No. 864,777. PATENTED SEPT. 3, 1907.

W. R. FOX.

SPOOL AND RIBBON MECHANISM FOR FRONT STRIKE TYPE WRITING MACHINES.

APPLICATION FILED MAR. 4, 1907.

2 SHEETS—SHEET 1.

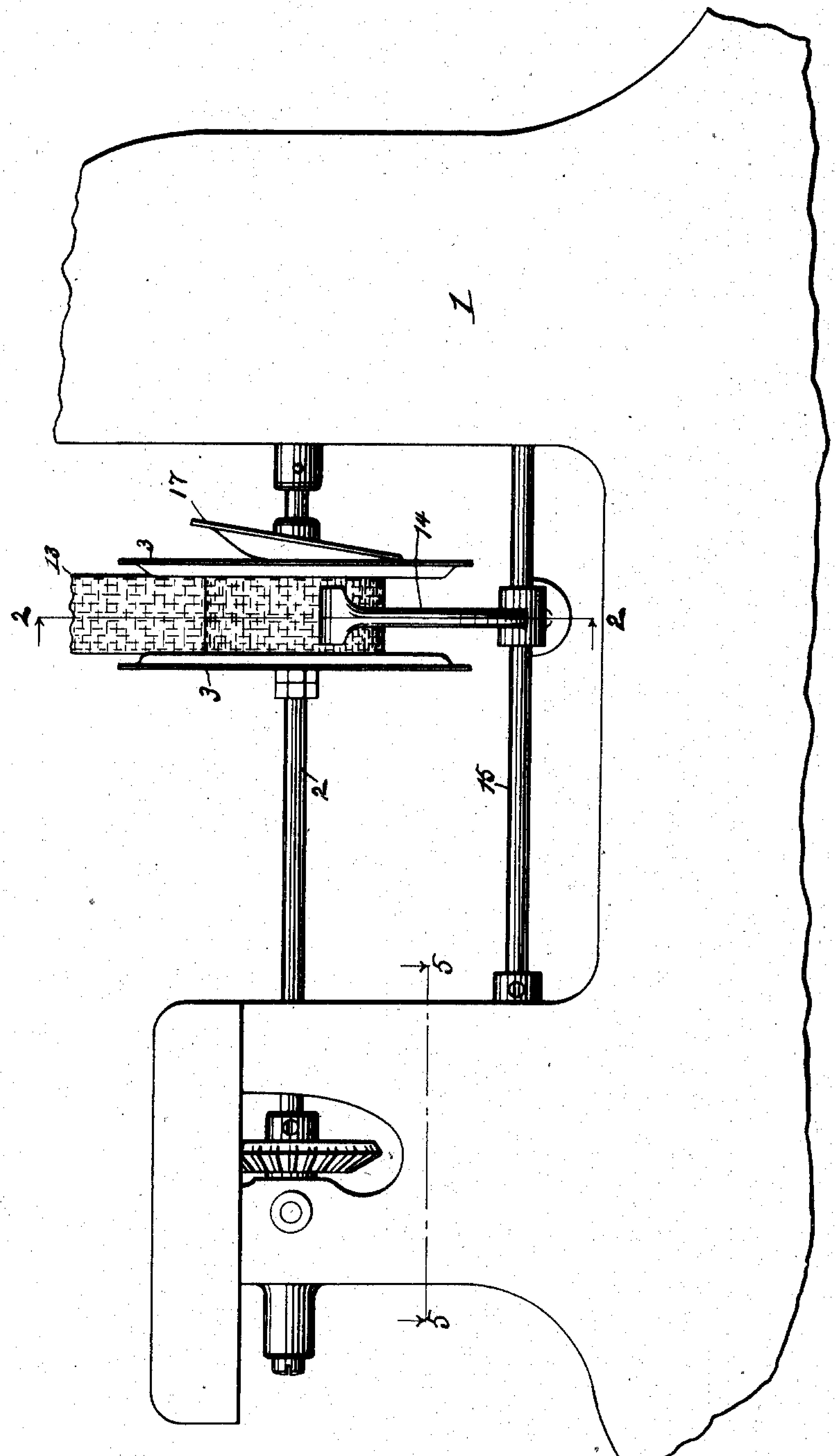

Fig. 1.

Witnesses:

Adelaide F. Adams

Lulie G. Greenfield

Inventor,

William R. Fox

By Chappell & Earl

Att'ys.

