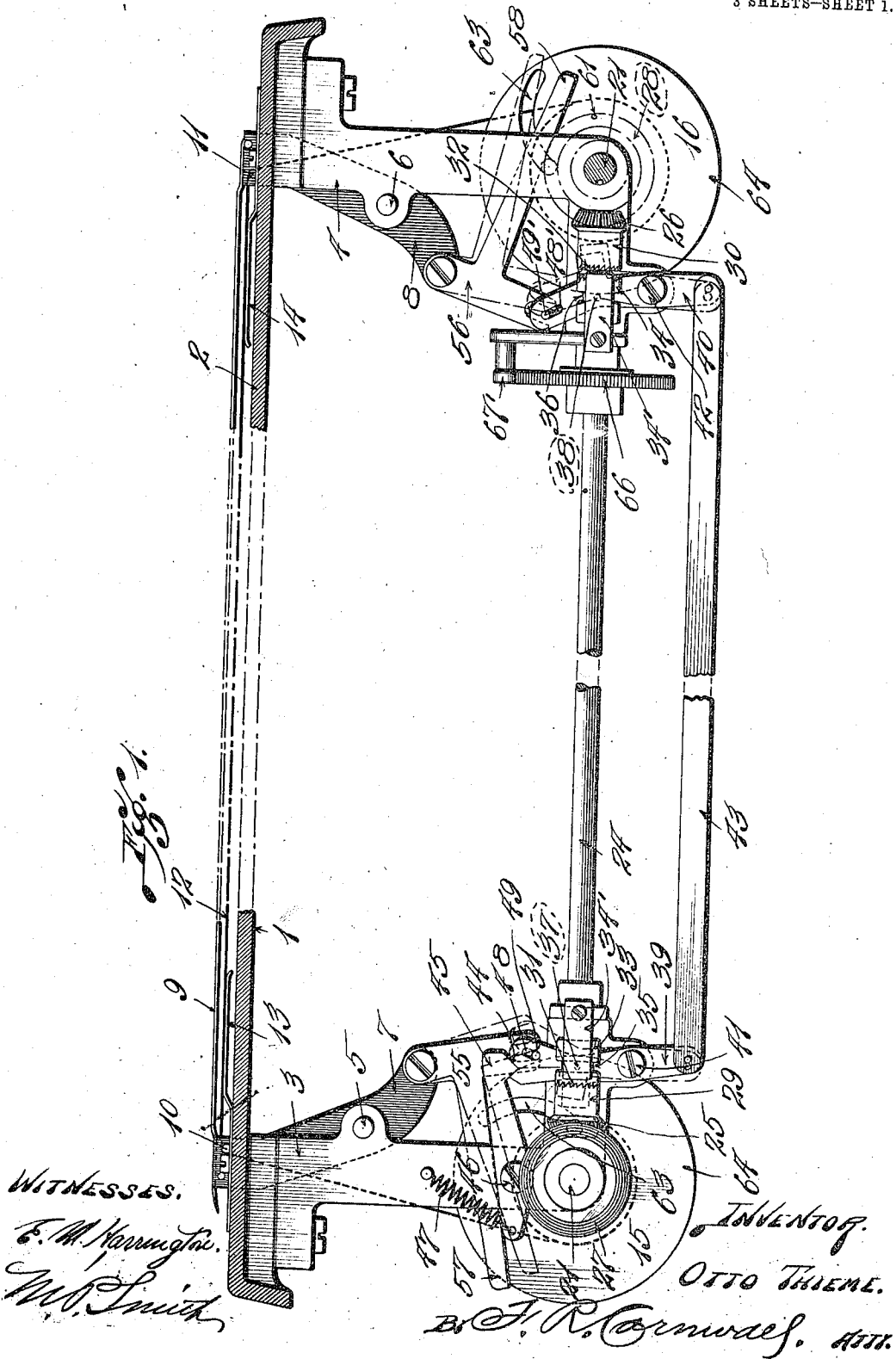


O. THIEME.
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 APPLICATION FILED SEPT. 23, 1910.

996,164.

Patented June 27, 1911.

