

No. 656,086.

G. C. BLICKENSDEKFER.
TYPE WRITER.

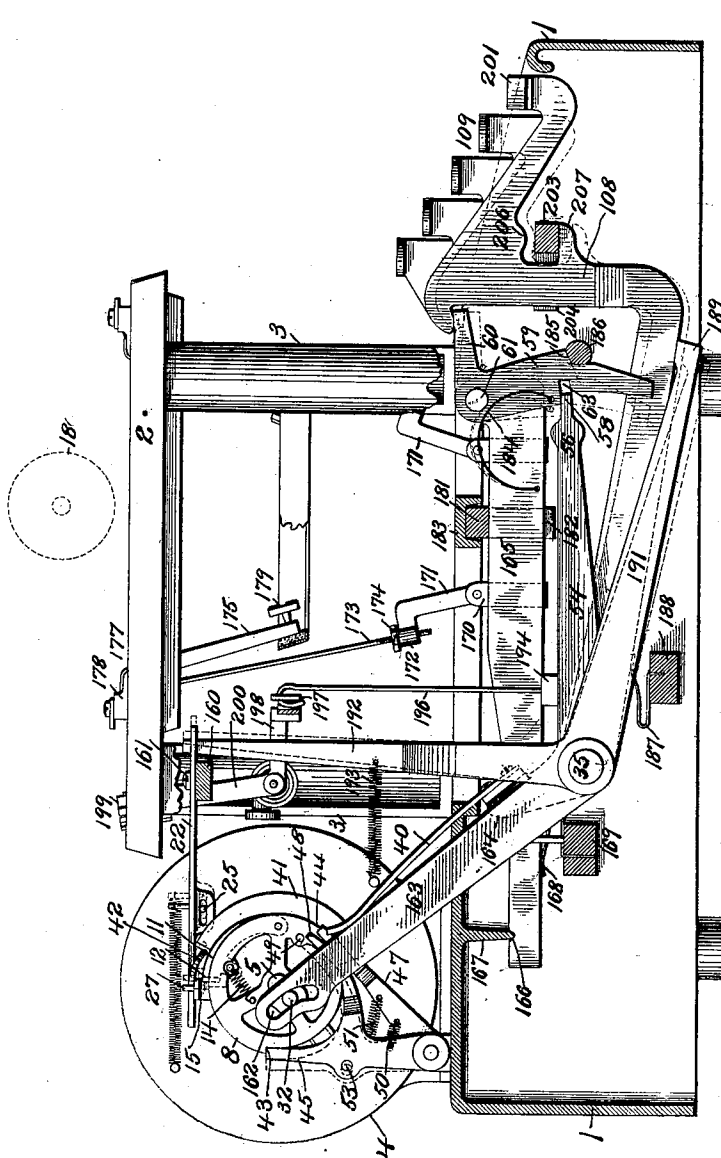
Patented Aug. 14, 1900.

(No Model.)

(Application filed Apr. 26, 1900.)

3 Sheets—Sheet 1.

Fig. 1.



