

No. 749,914.

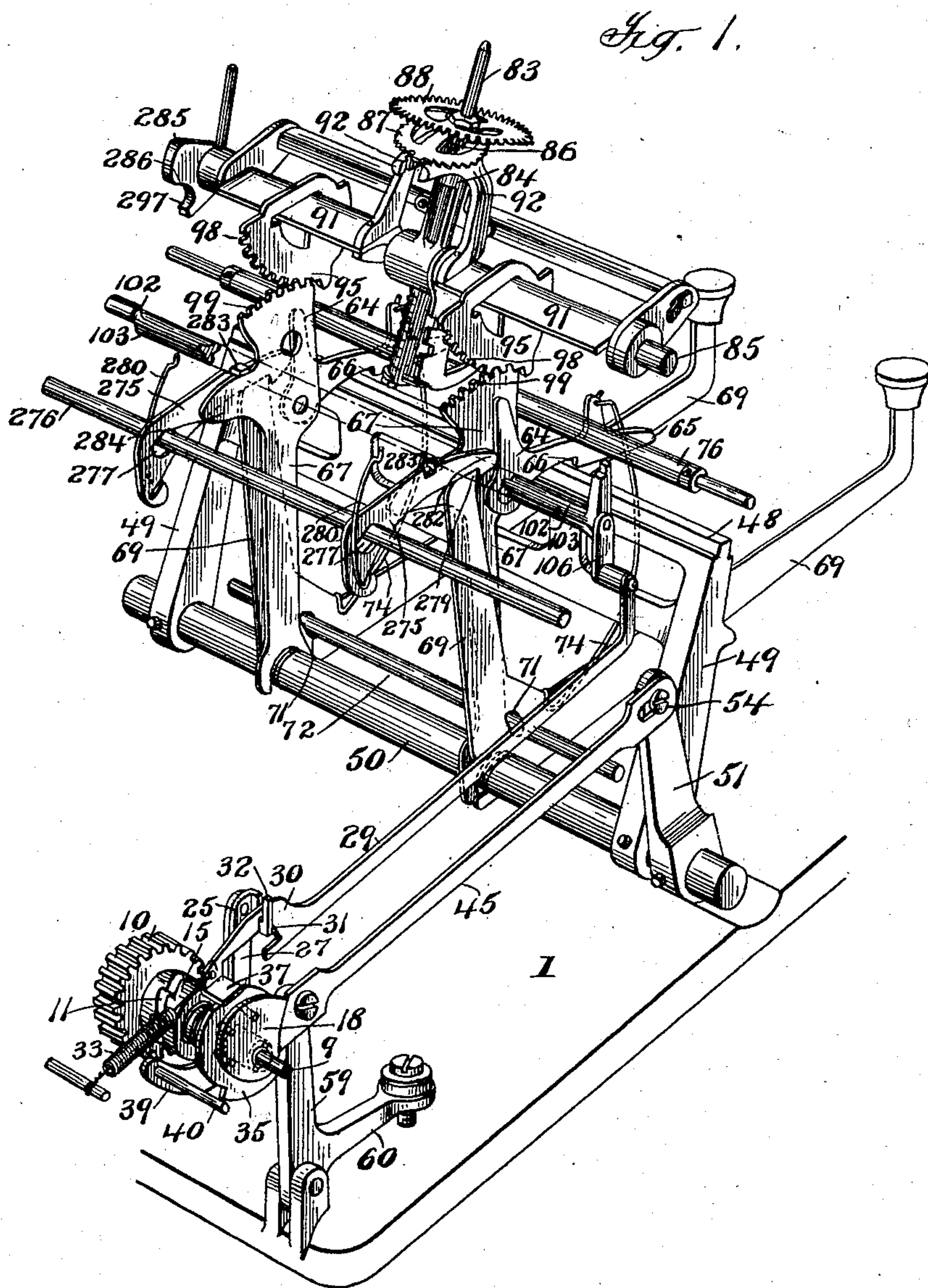
PATENTED JAN. 19, 1904.

G. C. BLICKENSDEKFER.
TYPE WRITING MACHINE.

APPLICATION FILED APR. 30, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 3

