

No. 632,767.

Patented Sept. 12, 1899.

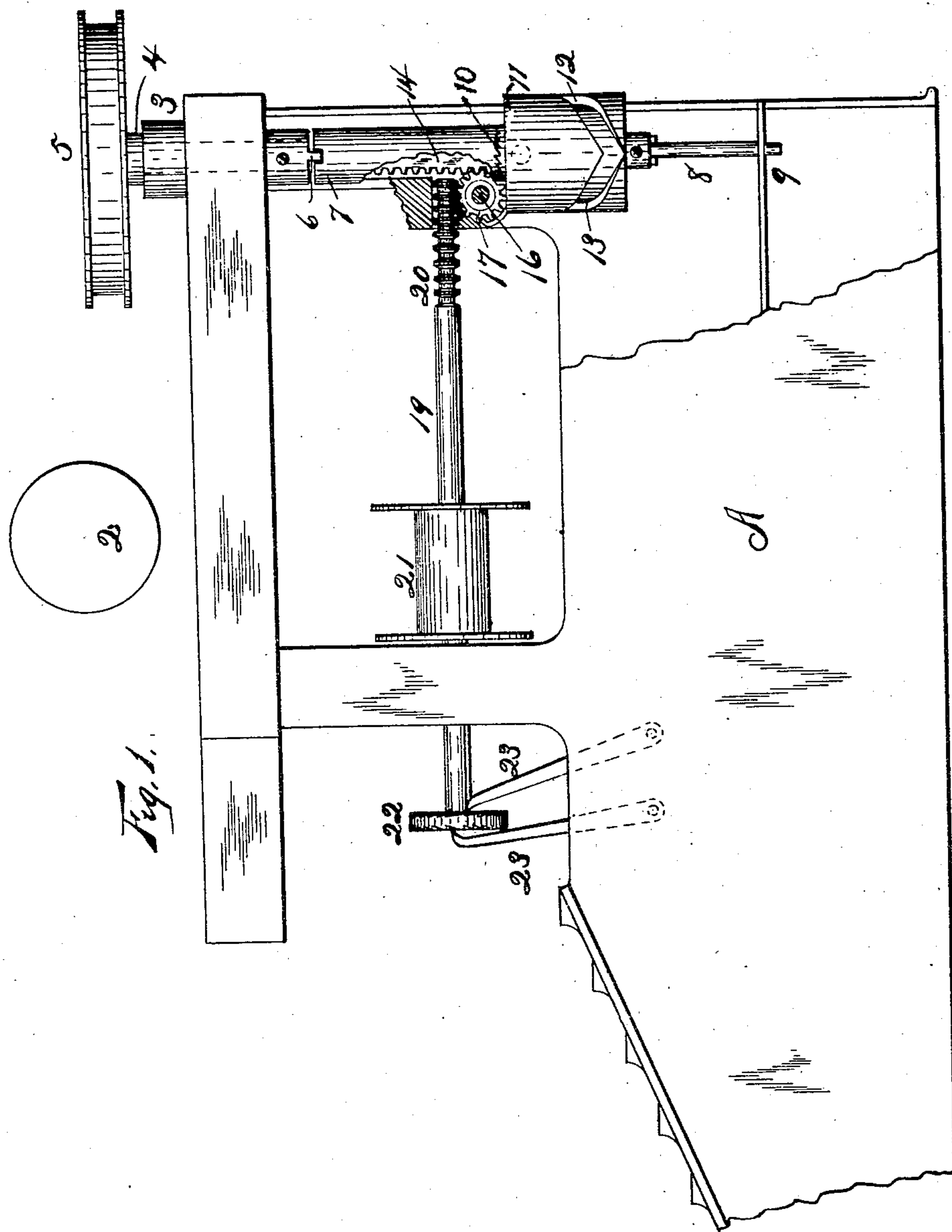
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RIBBON MOVEMENT FOR TYPE WRITING MACHINES.