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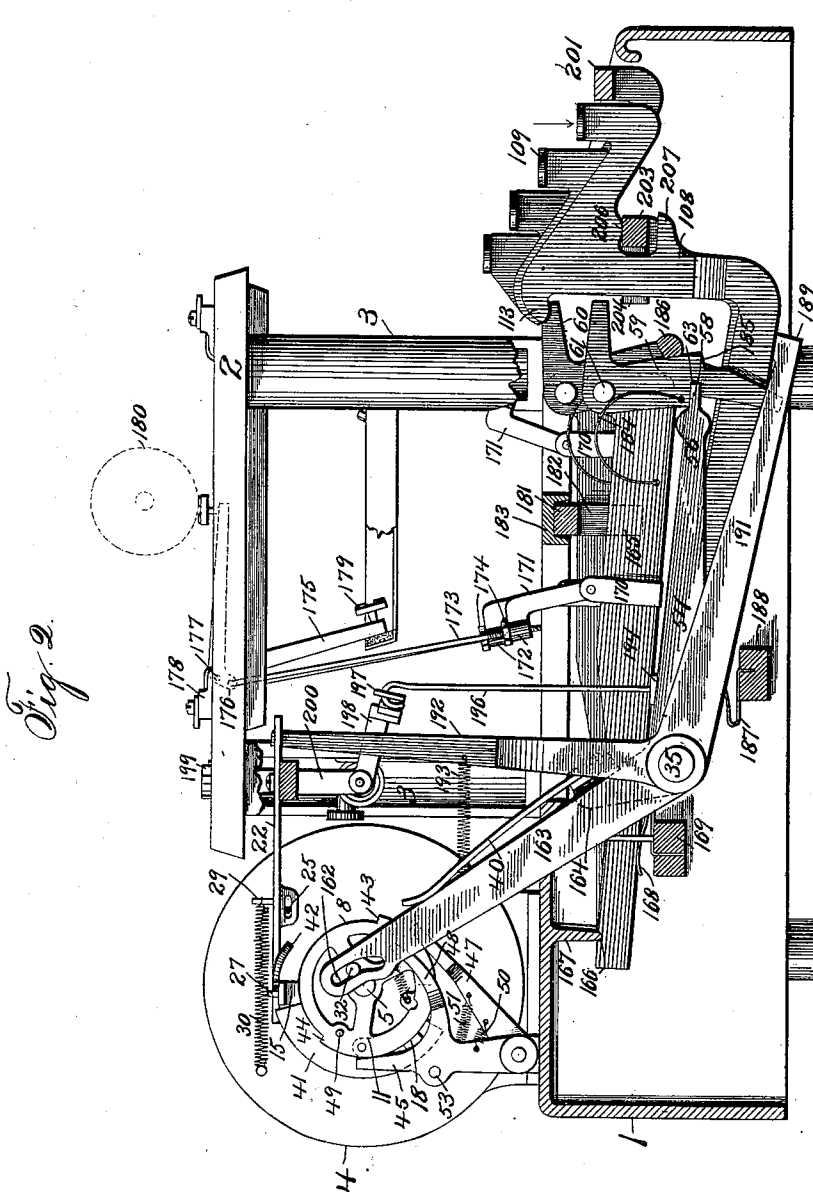
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(No Model.)

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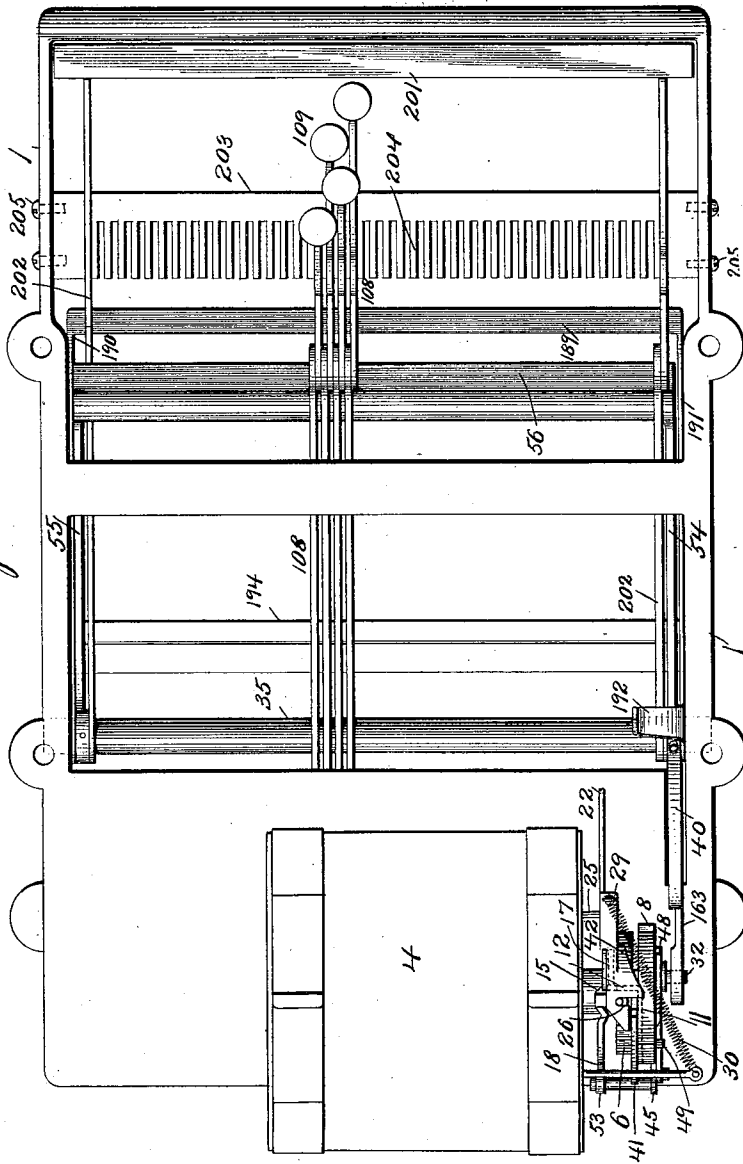
G. C. BLICKENS DERFER.
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(No Model.)