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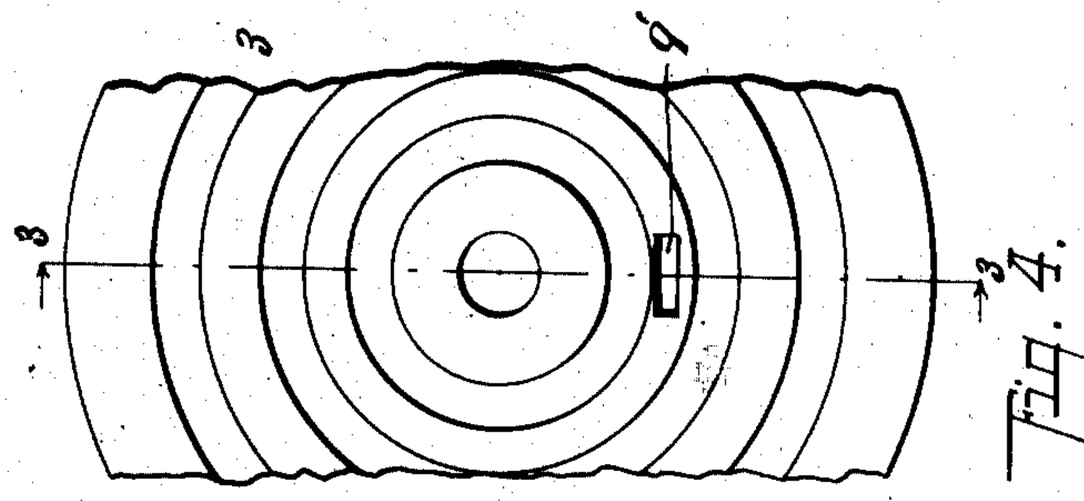

Fig. 4.

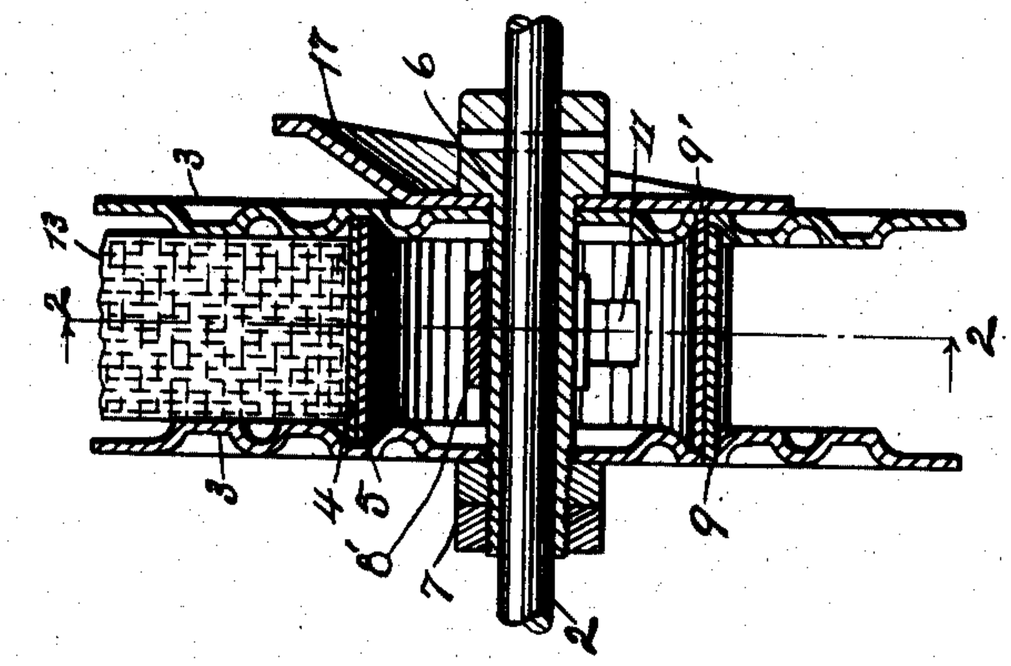

Fig. 3.

