

E. O. FANLOW.
 RIBBON FEEDING MECHANISM FOR REPRODUCING MACHINES.
 APPLICATION FILED MAY 11, 1909.

1,017,658.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.

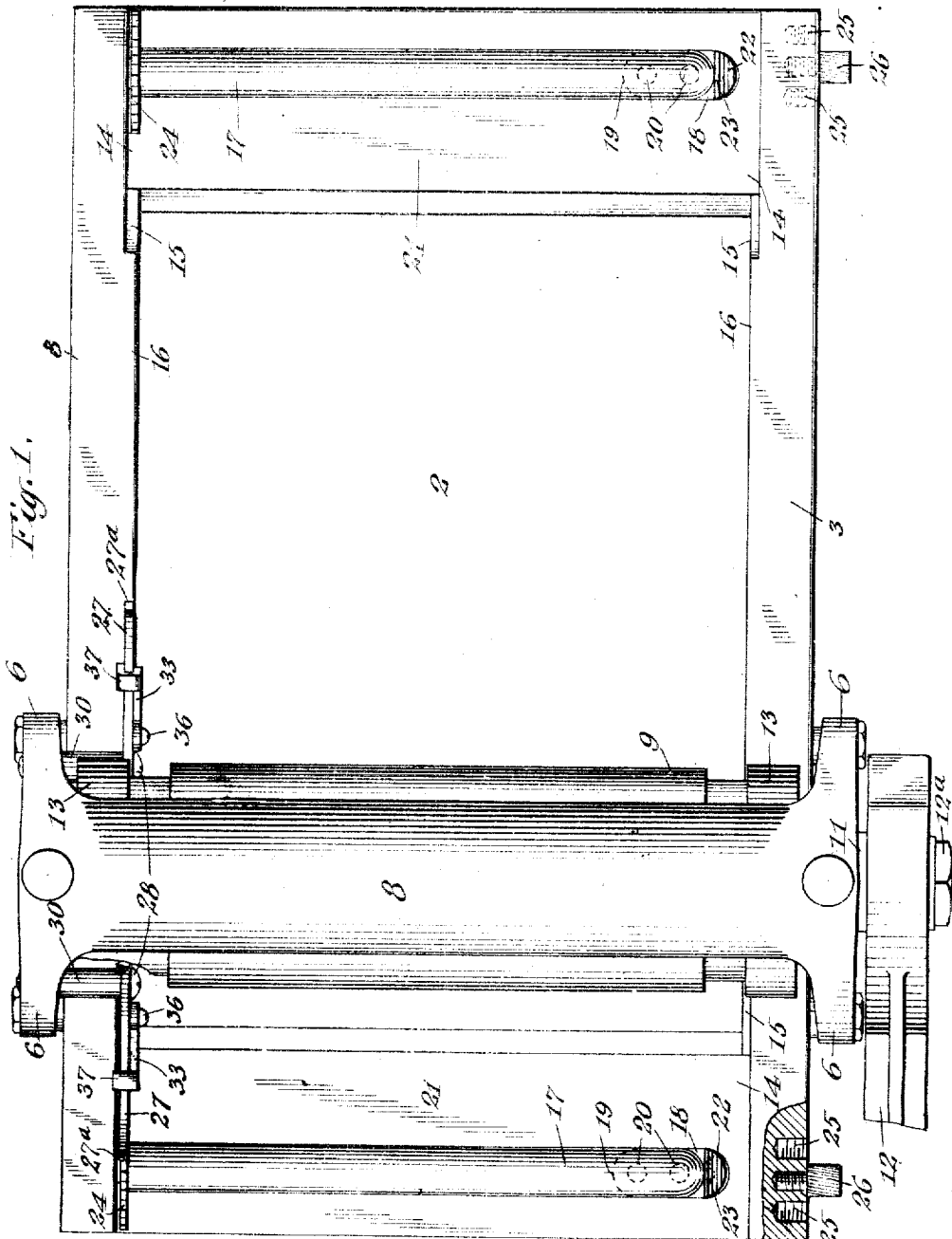


Fig. 1.

