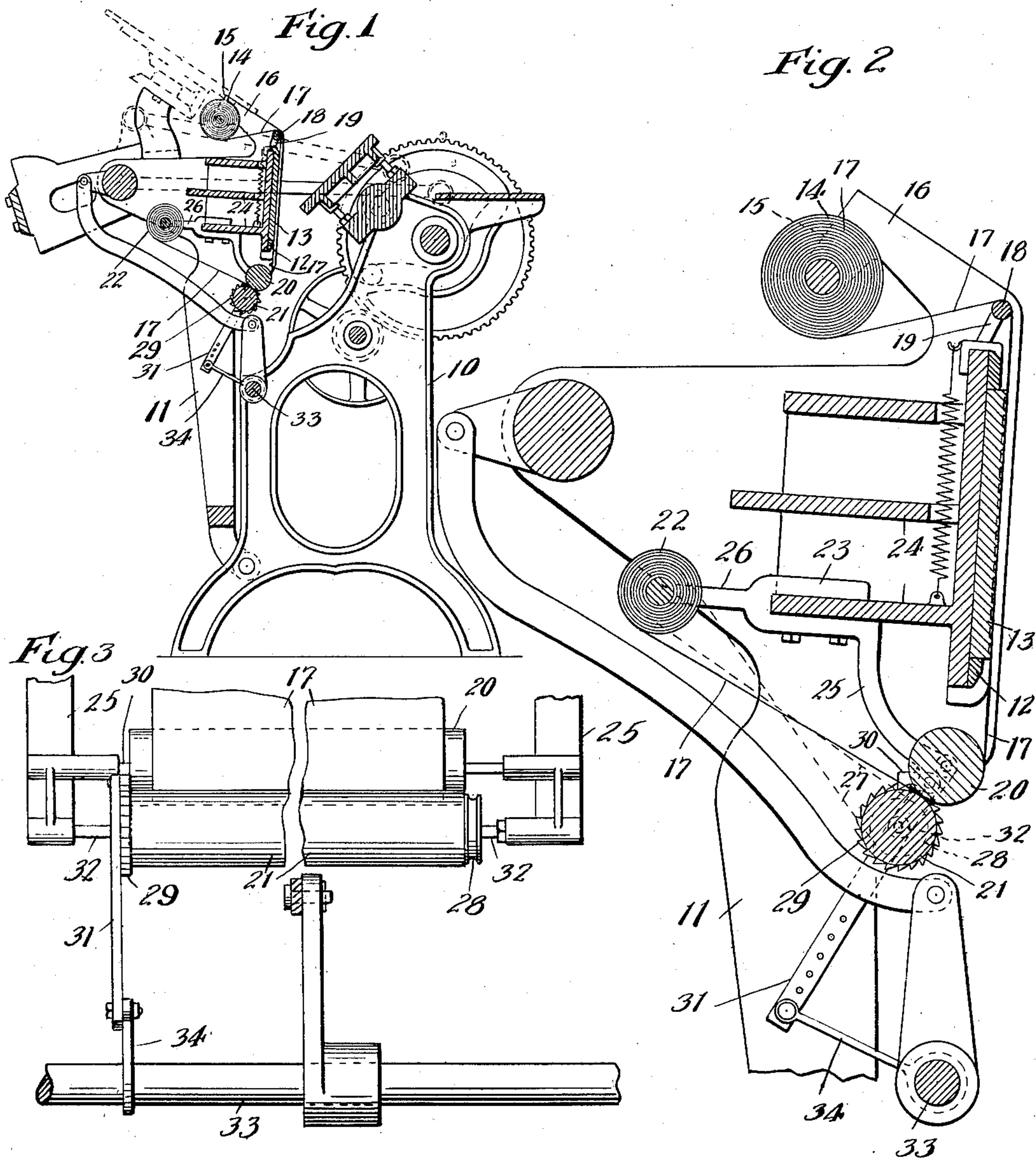


W. E. KIER.  
 PRINTING PRESS INK RIBBON MECHANISM.  
 APPLICATION FILED AUG. 18, 1909.

983,556.

Patented Feb. 7, 1911.



Witnesses:

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# UNITED STATES PATENT OFFICE.

WILLIAM E. KIER, OF CHICAGO, ILLINOIS.

PRINTING-PRESS INK-RIBBON MECHANISM.

983,556.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed August 18, 1909. Serial No. 513,442.

*To all whom it may concern:*

Be it known that I, WILLIAM E. KIER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Printing-Press Ink-Ribbon Mechanism, of which the following is a specification.

