April 6, 1954 J. T. DAVIDSON 2,674,185

PRINTING ROLL

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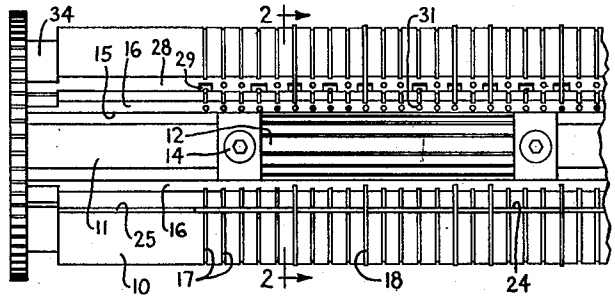


Fig. 1

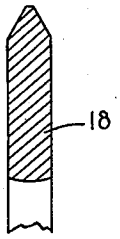
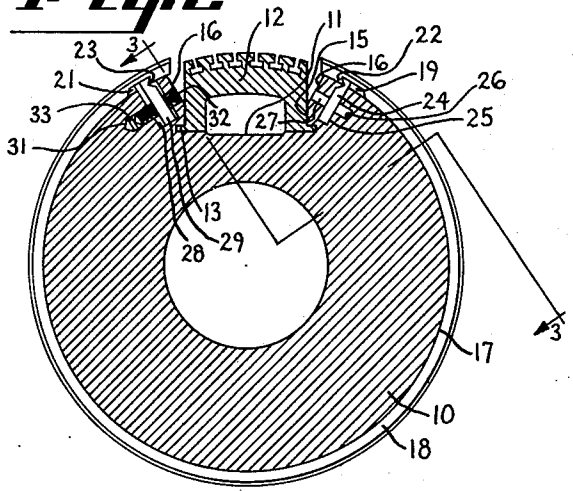


Fig. 5

Fig. 2



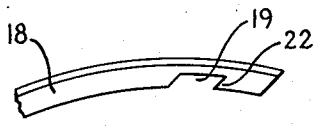


Fig. 6

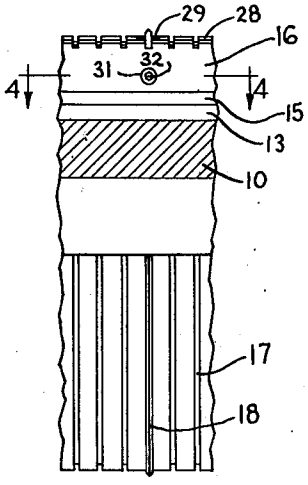


Fig. 3

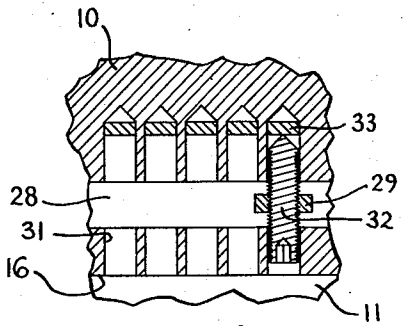


Fig. 4

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PRINTING ROLL

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14 Claims. (Cl. 101—373)

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This invention relates to printing rolls, and more particularly to those used to imprint headings and variably spaced down rules and margins on either partly preprinted or blank stationery.

Printing rolls of the class described have heretofore been known but in a fabricated, multipart form, relatively expensive to manufacture and requiring substantial disassembly of the parts for each change in make-up of the roll.

It is an object of this invention to provide for quick and substantially universal change in the make-up of a printing roll, utilizing a unitary cylinder as the printing roll.

Another object of the invention is to accomplish line imprinting from a printing roll through the use of printing rings which may be selectively installed along the length of the roll merely by being slipped over the periphery thereof.

A further object of the invention is to define in the periphery of a unitary printing roll a series of line imprinting stations in which line imprinting rings may selectively be installed.

Still another object of the invention is to provide for quick and easy adjustment of the line imprinting ring, in its selected position, so that it may readily be locked to and released from the cylinder.

A further object of the invention is to provide a printing roll having the advantageous structural features, the inherent meritorious characteristics and the mode of operation herein mentioned.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, as hereinafter described or illustrated in the accompanying drawings, or their equivalents.

Referring to the accompanying drawing, wherein is found the preferred but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a top plan view of a part of an assembled printing roll in accordance with the instant invention;

Fig. 2 is a view in cross section taken substantially along the line 2—2 of Fig. 1 and enlarged with respect to Fig. 1;

Fig. 3 is a fragmentary view in longitudinal section, taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a view taken substantially along the line 4—4 of Fig. 3;

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Fig. 5 is a fragmentary, enlarged view in cross section of a line imprinting ring; and

Fig. 6 is a fragmentary, enlarged view of an end of a line imprinting ring.

