E. B. CRAM.

STOP DEVICE FOR TYPE WRITERS.

APPLICATION FILED APR. 27, 1904.

913,362.

Patented Feb. 23, 1909.

3 SHEETS—SHEET 1.

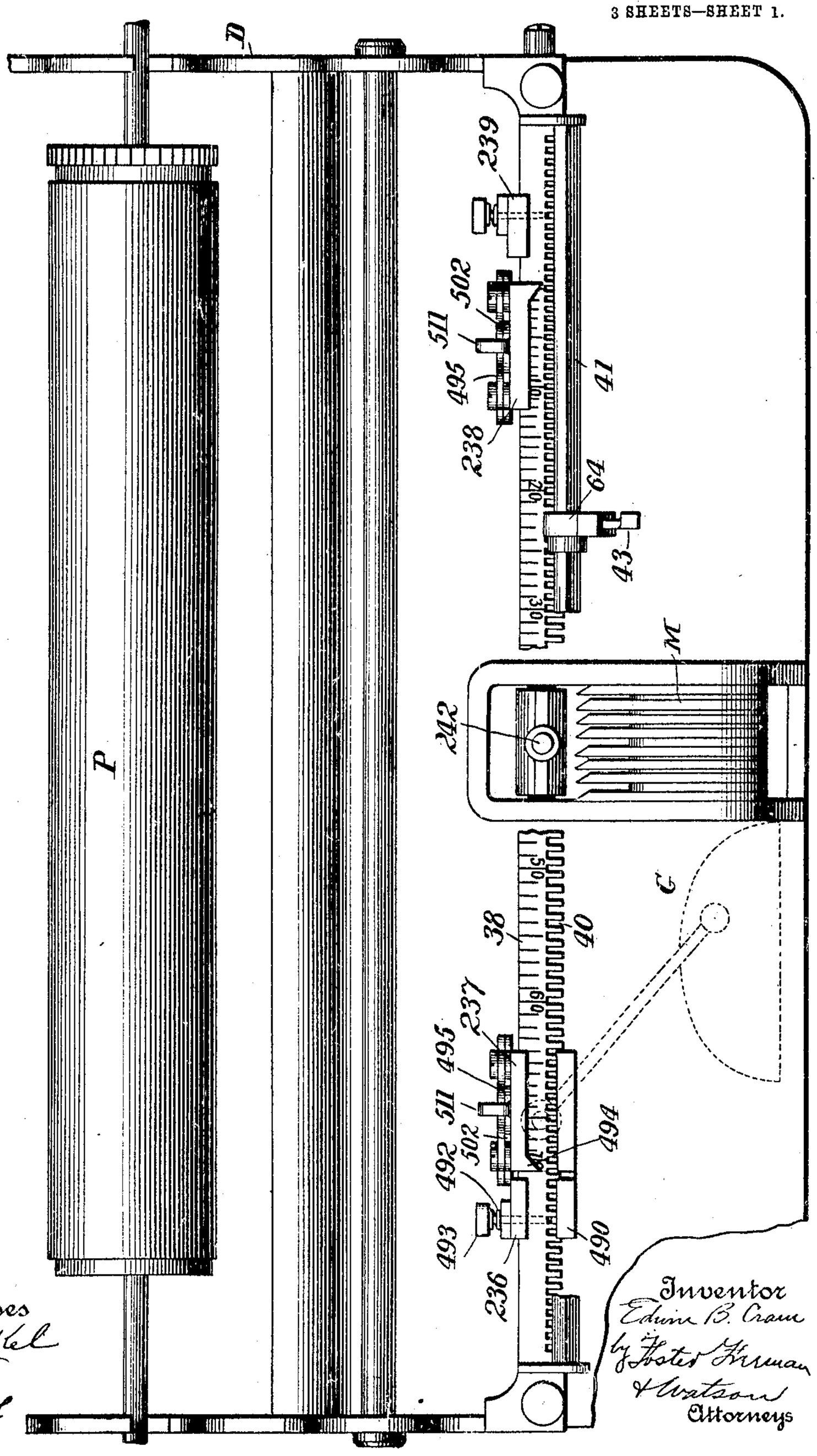

Fig. 1.