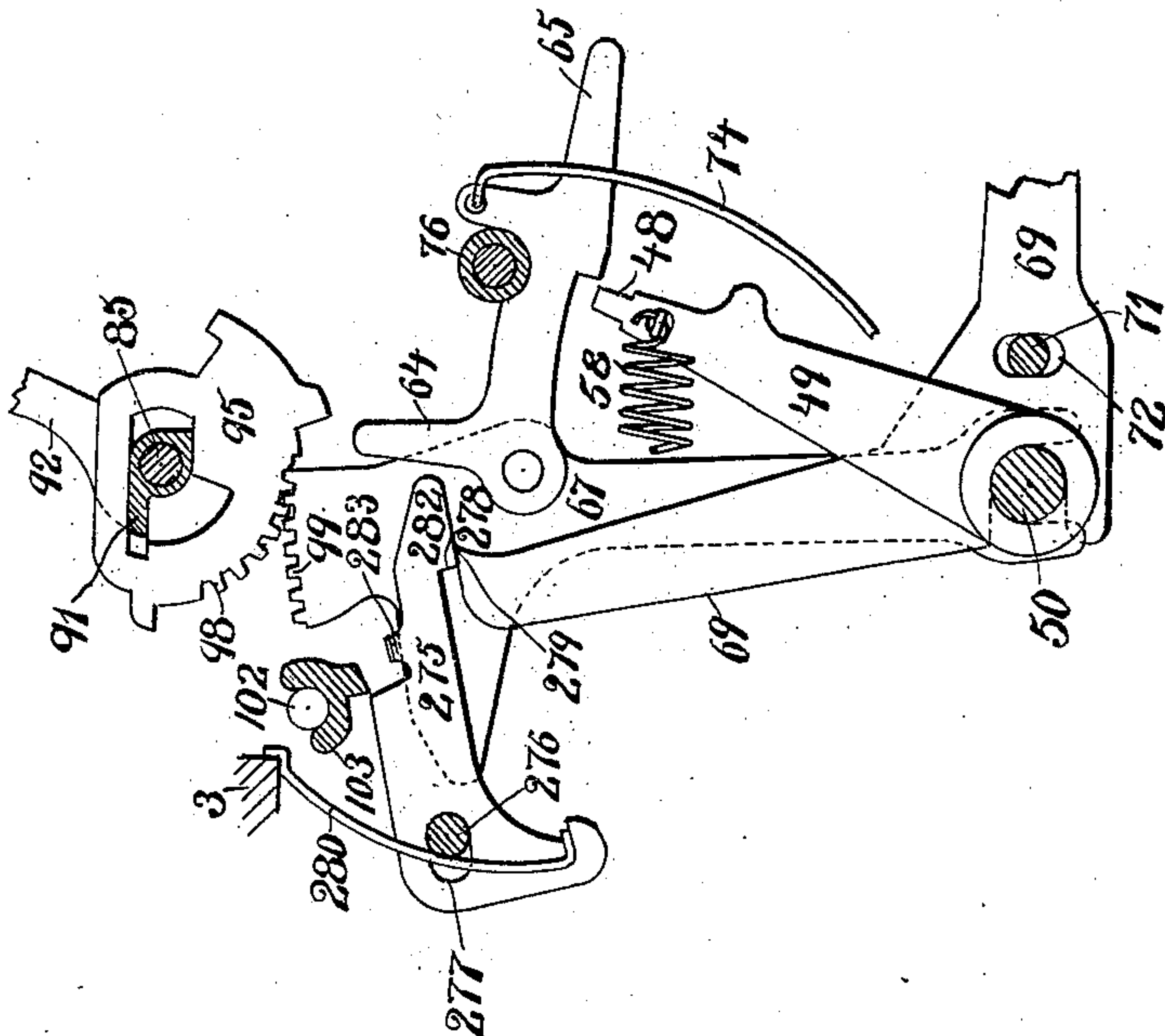
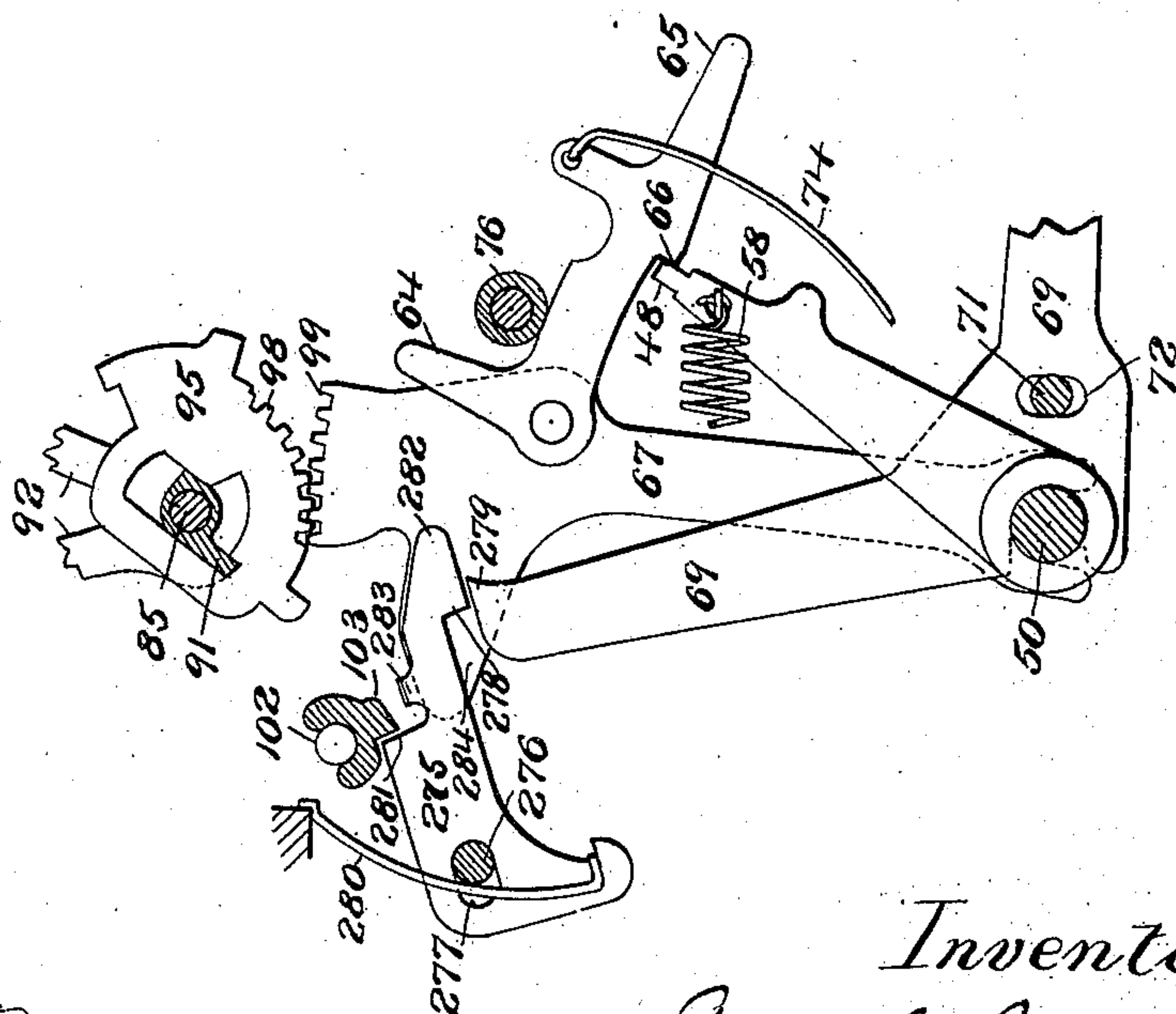


Fig. 2



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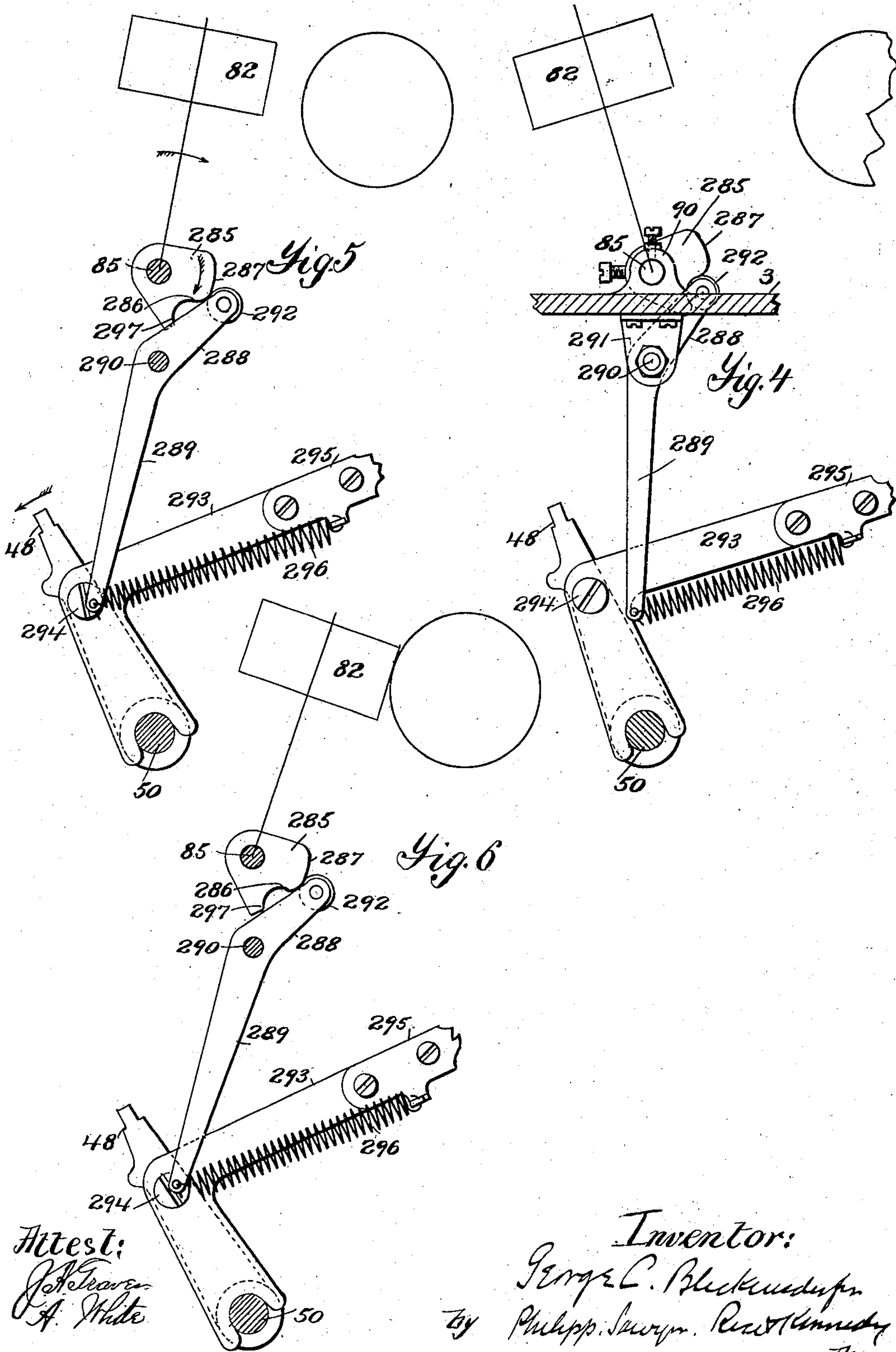
No. 749,914.

