of the bar, to vary its relation to the key-actuated devices, and a holding-device on the frame engaged with said bar.

22. In a typewriting machine, the combination of pivoted type-bars, links connected with the type-bars, key-levers to which the links are pivoted, lost-motion connections rendering the type-bars movable by their momentum to complete their printing movements after the links cease to act on the type-bars, a bar under the key-levers to limit the depression of the key-levers, the bar being adjustable on an axis extending through the bar lengthwise and lying at different distances from different portions of the lateral surface of the bar, to vary its relation to the key-levers, and a holding-device on the frame engaged with said bar.

23. In a typewriting machine, the combination of a pivoted type-bar, a device supported near the path of the type-bar proper and comprising movable arms, and means on the type-bar coöperative with the arms of said device to prevent or oppose a rebound of the type-bar.

24. In a typewriting machine, the combination of a pivoted type-bar, a device pivoted near the path of the type-bar proper and comprising arms, and means on the type-bar operative on said device to turn it on its pivot and coöperative with the arms thereof to prevent or oppose a rebound of the type-bar.

25. In a typewriting machine, the combination of a pivoted type-bar, a device supported near the path of the type-bar proper and comprising movable arms, and another device on the type-bar operative on one of said arms to interpose the other arm between this device and the platen.

26. In a typewriting machine, the combination of a pivoted type-bar, a device pivoted near the path of the type-bar proper and comprising arms, and another device on the type-bar operative on one of said arms to turn said pivoted device and interpose the other arm between the device on the type-bar and the platen.

27. In a typewriting machine, the combination of a pivoted type-bar, a block pivoted near the path of the type-bar proper and having surfaces that form a reëntrant angle, and means on the type-bar coöperative with the sides of said angle to prevent or oppose a rebound of the type-bar.

28. In a typewriting machine, the combination of a pivoted type-bar, a block pivoted near the path of the type-bar proper and having surfaces that form a reëntrant angle, and a device on the type-bar operative on one side of said angle to turn said block and interpose the other side of the angle between said device and the platen.

29. In a typewriting machine, the combination of a pivoted type-bar, a device pivoted near the path of the type-bar proper and comprising arms and provided with a restoring spring, and means on the type-bar operative on said device to turn it on its pivot and coöperative with the arms thereof to prevent or oppose a rebound of the type-bar.

30. In a typewriting machine, the combination of a pivoted type-bar, a device pivoted near the path of the type-bar proper and comprising arms and provided with a restoring spring, and another device on the type-bar operative on one of said arms to turn said pivoted device and interpose the other arm between the device on the type-bar and the platen.

31. In a typewriting machine, the combination of a pivoted type-bar, a block pivoted near the path of the type-bar proper and having surfaces that form a reëntrant angle and provided with a restoring spring, and means on the type-bar coöperative with the sides of said angle to prevent or oppose a rebound of the type-bar.

32. In a typewriting machine, the combination of a pivoted type-bar, a device pivoted near the path of the type-bar proper and comprising arms, and means on the type-bar operative on said device to turn it on its pivot and coöperative with the arms thereof to prevent or oppose a rebound of the type-bar.

nation of a pivoted type-bar, a block pivoted near the path of the type-bar proper and having surfaces that form a reëntrant angle and provided with a restoring spring, and a device on the type-bar operative on one side of said angle to turn said block and interpose the other side of the angle between said device and the platen.

33. In a typewriting machine, the combination of a pivoted type-bar having an extension projecting from the free end of the type bar and protruding from behind the type block, and a device coöperative with said extension to prevent or oppose a rebound of the type-bar.

34. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a device operative by the impact of said extension thereon to prevent or oppose a rebound of the type-bar.

35. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a device movable in contact with said extension to prevent or oppose a rebound of the type-bar.

36. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a pivoted device movable on its axis by the impact of said extension on said device to prevent or oppose a rebound of the type-bar.

37. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a device comprising arms coöperative with said extension to prevent or oppose a rebound of the type-bar.

38. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a device comprising arms and operative by the impact of said extension on one of said arms to prevent or oppose a rebound of the type-bar.

39. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a pivoted device comprising arms and movable on its axis by the impact of said extension on one of said arms to prevent or oppose a rebound of the type-bar.

40. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a device comprising arms and operative by the impact of said extension on one of said arms to interpose the other arm between the extension and the platen.

41. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a pivoted device comprising arms

and movable on its axis by the impact of said extension on one of said arms to interpose the other arm between the extension and the platen.

42. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a movable device provided with a restoring spring and coöperative with said extension to prevent or oppose a rebound of the type-bar.

43. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a movable device provided with a restoring spring and operative by the impact on it of said extension acting against the spring to prevent or oppose a rebound of the type-bar.

44. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a device provided with a restoring spring and movable in contact with said extension against the pressure of the spring to prevent or oppose a rebound of the type-bar.

45. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a pivoted device provided with a restoring spring and movable on its axis by the impact on it of said extension acting against the spring, to prevent or oppose a rebound of the type-bar.

46. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a pivoted device comprising arms and provided with a restoring spring and movable on its axis by the impact of said extension acting against the spring on one of said arms, to prevent or oppose a rebound of the type-bar.

47. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, and a pivoted device comprising arms and provided with a restoring spring and movable on its axis by the impact of said extension acting against the spring on one of said arms to interpose the other arm between the extension and the platen.

48. In a typewriting machine, the combination of a pivoted type-bar, having an extension protruding from behind the type block and provided with a surface of soft material, and a device coöperative with said extension to prevent or oppose a rebound of the type-bar.

49. In a typewriting machine, the combination of a pivoted type-bar, a device on the type-bar having a surface of soft material, and a device pivoted near the path of the type-bar proper and comprising arms, said

device on the type-bar being operative on one of said arms to interpose the other arm between this device and the platen.

50. In a typewriting machine, the combination of a pivoted type-bar, a device on the type-bar having a surface of soft material, and a block pivoted near the path of the type-bar proper and having surfaces that form a reëntrant angle, the device on the type-bar being coöperative with the sides of said angle to prevent or oppose a rebound of the type-bar.

51. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block and provided with a surface of soft material, and a device operative by the impact of said extension thereon to prevent or oppose a rebound of the type-bar.

52. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block and provided with a surface of soft material, and a block pivoted in the path of said extension and having surfaces that form a reëntrant angle, said extension being coöperative with the sides of said angle to prevent or oppose a rebound of the type-bar.

53. In a typewriting machine, the combination of understrike type-bars, and devices coöperative therewith to prevent or oppose a rebound of the type-bars, said devices being supported by a standard fixed in the central portion of the machine above the key-levers.

54. In a typewriting machine, the combination of understrike type-bars, and devices coöperative therewith to prevent or oppose a rebound of the type-bars, said devices being supported by a standard affixed to a bar extending across the frame of the machine above the key-levers.

55. In a typewriting machine, the combination of understrike type-bars, and devices coöperative therewith to prevent or oppose a rebound of the type-bars, said devices being mounted on radial arms supported by a standard fixed in the central portion of the machine above the key-levers.

56. In a typewriting machine, the combination of understrike type-bars, and devices coöperative therewith to prevent or oppose a rebound of the type-bars, said devices being mounted on radial arms attached to a vertically adjustable block supported by a standard.

57. In a typewriting machine, the combination of an understrike type-bar having an extension protruding from behind the type block, and a device coöperative with said extension to prevent or oppose a rebound of the type-bar, said device being pivoted to a fixed arm and having surfaces that form a reëntrant angle of ninety or about ninety degrees, and one side of said angle being sub-

stantially vertical and in the path of said extension when the device is in its normal position.

58. In a typewriting machine, the combination of an understrike type-bar having an extension protruding from behind the type block, and a device coöperative with said extension to prevent or oppose a rebound of the type-bar, said device being pivoted to a fixed arm and having surfaces that form a reëntrant angle of ninety or about ninety degrees, and being provided with a restoring spring acting against said arm, and one side of said angle being substantially vertical and in the path of said extension when the device is in its normal position.

59. In a typewriting machine, the combination of an understrike type-bar having an extension protruding from behind the type block and having a surface of soft material, and a device coöperative with said extension to prevent or oppose a rebound of the type-bar, said device being pivoted to a fixed arm and having surfaces that form a reëntrant angle of ninety or about ninety degrees, and one side of said angle being substantially vertical and in the path of said extension when the device is in its normal position.

60. In a typewriting machine, the combination of an understrike type-bar having an extension protruding from behind the type block and having a surface of soft material, and a device coöperative with said extension to prevent or oppose a rebound of the type-bar, said device being pivoted to a fixed arm and having surfaces that form a reëntrant angle of ninety or about ninety degrees and being provided with a restoring spring acting against said arm, and one side of said angle being substantially vertical and in the path of said extension when the device is in its normal position.

61. In a typewriting machine, the combination of a pivoted type-bar having an arm on its pivoted end, a link secured to said arm by a lost-motion connection, adjusting means to vary the extent of the lost-motion, a key-actuated device connected with said link, a device supported near the path of the type-bar proper and comprising movable arms, and means on the type-bar coöperative with the arms of this device to prevent or oppose a rebound of the type-bar.

62. In a typewriting machine, the combination of a pivoted type-bar, a link connected with the type-bar, a lost-motion connection rendering the type-bar movable by its momentum to complete its printing movement after the link ceases to act on the type-bar, a key-actuated device connected with the link, a stop to arrest the key-actuated device before the type-bar reaches its printing position, a device supported near the path of the type-bar proper and comprising

movable arms, and means on the type-bar cooperative with the arms of this device to prevent or oppose a rebound of the type-bar.