Witnesses
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3 SHEETS—SHEET 2.

Fig. 2.

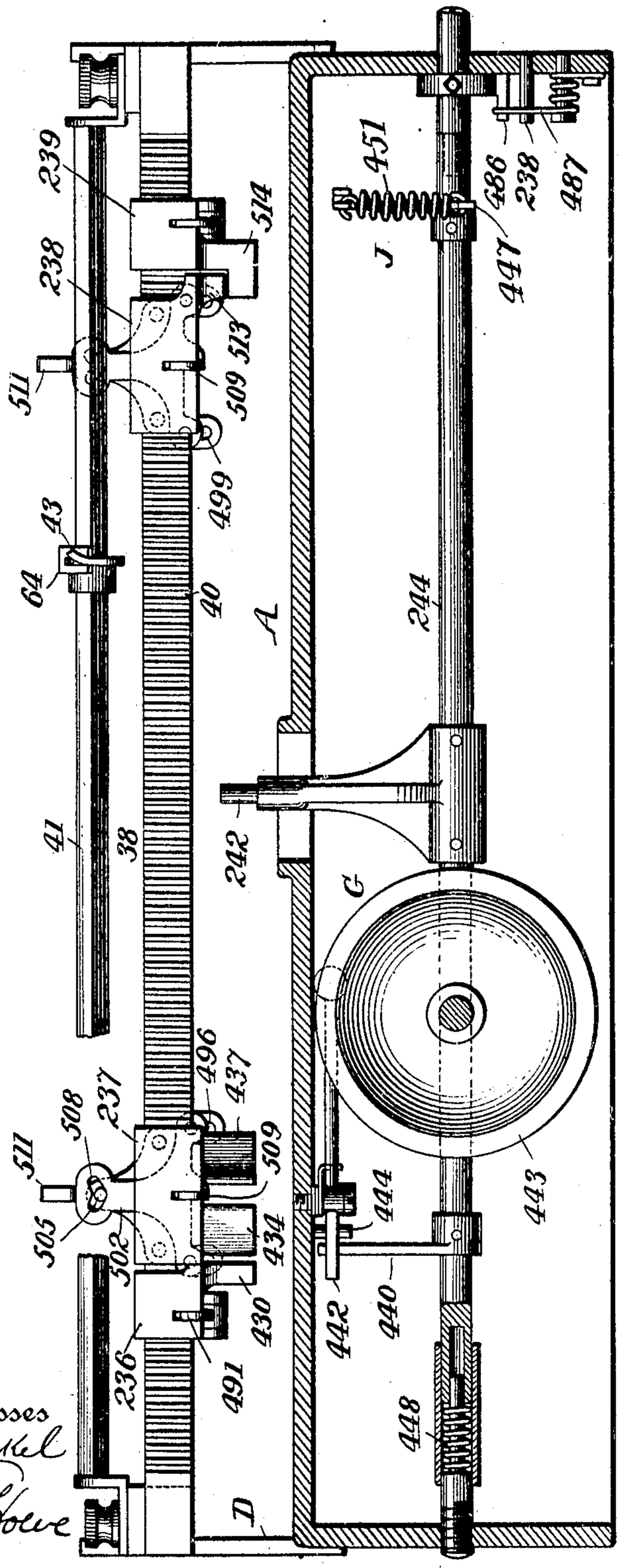
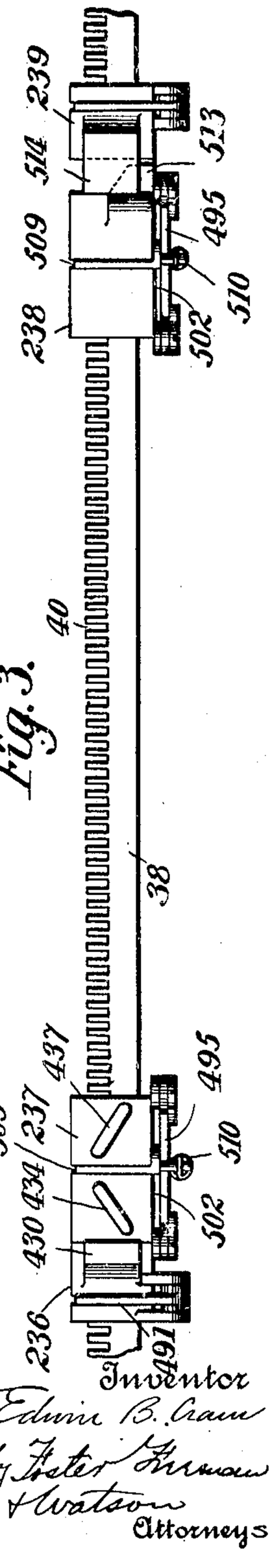


