

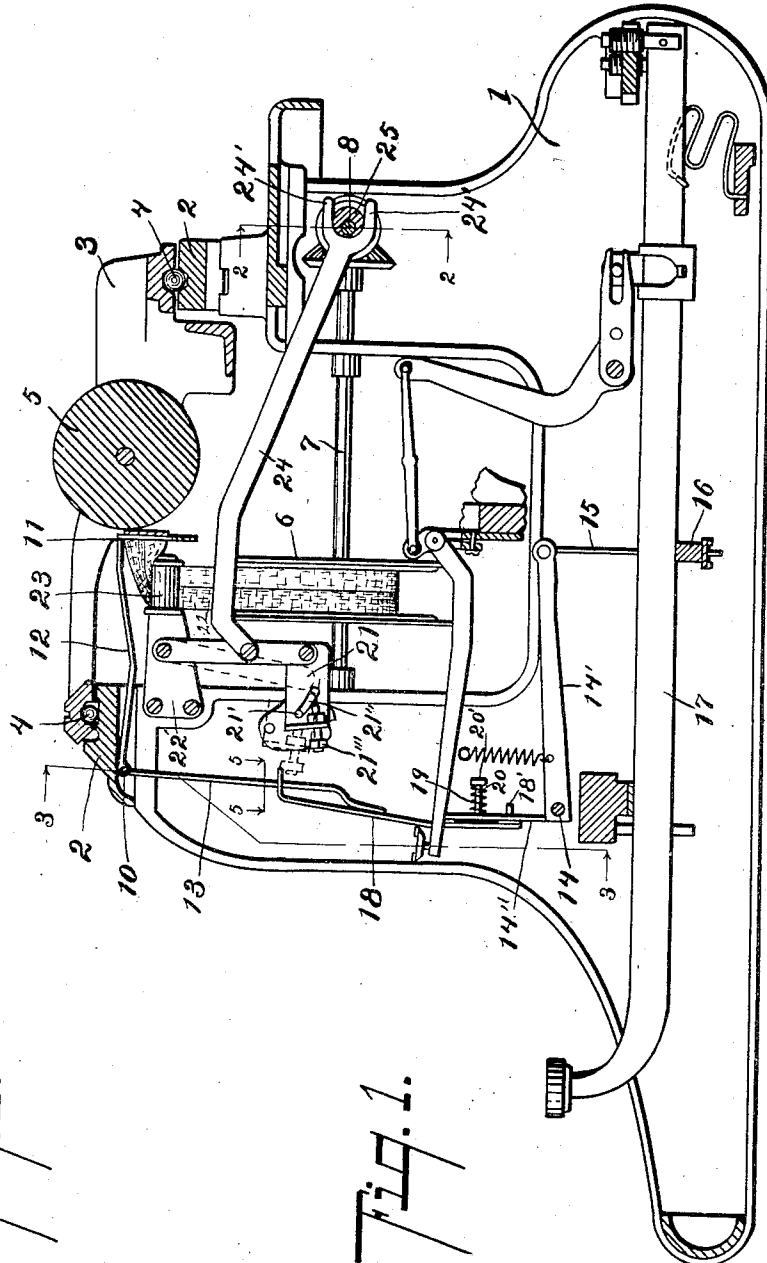
W. R. FOX.
 RIBBON OSCILLATOR FOR VISIBLE TYPE WRITING MACHINES.
 APPLICATION FILED DEC. 14, 1907.

931,855.

Patented Aug. 24, 1909.
 2 SHEETS—SHEET 1.

Fig. 5.

Fig. 1.