(Application filed Apr. 26, 1900.)

3 Sheets—Sheet 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE C. BLICKENS DERFER, OF STAMFORD, CONNECTICUT.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 656,086, dated August 14, 1900.

Application filed April 26, 1900. Serial No. 14,453. (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-Writers, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in type-writing machines, and more particularly to that class of machines ordinarily known as "type-bar" machines.

The invention has for its object to produce a simple, compact, and efficient power mechanism by which the type-bars may be operated, the impression being thus effected by the power-actuated mechanism and not by the force of the blow given by the operator.

With this 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 more particularly pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification, and in which like characters of reference indicate the same parts, Figure 1 is a diagrammatic side elevation, partly in section, of so much of a type-bar type-writing machine as is necessary to illustrate the invention. Fig. 2 is a view similar to Fig. 1, but showing the parts in a different position. Fig. 3 is a plan view with a number of the parts removed, illustrating the arrangement of the key-levers and the spacing-bar.

Referring to the drawings which illustrate one embodiment of the invention, the frame, which may be of any ordinary construction, consists of a casting 1, which forms the base of the frame, and a casting 2, which forms the top of the frame and which operate to support the type-bars in the usual manner. The casting 2 is connected to or supported on the casting 1 by means of pillars 3 or in any other suitable manner.

Connected to the frame in any suitable manner is a case in which the motor is contained. This case is shown as comprising two heads or drums 4, formed to provide suitable bearings, in which the main power-shaft 5 is mount-

ed. Any suitable form of motor may be used to drive the main power-shaft, but an electric motor will preferably be used. Since, however, this motor forms no part of the present invention, it is not illustrated.

In this machine the power mechanism is constantly driven and an actuating mechanism is provided through which the type mechanism is operated, the actuating mechanism being connected to and disconnected from the power mechanism for each operation of the type mechanism. In the form of machine shown the power mechanism embodies the constantly-running power-shaft 5, and the actuating mechanism is connected to and disconnected from the shaft by a clutch. Any suitable form of clutch may be used between the power-shaft and the actuating mechanism. The preferred form of clutch is that described and shown in my copending application executed of even date herewith, Serial No. 14,452. Since this clutch is fully illustrated and described in the application referred to, a full description of it is unnecessary in this application. For the purposes of this application it is sufficient to say that the main power-shaft 5 is provided with a ratchet-wheel 6, which is fast thereon. Loosely mounted on the power-shaft in any suitable manner is a driving-wheel 8, which is preferably a crank-wheel. This driving crank-wheel 8 is designed to be secured to and disengaged from the constantly-rotating ratchet-wheel 6 for each operation of a type-bar. This is effected by providing the driving-wheel 8 with a pawl 11, having an angular end 12, the said pawl being pivoted on the wheel and having secured to it a spring 14, which tends to draw the pawl 11 down into a position in which its angular end 12 engages the teeth of the ratchet-wheel 6. The pawl is held out of engagement with the ratchet-wheel 6 by means of a controller 15, which is pivoted on the bearing of the main power-shaft and is provided with a cam 17, which in the normal position of the parts lies underneath the angular end of the pawl 11 and holds it out of engagement with the ratchet-teeth. When, however, the controller is swung on the bearing, the cam passes out from under the angular end of the pawl and allows it to engage the teeth of the ratchet-wheel.

