No. 658,735. Patented Sept. 25, 1900.

W. S. CRAIG.

TYPE WRITER.

(Application filed May 5, 1899.)

(No Model.) 4 Sheets—Sheet 1.

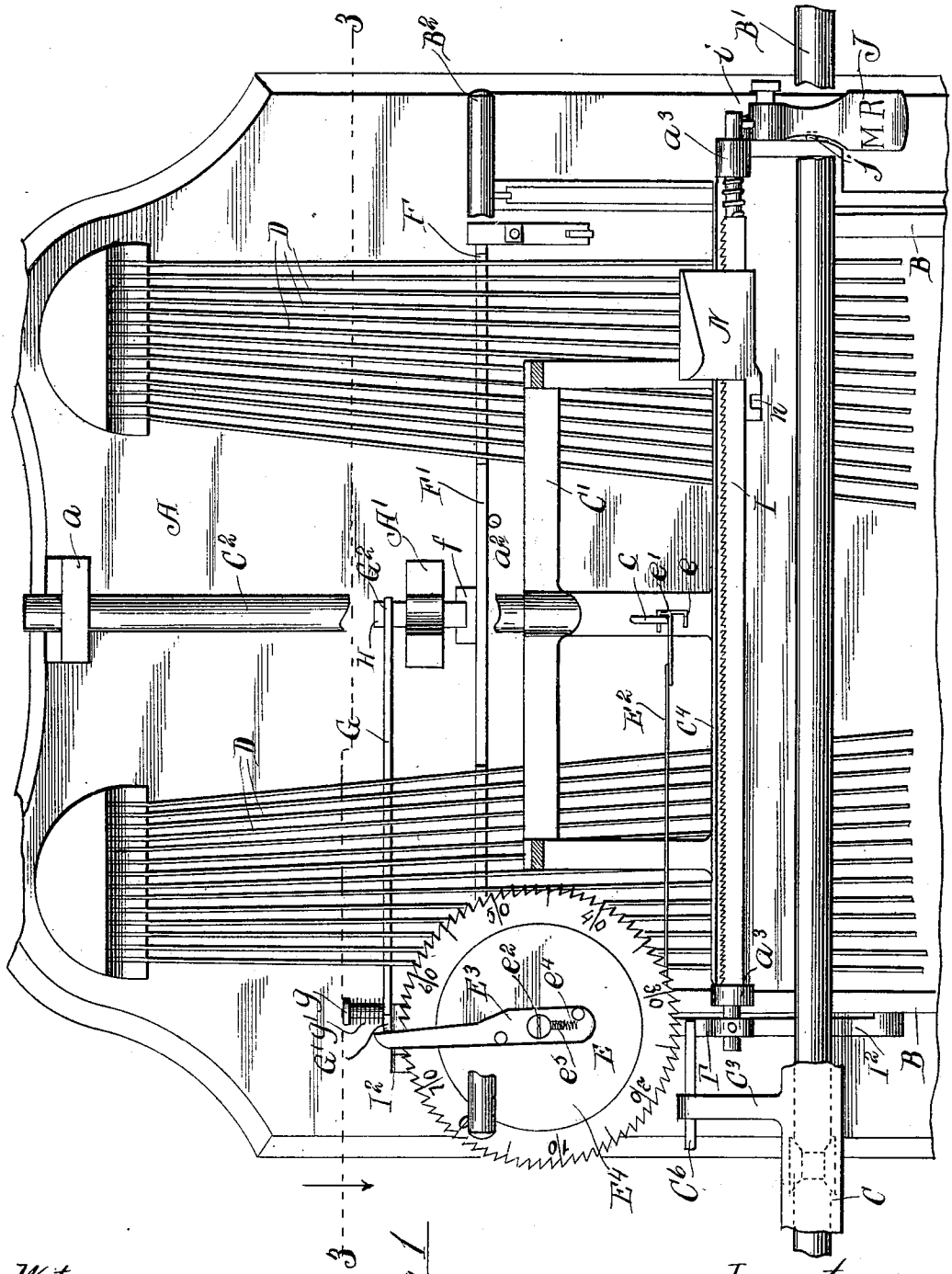


Fig. 1

Witnesses:-
Carl H. Crawford
William L. Hall

Inventors:
William S Craig
by Poole & Brown his Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 4 Sheets—Sheet 2.

