

987,763.

C. SPIRO.
LINE SPACING MECHANISM.
APPLICATION FILED AUG. 4, 1910.

Patented Mar. 28, 1911.

2 SHEETS-SHEET 1.

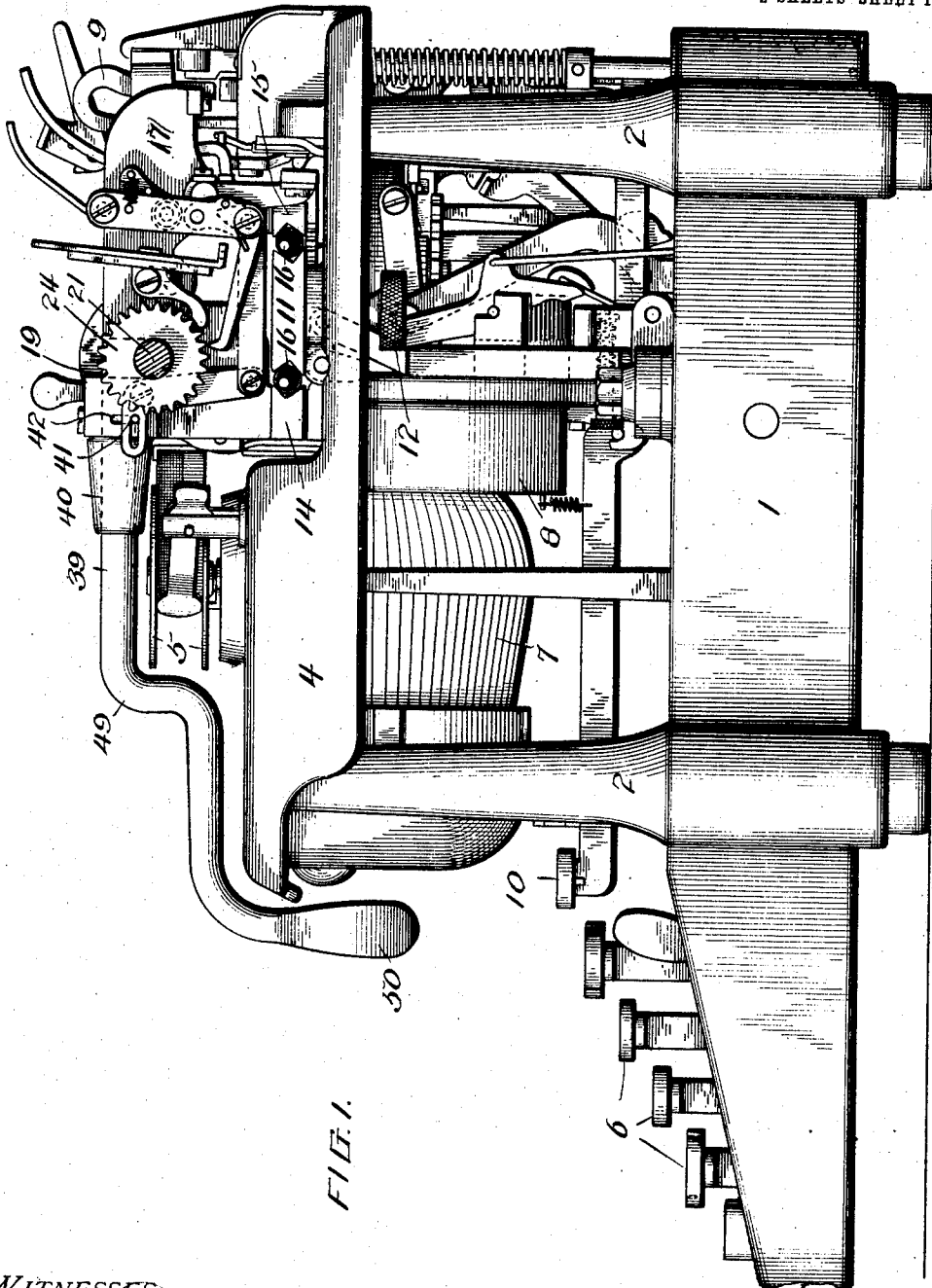


FIG. 1.

