

UNITED STATES PATENT OFFICE.

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REVERSE-FEED FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 616,549, dated December 27, 1898.

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To all whom it may concern:

Be it known that I, THOMAS A. MAULSBY, a citizen of the United States, residing at Fairmont, in the county of Marion, State of West Virginia, have invented certain new and useful Improvements in Reverse-Feeds for Type-Writers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to force-feeds for type-writers, and more particularly to a construction adapted to reverse the feed of a carriage for the purpose of correcting errors, the said reversing means being controlled by a key-lever.

The invention has for its object to provide a simple construction of parts adapted for application to type-writing machines of various characters by means of which the feed of the carriage may be reversed for one or more spaces.

The invention also has for an object to so construct and arrange the parts that the same may be operated from a key-lever located in the keyboard of the machine, and also of means to permit the return of the force-feed dog without raising the spacing-rack frame.

A further object of the invention is to provide an improved construction of bell-ringer attached to the spacing-rack frame which particularly adapts the ordinary rack for use with this invention.

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 represents a detail rear elevation of an ordinary construction of type-writer with this invention applied thereto. Fig. 2 is a detached perspective of the operating parts of the force-feed. Figs. 3, 4, and 5 are detail plan views illustrating the successive positions of the force-feed dog in accomplishing its functions.

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

The letter A represents the frame of a type-writer, which may be of any desired construction. It will here be stated that the invention is illustrated as applied to a "Remington"

type-writer; but it is obvious that with suitable mechanical changes the invention may be applied to any of the numerous type-writer constructions now upon the market in which a spacing-rack is used or in which a suitable part is provided, which may be acted upon by the dog to produce the force-feed. At the upper part of the frame the usual carriage-way or hinge-rod A' is provided, upon which moves the spacing-rack frame A², located on and moved in the movement of the carriage. Upon the usual support, at the rear of the frame, the ordinary construction of spacing-rocker A³ is pivoted and the same provided with the loose and rigid space-dogs A⁴. The ordinary bell A⁵ is provided and likewise the striker A⁶ for operating the same, the upper end of which projects through an aperture in the frame A.

The parts just described are of the usual construction employed in connection with the Remington type-writer and are simply illustrated as accessories to demonstrate the application of one form of my invention.

For the purpose of retracting the carriage carrying the spacing-rack A² a laterally-operating feeding-dog B is provided. This dog may be supported in any suitable manner, an instance of which is illustrated in the accompanying drawings, where the dog is pivotally mounted in a removable support B', secured to the frame of the type-writer adjacent to the escapement or space-dogs A⁴. The plate B' is provided with suitable pins or lugs b, adapted to enter apertures in the frame, whereby the attaching-bracket may be secured in exact operative relation with the other parts and removed therefrom by the user of the machine. The support B' will be secured in position by means of a removable screw b'. At one end of the support B' forked arms B² are provided, through which the pivot-pin b² passes to support the dog B. This dog is also provided with an angle-arm B³ and engaging socket B⁴, within which rests the fold of a leaf-spring B⁵ or other suitable retracting device. One free arm of this spring B⁵ rests upon the angle-arm B³, while the other end is engaged beneath a cross-bar b³ of the support B'. The action of this spring is to retract the dog to its normal or initial position, as shown in Fig. 2, and from en-

gagement with the spacing-rack A². The end of the dog which engages the rack is provided with a horizontal face B⁶ and flange B⁷, which flange lies at an angle to the axis or pivot upon which the arm B rotates. This flange is also provided with the spring end or finger b⁴, the function of which will be hereinafter described. Numerous means may be provided for operating this force-feed dog; but a convenient method of performing the same is a key-lever C, extending to the keyboard of the machine and connected by a link C' with a rocking arm C², mounted upon a pivot C³, carried by the frame of the machine. The end C⁴ of this arm lies beneath the angle-arm B³ of the dog, and the movement of rock-arm C² thus causes the flange B⁷ of the force-feed dog to travel laterally across the path traversed by the spacing-rack A² and between the teeth thereof.