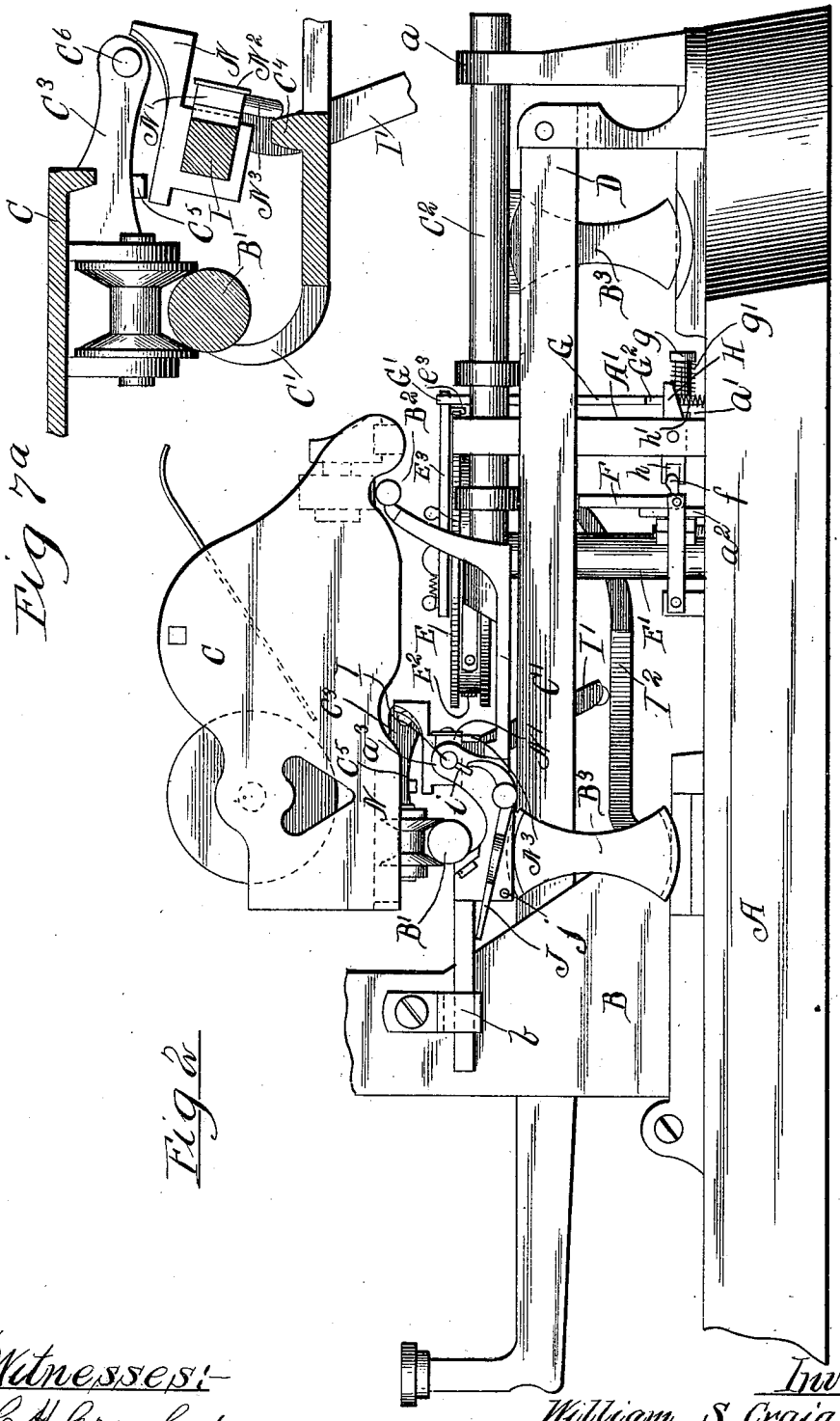


Fig 7a

Fig 2

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(No Model.) 4 Sheets—Sheet 3.