Like parts are indicated by similar characters of reference throughout the several views.

Referring to the drawings, a printing roll in accordance with the illustrative embodiment of the invention comprises a unitary one-piece roll or cylinder 10, centrally bored for mounting on a shaft, arbor or the like. In the periphery of the cylinder 10, and extending longitudinally from end to end thereof is a channel or recess 11 receiving interchangeable type carrying members 12. The bottom of the recess 11 is undercut at 13 to define a slideway for the members 12 so that these members may be selectively located along the length of the printing roll. When so located, the type carrying members may be locked against longitudinal movement relative to the roll 10 by turning screws 14 into pressural contact with the bottom of the recess 11. The side walls of the recess 11 are made up of parallel portions 15 receiving the type carrying members 12 with a sliding fit and preventing relative movement of the members circumferentially of the cylinder 10. Above the parallel portions 15, the side walls of recess 11 flare outwardly into divergently inclined portions 16, the upper side edges of the recess being accordingly separated from the type members by V-shaped spaces.

There is further formed in the periphery of the cylinder 10 a longitudinal series of regularly spaced grooves 17 extending circumferentially around the cylinder. The grooves 17 are constructed and arranged to receive down rule or line imprinting rings 18, the slots 17 being selected for installation of the rings 18 in accordance with the columnar arrangement it is desired to print. The rings 18 are relatively thin in cross section, having flattened sides and are split for radial expansion and contraction. In the under surface of each ring, adjacent to the free ends thereof, are respective recesses 19 and 21 undercut to define re-entrant locking teeth 22 and 23, respectively. The tooth 22 in recess 19 is arranged to cooperatively engage a similar tooth on a latch bar 24 mounted with a close fit in a longitudinal groove 25 in the cylinder 10, the groove 25 occupying a position on one side of the recess 11. Groove 25 is intersected, transversely, by bores 26 opening through the adjacent inclined wall portion 16 of recess 11. Dowel pins 27, inserted into the bores 26 through the

wall portion 16, pass through a corresponding bore in the latch bar, thereby holding the bar in fixed relation to the cylinder 10.

On the opposite side of the recess 11 is a longitudinal groove 28, in which is seated a longitudinal series of holding members 29 which are constructed as ordinary square shaped nuts except for a toothed formation along one edge for engagement with the tooth 23 in ring recess 21. The groove 28 is broader in a circumferential sense relative to the cylinder 10. The groove 28 is intersected by transverse bores 31 with which threaded openings in the members 29 are caused to register. Screws 32 are inserted into the bores 31 through the wall portion 16 and have threaded engagement with the members 29, the inner ends of the screws limiting against pressure discs 33 in the bottoms of the bores 31. The screws 32 are accessible through the recess 11 and it will be apparent that rotation of the screws in the presence of an axial thrust against the pressure discs 33 will shift the members 29 between the side walls of groove 28, the members 29 being held against rotation by their seat in the bottom of groove 28.

In assembling the printing roll for use, a rule ring 18 is expanded, then slipped transversely over the cylinder 10 and allowed to settle in a selected groove 17. One free end thereof is hooked onto the fixed latch bar 24. The other free end of the ring is thus brought substantially to the position shown in Fig. 2, with the tooth 23 thereof in cooperative relation with a nut member 29. The screw 32 associated with that member 29 is then turned in a clockwise direction (Fig. 4) while at the same time being pressed inwardly upon the pressure plate 33. In response thereto, the member 29 is drawn toward the right hand wall of groove 28 (as viewed in Fig. 2), interengaging the upper toothed portion thereof with the tooth 23 on ring 18. Continued rotation of the screw 32 will accordingly result in the ring 18 being contracted or drawn down onto a firm seat in the groove 17, since the opposite or other free end of the ring is anchored to the latch bar 24. Other line imprinting rings 18 are installed in similar manner wherever desired along the series of grooves 17, following which the type members 12 are slipped into the channel recess 11 and fastened in place in selected locations.

To change the make-up of the printing roll, the type members 12 are released and removed and the line imprinting rings 18 rearranged as desired. Release of the rings 18 from gripping engagement with the cylinder is, of course, accomplished by turning the screws 32 counterclockwise (Fig. 4) to relieve the tension on the rings and move the members 29 toward the left hand (Fig. 2) wall of the groove 28 whereupon the rings may be disengaged and shifted to a new position or removed from the cylinder entirely.

As shown in Fig. 5 the periphery of the rings 18 is tapered and may terminate in a fine or a blunt edge, the rings being selected for use in accordance with the width of line wanted.

