No. 684,807. Patented Oct. 22, 1901.

A. C. FERGUSON.

SHIFTING TYPE BAR TYPE WRITER.

(Application filed Feb. 7, 1901.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

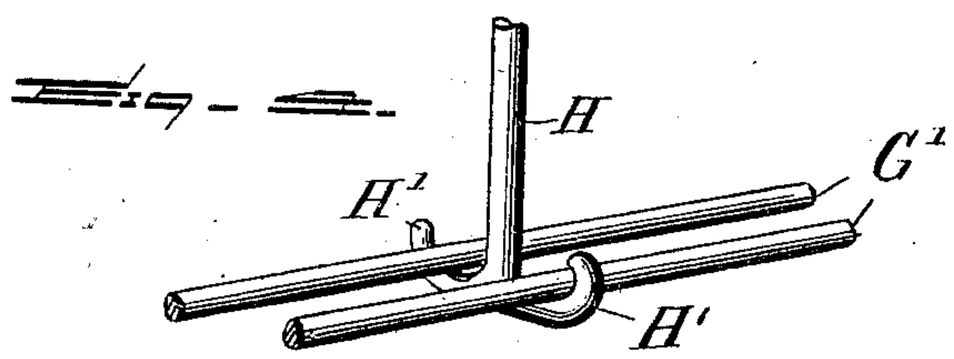
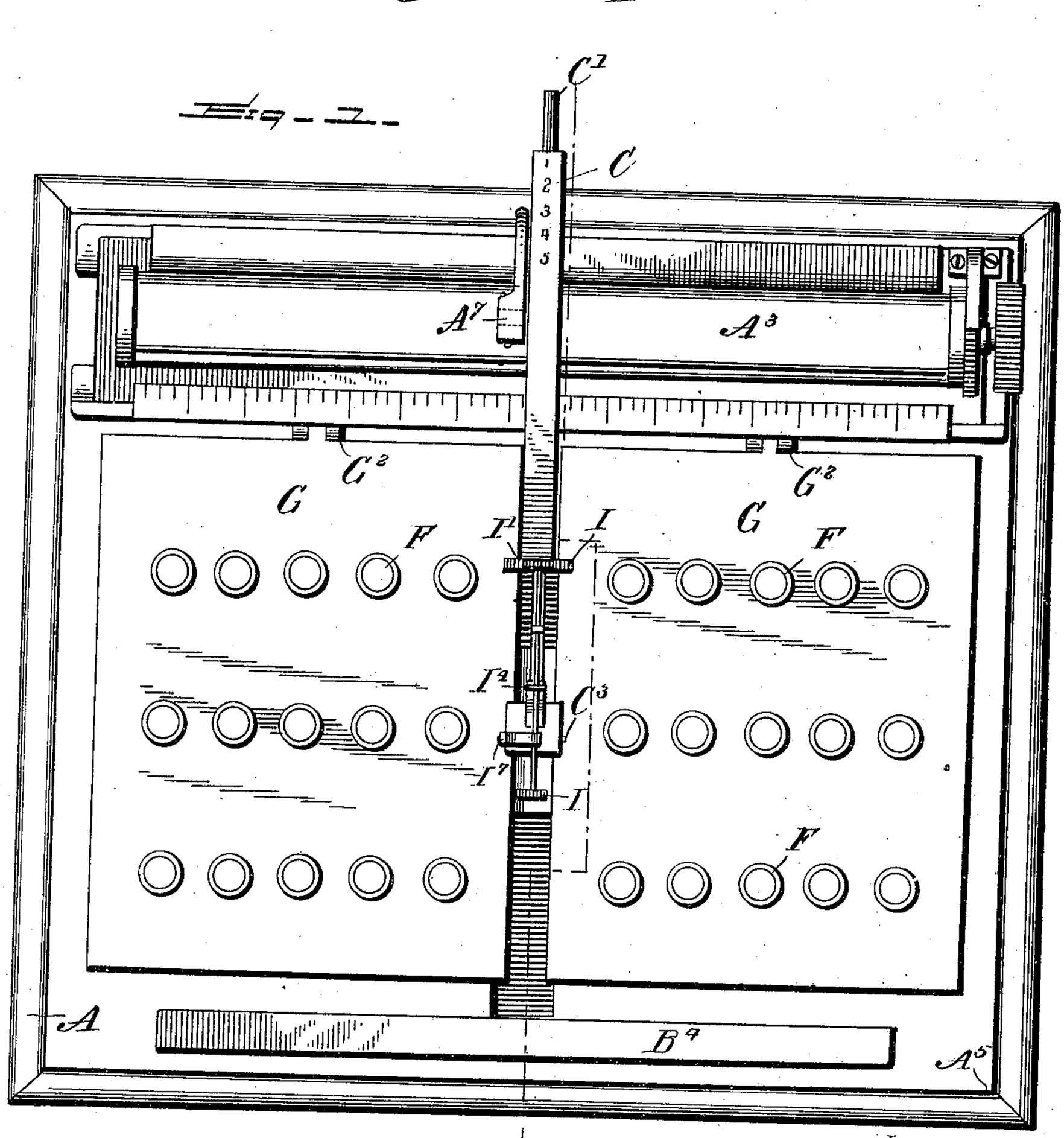


