H. L. HEDRICK AND H. C. CHANTLER

ATTACHMENT FOR TYPEWRITERS.

APPLICATION FILED SEPT. 5, 1919.

1,420,259. **Patented June 20, 1922.**

2 SHEETS—SHEET 1.

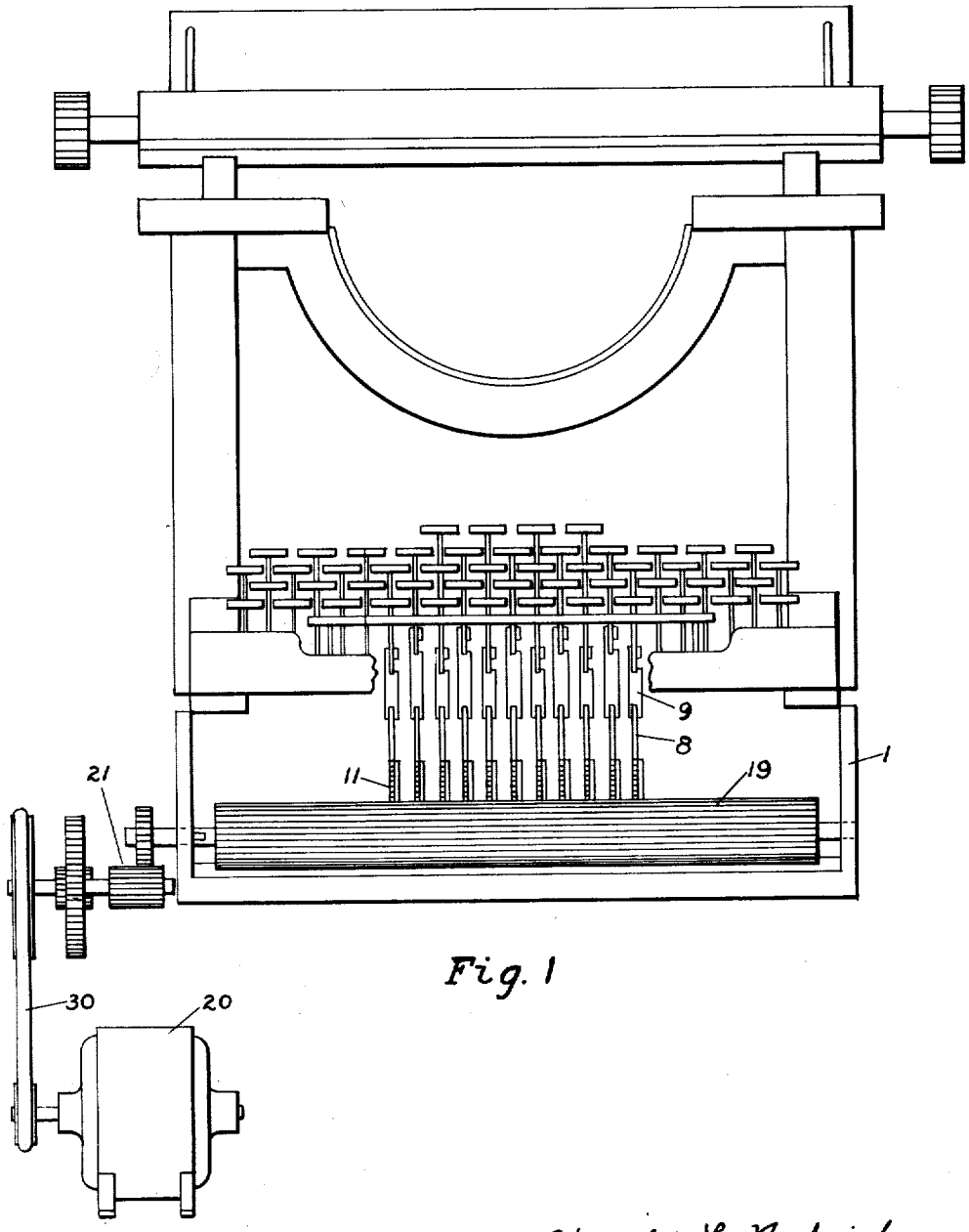


Fig. 1

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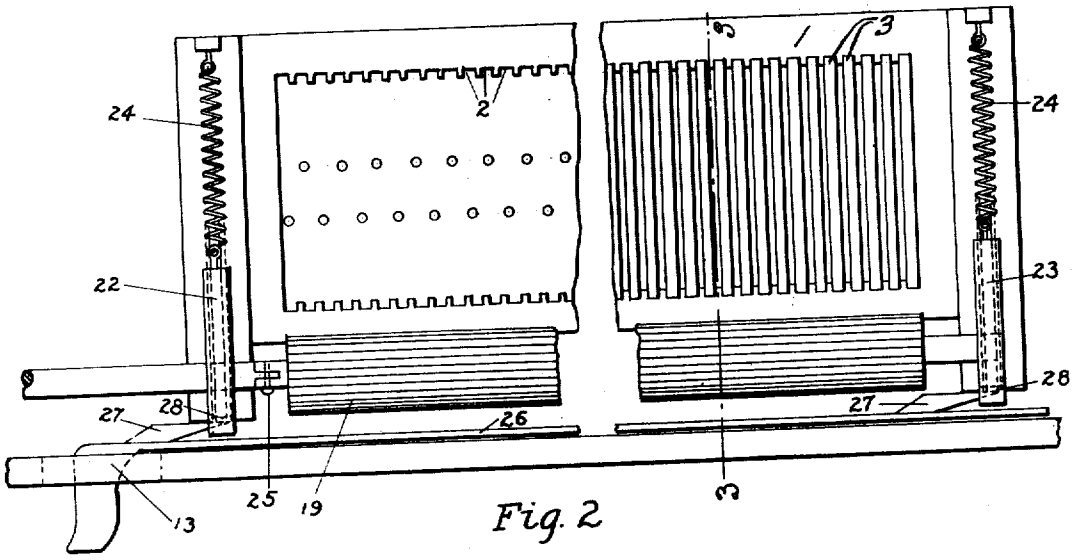


Fig. 2

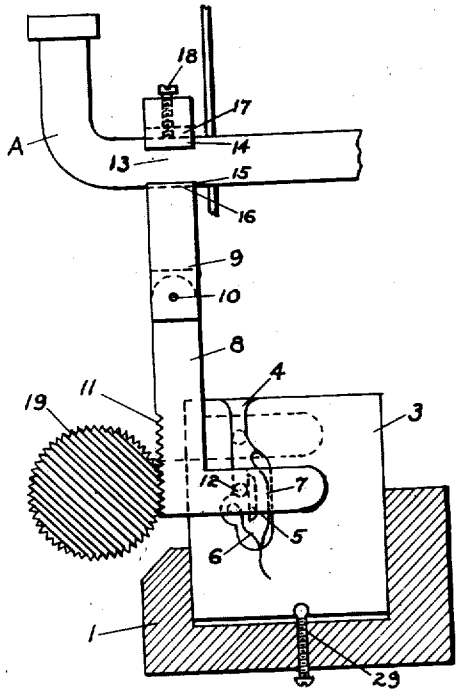


Fig. 3

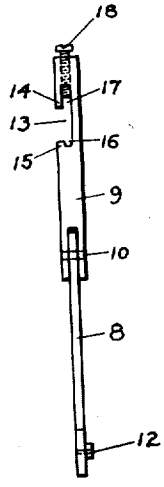


Fig. 4

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ATTACHMENT FOR TYPEWRITERS.

1,420,259. Specification of Letters Patent. Patented June 20, 1922.

Application filed September 5. 1919. Serial No. 321,772.

To all whom it may concern:

Be it known that we, HAROLD L. HEDRICK and HENRY C. CHANTLER, citizens of the United States of America, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Attachments for Typewriters, of which the following is a specification.

Our invention relates to an attachment for typewriters and aims to provide a readily attachable mechanism therefor that will facilitate its operation and increase the speed of the operator. Our attachment is of such form that the operator of the machine is entirely relieved of the difficulties arising from "a heavy touch" for the reason that the greater part of the key depression is effected automatically, it being only necessary to initiate depression manually.

Our novel apparatus takes the form of a motor driven roller with corrugations designed to cooperate with key attachments so that, upon the initiation of depression of any key, the continuously rotating roller will carry through this depression until printing occurs and will then automatically release the key attachment so that the key may return to normal position. The structure of our apparatus is such that it is purely an attachment and necessitates no modification of the typewriters of normal form. On the contrary it is merely placed beneath the typewriter, the key attachments applied and the motor set in motion to rotate the corrugated roller. Then the slight depression of any key will attain the results sought.

