

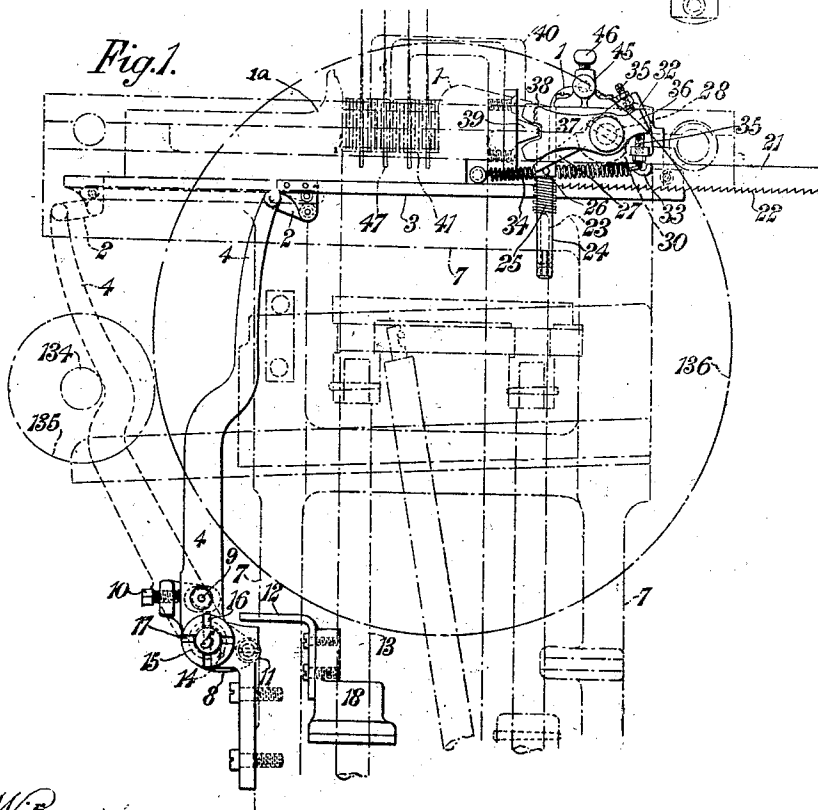
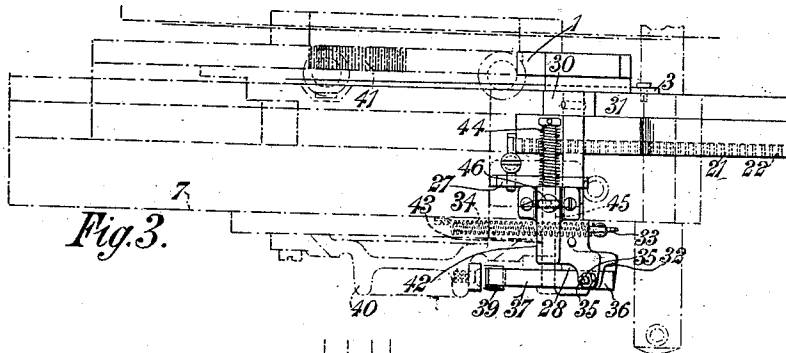
H. PEARCE, J. E. BILLINGTON, C. HOLLIWELL & J. R. BURGESS
 TYPOGRAPHICAL COMPOSING MACHINE.

APPLICATION FILED JULY 27, 1909.

1,008,056.