Fig. 2.



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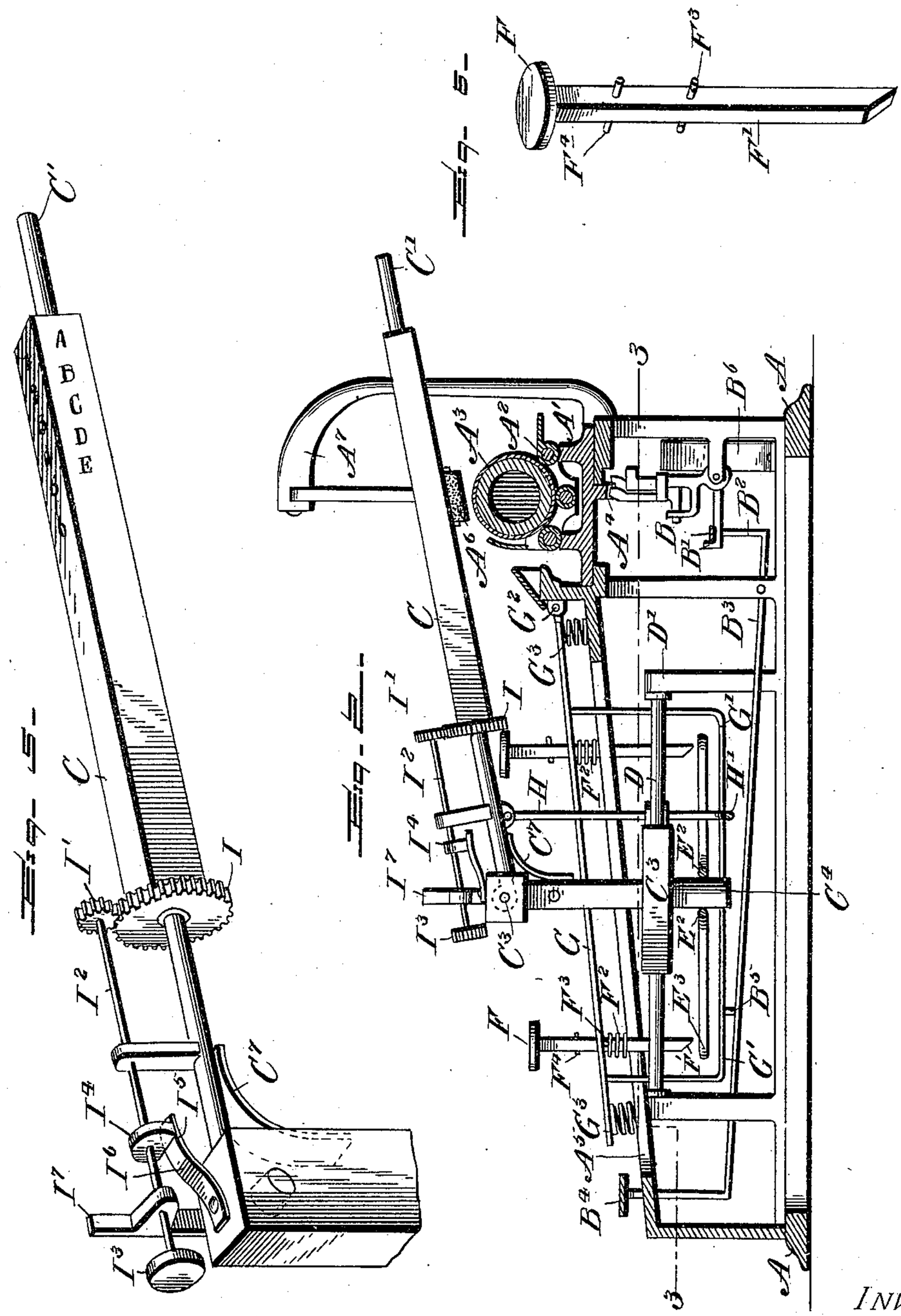
(No Model.) 3 Sheets—Sheet 2.



