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POWER-OPERATED TYPING MECHANISM FOR TYPEWRITERS OR LIKE MACHINES

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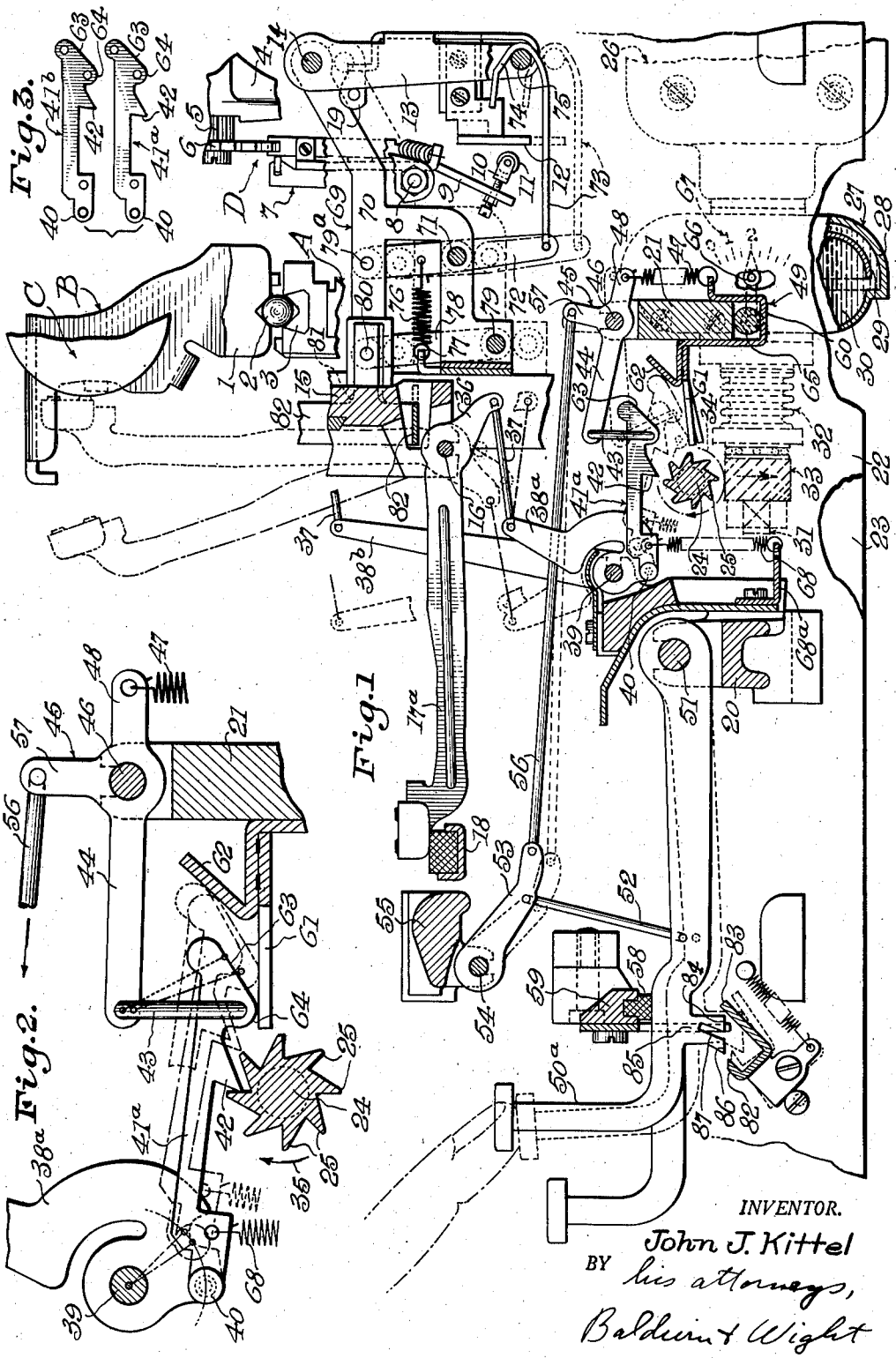


Fig. 1

Fig. 2

Fig. 3

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POWER-OPERATED TYPING MECHANISM FOR TYPEWRITERS OR LIKE MACHINES

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14 Claims. (Cl. 197—17)

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This invention relates to typewriting machines, and more particularly to power operated mechanism for actuating various instrumentalities included in such machines, for example type actions, escapement mechanism, and ribbon vibrator mechanism.