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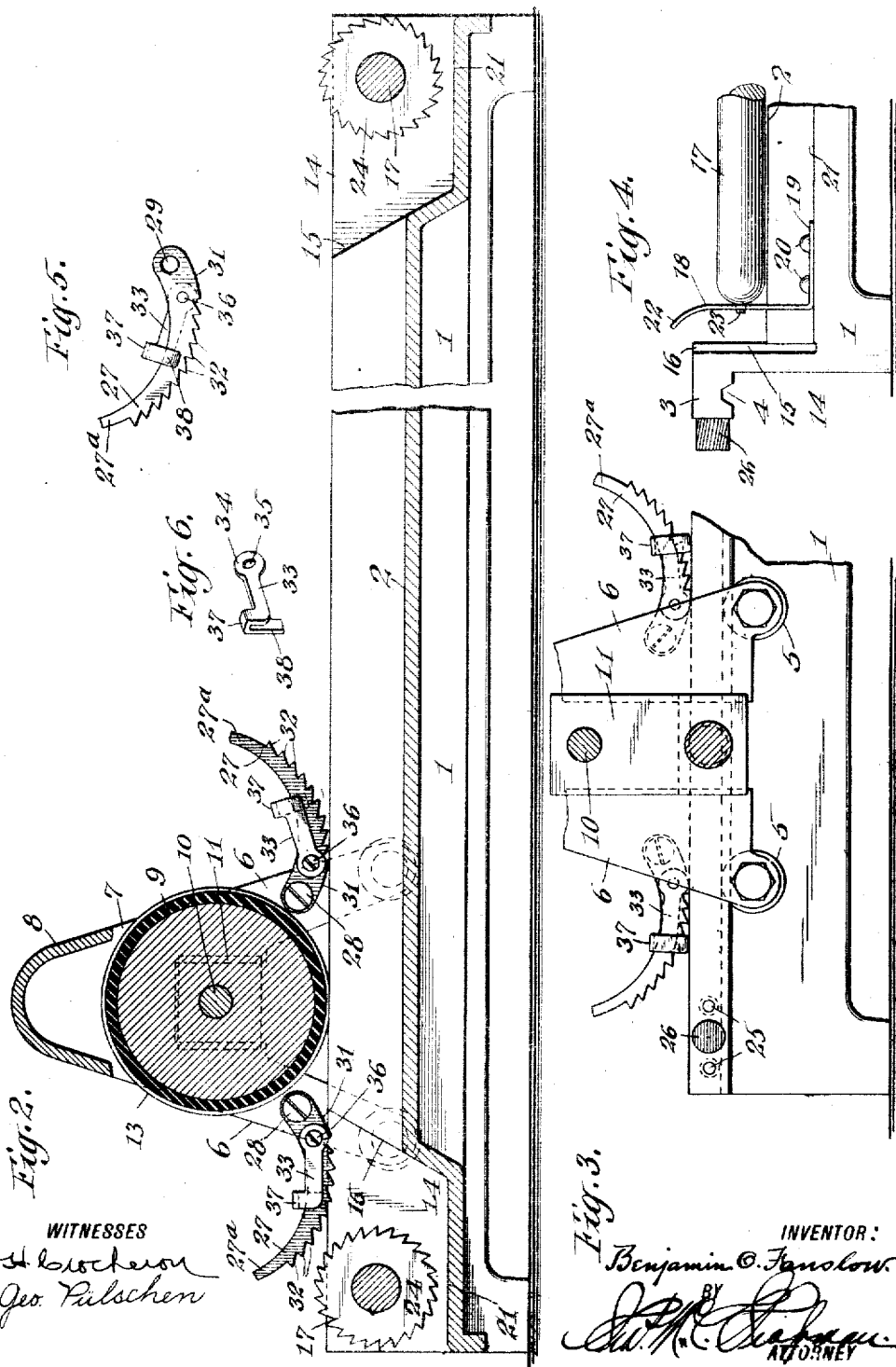
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WITNESSES
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UNITED STATES PATENT OFFICE.

BENJAMIN O. FANSLOW, OF WILLIAMSPORT, PENNSYLVANIA, ASSIGNOR TO POLYGRAPH DUPLICATING TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

RIBBON-FEEDING MECHANISM FOR REPRODUCING-MACHINES.

1,017,658.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed May 11, 1909. Serial No. 495,302.