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(No Model.) 3 Sheets—Sheet 3.

Fig. 4.

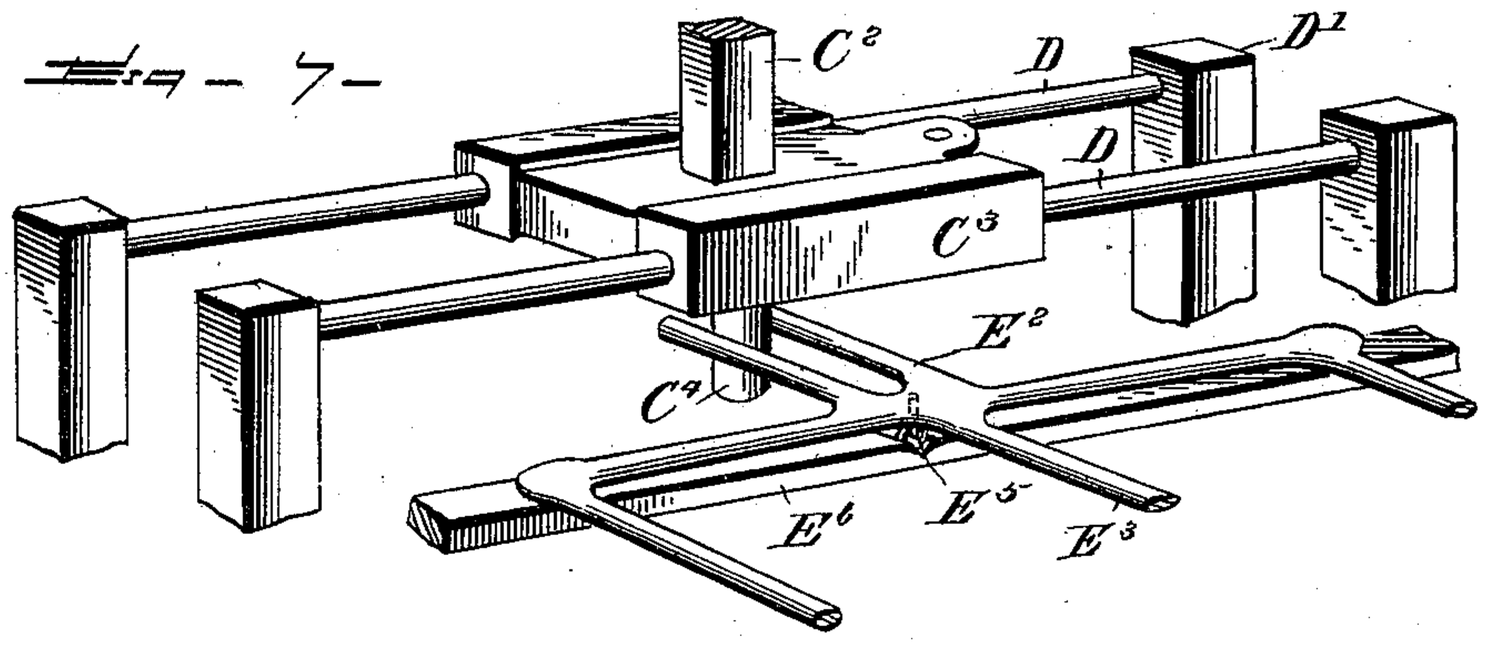
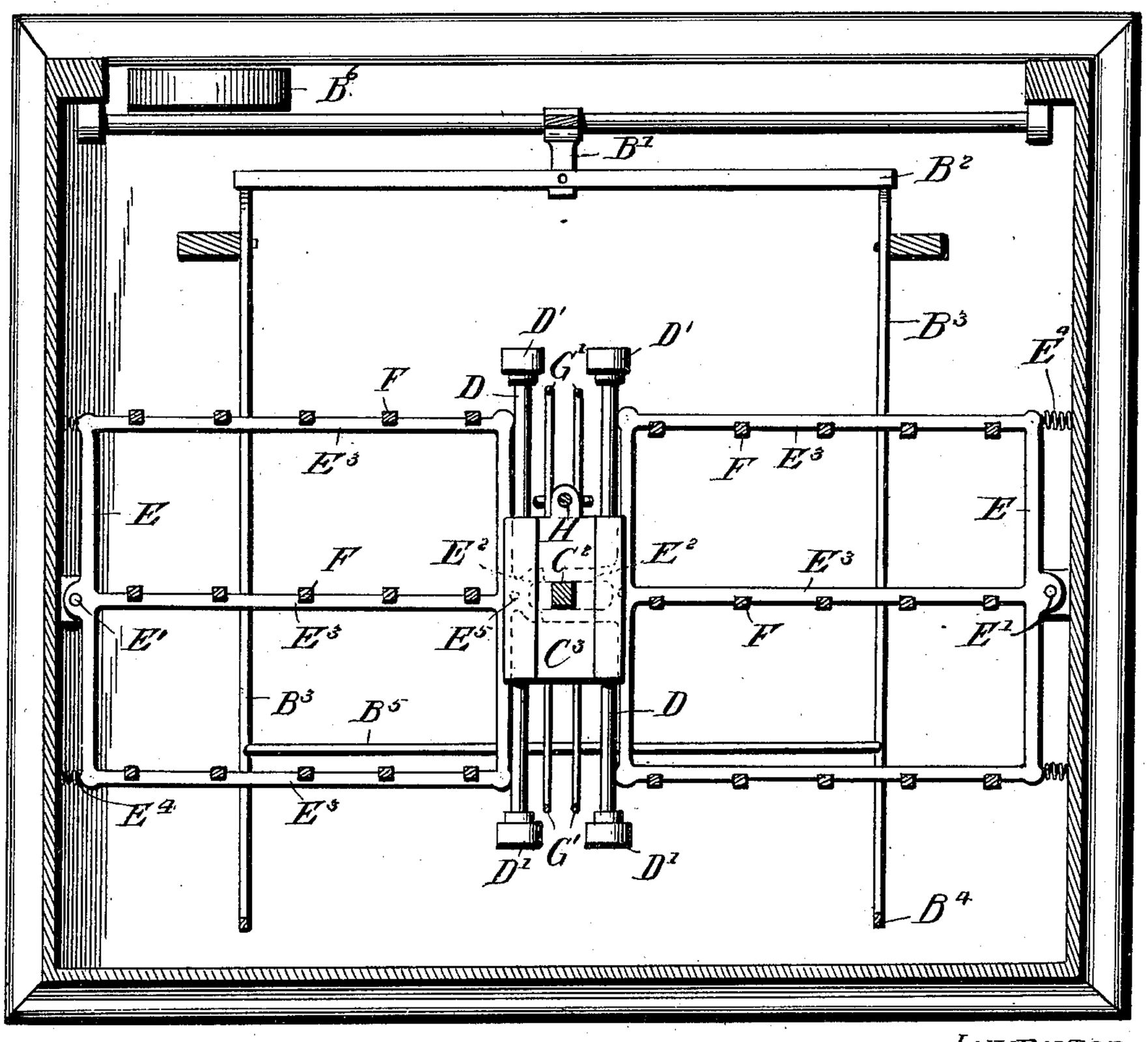


Fig. 5.