The controller 15 is operated from the keys of the machine through suitable connections, said connections embodying in the present instance a slide-bar 22, which is supported on a bracket or extension 160, which is suitably connected to the frame, the slide-bar being positioned on the bracket and guided in its movement by means of a screw 161. The bar is further guided in its movement by means of a pin 25, which extends from one of the heads 4 of the motor-case and which takes over a slot in the slide-bar. The slide-bar is detachably connected to the controller 15, the controller being provided with an upwardly-extending pin, which is engaged by an open-ended slot 26 in the slide-bar. The slide-bar 22 is held forward, so as to hold the controller in such a position that its cam 17 is under the angular end 12 of the pawl 11 by means of a suitable spring 30, which is connected to a pin 29 upon the slide-bar and to a pin on one of the heads of the motor-case.

The power from the driving-wheel 8 is transmitted to the actuating mechanism, to be hereinafter described, in any suitable manner. In the construction shown, as has been before stated, the driving-wheel is preferably a crank-wheel and is provided with a crank-stud 32, which engages a suitably-shaped slot 162 in a power-transmitting arm 163, which is loosely mounted on a shaft 35, said shaft being supported in suitable bearings in the casting 1. The construction is so arranged that a rotation of the crank-wheel produces an operation of the actuating mechanism, after which the crank-wheel is disconnected from the power-shaft.

In order to disconnect the crank-wheel from the power-shaft, it is provided with a projection 41, which coöperates with a cam 42 on the slide-bar 22, said projection striking the cam directly after the slide-bar has been actuated to move the controller. As the projection 41 strikes the cam it throws the open-ended slot 26 out of engagement with the pin 27 and permits the controller 15 to return to its normal position.

A stop-arm 45 is provided, which coöperates with a notch 43 on the crank-wheel 8, and a second stop-arm 47 is provided, which coöperates with a notch 44 on the wheel to prevent any rebound of the same. The stop-arm 45 is provided with a pin 53, which is operated on by a cam on an extension 18 of the controller, so that the movement of the controller throws out the stop-arm 45. The stop-arm is thrown in by means of a pin 49 on the crank-wheel 8, which engages a curved extension 48 on the stop-arm. The arms 45 and 47 are connected by a light spring 50 and the arm 47 is held up to its duty by a spring 51.

As has been before stated, the movement of the arm 163 serves to operate the actuating mechanism, which in turn operates the type mechanism. This actuating mechanism may be widely varied in form. In the construction shown, however, it consists of a bar

or bail 56, which is connected to a pair of arms 54 55, said arms and bail being preferably formed in one piece. The arms 54 55 are secured to the shaft 35 so as to be fast thereto in any suitable manner. The arm 54 is provided with an extension or arm 164, which is operated by the arm 163 before referred to. The connection between the arm 163 and the extension 164 may be made in any suitable manner; but it is preferably so made as to yield in case there is any locking or binding in the operating parts of the machine. In the construction shown the extension 164 carries a stiff spring 40, which is preferably detachably secured to the extension in any suitable manner. The spring 40 is made stiff enough so that a movement of the arm 163 will actuate the extension 164 and rock the shaft 35, so as to vibrate the actuating bail or bar 56. Should there be any binding or locking of the mechanism, however, which prevents movement of the bar 56, the spring 40 will yield, and thus prevent breakage in the machine. The bar or bail 56 operates certain actuating mechanism through which the type is caused to be impressed upon the paper. This actuating mechanism may be widely varied in form. In the construction shown it consists of a series of pivoted levers 165, which are provided with notches 166, said notches engaging a knife-edge projection 167, secured to the under side of the casting 1. The levers are held up against the knife-edge by means of springs 168, which are mounted on a bar 169, which extends across the casting 1 from side to side.