An object of the invention is to provide mechanism embodying structural features and arrangements providing advantages as compared to prior mechanism of the same general kind.

Another object is to provide mechanism of the kind referred to including a new and improved arrangement of parts for transmitting cushioned power or driving effort to actuate the instrumentalities referred to smoothly with a minimum of shocks.

Another object of the invention is to provide mechanism of the character stated in which the driving effort or power is transmitted through an impositive drive coupling, e. g. a kinetic type fluid coupling which has a capacity or characteristics enabling the obtaining of the advantages of smooth cushioned machine operation and also uniformity of type impression.

Another object is to provide new and improved connections between a set of type bars on a shiftable segment and a power driven rotor or the like, the arrangement and cooperation of the connections being such that the segment is shiftable freely without restraint by the connections, and the typing members are all driven to the printing point so as to make substantially uniform type impressions.

Another object is to provide a novel mounting by which a bail or like rockable member for operating escapement mechanism is supported on the type bar segment to shift vertically therewith.

A further object of the invention is to provide new improved and easily adjustable mechanism for preventing operative depressing of a key lever when a different key lever has been depressed and has not returned to normal or raised position.

Other objects will become apparent from a reading of the following description, the appended claims, and the accompanying drawing, in which:

Figure 1 is a vertical fore-and-aft section of a typewriter including mechanism embodying the invention, some conventional typewriter parts being shown only fragmentarily and others being omitted;

Figure 2 is an enlarged scale fragmentary vertical section of a portion of the mechanism for driving the type bars, some parts being shown in elevation; and

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Figure 3 is a group view showing two type bar actuators or links in elevation to illustrate the difference between the lengths of actuators associated with center type bars and actuators associated with end type bars.

Mechanism construction in accordance with the invention is illustrated as being embodied in a typewriter having a basic structural arrangement generally similar to that of the Royal standard typewriter. Conventional parts included in this basic structure and shown in part in the accompanying drawing include a stationary frame, a portion of which is indicated at A. Mounted for reciprocation on the frame A is a carriage B equipped with a cylinder or platen C. The carriage is equipped with a bottom rail 1 which is supported by ball bearings 2, in turn carried by a bottom rail 3 mounted on the frame part A.

Letter spacing travel of the carriage B is controlled by an escapement mechanism D of known form including an escapement frame 4 mounted on the main frame A and serving to journal an escapement pinion 5 meshing with a carriage escapement rack (not shown). An escapement wheel 6 fast with the pinion 5 is adapted to cooperate with a dog rocker assembly 7 pivoted on the frame A as at 8. The assembly 7 includes a depending arm 9 and adjustable clevis support 10 for a roller 11 adapted to be operated by a pressure plate 12 carried by an escapement bail 13 rockably mounted as at 14 in a novel manner as will be described later.

In operation, when the bail 13 is rocked clockwise, the pressure plate 12 engages the roller 11 to rock the dog assembly 7 rearwardly, and when the bail 13 returns to the position shown in Figure 1 the rocker assembly 7 moves back to its starting position. To and fro rocking of the assembly 7 through one complete cycle permits a step rotation of the escapement wheel 6 and movement of the carriage B through a single letter space increment.

A type bar segment 15 mounted for vertical shifting on the frame A carries a pivot wire 16 serving as the fulcrum for a series of type carrying members or bars, one of which is shown at 17a. When the type bar 17a is in its inactive position as shown in full lines in Figure 1, the type head is supported upon a rest 18 carried by the segment 15.

An ear 19 on the escapement bail 13 is adapted to be connected to ribbon vibrator mechanism, for example in the manner shown in the patent to Degener, 1,781,570, granted November 11, 1930. The arrangement is such that each time the

bail 13 is rocked to actuate the escapement mechanism in the manner previously described, the ear 19 will be thrust forwardly so as to operate the ribbon vibrator mechanism for positioning the ribbon (not shown) in operative position at the writing line.

Power operated mechanism is provided for operating the type actions, the escapement mechanism D, and the ear 19 for actuating the ribbon vibrator. For mounting parts of the power operated mechanism the frame A is provided with cross bars 20 and 21 and with end plates 22 and 23.