Patented Nov. 7, 1911

3 SHEETS-SHEET 1.



Witnesses

L. E. Morrison
 W. Flint

Inventors

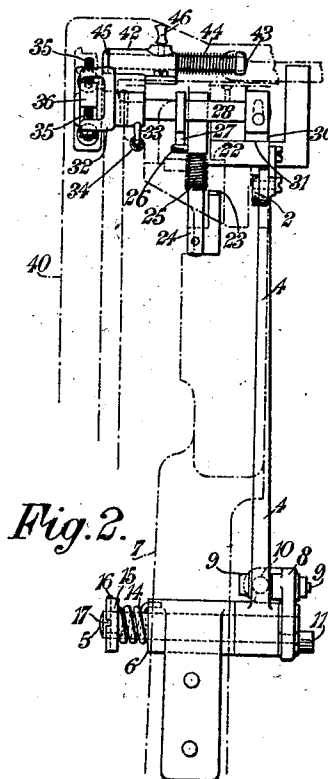
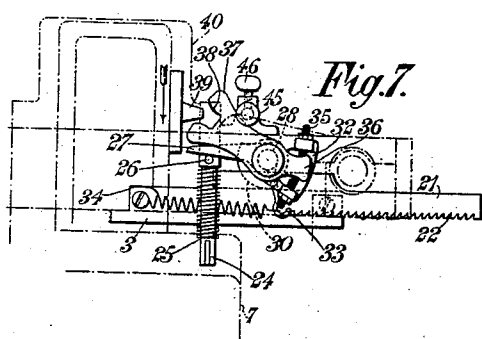
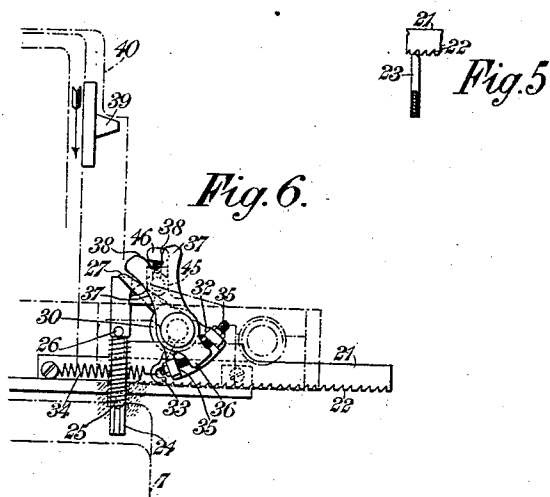
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 3 SHEETS—SHEET 2.



Witnesses
 Frank S. Ober
 L. J. Morrison

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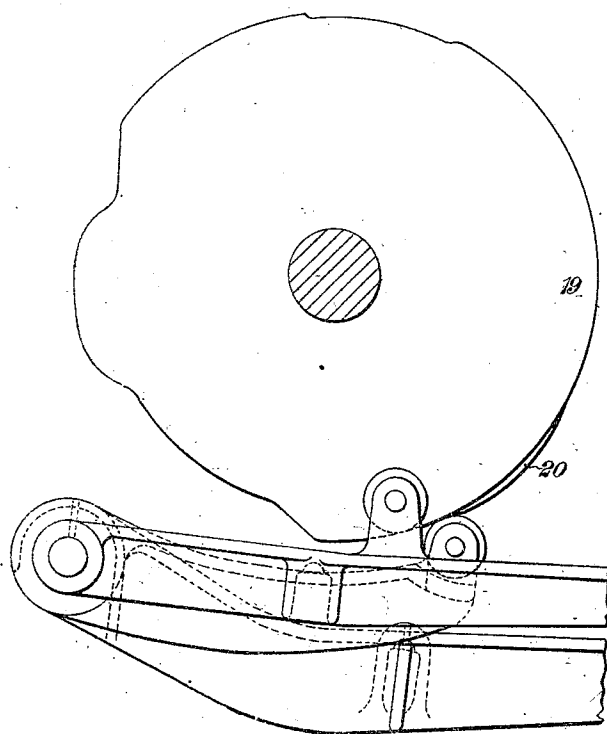
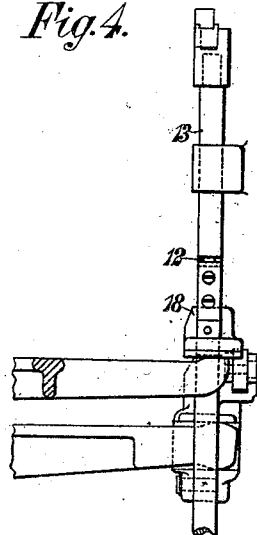


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

HERBERT PEARCE, JOHN ERNEST BILLINGTON, CHARLES HOLLIWELL, AND JOHN ROBERT BURGESS, OF BROADHEATH, ENGLAND, ASSIGNORS TO LINOTYPE AND MACHINERY LIMITED, OF LONDON, ENGLAND.

TYPOGRAPHICAL COMPOSING-MACHINE.

1,008,056.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed July 27, 1909. Serial No. 509,843.