When the force-feed dog is located in the relation to the spacing-dogs illustrated in Fig. 1, it is found desirable to provide an improved form of bell-ringing projection upon the spacing-rack. In the operation of the rack the ordinary form of bell-ringing lug would strike the force-feed dog, and for that reason I have provided the extension D, rigidly mounted upon the rack A² and provided at its extreme end with a pivoted projection D' and with an arm D², upon which bears a spring D³ to normally maintain the projection D' in the depressed position shown in Figs. 1 and 2. This spring permits the projection D' to move and ride over the bell-ringing arm A⁶ in the reverse movement of the carriage, while in the forward movement of the carriage the projection D' is held against movement when engaging the bell-ringing arm by means of a lug d, carried by the projection D' and engaging the end of the extension D. The operation of this bell-ringer will be obvious through its relation to the bell-ringing arm A⁶.

For the purpose of clearly demonstrating the operation of the force-feed dog the action of the same is illustrated by Figs. 3, 4, and 5, which diagrammatically show the successive steps of its operation. In Fig. 3 the dog B is illustrated as in its normal position and out of operative relation with the spacing-rack. The point x upon the rack indicates the position at which the carriage stands in relation to the spacing-dogs A⁴, the same being in engagement with the rack. Now it is to be assumed that a letter preceding the point x has been erroneously printed and it is desired to correct the same. The dog B is consequently swung upon its pivot laterally of the spacing-rack by means of the key-lever C, so that the point b⁴ engages the vertical face of the tooth marked x upon the rack. The continued movement of the dog brings the diagonally-disposed flange B⁷ thereof into advancing contact with the rack, and this moves or retracts the same in a reverse direction for a predetermined distance—for instance, two spaces, as shown in Fig. 4. Dur-

ing this movement the spacing-dogs will be thrown into proper holding relation with the second tooth behind their previous position. The key-lever C is released at this time, and the spring B⁵ returns the dog to its initial position, and the rack during this returning movement advances one space, or until the point x is one space retracted from its original position, as shown in Fig. 5. The proper type-lever will be then operated to make the desired correction, and the spacing-dogs A⁴ operate to feed the rack to its original position for continuing writing. In order to prevent the elevation of the rack by reason of the engagement of the dog B with the inclined face of the rack-tooth, the spring-finger b⁴ is provided. The diagonal disposition of the flange B⁷ renders the use of the finger b⁴ essential when used in connection with the form of rack-teeth shown, so that the finger will yield to permit the complete return of the reversing-dog without elevating the rack. It will be seen that if the finger b⁴ were rigid (the path traversed thereby being diagonally across the inclined face of the rack-tooth) it would overcome the weight of the space-rack and lift the same as the finger passes to the vertical face of the same tooth. The yielding finger not only prevents the lifting of the space-rack, but also springs to a position from which it may enter in front of the vertical face of the tooth previously acted upon, and is thus in position for subsequent operation.

The operation described is performed with the rapidity usual in the depression of a type-lever, as the reverse-key C is simply depressed and immediately retracts, leaving the carriage reversed one space from its previous position.

It is obvious that numerous changes may be made in the construction and location of the force-feed dog in order to adapt the same for application to different classes of typewriters and that such changes will not depart from the spirit of the invention as defined by the appended claims.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A force-feed attachment comprising a pivoted reversing-dog provided with a single continuous contacting face extending at an angle to the pivotal point of said dog; substantially as specified.

2. In a force-feed attachment, the combination with a movable carriage and its escapement mechanism embracing a spacing-rack, of an independent laterally-operating reversing-dog provided with a contacting face extending at an angle to the pivoting-point of said dog and having a yielding end engaging said rack; substantially as specified.

3. In a force-feed attachment, the combination with a movable carriage and its escapement mechanism, of a laterally-operating reversing-dog provided with a single continuous contacting face extending at an angle to the

pivoting-point of said dog, positive keyboard connections for moving said dog, and means for retracting the same to its initial position; substantially as specified.

5 4. In a force-feed attachment, the combination with a movable spacing-rack and its accessories, of a reversing-dog pivotally mounted and provided with a single continuous contacting face adapted to travel angularly of the path traversed by said rack; substantially as specified.

10 5. In a force-feed attachment, the combination with a moving spacing-rack and its escapement mechanism, of a reversing-dog pivotally mounted and provided with a single continuous contacting face adapted to travel laterally of the path traversed by said rack, an angle-arm provided upon said dog, and positive keyboard connections for operating the arm; substantially as specified.