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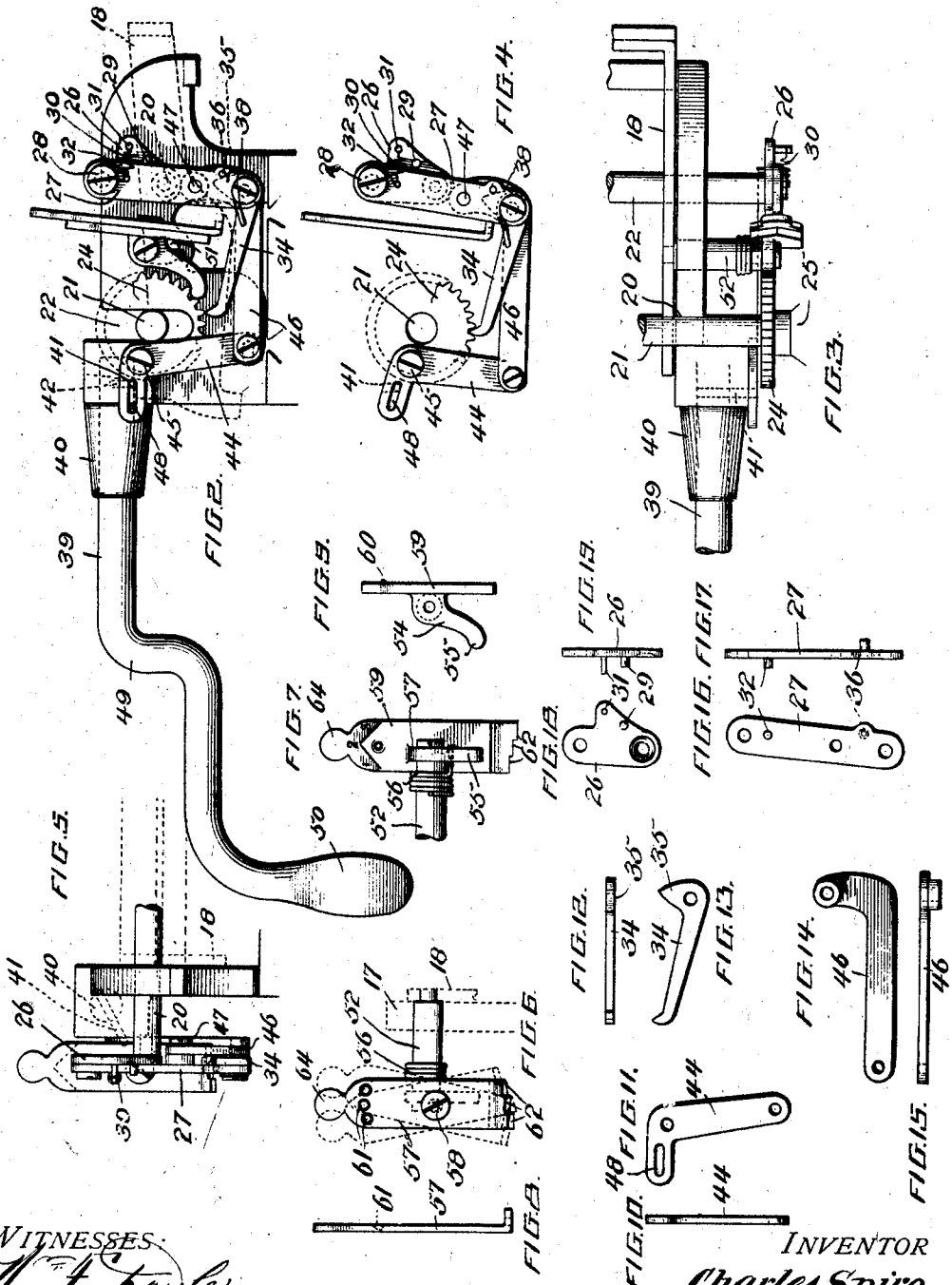
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2 SHEETS—SHEET 2.



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LINE-SPACING MECHANISM.

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Specification of Letters Patent.