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

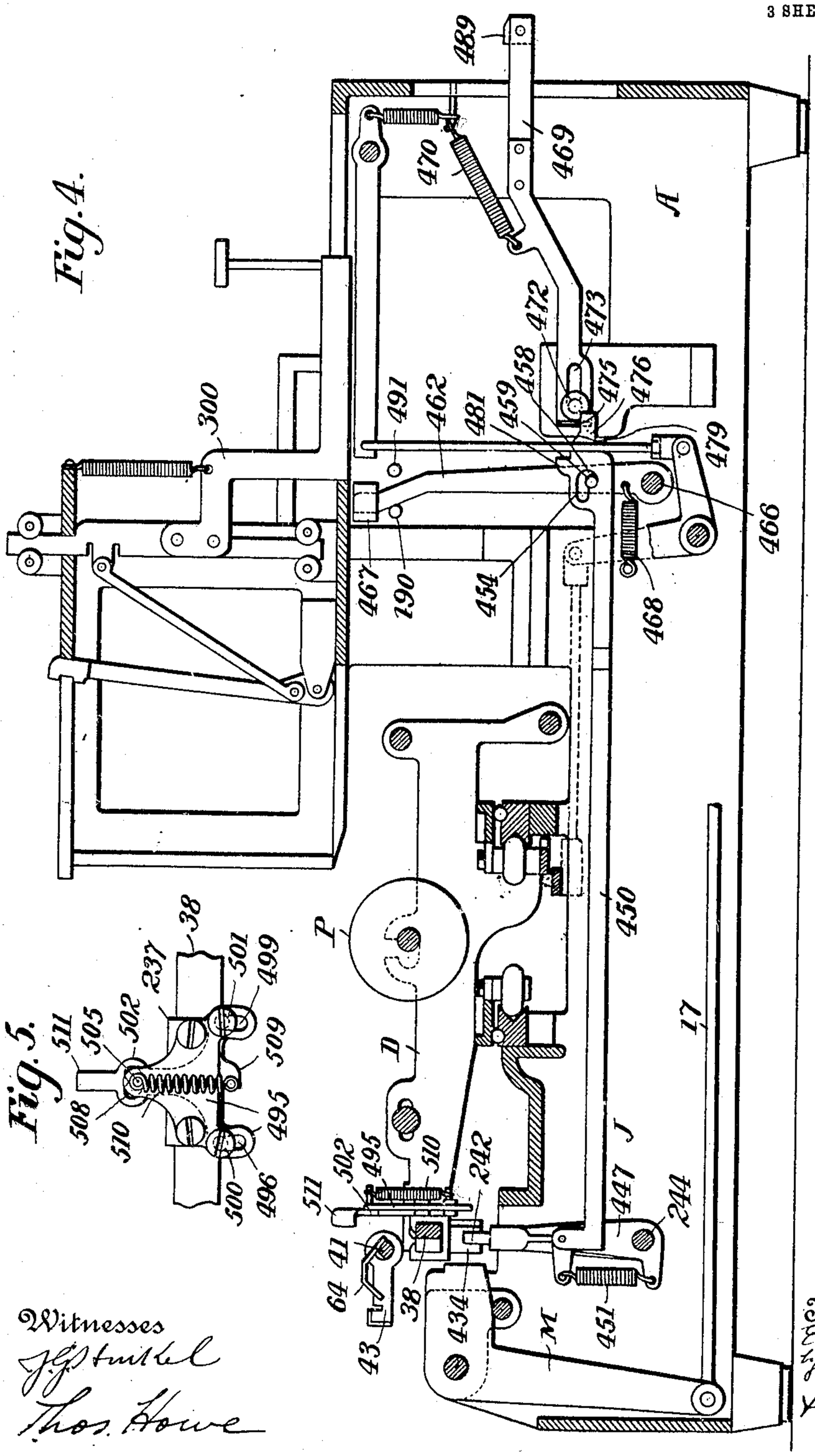

Fig. 5.

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UNITED STATES PATENT OFFICE.

EDWIN B. CRAM, OF BROOKLYN, NEW YORK, ASSIGNOR TO NEW YORK ADDING TYPEWRITER COMPANY, OF ORANGE, NEW JERSEY, A CORPORATION OF MISSOURI.

STOP DEVICE FOR TYPE-WRITERS.

No. 913,362. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed April 27, 1904. Serial No. 205,204.

To all whom it may concern:

Be it known that I, EDWIN B. CRAM, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Stop Devices for Type-Writers, of which the following is a specification.

This invention relates to stop devices for typewriters, and has for its object the provision of improvements as will be hereinafter set forth.

In the accompanying drawings, Figure 1 is a plan view of a portion of a typewriter, provided with stop devices embodying the invention; Fig. 2 is a rear elevation, partly in section on an enlarged scale; Fig. 3 is a bottom plan view of the marginal stops and their supporting bar; and Fig. 4 is a vertical longitudinal section of the machine. Fig. 5 is a detail view.

The frame supports a transversely movable carriage D having the usual platen P and carrying one or more tabulating stops 43 and marginal stops 236, 237, 238 and 239. The tabulating stops are adapted to engage with movable stops M pivoted in the frame and movable into and out of the path of the stops 43 at will. The marginal stops are adapted to engage with the end of an arm 242 upon a rock shaft 244 supported by the frame, to limit the movement of the carriage and also to rock the shaft 244 and thereby operate an alarm mechanism G for indicating the approach of the carriage to a limit of its travel and a mechanism J for locking the type