To all whom it may concern:

Be it known that I, BENJAMIN O. FANSLOW, a citizen of the United States, residing in Williamsport, county of Lycoming, and State of Pennsylvania, have invented a new and useful Improvement in Ribbon-Feeding Mechanism for Reproducing-Machines, of which the following is a description.

This invention relates to duplicating printing machines, which have come to be known by my designation "polygraph", and has particular reference to the ribbon-feeding means thereof.

Among the objects of my invention may be noted the following: to provide means whereby the ribbon may be fed or unwound from one roll onto another positively, and with the desired degree of speed, according to adjustment; to provide a simple, cheap, compact and effective feeding mechanism for the printing-ribbon on any machine where the same may be used; and to provide a simple, adjustable pawl and ratchet mechanism for feeding ribbons in either direction from one ribbon-reel to the other.

With the above objects in view, and others which will be detailed during the course of this description, my invention consists in the parts, features, elements and combinations of elements hereinafter described and claimed.

Referring to the drawings forming part of this description: Figure 1 is a top-plan view, and Fig. 2 is a longitudinal, central section of a polygraph showing my feeding mechanism in elevation; Fig. 3 is a side elevation of one end of the machine showing certain details of construction; Fig. 4 is an end elevation of a portion of the machine showing certain details of construction; Fig. 5 is an elevation of the feeding-pawl; and Fig. 6 is a perspective view of the adjusting-device carried by the feeding-pawl.

Referring to the drawings, the numeral 1 indicates the frame of the machine, 2 the bed thereof upon which is placed the type-chase, type-holding frame, die-block, or other medium from which the impression or printing is obtained. The rails or overhanging flanges of the machine are indicated by 3, these rails extending longitudinally of the frame and on opposite sides thereof, as is well known, and the top surfaces of these

rails being smooth and the under surfaces 55 being grooved, as at 4, for the reception of anti-friction rolls 5, journaled at the bottom of the opposite pairs of legs 6 of the carriage generally indicated by 7, said carriage being provided, at its top, with an arched bridge 8, 60 which may be grasped, if desired, for the purpose of driving the carriage longitudinally of the frame 1. The carriage 7 carries the impression-roller 9, which is journaled, by its shaft 10, in journal-blocks 11, disposed 65 at opposite ends of the carriage in the crotch of the latter between the pairs of legs 6. Ordinarily, this carriage is driven by means of a segmental lever 12 journaled at 12^a upon the block 11, elongated for the 70 purpose, which lever carries a segmental rack coöperating with a pinion mounted upon the journal 10 of the impression-roller 9. This driving mechanism has not been illustrated herein in detail, since it forms no 75 part of my present invention, but may be, in essential particulars, substantially the same as that disclosed in my application executed of even date herewith, Serial No. 495,303. The impression-roller is provided at its op- 80 posite ends with elastic tires, rims or peripheries 13, which are in traction with the smooth surfaces of the rails 3, as clearly shown in Fig. 1. Hence, when the carriage is moved along the frame, the elastic rims, 85 in frictional traction with the rails 3, will cause the rotation of the impression-roller over the surface of the type, or other printing medium. The frame of the machine, at opposite ends and on both sides, is cut away 90 as at 14, so as to provide the oppositely-inclined shoulders 15, see Fig. 1, extending to the surface of the rails 3, see Fig. 2, so as to provide the broadened surface or extension 16 of the latter. In the cut-out portions 14 95 of the frame, one end of the ribbon-spools or spindles 17 is journaled, each being, at its opposite end, journaled in a resilient support 18, see Fig. 4, secured by the angular foot-piece 19 and screws 20 to the base-portion 21 of the frame, the upper end 22 of the 100 resilient support being bent outwardly so as to permit the journal of the spindle 17 to be slid vertically along the same until its journal 23 snaps into the aperture affording 105 the bearing therefor, as will be clearly understood upon reference to said Fig. 4. This structure enables the ribbon-spindle 17 to be

readily removed and placed in the frame. At the end of the spindle 17, which is journaled in the side of the frame at the cut-out portion 14, a ratchet-wheel 24 is applied, in any suitable manner, so as to rotate with said spindle, the two spindles located at the opposite ends of the frame thus supporting the printing-ribbon, which will extend between the two and over the face of the type, and under the impression-roller, as will be readily understood.