Patented Mar. 28, 1911.

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To all whom it may concern:

Be it known that I, CHARLES SPIRO, a citizen of the United States, residing at New York, county of New York, State of New York, have invented certain new and useful Improvements in Line-Spacing Mechanism, of which the following is a specification, reference being had therein to the accompanying drawing.

10 The invention disclosed in this application relates broadly to typewriting machines and specifically to line spacing mechanism for typewriting machines by means of which the platen is adapted to be turned predetermined
15 distances for line spacing.

The principal object of this invention is to provide a line spacing mechanism for typewriting machines having a vertical shifting carriage: the line spacing mechanism being
20 arranged to shift with the platen carrying shifting frame, with the exception of the operating lever which is mounted upon the main carriage frame and therefore does not shift during the shifting of the platen.

25 Another object of this invention is to construct a line spacing mechanism particularly adapted for a vertical shifting carriage of a front strike typewriter, in which the holding, detent and actuating dogs are mounted upon the platen carrying shifting frame
30 in such manner as to be shifted in a vertical direction when the platen is moved from one printing level to another, and to connect the actuating dog with an operating lever which is carried upon a non-shifting portion of the carriage frame.

Another object of this invention is to construct a holding detent for a line space wheel in such manner that the holding detent is
40 adapted to carry the line space determining stops.

Another object of this invention is to construct a pivoted holding detent for the line space wheel in such manner as to carry a
45 movable line space determining stop adapted to be engaged by mechanisms for operating the actuating dog, the construction of parts being such that the abutting force against the line space determining stop tends
50 to force the detent holding member between the line space wheel, thus preventing overthrow at the end of the line space movement.

A still further object of this invention is to construct the operating lever for the line
55 spacing mechanism of a front strike typewriting machine in such manner as to lie

very close to the top plate of the typewriting machine and have the major portion of its weight considerably below the center of suspension, in order that gravity may assist
60 in returning the several parts to normal position.

Still other and further objects of this invention will in part be obvious and will in part be pointed out in the specification which
65 hereinafter follows, by reference to the accompanying drawings, in which like numerals are used to indicate like parts throughout the several figures thereof, and the scope of the invention will be indicated by the appended claims.

Figure 1 is a sectional end view of a complete typewriting machine showing the relationship of the line spacing mechanism to the carriage and other parts of the machine.
75 Fig. 2 is a detail view showing the line spacing mechanism in elevation. Fig. 3 is a detail view showing the line spacing mechanism in plan. Fig. 4 is a detail view showing the actuating dog and operative mechanisms therefor, in side elevation. Fig. 5 is
80 a detail view showing the actuating dog and operative mechanisms therefor, in end elevation. Fig. 6 is a detail front view of the line determining stop. Fig. 7 is a detail rear
85 view of the line determining stop. Fig. 8 is a detail view of the line stop. Fig. 9 is a detail view of the holding detent. Fig. 10 is an end elevation of the bell crank connecting link. Fig. 11 is a detail side view of
90 the bell crank connecting link. Fig. 12 is a detail plan view of the actuating dog. Fig. 13 is a detail elevational view of the actuating dog. Fig. 14 is a detail elevational view of the connecting link. Fig. 15 is a detail
95 plan view of the connecting link. Fig. 16 is a detail elevational view of the swinging dog carrying link. Fig. 17 is a detail side elevational view of the swinging dog carrying link. Fig. 18 is a detail elevational
100 view of the anchor bracket for the swinging dog carrying link. Fig. 19 is a side view of the anchor bracket for the swinging link.

Referring particularly to Fig. 1 of the drawings, it will be noted that this figure
105 shows a great many parts of a typewriting machine which do not specifically refer to the line spacing mechanism, however, this view has been made for the purpose of showing the relationship of the line spacing
110 mechanism, operating lever, etc., to the other parts of the machine, and the portions of

the typewriter which are illustrated in Fig. 1 that do not appertain specifically to line spacing mechanism, are covered by applications for patent which are pending contemporaneously with this application. Therefore, these parts will only be referred to generally in the hereinafter following specification.