The preferred embodiment of this invention is shown in the accompanying drawings, wherein similar characters of reference designate corresponding parts and wherein

Figure 1 is the front elevation of a typewriter, showing the manner in which our device is attached thereto.

Figure 2 is a plan view of our attachment with some of the cam plates removed and showing the mechanism for adjusting our corrugated roller to engage the connecting links so as to depress the keys the proper distance for making an impression with the type.

Figure 3 is a cross section on line 3—3 of Fig. 2 of the cam plate retainer, showing one side of one of the cam plates, the corrugated roller, and the connecting link attached to one of the keys which is in a partially depressed position.

Figure 4 is a rear view of one connecting link, showing its cam roller, its hinge joint and the method of attaching it securely to the key.

Referring to the drawings by numerals, it will be seen that our device comprises a retaining box or receptacle 1 provided with grooves 2 for the reception of a plurality of cam plates 3 which are designed to fit in said grooves. Each of these cam plates is provided on one side with a cam groove 4 with an island formation 5 therein. The opposite side of each cam plate is smooth.

Each cam groove 4 is in the nature of a loop having a front pathway and a rear pathway, the same being respectively forward and rearward of the island formation 5. Adjacent the lower end of the island formation, the front pathway of each cam groove is provided with an inset spring 6 which is downwardly and rearwardly bowed. Directly in the rear of said island formation is a spring 7 set in in the rear pathway of the groove and forming a rear resilient wall therefor. The spring 6 is effective to automatically release the key operating mechanism at the end of the key stroke and the spring 7 is designed to guide the key operating mechanism on its return to operative position. Complemental parts are provided to effect these results. These parts will now be described.

Each cam plate is designed to cooperate with a key link formed in two parts respectively designated 8 and 9. These parts are pivoted together as at 10.

Each lower part is in the nature of a flat bar of L-formation, having a series of teeth 11 upon its lower front edge. Upon one side of each lower part 8 of each key link is a cam roller 12 designed to cooperate with the cam groove 4 in its adjacent cam plate 3 while the opposite side of said lower part is smooth to effect a sliding bearing upon the smooth surface of the adjacent cam plate.

The upper part 9 of each key link takes the form of a straight bar with an inset opening 13 having flanges 14 and 15 which result in grooves 16 and 17. The groove 16 is slightly wedge-shaped. Extending downwardly through the base of the groove 17 is a set screw 18.

In application of the parts of our attach-

ment thus far described, each part 9 is placed over the typewriter key bar A so that such key bar will fit in opening 13. This may be best accomplished by tilting each key link from the vertical. When in position upon each typewriter key bar, the key link is firmly secured thereto by screwing down the set screw 18 whereby the typewriter key is forced into the wedge-shaped seat 16. If it is desired to remove any key link after all of these links are in place, this key link may be loosened and slid lengthwise of its key bar or if more convenient adjacent key links may be moved to facilitate tilting and removal of the key link in question.

In cooperation with the mechanism thus far described, we have provided a corrugated roller 19 disposed in juxtaposition to the rack 11 on the link parts 8 and preferably disposed directly in front of these racks. This corrugated roller 19 is continuously driven by an electric motor 20, a speed reduction gear mechanism 21 being interposed.

The corrugated roller 19 is mounted in bearing boxes 22 and 23, and these bearing boxes are slidable and held in contact with the racks 11 by means of retractile springs 24. The roller is removable by releasing the pin 25 from the tongue and groove connection with the driving shaft and by pulling the bearing box 23 outwardly.

The corrugated roller is readily removable from contact with the racks 11 by means of a roller release comprising a longitudinally movable rod 26 and wedge pins or extensions 27 which operate in openings 28 in the bearing boxes 22 and 23. The cam plates 3 are individually adjustable at will by means of set screws 29.

In the operation of the structure described, the key links are each applied to their respective typewriter key bars. The operator then proceeds to operate the typewriter in much the normal way except that he does not apply so much force to the keys. As soon as any key is slightly depressed the rack 11 of the key link comes into contact with the revolving corrugated roller 19. This corrugated roller completes the depression of the key and the making of the impression with the type. At the instant the impression is made, the cam roller 12 rides upon the spring 6 and by this spring is forced rearwardly past the lower end of the island formation 5, in the course of which movement it removes the rack 11 from contact with the corrugated roller. The upward spring of the typewriter type bar draws with it the key link and the cam roller 12 rides up the rear pathway of the cam groove between the rear of the island formation 5 and the spring 7. The spring 7 is of such length and form that when the cam roller reaches the upper end of the island formation it is forced forwardly and causes the key link to resume initial position. The time of automatic separation of any rack 11 from the corrugated roller may be varied by adjusting any set screw 29 which raises or lowers its cam plate. In the event that two keys conflict and stick in raised or partially raised position the slippage of the belt 30 will avoid breakage until roller release mechanism is operated. Suitable belt adjusting means may be provided.