To all whom it may concern:

Be it known that we, HERBERT PEARCE, JOHN ERNEST BILLINGTON, CHARLES HOLLIWELL, and JOHN ROBERT BURGESS, subjects of the King of the United Kingdom of Great Britain and Ireland, and all residing at the Linotype and Machinery Works, Broadheath, in the county of Chester, England, have invented new and useful Improvements in Typographical Composing-Machines, of which the following is a specification.

This invention relates to improvements in typographical composing machines and although it is especially devised as an improvement upon the well-known machine described in the specification of Letters Patent No. 436532 and more particularly upon the variant of that machine described in the specification of Letters Patent No. 945892, dated January 11th 1910, it is to be understood that the invention is not limited to that particular application; the invention is hereinafter described as applied to machines known commercially under the trade mark "Linotype," but this is merely as a matter of convenience, and not to be regarded in any way in a restrictive sense.

In the accompanying drawings which are to be taken as part of this specification and read therewith:—Figure 1 is a front elevation of sufficient of the machine to show the application thereto of one arrangement according to the present invention; Fig. 2 is an elevation as seen from the right-hand side of Fig. 1; Fig. 3 is a plan of Fig. 1; Fig. 4 is a sectional elevation as seen from the left-hand side of the machine, showing part of the justification mechanism; Fig. 5 is a sectional elevation as seen from the front of the machine of a detached portion of Fig. 1 but shown in a different operative position; and Figs. 6 and 7 are front elevations (partly broken away) corresponding to portions of Fig. 1 but showing some of the parts in respectively different operative positions.

In the said drawings many of the existing portions of the machine and which form no separate part of the present invention, are represented in dot-and-dash lines.

According to this invention, as illustrated in Figs. 1, 2 and 3, the right-hand or quadding vise-jaw 1 is, through a link 2 and jaw extension 3, in operative connection with the upper end of a lever 4 which, at its lower end, is fast to a short shaft 5 free to oscillate in a bearing 6 fast to the vise frame 7. On the shaft 5 is also mounted, so as to be capable of angular adjustment thereon, a shoe or bracket 8, which, by a suitable clamping device such as the bolt and nut 9, is capable of being secured to the lever 4 in any position to which it may be adjusted relatively to the said shaft and lever, this bracket preferably being provided with a suitable set screw 10 for facilitating the said adjustment. The bracket 8 is also provided with an anti-friction roller 11 whereon a spring device or arm 12 (see also Fig. 4) attached to the left-hand or second justification rod 13, acts to effect the rightward movement of the quadding jaw 1, say from the position in which it is shown in dash lines in Fig. 1 away from the other jaw 1^a, to its normal position, in which it is shown in full lines in that figure. The leftward movement of the quadding jaw 1 is effected by a torsion spring 14 encircling the shaft 5 and which is capable of being adjusted for varying its effective strength upon the said shaft and therefore also upon the lever 4; a convenient way of providing for this last-named adjustability is, as shown in Figs. 1 and 2, to engage the ends of the spring 14 one with the bearing 6 and the other with a collar 15, which latter may be adjusted angularly upon the shaft 5 and retained in any such adjusted position thereon by a pin 16 which transversely penetrates the said shaft and engages with radial grooves 17 in the collar.

The above-named spring device or yielding arm 12 may take the form of either an

angled piece of spring steel secured to a collar 18 fast on the second justification rod 13 as shown in the drawings, or some equivalent thereof, so as to permit a yielding contact between the parts; as shown in Fig. 1, it stands normally at a distance above the anti friction roller 11 sufficient to leave clearance for the latter to ascend when the right-hand jaw 1 is swung to the left, and it receives its downward motion (for moving the right-hand jaw 1 rightward) from the first justification cam 19 which, for this purpose, as shown in Fig. 4, has a special hump 20 provided upon it.