Suitable connections which may be widely varied in form are provided through which the movement of the levers 165 operate the type. In the construction shown each of the levers 165 (it being understood that there is one lever for each type-bar) is provided with a loop 170, to which is pivoted an arm 171. Each of the arms 171 has a threaded boss 172, which is engaged by a threaded connecting-rod 173. These rods 173 are or may be secured in position by lock-nuts 174. As is usual in this class of machines, the type-bars consist of bell-crank levers 175 176, said levers being pivoted at 177 to brackets 178, suitably secured around a central well in the upper casting 2. Each of the connecting-rods 173 is connected to the short arm 176 of one of the operating bell-cranks which form the type-bars. The other arm 175 carries the type 179, the type being secured to the bar in any usual or desired manner.

A platen-roll (indicated at 180) is mounted in a carriage such as is commonly employed in this class of machines.

In order that the levers 165 may be properly guided in their movement, the machine is preferably provided with a suitable guide or guides. As shown, the machine is provided with a comb-guide 181, between the teeth 182 of which the levers 165 move. This comb-guide is secured in any suitable man-

nier to the casting 1 of the frame of the machine. In the construction shown it is located in a recess in a cross-bar 183, which extends across the casting 1.

5 It is apparent from the construction so far described that when any one of the levers 165 is depressed the corresponding type-bar bell-crank will be operated and a type thrown up against the platen-roll.

10 Suitable means are provided for locking the actuating-levers 165 to the actuating bar or bail 56. In the construction shown each of the levers 165 carries a pivoted locking bell-crank 59 60, said bell-cranks being pivoted to the arms by pins 61 or in any other suitable manner. Each of the arms 59 of the bell-cranks 59 60 is provided with a notch 63, which engages a reduced edge 58 of the actuating bar or bail 56. The bell-cranks are normally held forward out of engagement with the bail by means of suitable springs 184, which in the construction shown are secured at one end to the levers 165 and at the other end to the arm 59 of the bell-crank 59 60. Each of the arms 59 of the bell-cranks 59 60 is further provided with a notch 185, which engages in the normal position of the parts with a shouldered rod 186, said rods limiting the movement of the bell-cranks under the stress of the springs 184. The shoulders on the rods 186 are preferably slightly inclined, as shown, so that the bell-cranks will readily slip therefrom when they are actuated.

35 The machine is provided with the usual series of key-levers 108, said levers being loosely mounted on the shaft 35 before referred to. These key-levers are provided with the usual character-keys 109 and operate against suitable returning-springs 187, mounted on a cross-bar 188, which extends across the casting 1 from side to side. The key-levers are provided with suitable means by which they operate the locking bell-crank levers 59 60. In the construction shown each key-lever is provided for this purpose with a projection 113, which overlies the arm 60 of its corresponding bell-crank. As each key-lever is depressed, therefore, it will be seen that it will turn its corresponding bell-crank on its pivot and lock the actuating-lever which carries the bell-crank to the actuating bar or bail 56.

The clutch mechanism before referred to is thrown into operation by the operation of the key-lever either simultaneously therewith or immediately after the movement of the locking bell-crank which has just been described. In order to effect this, the machine is provided with an operating-bar 189, said bar underlying all the key-levers and being carried on arms 190 191, which are loosely mounted on the shaft 35 before referred to. The arm 191 is one of the arms of the bell-crank 191 192, and the arm 192 engages the slide-bar 22. A pull-spring 193 is provided which is connected to the arm 192 and to any

other suitable part of the machine—as, for instance, one of the heads of the motor-case 4—and serves to return the operating-bar 70 after it has been actuated.