My invention has for an object the providing of a practical and efficient mechanism for supporting and automatically feeding an ink ribbon on a printing press such, for instance, as an ordinary Gordon press; and the invention has for further objects such other improvements in structure or function as may be found to obtain in the device as hereinafter described or claimed.

In the accompanying drawing, forming a part of this specification, and in which like reference numerals indicate like parts in all of the figures, Figure 1 is a vertical sectional view of an ordinary Gordon press equipped with the inking ribbon mechanism; Fig. 2 is an enlarged fragmentary view of the press illustrated in Fig. 1, to show in fuller detail the construction and application of the ink ribbon mechanism; and Fig. 3 is a fragmentary rear elevation, on the same scale as Fig. 2, to show the ink ribbon feeding rolls and their actuating device.

10 is the stationary frame and 11 the swinging press bed of the Gordon press, the latter bearing the chase 12 in which the type form 13 is locked. The ink ribbon spool 14 is pivotally supported on the downwardly extended arms 15 of the upward projections 16 of the swinging press bed, the pivotal bearings clutching the ends of the core of said spool with sufficient friction to so resist the unwinding as to hold the ink ribbon taut; and the said unwinding ink ribbon 17, of a width sufficient to cover the type form, is led forward over the pulley-roller 18, supported on the bracket arms 19, and downward over and in contact with the type form and thence to and partly around the upper feed roller 20 and rearward and upward, between said upper feed roller and the lower feed roller 21, to the winding roll 22. The two feed rollers 20 and 21 and the winding roller 22 are pivotally mounted on the brackets 23 that are bolted to the frame 24 that supports the chase on the swinging press bed, the feed rollers being supported on the downwardly projecting arms 25 and

the winding roll on the rearwardly projecting arms 26 of said brackets. A twisted belt 27 connects a pulley on one end of the winding roller with a pulley 28 secured on the corresponding end of the lower feed roller 21, so that rotation, in a reverse direction, is transmitted from said feed roller 21 to said winding roller 22, the belt sliding on the pulleys when the roll of ribbon on the winding roller 22 has become so large that the ribbon would be wound on said winding roller more rapidly than it is advanced by the feed rollers if such sliding of the belt did not occur. The feed rollers 20 and 21 bite the ribbon firmly between them and restrict its step by step advance to an amount exactly proportional to the step by step angular movement of said rolls. The upper feed roller 20 is rotated by the mere pressure contact of its periphery, through the interposed ribbon, upon the periphery of the lower feed roll 21, and the lower feed roll is rotated step by step by means of the ratchet 29 secured upon the left hand end of said feed roller 21 and engaged by the pawl 30 pivotally borne on the upper or short arm of the pawl-lever 31 that is pivotally mounted on the shaft 32 of the lower feed roller, the lower end of said pawl-lever 31 being linked to the shaft 33, on the stationary frame of the press, by the swinging link 34 whose lower end is freely mounted on the said shaft 33 and whose upper end is pivotally attached to said lower end of the pawl-lever 31. As the press bed 11 swings back and forth, moving the pivot of the pawl-lever toward and away from the stationary frame of the press, a back and forth swinging movement is imparted to said pawl-lever, the pawl being drawn back over the teeth of the ratchet as the press bed swings forward and the lower end of the pawl-lever is pressed backward, and the pawl engaging the ratchet teeth and impelling such ratchet teeth rearward as the press bed swings backward and the lower end of the pawl-lever is drawn forward. This manner of feeding the ink ribbon, biting it between feed rollers that are located intermediate the ribbon spool and the winding roll and are impelled in exactly uniform step by step movements, makes possible an exactly uniform and constant step by step advance of the ribbon over the type form, so that after each printing impression exactly the same length of fresh ribbon is



drawn forward over the type form; and a constant tension of the ribbon is also preserved.

The older method of advancing the ribbon by using the winding roller for a feed was objectionable because the circumference of the roll on such roller progressively increased as more and more ribbon was rolled upon it, and so the ribbon, instead of being advanced at a uniform step by step rate would be wound faster and faster, bringing a greater and greater length of fresh ribbon over the type form, as successive printing impression movements imparted successive step by step movements to such winding roller; and this continued variation in the amount of fresh ribbon drawn forward over the type form would result in variation of the clearness and intensity of the impressions printed from the ribbon, destroying the essential uniformity of impression that must be obtained in press impressions from an ink ribbon. Such objectionable feature of the old manner of feeding the ribbon is entirely overcome in the present device.