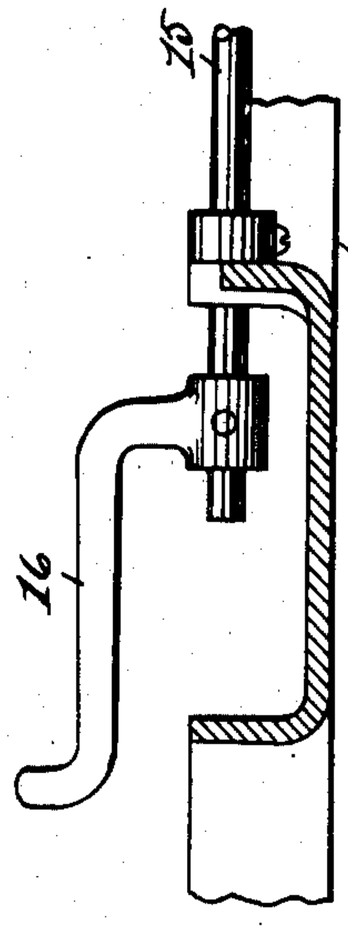

Fig. 5.

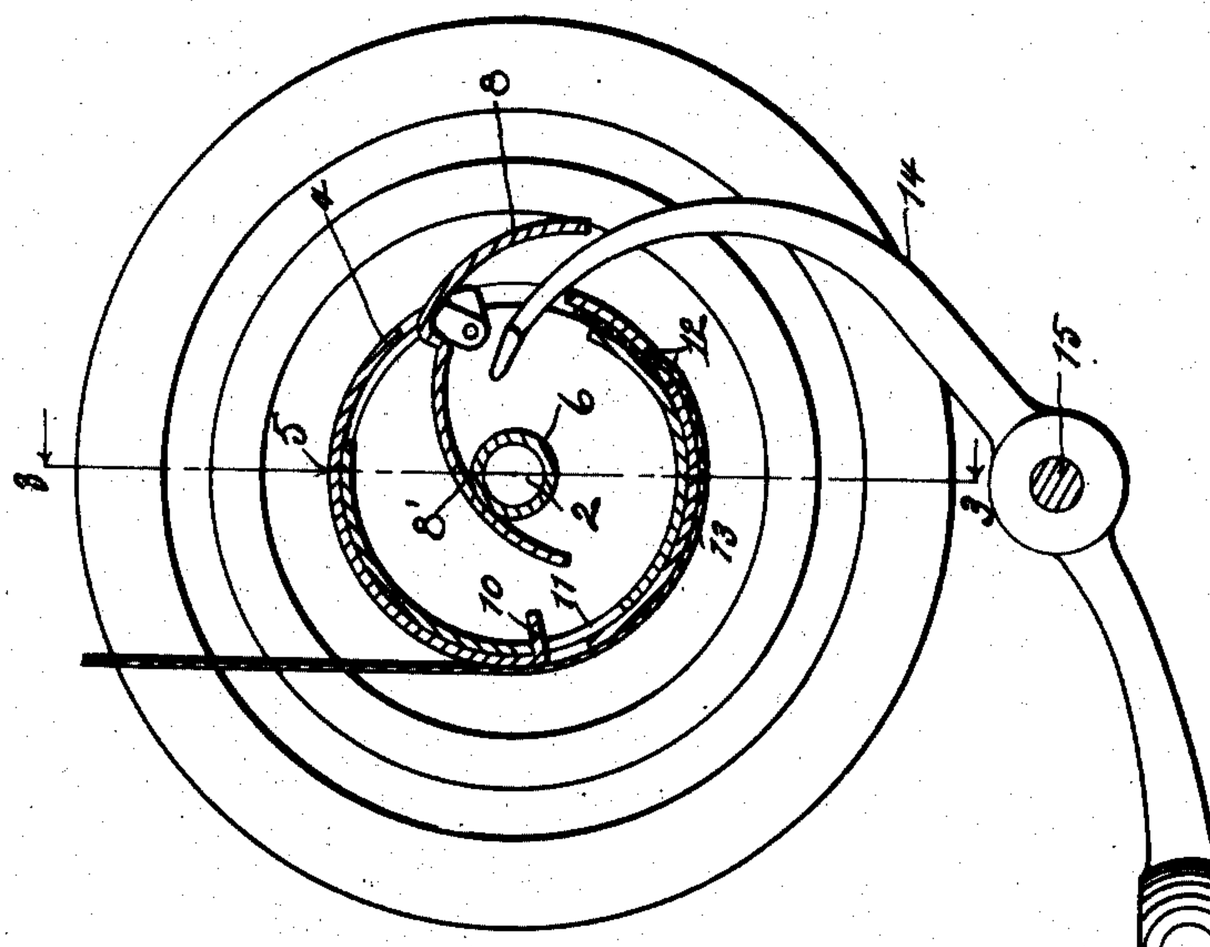

Fig. 2.

