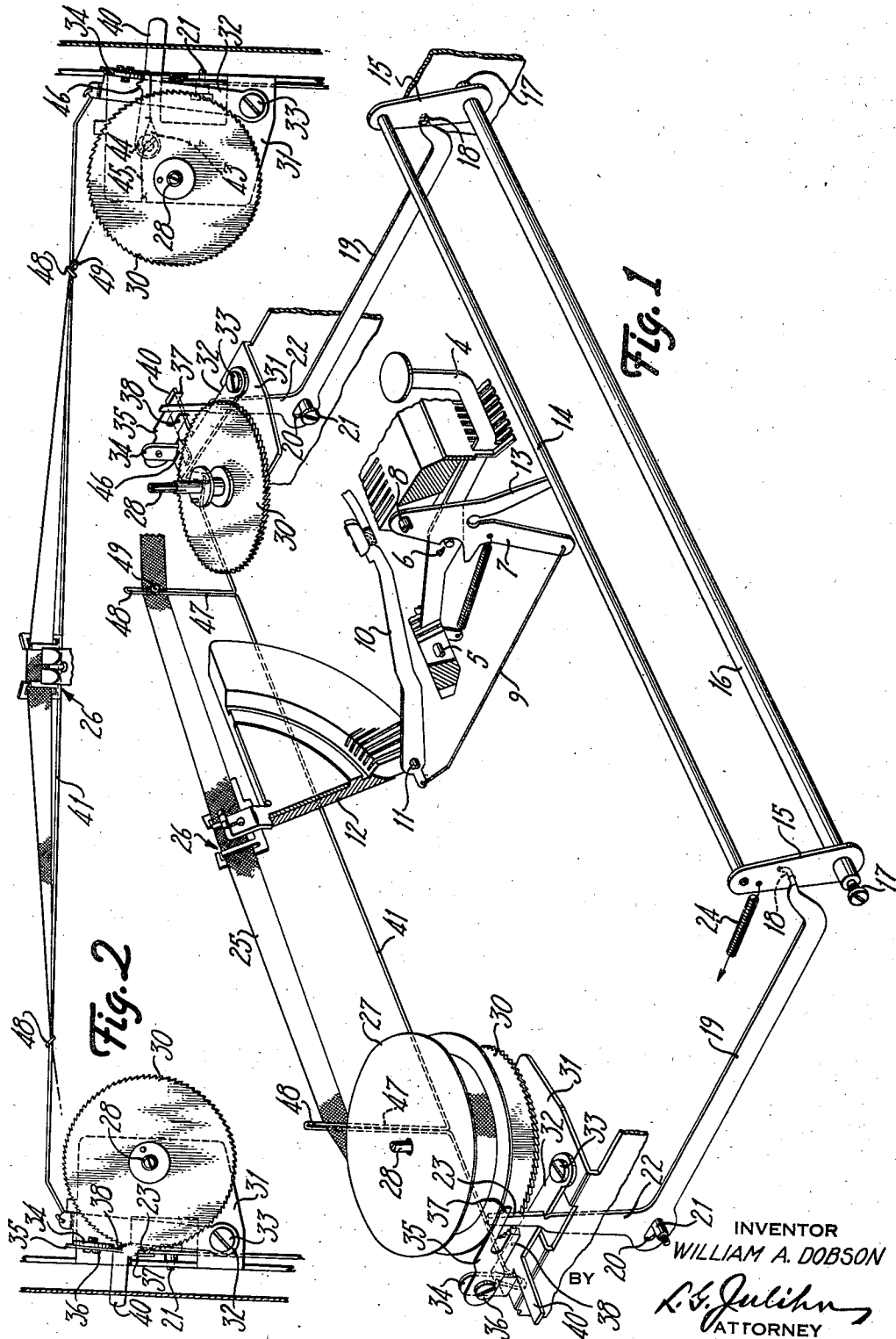


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W. A. DOBSON
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TYPEWRITING MACHINE

William A. Dobson, Wethersfield, Conn., assignor
to Underwood Elliott Fisher Company, New
York, N. Y., a corporation of Delaware

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8 Claims. (Cl. 197—165)

This invention relates to ribbon-feed mechanisms for typewriting machines, and more particularly to such mechanisms wherein the ribbon feeding is effected by a pawl and ratchet drive at each of the ribbon spools.

The invention has among its objects the provision of a ribbon feed mechanism of simple and rugged construction having a small number of lightweight parts in a compact and reliably operative organization particularly adapted for typewriting machines of the portable class.

Other objects of the invention are to provide a ribbon feed and reversing mechanism having only a minimum number of parts for effecting the reverse ribbon travel, and to provide a ribbon reversing mechanism adapted either for manual or automatic control.

