

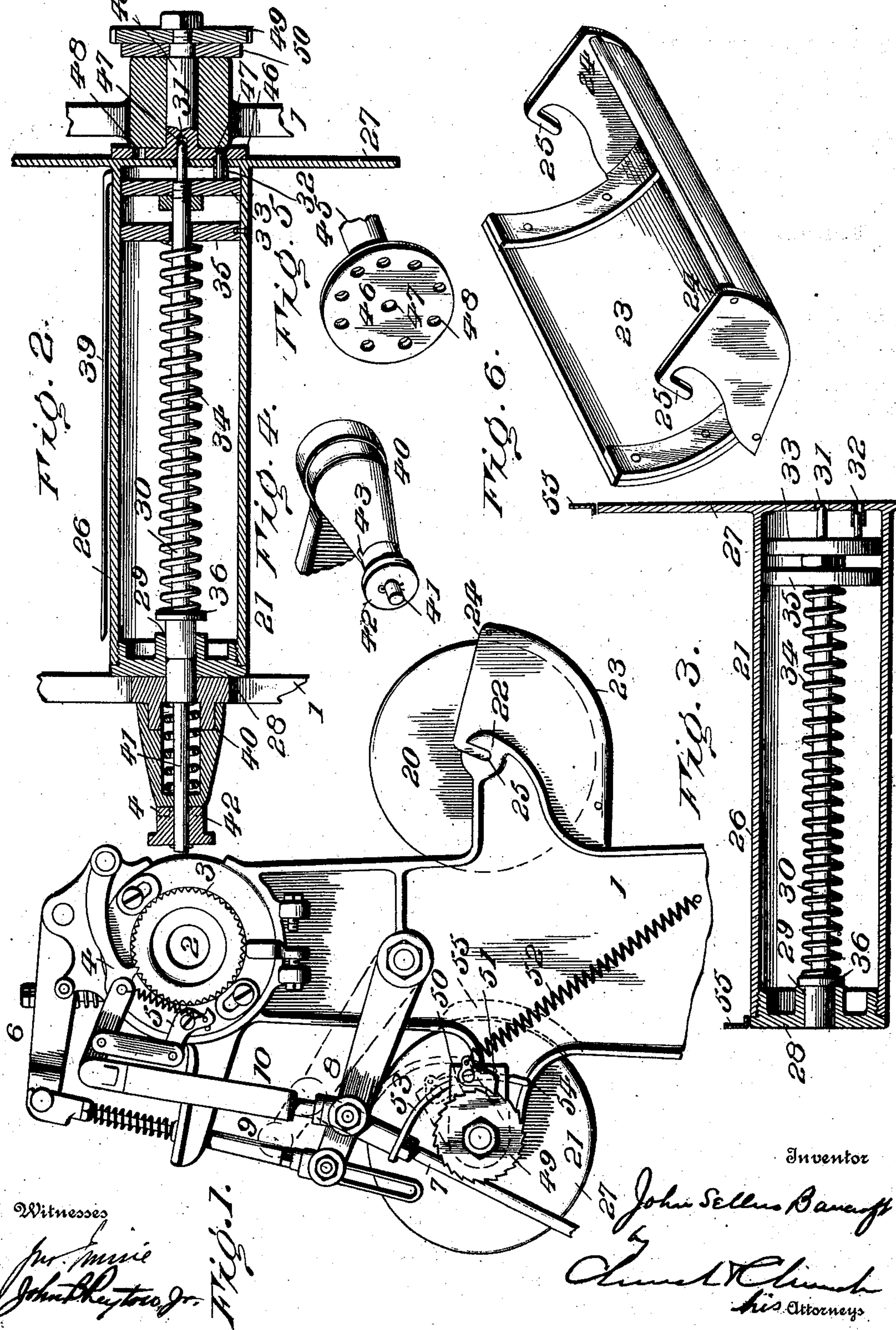
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Patented May 20, 1902.

J. S. BANCROFT.  
RECORD STRIP FEEDING MECHANISM.

(Application filed Nov. 9, 1901.)

(No Model.)





# UNITED STATES PATENT OFFICE.

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## RECORD-STRIP-FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 700,289, dated May 20, 1902.

Application filed November 9, 1901. Serial No. 81,717. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN SELLERS BANCROFT, of Philadelphia, in the county of Philadelphia, State of Pennsylvania, have invented  
5 certain new and useful Improvements in Record-Strip-Feeding Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming  
10 a part of this specification, and to the figures of reference marked thereon.

This invention relates to the controller or record-strip-feeding mechanism of type-casting and composing machines—such, for ex-  
15 ample, as described in Patent No. 625,998—although applicable to analogous uses; and it consists in the novel construction and arrangement of the spooling devices, having for its object to facilitate the application and re-  
20 moval of the supply and winding spools and the actuating of the latter to take up slack and preserve the proper tension on the paper.