(Application filed Sept. 19, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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M. A. Franklin

INVENTOR

Robert Turner

BY

Smith & Harrison

ATTORNEYS.

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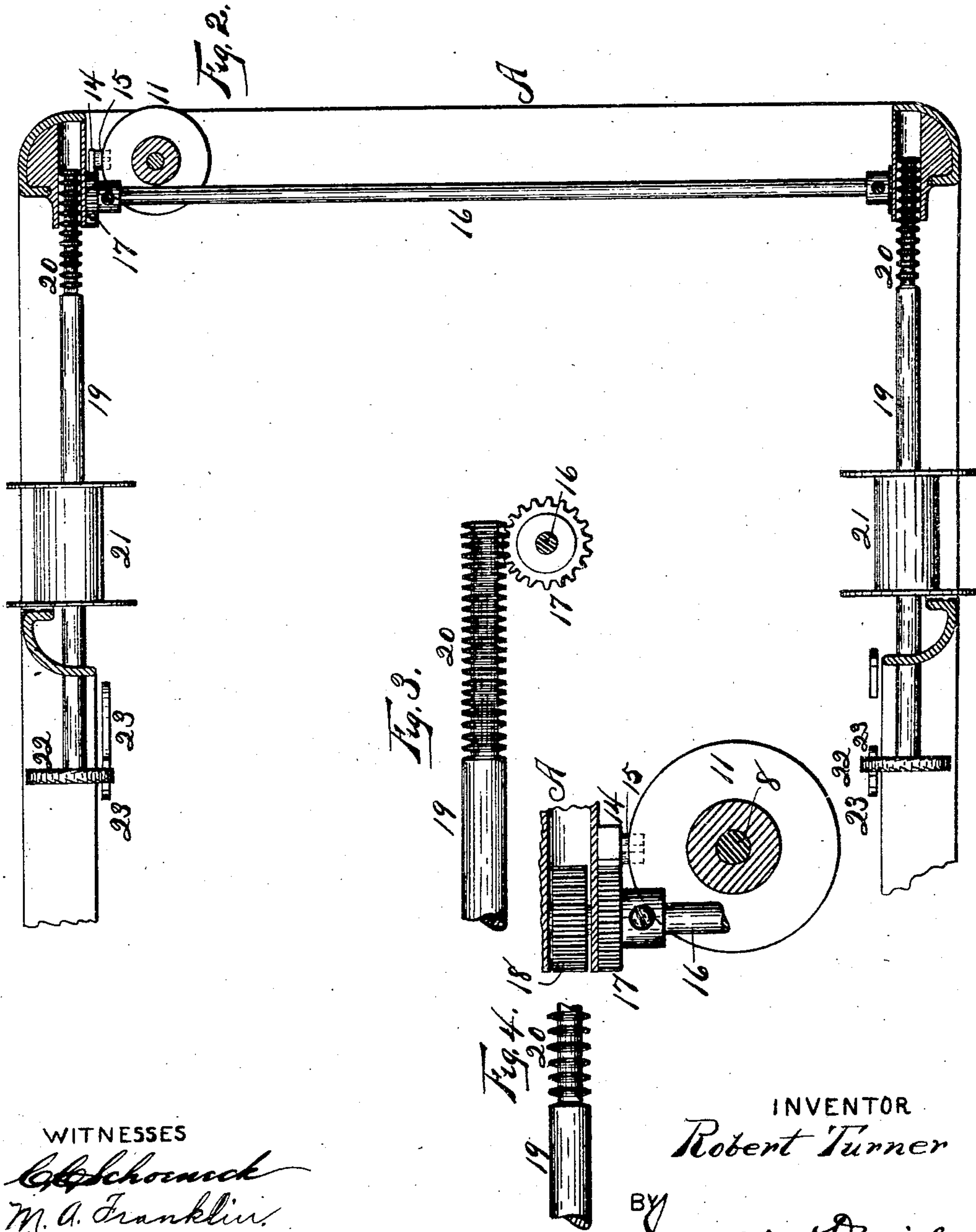
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UNITED STATES PATENT OFFICE.