Journaled for rotation on the main frame A is a power driven rotary element 24 formed with longitudinally extending teeth 25. The element 24 is driven by an electric motor 26, power from which is transmitted through an impositive drive coupling preferably a kinetic type fluid coupling 27 of the kind disclosed in Patent No. 2,279,141 issued to John J. Kittel, April 7, 1942. The coupling 27 includes a driving element 28 rotatable by the motor 26, a driven element 29, and a body of fluid 30, for example oil, confined within the driving element 28. A shaft 31 rotatable in unison with the driven element 29 extends through a sealing device 32 and is provided with a helical gear 33 which meshes with a helical gear 34 fast with the toothed driving element 24. In operation, the motor 26 transmits drive through the coupling 27 and gears 33—34 to rotate the element 24 continuously.

Associated with each type bar is key controlled mechanism for placing the type bar in operative connection with the rotor 24 for a limited period to enable the rotor to drive the type bar toward printing position. With the exception of differences in the sizes of certain constituent elements in the mechanism, the mechanisms for connecting the various type bars to the rotor 24 are the same and it will be necessary to describe only one of the mechanisms in detail. As shown in Figure 1, the type bar 17a which is pivoted near the center of the segment 15 is formed with a heel 36 which is connected to the rear end of a link 37, the front end of which is connected to a lever 38a pivoted as at 39 on the frame cross bar 20. Pivoted as at 40 on the lever 38a is an actuator link or pawl 41a which extends rearwardly and across the rotor 24.

The link or pawl 41a is formed with a nose 42 which normally is so disposed as not to be engaged by the teeth 25 on the rotor 24. The link 41a is held in this normal position by a link 43 connected at its lower end to the rear end of the link 41a and connected at its upper end to one arm 44 of a three armed lever 45 pivoted as at 46 on the frame cross bar 21. A spring 47 interposed between an arm 48 on the three armed lever 45 and a knock out device generally designated 49 yieldably urges the lever 45 clockwise so as to lift the link 43 and thereby yieldably hold the actuator 41a in the position shown in Figure 1, wherein the nose 42 is out of the path of rotation of the rotor teeth 25.

In order to cause the type bar 17a to be driven to typing position, the actuator link 41a is moved downwardly to bring its nose 42 into engagement with a tooth 25 on the power driven element 24, whereupon the actuator 41a is moved rearwardly so as to rock the lever 38a counterclockwise, pull on the link 37, and swing the type bar 17a toward the platen C. The mechanism for bringing the actuator nose 42 into engagement with the rotor 24 includes a key lever 50a pivoted as at 51 on the frame cross bar 20, a link 52 pivoted at its lower end to the key lever 50a and at its upper end to a lever 53 pivoted as at 54 on a frame cross bar 55, and a link 56 pivoted at its front end to the lever 53 and at its rear end to an arm 57 on the lever 45. The spring 47 previously referred to yieldably holds the actuator 41a in its normal position out of engagement with the rotor 24 and through the link 56, lever 53, and link 52 also holds the key lever 50a in its normal rest position in which it engages a cushion stop 58 carried by a cross bar 59 on the main frame.

In operation, when the key lever 50a is depressed, the link 52, lever 53, and link 56 are moved to rock the three armed lever 45 counterclockwise against the urge of the spring 47 so as to move the actuator nose 42 into engagement with the toothed element 24, causing the type bar to be moved to typing position as previously described.

Means are provided for disengaging the actuator nose 42 from the toothed element 24 before the type bar 17a has been moved completely to typing position, the arrangement being such that the momentum of the type bar and its connected linkage causes the type bar to move the remainder of the way to printing position. The means for disengaging the actuator from the toothed element comprises the knock out device 49 previously referred to. The device 49 includes a U-shaped mounting portion or movable guide 60 slidably engaging the frame cross bar 21 and substantially flat knock out parts 61 and 62 disposed at an obtuse angle to each other.