writing mechanism against operation. Upon the carriage are fixed a rod 41 and a bar 38. The former carries the tabulating stops 43 which may turn and slide thereon, and has flat sides which engage flat springs 64 secured to the stops 43 to hold the stops in definite positions. The bar 38 is preferably square and has a scale on its upper face and grooves 40 on its rear face coincident with the graduations of the scale. The stops 43 preferably extend horizontally when not in use, and, when required for use, a stop is turned down into a groove 40 and is thereby held in position. A lever M is thrown into and out of position to engage the stops 43 by pulling or pushing, by any suitable means, upon a rod 17 pivoted to its lower end. The details of the tabulating apparatus are described in my application Serial No. 188,554 filed January 11, 1904.

Locking and alarm mechanisms may be constructed to coöperate with the stops as hereinafter described.

The sliding marginal stops 236, 237, 238 and 239 are on the bar 38 and the stops 236, 237 have to do with the ending of a line and the margin at the right of the paper and the two latter with the beginning of the line and the margin at the left of the paper.

The stop 236 is in the form of a hollow slide 490 which slides upon the bar 38 and is open at the top so that the scale on the bar may be seen. A downward projection 430 fixed to the slide and having a plane face at right angles to the carriage movement is adapted to engage with the arm 242 to limit the left hand movement of the carriage, and a latch 491 is pivoted to the slide forward of the bar 38 and extends beneath the bar to the rear where it is provided with a toe which is normally pressed into one of the slots 40 by the spring 492 between a thumb piece 493 on the latch and the slide.