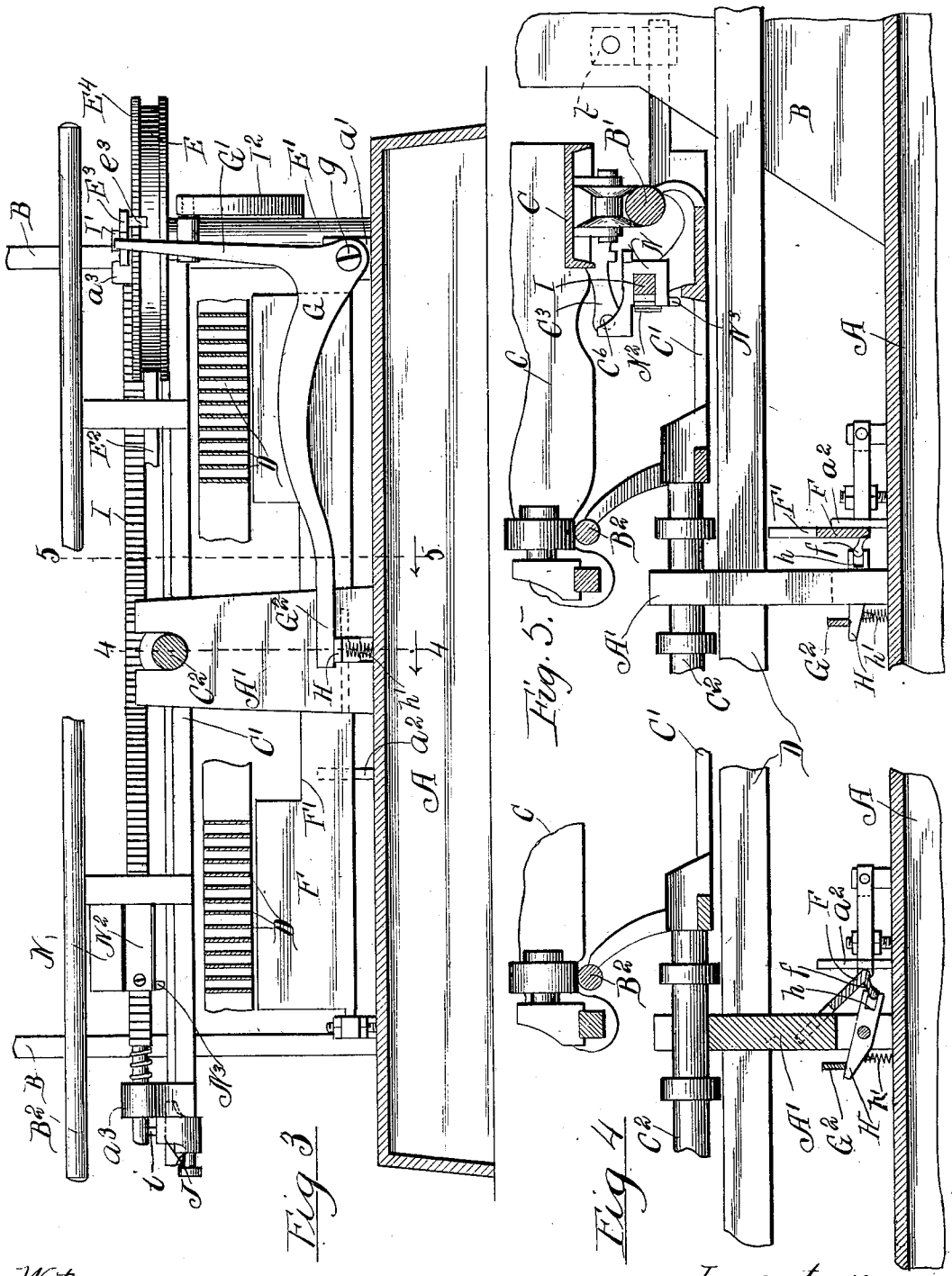


Fig. 3

Fig. 5.

Fig 4

Witnesses:—
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TYPE WRITER.

(Application filed May 5, 1899.)

(No Model.) 4 Sheets—Sheet 4.