The actuation of the feed rollers by a direct connection with the stationary frame of the press, instead of by connections leading to moving parts of the swinging bed of the press, also insures an entirely positive feeding action. The locating of the feed rollers below the frame of the chase causes the ribbon to be fed downward from the type form, so that the fresher ribbon will always be over the upper part of the type form, where the impression, in such a swinging bed press, always tends to be somewhat lighter, so that perfect uniformity between the upper and lower portions of each printed impression is insured.

My invention is hereinabove set forth as embodied in one particular form of construction, but I do not limit it thereto or to less than all the possible forms in which the invention as hereinafter claimed may be embodied and distinguished from prior devices for like purposes.

I claim:—

1. In a printing-press, in combination: a stationary press-frame and swinging press-bed; an ink-ribbon strip; a spool from which the ink-ribbon is unwound; a winding roll upon which the ink-ribbon is rewound; and a feeding mechanism intermediate said spool and said roll, automatically effecting a uniform step-by-step advance of the ink-ribbon, said mechanism being uniformly impelled by direct connections between the said press-frame and press-bed; substantially as specified.

2. In a printing-press, in combination: a stationary press-frame and swinging press-bed; an ink-ribbon strip; a spool from which the ink-ribbon is unwound; a winding roll upon which the ink-ribbon is re-

wound; and a feeding mechanism automatically effecting a uniform step-by-step advance of the ink-ribbon, said mechanism including a pair of feed-rollers that bite the ink-ribbon intermediate said spool and said roll and are uniformly impelled by direct connections between the said press-frame and press-bed; substantially as specified.

3. In a printing-press, in combination: a stationary press-frame and swinging press-bed; an ink-ribbon strip; a spool from which the ink-ribbon is unwound; a winding roll upon which the ink-ribbon is rewound; a drive device maintaining a winding tension upon said winding roll; and a feeding mechanism intermediate said spool and said roll, automatically effecting a uniform step-by-step advance of the ink-ribbon, said mechanism being uniformly impelled by direct connections between the said press-frame and press-bed; substantially as specified.

4. In a printing-press, in combination: a stationary press-frame and swinging press-bed; an ink-ribbon strip; a spool from which the ink-ribbon is unwound; a winding roll upon which the ink-ribbon is rewound; a slipping drive-belt maintaining a winding tension upon said winding roll; and a feeding mechanism intermediate said spool and said roll, automatically effecting a uniform step-by-step advance of the ink-ribbon, said mechanism being uniformly impelled by direct connections between the said press-frame and press-bed; substantially as specified.

5. In a printing-press, in combination: a stationary press-frame and swinging press-bed; an ink-ribbon strip; a spool from which the ink-ribbon is unwound; a winding roll upon which the ink-ribbon is rewound; and a feeding mechanism automatically effecting a uniform step-by-step advance of the ink-ribbon, said mechanism being uniformly impelled by direct connections between the said press-frame and press-bed; substantially as specified.

6. In a printing-press, in combination: a stationary press-frame and swinging press-bed; an ink-ribbon strip; a spool from which the ink-ribbon is unwound; a winding roll upon which the ink-ribbon is rewound; and a feeding mechanism automatically effecting a uniform step-by-step advance of the ink-ribbon, said mechanism being uniformly impelled by direct connections between the said press-frame and press-bed, the feeding-mechanism being mounted on said swinging press-bed; substantially as specified.

7. In a printing-press, in combination: a press-frame and press-bed, movable relative to each other for the making of printing impressions; an ink-ribbon strip; a spool from which the ink-ribbon is unwound; a winding roll upon which the ink-ribbon is rewound; and a feeding mechanism inter-



mediate said spool and said roll, automatically effecting a uniform step-by-step advance of the ink-ribbon, said mechanism being uniformly impelled by direct connections  
5 between the press-frame and press-bed; substantially as specified.

8. In a printing-press, in combination: a press-frame and press-bed, movable relative to each other for the making of printing  
10 impressions; an ink-ribbon strip; a spool from which the ink-ribbon is unwound; a winding roll upon which the ink-ribbon is rewound; and a feeding mechanism automatically effecting a uniform step-by-step

advance of the ink-ribbon, said mechanism 15 including a pair of feed rolls that bite the ink-ribbon intermediate said spool and said roll and are uniformly impelled by direct connections between the said press-frame and press-bed; substantially as specified. 20

In testimony whereof, I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM E. KIER.

Witnesses:

HENRY LOVE CLARKE,  
H. M. MUNDAY.