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UNITED STATES PATENT OFFICE.

ARTHUR C. FERGUSON, OF SARATOGA SPRINGS, NEW YORK.

SHIFTING-TYPE-BAR TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 684,807, dated October 22, 1901.

Application filed February 7, 1901. Serial No. 46,410. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR C. FERGUSON, a citizen of the United States, residing at Saratoga Springs, in the county of Saratoga, State of New York, have invented certain new and useful Improvements in Shifting-Type-Bar Type-Writers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a shifting-type-bar type-writer, and particularly to a structure wherein the type-bar is longitudinally shifted through operative connections with a key-post.

The invention has for its object to provide a structure which will insure an accuracy of movement and permit the parts to be quickly restored to their initial position, such structure embodying a type-bar adapted to be longitudinally reciprocated by means of the reciprocatory key-post and intermediate operative connections.

A further object of the invention is to provide means by which the type-bar will be first reciprocated to the desired position and then oscillated downward into contact with a platen by means of a key-post, and wherein said movement of the bar effects a spacing operation.

A further object of the invention is to provide means to rotate said bar to permit the use of the several faces thereof for different characters of type and to hold said faces in position when so adjusted.

Other objects and advantages of the invention will hereinafter appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan of the invention. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 3 is a horizontal section on the line 3 3 of Fig. 2. Fig. 4 is a perspective of the lower end of the depressing-hook for the type-bar. Fig. 5 is a similar view of the type-bar and rotating means therefor. Fig. 6 is a perspective of a key-post, and Fig. 7 is a similar view of the sliding cross-head carrying the standard for the type-bar and a portion of the shifting-frame for the same.

Like letters of reference indicate like parts throughout the several figures of the drawings.

The letter A designates a frame or foundation which may be of any desired construction or configuration suitable for containing the operative parts of the mechanism. At the rear of this frame a support A′ is provided for a platen-carriage A^2, having therein a platen A^3, adapted to coöperate with a type-bar. This carriage-support A′ is provided upon its under face with a rack-bar A^4, adapted to cooperate with any usual or preferred form of feeding mechanism B—for instance, the oscillating dog—as shown. This feed mechanism is provided with an angle-arm B′, adapted to coöperate with the inner end B^2 of a pivoted spacing-lever B^3, which terminates at the front of the machine in a suitable space-bar B^4, accessible to the operator. This space device for the carriage may be used with any desired form of feed mechanism—such, for instance, as a spring-drum B^5, as shown by dotted lines in Fig. 2—for applying power to the carriage.

The type-bar C may be provided with any desired number of flat or other shaped faces adapted to contain different arrangements or characters of type. For instance, in the illustration shown in Fig. 5 the under face of the bar contains the ordinary small letters, while the right-side face contains capitals and the upper face numerals. The left face may be provided with any desired characters convenient for the use of the operator. This type-bar C is rotatably mounted upon a shaft C′, which shaft is at its inner end pivoted to a vertical standard C^2 by any desired means—for instance, as shown at C^3—and held above the platen by a spring C^7. The lower end of the standard C^2 is mounted in a suitable cross-head C^3, which is slidably supported upon bars or rods D, mounted above the base of the machine by means of standards D′ at opposite ends of each bar. It will be seen that the reciprocation of the cross-head C^3 upon the bars D carries therewith the standard C^2 and the type-bar C. For the purpose of shifting this cross-head and the type-bar carried thereby I have provided at opposite sides thereof a pivoted frame E, mounted upon opposite walls of the casing, as at E′, and provided on their ends next the cross-head with a forked extension E^2, adapted to embrace