The stop 237 is in the form of a slide similar to that of the stop 236 having a pointer 494 over the scale, for indicating the position of the stop, and two downward oppositely disposed cam projections 434 and 437 to engage with the arm 242 and cam it back and forth. Supported at a distance from the front face of the slide is a plate 495 Fig. 5 having the arc shaped slots 496 and 499 within which work the pins 500 and 501 fixed in the latch-arm 502 located between the slide and the plate 495. Each of the slots in the plate is struck about the center of the pin in the other slot when that pin is in its uppermost position so that one pin may turn about the other as a center. The plate 495 also supports the pin 505 which projects into the slot 508, Fig. 2, in the latch arm, to steady and guide it, the slots comprising sections struck about the centers of the pins 500 and 501 so that the latch arm can swing about either of the pins. A latch 509, similar to the latch 491 described in connection with the stop 236, is fixed to the arm 502 and is normally held in engagement with a notch 40 by a spring 510 secured to the arm and the plate 495. By lateral pressure in either direction upon the handle 511 fixed to the latch-arm, the arm will be swung about one

of the pins 500 and 501 and the latch 509 moved downwardly out of engagement with a notch 40.

The stop 238 is similar to the stop 237 with the exception that it has but one downward projection 513 and that extends across about one-half the width of the bar 38 and has a transverse right hand face while the left hand face is at an angle with the movement of the carriage so that as the carriage is moved to the left the arm 242 will be cammed backwardly.

The stop 239 is similar to the stop 236 except that its transverse projection 514 extends laterally so that when the stops 239 and 238 are in abutment the right hand contact faces of their projections will be in line.

To adjust the margins, stops 238 and 239, determining the left hand margin, are moved together until the pointer carried by the stop 238 indicates the desired position on the scale, which indication will apply to the position of the contact face of the stop 239 as it is in line with the right hand face of the stop 238. The stop 239 may then be fixed in position, as described, and the stop 238 moved away from it until the pointer indicates the desired position, when it may be secured. In a similar manner the stops 236 and 237 are located and fixed in position to determine the right hand margin.

The alarm mechanism comprises an arm 440 fixed to the shaft 244 and extending into proximity with and forwardly of the tail of the clapper 442 of a bell 443 supported by the frame A, which clapper is normally pressed close to the bell with its tail against the fixed pin 444 by the spring 445. When the arm 440 is moved rearwardly it moves the clapper away from the bell against the spring 445 which, upon the release of the arm, moves the arm to normal position and brings the clapper in contact with the bell. When the arm 440 is moved forwardly the projection 486 fixed to the shaft 244 comes against the tail of a spring 487 supported by the frame A, which tail is normally against the fixed pin 288. Thus the shaft is returned to normal position by the spring 487 or 445 but when in normal position is free from the pressure of either. A suitably arranged buffer spring 448 takes up the shock when the carriage stop strikes the arm 242 upon the restoring of the carriage to the right to begin a new line.

The line locking mechanism has for its object to prevent the feed of the carriage beyond a certain point and to prevent the type from being operated to write one character on another after that limit has been reached, and comprises an arm 447 fixed to the shaft 244, to which arm is pivoted a lever 450, the forward end of which is normally held elevated by the spring 451. In the forward end of the lever 450 is a slot 454, having a notch 458 at its front portion, for engaging a pin 459 fixed in an arm 462 of a pair of arms, one at each side of the machine, which are fixed to a rock shaft 466 journaled in the frame A, and carry the bail 467 movable into and out of the path of key stems 300 whereby when beneath the stems the depression of the keys and the operation of their coöperating mechanisms is prevented. The bail is normally held from under the key stems by a retracting spring 468 and is moved beneath them by the rocking of the shaft 244 when the arm 447 is moved forwardly. The movement of the bail is limited by fixed stop pins 590 and 591. To provide a means for manually removing the bail 467 from under the key stems when it has been moved thereunder by the arm 447, a plunger 469, retracted by spring 470, is slidably supported by the frame A and a pin 472 supported by the frame, which pin works in a slot 473 in the plunger. At its front end the plunger extends beyond the front of the machine and carries the pivoted catch 489 adapted to engage the front of the frame A and at its rear end carries the projection 475 adapted to engage with a projection 476, a cam face 479 and a shoulder 481 upon the forward end of the lever 450. By pressing the plunger until the catch comes against the front of the machine frame, the projection 475 will ride upon the cam face 479, thereby depressing the lever 450 so that the pin 459 will be freed from the notch 458 and the bail 467 will move from beneath the key levers under the influence of the spring 468. By depressing the catch and still further pressing the plunger, the projection 475 will come against the shoulder 481 and thus rock the arm 242 backwardly to avoid a stop upon the carriage.

