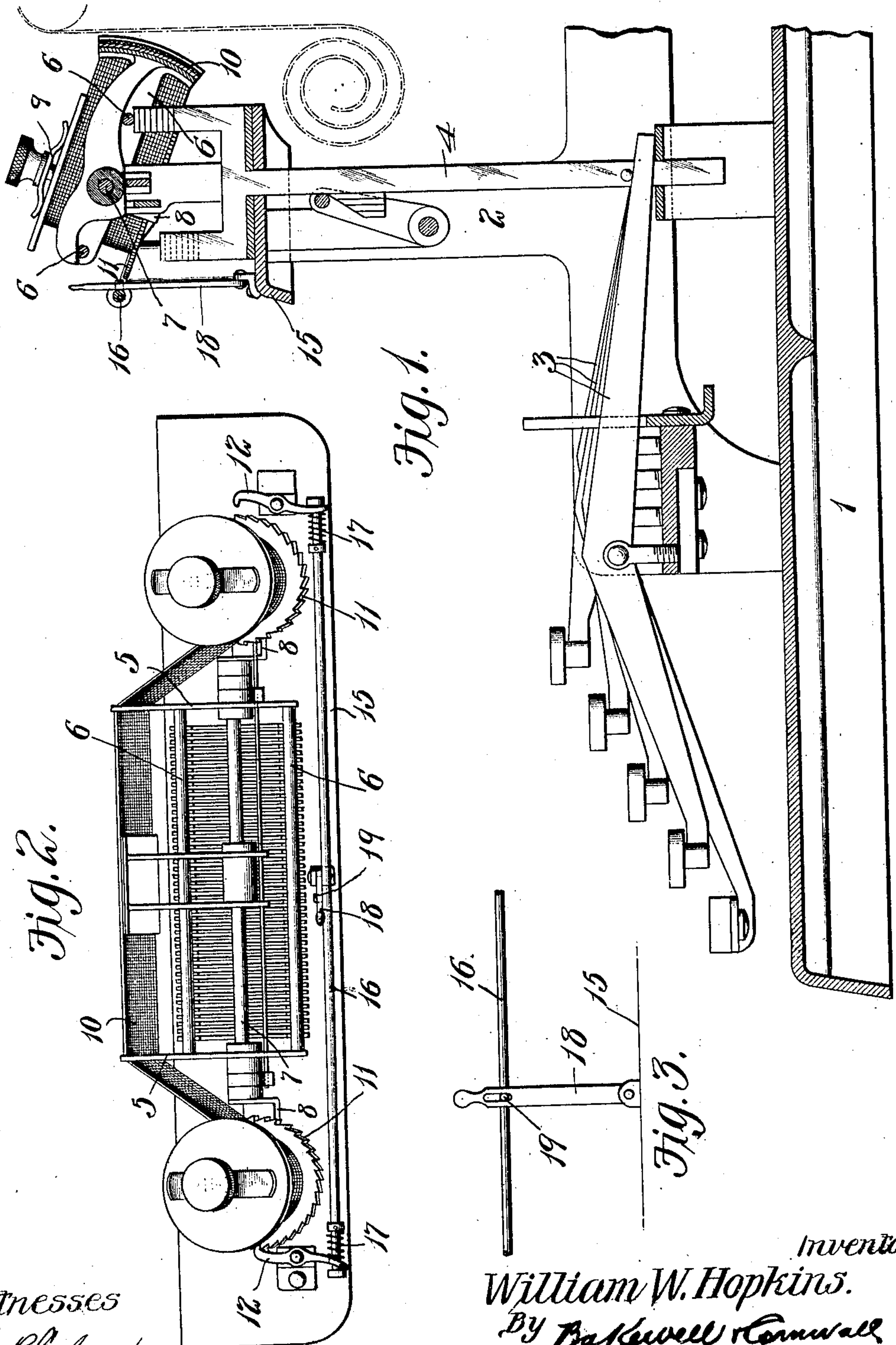


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PATENTED JULY 16, 1907.

W. W. HOPKINS.
RIBBON FEEDING MECHANISM FOR TYPE WRITING MACHINES.
APPLICATION FILED DEC. 4, 1906.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM W. HOPKINS, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
THE MOON-HOPKINS BILLING MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A COR-
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RIBBON-FEEDING MECHANISM FOR TYPE-WRITING MACHINES.

No. 860,297.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed December 4, 1906. Serial No. 346,271.

To all whom it may concern:

Be it known that I, WILLIAM W. HOPKINS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in
5 Ribbon-Feeding Mechanism 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,
10 forming part of this specification, in which—

Figure 1 is a vertical cross sectional view of a type-writing machine embodying the features of my invention; Fig. 2 is a top plan view of a portion of Fig. 1; and Fig. 3 is a detail view of the device for moving the feed-
15 ing pawls into and out of operative position.

This invention relates to typewriting machines, and particularly to the ribbon mechanism of said machines.

One object of my invention is to provide a ribbon mechanism which is so constructed that the ribbon will
20 be held taut at all times without the aid of a take-up device.

Another object of my invention is to provide a ribbon mechanism in which the ribbon spools are mounted on a movable frame and cooperate with pawls carried by
25 a stationary member, thereby causing the spools to be actuated each time the frame is moved. And still another object of my invention is to provide a construction comprising an oscillating frame and ribbon spools mounted thereon in such a manner that very little
30 power is required to actuate the frame.