At opposite ends of the frame, on one or both sides thereof, the rails 3 are provided with a series of screw-threaded apertures 25, spaced a little apart and adapted for the reception of a stop-plug or pin 26, which may be shifted from one to the other, as may be required, and which projects laterally from the said rail 3, as shown in Figs. 1 and 3. This stop-plug engages, according to the direction of movement of the carriage 7, with one or the other of said legs 6 of said carriage and, consequently, limits its movement, thus also limiting and regulating the action of the ribbon-spindle actuating pawl 27, one of which is journaled to each of the legs 6, at one side of the carriage as shown in Fig. 2, by means of the screw-pin 28 passing through the aperture 29 at the inner end of said pawl, which screw-pin is tapped into a lug or journal-bearing 30, which projects from the inner side of the legs 6 of the carriage and which is sufficiently long to locate the segmental pawl in position such that its smooth shoulder 31 will bear upon the extension 16 at the inner side of the rail 3 so as to hold the pawl in substantially the position shown on the right of Fig. 2, and with the ratchet-teeth 32 on the convex periphery of said pawl from engaging said extension 16, or the top surface of the rail 3 at any time; and it is to be noted that the smooth shoulder 31 of said pawl travels in engagement with the surface of the extension 16 of the rail 3 and that, when the carriage reaches the point of travel shown in Fig. 1, said pawl will drop from the surface of the extension 16 into the cut-away portion 14 at the end of the frame, so that the segmentally arranged teeth 32 will be in position to engage the ratchet-wheels 24, according to the adjustment of said pawl produced by the adjusting-device shown in Fig. 6. This adjusting-device consists of the elongated body-portion 33 provided at its inner end with an enlarged portion 34, provided with an aperture 35 through which extends the screw 36, which secures said adjusting-device to the inside of the pawl 27 near its journaled or inner end. The screw 36 binds the adjusting-device against the side of the pawl with sufficient friction to retain the same in any position to which it may be moved on its axis relatively to said pawl. The ad-

justing-device is provided at its outer end with the vertically-extending looped portion 37, which straddles the concaved edge of the pawl 27, as shown in Figs. 1 and 5, and is also provided with the downwardly-extending leg 38, which is sufficiently long to extend a distance below the apices of the teeth of the pawl and raise the same more or less, according to adjustment, relatively to the ratchet-wheel with which it coöperates. The end of the leg 38 is extended at an angle to the length of the pawl and on the outside of the latter, as shown in Fig. 1, and travels at all times upon the top smooth surface of rail 3, and holds the pawl up after the smooth shoulder 31 of said pawl has passed from the surface of the extension 16. That is to say, during the travel of the carriage longitudinally of the frame, the oppositely-disposed pawls 27, which swing loosely upon their journal-supports at 28, will ride with their shoulders 31 and possibly one or two of their ratchet-teeth 32 on the smooth surface of the extension 16 of the rail 3 until—the carriage moving toward the left in Fig. 2,—the inclined shoulder 15 is reached, whereupon the pawl, at that side of the carriage, will drop from the surface of the extension 16 into the cut-out space 14 of the frame, thus bringing the end of the leg 38 of the adjusting-device into contact with the top surface of the rail 3 when the relative adjustment of the parts is such as shown in said Fig. 2. When this occurs, the teeth 32 of the pawl will extend below the top surface of the rail 3 and directly in line, and for engagement, with the teeth of the ratchet-wheel 24. The time of the engagement of the pawl with the ratchet-wheel will be regulated according to the adjustment of the device 33 and, consequently, the number of teeth of said pawl and ratchet which will have coöperative action will also be regulated. Hence also the amount of rotation imparted to the spindle 17 by the pawl and ratchet mechanism will be regulated and always under control of the operator. According to the height of the adjustment of the leg 38 of the adjusting-device, the number of teeth of the pawl and ratchet which will coöperate will also be regulated and, consequently, the feed of the ribbon from one spindle to another in both directions will be controlled and regulated. It will be understood that the length of the pawl 27 is such that the moment its smooth shoulder 31 leaves the extension 16 of the rail 3, at the inclined end 15, and if the position of the adjusting-device 33 permits, said pawl may drop into engagement with the ratchet-wheel 24 for driving action, and the extended end 27^a of the pawl prevents it from dropping down in front of the ratchet-wheel without engaging the latter, thus always keeping the pawl in an