The right-hand vise jaw 1, or a bar 21 fast thereto, is provided with a downwardly-presented toothed rack 22 with which a catch or detent 23 is free to engage, as shown in Fig. 5, this detent being carried by a plunger 24 which is free to slide vertically in the head of the vise frame 7. The plunger 24 is raised by means of a spring 25 which bears at its upper and lower ends against annular shoulders formed respectively on the plunger and the part of the vise-frame in which the said plunger is slidable. In its normal or uppermost position, the plunger 24 serves to lock the right-hand vise jaw 1 in its right-most position, as indicated in Figs. 6 and 7, both during the normal or non-quadding operation of the machine, and preparatory to the release of the said jaw when the machine is adjusted for quadding. The plunger 24 is provided with a lateral projection or pin 26 whereon a lever arm 27 is caused to act for effecting the depression of the plunger, the said lever arm being secured to a shaft 28 free to oscillate in suitable bearings in the head of the vise frame 7. On the shaft 28 there is secured a cam or eccentric 30 adapted to engage with an upwardly-presented surface 31, Figs. 2 and 3, of the right-hand vise jaw 1, or of the before-mentioned bar 21 fast thereto, and there is also secured thereon a jaw piece 32 carrying a hook 33 for the attachment thereto, of a tension spring 34, and two adjustable set screws 35 between which is located a lug 36 formed on a sector 37 which, by the said screws 35, is capable of being adjusted angularly on the shaft 28. The sector 37 is provided with a single tooth space 38 adapted to receive tooth 39 secured to the first elevator 40, the tooth space, as shown in Fig. 1, being somewhat larger than the tooth so as to allow the first elevator to align the matrices 41, without also turning the sector 37 or eccentric 30 and thereby releasing the right-hand vise jaw 1. The tension spring 34 is attached to the head of the vise frame 7 and constantly tends to turn the sector 37 into its highest position.

In a sleeve 42 fast to the top of the vise frame 7 there is slidable, in a fore-and-aft

direction, a headed pin 43 upon which a spring 44 acts so as to tend always to move it into its rearmost position in which it is shown in Figs. 2 and 3. When this pin 43 is in its foremost position (into which it is moved by the operator when the machine is required to automatically effect the quadding, and in which position it is represented in dash lines in Fig. 3) its forward end overlies the sector 37 and, as shown in Fig. 7, retains it depressed in such position as to insure the engagement therewith of the tooth 39 at the next descent of the first elevator 40, the head 45 of the pin 43, by engaging with the sector 37, meanwhile preventing the said pin being moved rearward by its spring 44.

For enabling the machine to be adjusted for automatically effecting the quadding of a succession of lines, or, it may be, for automatically casting a succession of blanks, the headed pin 43, is temporarily locked in its foremost position by a suitable device such as the pinching screw 46, which latter is threaded through the wall of the sleeve 42, and is capable of being screwed down upon and released from the said headed pin.

During the leftward travel of the vise jaw 1, the first elevator 40 continues its descent, and the tooth 39 engages, as aforesaid, with the sector 37, the shaft 28 being thereby turned about its axis and the cam 30 caused to engage with the surface 31. By these means the jaw 1 is rigidly locked in position and retained so during the expansion of the space bars 47 for justifying the line. It will be seen that the jaw 1 is locked in quadding position by the cam 30 and in its inoperative position by the plunger 23, both of these parts being controlled by the shaft 28. After the first elevator reaches its lowest position it receives a slight upward movement for effecting the before-mentioned alinement of the matrices, and it is for the purpose of allowing of this slight upward movement taking place without affecting the grip of the cam 30 on the surface 31, that the tooth space 38 of the sector 37 is larger than the tooth 39.

After the type bar is cast and the first elevator 40 ascends, the tooth 39 turns the sector 37, shaft 28 and cam 30 sufficiently to release the jaw 1, the further movement necessary to move the sector 37 out of the next downward path of the tooth (that is, if successive quadding is not required) being given by the spring 34. By the turning of the shaft 28, as just mentioned, the lever arm 27 also is raised so as to allow the catch or detent 23 to engage with the downwardly-presented rack 22 and to thereby prevent the vise jaw 1 from moving leftward and striking the lower ends of the space bars 47, which striking, if not prevented, would have the effect of "piecing" the line. The engagement of the detent 23 with the rack 22 is of

such a character that although it is sufficient to prevent the just mentioned leftward motion, it allows the jaw 1 to be moved rightward through the action, as before described, of the arm 12 and the roller 11.

The leftward movement of the right-hand vise jaw, instead of being effected by a spring 14, may obviously be effected by a weight.

We claim:—

1. The quadding mechanism for a typographical composing machine, comprising in combination the quadding jaw and the justifying devices, with means operated by the justifying devices for moving the quadding jaw to its normal position and independent means to move the jaw to its operative or quadding position.