the lower curved portion C^4, extending downward from the standard below the cross-head C^3. These shifting-frames are similar in construction and are provided with cross-bars E^3, adapted to be engaged by the lower beveled ends F′ of the key-posts F. The frames E are centrally pivoted, and at the ends thereof suitable springs E^4 are provided for restoring the frame to its initial position when moved in either direction, and for the purpose of holding the frame in this position a suitable projection E^5 is adapted to seat in a centrally-disposed recess formed in a fixed part E^6, secured to the base of the machine. It will be seen that the seating of this projection will prevent the rebound of the frame as it returns to its initial position during a rapid movement of the apparatus. In practice it is desirable to dispose the longitudinal center of the type-bar C over the platen A^3, and in order to carry the bar in either direction the key-posts on one side of the machine are disposed on one side of the bars E^3, while those at the opposite side of the machine are disposed upon the other side, thus causing the right frame to move in one direction and the frame at the left to move in the opposite direction when the key-post above the same is depressed.

The key-post F may be mounted in any desired manner and is preferably provided with a restoring-spring F^2, surrounding the same and bearing at its lower end upon the top plate A^5 of the machine, while its upper end is in contact with a projection or collar F^3 upon the post. The first downward movement of the post is to bring the inclined face F′ thereof in contact with a bar E^3 of the frame E, which longitudinally shifts the type-bar. It is now desirable to depress this bar into contact with the platen, and this function is accomplished by means of a table G, suitably mounted above the top plate A^5 and provided with a depending bail G′. Two of these plates are provided, one beneath each bank of keys, and they are supported by a pivotal mounting G^2 at the back of the machine next the carriage. The bails G′ extend down from the tables G at their adjoining edges and lie beneath the cross-head C^3. Pivotally connected with the shaft C′ of the type-bar C and extending through the cross-head is a depressing-hook H, provided at its lower end with loops H′, as shown in Fig. 4, adapted to lie beneath the rods of the bail G′ and to travel beneath the same in the reciprocation or shifting of the post and type-bar. It will be seen that a downward movement of either table G, which is produced by means of a projection F^4 upon the key-post engaging the upper face of the table, carries the same downward and brings the bail into contact with the hook H, thus drawing the same downward and making the impression from the type-bar to the platen. The continued downward movement of the bails incident to making the impression causes the same to engage a cross-bar B^5, extending between the pivoted space-bars B^3, so as to operate the feed-dogs B, as usual in this class of machines. For the purpose of inking the type-bar a suitable pivoted roller A^6 may be supported from a hanger A^7 to lie beneath the bar when the same is in a raised position and to be forced from beneath the same in the downward movement of the bar.

For the purpose of rotating the type-bar C when the characters are desired to be used upon the various sides thereof one end of the bar is provided with a gear I, adapted to mesh with a pinion I′, mounted upon a shaft I^2, which shaft is provided with a turn-button I^3 and carried by a pivoted post I^7. This shaft is mounted to oscillate with the type-bar C when depressed and is provided with a holding-disk I^4, having a flattened face I^5, adapted to lie in contact with the spring I^6 when one face of the bar is in proper printing position above the platen, as shown in detail by Fig. 5.

In the operation of the machine it will be seen that the depression of a key-post F first brings the beveled lower end F^8 thereof in contact with a cross-bar E^3 of the pivoted frame E, thus shifting the same upon its pivot E′. The fork of this shifting-frame embraces the lower end of the standard C^2, which is secured to the cross-head C^3, thus reciprocating said cross-head upon the rods D and carrying therewith the depressing-hook H, which extends beneath the bails G′ from the tables G. The extent of movement of the shifting-frame is governed by the relative position of the key-post F to the pivot E′ of the frame, it being obvious that the greater the distance of the post from the pivot the less would be the movement of the frame, although this movement can also be determined to some extent by the inclination of the beveled face F′ of the bar relative to the vertical axis thereof. It will also be observed that by forming the bars rectangular in shape and passing the same through a similar aperture in the table G and top A^5 of the frame the bars will be held against rotation and the proper face always presented to the bars of the shifting-frame. The movement so far described has shifted the type-bar to bring the proper type above the platen, and the continued downward movement of the key-post brings the projection F^4 into contact with the upper face of the table G, thus depressing the bail G′ thereof into contact with the loop of the hook H and exerting a downward pressure upon the shaft of the type-bar and bringing the same into printing contact with the platen and also depressing the pivoted space-lever B^3 through the engagement of the bail G′ with the cross-bar B^5. When the key is released, the table G is restored to position by means of suitable springs—for instance, as shown at G^3—and the key-post raised by the retracting-spring