With the construction so far described it will be seen that when any key-lever is operated its corresponding locking bell-crank will be thrown forward so as to engage the 75 actuating-bar, and at the same time the bail 189 will be operated and through the bell-crank 191 192 will move the slide-bar 22 to operate the controller 15 of the clutch.

Spacing mechanism is provided, which may 80 be of any suitable form. In the construction shown a space-bar 194 is provided, said bar underlying all the levers 165 and being connected by hangers 196 to a cross-bar 197. The cross-bar 197 is in turn connected to an 85 arm 198, which operates the spacing-pawl 199, secured to an arm 200, the construction shown being that commonly used in type-bar machines. As each of the levers 165 is depressed, therefore, the spacing-bar is oper- 90 ated.

In order to operate the spacing-bar when a key-lever is not operated the machine is provided with the usual spacer 201, carried on arms 202, which are pivoted on the shaft 35 95 and overlie the bar 194.

In order that the key-levers may be truly guided in their operation, the machine is further provided with a comb-guide 203, between the teeth 204 of which the levers move. This 100 bar is preferably removably secured in the machine by screws 205. The guide 203 preferably not only operates to guide the key-levers in their movement, but also operates to limit the upward and downward movement 105 of the levers. To this end each of the levers is provided with shoulders 206 207, between which the guide 203 is located.

The general operation of the machine is as follows: When the operator depresses any 110 one of the keys, its projection 113 operates on the arm 60 of the locking bell-crank 59 60 and turns the same on its pivot 61 against the stress of the spring 184, thus causing the notch 63 of the arm 59 to engage the reduced 115 forward edge of the actuating-bar. At the same time the key-lever in its downward movement strikes the bar 189, thus rocking the bell-crank 191 192 and causing a movement of the slide-bar 22, which in turn moves 120 the controller 15 and throws its cam 17 out from under the angular end of the pawl 11. As soon as this occurs the pawl engages the teeth of the ratchet-wheel 6 and the driving crank-wheel is locked to the shaft, the stop- 125 arm 45 at the same time being thrown out by the movement of the controller. The driving-wheel now revolves, operating the arm 163, which in turn, through the spring 40, operates the arm 164 and rocks the shaft 35, 130 causing a downward movement of the actuating-bar 56. Inasmuch as the locking bell-crank has locked the proper lever 165 to the actuating-bar this lever is pulled down and

causes the bell-crank type-bar to be thrown up, thus impressing its type against the paper. As the wheel 8 began to revolve the end of the slide-bar 22 was unhooked from the controller, so that the controller was free to assume and did assume its normal position. As the wheel 8 completes its revolution, therefore, the clutch-pawl 11 is thrown out and the wheel 8 is brought to a positive stop by means of the stop-arm 45, said arm being thrown in by the operation of the pin 49 on the curved extension 48 of said arm.

In case of failure of power or for any other reason it may be desired to operate the machine as a hand-machine the guiding-comb 203 will be removed and the spring 49 will also be removed. As the type-levers are now depressed, they rock the bell-cranks, as before, causing them to engage with the actuating-bar. Inasmuch, however, as the guide 203 has been removed, the type-levers will not be limited in their downward movement and can be pressed on down, their projections 113 still remaining in engagement with the bell-crank arm 60. Inasmuch, however, as the bell-crank arms are secured to the levers 165, the levers will be forced down and the type-bars thrown into operation. In this case the actuating-bar will be moved and the shaft 35 rocked; but these movements will be idle movements.

The mechanical construction by which the several features of the invention are carried into effect may be varied within certain limits. The invention is not, therefore, to be limited to the specific construction hereinbefore described.

What is claimed is—

1. The combination with a constantly-running power mechanism, of a series of type-bars, a normally-inoperative actuating mechanism, a series of key-levers, means for positively connecting each of the type-bars to the actuating mechanism, and means for causing the power mechanism to operate the actuating mechanism, both sets of means being constructed to be operated by each key-lever, substantially as described.