In its more specific aspect the invention provides a ribbon feed mechanism including slidably reciprocatory drive pawls cooperating respectively with ratchet wheels of each of the ribbon spools; these driving pawls being connected to, and reciprocated concomitantly by, the rocking movement of a universal bail actuated by any of the type actions of the typewriter. The pawl and ratchet mechanism of each ribbon spool may be controlled by a shiftable control member engageable with the driving pawl and which also carries a holding pawl and a driving pawl spring, these elements being so associated that upon shifting the control members concomitantly, the two pawls of one spool mechanism are disabled, while the pawls of the other spool mechanism are operatively set. The direction of shifting the control members corresponds substantially to the direction of ribbon travel, so that these members may be directly connected for concomitant shifting by a link which may be so disposed relative to the path of ribbon travel as to be adapted for automatic ribbon reversing by having the link engageable by projections adjacent the ribbon ends. Each of the control members may also have a finger piece, by the alternate operation of which the reversing mechanism may be manually set.

Other objects and advantages will hereinafter appear.

Reference is made to my copending application Serial No. 295,295, filed September 16, 1939, in which certain features pertaining to the automatic reversal of the ribbon-feed mechanism form the subject matter described and claimed.

In the drawing,

Figure 1 is a perspective view of the preferred embodiment of the invention, including only the

related portions of the typewriter mechanism, and

Figure 2 is a top plan view of same, omitting the type action and the actuating universal bail.

In the embodiment of the invention illustrated, a central type action of the system similar to that of an "Underwood" Portable typewriter is shown, to illustrate by way of example the preferred manner of actuating the ribbon feed mechanism. Each type action includes a key lever 4 fulcrumed at 5 and having a driving connection 6 to a sub-lever 7. Each sub-lever is pivoted at 8 and is operatively connected by a link 9 to a type bar 10 fulcrumed at 11 on a mounting segment 12. Each sub-lever 7 of the type action system includes a part such as a finger 13 engageable with a universal bar 14 extending across the typewriter and supported adjacent each end by arms 15 fixed to a rock shaft 16 pivoted at 17 on the main frame of the typewriter.

The bar 14 and the arms 15 constitute a bail oscillatable universally by any of the type actions. Articulated to each of the arms 15 at 18 is a slide arm 19 having a guide slot 20 at its opposite end riding upon a stud 21 mounted on the main frame. Each of the arms 19 extends in a fore and aft direction of the typewriter and includes an integral upstanding pawl arm 22 formed at its upper end to provide a driving pawl 23. A spring 24 restores the universal bail 14, 15 to normalcy and thus returns the driving pawls 23 to initial position after the driving stroke.

The usual inking ribbon 25 traverses the printing zone of the platen through a ribbon guide 26 to and from suitable ribbon spools 27 removably carried on spindles 28 in the well-known manner. Each ribbon spool spindle has a ratchet wheel 30 arranged to rotate therewith and disposed to cooperate with the corresponding driving pawl 23 to effect travel on the ribbon. Each side wall of the typewriter main frame may include an intumed portion 31 providing a plate upon which each ribbon spool spindle 28 may be rotatably mounted. Shiftable mounted on each of the plates 31 adjacent each driving pawl 23 is a control member 32 preferably pivoted at 33 on the plate 31 and having an edge thereof extending alongside the driving pawl 23 for engagement therewith. At the free end of each control member 32 an upstanding lug 34 is formed to provide a mount for a bifurcated member 35 adjustably secured to the lug by a screw 36. The member 35 provides, in an integral structure, a

leaf spring 37 and a holding dog 38 each formed of the tines of the member. In the operative setting of the control member 32, as shown at the left-hand ribbon spool, the holding dog 38 engages the teeth of its ratchet wheel 30 to prevent reverse rotation of same during the return stroke of the driving pawl 23. The leaf spring 37 of the bifurcated member 35 presses against the pawl 23 to yieldably hold same engaged with its ratchet wheel 30. Each control member 32 has a finger piece 40 extending laterally therefrom to project through the adjacent side of the typewriter mask for access by the operator to manually reverse the direction of the ribbon feed, and the control members 32 are connected together by a link 41 extending across the machine for concomitant shifting of the members 32.