To explain the action of the stops with relation to the arm 242 and its connected mechanisms, assume that a line has been completed and the carriage is moved to the right to begin a new line. The transverse face of the projection 513 on the stop 238 strikes the arm 242 and the carriage is arrested in position to begin a normal line. If, however, it is desired to write in the margin, to number the lines, make notes or for other purposes, the arm 242 is rocked to the rear, to avoid the projection 513, by suitable means, as for instance, the plunger 469. The carriage may then be moved to the right until the face of the stop 239 collides with the arm 242. This is the limit of movement of the carriage to the right. Writing may now proceed in the margin, and as the carriage is fed to the left in the usual manner, the arm 242 contacts with the left hand face of the projection 513 and is thereby cammed to the rear and upon its release from the projection an alarm is sounded as hereinbefore described, and the

beginning of a normal line is indicated. The typewriting is then carried on as usual until the rear face of the projection 437 comes in contact with the arm 242 and cams it backwardly so that upon release of the arm from the projection the alarm will be sounded to indicate the approach of the end of a normal line. Further operation brings the front face of the projection 434 of the same stop against the arm 242, thereby camming the arm forwardly and locking the typewriting and carriage feeding mechanism, as hereinbefore described. By the plunger 469, however, the locking mechanism may be thrown out of action when the typewriting may be carried on in the right hand margin and may be continued until the face of the projection 430 upon the stop 236 comes against the arm 242. This is the extreme left hand limit of the carriage travel and the carriage may be returned to the right as before.

Without limiting myself to the precise construction shown, what I claim is,—

1. In a typewriter the combination with a bar, of an adjustable device upon said bar, means for securing said device to said bar, mounted upon said device and movable about a plurality of pivots, substantially as described.

2. In a typewriter, the combination with a bar, of a stop device mounted on and movable longitudinally of said bar, and means movable about either of two pivotal points on said device adapted to engage the bar between said pivotal points to hold said stop device stationary on the bar.

3. In a typewriter, the combination with a bar having a series of transverse grooves formed in one face, of a stop device comprising a casing mounted on and movable longitudinally of said bar, a plate supported by and at a distance from said casing, and a latch adapted to engage the grooves in the bar pivotally supported between said casing and plate.

4. In a typewriter, the combination with a bar having grooves, of an adjustable device thereon, comprising a casing, a plate supported by, and at a distance from, said casing, an arm supported between said casing and plate by pin and slot connection, a latch adapted to engage with said grooves and fixed to said arm, and means for normally holding said latch in engagement with said grooves, substantially as described.

5. In a typewriter, the combination with a bar provided with a plurality of transverse grooves, a device adjustably mounted on said bar and comprising a casing, a plate supported by and at a distance from said casing and provided with arc shaped slots 496 and 499, an arm between said casing and plate and having a pin extending into each of said slots in the plate, and a latch carried by said arm and adapted to engage with the grooves in the bar, substantially as described.

6. In a typewriter the combination with a frame, of a carriage movable thereon, a bar carried by said carriage, an adjustable device upon said bar having a projection extending below the bar and provided with a face transverse to the carriage movement, an arm supported by said frame in position to contact with said face, means for securing said device to said bar and means operable by the exertion of force in any one of a plurality of directions for releasing said device, substantially as described.