2. The combination with a constantly-running power mechanism, of a series of key-levers, a series of type-bars, a normally-inoperative actuating mechanism, key-controlled connections between the type-bars and the actuating mechanism, connections including a clutch between the actuating mechanism and the power mechanism, and connections between each key-lever and the clutch mechanism, substantially as described.

3. The combination with a constantly-running power mechanism, of a series of type-bars, a normally-inoperative actuating mechanism therefor, connections including a clutch between the actuating mechanism and the power mechanism, connections including locking devices between the type-bars and the actuating mechanism, a series of key-levers,

means whereby each key-lever operates the clutch, and means whereby each key-lever operates a locking device, substantially as described.

4. The combination with a constantly-running power mechanism, of a series of type-bars, a normally-stationary actuating-bar, connections between the type-bars and the actuating-bar, connections including a clutch between the actuating-bar and the power mechanism, a series of key-levers, and means whereby each key-lever operates the clutch, substantially as described.

5. The combination with a constantly-running power mechanism, of a series of type-bars, a normally-stationary actuating-bar, connections including locking devices between the type-bars and the actuating-bar, connections including a clutch between the actuating-bar and the power mechanism, a series of key-levers, means whereby each key-lever operates the clutch, and means whereby each key-lever operates a locking device, substantially as described.

6. The combination with a constantly-running power mechanism, of a series of type-bars, a series of operating-levers, connections between each operating-lever and a type-bar, an actuating-bar, a series of key-levers, means operated by the key-levers for positively connecting the operating-levers to the actuating-bar, and means whereby the power mechanism operates the bar, substantially as described.

7. The combination with a constantly-running power mechanism, of a series of type-bars, a series of operating-levers, connections between each operating-lever and a type-bar, a normally-stationary actuating-bar, a series of key-levers, means operated by each key-lever for positively connecting the operating-levers to the actuating-bar, and means controlled by the key-levers for throwing the actuating-bar into operation, substantially as described.

8. The combination with a constantly-running power mechanism, of a series of type-bars, a series of operating-levers, connections between the operating-levers and the type-bars, a series of pivoted locking-levers carried by the operating-levers, an actuating-bar, connections including a clutch between the power mechanism and the actuating-bar, a series of key-levers, and means whereby each key-lever operates a locking-lever and throws in the clutch, substantially as described.

9. The combination with a constantly-running power mechanism, of a shaft, a power-transmitting arm, means whereby the arm rocks the shaft, an actuating-bar secured to the shaft, a series of type-bars, a series of operating-levers, connections between the type-bars and the operating-levers, a series of pivoted locking-levers operating to connect the operating-levers to the actuating-bar, a series of key-levers, and means operated by

each key-lever for causing the power-arm to be operated by the power mechanism, substantially as described.

10. The combination with a constantly-running power mechanism, of a driving-wheel, a clutch between the driving-wheel and the power mechanism, a shaft, a power-transmitting arm, means whereby said arm rocks the shaft, an actuating-bar connected to the shaft, a series of operating-levers, means whereby each of the operating-levers is connected to the actuating-bar, a type mechanism, connections between the type mechanism and the operating-levers, an operating-bar underlying the key-levers, and means whereby the operating-bar throws in the clutch, substantially as described.

11. The combination with a constantly-running power mechanism, of a driving-wheel, a clutch between the driving-wheel and the power mechanism, an actuating-bar, means whereby the driving-wheel operates the actuating-bar, a type mechanism, connections between the actuating-bar and the type mechanism, a series of key-levers, an operating-bar actuated from the key-levers, and means whereby the operating-bar throws in the clutch, substantially as described.

12. The combination with a constantly-running power mechanism, of a driving-wheel, a clutch between the driving-wheel and the power mechanism, an actuating-bar, means whereby the driving-wheel operates the actuating-bar, a series of type-bars, a series of operating-levers, connections between the type-bars and the operating-levers, a series of locking-levers for connecting the operating-levers to the actuating-bar, an operating-bar, means whereby the operating-bar actuates the clutch, and a series of key-levers arranged to actuate the locking-levers and the operating-bar, substantially as described.