PATENTED JAN: 19, 1904.

G. C. BLICKENSBERGER.
TYPE WRITING MACHINE.
APPLICATION FILED APR. 30, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

GEORGE C. BLICKENS DERFER, OF STAMFORD, CONNECTICUT.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 749,914, dated January 19, 1904.

Application filed April 30, 1903. Serial No. 154,931. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. BLICKENS DERFER, a citizen of the United States, residing at Stamford, county of Fairfield, and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in type-writing machines.

In type-writing machines it is desirable that the connection by which the keys cause the operation of the type mechanism be interrupted after the operation of the key, but before the key has returned to its normal position, so that the operator is not obliged to wait for the return of the key before operating another key. While such a construction is advantageous in many kinds of type-writing machines, it is particularly so in power-operated machines, because the actuating mechanism for the type mechanism operates so quickly that the operator is able to strike the keys in rapid succession, thus making a higher speed possible than could be attained if it were necessary to await the return of the key before striking the next. It is also desirable in power-operated machines, as well as in machines of other types, to cause the type mechanism to strike the paper with what may be termed a "momentum" blow. In the best machines this is accomplished by constructing the type mechanism and its operating mechanism so that the type mechanism is free to run slightly ahead of the operating mechanism. It therefore strikes the paper under the momentum acquired in its advancing movement instead of being forced against the paper by the operating mechanism, in which case it delivers a blow which may be described as a "punching" blow, as distinguished from the momentum blow before referred to. When, however, the mechanism which returns the type mechanism is constantly acting thereon, the force of this returning mechanism has to be overcome at the time when the momentum blow is being delivered, and when, as is usual in many types of machines, the type mechanism is returned by the action of a spring which

is constantly operating thereon the spring is under the greatest tension, and is consequently exercising the greatest force on the type mechanism at the time when the mechanism should be entirely free from the returning force.

It is one of the objects of this invention to produce an improved type-writer in which the connections between the keys and the type mechanism shall be interrupted after the key is operated and before it is returned.

A further object of this invention is to produce a type-writer in which the type mechanism shall be returned after each impression by suitable mechanism, but in which said type mechanism shall be free from the returning force of the mechanism at the time said type mechanism is completing its impression movement.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter fully described and then specifically pointed out in the claims hereunto appended.

In the accompanying drawings, Figure 1 is a perspective view of so much of the operating mechanism of a machine constructed in accordance with the invention as is necessary to an understanding of the invention. Figs. 2 and 3 are detail views illustrating the operation of the connector mechanism. Figs. 4, 5, and 6 are detail views illustrating the operation of the returning mechanism for the type mechanism.

The machine which has been selected to illustrate the invention is a power-driven wheel-machine of the well-known Blickensderfer type; but it may be remarked that the improvements included in the invention are applicable to machines which are not power-operated and to machines of other types than the wheel-machine.

The means by which the power is supplied for operating the machine may be of any suitable description, but will preferably be a constantly-running power mechanism and will also preferably be generally similar to that shown in Patent No. 717,732, dated January 6, 1903. In the construction illustrated the source of power-supply includes a gear 10,

mounted on a shaft 9, this gear being constantly driven by a shaft and pinion similar to that illustrated in the patent referred to. The type mechanism in the preferred construction will be normally stationary and will be thrown into and out of operative relation with the power mechanism for each printing operation. In order to effect this, the type mechanism in the construction shown is operated by an actuating mechanism which is also normally stationary, and between this actuating mechanism, which will be hereinafter more fully described, and the power mechanism engaging devices are located, the engagement and disengagement of said devices being controlled by means of a suitable operating member. The form of the engaging devices may be widely varied. The form illustrated is generally similar to the construction illustrated in the patent before referred to and includes a toothed plate 11, which is secured to the gear 10, said toothed plate forming one of the parts of a clutch. It is remarked that the term "clutch" as used in this specification and in the claims is to be given a broad signification, it being intended by this term as used herein to cover, broadly, devices normally disengaged and of such a character that when they are engaged one of them transmits movement to the other. The member of the clutch which coöperates with the tooth-plate in the construction shown consists of a toothed plate 15, mounted on a hub, which is in turn loosely supported on the shaft 9, which carries the gear 10. When the clutch is engaged, it serves to operate a driver, which, as shown, consists of a cam 18, which is connected to the toothed plate 15 in such a way that the plate 15 may be moved to disengage the parts of the clutch without disengaging it from the driver.

The engagement of the clutch members is controlled by means of a pivoted controller-lever 25, which carries a cam 27. When the lever 25 is in one position, the cam 27 enters between the clutch members and separates them. When the lever is in the other position, a suitable spring forces the clutch members together. The controller is operated by means of a slide-bar 29, said bar having a hooked end 30, which has in turn a recess 31 therein, said recess engaging an extension 32 on the controller-lever. The slide-bar 29 has a spring 33 secured to its ends, which serves to move it toward the clutch at proper times. The construction is such that the slide-bar is disengaged from the controller as soon as the members of the clutch are engaged, and the controller therefore moves into position so as to separate the parts of the clutch as soon as the shaft 9 has completed a revolution. The disengagement of the slide-bar from the controller-lever is effected by means of a cam 35, which is connected to the driver 18 and operates on an extension 37 of the slide-bar, so that the slide-bar is lifted by the cam and

disengaged from the controller-lever. This cam 35 also acts on a pin 40, carried on an arm 39 of the controller-lever to throw the controller into position, so that the cam 27 will engage between and separate the parts of the clutch at the proper time. The construction of this clutch and its operating mechanism is fully described in the patent hereinbefore referred to, and reference is made thereto for a fuller disclosure of the construction should such disclosure be necessary. It may be here remarked, however, that any other suitable form of clutch and operating mechanism may be substituted for the one shown.

The driver 18 operates the actuating mechanism of the machine through a slide-bar 45, the construction of the driver being such that the slide-bar is started with an easy movement, which increases very rapidly, so as to cause the slide-bar to run slightly ahead of the driver, thus enabling the type mechanism which is operated by the actuating mechanism to deliver an elastic blow on the paper, as distinguished from a punching blow.