Witnesses:

Wolcott F. Adams

Lulu G. Greenfield

Inventor,

William R. Fox

By Chappell & Earl

Att'y.s

UNITED STATES PATENT OFFICE.

WILLIAM R. FOX, OF GRAND RAPIDS, MICHIGAN.

SPOOL AND RIBBON MECHANISM FOR FRONT-STRIKE TYPE-WRITING MACHINES.

No. 864,777. Specification of Letters Patent. Patented Sept. 3, 1907.

Application filed March 4, 1907. Serial No. 360,428.

To all whom it may concern:

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

This invention relates to improvements in spools and spool mechanisms for typewriters.

The objects of the invention are, first, to provide an improved construction of spool by means of which the ribbon can be readily attached and detached. Second, to provide an improved construction of spool which permits the ready tripping of the ribbon shifting mechanism. Third, to provide an improved construction of spool and cam.

Further objects, and objects relating to details of construction, will definitely appear from the detailed description to follow.

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.

The portions of a typewriter illustrating the features of my invention are clearly illustrated in the accompanying drawing, forming a part of this specification, in which,

Figure 1 is a portion of a typewriter with my improved spool in position. Fig. 2 is a sectional view on a line corresponding to line 2—2 of Figs. 1 and 3. Fig. 3 is a vertical sectional view on a line corresponding to line 3—3 of Figs. 2 and 4. Fig. 4 is a detail view of the central portion of one of the spool heads. Fig. 5 is an enlarged sectional view on line 5—5 of Fig. 1, showing the trip on the rock shaft 15.

In the drawing all of 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.

Referring to the numbered parts of the drawing, a portion of the frame 1 of a typewriter is illustrated as the support for the various parts of this improved spool and ribbon mechanism. The spool is shown supported on a suitable shaft 2 which has the usual gear for being driven by any suitable or convenient driving mechanism that may be in use or may be adopted on a typewriter for such purpose.

The sides or heads of the spool 3 are of sheet metal stamped to form concentric corrugations or grooves to give the same rigidity, one groove being specially formed to receive the barrel of the spool which consists of two concentric incomplete sheet metal drums 4 and 5, the one within the other and adapted to be adjusted the one upon the other to form a complete cylinder and for other purposes to be described.

A lug 9 is on the external drum 4 and extends through a slot in the spool end 3, and a lug 9′ is on the opposite end of the inner cylinder 5 and extends through a lug on the opposite end 3 of the spool, so that these concentric sheet metal cylinders can be rotated and adjusted on each other by turning the ends 3 of the spool in opposite directions. An inwardly-extending lug 10 is formed on the outer drum 4 and is arranged in a slot 11 in the inner drum 5 and serves to limit the movement of the parts on each other. A slot 12 is through the outer drum 4 near the end of the inner drum 5, so that by the adjustment the slot 12 is opened and closed. This slot is for the purpose of receiving the end of the ribbon 13, when by rotating the opposite ends of the spool the concentric drums are adjusted and clamp the end of the ribbon. The ends of the spool are clamped upon these concentric cylinders by means of a shouldered sleeve 6 extending therethrough, the same being clamped by the locking nut 7. A face cam 17 formed of sheet metal is clamped against the shouldered end and serves, by suitable connection, to operate a movable ribbon guide to insure the use of the full width of the ribbon.

An opening is in the outer drum 4 where the ends of the shell are separated to permit the end of the finger 14 to drop inside, which finger is secured to the rock shaft 15. This finger is held yieldingly in position by the weight 14′. This opening is provided with a pivoted cover 8, which is pivoted on suitable ears inturned at the opposite sides of the spool within the spool body. The inner end 8′ of this cover is extended within the hollow barrel or body of the spool and is of greater weight than the cover 8, so that, by its weight, it opens the cover when the ribbon has become unwound from the barrel of the spool, so that the finger 14 does not strike the cover or touch it to raise it and is not in danger of contacting with any part, but drops freely into the opening in the side of the spool when the spool is moved to the right position and the ribbon is unwound. The cover 8 opens automatically when the ribbon is unwound by the action of the heavier counterbalance. The wrapping of the ribbon around the barrel of the spool, and its very slight tension on the cover 8, overcomes the weighted end 8′ so that there is always a smooth barrel until the ribbon is entirely unwound. At this point the spool, of course, should be reversed and run in the opposite direction. The reversing mechanism is thrown into gear by a trip 16 on the rock shaft 15, which is actuated by the weight 14′ when the finger 14 drops into the aperture in the side of the spool body. The details of this trip mechanism appear in the patent to Fox and Barrett No.