ROBERT TURNER, OF DES MOINES, IOWA

RIBBON MOVEMENT FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 632,767, dated September 12, 1899.

Application filed September 19, 1898. Serial No. 691,344. (No model.)

To all whom it may concern:

Be it known that I, ROBERT TURNER, of Des Moines, in the county of Polk, in the State of Iowa, have invented new and useful Improvements in Ribbon Movements for Type-Writing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear and exact description.

My invention relates to type-writing machines, and particularly to mechanisms for feeding the inking-ribbon lengthwise and widthwise intermittently or simultaneously.

My object is to produce a feed mechanism for imparting a compound movement to the inking-ribbon, the driving power being supplied from the spring-wheel to revolve a spiral cam, a rack-bar reciprocated vertically thereby, a pinion driven by said rack-bar, and a gear-toothed ribbon-spool shaft reciprocated lengthwise by said mechanism combined with a ratchet upon said shaft having teeth on both faces and swinging pawls engaging with said ratchets to revolve said spool-shaft coincidently with its lengthwise movements in either direction. The ribbon-spool being mounted upon said shaft the ribbon is moved widthwise first in one direction and then in the opposite direction in substantially a continuous manner, only halting for the reversal of movement, and at the same time moving or being fed widthwise intermittently incident to the intermittent movement of the ribbon-spool as the carriage is being fed to the left in printing, stopping the widthwise feed whenever said forward movement of the carriage and spring-wheel stops, remaining stationary during the backward movement of the carriage and spring-wheel, no matter what the position of the cam may be, and stopping the lengthwise feed of the ribbon whenever the widthwise feed stops. The double cam is mounted loosely upon the spring-wheel shaft, and a slip-ratchet mechanism is provided whereby the cam is revolved while said shaft is driven in one direction and remains stationary at all other times.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation of the frame of a type-writing machine, parts being broken away to show interior members of the ribbon mechanism in elevation. Fig. 2 is a top plan

of the ribbon mechanism, the frame being cut off in a horizontal plane. Fig. 3 is an enlarged detail of the geared ribbon-spool shaft and the pinion by which it is driven. Fig. 4 is a detail in top plan of the cam, the rack-bar, pinion driven by it, and driving-gear, the spool-shaft being broken off.

A represents the frame of a type-writing machine of the type of the well-known Jewett or Duplex machines, and 2 represents the impression-platen, its carriage being omitted as not a part of this invention. Upon the frame is a suitable bearing 3, in which a vertical shaft 4 is suitably journaled, upon which an ordinary spring-wheel 5 is suitably secured and is connected to the carriage by any suitable ordinary means. This shaft is provided upon its lower end with a transverse tongue 6, radial or otherwise, which freely enters a groove in the upper end of a sleeve 7, which fits loosely upon an auxiliary shaft 8, stepped, as at 9, into a suitable support. The lower end of this sleeve is provided with inclined ratchet-teeth 10, adapted to engage with like ratchet-teeth upon the hub of the cam-cylinder 11, which is secured upon said shaft and provided with peripheral and longitudinally-inclined camways 12 13, the upper and lower ends of which intersect substantially as shown, so that each forms a segment of a spiral on opposite sides of said cylinder. A rack-bar 14 is suitably mounted to be vertically reciprocated, having an arm 15, usually of an antifrictional type, projecting into and engaging with one of said ways. A shaft 16 is suitably journaled across said frame and provided with a pinion 17, driven by said rack-bar and which drives a gear 18 upon said shaft, and this reciprocates the spool-shaft 19, which is provided with gear-teeth 20, whereby said shaft is shifted longitudinally, together with the ribbon-spool 21 thereon, and this imparts a widthwise movement to the ribbon across the printing-point, whereby the entire width of the ribbon is utilized. A disk 22 is secured upon the front end of each spool-shaft, being provided with ratchet-teeth upon each face, and 23 are suitable swinging pawls alternately engaging with said ratchets to intermittently and step by step revolve the spool-shafts and the spools thereon and impart a step-by-step intermittent lengthwise

feed to the ribbon simultaneous with the step-by-step intermittent widthwise feed thereof. Inasmuch as these pawls are the same and operate in precisely the same way as they have been used for several years past upon the Jewett or Duplex machines aforesaid they are not described in detail.