In the accompanying drawings, illustrating a preferred form of embodiment, Figure 1 is  
25 an end elevation of a feeding mechanism with the improvements applied thereto. Fig. 2 is a longitudinal section through the receiving or winding spool and its centering and driving devices. Fig. 3 is a similar view of the  
30 spool detached. Fig. 4 is a detail showing in perspective the support for one end of the spool. Fig. 5 is a similar view showing the support for the opposite end of the spool. Fig. 6 is a detached view in perspective of the  
35 trough.

Similar numbers of reference in the several figures indicate the same parts.

The feed mechanism shown by way of illustration is that of Patent No. 674,362. It will  
40 be sufficient for present purposes to designate the principal elements as follows: 1, the frame; 2, the shaft carrying the feeding devices; 3, the ratchet-wheel on said shaft; 4, the holding-pawl; 5, the feeding-pawl; 6, one  
45 of the actuating-arms of the air-bar; 7, the connecting-rod; 8, the pivoted arm through which motion is transmitted from the connecting-rod to the feeding devices and air-bar, and 9 and 10 transmitting devices inter-

mediate said feeding devices and air-bar and 50 the said arm 8.

As this invention has to do with the supply and take-up devices alone, it is only necessary to remark that a feeding motion is induced during each reciprocation of connecting-rod 55 7. The record-strip contained upon a supply-spool 20 passes to the feeding devices and thence to the winding-spool 21. It is very desirable that the strip should be maintained under a moderate degree of tension suffi- 60 cient to properly control its presentation to the feeding devices, that the winding-spool should possess the capacity of a take-up in addition to its normal office of receiving the strip in order to accommodate differences in 65 diameter and to take up slack, and that the spools should be readily and quickly inserted and removed. With these ends in view the supply-spool 20 instead of being mounted upon a removable pin and supported in bear- 70 ing 22 on the frame is inserted loosely in a concave receptacle or trough 23, whose curvature approximates that of the periphery of the spool-heads and is provided with shoulders 24, between which the heads of the 75 spool are received. The spool, with its supply of record, is thus supported and guided by its heads, which latter by their contact with the inner surface of the trough offer frictional resistance to motion proportional 80 to the weight of the spool plus the strip remaining on the spool. To adapt this holder to existing machines, its ends are cut away to conform to the outline of the frame and formed or provided with hooks 25 for engag- 85 ing the open bearings on the frame, so that when in place the sides of the frame act as continuations of the end pieces as well as stops for positioning the holder.

The winding-spool is composed of a cylin- 90 drical body portion 26, Figs. 2 and 3, with a flange or head 27 applied to one end thereof. The body and head are preferably of metal, the former being hollow and having its end closed by a plug 28, detachably secured there- 95 to. This plug 28 is formed with a bearing 29, in which is received one end of a rod 30, whose opposite end is furnished with a center-



pin 31 and a locking-pin 32, each working in an aperture formed in head 27. Pin 32 is preferably mounted upon a disk 33, which is threaded upon rod 30, as shown in Figs. 2 and 3.

Within the body 26 is arranged a spring 34, interposed between a bearing 35 and a shoulder 36 on rod 30. This spring operates in a direction to hold shoulder 36 normally in contact with the inner surface of plug 28, in which position rod 30 occupies bearing 29 and is flush, or nearly so, with the outer face of plug 28, while center-pin 31 and locking-pin 32 are retracted within the spool. Thus both ends of the spool are free of projections and present parallel surfaces.

To facilitate the attachment of the end of record-strip, the winding-spool is furnished with a flexible tongue 39, attached at one end to the body portion near head 27 and extending longitudinally thereof.

Upon one of the side pieces of the frame 1 is attached a thimble 40, through which and the side piece extends the centering pin or journal 41. The outer end of this pin 41 is provided with a head 42, furnished with a projection 43, resting normally in a depression in thimble 40, and within the latter is contained a spring 44, operating upon pin 41 to project it through the frame.

When pin 41 is withdrawn against the pressure of its spring and is turned to move projection 43 from the recess, the end of pin stands flush with or within the face of the frame and offers no obstruction to the insertion of the spool.

In the opposite side piece and in alinement with pin 41 is a shaft 45, provided with a head or face plate 46, containing a center bearing 47 to receive centering-pin 31 and a series of locking-holes 48, arranged in a circle concentric with bearing 47 and adapted to receive locking-pin 32.

To the outer end of shaft 45 is secured a ratchet-wheel 49, and on said shaft is pivoted an arm 50, carrying a pawl 51, held in engagement with said wheel by a spring 52, the latter also operating to advance arm 50. Connected to rod 7 is a tension-restorer on arm 53, provided with a projection or shoulder 54, against which arm 50 bears.

Upon the side pieces of the frame 1 are secured concave flanges 55, Figs. 1 and 3, which cooperate with the body and head of the winding-spool in properly locating the latter when first inserted.