Witnesses

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 Lulu Greenfield

By

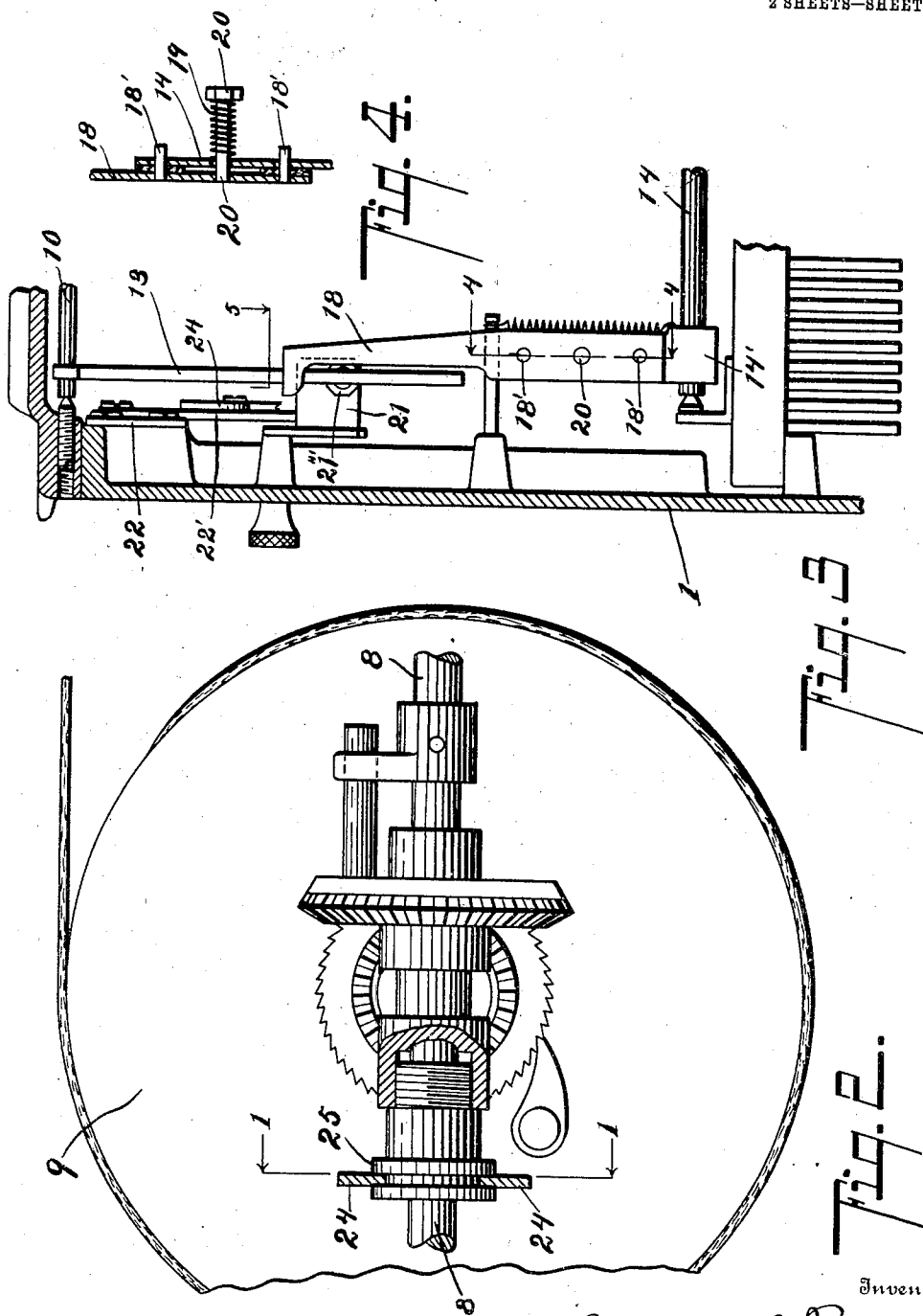
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UNITED STATES PATENT OFFICE.

WILLIAM R. FOX, OF GRAND RAPIDS, MICHIGAN.

RIBBON-OSCILLATOR FOR VISIBLE TYPE-WRITING MACHINES.

931,855.

Specification of Letters Patent. Patented Aug. 24, 1909.

Application filed December 14, 1907. Serial No. 406,490.

To all whom it may concern:

Be it known that I, WILLIAM R. FOX, a citizen of the United States, residing at Grand Rapids, county of Kent, State of Michigan, have invented certain new and useful Improvements in Ribbon-Oscillators for Visible Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in ribbon oscillators of "visible" typewriters.

The invention has to do with the matter of the arrangement of the oscillating cam, and in the simplification of these parts it is an improvement on my inventions described in my Patents No. 879,159 of February 18th, 1908, and No. 880,648 of March 3rd, 1908.

The object of the invention is to provide a very simple and effective cam or eccentric mechanism for oscillating the ribbon and the ribbon vibrator of a visible typewriting machine.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure 1 is a vertical longitudinal sectional elevation through a typewriting machine, showing such details as are necessary to a proper understanding of my invention and omitting entirely the details of the typewriter which do not pertain to my invention, the shaft and eccentric cam of the ribbon oscillator mechanism being sectioned on a line corresponding to line 1—1 of Fig. 2; Fig. 2 is an enlarged detail sectional view, taken on a line corresponding to line 2—2 of Fig. 1, showing also the spring drum for driving the carriage, which does not appear in Fig. 1; Fig. 3 is an enlarged detail sectional view taken on line 3—3 of Fig. 1; Fig. 4 is a detail sectional view of the flexible and yielding connection, taken on line 4—4 of Fig. 3; and Fig. 5 is a detail sectional view taken on line 5—5 of Figs. 1 and 4, showing the coupling of the flexible connection to the arm of the ribbon oscillator.

In the drawing, the sectional views are taken looking in the direction of the little arrows at the ends of the section lines, and similar numerals of reference refer to similar parts throughout the several views.

Considering the numbered parts of the drawing, the main frame 1 is provided with the usual top-plate 2 and a carriage 3 is arranged to reciprocate thereon on suitable ways provided with ball bearings 4. The usual platen 5 is arranged on the carriage and is carried thereby.