It will be noted that we have provided a device which may be attached to practically all modern forms of typewriters. Furthermore, our mechanism is such that when any key is mechanically operated as set forth, it will be released with a snapping action and will be positively guided back to a position for presentation anew to the mechanically operating means. Furthermore, the structure is such that the power drive of any key is not maintained manually but mechanically. Also, whenever a key is once mechanically depressed this operation cannot be repeated except by returning the key to initial position. Many other advantages arise from the novel and extremely simple mechanisms that we have devised and claimed herein.

Having thus described our invention, what we claim is:

1. An attachment for typewriters comprising elements removably connected to the typewriter key levers of a typewriter, means independent of the typewriter for carrying through the depression of any key slightly depressed and automatically releasing said keys the instant depression is completed.

2. An attachment for typewriters comprising a power drive, means for connecting any key with said power drive by a slight depression of said key, said means being such that as the key approaches the point where printing will occur a tension is gradually applied to said means which becomes effective to release with a snapping action practically simultaneously with printing.

3. An attachment removably applicable to typewriters comprising a power drive, a means for connecting any key to said power drive by slight depression thereof, a pin on said means and a spring to engage said pin to effect disengagement automatically practically simultaneously with printing.

4. An attachment for typewriters comprising a power drive, a key link for removable attachment to each typewriter key lever, and a cam groove complemental to a part on said key link, said key-link being so mounted on said typewriter key lever and so related to said power drive and said cam groove that it will be moved into operative

relation to said power drive by slight depression of the key lever and will be automatically released by said cam groove practically simultaneous with printing.

5. An attachment for typewriters comprising a power drive, a key link for removable attachment to each typewriter key lever, and a cam groove complemental to a part on said key link, said key link being so mounted on said typewriter key lever and so related to said power drive and said cam groove that it will be moved into operative relation to said power drive by slight depression of the key lever and will be automatically released by said cam groove practically simultaneous with printing and by said cam groove will be forced to return to normal key position before it can again be brought into cooperation with said power drive.

6. An attachment for typewriters comprising a power drive, a key link for removable attachment to each typewriter key lever, said link being brought into cooperative relation to said power drive upon slight depression of its key, resilient means for removing it from such cooperative relation at about the time printing occurs, and resilient means for guiding it back to original position.

7. An attachment for typewriters comprising a power drive, a key link for removable attachment to each typewriter key lever, a cam plate for each link having a cam groove therein, and a cam roller on each link for running in said cam groove.

8. An attachment for typewriters comprising a power drive, a key link movable into cooperative relation to said power drive by slight depression of a typewriter key, means for automatically disengaging said drive and said link, at about the time printing occurs, and means for varying the instant of disengagement.

9. An attachment for typewriters comprising a corrugated roller driven continuously by power, a key link having a rack for cooperation with said roller, and means for mechanically maintaining said roller and rack in cooperative relation after initial key depression and until printing.

10. An attachment for typewriters comprising a power drive, a key link formed in two parts pivoted together, one part being removably connected to a typewriter key lever, and the other part being movable into cooperative relation to said power drive upon a slight depression of the typewriter key and means for swinging said last part out of engagement with said power drive at about the time printing occurs.

11. An attachment for typewriters com prising key links for connection removably to typewriter key levers, a power drive, and a plurality of plates arranged side by side and having one side of each plate smooth and its other side provided with a cam groove construction, said plates being closely spaced to form a sliding bearing for said key links.

12. An attachment for typewriters comprising key links for connection removably to typewriter key levers, a power drive, and a plurality of plates arranged side by side, a cam groove in one side of each plate, both sides of each plate being otherwise smooth, a cam roller on each key link for operating in each cam groove, said plates being closely spaced and forming smooth bracing bearings for each key link.

13. A typewriter attachment comprising a power driven corrugated roller, movable bearings therefor, rack key links for cooperation therewith, and a roller release comprising a wedge member operative to move said roller transversely of itself.

In testimony whereof we hereby affix our signatures.

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HENRY C. CHANTLER.