It will be readily understood that the rotation of the spring-wheel to impel the carriage forward in printing will transmit the power to shift the ribbon widthwise step by step coincident with the intermittent rotation thereof, that the lifting of the rack-bar incident to one camway will shift the ribbon-shafts, spools, and ribbon forward, and its lowering incident to the other camway will reverse the movements of said shafts, spools, and ribbon, and that while one pawl and ratchet will simultaneously with said forward widthwise movement of its spool-shaft revolve that shaft to feed the ribbon lengthwise so when the lengthwise movement of said spool-shaft is reversed the other pawl and ratchet upon this shaft will revolve it and also feed the ribbon in the same direction, the lengthwise and widthwise feeds being simultaneous. One pair of these feed-pawls is thrown out of engagement with their ratchet-disk to permit the ribbon to be unwound from the spool upon that spool-shaft. The reversal of movement of the spring-wheel incident to the throwing back of the carriage to start a new line of print causes the ratchet-teeth upon the sleeve to slip over those upon the cam-cylinder without actuating said cylinder, and consequently stops the feed of the ribbon.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a ribbon-spool shaft provided with gear-teeth and a spool thereon, of a cam, a rack-bar actuated thereby, a pinion driven by said rack-bar, a gear driven with said pinion and engaging with said spool-shaft to shift it longitudinally, and means to drive said cam.

2. The combination with a cam-propelled rack-bar, and a shaft driven by said rack-bar, of a pair of spool-shafts, each provided with gear-teeth, and gears upon the first-mentioned shaft engaging with the respective spool-shafts to simultaneously shift them longitudinally and means to drive said cam.

3. The combination with a cylinder provided with intersecting spiral camways and means to rotate it, of a rack-bar engaging with said camways alternately and reciprocated vertically, thereby changing its direction of movement, as it shifts from one camway to the other, a shaft having a pinion engaging with, and driven first one way and then the other, by said rack-bar, a ribbon-spool shaft provided with gear-teeth, and a gear on the first-mentioned shaft engaging therewith, whereby said spool-shaft is reciprocated longitudinally.

4. The combination with a spring-wheel, a cam driven thereby and provided with oppositely-arranged intersecting camways, and a rack-bar reciprocated by said camways, of a shaft driven by said rack-bar, a gear on said shaft, a spool-shaft provided with gear-teeth, whereby it is reciprocated longitudinally by said gear, and a ribbon-spool upon said spool-shaft.

5. The combination with a spring-wheel, a cam driven thereby and provided with oppositely-arranged intersecting camways, and a rack-bar reciprocated by said camways, of a shaft driven by said rack-bar, a gear on said shaft, a spool-shaft provided with gear-teeth whereby it is reciprocated longitudinally by said gear, a ribbon-spool upon said shaft, a disk having ratchet-teeth on said spool-shaft, and means to revolve said spool-shaft simultaneously with its lengthwise movement.

6. The combination with a ribbon-spool and a reciprocatory shaft therefor provided with gear-teeth, of a gear directly engaging with said spool-shaft and its gear-teeth, and means to drive said gear to bodily shift said shaft and spool lengthwise.

7. The combination with a ribbon-spool, and a rotatable shaft therefor provided with gear-teeth, of a gear engaging with said spool-shaft and its gear-teeth, and means to drive said gear intermittently in opposite directions whereby said spool-shaft is reciprocated lengthwise in its bearings.

In witness whereof I have hereunto set my hand this 9th day of September, 1898.

ROBERT TURNER.

Witnesses:

E. S. CHANDLER,
GEORGIA WHITE.