In the preferred form of the construction, as before stated, the actuating mechanism will preferably be normally stationary. As shown, it embodies a bar 48, supported on legs 49, which are secured to a rock-shaft 50, suitably journaled in the base of the machine. This shaft 50 has secured to it an upright arm 51, to which the slide-bar 45 is connected in any suitable manner, as by a screw 54. After the bar has been rocked by the driver it is returned by means of a suitable spring 58. The end of the bar which is operated upon by the driver is supported by means of a bent lever 59 60, pivoted to the frame of the machine, the lever thus acting not only to support the bar, but to limit the return movement of the bar produced by the spring 58. The form of the driver, the actuating mechanism, and the means by which the driver operates the actuating mechanism may be of any suitable description. The form which has been described is, however, the preferred form.

The actuating-bar operates through suitable connections, which may be widely varied, to produce the movement of the type mechanism. As shown, this mechanism includes a series of locking bell-crank levers 64 65, the arms 65 of these levers being provided with shoulders 66, which are engaged by the actuator-bar 48. Each of these bell-crank levers in the construction shown is pivoted to a lever 67, these levers having lower forked ends which straddle the shaft 50. The engagement between these locking-levers and the actuator-bar is effected by means of the key-levers, which may be constructed in any suitable manner. As shown, each of these key-levers consists of a bent lever 69, supported on the shaft 50, before referred to, the levers being held in position on the shaft by means of a bar 71,

which passes through slots 72 in the key-levers. The means by which the key-levers cause the bent levers 64 65 to engage the actuator-bar will be hereinafter described. It may be remarked, however, that these levers are held out of engagement with the bar by means of returning-springs 74, the return movement of the levers and their engagement with the bar 48 when they are operated being insured on their forward movement by means of a guide 76, extending across the machine.

The intermediate connections by which the actuating mechanism, whatever its form may be, produces the operation of the type mechanism may be varied widely and will vary according to the type of machine in which the invention is embodied. In the Blickensderfer type of machine, which is a wheel-machine, the printing characters are carried on a wheel 82, which is rotated to bring in position the proper character to be impressed upon the paper, after which the wheel is given a further movement toward the paper to effect the printing. In the machine shown the wheel 82 is mounted on a vertical rod 83, which is mounted in a support 84, carried on a shaft 85, extending across the machine and known as the "action-shaft." This rod serves to support a pinion 86, to which is secured the stopping-ratchet 87 and the notched positioning-wheel 88, the construction being that of the well-known Blickensderfer type of machine. The shaft 85 is secured in suitable bearings 90 on the top plate of the machine. This shaft 85 supports a pair of sleeves 91, one on each side of the machine. Each of these sleeves carries a sector 92, the sectors being provided with teeth which engage the pinion 86 on opposite sides. It will be understood that a part of the key-levers operate on one of the sectors 92 through its sleeve 91 and suitable connections, and the remainder of the key-levers operate upon the other sector 92 through its sleeve 91 and suitable connections. The operation of these sectors and of the stopping-ratchet and the positioning-wheel is well understood and need not be specifically stated here. The sleeves 91 are operated through a series of graduated tumblers 95, each of which is loose on the sleeve, but which may be locked thereto in the manner clearly set forth in the patent hereinbefore referred to and in the United States Patent No. 665,085, dated August 14, 1900. These tumblers are provided with teeth 98, which engage with teeth 99, formed on the lever 67, before referred to. In the operation of the machine as set forth in the patents above referred to when the lever 67 is operated it first slides the tumbler with respect to its sleeve, so as to lock it thereto, and then the tumbler, sleeve, and shaft 85 turn together and operate the type-wheel.

The operations by which the type mechanism is thrown into operative relation with the actuating mechanism are effected by the ac-

tion of the particular key-lever which is struck, and this key-lever also effects the engagement of the engaging devices, before referred to, by which the power mechanism is enabled to operate the actuating mechanism. While the means by which the engagement of the engaging devices is effected by the type-levers may be widely varied, in the construction shown there is provided an operating member which is common to all the key-levers and which consists of a shaft 102, provided with an operating-rib 103. This shaft is also provided with an arm 106, to which the slide-bar 29, before referred to as in engagement with the controller-lever 25, is connected. As the shaft 102 is rocked, therefore, the slide-bar is operated, and the engaging members, which in the form of the machine illustrated consist of the two parts of a clutch, are allowed to come into engagement.

The connections by which the operation of any particular key causes the power mechanism to be thrown into operation may be widely varied in form; but they will be of such a character that they may be interrupted after the key is struck and before it has returned, so that the parts or such of them as are necessary to enable a second key to be operated to throw the power mechanism into operation may be returned before the key is returned. In the construction shown there is provided a series of connectors, which are interposed between the operating member or shaft 102 and the key-levers, said connectors being so constructed that the connection formed by them may be interrupted directly after the power mechanism has been thrown into operation. As shown, these connectors consist of sliding plates 275, these plates being supported on a rod 276, which extends across the machine and is suitably mounted in the frame, said rod passing through slots 277 in the connectors. In the preferred form of the construction a connector is provided for each key-lever, and each connector has a shoulder 278, which is normally in engagement with a shoulder 279, formed on the bent key-lever 69. The connectors are held in their rearward position on the bar 276—that is, with the forward portion of their slots in engagement with the bar—by means of springs 280, which are secured to the connectors and to the frame of the machine. The connectors are further provided with shoulders 281, which are normally in engagement with the rib 103 on the shaft 102. The connectors in addition to serving as a part of the means by which the keys release the power mechanism also serve to operate the bell-crank levers 64 65, before referred to, by which the actuator-bar is connected to the mechanism for operating the type mechanism, and it may be here remarked that connectors of proper construction may be used for this purpose in machines in which power mechanism is not employed, but in which it is desired to release

the actuating mechanism for the type from its operating mechanism before the key by which the mechanism is thrown into operation has returned.

5 In order to enable the connectors to operate the levers 64 65, they are provided with extensions 282, which lie behind the arm 64 of these levers. When a key is operated, therefore, the corresponding connector rocks
10 the shaft 102 and at the same time causes the arm 65 of the lever 64 65 to engage the actuator-bar, so that the lever 67 will be thrown forward to produce an operation of the type mechanism.

15 When a connector under the influence of an operating-key has produced the results referred to, it should be immediately released to permit the parts to return to their normal position. The release of the connectors may
20 be effected by any desired mechanism. As shown, each connector is provided with a projection or shoulder 283, which overlies a lifter 284, carried on the lever 67. As soon, therefore, as the power mechanism causes this lever 67 to move the lifter will be operated and
25 will raise the connector out of engagement with the shoulder 279 on the bent lever. The connector now is free to return and will be returned by a spring 280, and at the same time the shaft 102 and the slide-bar 29 will be
30 returned, so as to be in position to be operated by another key. The position of the parts prior to the operation of any key is shown in Fig. 1, in which it will be seen that
35 the shoulder 278 of the connector is in engagement with the shoulder 279 of the bent lever 69 and the shoulder 281 is in position to engage the operating-rib 103 on the shaft 102, this shaft, however, being broken away in
40 this figure in the interest of clearness. The position of the parts when the actuator-bar is at the forward limit of its stroke is shown in Fig. 2, in which it will be seen that the connector 275 has been disengaged from the shoulder 279 on the key-lever and has been returned
45 by its spring back against the supporting-bar 276, and it will also be seen that the shaft 102 has returned.