Fig 6

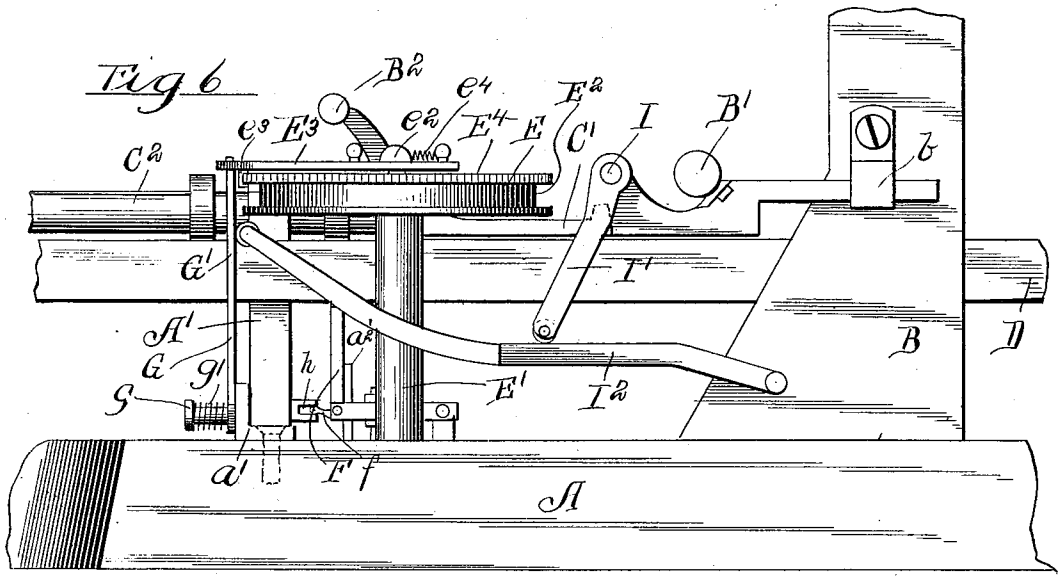


Fig 7

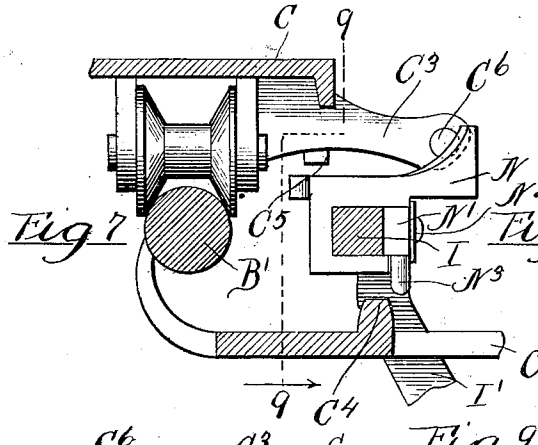


Fig 8

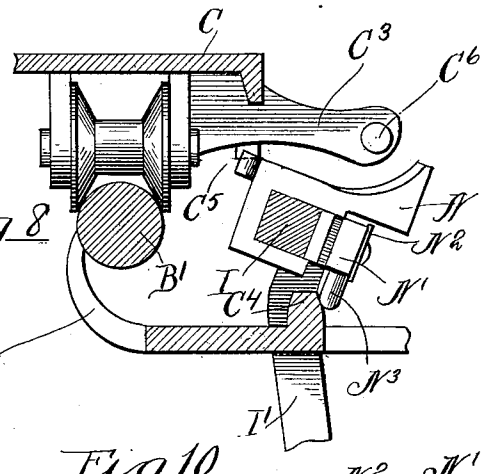


Fig 9

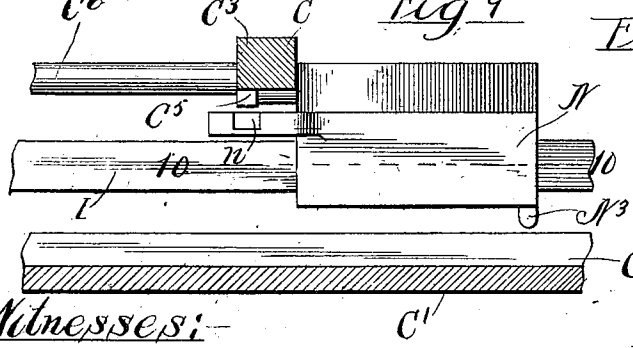
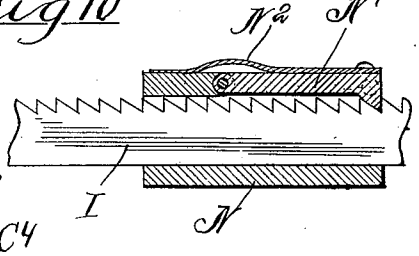


Fig 10



Witnesses:-
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UNITED STATES PATENT OFFICE.

WILLIAM S. CRAIG, OF CHICAGO, ILLINOIS.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 658,735, dated September 25, 1900.

Application filed May 5, 1899. Serial No. 715,660. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. CRAIG, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Type-Writers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention embraces novel devices for use in type-writing machines, known as "margin-stop" mechanisms, or devices designed to limit the movement of the carriage in either direction, and thereby to fix or determine the width of margins or location of the ends of the printed lines upon the sheet of paper which receives the writing.

The invention embraces as one of its features an improved right-hand margin-stop mechanism, and as another feature an improved left-hand margin-stop mechanism.

The invention also relates to means for enabling either margin to be written upon if required, and also to means for locking the key-levers when the predetermined limit for each line of writing is reached, and for releasing said levers to permit the right-hand margin to be written upon when necessary.

My invention is herein shown as applied to a type-writing machine having the general form and construction of the machine shown and described in United States Patent to Oliver, No. 599,863, dated March 1, 1898; but only such parts of such machine are shown as are necessary to a clear understanding of the present invention.

In the drawings, Figure 1 is a plan section of a type-writing machine provided with my invention. Fig. 2 is a left-hand side view of the machine. Fig. 3 is a cross-section taken on line 3 3 of Fig. 1. Fig. 4 is a vertical section taken on line 4 4 of Fig. 3. Fig. 5 is a vertical section taken on line 5 5 of Fig. 3. Fig. 6 is a fragmentary right-hand side view of the machine. Figs. 7, 7^a, and 8 are fragmentary detail sections taken through the left-hand margin-stop, showing the same in different positions. Fig. 9 is a vertical section taken on line 9 9 of Fig. 7. Fig. 10 is a longitudinal section taken on line 10 10 of Fig. 9.