operative position. By this means it will be understood that all the teeth of the pawl can be arranged to engage and drive the ratchet-wheel and that, for example, if the spacing of the teeth of the pawl is one-eighth of an inch, and there be ten teeth 32, the ratchet-wheel can be driven in an angular direction approximately one inch and a quarter if desired, unless the arrangement of the stop-plug 26 is such as to modify the extent of movement of the pawl and ratchet-wheel. That is to say, the stop-plug 26 can be set so as to limit the movement of the carriage on the frame and, consequently, limit the feed of the ribbon in one direction or another irrespective of adjustments of the pawl, within certain limits, so that a fixed and predetermined limit of movement of the ribbon can be established by the stop-plug and within this predetermined limit the feed of the ribbon can be regulated by means of the adjustable pawl.

Having set forth the details of my invention, the following modes of operation will be readily understood and the functions to be attained appreciated: Irrespective of how the carriage may be driven, when it reaches, in either end of the frame, substantially the position shown in Fig. 2, the pawls, with the adjusting-devices set as shown, will assume the positions indicated in said figure; that is to say, the smooth shoulder 31 of the right-hand pawl will be riding on the surface of the extension 16, thus holding the pawl, with its adjusting-device, in the position shown, while the smooth shoulder 31 of the left-hand pawl will have passed from the surface of the extension 16, thus permitting the end of the leg 38 of the adjusting-device to drop into running engagement with the smooth top surface of the rail 3, which engagement permits, according to adjustment, certain of the teeth of the pawl to drop below the surface of the rail 3 and assume a position such that the desired number will, upon further movement of the carriage toward the left along the frame of the machine, go into coöperation with the teeth of the ratchet-wheel 24 and thus give to the latter a predetermined amount of movement for feeding the ribbon from the right-hand spindle to the left-hand spindle, this feed movement being modified according to the predetermined position of adjustment of the stop-plug 26, with which contacts the leg 6 of the carriage at that side. Reverse movement of the carriage, so as to drive it to the right along the frame, will, when the smooth shoulder 31 of the left-hand pawl engages the extension 16, cause said pawl to be lifted into a position corresponding substantially with that of the right-hand pawl in Fig. 2 and this condition of the pawls will continue until the right-hand end of the frame is reached, where-

upon the right-hand pawl will drop into the cut-out space 14 until the end of the leg 38 of its adjusting-device engages with the smooth surface of the rail 3, when further movement of the carriage will bring the teeth of the pawl into engagement with the teeth of the ratchet-wheel so as to feed the ribbon on the spindle 17 the predetermined distance modified only by the travel of the frame limited by the position of the plug 26.

It is desirable, in machines of this character, to always present to the type or composition a new or fresh surface of ribbon and it is also desirable to regulate the feed of said ribbon, so that, according to the character of the composition, the size of the type, etc., a fresh surface of the ribbon will, for each impression, be presented to the type. According to my invention, the results are secured by the two sets of adjusting means, viz., the stop-plug 26 and the pawl and ratchet mechanisms, and by feeding the ribbon in opposite directions alternately to a greater or less degree, according to the spindle upon which the reel is to be ultimately wound. That is to say, if the ribbon is to be wound from the right-hand to the left-hand spindle, the left-hand pawl will be adjusted so as to feed three teeth, for example, or three-eighths of an inch, while the right-hand pawl will be adjusted so as to feed in the opposite direction two-eighths of an inch, or bring two of the teeth into coöperation with its ratchet-wheel. If this is a minimum adjustment, the stop-plugs will be set so as to have no modifying effect upon the feeding action of the pawls and they will act simply as a limiting-device for the carriage, according to the length of the composition. If the length of the composition be short, the stop-plug can be set up to the right-hand aperture in the side of the rail 3, which will determine the extent of travel of the carriage, and, in accordance with this, the pawl will be adjusted so as to obtain the requisite feed prior to the carriage reaching its limit of movement, this regulation of the pawls being made for opposite ends of the frame, as previously stated.