837,554, dated Dec. 4, 1906, for ribbon mechanism for type writers; and as this invention does not relate particularly to the trip mechanism, it is not necessary that anything more than the trip finger 16 which throws the mechanism into gear be here illustrated.

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

1. In a spool and ribbon mechanism for a typewriter, the combination with a typewriter frame 1, of the spool shaft 2; a spool made up of corrugated sides 3—3, and a spool body made up of incomplete concentric drums 4 and 5, of sheet metal; a slot through the outer drum arranged to be opened and closed by the adjustment of the inner drum for attaching a ribbon 13; a ribbon 13; an inwardly extending lug 10 on the outer drum engaging a corresponding slot 11 on the inner drum to limit the movements of the same on each other; a lug 9 on one end of one drum; a lug 9′ on the opposite end of the other drum, the said lugs extending into suitable slots in the opposite spool heads, whereby the drums can be adjusted one upon the other by turning the spool heads in opposite directions; a face cam 17 formed of sheet metal; a shouldered sleeve through the center of said drum, clamping the cam and various parts together, the incomplete drums leaving an opening at one side; a pivoted cover 8 for the said opening, arranged to be held normally closed by the pressure of the ribbon 13 wrapped around the same; a counterweight 8′ for said cover 8 within the spool body, arranged to open the same when the ribbon is unwound; a yielding finger 14 on a rock shaft 15; a counterbalance 14′ for the said finger to hold the same normally against the spool so that it will enter the aperture when the cover 8 is released and opened by the counterweight; and a trip 16 on the shaft 15 to throw the reversing mechanism into gear, all co-acting substantially as described and for the purpose specified.

2. In a spool and ribbon mechanism for a typewriter, the combination with a typewriter frame 1, of the spool shaft 2; a spool made up of corrugated sides 3—3, and a spool body made up of incomplete concentric drums 4 and 5, of sheet metal; a slot through the outer drum arranged to be opened and closed by the adjustment of the inner drum for attaching a ribbon 13; a ribbon 13; an inwardly extending lug 10 on the outer drum engaging a corresponding slot 11 on the inner drum to limit the movements of the same on each other; a lug 9 on one end of one drum; a lug 9′ on the opposite end of the other drum, the said lugs extending into suitable slots in the opposite spool heads, whereby the drums can be adjusted one upon the other by turning the spool heads in opposite directions; a shouldered sleeve through the center of said drum, clamping the various parts together, the incomplete drums leaving an opening at one side; a pivoted cover 8 for the said opening, arranged to be held normally closed by the pressure of the ribbon 13 wrapped around the same; a counterweight 8′ for said cover 8 within the spool body, arranged to open the same when the ribbon is unwound; a yielding finger 14 on a rock shaft 15; a counterbalance 14′ for the said finger to hold the same normally against the spool so that it will enter the aperture when the cover 8 is released and opened by the counterweight; and a trip 16 on shaft 15 to throw the reversing mechanism into gear, all co-acting substantially as described and for the purpose specified.

3. In a spool and ribbon mechanism for a typewriter, the combination with a typewriter frame 1, of the spool shaft 2; a spool made up of corrugated sides 3—3, and a spool body made up of incomplete concentric drums 4 and 5, of sheet metal; a slot through the outer drum arranged to be opened and closed by the adjustment of the inner drum for attaching a ribbon 13; a ribbon 13; an inwardly extending lug 10 on the outer drum engaging a corresponding slot 11 on the inner drum to limit the movements of the same on each other; a lug 9 on one end of one drum; a lug 9′ on the opposite end of the other drum, the said lugs extending into suitable slots in the opposite spool heads, whereby the drums can be adjusted one upon the other by turning the spool heads in opposite directions; and a shouldered sleeve through the center of said drum, clamping the various parts together, all co-acting substantially as described and for the purpose specified.