As shown in said drawings, A designates the base of the machine, B B side frame-plates attached thereto, and C a paper-carriage, which is supported upon transverse rails B′ B^2, which latter are mounted upon a shifting frame C′. Said shifting frame is movable in a direction transversely of the path of movement of the carriage and is supported in suitable bearings *a b* in the stationary parts of the frame and upon rockers B^3 B^3.

A′ designates a standard which rises from the base-plate and is constructed to afford bearing for a rearwardly-extending guide-shaft C^2, connected with the shifting frame.

D designates key-levers pivoted at the rear end of the machine to swing in a vertical plane and adapted to be connected between their ends to the type-bars.

E designates a rotative barrel mounted upon the standard E′ at the rear and left-hand side of the machine-base. Said barrel contains the carriage-actuating spring and is connected with the carriage by a strap E^2. Said strap is provided with a hook *e*, by which it is attached to the carriage, and is also provided with another hook *e′*, adapted to engage a suitable eye *c* on the shifting frame when the carriage is removed therefrom.

Referring now to the parts constituting the left-hand margin-stop mechanism, said parts are constructed as follows: The spring-barrel E is provided on its top plate E^4, which has the form of a disk, with an arm E^3, which is pivoted on the stud e^2, concentric with said disk, and projects beyond the periphery thereof. Said disk is provided in its periphery with a plurality of notches, and the arm is provided near its outer end with a tooth e^3, adapted to normally engage one of said notches, and thereby lock the arm in fixed relation to the disk. A spring e^4 is applied to the arm and acts to hold the tooth thereon in engagement with one of said notches. Said arm is preferably provided with a slot e^5, through which the pivot-stud passes and which permits endwise movement of the arm in changing the tooth from one notch to another, the spring e^4 being, as herein shown, located in said slot in position to bear against said stud. Said notches are equal in number to the number of divisions on the carriage-scale and are spaced and numbered to

correspond therewith. The arm E^3 constitutes a stop-arm adapted to be locked to the disk E^4 in the manner described at any desired position thereon and to engage at a desired time in the rotation of the disk a suitable locking device by which the key-levers or carriage or both are held from movement.

The locking device herein shown comprises a locking-bar F, located under the key-levers and pivoted at its ends to the machine-frame, and a locking-lever having the form of a bell-crank lever G. Said locking-lever is pivoted at its angle to swing in a vertical plane by means of a pivot-stud g, having screw-threaded engagement with a lug a' on the base of the machine. Said locking-lever consists of a vertical part G', the upper end of which is normally located in the path of said stop-arm, and a horizontal part G^2, which is operatively connected with the locking bar. The connection between the horizontal arm of the lever and the locking-bar consists of a short lever H, pivoted between its ends in an opening at the base of the standard A'. Said horizontal arm rests upon the upper surface of the rear end of said lever, and the lever is provided upon its front end with a notch h, adapted to receive a lug f on the rear face of the locking-bar. A spring h' is applied to the lever H to normally hold the forward end of the lever H depressed, and thereby maintain the locking-bar in its rearward or unlocking position. Said locking-bar is provided in its upper edge with a notch F' to avoid contact with the standard A^2 when the bar is swung rearwardly. The locking-bar is shown as mounted in adjustable bearings to permit accurate adjustment thereof with respect to the lever H.

The point at which the locking-bar will be operated is determined by the angular position of the locking-arm on the disk E^4, said arm being set by the scale on said disk, which corresponds with the scale on the carriage. When the stop-arm is rotated under the influence of the carriage-actuating spring, it will engage at a point in the movement of the carriage determined by the angular position of the stop-arm the vertical part of the locking-lever and act therethrough to move the locking-bar into its vertical or locking position, as shown in Figs. 1, 2, 3, 5, and 6. A stop-pin a^2 is attached to the base-plate in position to limit the forward movement of the locking-bar when the same has reached a vertical position. When the bar is in the position shown in said Figs. 1, 2, 3, 5, and 6, it will obviously be impossible to depress the key-levers, so that the machine cannot be further operated until the said locking mechanism is released.

The release of the locking mechanism is effected by shifting the upper end of the locking-lever rearwardly until it is disengaged from the end of the stop-arm, whereupon the spring h' will act upon said lever to throw the upper end of said lever backwardly with respect to the direction of rotation of the arm and at the same time to swing the locking-bar rearwardly into its unlocking position. The shifting of the lever G rearwardly in the manner described is permitted by a spring g', located between the same and the head of its pivot-pin g and tending to hold the lever in its normal or engaged position. Said release is necessary when it is desired to overrun the right-hand margin in order to complete the word or for other purposes. The stop-arm is shown as beveled at its outer end, so that it may throw outwardly and pass the upper end of the locking-lever when the carriage is returned to its starting-point for a new line.