From the foregoing it will be seen that, by the combination of the adjustable stop-plugs and adjustable feed-pawls, the ribbon can be fed more or less in both directions, as desired, and the carriage can be moved more or less in both directions, and then the predetermined limits of movement of the carriage to feed the pawl can be regulated to obtain the desired feed of the ribbon.

While I have shown, and prefer, a double pawl feeding mechanism so as to feed the ribbon alternately a predetermined degree in opposite directions, I desire it understood that I may use only one feeding-device at

a time and wind the ribbon from one reel or spindle to another continuously, and then shaft the adjusting-devices of the pawls so as to feed the ribbon entirely in the opposite direction. I also desire it understood that instead of the carriage traveling on the frame the latter may be caused to travel relatively to the carriage, my invention, therefore, in a broad aspect, comprehending the idea of means of having the frame and carriage travel relatively.

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

1. In combination with a stationary type-bed, a ribbon-reel journaled thereon provided with a ratchet-wheel, means for rotating said reel to feed the ribbon comprising a support, a feed-pawl pivoted to said support in position to engage the ratchet-wheel, means for causing the support to travel from end to end of the type-bed so as to bring the pawl and ratchet into operative engagement to rotate the latter, and means for adjusting the position of the pawl relatively to the ratchet to vary the feed of the wheel.

2. In combination, a stationary type-bed, a ribbon-reel journaled thereon, a support, and means whereby the support may be caused to travel from end to end of the type-bed, devices carried by said support and reel for coöperative action to rotate the reel, and means for varying the position of one of said devices for controlling the amount of movement imparted to said reel.

3. In combination, a frame having a ribbon-reel journaled thereon, a support, and means whereby the frame and support may be caused to travel relatively, means carried by said support and reel for coöperative action to rotate the reel, means for varying the extent of relative travel of the frame and support, and means for varying the feed-movement of said ribbon-reel.

4. In combination, a frame for supporting the composition, a carriage for supporting an impression-roller, ribbon-supporting means for holding the ribbon over the composition, means for feeding the ribbon a predetermined extent in one direction, means for feeding the ribbon a predetermined extent in the opposite direction, and means carried by the ribbon-feeding means for altering at will the extent of ribbon-feeding movement.

5. In combination, a supporting-frame, ribbon-reels supported at opposite ends thereof, feeding means for the ribbon-reels

mounted to travel on said frame, and devices carried by said feeding means for regulating the feed-movement of the latter.

6. In combination, a supporting-frame, ribbon-reels supported at opposite ends thereof, feeding means for the ribbon-reels mounted to travel on the frame, and devices pivoted on said feeding means for regulating the feed movement of the latter.

7. In combination, a frame having side-rails, a carriage mounted on said side-rails, means by which said carriage may be caused to travel on said rails, a ribbon-reel mounted at each end of said frame and each carrying a ratchet-wheel, pawls pivotally mounted on said carriage and normally in running contact with one of said rails, means whereby, during the travel of said carriage, one or the other of the pawls may be caused to engage with a ratchet-wheel, and a device carried by each of said pawls for regulating the amount of movement it will impart to its ratchet-wheel.

8. In combination, a supporting-frame, a ribbon-reel supported at one end thereof, a carriage mounted to travel relatively to the frame and feeding means carried by said carriage comprising a toothed pawl movable relatively to said carriage, said pawl carrying means by which it may be adjusted relatively to the frame to vary its coöperative relation with the reel.

9. In combination, a supporting-frame, a ribbon-reel supported at one end thereof, a carriage movable relatively to the reel and feeding means pivotally supported by said carriage comprising a pawl having a plurality of teeth and an adjusting device carried by said pawl and frictionally engaged therewith whereby the position of the same may be varied relatively to the pawl so as to regulate the feeding action of the latter.

10. In combination, a supporting-frame, a ribbon-reel operating at one end thereof, a carriage mounted to travel relatively to said frame, means for actuating said reel including a pawl movably supported on said carriage and normally hanging within said frame, and means carried by the pawl for engagement with the frame whereby to hold the pawl in predetermined position for the purpose of actuating the reel.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

BENJAMIN O. FANSLOW.

Witnesses:

CHAS. MCC. CHAPMAN,
FLORENCE ATEN IVES.