4. In a spool and ribbon mechanism for a typewriter, the combination with the typewriter frame 1 of the spool shaft 2; a spool with suitable ends and a hollow body containing an opening in one side thereof; a pivoted cover 8 for said opening, arranged to be held normally closed by the pressure of the ribbon 13 wrapped around the same; a counterweight 8′ for said cover 8 within the hollow spool body, arranged to open the same when the ribbon is unwound; a yielding finger 14 on the rock shaft 15; a counterbalance 14′ for the said finger to hold the same normally against the spool so that it will enter the opening when the cover 8 is released and opened by the counterweight; and a trip 16 on the shaft 15 to throw the reversing mechanism into gear, all co-acting substantially as described and for the purpose specified.

5. In a spool and ribbon mechanism for a typewriter, the combination of a spool with suitable ends and a hollow body containing an opening in one side thereof; a pivoted cover 8 for said opening, arranged to be held normally closed by the pressure of the ribbon 13 wrapped around the same; a counterweight 8′ for said cover 8 within the hollow spool body, arranged to open the same when the ribbon is unwound; a yielding finger 14; the rock shaft 15 carrying said finger; a counterbalance 14′ for the said finger to hold the same normally against the spool so that it will enter the opening when the cover 8 is released and opened by its counterweight; and a trip 16 on the shaft 15 to throw the reversing mechanism into gear, all co-acting substantially as described and for the purpose specified.

6. In a spool and ribbon mechanism for a typewriter, the combination of a spool with suitable ends and a hollow body containing an opening in one side thereof; a pivoted cover 8 for said opening, arranged to be held normally closed by the pressure of the ribbon 13 wrapped around the same; a counterweight 8′ for said cover 8 within the hollow spool body, arranged to open the same when the ribbon is unwound; a yielding finger 14; the rock shaft 15 carrying the said finger; a counterbalance 14′ for the said finger to hold the same normally against the spool so that it will enter the opening when the cover 8 is released and opened by its counterweight, all co-acting substantially as described and for the purpose specified.

7. In a spool and ribbon mechanism for a typewriter, the combination of a spool with suitable ends and a hollow body containing an opening in one side thereof; a pivoted cover 8 for said opening, arranged to be held normally closed by the pressure of the ribbon 13 wrapped around the same; a counterweight 8′ for said cover 8 within the hollow spool body, arranged to open the same when the ribbon is unwound; a yielding finger 14, resting normally against the spool so that it will enter the opening when the cover 8 is released and the rock-shaft 15 carrying said finger, all co-acting for the purpose specified.

8. In a spool and ribbon mechanism for a typewriter, the combination of a spool with a hollow body, containing an opening in the side thereof; a pivoted cover for said opening, arranged to be held normally closed by the pressure of the ribbon when it is wrapped around the same; yielding means for holding said cover normally open when the spool is empty, so that when the ribbon is unwrapped the same will open; and a yielding finger arranged to rest against the spool body and the ribbon wrapped thereon, so as to enter the opening in the side of the spool body when the ribbon is unwound and the cover is opened, all co-acting for the purpose specified.

9. In a ribbon mechanism for a typewriting machine, the combination of a spool with a body made up of concentric sheet metal shells adapted to adjust the one upon the other, the outer one of which is slotted, one of which is connected to operate by one spool head and the other by the opposite spool head, whereby the said slot can be opened and closed by manipulating the spool heads for detaching and attaching the ribbon, as specified.

10. In a ribbon mechanism for a typewriting machine, the combination of a ribbon spool, the body of which is made of concentric parts, connected to the opposite heads

of the spool and adjustable upon the other, the said parts being formed with an aperture between them; and a suitable slot through the parts for receiving and clamping the ribbon as the parts are adjusted, for the purpose specified.

11. In a ribbon mechanism for a typewriting machine, the combination of a ribbon spool, the body of which is made of parts, connected to the opposite heads of the spool and adjustable the one upon the other, the said parts being formed with an aperture between them for receiving and clamping the ribbon as the parts are adjusted, for the purpose specified.

12. In a typewriter, the combination of a spool with suitable heads and a body made up of concentric parts, one movable on the other; and a slot through the parts to receive the end of the ribbon and clamp the same by slipping one part on the other, as specified.

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,
JAMES STRASBURG.