3 SHEETS-SHEET 1.



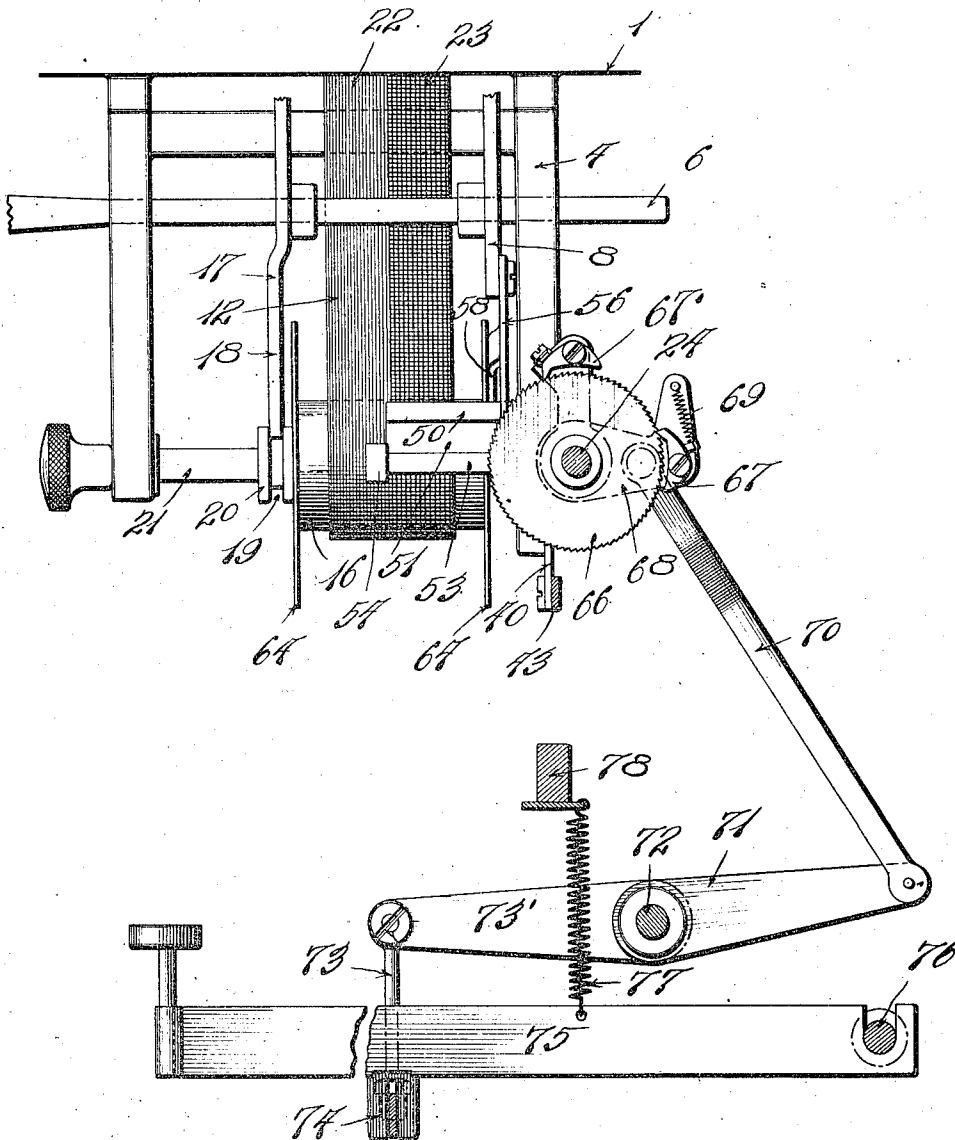
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3 SHEETS-SHEET 2.

Fig. 2.



WITNESSES.

E. M. Harrington.
W. O. Smith.

INVENTOR.