Again referring specifically to Fig. 1, the machine frame comprises a base portion 1, from which rise supporting columns 2, formed integral with said base portion. A supporting top plate 4, is adapted to be mounted upon the upper ends of the supporting columns by any convenient means of fastening. Ribbon spools 5, and actuating mechanism therefor, is adapted to be carried by the forward portion of the top plate. Key board mechanism 6, is mounted within the machine frame and is adapted to be operatively connected with type bars 7, that are pivotally mounted within a type bar segment 8. Tabulating mechanism 9, is arranged at the rear portion of the machine frame and is operatively connected with an upper set of key levers 10.

Referring more specifically to the carriage mechanism, a carriage bed 11, is removably mounted upon the top plate 4, and knurled thumb screws 12, pass through the openings in the top plate and into the carriage bed in such manner as to firmly clamp the bed 11 to the top plate 4 in the machine frame. A reciprocating carriage comprising side rails 14 and 15, which together with the carriage bed 11, form runways for anti-friction balls 16. The side rails 14 and 15 are connected to end frames 17, which together with the several connecting cross rods, form a rigid reciprocating frame, within which a vertically shifting platen frame 18 is adapted to be mounted, and which carries a cylindrical platen 19. The vertical shifting platen frame is fixedly mounted upon a pivot rod 20, which is adapted to rotate in the end frames 17, when the shifting platen frame 18 is rocked to move the platen 19 from one printing level to another. A platen axle 21, is extended outwardly from the cylindrical platen 19, through an open slot 22, which is formed in the carriage end frames 17. A line spacing wheel 24, is mounted upon the platen axle 21, outside of the carriage end frame 17, and adjacent to a platen turning knob 25, (which is indicated in Fig. 3.) Fixedly mounted upon the outward extension of the pivot rod 20, for the platen shifting frame 18, is an anchor bracket 26, which is arranged to extend upwardly from the axis of rotation of the pivot rod 20 for a reason which will be more fully explained hereinafter. A swinging link member 27 is pivotally mounted upon the upper end of the anchor bracket 26, by means of stud screws 28, and is normally retained

against a stop pin 29, by means of a coiled spring 30, which is attached to a pin 31 mounted in the anchor bracket, and a similar pin 32, mounted in the swinging link 27. A line spacing actuating dog 34, is pivotally mounted upon the lower end of the swinging link 27. A tail 35, of the actuating line spacing dog, is normally held against a stop pin 36 which is carried by the swinging link 27, by means of a coiled spring 37, which is mounted upon the swinging link 27, and is attached to the actuating line spacing dog in such manner as to exert a force in an upward direction upon the body of the dog.

Referring more particularly to Figs. 2 and 3, it will be noted that the axis for the pivot rod 20 of the platen shifting frame, substantially bisects the swinging link 27, and it will also be noted that the anchor bracket 26, the swinging link 27 and the actuating dog 34, when in normal position, occupy a substantially fixed relation to the line spacing wheel 24, and it therefore follows that as the platen carrying shifting frame 18 is rotated about the axis of the pivot rod 20, the actuating dog will be continually in a definite fixed relationship in regard to the teeth of the line spacing wheel. An operating lever 39, is rotatively mounted in a boss member 40, which is formed integral with the right end frame 17. The operating lever 39, is held in proper position in the boss member 40, by means of a cross pin 41, which is firmly seated in the operating lever 39, and is adapted to swing in a vertical direction between the walls of a slot 42, and thus maintains the operating lever within the boss member 40. A bell crank connecting link 44, is pivotally mounted upon the right end frame 17, by means of a stud screw 45, and is attached at its lower end to a horizontal L-shaped connecting link 46, that is pivotally mounted upon the swinging link 27, by means of a stud screw 47. The bell crank connecting link 44, is formed on its upper end with an open slot 48, within which the cross pin 41 is adapted to operate.