2. The quadding mechanism for a typographical composing machine, comprising in combination the quadding jaw and the justifying devices, with means operated by the justifying devices for moving the quadding jaw to its normal position and independent means normally tending to move the jaw to its operative or quadding position.

3. The quadding mechanism for a typographical composing machine, comprising in combination the quadding jaw, the justifying devices, and the first elevator, with means operated by the justifying devices for moving the quadding jaw to its normal position and independent means to move the jaw to its operative or quadding position, together with means controlled by the first elevator to hold the jaw in both positions.

4. The quadding mechanism for a typographical composing machine, comprising in combination the quadding jaw and the justifying devices, with means operated by the justifying devices for moving the quadding jaw to its normal position and independent means to move the jaw to its operative or quadding position, together with independent means for holding the jaw in both positions.

5. The quadding mechanism for a typographical composing machine, comprising in combination the quadding jaw and means for moving it to its operative and inoperative positions, with means for locking the said jaw in both positions, and a single independently movable means to control the said locking means.

6. In a typographical composing machine, the combination with vise jaws, between which, composed lines of matrices are justified, one of the vise jaws being capable of being moved toward and away from the other jaw, and a justification rod moved vertically for effecting the justification of the composed lines, of a lever arm operatively connected to the movable jaw, a shaft carrying the lever arm, a shoe or bracket adapted to be adjusted angularly upon the

shaft, devices adapted to make the shoe operatively fast to the lever arm and a device on the justification rod adapted to operatively engage the shoe.

7. In a typographical composing machine, the combination with vise jaws, between which, composed lines of matrices are justified, one of the vise jaws being capable of being moved toward and away from the other jaw, a justification rod moved vertically for effecting the justification of the composed lines, a lever arm operatively connected to the movable jaw, a shaft carrying the lever arm, a shoe or bracket adapted to be adjusted angularly upon the shaft, devices adapted to make the shoe operatively fast to the lever arm, and a device on the justification rod adapted to operatively engage the shoe, of a spring encircling the shaft and one end of which is fixed, a collar to which the other end of the spring is fast, the said collar being free to be adjusted around the shaft, and means adapted to secure the collar on the shaft after such adjustment.

8. In a typographical composing machine, the combination with a vise frame, vise jaws mounted on the frame, one of the jaws being capable of being moved toward and away from the other jaw, a toothed rack operatively fast to the movable vise jaw, a spring-pressed catch or detent adapted to engage with the rack, and a shaft adapted to rock in bearings on the vise frame, of an arm and a toothed sector both operatively fast to the said shaft, the former being adapted to disengage the catch from the rack, and the latter being adapted to be engaged by a vertically reciprocated tooth, the said tooth, and means adapted to reciprocate it in a vertical direction, the engagement of the tooth with the sector causing the shaft to be turned and the catch to be disengaged from the rack.

9. In a typographical composing machine, the combination with a vise frame, vise jaws mounted on the frame, one of the jaws being capable of being moved toward and away from the other jaw, a toothed rack operatively fast to the movable vise jaw, a spring-pressed catch or detent adapted to engage with the rack, and a shaft adapted to rock in bearings on the vise frame, of an arm and a toothed sector both operatively fast to the said shaft, the former being adapted to disengage the catch from the rack, and the latter being adapted to be engaged by a vertically reciprocated tooth, the said tooth, and means adapted to reciprocate it in a vertical direction, and a cam or eccentric also operatively fast to the shaft and adapted to operatively engage with the movable vise jaw when the catch is disengaged from the rack and vice versa.

10. In a typographical composing machine, the combination with a vise frame, vise jaws

mounted on the frame, one of the jaws being capable of being moved toward and away from the other jaw, a toothed rack operatively fast to the movable vise jaw, a spring-pressed catch or detent adapted to engage with the rack, a shaft adapted to rock in bearings on the vise frame, and a vertically reciprocated first elevator, of an arm and a toothed sector both operatively fast to the shaft, the former being adapted to disengage the catch from the rack, and the latter being adapted to be engaged by a tooth fast to the first elevator, the said tooth, and a cam or eccentric also operatively fast to the shaft and adapted to operatively engage with the vise jaw when the catch is disengaged from the rack and vice versa.