At least one of the control members 32 is yieldably held in effective and inoperative positions by a detent shown best at the right of Figure 2, which detent preferably comprises an arm 43 pivotally mounted at 44 on the plate 31 and urged by a spring 45 to press against an edge of the lug 34. The arm 43 carries a mound 46 having oppositely inclined edges coactive with the lug 34 so that in the condition of the parts as shown in Figure 2 the right-hand control member 32 is detented at its inoperative position, and when the lug 34 is pressed to the opposite side of the mound 46, the control member is detented at its effective position. It will be seen that when the furthestmost projecting finger piece 40 is manually pressed, the direction of ribbon travel is reversed in that both control members are conjointly swung so that the one feed mechanism is rendered operative while the other feed mechanism is disabled.

In the operative condition of either feed mechanism, the driving pawl 23 under influence of its spring 37 engages its ratchet wheel 30 and the holding dog 38 is also engaged therewith, so that as the pawl arm 19 is reciprocated incident to the depression of a key lever, the spool 27 is rotated to wind the ribbon 25 thereon. As the control member 32 is swung to the inoperative setting, the holding dog 38 is moved to a position free of its ratchet wheel 30, and the driving pawl 23, being disposed between its spring 37 and an edge of the control member 32, is also moved to inoperative position free of the ratchet wheel. It will be observed that the pawl-carrying end of each arm 22 assumes a motion laterally of the typewriter in moving between effective and inoperative positions, this motion being accommodated at the stud 21 which is of such length as to permit the slot 20 to slide axially thereon.

In that the control members 32 are shiftable laterally of the machine to effect reverse travel of the ribbon, that is, in the general direction of ribbon travel, the arrangement is particularly suited for an automatically effected ribbon reversal. To effect automatic reverse feed, the link 41 is provided with two integral projecting members 47 adjacent each of the ribbon spools 27 and providing loops 48 disposed in the path of travel of the ribbon and through which the ribbon passes in traversing the printing zone. Adjacent each end of the ribbon 25 a projection such as a rivet 49 is affixed thereto so that as the ribbon is unreel from one of the spools, the projection 49 abuts the loop 48 and the further travel of the ribbon pulls the link 41 laterally in a manner to concomitantly swing both the control members 32 and thus reverse the positions of the

driving pawl 23 and the holding dog 38 of each feed mechanism. In other words, the travel of the ribbon, bringing the projection 49 against one of the loops 48, has the same effect upon the control members as does the manual actuation of either finger piece 40, but accomplishes the same automatically.

It will be seen from the foregoing that the invention provides a ribbon feed mechanism particularly suited for portable, lightweight typewriter machines and embodies a ribbon feed mechanism of simple and rugged construction comprising a minimum number of parts. It will also be seen that the invention provides in a ribbon feed mechanism, an organization readily adapted for either manual or automatic ribbon reversing; in either instance the parts being of simple form adapted for economic manufacture.

Although in this application there is specifically described one embodiment which the invention may assume in practice, it will be understood that same is shown for the purposes of illustration, and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What is claimed is:

1. In a ribbon-feed mechanism for typewriting machines, having a pair of ribbon spool ratchet wheels; reversible actuating means for each of the ratchet wheels, comprising a driving pawl cooperative with the ratchet wheel, means for reciprocating the pawl of each ratchet wheel, a control member engageable with said pawl and shiftable to bring said pawl free of the ratchet wheel, means operatively connecting the control members of both ratchet wheels, a resilient bifurcated member carried on said control member and presenting a holding dog cooperative with its ratchet wheel and a spring pressing said driving pawl toward its ratchet wheel, said holding dog and said spring being shiftable with their control member to ineffective positions.

2. In a ribbon-feed mechanism for typewriting machines, having a pair of ribbon spool ratchet wheels with axes in spaced parallelism; reversible actuating means for each of the ratchet wheels, comprising a driving pawl presenting a pawl tooth lying across the periphery of the ratchet wheel, means mounting said pawl for reciprocatory movement to rotate the ratchet wheel, permitting sidewise movement of said pawl tooth to disengage the ratchet wheel, means for reciprocating the pawls of both ratchet wheels, means for resisting reverse rotation of the ratchet wheels, a control member engageable with said pawl and shiftable in a plane parallel with the ratchet wheel to move said pawl tooth to disengage the ratchet wheel, a link connecting the control members of each ratchet wheel, and a leaf spring carried on said control member and projecting therefrom to overlie said pawl tooth and yieldably hold said tooth engaged with the ratchet wheel.