I have not herein described the complete machine as said machine is clearly illustrated and described in my pending application Serial No. 330,726, filed August 15, 1096.

35 In the drawings, which represent the preferred form of my invention, 1 indicates the base of a machine upon which are arranged the side frame pieces 2. These frame pieces support the moving parts of the machine. 3 are the key levers whose forward ends are provided
40 with the usual heads bearing characters corresponding to the printing characters controlled by each particular key lever. The rear ends of these key levers 3 are arranged under lateral projections on the stems 4 of the positioning bars. These stems are guided vertically
45 by suitable notched plates secured to the framing of the machine, and each stem carries a head at its upper end, which head is provided with contact faces for engagement with cradle bars on which the type-carrier is mounted. The construction of this cradle or rocking
50 frame is shown in Figs. 1 and 2, and consists of two end plates 5 which are extended rearwardly so as to support and guide the inking ribbon which moves therewith.

These end pieces carry bars 6, which bars extend over the heads carried by the stems 4.

7 is a shaft journaled in posts rising from the top 55 frame plate of the machine and the end plates 5 of the cradle are secured to said shaft. The shaft 7 carries at its ends two bent arms 8, see Fig. 2, which arms are provided with spindles 9 on which are arranged the ribbon spools. These spools are held on the posts or
60 spindles 9 by suitable thumb nuts screwed on the upper ends of the posts and impinging against spring washers which bear upon the spools. The bent arms 8 are fixed to the shaft 7 and rock therewith. In this manner the inking ribbon designated at 10, where it
65 moves past the end pieces 5 of the cradle, is caused to rock with the shaft 7.

The rocking motion of the ribbon spools is utilized to cause the feed of the ribbon from one spool to the other. Each ribbon spool has a ratchet 11 conjoined
70 thereto with which is adapted to cooperate a pawl 12 (see Fig. 2). The pawls 12 are mounted on the cross piece 15 and are moved into and out of engagement with the ratchets by means of a rod 16 provided at each of its ends with two collars between which a
75 coiled spring 17 is arranged, the rear end of the pawl being interposed between said spring and one of the collars. When the rod is moved in one direction one pawl will be moved into operative position and the
80 other pawl will be moved into inoperative position so that when the cradle is rocked the pawl which is then in operative position, will feed its cooperating ribbon spool one step forward and thus wind the ribbon
thereon, each vibration of the cradle causing a por-
85 tion of the ribbon to be wound onto the spool. When this pawl is moved into inoperative position and the other pawl is moved into operative position the other spool will be actuated step-by-step at each oscillation
of the frame and the ribbon will be re-wound onto this
90 spool.

Preferably, a lever 18 is provided for shifting the rod 16, said lever being pivotally connected at its lower end to the cross piece 15 and provided at its upper end with a slot which receives a pin 19 on the rod. By
95 mounting the ribbon spools on the same frame which carries the guides through which the ribbon passes, I obtain a taut ribbon at all times without using a take-up device. Furthermore, by mounting the spools on the bent arms 8 the transverse centers of said spools
will be located in alinement with the shaft 7 so that
100 when the rocking frame is actuated the spools will turn about a point in longitudinal alinement with the shaft 7 and thus the weight of the spools will not have to be overcome. If the spools were so connected to

the shaft 7 that they lay entirely to one side of the shaft, as, for instance, in case they were mounted on spindles projecting radially from the shaft, the entire weight of the spool would have to be overcome whenever the rocking frame was actuated, thereby necessitating the expenditure of a great deal of energy on the part of the operator.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

- 10 1. In a typewriting machine, the combination of a rocking type-carrier, and ribbon spools mounted in fixed relation thereto and arranged to turn about the axis of the carrier; substantially as described.
- 15 2. In a typewriting machine, the combination with a rocking type-carrier, of a horizontal shaft extending transversely of the machine and having said type carrier mounted thereon, downwardly extending arms connected to the opposite ends of said shaft, posts carried by said arms, and ribbon spools on said posts; substantially as described.
- 20 3. In a typewriting machine, the combination with a cradle frame, of a type-carrier rockable therewith, ribbon spools connected to said frame and arranged to turn about a point located in alignment with the axis of the frame, the ribbon being guided in its feed past the type
- 25 carried by said cradle frame, and means mounted on a

stationary support for rotating said spools to feed said ribbon; substantially as described.

4. In a typewriting machine, the combination with a rocking type-carrier, ribbon spools located at the opposite ends of said carrier and arranged to turn about the axis of the carrier, of ratchet wheels conjoined to said spools, stationarily mounted pawls for cooperating with said ratchet wheels, and means for holding said pawls in operative or inoperative position; substantially as described.

5. A typewriting machine comprising an oscillating frame and ribbon spools in fixed relation to said frame and mounted in such a manner that they turn about points in alignment with the axis of the frame; substantially as described.

6. A typewriting machine comprising a rock shaft having ribbon guides connected thereto, arms connected to the ends of said shafts, spindles carried by said arms, and ribbon spools mounted on said spindles, said arms being so formed that the spools turn about points in alignment with said shaft; substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this twenty seventh day of November, 1906.

WILLIAM W. HOPKINS.

Witnesses:

WELLS L. CHURCH,
GEORGE BAKEWELL.