Referring particularly to Fig. 1, it will be noted that the operating lever 39, extends forwardly and is bent down as at 49, again extending forward and terminating in a downwardly depending handle portion 50. The downward bend 49, on the operating lever 39, permits the outer end of the operating lever to lie very close to the top of the machine frame and at the same time forms a sufficient space for the lever to pass over the ribbon spools. It will also be noted that the entire weight of the operating lever forward of the downward bend 49, is below the axis of rotation of the lever 39. Thus it will be noted that the operating handle will be restored to normal position by the effect of gravity. The end frame 17, is provided

with an opening 51, through which passes an elongated stud member 52, that is fixedly mounted upon the platen shifting frame 18. The elongated stud member 52, extends outwardly, and carries pivoted thereupon a line spacing detent member 54, which is provided with an engaging dog 55, that is constructed to be seated between the teeth of the line spacing wheel 44, and thus resiliently retain the wheel in any particular line spacing position. A coiled spring 56, is mounted upon the elongated stud member 52, and is attached to the line spacing detent 54, in such manner as to resiliently hold the engaging dog 55 against the line spacing wheel. A line space determining stop 57, is pivotally mounted as at 58, upon a facing member 59, of the line spacing detent 54. The facing member 59, is provided on its upper face with a small projection 60, which is adapted to be seated in either or any of the depressions 61, that are formed upon the upper face of the line space determining stop. The lower end of the line space determining stop is formed with stepped stop faces, which are adapted to be definitely positioned in the path of the swinging link 27, in order to determine the amount of movement which the swinging link may have, and by so determining the amount of movement to determine the number of line spaces which the line spacing wheel 24, will be moved at each actuation of the operating lever 39. It will be noted that the buffing force exerted between a stop face 62, on the line space determining stop and the swinging link 27, will be transmitted through to the detent dog 55, and will tend to seat the dog more firmly between the teeth of the line spacing engaging wheel. It will be further noted that this extra pressure upon the detent dog is only brought into effect at the extreme limit of movement of the several parts, and thus insuring against "overthrow" of the line spacing wheel 24 when the operating lever 39 is violently actuated. The line space determining stop 57, is provided on its upper end with a handle portion 64, which enables the operator to swing the line space determining stop member into either of the three positions to position the parts for actuating the line spacing wheel 2, at two or three line space intervals as may be desired.

The construction and arrangement of the several parts of the line spacing mechanism are such that the actuating and holding elements for the platen, are all arranged with definite relation to the platen itself and will follow the platen in either of its shifted positions. While the line spacing operating lever is mounted upon the main frame of the carriage proper, it does not shift when the platen is moved from one printing level to another, and by this construction the line

spacing mechanism may be formed much more rigid than if the operating lever were mounted to shift with the platen carriage.

Having thus described my invention what I desire to claim is:—

1. In a line spacing mechanism for a type-writing machine, the combination of a carriage frame, a swinging platen carriage mounted in said carriage frame, a cylindrical platen mounted in said swinging platen carriage, a line space wheel operatively connected with said platen, a pivot rod for said swinging platen carriage, an anchor member mounted upon said pivot rod, a swinging dog carrying link pivotally mounted upon said anchor member, an actuating dog mounted upon said swinging link, and means for operating said actuating dog.

2. In a line spacing mechanism for a type-writing machine, the combination of a carriage frame, a swinging platen carriage mounted in said carriage frame, a platen carried by said swinging platen carriage, a line spacing wheel operatively connected with said platen, a pivot rod about which said swinging platen carriage rotates, an anchor bracket fixedly mounted upon said pivot rod, a swinging link pivotally mounted upon said anchor bracket, an actuating dog carried by said swinging link, an operating lever mounted upon said carriage frame, and operative means connecting said operating lever and said swinging link.

3. In a line spacing mechanism for a type-writing machine, the combination of a carriage frame, a swinging platen carriage mounted in said carriage frame, a pivot rod about which said swinging platen carriage is adapted to rotate, a cylindrical platen carried by said swinging platen carriage, a line spacing wheel operatively connected with said platen, an anchor bracket fixedly mounted upon said pivot rod, a swinging link pivotally mounted upon said anchor bracket, an actuating dog mounted upon said swinging link, an operating handle mounted for rotation in said carriage frame, and means for connecting said rotatively mounted handle with said actuating dog.