3. In a ribbon feed mechanism for typewriting machines, a pair of ribbon spools and ratchet wheels therefor rotatably mounted on vertical axes adjacent each side of the machine, a universal bar actuatable in typing, extending across the machine forwardly and below the level of the ratchet wheels; a pair of driving pawls, one for each ratchet wheel, each articulated to the universal bar and extending rearwardly therefrom, the rear portion of each of said driving pawls being slidably mounted and presenting an upstand-

ing arm having a pawl tooth projecting across the ratchet wheel, means resisting reverse rotation of each ratchet wheel, said upstanding arm being sidewise movable to permit said pawl tooth to disengage the ratchet wheel, a pair of control members, one for each of said driving pawls, a link connecting said control members, each of said control members being engageable with one of said pawls and shiftable laterally of the machine to bring the pawl tooth free of its ratchet wheel, and a spring carried on each of said control members and pressing the corresponding pawl tooth toward its ratchet wheel.

4. In a ribbon feed mechanism for typewriting machines, a pair of ribbon spools and ratchet wheels therefor rotatably mounted on vertical axes adjacent each side of the machine, a universal bar actuatable in typing, extending across the machine and below the level of the ratchet wheels, a pair of driving pawls, one for each ratchet wheel, each articulated to said universal bar and extending rearwardly therefrom, the rear end of each of said driving pawls being slidably mounted and presenting an upstanding arm having a pawl tooth projecting across the ratchet wheel, said upstanding arm being sidewise movable to permit said pawl tooth to disengage the ratchet wheel, a pair of control members, one for each of said driving pawls, a link connecting said control members, each of said control members being engageable with one of said pawls and shiftable laterally of the machine to bring the pawl tooth free of its ratchet wheel, a holding dog cooperative with its ratchet wheel, carried on each of said control members for shifting therewith to ineffective position, and a spring carried on each of said control members and pressing the corresponding pawl tooth toward its ratchet wheel.

5. In a ribbon feed mechanism for typewriting machines, a pair of ribbon spools and ratchet wheels therefor rotatably mounted on vertical axes adjacent each side of the machine, a universal bar actuatable in typing and extending across the machine forwardly of the ribbon spools, a pair of driving pawls, one for each ratchet wheel, each articulated to the universal bar and extending rearwardly therefrom, the rear portion of each of said driving pawls being slidably mounted and presenting an upstanding arm having a pawl tooth projecting across the ratchet wheel, said upstanding arm being sidewise movable to permit said pawl tooth to disengage the ratchet wheel, a pair of control members, one for each of said driving pawls, a link connecting said control members, each of said control members being engageable with one of said pawls and shiftable laterally of the machine to bring its pawl tooth free of its ratchet wheel, and a resilient bifurcated member carried on each of the said control members and presenting a holding dog cooperative with its ratchet wheel and a spring pressing its pawl tooth toward the ratchet

wheel, said holding dog and said spring being shiftable with their control member to ineffective positions.

6. In a ribbon-feed mechanism for typewriting machines, having a pair of ribbon spool ratchet wheels, reversible actuating means for each of the ratchet wheels, comprising a shiftable control member for each ratchet wheel, means operatively connecting both said control members, a driving pawl cooperative with each ratchet wheel and mounted for reciprocatory movement on a fixed member of the machine, means for reciprocating the pawl of each ratchet wheel, means for resisting reverse rotation of the ratchet wheels, and a spring carried on said control member and pressing said pawl to engage the ratchet wheel, each of said control members having a part engageable directly with the corresponding said pawl, shifting of said control member in one direction being effective to move said spring and said pawl in unison to bring the pawl free of the ratchet wheel.

7. In a ribbon feed mechanism for typewriting machines, having a pair of ribbon spool ratchet wheels mounted on vertical axes adjacent each side of the machine; reversible actuating mechanism, comprising a pair of driving pawls, one for each ratchet wheel, mounted for reciprocatory movement tangential to the ratchet wheel in a direction fore and aft of the machine, each pawl presenting an upstanding arm having a pawl tooth lying across the periphery of the ratchet wheel, said upstanding arm being sidewise movable to permit the pawl tooth to disengage the ratchet wheel, means resisting reverse rotation of each ratchet wheel, control means shiftable laterally of the machine and engageable alternately with said pawl arms to disengage the pawl tooth from its ratchet wheel in reversing the direction of ribbon feed, and a pair of springs carried on said control means, each pressing the corresponding said pawl tooth toward its ratchet wheel.

8. In a ribbon-feed mechanism for typewriting machines, having a pair of ribbon spool ratchet wheels; reversible actuating means for the ratchet wheels, comprising a shiftable control member for each ratchet wheel, means operatively connecting said control members, a driving pawl cooperative with each ratchet wheel, mounted for reciprocatory movement on a fixed member of the machine, each of said control members upon shifting being engageable directly with its pawl to bring said pawl free of the ratchet wheel, means on each control member to resist reverse rotation of its ratchet wheel, and resilient means on each control member to press its driving pawl into engagement with its ratchet wheel.

WILLIAM A. DOBSON.