For the convenience of the operator means are provided for effecting the release of the locking mechanism from the right-hand side of the machine. These parts are constructed as follows: I designates a rock-shaft arranged transversely of the machine and mounted in suitable bearings a^3 a^3 on the shifting frame. Said shaft is rocked in its bearings by means of a release-key J, pivoted to the shifting frame and having a part which projects rearwardly from its pivot and engages a lug i on the adjacent end of the rock-shaft. The opposite end of the rock-shaft is provided with a rigid arm I', which engages a rock-arm I^2, which is pivoted at one end to the machine-frame and engages at its opposite end the vertical arm of the locking-lever G. With this construction depression of the lever J will act through said rock-shaft, its arm, and the rock-arm I^2 to shift the locking-lever rearwardly out of the path of the rotary stop-arm E^3. Roller-bearings are provided between said arms I' and I^2 and between the latter and the locking-lever.

Next describing the construction of the left-hand margin-stop mechanism this is made as follows: N designates a block which is mounted to slide upon the rack-bar arranged parallel with the path of movement of the carriage and to which said block is adapted to be locked at any predetermined point. The teeth or notches of said rack-bar are equal in number to and are arranged to correspond with the divisions of the carriage-scale. The carriage is provided with a rigid stop-arm C^3, into the path of which said block normally projects and through the medium of which the block arrests the movement of the carriage. C^6 indicates a longitudinally-sliding rod which passes through the stop-arm C^3 and is adapted to act against the block N. Said rod forms part of a device for automatically turning the platen and has no relation to the part constituting the present invention. Said block N is so constructed and arranged that it normally remains stationary upon said bar, but is adapted when released from the bar to be temporarily engaged with the carriage, so as to be shifted upon the bar by a movement of the carriage. Said block may therefore be set by the aid of the car-

riage-scale and without the necessity of providing a corresponding scale upon the bar. In the present construction the rock-shaft I of the releasing mechanism is notched upon one side thereof and constitutes the rack-bar on which the block N rests and slides. The means for detachably connecting said block with the rack-bar consists of a tooth or pawl N′, which, as herein shown, is pivoted in a slot at one side of said block and is engaged by a spring N^2, which acts to yieldingly hold said pawl in engagement with said rack-bar. Said pawl is provided on its lower side with a tripping-pin N^3, by which the pawl is moved out of engagement with the rack-bar against the action of said spring. In the present instance said pawl is released by partially rotating or rocking the rack-bar I, so as to carry said tripping-pin into contact with a longitudinal bearing-surface C^4, formed on the frame parallel with said rack-bar and which acts when the tripping-pin N^3 is moved against the same to swing said pawl out of engagement with said rack-bar. When thus released from the rack-bar, said block N will be free to slide upon said bar and will also be tilted downwardly out of the path of the stop-arm C^3, as shown in Fig. 8. The means for temporarily engaging the carriage with the block N consists of a lug C^5 on the carriage, which when the stop-arm C^3 is moved into contact with the block N, as shown in Fig. 7, is located in position to engage a socket or recess *n* in the said block at the time the latter is tilted in the manner set forth to release the same from the rack-bar I. Such position of temporary engagement of the block N with the carriage is shown in Fig. 8, and while the block is held in this position it will be free to be shifted by and with the carriage along the rack-bar to the desired point. The adjustment of the left-hand margin-stop will be effected by first depressing the release-key J to release the block from the rack-bar and effect its temporary engagement with the carriage and then shifting the carriage longitudinally while holding said key depressed, the carriage-scale being used to determine the position of the end of the line or with the margin. Obviously the tilting or partial rotation of the block on the rack-bar if the latter were cylindric would produce the same results. Moreover, the tooth or pawl N′ might be rigid with the block and the spring interposed between the block and bar.

It will be seen that in the construction illustrated both right and left hand margin-stops are released by the same release-key J, which greatly simplifies both the construction and operation of the machine.

As a further improvement, provision is made for writing upon the left-hand margin as follows: The block N and stop-arm C^3 are so constructed and arranged that when the said block is placed or held in an intermediate position between the limits of its movement the said block will be out of the path of the said stop-arm, so that the latter may pass over it, while the lug C^5 will be out of engagement with the notch *n*. This position of the parts is shown in Fig. 7^a. It follows from this construction that by depressing the lever J only partially the stop-arm C^3 will pass the block N, so that the carriage will not be arrested by said block in its movement toward the right, and writing may be done on the left-hand margin of the paper, or, in other words, the printing may begin as near the left-hand edge of the paper as may be desired.