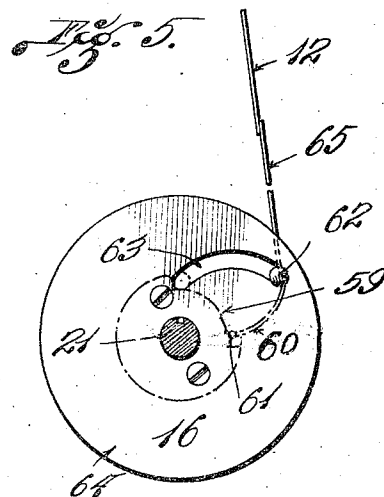
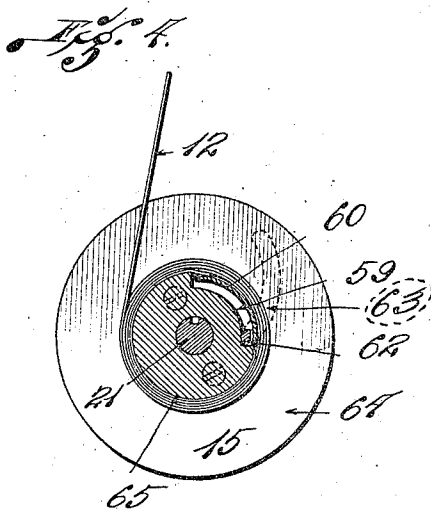
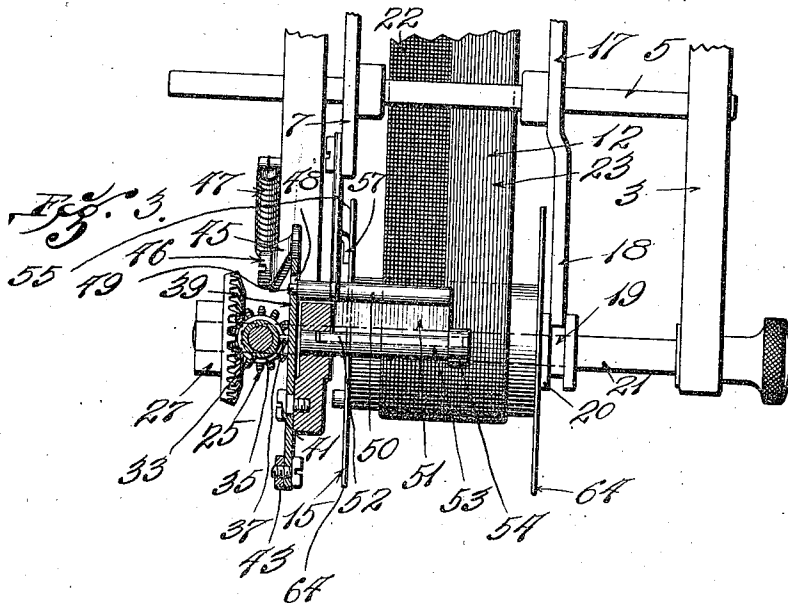
OTTO THIEME.
BY F. R. Barnwal. ATTOR.

O. THIEME.
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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RIBBON-REVERSE FOR TYPE-WRITING MACHINES.

996,164.

Specification of Letters Patent. Patented June 27, 1911.

Application filed September 23, 1910. Serial No. 583,434.

To all whom it may concern:

Be it known that I, OTTO THIEME, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Ribbon-Reverses for Type-Writing Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view in side elevation of so much of a typewriting machine as is necessary to illustrate my improved device. Fig. 2 is a fragmentary view in side elevation illustrating the means whereby my device is operated. Figs. 3, 4 and 5 illustrate details of construction.

My invention relates to an improvement in a mechanism for reversing the ribbon on an ordinary typewriter machine.

The object of my invention is to provide means for automatically positioning the operating mechanism of the ribbon winding reels or spools on either side of the machine, so that when the ribbon has been entirely unwound from one reel it will be automatically reversed or rewound on the opposite reel during the operation of the ordinary keys of the machine.

In my improved machine the reel operating means is operated intermittently and automatically through the action upon any key lever of the machine for printing.

In the drawings, 1 indicates generally the frame of the machine and 2 the upper portion of the frame forming a deck. On either side of the deck are suitably attached brackets 3 and 4. In these brackets are mounted slidable rods 5 and 6, one of which is suitably connected to a key lever on the frame. Upon these rods are fixed bars 7 and 8, having attached at their upper ends the usual sheet metal ribbon guard 9 extending across the top of the machine. On each bar 7 and 8 just below the guard 9 are mounted guide pins 10 and 11 over which the ribbon 12 of the machine is passed.

Attached to the frame or deck 2 are suitable resilient strips 13 and 14 extending below the ribbon to prevent its contacting with the frame of the machine. The ribbon 12 passes from the reel or spool 15 on one side

of the machine to the reel or spool 16 on the opposite side of the machine.

On the rod 5 opposite the bar 7 is a coöperating bar 17 which extends upward to support the guard 9 on the opposite side of the ribbon. This bar 17 has an extension 18 engaging a slot 19 around the projecting hub 20 of the reel 15. A similar construction is used in connection with the reel 16. Each reel is keyed on a spindle 21 to rotate therewith, and be slidable longitudinally thereof.

The ribbon 12 is composed of two parts 22 and 23 for black and red ink and by moving the rod 5 laterally the reel 15 and guard 9 together with the ribbon may be shifted so that the black or red inked portion of the ribbon as desired is positioned under the printing mechanism.

At the back of the machine is suitably supported a shaft 24 extending between the two reels 15 and 16. This shaft has loosely mounted at either end beveled gears 25 and 26 intermeshing with beveled gears 27 and 28 fixedly mounted on the spindles 21, respectively.