Ribbon spools 6, one only of which is illustrated, the same being in pairs, are supported on shafts 7 at each end of the machine, and these are driven from a driving-shaft 8 at the back of the machine, having the usual beveled gear connections. The driving shaft 8 is actuated by a beveled gear and suitable connections from the usual spring drum 9 which urges the carriage forward.

The ribbon oscillator is supported on the rock shaft 10 in the upper front part of the machine, the central guide 11 for the ribbon vibrator being supported by rearwardly extending rock-shaft arms 12. A downwardly extending arm 13 is connected to the rock shaft 10 or to the ribbon vibrator and is the thing acted upon for vibrating the ribbon. This means is preferably the yielding connection illustrated in my former patent applications referred to, consisting of rock shaft 14 with rearwardly extending arms 14' which are connected by suitable links 15 to a universal bar 16 beneath the key levers 17 of the typewriting machine, all of which are substantially the same as those appearing in my former applications.

The flexible connection is accomplished by the upwardly-extending arm 14'' from the rock-shaft 14 which is yieldingly connected to an arm 18, by a pair of pins 18' extending from the arm 18 through the upwardly-extending arm 14''. The parts are retained yieldingly together by a spring 19 on a pin 20 secured to the arm 18' and playing freely through an aperture in the arm 14''. A nut 20' is adjustable on the pin 20 and affords an abutment for the spring and enables the tension thereof to be adjusted. These parts are only briefly described herein as they have been fully described and claimed in my former applications above referred to.

The oscillation of the ribbon is secured by an adjustable abutment 21 provided for the arm 13 of the ribbon vibrator. This is suspended by a link 22 from the upper portion of the typewriting machine, preferably from the plate 22' which supports the ribbon guides 23. The abutment 21 is guided on a

pin 21' extending through a curved slot 21'' therein. A bifurcated pitman 24 is pivotally connected at its forward end, preferably to the link 22, although it might be connected to the abutment 21, and is bifurcated at 24' 24' at its rearward end. On the ribbon driving shaft 8, at the rear end of the pitman 24, is supported a cam 25, preferably an eccentric cam which is embraced by the bifurcations 24' of the pitman 24.

It will be seen from this arrangement that as the ribbon driving shaft 8 rotates and carries with it the cam 25, the pitman 24 will be reciprocated back and forth by its contact with such bar and consequently swing the abutment 21 back and forth by actuating the link 22. As the connection for actuating the ribbon vibrator is yielding, it will be seen that as the mechanism is operated the extent of the movement of the arm 13 and the consequent extent of movement of the ribbon vibrator will be varied, which will secure the desired oscillation of the ribbon and utilize the full width of the same.

I show the abutment 21 provided with an adjustable stop 21''' so that the oscillation can be definitely located and controlled and the exact travel of the ribbon vibrator determined, to secure the proper use and oscillation of the ribbon. In this connection I desire to remark that I locate the cam, which is preferably an eccentric cam, on the ribbon driving shaft, which is of considerable advantage because no special shaft or support is then required. The same can be located on any shaft located in any convenient part of the machine and the oscillation thus secured, so long as the cam is a cylindrical cam, or substantially an eccentric cam, so that it can be readily embraced by the bifurcated ends 24' of the pitman 24.

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

1. In a ribbon oscillator for a visible typewriter, the combination of the ribbon vibrator; a common bar arranged to be actuated by the key-levers, for actuating the said

vibrator; a yielding connection between the said common bar and the ribbon vibrator; an abutment stop to limit the movement of the ribbon vibrator, suspended by a suitable link from the upper portion of the machine; a bifurcated controlling pitman pivotally connected to the abutment stop; an eccentric cam on the ribbon driving shaft, embraced by the bifurcated end of the said pitman, co-acting for the purpose specified.

2. In the ribbon oscillator for a visible typewriter, the combination with the ribbon vibrator; yielding connections therefor to the keyboard of the machine; a variable abutment stop arranged and located to limit the movement of the ribbon vibrator; a bifurcated controlling pitman pivotally connected to the said variable stop; an eccentric cam on the ribbon driving shaft, arranged to be embraced by the bifurcated ends of the said pitman, co-acting for the purpose specified.

3. In the ribbon oscillator for a visible typewriter, the combination with the ribbon vibrator of yielding connections therefor to the keyboard of the machine; a variable abutment stop arranged and located to limit the movement of the ribbon vibrator; a bifurcated controlling pitman pivotally connected to the said variable stop; an eccentric cam on a suitable shaft, arranged to be embraced by the bifurcated ends of said pitman, co-acting for the purpose specified.

4. In the ribbon oscillator for a visible typewriter, the combination with the ribbon vibrator; yielding connections therefor to the keyboard of the machine; a variable abutment stop arranged and located to limit the movement of the ribbon vibrator; a controlling pitman connected to the said variable stop; and connections for the pitman to a movable part of the machine.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

WILLIAM R. FOX. [L. S.]

Witnesses:

ELLA DE VRIES,
ELVA FOSTER.