To facilitate the shifting of the block N to the intermediate position described and illustrated in Fig. 7^a when it is desired to write upon or overrun the left-hand margin, devices are provided as follows: The lever J is arranged to have a limited movement longitudinally on its pivot, and a stop-pin *j* is attached to the carriage in position to limit the movement of the said lever J when the latter stands at the one limit of its movement on its pivot, but is so located or of such length that the lever will pass the same when the lever is at the opposite limit of its movement. The said stop-pin is herein shown as so located as to be in position for contact of the lever therewith when the lever is slid to the end of the pin nearest the carriage or when at the left-hand limit of its movement. Said stop-pin *j* is so located, moreover, that it will arrest the movement of the lever when the block N is in its intermediate position or has been turned far enough to permit the passage of the stop-arm C^3 over said block, but not far enough to bring the lug C^5 into engagement with the recess *n*. Obviously if it be desired to write upon the left-hand margin of the sheet it is merely necessary to shift the lever J endwise on its pivot until said lever is in position to engage the stop-pin *j* and to then depress said lever until it is arrested by said stop-pin, when the parts will be in such position that the arm C^3 may freely pass the block N, and the carriage may then be moved, so as to write upon the said left-hand margin, as desired. If the left-hand margin is not to be written upon, the lever J will be shifted on its pivot into position to clear the said stop-pin, and the said lever may be then fully depressed, and the block N thereby locked to or engaged with the carriage by engagement of the lug C^5 with the recess *n*, as hereinbefore described.

I claim as my invention—

1. The combination with key-levers, a traveling paper-carriage and a carriage-actuating spring, of a locking-bar arranged transversely of the key-levers and normally disengaged from the same, a rotative stop-arm which is actuated by said spring, a bell-crank lever, one arm of which is operatively connected with said bar and the other arm of which extends into the path of said rotative stop.

2. The combination with key-levers, a traveling paper-carriage and a carriage-actuating spring, of a locking-bar arranged transversely

of the key-levers and normally disengaged from the same, a rotative stop-arm which is actuated by said spring, an oscillatory bell-crank lever, one arm of which is operatively connected with said bar and the other arm of which extends into the path of the said rotating stop, said last-mentioned arm being movable in a plane perpendicular to the plane of oscillation of the lever, whereby it may be released from said stop-arm.

3. The combination with key-levers, a traveling paper-carriage and a carriage-actuating spring, of a locking-bar arranged transversely of the key-levers and normally out of engagement with the same, a rotative stop-arm which is actuated by said spring, an oscillatory bell-crank lever, one arm of which is operatively connected with said bar and the other arm of which extends into the path of the rotative stop, said last-mentioned arm being movable in a plane perpendicular to the plane of oscillation of the lever, a spring applied to said arm to normally hold it in the path of the rotative stop, and a release-key connected with said arm and acting in opposition to said spring.

4. The combination with key-levers, a traveling paper-carriage and a carriage-actuating spring, of a locking-bar arranged transversely of the key-levers and normally disengaged from the same, a rotative stop which is actuated by said spring, a bell-crank lever, one arm of which extends into the path of said rotative stop, and a short oscillatory lever, one end of which is connected with the other arm of said bell-crank lever and the other end of which is connected with said locking-bar.

5. The combination with key-levers, a traveling paper-carriage and a carriage-actuating spring, of a rotative disk which is actuated by said spring and is provided with a plurality of peripheral notches, a stop-arm pivoted concentrically on said disk and projecting beyond the periphery thereof, a tooth on said arm adapted to engage the notches of said disk, said stop-arm having longitudinal movement to permit the release of the tooth carried thereby from said notches, and a spring applied to the arm to hold it in its retracted position with said tooth in engagement with one of said notches, and a locking device for said key-levers embracing a lever which projects normally into the path of said stop-arm.

6. The combination with a paper-carriage, of a left-hand margin-stop, means affording engagement of the stop both with the machine-frame and with the carriage, and means acting to disengage the stop from the machine-frame when it is engaged with the carriage, said stop being free to move on the machine-frame when disengaged therefrom.

7. The combination with a paper-carriage, of a left-hand margin-stop which is adjustable on the machine-frame longitudinally of the carriage, means for locking said stop rigidly on the frame, means for effecting engagement of said stop with the carriage, and means for releasing said stop from the frame constructed to automatically effect the engagement of said stop with the carriage.

8. The combination with a paper-carriage of a left-hand marginal stop which is movably supported upon the frame, means by which the said stop is held normally in engagement with the frame, means affording temporary engagement of the stop with the carriage, embracing a spring by which the said stop is held normally free from engagement with the carriage, and a release-key acting against said spring to effect the release of the stop from the frame and its engagement with the carriage.

9. The combination with a paper-carriage, of a rack-bar in the machine-frame, a sliding block on said bar located normally in the path of a stop-arm on the carriage, a tooth or pawl on said block adapted to normally engage said rack-bar, interlocking connections on the block and the carriage, and means for disengaging said pawl or tooth from said rack-bar and temporarily locking the block to the carriage.