15 6. In a force-feed attachment, the combination with a moving spacing-rack and its escapement mechanism, of a reversing-dog pivotally mounted and provided with a single continuous contacting face adapted to travel laterally of the path traversed by said rack, an angle-arm provided upon said dog, positive keyboard connections for operating said arm, and a spring for retracting the said dog to its initial position; substantially as specified.

20 7. In a force-feed attachment, the combination with a moving spacing-rack and its escapement mechanism, of a reversing-dog pivotally mounted and adapted to travel laterally of the path traversed by said rack, an angle-arm provided upon said dog, means for operating said arm, a spring for retracting the said dog to its initial position; and an engaging face upon said dog extending diagonally to the pivot thereof; substantially as specified.

25 8. In a force-feed attachment, the combination with a moving spacing-rack and its escapement mechanism, of a reversing-dog pivotally mounted and adapted to travel laterally of the path traversed by said rack, an angle-arm provided upon said dog, means for operating said arm, a spring for retracting said dog to its initial position, and an engaging face provided with a spring-finger and extending diagonally to the pivot of said dog; substantially as specified.

30 9. A force-feed dog for type-writers comprising an arm provided at one end with an engaging flange and at the opposite end with a pivoting-socket, said flange extending diagonally to the axis of said socket and being provided with a yielding end; substantially as specified.

35 10. A force-feed dog for type-writers comprising an arm provided at one end with a pivoting-socket and an angle-arm extending therefrom, a head at its opposite end provided with a flange at one edge having a spring end or finger, said flange extending at an angle to the axis of said socket; substantially as specified.

11. In a force-feed attachment, the combination with a support, of a force-feed dog pivotally mounted therein and provided with an angle-arm, a socket at the outer end of said arm, a spring seated in said socket and engaging a portion of said support, and an engaging flange at one end of said dog and extending at an angle to the pivot thereof; substantially as specified.

12. In a force-feed attachment, the combination with a support, of a force-feed dog pivotally mounted therein and provided with an angle-arm, a socket at the outer end of said arm, a spring carried by said arm and engaging a portion of said support, an engaging flange at one end of said dog and extending at an angle to the pivot thereof, and centering-lugs provided upon said support to govern the application of the same to a machine-frame; substantially as specified.

13. In a type-writer, the combination with a carriage, its spacing-rack and escapement mechanism, of a pivoted reversing-dog provided with a single continuous contacting face traveling laterally of said rack, a key-lever mounted in the frame, a rock-arm adapted to engage said dog, and a positive keyboard connection between said arm and key-lever; substantially as specified.

14. In a type-writer, the combination with a carriage, its spacing-rack, escapement mechanism and force-feed dog; of an extension carried by the rack and extended beyond the end thereof, a pivoted projection upon said extension provided with a finger or lug, a spring adapted to act upon said finger, and a striker-arm supported upon the type-writer frame and lying in the path traversed by said projection; substantially as specified.

15. In a type-writer, the combination with a carriage and the spacing-rack carried thereby, of key-operated escapement-dogs pivoted upon the frame of the machine and operating in relation to said rack, and a reversing-dog provided with a single continuous contacting face operating laterally of said rack and pivotally mounted upon the machine adjacent to said spacing-dogs; substantially as specified.

16. In a type-writer, the combination with a carriage and the positively-operated escapement-rack carried thereby, of spacing-dogs pivoted upon the frame of the machine and operating in relation to said rack, and a reversing-dog provided with a single continuous contacting face operating laterally of said rack and pivotally mounted upon the machine adjacent to said rack, an engaging face on said dog extending at an angle to the pivotal point thereof, and a key-lever positively connected to actuate said reversing-dog; substantially as specified.

17. In a type-writer, the combination with a carriage and toothed rack-bar carried thereby, an escapement mechanism, a pivoted reversing-dog operating laterally of said rack, and an engaging face on said dog provided

with a spring-finger to permit a yielding disengagement of the dog from the rack; substantially as specified.

18. In a type-writer, the combination with
5 a carriage provided with a toothed rack-bar,
a reversing-dog pivotally mounted in a support carried by the machine, an engaging face
upon said dog extending at an angle to the
axis of said dog and provided with a spring-
10 finger, an angle-arm extending from said dog,
a spring interposed between said arm and

said support, a rock-arm engaging said angle-arm, a key-lever, and means connecting said rock-arm and key-lever; substantially
as specified.

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

THOMAS A. MAULSBY.

Witnesses:

B. F. RUMAGE,
W. S. MEREDITH.