Fig. 3 illustrates the position of the parts
50 after the actuator-bar has completed its return movement, it being supposed that the key which produces the movement of the actuator-bar is held down. It will be seen that in this figure, as well as in Fig. 2, the shaft
55 102 has returned and is in position, so that it may be operated on by the connector of any other key, although the key which produces its operation in the first instance has not returned to its normal position.

60 After the type mechanism has completed the impression movement—that is, its movement toward the paper by which it effects an impression of the type—it must be returned, and in machines of the type illustrated to embody the invention this return movement must

be positive in order to bring the type-wheel back to the initial starting-point, from which all revolutions of the wheel must begin in order to properly position each character for its impression on the paper. Heretofore it has
70 been usual in the present type of machines to return the type-wheel and its connected parts by a spring. As it has been heretofore arranged, however, the spring is objectionable, for the reason that it is under the greatest
75 tension and is consequently exercising its greatest force at the time when the type-wheel is completing its impression movement or stroke. In order, therefore, to produce the elastic tapping or momentum blow, which
80 has been heretofore referred to, it has been necessary in actuating the type-wheel to overcome the force of the spring and at the time when, as has been before said, this force was the greatest.
85

While the mechanism which is employed to return the type mechanism may be of any suitable character, in the preferred construction, and as shown, it will be of such a character as to leave the type mechanism free from
90 the returning force of the spring at the time when the type mechanism is completing its impression movement, thereby making it much easier to effect the desired elastic blow. In the construction illustrated the shaft 85,
95 heretofore referred to as the "action-shaft," is provided with an arm or projection 285, which is provided with a returning portion 286 and a holding portion 287. Coöperating with this projection on the shaft 85 is a two-
100 armed lever 288 289, pivoted at 290 to a bracket 291, depending from the top plate 3. The arm 288 of this lever is preferably provided with an antifriction-roller 292, which coöperates either with the holding or the re-
105 turning surface of the arm or projection 285, according to the position of the action-shaft. This lever 288 289 may be operated by any desired mechanism, but will preferably be operated by a spring, and in the preferred form
110 of the construction this spring will be mounted so that it will not be placed under tension, or at least not under strong tension, at the time when the action-shaft is moving to effect the impression movement of the type mechanism. This spring is accordingly mounted
115 on a movable support, which support is given its movement as the type mechanism moves toward the paper. In the construction shown, which is a preferred form, there is provided
120 a bent arm 293, having at one of its ends a fork which straddles the shaft 50 and being secured to one of the legs of the actuator-bar 48 by means of a screw 294 or in any other suitable manner. Mounted on this arm 293
125 is an arm 295, to which one end of a pull-spring 296 is secured, the other end of the pull-spring being secured to the arm 289 of the returning-lever, before referred to. It is apparent that as the actuator-bar starts for-
130

ward the spring will move with it toward the arm of the lever 289, to which it is secured.

The normal position of the parts when they are quiescent is well illustrated in Fig. 4. In this figure the returning-surface 286 of the arm or projection 285 is resting against the roller 292, the backward movement of the lever being prevented by means of a stop 297, which also forms a part of the arm 285. As the shaft 85 under the influence of the actuator-bar begins to rock to give the type mechanism an impression movement, the lever 288 289 is rocked so as to cause the roller 292 to run off from the returning portion of the arm 285 onto the holding portion 287 of the arm. This holding portion is formed on a circle struck from a center which corresponds with the center of the shaft 85. Fig. 5 illustrates the position of the parts at the time when the roller 292 is passing from the returning-surface 286 to the holding-surface 287, the type-wheel being then in about the position diagrammatically illustrated in this figure. It will of course be understood that the returning-spring 296 has been caused to move toward the lever-arm by the operation of the actuator-bar, so that the full force of the spring is not exercised on the returning-lever, and the lever readily moves from the position indicated in Fig. 4 to the position indicated in Fig. 5. The position of the parts at the time the type-wheel strikes the paper is illustrated in Fig. 6, and it will be seen that during the movement of the action-shaft from the position indicated in Fig. 5 to the position indicated in Fig. 6 the roller 292 is running on the circular or holding portion 287 of the arm 285, and this roller and the returning-lever by which it is carried is not, therefore, exercising any returning force on the arm or projection 285. The rebound of the type-wheel and the action of the other returning parts throws the type-wheel back from the position indicated in Fig. 6 to that indicated in Fig. 5. The spring 296 has by this time, however, been placed under full tension, as indicated in Fig. 6, by the return of the actuator-bar, which gets back before the type-wheel. The returning-lever, therefore, now acts strongly on the returning portion 286 of the arm 285 and rotates the shaft 85 in a direction opposite to that indicated by the arrow on the returning portion in Fig. 5. The type-wheel is therefore thrown positively and quickly back to its initial or starting position.

It is to be understood that changes and variations may be made in the constructions herein shown and described without departing from the invention. The invention is not, therefore, to be limited to the specific details of construction herein shown and described.

What is claimed is—

1. In a type-writer, the combination with a constantly-running power mechanism, of a type mechanism, an actuating mechanism, a

key-lever, connections whereby the key-lever causes the power mechanism to operate the actuating mechanism, and positive means for interrupting said connections before the key-lever returns, whereby the parts are allowed to assume their normal position before the key-lever returns, substantially as described.

2. In a type-writer, the combination with a constantly-running power mechanism, of a type mechanism, an operating mechanism therefor, a key-lever, an actuating mechanism, key-controlled means whereby the operating mechanism is connected to the actuating mechanism, connections whereby the key-lever causes the power mechanism to operate the actuating mechanism, and means for positively interrupting said connections before the key-lever returns, whereby the parts are allowed to assume their normal position before the key-lever returns, substantially as described.

3. In a type-writer, the combination with a constantly-running power mechanism, of a type mechanism, an actuating mechanism, a bank of keys, connections including a series of connectors, one for each key, whereby the keys cause the power mechanism to operate the actuating mechanism, and means for positively releasing the connector for each key before the key is returned whereby the parts are allowed to resume their normal position before the key is returned, substantially as described.

4. In a type-writer, the combination with a constantly-running power mechanism, of a type mechanism, an actuating mechanism, operating means between the power mechanism and the actuating mechanism, a bank of keys, means including a series of connectors, one for each key, whereby the power mechanism is caused to operate the actuating mechanism, and power-operated means for releasing each connector before the key to which it corresponds is returned, substantially as described.

5. In a type-writer, the combination with a power mechanism, of a type mechanism, an actuating mechanism, a clutch mechanism and suitable operating connections, a bank of keys, key-controlled connections whereby each key brings the clutch mechanism into operation, whereby the power mechanism is enabled to operate the actuating mechanism, and positive means for interrupting the connections whereby each key effects the engagement of said clutch mechanism before the key is returned, substantially as described.

6. In a type-writer, the combination with a power mechanism, of a type mechanism, an actuating mechanism, a clutch mechanism and suitable operating connections, a bank of keys, key-controlled connections whereby each key brings the clutch mechanism in operation, whereby the power mechanism is enabled to operate the actuating mechanism, and power-operated means for interrupting the connections whereby each key effects the engage-

ment of said clutch mechanism before the key is returned, substantially as described.