10. The combination with a paper-carriage, of a rack-bar in the machine-frame, a sliding block on said bar located normally in the path of a stop-arm on the carriage, a tooth or pawl on said block adapted to normally engage said rack-bar, interlocking connections on said block and carriage, a tripping-pin carried by said block, and a bearing-surface on the machine-frame adapted to be engaged by said pin when the block is partially rotated and to thereby release said tooth or pawl from the rack-bar, said block being when so partially rotated connected with the carriage and free to slide on the rack-bar.

11. The combination with a paper-carriage, of a rack-bar in the machine-frame, a sliding block on said bar located normally in the path of a stop-arm on the carriage, a spring-pressed pawl on the block adapted to normally engage said rack-bar, interlocking connections on said block and carriage, a tripping-pin on said pawl, and a longitudinal bearing-surface on the carriage, said block being adapted to be tilted or partially rotated to carry said pin into engagement with said bearing-surface and at the same time to temporarily lock said block to the carriage.

12. The combination with key-levers, a traveling paper-carriage, and a carriage-actuating spring, of a right-hand margin-stop mechanism comprising a circumferentially-adjustable stop-arm which is actuated by said spring, a locking device for the key-levers which is adapted for actuation by said stop-arm, a left-hand margin-stop mechanism comprising a stop which is normally in the path of the carriage, means affording engagement of said stop with the machine-frame and with the carriage so constructed that when the stop is free from the frame it will be engaged with the carriage, and a key for effecting the release of both of said stop mechanisms.

13. The combination with a paper-carriage, of a rack-bar on the machine-frame, and having rocking movement thereon, a sliding block on said rack-bar, interlocking connections on said block and the carriage, a tooth or pawl on the block adapted to engage said bar, a tripping-pin on said pawl, a bearing-surface on the frame adapted for engagement with said tripping-pin, and a release-key mounted on the frame and acting on said rack-bar to partially rotate the same.

14. The combination with a paper-carriage of a left-hand margin-stop and means affording engagement of said stop with the machine-frame, and carriage so constructed that the stop will be engaged with the frame at one limit of its movement and with the carriage at the opposite limit of its movement, and when in an intermediate position will allow the carriage to pass the same for writing on the left-hand margin.

15. The combination with a paper-carriage of a rack-bar on the machine-frame, a sliding block on said bar adapted to be tilted or partially rotated, interlocking connections on the block and carriage, a tooth or pawl on the block adapted to engage the rack-bar, a tripping-pin on the block, a bearing-surface on the frame adapted for engagement with said tripping-pin when the block is in position for interlocking engagement with the carriage, and a stop-arm on the carriage adapted for contact with the block when the latter is disengaged from the carriage, said block and stop-arm being so located that the stop-arm will pass the block without contact therewith when the block is at an intermediate point in its movement.

16. The combination with a paper-carriage, of a rack-bar on the machine-frame, a sliding block on said rack-bar adapted to be tilted or partially rotated, interlocking connections on the block and carriage adapted for engagement when the block is at one limit of its tilting or rocking movement, a tooth or pawl on the block adapted to engage said rack-bar, a tripping-pin on said pawl, a bearing-surface on the frame adapted for engagement with said tripping-pin when the block is in position for interlocking engagement with the carriage, a stop-arm on the carriage adapted for contact with said block when the latter is disengaged from the carriage, but which is adapted to pass the block without contact therewith when said block is in its intermediate position, and a release-key having operative connection with the block for turning the same.

17. The combination with a paper-carriage, of a rack-bar on the machine-frame, a sliding block on said rack-bar adapted to be tilted or partially rotated, interlocking connections on the block and carriage adapted for engagement when the block is at one limit of its tilting or rocking movement, a tooth or pawl on the block adapted to engage said rack-bar, a tripping-pin on said pawl, a bearing-surface on the frame adapted for engagement with said tripping-pin when the block is in position for interlocking engagement with the carriage, a stop-arm on the carriage adapted for contact with said block when the latter is disengaged from the carriage, but which is adapted to pass the block without contact therewith when said block is in its intermediate position, a release-key having operative connection with the block for turning the same, and a stop-pin for limiting the movement of the key, said key being movable on its pivot and adapted to be shifted into and out of position for engagement with said stop-pin.

18. The combination with a paper-carriage, of a rack-bar on the machine-frame having rocking movement thereon, a sliding block on said rack-bar, a pawl on the block provided with a tripping-pin, interlocking connections on the block and carriage, a bearing-surface on the carriage adapted for engagement with said tripping-pin, a stop-arm on the carriage located in position to pass said block when the latter is in an intermediate position, a release-key mounted to slide endwise on a pivot-stud on the machine-frame, and adapted to turn the rack-bar, and a stop-pin located in position for engagement with the release-key when the latter is in one position.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 3d day of May, A. D. 1899.

WILLIAM S. CRAIG.

Witnesses:
B. E. CARSON,
M. F. SULLIVAN.