F², while the type-bar is raised by means of spring C⁷, heretofore described. When the pressure is removed from the space-bar B⁵, the spacing-dogs permit a movement of the carriage in the usual manner, while the springs E⁴ retract the shifting-frame to its central or initial position, at which it is frictionally held by means of the roller and seat E⁵, when the parts are in position for a further operation.

It will be obvious that changes may be made in the details of construction and configuration of the several parts and such changes as are within the province of a skilful mechanic made in the practical construction of the machine without departing from the spirit of the invention as defined by the appended claims.

Having described my invention, what I claim is—

1. In a type-writer, the combination with a reciprocatory type-bar pivotally supported at one end of a key-post, means connecting said post and bar for reciprocating the latter, and means operated by said post for depressing the bar into contact with a platen beneath the same; substantially as specified.

2. In a type-writer, the combination with a reciprocatory type-bar pivotally supported at one end, of a key-post, a shifting-frame, means connecting the same with said bar, and means operated by said post for depressing the bar into contact with a platen beneath the same; substantially as specified.

3. In a type-writer, the combination with a reciprocatory type-bar pivotally supported at one end, of a key-post, a shifting-frame, a standard for said bar adapted to be shifted by said frame, and means operated by said post for depressing the bar into contact with a platen beneath the same; substantially as specified.

4. In a type-writer, the combination of a reciprocatory type-bar pivotally supported at one end, a key-post, a shifting-frame, a standard for said bar adapted to be shifted by said frame, a sliding cross-head to guide the movement of said standard, and means operated by said post for depressing the bar into contact with a platen beneath the same; substantially as specified.

5. In a type-writer, the combination of a reciprocatory type-bar, of a key-post, a shifting-frame adapted to be engaged by said post, a standard for said bar adapted to be shifted by said frame, a sliding cross-head connected to said frame to guide the movement of said standard, a pivot for said frame, and means for restoring the same to its initial position; substantially as specified.

6. In a type-writer, the combination of a reciprocatory type-bar, a key-post, a shifting-frame adapted to be engaged by said post, a standard for said bar adapted to be shifted by said frame, a sliding cross-head connected to said frame to guide the movement of said standard, a pivot for said frame, means for restoring the same to its initial position, and means for oscillating said type-bar; substantially as specified.

7. In a type-writer, the combination of a reciprocatory type-bar, a key-post, a shifting-frame, a standard for said bar adapted to be shifted by said frame, a sliding cross-head to guide the movement of said standard, a pivot for said frame, means for restoring the same to its initial position, means for oscillating said type-bar, a table adapted to be depressed by said key-post and provided with a bail for operating said oscillating means; substantially as specified.

8. In a type-writer, the combination of a reciprocatory type-bar, a key-post, a shifting-frame, a standard for said bar adapted to be shifted by said frame, a sliding cross-head to guide the movement of said standard, a pivot for said frame, means for restoring the same to its initial position, means for oscillating said type-bar, a table adapted to be depressed by said key-post and provided with a bail for operating said oscillating means, and a space-bar beneath said bail; substantially as specified.

9. In a type-writer, the combination with a shaft, a type-bar rotatably mounted thereon, means for reciprocating said shaft, a gearing upon one end of said type-bar, a shaft and pinion for operating said gear, a cam-disk on said shaft, and a spring adapted to engage said disk; substantially as specified.