7. In a type-writer, the combination with a power mechanism, of a type mechanism, an actuating mechanism, a bank of keys, means including engaging devices between the power mechanism and the actuating mechanism through which the power mechanism operates the actuating mechanism, an operating member common to all the keys controlling the engagement of said devices, a connector between each key and the operating member, and means for interrupting the connection formed by each connector before its corresponding key is returned, substantially as described.

8. In a type-writer, the combination with a power mechanism, of a type mechanism, an actuating mechanism, a bank of keys, means including engaging devices between the power mechanism and the actuating mechanism, means including a connector for each key, whereby the keys effect the engagement of said devices and enable the power mechanism to operate the actuating mechanism, and positive means for interrupting the connection formed by each connector before its corresponding key is returned, substantially as described.

9. In a type-writer, the combination with a power mechanism, of a type mechanism, an actuating mechanism, a bank of keys, means including engaging devices between the power mechanism and the actuating mechanism, means including a connector for each key, whereby the keys effect the engagement of said devices and enable the power mechanism to operate the actuating mechanism, and power-operated means for interrupting the connections formed by each connector before its corresponding key is returned, substantially as described.

10. In a type-writer, the combination with a power mechanism, of a type mechanism, an actuator, operating means including engaging devices between the actuator and the power mechanism, a bank of keys, key-controlled connections between the actuator and the type mechanism, an operating member common to all the keys, said member controlling the engagement of said engaging devices, a series of connectors between the keys and the operating member, and means for interrupting the connections formed by a connector before the corresponding key is returned, substantially as described.

11. In a type-writer, the combination with a continuously-running power mechanism, of a type mechanism, a normally stationary actuator, a bank of keys, key-controlled connections between the actuator and the type mechanism, connections including an operating member common to all the keys by which the power mechanism is caused to operate the actuator, a series of connectors between the

keys and the operating member, and means for interrupting the connection established between said connectors and the keys before the corresponding keys are returned, substantially as described.

12. In a type-writer, the combination with a continuously-running power mechanism, of a type mechanism, a normally stationary actuator, a bank of keys, key-controlled connections between the actuator and the type mechanism, connections including an operating member common to all the keys by which the power mechanism is caused to operate the actuator, a series of connectors between the keys and the operating member, and power-operated means for interrupting the connection established between said connectors and the keys before the corresponding keys are returned, substantially as described.

13. In a type-writer, the combination with a power mechanism, of a type mechanism, operating means including engaging devices between the power mechanism and the type mechanism, a bank of keys, an operating member common to all the keys controlling the engagement of said engaging devices whereby the power mechanism is enabled to operate the type mechanism, a series of connectors between the keys and the operating member, and means for interrupting the connection established by said connectors before the corresponding keys are returned, substantially as described.

14. In a type-writer, the combination with a continuously-running power mechanism, of a type mechanism, operating means between the power mechanism and the type mechanism, a bank of keys, means including an operating member common to all the keys, whereby the power mechanism is caused to operate the type mechanism, a series of connectors between the keys and the operating member, and power-operated means for interrupting the connection established by said connectors before the corresponding keys are returned, substantially as described.

15. In a type-writer, the combination with a continuously-running power mechanism, of a normally stationary actuator, a bank of keys, a type mechanism, a series of connectors operated by the keys, means brought into operation by the connectors for causing the power mechanism to operate the type mechanism, and power-operated means for interrupting the connections established by the connectors, substantially as described.

16. In a type-writer, the combination with a continuously-running power mechanism, of a normally stationary actuator, a bank of keys, a series of connectors operated by the keys, means including an operating member common to all the connectors whereby the power mechanism is caused to operate the actuating mechanism, and means for interrupting the connection established by the connectors be-

fore the corresponding keys are returned, substantially as described.

17. In a type-writer, the combination with a continuously-running power mechanism, of a normally stationary actuator, a bank of keys, a series of connectors operated by the keys, means including an operating member common to all the connectors whereby the power mechanism is caused to operate the actuating mechanism, and power-operated means for interrupting the connection established by the connectors before the corresponding keys are returned, substantially as described.

18. In a type-writer, the combination with a type mechanism, of a normally stationary actuator, a series of key-levers, normally in operative connections between the actuator and the type mechanism, a series of connectors operated by the key-levers, means including a clutch mechanism and an operating member common to all the connectors and key-levers for rendering operative the connections between the actuator and the type mechanism whereby the power mechanism is caused to operate the actuator, and means for interrupting the connection established by each connector before the key-lever is returned, substantially as described.

19. In a type-writer, the combination with a type mechanism, of a normally stationary actuator, a series of key-levers, normally in operative connections between the actuator and the type mechanism, a series of connectors operated by the key-levers, means including a clutch mechanism and an operating member common to all the connectors and key-levers for rendering operative the connections between the actuator and the type mechanism whereby the power mechanism is caused to operate the actuator, and positive means for interrupting the connection established by each connector before the key-lever is returned, substantially as described.

20. In a type-writer, the combination with a type mechanism, of a normally stationary actuator, a series of key-levers, normally in operative connections between the actuator and the type mechanism, a series of connectors operated by the key-levers, means including a clutch mechanism and an operating member common to all the connectors and key-levers for rendering operative the connections between the actuator and the type mechanism whereby the power mechanism is caused to operate the actuator, and power-operated means for interrupting the connection established by each connector before the key-lever is returned, substantially as described.

21. In a type-writer, the combination with a type mechanism, of a normally stationary actuator, means including a series of levers whereby the actuator operates the type mechanism, means for connecting each of said levers to the actuator, a constantly-running power mechanism, a series of key-levers,

means including a series of connectors in engagement with the key-levers, whereby each key-lever causes the power mechanism to operate the actuator, and means for positively interrupting the connection established by each connector before its corresponding key-lever is returned, substantially as described.

22. In a type-writer, the combination with a type mechanism, of a normally stationary actuator, means including a series of levers whereby the actuator operates the type mechanism, means for connecting each of said levers to the actuator, a constantly-running power mechanism, a series of key-levers, means including a series of connectors in engagement with the key-levers, whereby each key-lever causes the power mechanism to operate the actuator, and power-operated means for interrupting the connection established by each connector before its corresponding key-lever is returned, substantially as described.

23. In a type-writer, the combination with a power mechanism, of a normally stationary actuator, means including a clutch mechanism whereby the power mechanism operates the actuator, a series of key-levers, an operating member, means whereby the operating member brings the clutch mechanism into operation whereby the power mechanism is enabled to operate the actuator, a series of connectors between the key-levers and the operating member, and power-operated means for interrupting the connection between each key-lever and the operating member before the key-lever is returned, substantially as described.

24. In a type-writer, the combination with a type mechanism, of a normally stationary actuator, means for connecting the actuator to the type mechanism, a constantly-running power mechanism, an operating member, means whereby the operating member causes the power mechanism to operate the actuator, a series of key-levers, a series of connectors between the key-levers and the operating member, said connectors being normally in engagement with the key-levers, and means for operating the connectors to break the connection between each key-lever and the operating member before said key-lever is returned, substantially as described.

25. In a type-writer, the combination with a type mechanism, of a normally stationary actuator, means for connecting the actuator to the type mechanism, a constantly-running power mechanism, an operating member, means whereby the operating member causes the power mechanism to operate the actuator, a series of key-levers, a series of connectors between the key-levers and the operating member, said connectors being normally in engagement with the key-levers, and power-operated means for operating the connectors to break the connection between each key-lever and the operating member before said key-lever is returned, substantially as described.