It will be observed that when the winding-spool is detached there are no projections on its ends to be battered or caught and that the opposite faces of the support between which the spool is to be inserted and held are likewise devoid of projecting pivots. All that is required is to place the spool in position against concaves 55, turn the centering-pin 41 until its projection is opposite the recess, and release it. This brings pin 41 in line with rod 30. The power of spring 44 exceeds that

of spring 34. Hence the former dominating it forces rod 30 longitudinally, thereby protruding its centering-pin 31 into center hole 47 of head 46, while locking-pin 32 enters one of the holes 48, thus completing the attachment. As the beveled ends of pins 41 and 31 engage their bearings the spool is lifted clear of the concave guides 55. Centering-pin 31 extends slightly beyond locking-pin 32, so that if the latter should not exactly register with one of the holes 48 the spool would be centered and held until by a slight movement of either the spool or the head 46 such registry was effected.

The winding motion of the spool is derived from spring 52 and accompanies the delivery of the strip by the feeding devices, while the action of arm 53 in retracting pawl 51 and restoring the tension of the spring precedes such feeding action. The excursions of arm 53 are uniform in extent and more than sufficient in degree to take up the amount of strip delivered during the single feeding. Consequently, excepting at the start or when slack is formed between the feeding devices and winding-spool, pawl 51 is arrested during its forward or winding stroke and before arm 53 reaches the limit of its back or down stroke by the record-strip, the latter being drawn taut and so held by the tension exerted by the winding-spring 52. The strip is thus maintained at all times under tension of the winding-spring, the latter being restored to the maximum degree of tension during each stroke of connecting-rod 7.

In the event slack is formed between the feeding devices and the winding-spool, as when the strip is taken up for inspection or readjustment, a few strokes of the connecting-rod 7 will suffice to take up the surplus and restore the tension, owing to the fact that at each stroke more of the strip will be wound on the spool than is delivered by the feeding devices. Moreover, should the feed of the strip be interrupted, as sometimes happens through accident or design, tearing of the record-strip is prevented, as the maximum tension to which the strip is at any time subjected is that produced by the winding-spring when arm 53 is at one extreme of its motion.

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

1. In a record-strip-feeding mechanism the combination with the feeding devices engaging the strip to advance the latter, of a supply-spool provided with heads and a concave holder provided with shoulders for positioning the spool, the peripheries of the heads of said spool being maintained by gravity in frictional contact with said holder; substantially as described.

2. In a record-strip-feeding mechanism the combination with the strip-feeding devices, of a concave trough or receptacle whose end pieces are cut away to fit the side pieces of



the frame and provided with hooks engaging bearings in the frame, substantially as described.

3. In a record-strip-feeding mechanism, the combination with the strip-feeding devices, of a winding-spool and actuating devices therefor including a motor-spring and a tension-restorer, the latter reciprocating in unison with the feeding devices, to restore the initial tension of the spring for each feed movement, substantially as described.

4. In a record-strip-feeding mechanism the combination with strip-feeding devices, and a winding-spool, of actuating mechanism for said spool, the same including a ratchet, a motor-spring for advancing the spool, and a retracting device actuated by the feeding devices, to restore the initial tension of the motor-spring after each advance of the feeding devices; substantially as described.

5. In a record-strip-feeding mechanism the combination with record-strip-feeding devices and a winding-spool of actuating devices for said spool, the same comprising a ratchet-wheel, a pawl, a motor-spring for advancing said pawl, an arm connected to the feeding devices and reciprocating in the path of the pawl-carrier, said arm being located in advance of the pawl-carrier and engaging the latter to move it in opposition to the motor-spring; substantially as described.

6. In a record-strip-feeding mechanism the combination of the following elements, to wit: a spring-actuated center-pin; a revolu-

35 ble head having a center bearing in alignment with said pin and one or more locking-perforations to one side of said center bearing; a spool provided with a journal-bearing to receive said center-pin and a spring-retracted rod mounted within the spool and provided with a center-pin and a locking-pin; 40 substantially as described.

7. In a record-strip-feeding mechanism the combination with the frame, the spring-actuated center-pin, the rotary head, and the 45 spool provided with a bearing in one end and a rod provided with a center-pin and locking-pin movable through the opposite end of the spool, of the guides fixed to the frame and serving to position the spool preliminary to 50 the entrance of the center-pin and movement of the rod into engagement with the rotatory head; substantially as described.

8. As a new article of manufacture a winding-spool for record-strip-feeding mechanisms, the same comprising a tubular body 55 provided at one end with a center bearing, a rod provided at one end with a center-pin and a locking-pin resting in apertures in one head of the body, while the opposite end of the 60 rod occupies the center bearing in the other end of the body, and a spring engaging said rod to hold it retracted within the body; substantially as described.

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