63. In a typewriting machine, the combination of a pivoted type-bar, a link connected with the type-bar, a key-actuated device connected with said link, a lost-motion connection, an adjustable stop to variably limit the movement of the key-actuated device, a device supported near the path of the type-bar proper and comprising movable arms, and means on the type-bar cooperative with the arms of this device to prevent or oppose a rebound of the type-bar.

64. In a typewriting machine, the combination of pivoted type-bars, links connected with the type-bars, key-actuated devices connected with the links, lost-motion connections rendering the type-bars movable by their momentum to complete their printing movements after the links cease to act on the type-bars, a bar to limit the movement of the key-actuated devices, the bar being adjustable to vary its relation to the key-actuated devices, a device supported near the path of each type-bar proper and comprising movable arms, and means on the type-bar cooperative with the arms of this device to prevent or oppose a rebound of the type-bar.

65. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, a link connected with the type-bar, a key-actuated device connected with said link, a lost-motion connection, and a device cooperative with said extension to prevent or oppose a rebound of the type-bar.

66. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, a link connected with the type-bar, a key-actuated device connected with said link, a lost-motion connection, a stop to arrest the key-actuated device before the type-bar reaches its printing position, and a device cooperative with said extension to prevent or oppose a rebound of the type-bar.

67. In a typewriting machine, the combination of a pivoted type-bar having an extension protruding from behind the type block, a link connected with the type-bar, a key-actuated device connected with said link, a lost-motion connection, an adjustable stop to variably limit the movement of the key-actuated device, and a device cooperative with said extension to prevent or oppose a rebound of the type-bar.

68. In a typewriting machine, the combination of pivoted type-bars having extensions protruding from behind the type blocks, links connected with the type-bars, key-actuated devices connected with the links, lost-motion connections rendering the type-bars movable by their momentum to

complete their printing movements after the links cease to act on the type-bars, a bar to limit the movement of the key-actuated devices, the bar being adjustable to vary its relation to the key-actuated devices, and devices cooperative with said extension to prevent or oppose a rebound of the type-bars.

69. In a typewriting machine, the combination of a pivoted type bar having a short arm on its pivoted end, a link secured on said arm by the immediate engagement of the arm with the link and forming with the arm a lost motion connection rendering the link separately movable, adjusting means to vary the extent of the lost motion, and a key actuated device connected with said link.

70. In a typewriting machine, the combination of a pivoted type bar having a short hook arm on its pivoted end, a link comprising a loop secured on said hook arm by the immediate engagement of the loop with the hook, and key actuated means connected with the link, the link being movable within the hook by the key-actuated means at the beginning of a stroke while the type bar is at rest in its normal position.

71. In a typewriting machine, the combination of a pivoted type bar having a short hook arm on its pivoted end, a link comprising a loop secured on said hook arm by the immediate engagement of the loop with the hook and forming with the hook arm a hook-and-eye connection affording lost motion, means to vary the adjustment of the loop of the link with relation to the hook arm, and key-actuated means connected with the link.

72. In a typewriting machine, the combination of a pivoted type bar having a short arm on its pivoted end or heel, a link comprising a loop engaged with said arm, the width of the loop being transverse to the length of the arm, and the arm extending from the heel of the type bar directly to and through the loop, and the loop being loose on the arm and being adjustable to regulate the extent of its action on the arm, a key-actuated device connected with the link, and means to secure the desired adjustment of the loop with relation to the arm.

73. In a typewriting machine, the combination of a pivoted type bar having a short arm on its pivoted end, a link secured on said arm by the immediate engagement of the arm with the link, the arm and a portion of the link being normally interlocked with each other and together forming a lost motion connection, and said portion of the link being adapted to be turned, and the link being movable with relation to the arm to disengage it therefrom, means to adjust the link with relation to the arm by turning said portion of the link when it is disengaged

from the arm, and a key actuated device connected with the link.

74. In a typewriting machine, the combination of a pivoted type bar having a short
5 arm on its pivoted end, a link comprising a loop engaged with said arm, the loop and arm being normally interlocked with each other and together forming a lost motion connection, and the loop being movable with
10 relation to the arm to disengage it therefrom, and a part of the link including the loop being adapted to be turned, means to adjust the loop with relation to the arm by turning said part of the link when the loop
15 is disengaged from the arm, and a key actuated device connected with the link.

75. In a typewriting machine, the combination of a pivoted type bar having an arm

on its pivoted end, a key actuated device, a link connected with the key actuated device 20 and comprising a loop loosely engaged with said arm and containing a space in which the arm is movable by the momentum of the type bar while completing its printing movement after the link ceases to act on the 25 type bar, and a normally fixed stop to prevent the link from acting on the type bar during the latter part of its printing movement.

Signed at Ilion, in the county of Herkimer, and State of New York, this 21st day of March A. D. 1903.

AUGUSTUS G. SNYDER.

Witnesses:

LOUIS P. DISH,
MILL KERR.