10. In a type-writer, the combination with a reciprocatory type-bar, of a standard to which the same is pivotally connected, a sliding cross-head for supporting said standard, a shifting-frame adapted to engage the lower end of said standard, and a key-post having a beveled lower face to engage and shift said frame; substantially as specified.

11. In a type-writer, the combination with a reciprocatory type-bar, of a standard to which the same is pivotally connected, a sliding cross-head for supporting said standard, a shifting-frame adapted to engage the lower end of said standard, a key-post having a beveled lower face to engage and shift said frame, means for centrally pivoting said frame, a restoring-spring for said frame, and restoring-spring for said key-post; substantially as specified.

12. In a type-writer, the combination with a reciprocatory type-bar, of a standard to which the same is pivotally connected, a sliding cross-head for supporting said standard, a shifting-frame adapted to engage the lower end of said standard, a key-post having a beveled lower face to engage and shift said frame, means for centrally pivoting said frame, a restoring-spring for said frame, restoring-spring for said key-post, a hook extending downward from the shaft of said type-bar, a table through which said key-post passes and provided with a bail adapted to

contact with said hook, and a projection carried by said key-post to depress said table, bail and hook; substantially as specified.

13. In a type-writer, the combination with a reciprocatory type-bar, of a standard to which the same is pivotally connected, a sliding cross-head for supporting said standard, a shifting-frame adapted to engage the lower end of said standard, a key-post having a beveled lower face to engage and shift said frame, means for centrally pivoting said frame, a restoring-spring for said frame, restoring-spring for said key-post, a hook extending downward from the shaft of said type-bar, a table through which said key-post passes and provided with a bail adapted to contact with said hook, a projection carried by said key-post to depress said table, bail and hook, means for pivoting said tables at one end thereof, and a restoring-spring for raising said table; substantially as specified.

14. In a type-writer, the combination with a reciprocatory type-bar, of a standard therefor upon which said bar is pivotally mounted, a cross-head within which said standard is supported, rods upon which said cross-head travels, a pivoted shifting-frame provided with forked ends adapted to engage the lower end of said standard, and a key-post adapted to engage and shift said frame, substantially as specified.

15. In a type-writer, the combination with a reciprocatory type-bar, of a standard therefor upon which said bar is pivotally mounted, a cross-head within which said standard is supported, rods upon which said cross-head travels, a shifting-frame provided with forked ends adapted to engage the lower end of said standard; cross-bars within said shifting-frame, and key-posts adapted to engage said bars at different distances from the pivotal point to shift the bars for varied extents of movement; substantially as specified.

16. In a type-writer, the combination with a reciprocatory type-bar, of a standard for the same centrally disposed in the frame, oppositely-disposed shifting-frames for reciprocating said standard, and key-posts adapted to engage one of said frames and move the same in a direction opposite to the movement of the oppositely-disposed frame; substantially as specified.

17. In a type-writer, the combination with a reciprocatory type-bar, of a standard for the same centrally disposed in the frame, oppositely-disposed shifting-frames for reciprocating said standard, key-posts adapted to engage one of said frames and move the same in a direction opposite to the movement of the oppositely-disposed frame, a forked projection extending from said frames and embracing the lower end of said standard, and a friction device for centering and holding said frames when restored to the initial position; substantially as specified.

18. In a type-writer, a shifting-frame comprising rectangular bars, means for pivoting said frame at one point, and a forked operating-arm extending from said frame at an opposite point; substantially as specified.

19. In a type-writer, the combination with a pivotally-mounted type-bar, of a depending hook, a depressible table provided with a bail adapted to engage said hook to depress said bar; substantially as specified.

20. In a type-writer, the combination with a reciprocatory type-bar, of a standard for supporting said bar mounted in a sliding cross-head, rods for supporting said cross-head, means for shifting said standard and cross-head, a depressible table, a bail extending downward from said table parallel with the rods for said cross-head, and a depressing-hook extending from said type-bar shaft and carried by the cross-head beneath said bails in the reciprocation thereof; substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR C. FERGUSON.

Witnesses:
WM. E. BRILL, JR.,
FRANCIS C. ELY.