13. The combination with a constantly-running power mechanism, of a series of type-bars, a series of horizontally-arranged operating-levers, connections between the type-bars and the operating-levers, a series of bell-crank locking-levers, an actuating-bar arranged to be engaged by said locking-levers, a series of key-levers having projections which operate the locking-levers, an operating-bar actuated by the key-levers, and means controlled by the operating-bar for causing the power mechanism to operate the actuating-bar, substantially as described.

14. The combination with a constantly-running power mechanism, of a series of type-bars, a shaft, an actuating-bar connected to the shaft, means including a clutch whereby the power mechanism operates the shaft, a series of pivoted horizontally-arranged operating-levers, connections between each operating-lever and a type-bar, a bell-crank lever carried by each operating-lever for locking said lever to the actuating-bar, a series of key-levers arranged to operate the bell-crank levers, an operating-bar arranged to be actu-

ated by the key-levers, and connections whereby the operating-bar actuates the clutch, substantially as described.

15. The combination with a constantly-running power mechanism, of a series of type-bars, a power-transmitting arm, a shaft, a yielding connection between the arm and the shaft, an actuating-bar carried by the shaft, a series of horizontally-arranged operating-levers, locking connections between the operating-levers and the actuating-bar, connections between the levers and the type-bars, a series of key-levers arranged to operate the locking connections, and means controlled by the key-levers for causing the power mechanism to operate the power-arm, substantially as described.

16. The combination with a constantly-running power mechanism, of a driving-wheel, a clutch for connecting the driving-wheel to the power mechanism, a shaft, a slotted arm loose on the shaft, a stud on the driving-wheel engaging the slot in the arm, an arm fast to the shaft and carrying a spring which bears on the slotted arm, an actuating-bar, a series of type-bars, connections including locking devices between the type-bars and the actuating-bar, a series of key-levers, each of said key-levers being arranged to operate a locking device, and connections whereby said key-levers operate the clutch, substantially as described.

17. The combination with a constantly-running power mechanism, of a driving-wheel, a clutch between the driving-wheel and the power mechanism, means including a slide-bar for operating the clutch, a series of key-levers, an operating-bar arranged to be operated by the key-levers, a bell-crank to one arm of which the operating-bar is secured the other arm being arranged to operate the slide-bar, a series of type-bars, an actuating-bar, connections between the actuating-bar and the type-bars, and means whereby the driving-wheel is caused to operate the actuating-bar, substantially as described.

18. The combination with a constantly-running power mechanism, of a series of type-bars, a series of pivoted operating-levers, connections between the type-bars and the operating-levers, a series of key-levers having projections, a series of bell-crank locking-levers pivoted to the operating-levers, one of the arms of each bell-crank lever underlying the projection on a key-lever, a removable stop for limiting the movement of the key-levers, an actuating-bar arranged to be engaged by the locking-levers, a shaft on which the actuating-bar is carried, separable connections between the shaft and the power mechanism, and means controlled by the key-levers for causing the power mechanism to operate the shaft and the actuating-bar, substantially as described.

19. The combination with a power mechanism, of a driving-wheel, a clutch between the power mechanism and the driving-wheel, a

series of type-bars, a series of pivoted operating-levers, connections between the type-bars and the operating-levers, a series of key-levers having projections, a series of bell-crank locking-levers pivoted to the operating-levers, one of the arms of each bell-crank lever underlying the projection on a key-lever, a removable stop for limiting the movement of the key-levers, an actuating-bar arranged to be engaged by the locking-levers, a shaft on which the actuating-bar is carried, separable connections between the shaft and

the power mechanism, an operating-bar arranged to be actuated by the key-levers, and means whereby the operating-bar throws the clutch into operation, substantially as described. 15

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

GEO. C. BLICKENSDECKER.

Witnesses:

JOHN A. GRAVES,

A. A. V. BOURKE.