4. In a line spacing mechanism for a type-writing machine, the combination of a carriage frame, a swinging platen carriage mounted in said carriage frame, a pivot rod about which said platen carriage is adapted to rotate, an anchor bracket fixedly mounted upon said pivot rod, a swinging link mounted upon said anchor bracket, a stop pin carried by said anchor bracket, resilient means for maintaining said swinging link in engagement with said stop pin, a platen carried by said swinging platen carriage, a line spacing wheel operatively connected with said platen, an actuating dog carried by said swinging link and adapted to engage said line spacing wheel, and

means for actuating said dog, substantially as described.

5. In a line spacing mechanism for a typewriting machine, the combination of a carriage frame, a swinging platen carriage mounted in said carriage frame, a cylindrical platen carried by said platen carriage, a line spacing wheel operatively connected with said cylindrical platen, a pivot rod about which said platen carriage is adapted to swing, an anchor bracket fixedly mounted upon said pivot rod, a swinging link mounted upon said anchor bracket, an actuating dog mounted upon said swinging link, a stop member carried by said swinging link, resilient means for maintaining a portion of said actuating dog in connection with said stop member, an operating lever rotatively mounted in the carriage frame, and operative means connecting said rotatively mounted lever and said actuating dog.

6. A line spacing mechanism for typewriting machines, including a carriage frame, a platen carriage mounted for movement in said carriage frame, a platen carried by said platen carriage, line spacing mechanism for said platen including an actuating dog mounted to move when said platen carriage is moved in the carriage frame, an operating lever carried by said carriage frame, and operative means connecting said actuating dog and said operating lever.

7. A line spacing mechanism for typewriting machines, including a line spacing wheel, an actuating dog, means for carrying said actuating dog, a detent dog adapted to cooperate with said line spacing wheel, a swing stop member operatively connected with said detent dog and adapted to contact with the carrying means for said actuating dog, and swing transverse the path of said carrying means, the arrangement and construction of parts being such that pressure upon the stop member tends to force the detent dog more rigidly in engagement with the line spacing wheel.

8. A line spacing mechanism for typewriting machines, including a non-shifting carriage frame, a swinging platen frame rotatively mounted in said carriage frame, a platen mounted in said swinging carriage frame, a detent member mounted upon said swinging carriage frame, a line spacing wheel operatively connected with said platen, a line space dog, means for mounting said line space dog in such manner as to maintain said dog in a normal definite position with relation to said line spacing wheel for any printing position to which said platen may be shifted, and means for actuating said ac-

tuating dog, said actuating means including an operating lever mounted upon said non-shifting carriage frame.

9. In a line spacing mechanism for typewriting machines, the combination of a carriage frame, a swinging platen carriage mounted in said carriage frame, a platen carried by said swinging platen carriage, a line spacing wheel operatively connected with said platen, a detent member carried by said swinging platen carriage, a line space determining stop member mounted upon said detent member, an actuating dog, supporting means for said actuating dog arranged in such manner as to shift said dog when said platen is shifted, an operating lever rotatively mounted in said carriage frame, and means operatively connecting said operating lever and said actuating dog.

10. A line spacing mechanism for typewriting machines, including a carriage frame, a cylindrical platen, means for mounting said cylindrical platen in said carriage frame, a line spacing wheel operatively connected with said cylindrical platen, means for operating said line spacing wheel comprising an actuating dog, means for supporting said actuating dog, an operating handle rotatively mounted in said carriage frame, operative means connecting said operating handle and said actuating dog, said operating handle being formed with an axially aligned portion and a portion parallel to said axially aligned portion, substantially as described.

11. In a line spacing mechanism for typewriting machines, the combination of a carriage frame, a platen carriage mounted for movement in said carriage frame, a cylindrical platen mounted in said platen carriage, a line spacing wheel operatively connected with said cylindrical platen, a holding detent pivotally mounted upon said platen carriage, an abutting stop pivotally mounted upon said detent, an actuating dog operatively connected with said platen carriage, an operating lever carried by said carriage frame, an actuating cam pin mounted in said operating lever, a bell crank link provided with a slot opening for cooperation with said actuating cam pin, and operative means connecting said bell crank link and said actuating dog, substantially as described.

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

CHARLES SPIRO.

Witnesses:

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H. P. ALDEN.