Projecting from the gears 25 and 26 are clutch devices 29 and 30 having preferably ratchet teeth 31 and 32 at the outer extremity thereof. Adapted to coöperate with the clutch devices 29 and 30 are corresponding toothed clutch members 33 and 34. These members 33 and 34 are keyed to the shaft 24 in order to be moved longitudinally thereof, and yet be rotated therewith. I prefer to attach spring strips 34' to stationary parts to project over and engage the slidable clutch members 33 and 34 respectively in order to prevent the clutches from being disengaged through vibration of the machine.

Each member 33 and 34 is grooved as at 35 and 36 for the entrance of pins 37 and 38, which pins are mounted respectively on levers 39 and 40, pivoted at 41 and 42 on fixed parts of the frame. These levers are connected through a link 43.

The lever 39 is notched at its upper extremity at 44 to receive a toothed pawl 45 pivoted at 46 on the bracket 3 having a spring 47 attached to hold the pawl normally in the notch. This lever at its upper end is also slotted at 48 for the reception of a pin 49. The pin 49 projects from the cylindrical portion 50 of a lever 51

which lever has a portion 52 shaped to oscillate in a groove in a pin 53 fastened in the frame of the machine. The groove in the pin extends within the bearing in the frame as shown in Fig. 3, and also extends to the projecting end thereof over which a cap or sleeve 54 is fitted. The portion 52 of the lever 51 extends within the groove to be engaged and held in place by the frame at one end and the cap 44 at the other. The lever 40 has a similar slot 48' for a pin 49' attached to a lever similar to 51 pivoted on a pin fast in the frame of the machine.

Pivoted to the lower ends of bars 7 and 8 are levers 55 and 56 notched at their lower ends to engage the portion 50 of the lever 51 and the corresponding lever on the other side of the machine. These levers 55 and 56 have lateral extensions, respectively, 57 and 58.

Each reel or spool 15 and 16 is notched at 59 for the reception of a curved lever 60 pivoted within the notch at 61. The end of this lever 60 has projecting portions 62 engaging curved slots 63 in the flanges 64 of the spool. The lever 60 is curved to lie wholly within the notch 59 and avoid interference with the winding of the ribbon on the reel or spool, and the slots 63 are curved with the pivot 61 as a center.

Fast to the ends 62 of the lever 60 is a strip of cloth or other material 65 which is suitably attached to the ends of the ribbon 12. The projecting ends 62 extend outwardly beyond the flanges of the spools or reels 15 and 16 to engage the projections 57 and 58 of the levers 55 and 56 when moved upward in the slots 63.

Fastened on the shaft 24 is a ratchet wheel 66 which is acted upon by a ratchet pawl 67 pivoted to a lever 68 mounted on the shaft 24. A spring 69 is attached to the pawl 67 in order to hold it in engagement with the ratchet wheel 66. A stop pawl 67' is fastened to a stationary part and prevents backward movement of the ratchet wheel.

The lever 68, and thereby the pawl 67, is operated through a link 70 connected with a lever 71 pivoted on shaft 72 extending across the machine. Rods 73 are connected to shaft 72 through levers 73' at each end of the shaft, and extend downward to support a cross bar 74 passing underneath all the key levers 75 of the machine which are suitably pivoted to the frame at 76 and held in an upper position by springs 77 attached to a fixed part of the machine 78.

When the ribbon has been fully unwound from one of the reels the projecting pin 62 will be moved to the end of the slot 63, the position shown in Fig. 5, and thereby engage one of the arms 57 or 58 which through corresponding lever 39 or 40 will shift corresponding clutches 33 or 34 to con-

nect the clutch members which operate upon the reel which has been depleted and disconnect the clutch of the other reel. By this means the rotation of the shaft 24 will reverse the movement of the ribbon, and it will be wound on the empty reel and unwound from the full reel.

The operating means for the clutches through the shaft 24 is the ratchet wheel 66 which is connected to be intermittently operated every time a key is pressed downward. By this means the ribbon is continually wound and unwound upon the reels, passing to and fro between the reels without requiring any attention on the part of the operator. The mechanism described, as already referred to, allows of the lateral movement of the reels to present different portions of the ribbon to the printing mechanism.

I am aware that minor changes may be made in the construction, arrangement and combination of the elements described without departing from the spirit of my invention, the scope of which is indicated by the accompanying claims.

I claim:

1. In a device of the character described, a ribbon reversing and rewinding mechanism comprising a ribbon reel mounted on each side of the machine, a shaft extending intermediate said reels, means on the shaft for rotating each reel, clutches slidably mounted on the shaft for engaging and disengaging each rotating means, means for shifting each clutch and means connecting said shifting means so that the clutches may be operated simultaneously.

2. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, a shaft extending intermediate said reels, means on the shaft for rotating each reel, clutches slidably mounted on the shaft for engaging and disengaging each rotating means, means for shifting each clutch, a bar connecting said shifting means, and means for retaining said clutches in either of two positions.

3. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, a shaft extending intermediate said reels, means on the shaft for rotating each reel, clutches slidably mounted on the shaft and engaging and disengaging each rotating means, and means for shifting each clutch, said means comprising a notched lever and a pawl cooperating with the notched lever to hold the same in either of two positions.

4. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, a shaft extending

intermediate said reels, means on the shaft for rotating each reel, clutches slidably mounted on the shaft for operatively engaging and disengaging each rotating means with the shaft, means for shifting each clutch, and friction means engaging each clutch to prevent accidental movement thereof.

5. In a device of the character described, a frame having a deck, ribbon guiding means mounted on either end of said deck, brackets attached to either end of the deck, ribbon reels rotatably mounted in each bracket, means attached to the deck to prevent the ribbon from contacting with the deck, and means mounted above the guiding means to protect the ribbon.

6. In a device of the character described, in combination, a frame having a deck, ribbon guiding means mounted on either end of said deck, brackets attached to either end of the deck beneath the guiding means, ribbon reels rotatably mounted in each bracket, metallic strips attached to the deck adjacent the guiding means to prevent the ribbon contacting with the deck, and an additional strip mounted above the guiding means to protect the ribbon.

7. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, an operating mechanism for said reels, means for connecting one reel to said operating mechanism and disconnecting the other, comprising a device pivoted to one reel and having a portion mounted in a curved groove in a flange of the reel and projecting therefrom, and a lever adapted to be actuated by said projection.

8. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, an operating mechanism for said reels, means for connecting a reel to said operating mechanism, means for operating said latter means, comprising a lever pivoted to the frame, and engaging a portion of said operating means, a second lever engaging the former lever, and means attached to the end of the ribbon for engaging and operating said second lever.

9. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, an operating mechanism for said reels, means for connecting one reel to said operating mechanism, and means for actuating said latter means comprising a pivoted member normally situated entirely within a groove in the hub of the reel, and attached to the end of the ribbon.

10. In a device of the character described, a frame having brackets attached at either

end thereof, a spindle mounted in each bracket, a ribbon reel slidably mounted on each spindle, means for moving each reel on its spindle, a shaft extending intermediate said reels, means on either end of said shaft for rotating the reels, clutches adjacent said rotating means at either end of the shaft, and means for operating said clutches to connect and disconnect each reel with its operating means.

11. In a device of the character described, a ribbon reversing and rewinding mechanism comprising a ribbon reel mounted on either side of the machine, an operating mechanism for each reel, means for connecting one reel to its operating mechanism and disconnecting the other, and vice versa, comprising two devices, one pivoted to each reel and having a portion mounted to move in a curved groove in the reel flange and projecting therefrom, and levers at either side of the machine adapted to be actuated by the projections of each pivoted device.

12. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, a shaft extending intermediate said reels, means on each end of the shaft for operating the adjacent reel, a clutch slidably mounted on the shaft adjacent each operating means, said clutches being adapted to rotate with the shaft, common means for shifting said clutches to throw one into engagement with the adjacent operating means and the other out of engagement, and vice versa.

13. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, a shaft extending intermediate said reels, means on each end of the shaft for operating the adjacent reel, a clutch slidably mounted on the shaft adjacent each operating means, said clutches being adapted to rotate with the shaft, common means for shifting said clutches to throw one into engagement with the adjacent operating means and the other out of engagement, and vice versa, and means for rotating said shaft intermittently, comprising a bar extending beneath a series of keybars of the machine.

14. In a device of the character described, a ribbon reversing and rewinding mechanism, comprising a ribbon reel mounted on either side of the machine, a shaft extending intermediate said reels, means on each end of the shaft for operating the adjacent reel, a clutch slidably mounted on the shaft adjacent each operating means, said clutches being adapted to rotate with the shaft, common means for shifting said clutches to throw one into engagement with the adjacent operating means and the other out of engagement, and vice versa, means for ro-

tating the shaft, comprising a ratchet wheel
mounted on the shaft, a pawl for operating
said ratchet, key-bars, a transverse bar ex-
tending beneath the key-bars, and means in-
5 termediate said bar and said pawl to operate
the latter intermittently upon actuation of
the key-bars.

In testimony whereof I hereunto affix my
signature in the presence of two witnesses,
this 12th day of September, 1910.

OTTO THIEME.

Witnesses:

J. W. CLIFT,
M. P. SMITH.