The device 49 is held stationarily on the cross bar 21 with the knock out parts 61 and 62 so positioned relatively to the rotor 24 as to engage the actuator 41 and force it out of engagement with the rotor 24 just before the type head reaches typing position. The actuator link 41a has its rear end shaped to provide an inclined portion 63 and a rounded heel 64. As shown in Figure 2, during driving of the link 41a by the rotor 24, the heel 64 will engage the knock out part 61 so that as the link 41 moves rearwardly it first will gradually be moved radially and outwardly from the rotor 24 toward a position of disengagement from the rotor. Before the link 41a has been completely disengaged from the rotor the link inclined part 63 moves into engagement with the knock out part 62 on the device 49 whereupon the actuator is moved abruptly out of engagement with the rotor 24. By this time the key lever 50a will have been released, enabling the spring 47 to return the key operated parts to their normal positions shown in Figure 1.

The typewriter includes a series of actuator links similar to the link 41a and a series of levers similar to the lever 38a arranged in alignment to rock about the pivotal axis 39 parallel to the axis of the rotor 24 and being connected to the respective type bars mounted on the segment 15. The knock out parts 61 associated with each actuator link are formed separately so as to be individually bendable to adjusted positions. This arrangement enables each type bar drive mechanism to be adjusted individually as to the phases of the movements by which the several actuators are disengaged from the rotor 24. This enables the mechanism to be adjusted so as to provide uniformity of type bar impact and uniformity of key lever dip or downward movement.

In order to permit easy shifting of the segment 15 without binding or interference by the connec-

tions between the various type bars and the associated driving linkages, the levers corresponding to the lever 38a but connected to type bars at the ends of the segment 15 instead of at the middle thereof, are longer than the lever 38a. One of the longer levers associated with an end type bar is shown at 38b. Intervening levers increase progressively in length from the lever 38a outwardly to the end lever 38b. If the longer levers, for example the lever 38b, should have the same angular rocking motion as the center lever 38a, the arcuate travels of their upper end portions would be greater than the arcuate travels of the ends of the shorter levers, and it would be difficult if not impossible to obtain uniformity of type bar impact. In accordance with the invention, the actuating mechanism is so constructed that the levers 38a—38b are rockable through different angular distances so that the arcuate distances traversed by the upper ends of the levers will be substantially equal. As shown in Figure 3 the actuator 41a, which it will be recalled is connected to the link 38a at the center of the segment, is shorter than the actuator 41b which is connected to the long lever 38b, the effective lengths of the actuators being measured, for example, between the pivots 40 and noses 42. The shorter link 41a will be in operative engagement with the toothed rotor 24 longer than the longer link 41b, and consequently the shorter lever 38a will be power-rocked through a greater angle than the longer lever 38b. Thus, the ends of the levers 38a—38b will partake of substantially the same arcuate movements, and uniform type impressions will be made.

Means are provided for varying the timing of disengagement of the actuators 41a—41b from the rotor 24 so as to obtain type impressions of varying intensity. For accomplishing this adjustment the entire knock out device 49 can be slid up or down on the cross bar 21 which serves as a guide mounting the device 49 for vertical adjusting movements. The springs 47 connected between the several three armed levers 45 and the device 49 urge the latter upwardly. Vertical adjustment of the device 49 is effected easily by rotation of an eccentric rod 65 interposed between the bottom face of the guide 21 and the cross piece extending between the two legs of the mounting portion 60 of the device 49. The eccentric rod 65 may be rocked from outside the machine frame by an arm and pointer 66 fixed to the rod and the position of which is indicated by a scale 67.

The springs 47 perform the dual function of urging the knock out device 49 upwardly and also biasing the levers 45 and hence the actuators or links 41a—41b to their normal positions. Springs 68 may be connected between the actuators and an anchor plate 68a on the cross bar 20 for partially balancing the action of the springs 47. The springs 68 and 47 working against each other prevent the interposed links and levers from rattling. The springs 68 also serve to restore the type bar and its associated connections back to normal or state of rest positions.

The fluid coupling 27 drives the rotor 24 with cushioned shock absorbing power providing the advantage of smooth operation with a minimum of shocks and noise. When the typewriter is operated very rapidly, imposing an almost continuous load on the rotor 24, there is a tendency for the rotor to be slowed down, and if it were allowed to slow down materially the impulses transmitted to the type bars would lessen and the type bar impressions would vary. In order to prevent this, the coupling 27 is of such ample capacity and its driven element has such a large amount of inertia that the element 29 and the rotor 24 are not slowed down sufficiently even during rapid typing to result in a noticeable difference in the type bar impressions.