7. In a typewriter the combination with a frame, of a carriage movable thereon, a bar carried by said carriage, an adjustable device upon said bar having a projection extending below the bar and provided with an engaging face oblique to the carraige movement, an arm supported by said frame in position to contact with said face, means for securing said device to said bar and means operable by the exertion of force in any one of a plurality of directions for releasing said device, substantially as described.

8. In a typewriter the combination with a frame, of a carriage movable thereon, a bar carried by said carriage, an adjustable device upon said bar having downwardly projecting engaging faces transverse and oblique to the carriage movement, an arm supported by said frame in position to contact with said face, means for securing said device to said bar and means operable by the exertion of force in any one of a plurality of directions for releasing said device, substantially as described.

9. In a typewriter, the combination with a bar, of an adjustable device thereon having an engaging surface extending below the bar, a second adjustable device upon the bar, and an indicator upon said second device adapted to indicate the relative position on the bar of the engaging surface of the first said device when said devices are abutting, substantially as described.

10. In a typewriter the combination with a bar, of an adjustable device thereon having below said bar an engaging face, an indicator upon said device and a second adjustable device upon said bar also having a face, said devices being so constructed that when they are in abutment said faces will be in line, substantially as described.

11. In a typewriter, the combination with a carriage of a stop thereon, a rock shaft, an arm thereon adapted to engage said stop, a lever secured to said rock-shaft and provided with a shoulder, and a plunger coöperating with said shoulder to rock said arm out of engagement with said stop, substantially as described.

12. In a typewriter, the combination with a carriage carrying oblique and transverse

contact faces, of a rock-shaft mounted in the frame of the machine, and an arm thereon adapted to engage with said oblique faces to rock said shaft and with said transverse faces to stop said carriage, substantially as described.

13. In a typewriter, the combination with a carriage carrying oblique and transverse contact faces, of a rock-shaft mounted in the machine frame, an arm thereon adapted to engage with said faces, and springs tending to move said rock-shaft to normal position when it is moved therefrom but exerting no pressure upon said shaft when it is in normal position, substantially as described.

14. In a typewriter, the combination with a rock-shaft and an arm thereon, of a carriage, and oppositely directed cam faces and a transverse face upon said carriage in position to engage said arm near one limit of the carriage travel, substantially as described.

15. In a typewriter, the combination with a rock-shaft and an arm thereon, of a carriage, and two oppositely inclined cam faces carried by said carriage in position to successively engage said arm and rock it in opposite directions near one limit of the carriage travel, substantially as described.

16. In a typewriter, the combination with a rock-shaft and an arm thereon, of a carriage, oppositely directed cam faces and a transverse face upon said carriage in position to engage said arm near one limit of the carriage travel, and two transverse faces and a cam face also carried by the carriage in position to engage said arm near the other limit of the carriage travel, substantially as described.

17. In a typewriter, the combination with a rock-shaft and an arm thereon, of a carriage, and oppositely directed cam faces and a transverse face upon said carriage in position to engage said arm near one limit of the carriage travel and thereby rock said arm backwardly, then forwardly and then collide with said arm to stop the carriage, substantially as described.

18. In a typewriter, the combination with a rock-shaft and an arm thereon, of a carriage, and two cam faces and a transverse face upon said carriage in position to successively engage said arm near one limit of the carriage travel, substantially as described.

19. In a typewriter, the combination with a rock-shaft and an arm thereon, of a carriage, two transverse faces and a cam face upon said carriage in position to engage said arm near one limit of the carriage travel, and means for moving said arm out of engagement with one of said transverse faces, substantially as described.

20. In a typewriter, the combination with a rock-shaft and an arm thereon, of a carriage, oppositely directed cam faces and a transverse face upon said carriage in position to engage said arm near one limit of the carriage travel, two transverse faces and a cam face also upon said carriage in position to engage said arm near the other limit of said carriage travel and means for moving said arm out of engagement with one of said transverse faces, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN B. CRAM.

Witnesses:
W. F. CARTER,
WALTER N. DAVIS.