26. In a type-writer, the combination with a type mechanism, of a normally stationary actuator, means for connecting the actuator to the type mechanism, a constantly-running power mechanism, an operating member, a series of key-levers, a series of sliding connectors between the operating member and the key-levers said connectors being normally in engagement with the key-levers, and means for breaking the connection between each connector and its cooperating key-lever before said lever is returned, substantially as described.

27. In a type-writer, the combination with a type mechanism, of a series of operating-levers therefor, a normally stationary actuator, means whereby each lever is connected to the actuator, a constantly-running power mechanism, means whereby the power mechanism operates the actuator, a series of key-levers, an operating member, connections whereby the operating member throws the power mechanism into operation, a series of connectors between the key-levers and the operating member, said connectors being normally in engagement with the key-levers, and means brought into operation by the key-levers for breaking the connections between the connectors and the key-levers, said means being brought into operation before the key-levers are returned, substantially as described.

28. In a type-writer, the combination with a type mechanism, of operating means therefor, said means including a series of operating-levers, a normally stationary actuator, a constantly-running power mechanism, operating connections between the power mechanism and the actuator, an operating rock-shaft, connections whereby the rock-shaft causes the power mechanism to operate the actuator, a series of key-levers, a series of connectors between the rock-shaft and the key-levers normally in engagement with the key-levers, and means brought into operation by the operating-levers for disengaging the connectors from the key-levers before the key-levers are returned, substantially as described.

29. In a type-writer, the combination with a type-wheel, of a series of key-levers, means whereby each key-lever effects the operation of the type-wheel to produce an impression, and positive means for interrupting the connection between a lever and the type-wheel before said lever is returned, substantially as described.

30. In a type-writer, the combination with a type-wheel, of a series of key-levers, means whereby each key-lever effects an operation of the type-wheel to produce an impression, and positive means brought into operation by the key-levers for interrupting the connection between the key-levers and the type-wheel before the levers are returned, substantially as described.

31. In a type-writer, the combination with

a type-wheel, of a constantly-running power mechanism, means intermediate the power mechanism and the type-wheel whereby said power mechanism operates the type-wheel to produce an impression, a bank of keys, connections whereby each key causes the power mechanism through said means to operate the type-wheel, and power-operated means for interrupting said connections before the key is returned, substantially as described.

32. In a type-writer, the combination with a constantly-running power mechanism, of a type-wheel, an actuating mechanism for operating the wheel to produce an impression, a bank of keys, connections including a series of connectors whereby the keys cause the power mechanism to operate the actuating mechanism, and means for positively releasing a connector which has been operated by a key before the key is returned, substantially as described.

33. In a type-writer, the combination with a type-wheel, of a constantly-running power mechanism, a normally stationary actuator, a series of key-levers, key-controlled connections whereby the actuator operates the type-wheel, a series of connectors, one for each key-lever, with which the key-levers are normally in engagement, an operating member common to all the key-levers, connections between said operating member and the power mechanism whereby the power mechanism is caused to operate the actuator, and means for releasing the connector from its corresponding key-lever after the key-lever has been operated and before it is returned, substantially as described.

34. In a type-writer, the combination with a type-wheel, of a constantly-running power mechanism, a normally stationary actuator, a series of key-levers, key-controlled connections between the operating-levers and the actuator, an operating member, a series of connectors between the key-levers and the operating member, whereby each key-lever operates said member, means whereby the operating member causes the power mechanism to operate the actuator, and means for interrupting the connection formed by a connector between the operating member and a key-lever when a key-lever is operated and before the key-lever is returned, substantially as described.

35. In a type-writer, the combination with a type-wheel, of a constantly-running power mechanism, a normally stationary actuator, a series of key-levers, key-controlled connections between the operating-levers and the actuator, an operating member, a series of connectors between the key-levers and the operating member, whereby each key-lever operates said member, means whereby the operating member causes the power mechanism to operate the actuator, and means thrown into operation by the movement of an operating-

lever for interrupting the connection formed by a connector between the operating member and a key-lever when a key-lever is operated and before the key-lever is returned, substantially as described.

36. In a type-writer, the combination with a type-wheel, of a constantly-running power mechanism, a series of operating-levers, a series of key-levers, a normally stationary actuator, key-controlled connections between the actuator and the operating-levers, connections whereby the operating-levers operate the type-wheel, an operating member, connections whereby said member causes the power mechanism to operate the actuator, a series of connectors intermediate the key-levers and the operating member, and means carried by each operating-lever for releasing the connection between the operating member and a key-lever formed by a connector before the key is returned, substantially as described.

37. In a type-writer, the combination with a type mechanism, of a power mechanism, operating connections between the power mechanism and the type mechanism, a series of key-levers, an operating member, means including a clutch mechanism whereby the operating member causes the power mechanism to operate the type mechanism, a series of connectors between the key-levers and the operating member, said connectors being normally in engagement with the key-levers, and means for releasing each connector from its key-lever after the lever has been operated and before it returns, substantially as described.

38. In a type-writer, the combination with a type mechanism, of a power mechanism, operating connections between the power mechanism and the type mechanism, said connections including a series of operating-levers, a series of key-levers, a series of connectors normally in engagement with the key-levers, said connectors being mounted to have a pivotal and sliding movement, means whereby each connector causes the power mechanism to operate the type mechanism when a key is operated, and means carried by the operating-levers for interrupting the connection between the connector and its corresponding key-lever after the key-lever is operated and before its return, substantially as described.

39. In a type-writer, the combination with a type mechanism, of a power mechanism, operating connections between the power mechanism and the type mechanism, said connections including a series of operating-levers, a series of key-levers, a series of connectors normally in engagement with the key-levers, said connectors being mounted to have a pivotal and sliding movement, means including an operating member common to all the connectors, connections between said member and the power mechanism, whereby the power mechanism is caused to operate the type mechanism when a key is operated, and means carried

by the operating-levers for interrupting the connection between each connector and its corresponding key-lever after the key-lever is operated and before it is returned, substantially as described.

40. In a type-writer, the combination with a type mechanism, of a power mechanism, operating connections between the power mechanism and the type mechanism, said connections including a series of operating-levers, a series of key-levers, a series of connectors normally in engagement with the key-levers, said connectors being mounted to have a pivotal and sliding movement, means including an operating member common to all the connectors, connections between said member and the power mechanism, whereby the power mechanism is caused to operate the type mechanism when a key is operated, and means including a rock-shaft common to all the connectors for interrupting the connection between each connector and its corresponding key-lever after the key-lever is operated and before it is returned, substantially as described.

41. In a type-writer, the combination with a type-wheel, of a constantly-running power mechanism, a normally stationary actuator, means including a series of operating-levers between the actuator and the type-wheel, a series of key-levers, key-controlled connections between the operating-levers and the actuator, an operating member, connections between said member and the power mechanism whereby the power mechanism is caused to operate the actuator, a series of connectors between the key-levers and the operating member said connectors being normally in engagement with the key-levers, and means for interrupting the connection between the operating member and a key-lever formed by a connector when said key-lever is operated and before the key is returned, substantially as described.