In order to facilitate assembling and servicing of the interior parts of the machine, the escapement bail 13 is mounted as at 14 to rock on a bracket 69 carried by and vertically shiftable with the type bar segment 15. In this respect the escapement mechanism and associated parts differ from the construction in the Royal Standard typewriter in which the escapement bail is mounted pivotally on the stationary main frame. The bracket 69 comprises spaced parallel parts, one of which is shown at 70. Both of the spaced bracket parts are secured to the segment 15 so as to be shiftable therewith. Pivoted on the bracket 69 as at 71 is a lever 72, the lower arm of which is connected to the front end of a pull link 73. The rear end of the link 73 is formed with a hook 74 embracing a bar 75 forming part of the escapement bail 13. A spring 76 interposed under tension between the upper end of the lever 72 and an ear 77 on the segment 15 urges the lever 72 counterclockwise as viewed in Figure 1. A lever 78 parallel to the lever 72 is pivoted at its lower end as at 79 on the bracket 69. The tops of the levers 72 and 78 are pivoted respectively at 78a and 80 to a projection 81 which is fast with and extends rearwardly from an arcuate universal bar 82 so positioned as to be thrust rearwardly by a type bar when the latter moves to typing position.

In operation, a type bar moved to typing position engages the universal bar 82 and thrusts it rearwardly so as to rock the levers 72 and 78 clockwise, causing the link 73 to be pulled forwardly thereby rocking the escapement bail 13 clockwise and operating the escapement mechanism D to cause the carriage B to advance one letter space.

A type bar may, if desired, be caused to perform repeated typing operations by merely holding the associated key lever depressed. For example, for underlining, repeated hyphenating, or successive period writing as when preparing bills or statements, the appropriate key lever is depressed only once and is held depressed until the desired number of repetitive characters has been typed. The repeated type bar operation will be accompanied by repeated operation of the escapement mechanism. When the depressed key is released the type bar and carriage will come to rest.

Means are provided for preventing operative depressing of a key lever before a previously depressed key lever has returned to its normal position. In the form shown, the usual Royal line lock plate 82 is modified by having formed integrally therewith an extension blade 83 which serves as an operating part adapted to be engaged by the heel 84 of an abutment 85 on any key lever when it is depressed. The device comprising the parts 82 and 83 is generally of U-shape with the leg 83 normally extending diagonally across the paths of the abutment heels 84. When the key lever is depressed the abutment heel 84 engages the operating part 83 and rocks the blocking part 82 rearwardly from its normal forwardly offset position to the position shown in dotted lines in Figure 1. The line lock plate 82 will then be disposed directly under the toes 86 of the aligned key lever abutments 85 so as to prevent operative downward movement of the other key levers. The heels 84 and toes 86 of the abut-

ments 85 are separated by a slot or slit 87 making it possible to adjust each heel and toe individually to positions assuring their proper cooperation with the locking device 82, 83.

The mechanism described with reference to the drawings embodies the invention in the form now preferred but it is evident that changes may be made without departing from the invention as defined in the claims.

I claim:

1. In a typewriting machine, a frame; type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power-driven toothed rotary element; and, respectively associated with each of a plurality of said members, a first lever pivoted on said frame at a point on one side of said rotary element and being operatively connected to said type-carrying member; a first link connected to said first lever and extending transversely across said rotary element and having a nose normally disengaged from but being engageable with said rotary element for being actuated thereby to rock said first lever and thus move said type-carrying member to typing position; a second lever pivoted on said frame at a point on the opposite side of said rotary element and having an arm extending transversely with respect to said rotary element and toward said first lever; a second link connecting said first link to said arm of said second lever; means for biasing said first link to be normally disengaged from said rotary element; key-operated means; and a third link operatively connecting said key-operated means to another arm of said second lever, whereby upon operation of said key-operated means said nose is moved into engagement with said rotary element and said first link and first lever are driven to move said type-carrying member to typing position.

2. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power driven toothed rotary element; and, respectively associated with each of a plurality of said members, power transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; key-operated means for moving said actuator into engagement with said rotary element; and knock-out means for moving said actuator out of engagement with said rotary element including a first substantially flat part initially engageable by said actuator for first moving the latter relatively slowly toward disengagement from said rotary element, and a second substantially flat part disposed at an obtuse angle to said first flat part and being subsequently engageable by said actuator for moving said actuator relatively abruptly from engagement with said rotary element, at least one of said flat parts being angularly displaceable to vary the obtuse angle between said flat parts and thus to vary the relative abruptness of disengaging movement of said actuator effected by the respective flat parts.

3. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power driven toothed rotary element; and, respectively associated with each of a plurality of said members, power transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; key-operated means for moving said actuator into engagement with said rotary element; and a knock-out device engageable with said actuator and having substantially flat portions disposed at an obtuse angle to each other and over which said actuator slides for successively moving said actuator relatively slowly toward disengagement from said rotary element and then moving said actuator relatively abruptly out of engagement with said rotary element, said knock-out device being substantially stationary in operation and at least one of the flat portions of said device being bendable to vary the obtuse angle between said flat portions and thus vary the relative abruptness of disengaging movement of said actuator effected by the respective flat portions.

4. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power driven toothed rotary element; and, respectively associated with each of a plurality of said members, power transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; key-operated means for moving said actuator into engagement with said rotary element; a knock-out device engageable by said actuator for moving the actuator out of engagement with said rotary element; means mounting said knock out device for adjustment relatively to said rotary element; spring means urging said actuator to its normal position and also urging said knock out device in one direction; and an eccentric operatively connected to said knock out device and being rotatable for moving said device against the urge of said spring means to different positions of adjustment to thereby vary the point of disengagement of said actuator from said rotary element and consequently vary the type impact intensity.

5. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power driven toothed rotary element; and, respectively associated with each of a plurality of said members, power transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; key-operated means for moving said actuator into engagement with said rotary element; a knock-out device including a substantially U-shaped portion and a part engageable by said actuator for moving the latter out of engagement with said rotary element; a fixed guide on which said U-shaped portion is slidable for mounting said knock-out device for adjusting movement to different positions with respect to said rotary element; and means for moving said

knock-out device to different positions on said guide.

6. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power driven toothed rotary element; and, respectively associated with each of a plurality of said members, power transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; key-operated means for moving said actuator into engagement with said rotary element; a knock-out device including a substantially U-shaped portion and a part engageable by said actuator for moving the latter out of engagement with said rotary element; a fixed guide on which said U-shaped portion is slidable for mounting said knock-out device for adjusting movement to different positions with respect to said rotary element; and a rotatable eccentric interposed between said guide and the cross piece of said U-shaped portion for moving said knock-out device to different positions.

7. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power driven toothed rotary element; and, respectively associated with each of a plurality of said members, power transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; key-operated means for moving said actuator into engagement with said rotary element; a knock out device including a substantially U-shaped portion and a part engageable by said actuator for moving the latter out of engagement with said rotary element; a fixed guide on which said U-shaped portion is slidable for mounting said knock out device for adjusting movement to different positions with respect to said rotary element; a rotatable eccentric interposed between said guide and the cross piece of said U-shaped portion for moving said knock out device to different positions; and spring means urging said U-shaped portion into contact with said eccentric.

8. In a typewriting machine, a frame; type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power-driven toothed rotary element; and, respectively associated with each of a plurality of said members, a first lever pivoted on said frame at a point on one side of said rotary element and being operatively connected to said type-carrying member; a first link connected to said first lever and extending transversely across said rotary element and having a nose normally disengaged from but being engageable with said rotary element for being actuated thereby to rock said first lever and thus move said type-carrying member to typing position; a second lever pivoted on said frame at a point on the opposite side of said rotary element and having a first arm extending toward said first lever, a second arm extending oppositely from said first arm, and a third arm extending between said first and second arms; a second link connecting said first link to said first arm; a key

operated link connected to said third arm for rocking said second lever and thereby moving said first link into engagement with said rotatable element; a fixed guide disposed between the first and second arms of said second lever; a knock-out device including a part engageable with said first link for moving it out of engagement with said rotary element, and a U-shaped portion slidable on said fixed guide for mounting said knock-out device for adjusting movement to different positions with respect to said rotary element; spring means interposed between said U-shaped portion and said second arm of said second lever for urging said first link to its normal position and for urging said knock-out device in one direction on said guide; and adjusting means for moving said knock-out device in the opposite direction on said guide.

9. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a toothed rotary element; a motor; a kinetic type fluid coupling for transmitting drive from said motor to said toothed rotary element, the latter being capable, because of the drive-transmitting characteristics of said coupling, of normally floating with respect to said motor; and, respectively associated with each of a plurality of said members, a first lever operatively connected to said type-carrying member; a first link connected to said first lever and having a part normally disengaged from said rotary element but being engageable therewith for being actuated thereby to rock said first lever and thus move the type-carrying member to typing position; a second lever; a second link pivotally connected at its opposite ends respectively to said second lever and to said first link; means for biasing said first link to a position in which said first link part is disengaged from said rotary element; and key-operated means operatively connected to said second lever and operative to rock the latter to move said first link part into engagement with said rotary element.

10. In a typewriting machine, a frame; type-carrying members; means mounting said members for movement from inactive position to typing position and return; a toothed rotary element; a motor; a kinetic type fluid coupling for transmitting drive from said motor to said toothed rotary element, the latter being capable, because of the drive-transmitting characteristics of said coupling, of normally floating with respect to said motor; and, respectively associated with each of a plurality of said members, a first lever pivoted on said frame at a point on one side of said rotary element and being operatively connected to said type-carrying member; a first link connected to said first lever and extending transversely across said rotary element and having a nose normally disengaged from but being engageable with said rotary element for being actuated thereby to rock said first lever and thus move said type-carrying member to typing position; a second lever pivoted on said frame at a point on the opposite side of said rotary element and having an arm extending transversely with respect to said rotary element and toward said first lever; a second link connecting said first link to said arm of said second lever; means for biasing said first link to be normally disengaged from said rotary element; key-operated means; and a third link operatively connecting said key-operated means to another arm of said second lever, whereby upon operation of said key-operated means said nose

is moved into engagement with said rotary element, and said first link and first lever are driven to move said type-carrying member to typing position.

11. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a toothed rotary element; a motor; a kinetic type fluid coupling for transmitting drive from said motor to said toothed rotary element, the latter being capable, because of the drive-transmitting characteristics of said coupling, of normally floating with respect to said motor; and, respectively associated with each of a plurality of said members, power transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; key-operated means for moving said actuator into engagement with said rotary element; and means for moving said actuator out of engagement with said rotary element including a part initially engageable by said actuator for first moving the latter relatively slowly toward disengagement from said rotary element, and another part subsequently engageable by said actuator for moving said actuator relatively abruptly from engagement with said rotary element.

12. In a typewriting machine, a plurality of type bars; a type bar segment; means pivoting said type bars on said segment; a power driven toothed rotary element; a series of levers pivoted to rock about an axis substantially parallel to the axis of said rotary element, said levers having arm ends respectively connected to said type bars, the arms connected to the type bars at the center of the segment being shortest and the other lever arms increasing in length from the center towards the ends of the segment; pawls connected respectively to said levers and being normally disengaged from said rotary element; and key controlled means for moving said pawls into engagement with said rotary element to be driven thereby for moving said type bars to typing position, said pawls being of different lengths, shortest at the center and longest at the ends of the segment, whereby said lever arm ends will be moved through substantially equal arcuate distances.

13. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a power driven toothed rotary element; and, respectively associated with each of a plurality of said members, power transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; key-operated means for moving said actuator into engagement with said rotary element; a knock-out device engageable by said actuator for moving the actuator out of engagement with said rotary element; means mounting said knock-out device for adjustment relatively to said rotary element; spring means urging said actuator to its normal position and also urging said knock-out device in one direction; and manually operable means connected to said knock-out device and being manipulatable for moving said device against the urge of said spring means to different positions of adjustment to thereby vary the point of disengagement of said actuator from said rotary element and consequently vary the type impact intensity.

14. In a typewriting machine, type-carrying members; means mounting said members for movement from inactive position to typing position and return; a motor; a toothed rotary element; a kinetic type fluid coupling for transmitting drive from said motor to said toothed rotary element, the latter being capable, because of the impositive drive-transmitting characteristics of said coupling, of normally floating with respect to said motor; and, respectively associated with each of a plurality of said members, power-transmitting mechanism operatively connected to said type-carrying member and including an actuator normally disengaged from said rotary element but being adapted to be moved into engagement with said element to be driven thereby so as to effect movement of said type-carrying member to typing position; and key-operated means for moving said actuator into engagement with said rotary element.

JOHN J. KITTEL.

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