11. In a typographical composing machine, the combination with a vise frame, vise jaws mounted on the frame, one of the jaws being capable of being moved toward and away from the other jaw, a toothed rack operatively fast to the movable vise jaw, a spring-pressed catch or detent adapted to engage with the rack, and a shaft adapted to rock in bearings on the vise frame, of an arm and a toothed sector both operatively fast to the said shaft, the former being adapted to disengage the catch from the rack, and the latter being adapted to be engaged by a vertically reciprocated tooth, the said tooth, and means adapted to reciprocate it in a vertical direction, and means adapted to adjust the toothed sector angularly upon the shaft and to secure it in such angularly adjusted position.

12. In a typographical composing machine, the combination with a vise frame, vise jaws mounted on the frame, one of the jaws being capable of being moved toward and away from the other jaw, a toothed rack operatively fast to the movable vise jaw, a spring-pressed catch or detent adapted to engage with the rack, and a shaft adapted to rock in bearings on the vise frame, of an arm and a toothed sector both operatively fast to the said shaft, the former being adapted to disengage the catch from the rack, and the latter being adapted to be engaged by a vertically reciprocated tooth, the said tooth, and means adapted to reciprocate it in a vertical direction, a lug on the sector, a jaw piece fast to the shaft, and set screws adjustable in the jaw piece and adapted to bear on the lug.

13. In a typographical composing machine, the combination with a vise frame, vise jaws mounted on the frame, one of the jaws being capable of being moved toward and away from the other jaw, a toothed rack operatively fast to the movable vise jaw, a spring-pressed catch or detent adapted to engage with the rack, and a shaft adapted to rock in bearings on the vise frame, of an

arm and a toothed sector both operatively fast to the said shaft, the former being adapted to disengage the catch from the rack, and the latter being adapted to be engaged by a vertically reciprocated tooth, the said tooth, and means adapted to reciprocate it in a vertical direction, a cam or eccentric also operatively fast to the shaft and adapted to operatively engage with the movable vise jaw, a sleeve fast to the vise frame, a pin slidable in the sleeve, and a spring adapted to move the pin longitudinally, the said pin being capable of adjustment so as to overlie or not to overlie the toothed sector.

14. In a typographical composing machine, the combination with a vise frame, vise jaws mounted on the frame, one of the jaws being capable of being moved toward and away from the other jaw, a toothed rack operatively fast to the movable vise jaw, a spring-pressed catch or detent adapted to engage with the rack, and a shaft adapted to rock in bearings on the vise frame, of an arm and a toothed sector both operatively fast to the said shaft, the former being adapted to disengage the catch from the rack, and the latter being adapted to be engaged by a vertically reciprocated tooth, the said tooth, and means adapted to reciprocate it in a vertical direction, a cam or eccentric also operatively fast to the shaft and adapted to operatively engage with the movable vise jaw, a sleeve fast to the vise frame, a pin slidable in the sleeve, a spring adapted to move the pin longitudinally, the said pin being capable of adjustment so as to overlie or not to overlie the toothed sector, and an annularly projecting head on the pin, adapted to engage with the sector and by this engagement to retain the pin against the influence of the spring which latter retracts the pin out of the path of the sector when the said sector is disengaged from the head.

15. In a typographical composing machine, the combination with a vise frame, vise jaws mounted on the frame, one of the jaws being capable of being moved toward and away from the other jaw, a toothed rack operatively fast to the movable vise jaw, a spring-pressed catch or detent adapted to engage with the rack, and a shaft adapted to rock in bearings on the vise frame, of an arm and a toothed sector both operatively fast to the said shaft, the former being adapted to disengage the catch from the rack, and the latter being adapted to be engaged by a vertically reciprocated tooth, the said tooth, and means adapted to reciprocate it in a vertical direction, a cam or eccentric also operatively fast to the shaft and adapted to operatively engage with the movable vise jaw, a sleeve fast to the vise

frame, a pin slidable in the sleeve, a spring adapted to move the pin longitudinally, the said pin being capable of adjustment so as to overlie or not to overlie the toothed sector, and means adapted to be manually adjusted to secure the headed pin, when otherwise released, against being moved by the spring throughout a succession of cycles of the machine.

In witness whereof we have hereunto set 10 our hands in the presence of two witnesses.

HERBERT PEARCE.

JOHN ERNEST BILLINGTON.

CHARLES HOLLIWELL.

JOHN ROBERT BURGESS.

Witnesses:

ROBERT BRIGGS,

FRED. BULLIVANT.