42. In a type-writer, the combination with a type-wheel, of a constantly-running power mechanism, a normally stationary actuator, means including a series of operating-levers between the actuator and the type-wheel, a series of key-levers, key-controlled connections between the operating-levers and the actuator, an operating member, connections between said member and the power mechanism whereby the power mechanism is caused to operate the actuator, a series of connectors between the key-levers and the operating member, said connectors being normally in engagement with the key-levers, and means including a rock-shaft common to all the connectors for interrupting the connection between the operating member and a key-lever formed by a connector when said key-lever is operated and before the key is returned, substantially as described.

43. In a type-writer, the combination with a type mechanism, of means for producing an impression movement of the type mechanism,

and returning means, said means leaving the type mechanism free from returning force as it is completing the impression movement, substantially as described.

5 44. In a type-writer, the combination with a type mechanism, of means for producing an impression movement of the type mechanism, a returning member, and means whereby said member is prevented from exercising a re-
10 turning force upon the type mechanism as said mechanism is completing the impression movement, substantially as described.

45. In a type-writer, the combination with a type mechanism, of means for producing an
15 impression movement of the type mechanism, a returning-spring for the type mechanism, and means for preventing said spring from exercising a returning force on the type mechanism as said mechanism is completing the im-
20 pression movement, substantially as described.

46. In a type-writer, the combination with a type mechanism, of a shaft, means for rock-
25 ing the shaft to produce an impression movement of the type mechanism, and means for returning the shaft, said shaft being free from the returning action of said means as the type mechanism is completing the impression move-
ment, substantially as described.

47. In a type-writer, the combination with
30 a type mechanism, of a shaft, means for rocking the shaft to produce an impression movement of the type mechanism, a spring for returning the shaft, and means for preventing the spring from exercising a returning action
35 on the shaft as the type mechanism is completing the impression movement, substantially as described.

48. In a type-writer, the combination with a type mechanism, of a power-operated means
40 for producing an impression movement of the type mechanism, and returning means, said means leaving said type mechanism free from the returning force as it is completing the impression movement, substantially as described.

49. In a type-writer, the combination with
45 a type mechanism, of power-operated means for producing an impression movement of the type mechanism, a returning member for the type mechanism, and means whereby said member is prevented from exercising a re-
50 turning force upon the type mechanism as said mechanism is completing the impression movement, substantially as described.

50. In a type-writer, the combination with
55 a type mechanism, of power-operated means for producing an impression movement of the type mechanism, a returning-spring for the type mechanism, and means for preventing said spring from exercising a returning force
60 on the type mechanism as said mechanism is completing the impression movement, substantially as described.

51. In a type-writer, the combination with a type mechanism, of a shaft, power-operated

means for rocking the shaft to produce an im- 65
pression movement of the type mechanism, and means for returning the shaft, said shaft being free from the returning action of said means as the type mechanism is completing the impression movement, substantially as 70
described.

52. In a type-writer, the combination with a type mechanism, of a shaft, power-operated means for rocking the shaft to produce an im-
75 pression movement of the type mechanism, a spring for returning the shaft, and means for preventing the spring from exercising a returning action on the shaft as the type mechanism is completing the impression movement, substantially as described. 80

53. In a type-writer, the combination with a shaft, of a type mechanism operated thereby, means for rocking the shaft to produce an im-
85 pression movement of the type mechanism, a projection on the shaft, and returning means coöperating with said projection to return the shaft, said returning means being prevented from exercising a returning force on the pro-
90 jection as the shaft is completing the movement which produces the impression move- ment, substantially as described.

54. In a type-writer, the combination with a shaft, of a type mechanism operated thereby, power-operated means for rocking the shaft to
95 produce an impression movement of the type mechanism, a projection on the shaft, and re- turning means coöperating with said pro- jection to return the shaft, said returning means being prevented from exercising a re-
100 turning force on the projection as the shaft is completing the movement which produces the impression movement, substantially as de- scribed.

55. In a type-writer, the combination with a shaft, of a type mechanism operated thereby, 105
means for rocking the shaft to produce an im- pression movement of the type mechanism, a projection on the shaft, a returning-lever co- operating with said projection to return the shaft, said lever being prevented from exer- 110
cising a returning force on the projection as the shaft is completing the movement which produces the impression movement, and means for operating said lever, substantially as de- 115
scribed.

56. In a type-writer, the combination with a shaft, of a type mechanism operated thereby, power-operated means for rocking the shaft to
120 produce an impression movement of the type mechanism, a projection on the shaft, a re- turning-lever coöperating with said pro- jection to return the shaft, said lever being pre- vented from exercising a returning force on the projection as the shaft is completing the movement which produces the impression 125
movement, and means for operating said lever, substantially as described.

57. In a type-writer, the combination with

a shaft, of a type mechanism operated thereby, means for rocking the shaft to produce an impression movement of the type mechanism, a projection on the shaft, said projection being provided with a returning portion and a holding portion, a returning-lever, said lever being operated upon by the holding portion of the projection as the shaft completes the movement which produces the impression movement and by the returning portion as the shaft returns the type mechanism, and means for operating the lever, substantially as described.

58. In a type-writer, the combination with a shaft, of a type mechanism operated thereby, power-operated means for rocking the shaft to produce an impression movement of the type mechanism, a projection on the shaft, said projection being provided with a returning portion and a holding portion, a returning-lever, said lever being operated upon by the holding portion of the projection as the shaft completes the movement which produces the impression movement and by the returning portion as the shaft returns the type mechanism, and means for operating the lever, substantially as described.

59. In a type-writer, the combination with a shaft, of a type mechanism operated thereby, means for rocking the shaft to produce an impression movement of the type mechanism, a projection on the shaft, said projection being provided with a returning portion and a holding portion, and a spring-operated returning-lever, said lever being operated upon by the holding portion of the projection as the shaft completes the movement which produces the impression movement and by the returning portion as the shaft returns the type mechanism, substantially as described.

60. In a type-writer, the combination with a shaft, of a type mechanism operated thereby, power-operated means for rocking the shaft to produce an impression movement of the type mechanism, a projection on the shaft, said projection being provided with a returning portion and a holding portion, and a spring-operated returning-lever, said lever being operated upon by the holding portion of the projection as the shaft completes the movement which produces the impression movement and by the returning portion as the shaft returns

the type mechanism, substantially as described.

61. In a type-writer, the combination with a type mechanism, of means for producing an impression movement thereof, returning means for the type mechanism, said means including a spring which is given a bodily movement during the impression movement to prevent it from being placed under tension during said impression movement, substantially as described.

62. In a type-writer, the combination with a type mechanism, of means for producing an impression movement thereof, returning means for said mechanism, said means including a spring-operated lever, and a movable support to which said spring is attached, said spring being moved toward the support during the impression movement whereby the spring is prevented from being placed under strong tension during said movement, substantially as described.

63. In a type-writer, the combination with a type mechanism, of means for producing an impression movement; a returning member, means whereby said member is prevented from exercising its returning force upon the type mechanism as said mechanism is completing its impression movement, operating means for the returning member, and means whereby said operating means is prevented from exercising its full force upon the returning member during the impression movement, substantially as described.

64. In a type-writer, the combination with a type mechanism, of means for producing an impression movement, a returning-spring for said mechanism, means for preventing the spring from being placed under strong tension during the beginning of the movement, and means for preventing the spring from exercising a returning force upon the type mechanism when said mechanism is completing its impression movement, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE C. BLICKENSDECKER.

Witnesses:

J. A. GRAVES,
A. WHITE.