Referring to Fig. 1, there may be formed at one end of the cylinder 10 a reduced diameter portion 34 constituting a storage place for rings 18. To take a ring from the storage portion 34, it is simply spread apart and slipped along the cylinder until a selected groove 17, representing the desired locating station for the ring, is reached.

As indicated in the drawings, nut members 29 and screws 32 are not associated with each groove 17. These elements may be readily repositioned as required and since it is unnecessary to provide a locking member for each groove 17 these members can be made rather large for strength and ease of handling without losing any of the advantages of the close spacing between groove 17.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise but one of several modes of putting the invention into effect.

Having thus described my invention, I claim:

1. A printing roll presenting a longitudinal series of grooves, the grooves of said series being spaced apart and each extending circumferentially around the cylinder in the periphery thereof, and resilient rule rings selectively and detachably mounted in said grooves under tension.

2. A printing roll including a cylinder, a series of regularly spaced grooves in said cylinder, said grooves extending circumferentially around the cylinder in the periphery thereof, and radially resilient rule rings selectively mounted in said grooves to define columnar spaces of predetermined arrangement.

3. A printing roll according to claim 2, characterized by a detachable mounting for said rings in said grooves whereby the defined columnar arrangement may be changed at will.

4. A printing roll, including a cylinder, a longitudnal series of peripheral grooves in said cylinder, a longitudinal recess in said cylinder, rule rings selectively mounted in said grooves to define columnar spaces of predetermined arrangement, and means accessible through said recess for detachably mounting said rings in said grooves.

5. A printing roll, including a cylinder, a series of grooves in said cylinder in longitudinally spaced relation to one another and extending circumferentially around the cylinder, said grooves constituting rule ring mounting stations on the periphery of said cylinder, rule rings for selective installation in said stations to define columnar spaces of predetermined arrangement, each of said rings being a radially resilient split member, and detachable connections between the ends of said rings and said cylinder in each said station.

6. A printing roll according to claim 5, characterized in that at least one of said connections is adjustable for individual tightening and loosening of the rings on the cylinder.

7. A printing roll including a cylinder presenting a peripheral recess extending longitudinally of the cylinder to receive type carrying members, a longitudinal series of circumferential grooves in the periphery of said cylinder, split rule rings received in said grooves, the ends of each said rings terminating adjacent respective side edges

of said recess, detachable connections between the ends of each said rings and the cylinder, at least one of said connections being adjustable to tighten and loosen the ring upon the cylinder, and adjustment means for said connection accessible through said recess.

8. A printing roll, including a cylinder, a longitudinal series of circumferential grooves in the periphery of said roll, split rule rings installed selectively in said grooves to define columnar spaces of predetermined arrangement, and cooperating portions on each end of said rings and on said cylinder for the detachable connection of said rings with said cylinder, at least one of said portions being adjustable for tightening and loosening the rings on the cylinder.

9. A printing roll, including a cylinder, a longitudinal series of rule ring stations on said cylinder, rule rings installed selectively in said stations to define columnar spaces of predetermined arrangement, said rings being split for contraction and expansion upon the cylinder, and adjustable means in each of said stations for tightening and loosening the rings on the cylinder.

10. A printing roll, including a cylinder, a longitudinally extending recess in the periphery of said cylinder for receiving type carrying members, a parallel slot along one side edge of said recess, latch means seated in said slot with freedom of movement in a circumferential direction relative to the cylinder, other latch means fixed in the periphery of the cylinder along the opposite side edge of said recess, split rule rings installed on said cylinder with the respective free ends overlying said latch means, cooperating portions on said rings engaged by said latch means, and adjustment means projecting through the wall of said recess and into cooperative relation with the first said latch means to tighten and loosen said rings upon the cylinder.

11. A printing roll for imprinting headings and down rules upon a record sheet, including a unitary cylinder, a continuous peripheral recess in said cylinder extending longitudinally thereof, type carrying members mounted in said recess for sliding movement into selected imprinting positions, and line imprinting rings of split radially resilient construction installed on said cylinder in selected longitudinal positions with the free ends of said rings terminating approximately at the side edges of said recess.

12. A printing roll according to claim 11, characterized in that the periphery of said cylinder is formed with a series of circumferential grooves constiuting stations for the installation of said rings, said grooves being selected for installation of said rings in accordance with the desired columnar arrangement.

13. A printing roll for imprinting headings and down rules upon a record sheet, including a unitary cylinder, a continuous peripheral recess in said cylinder extending longitudinally thereof, type carrying members mounted in said recess for sliding movement into selected imprinting position, a continuous series of stations formed in the periphery of said cylinder for the installation of line imprinting rings, and radially resilient line imprinting rings selectively installed in said stations in accordance with a desired columnar arrangement.

14. A printing roll for imprinting headings and down rules upon a record sheet, including a unitary cylinder, type carrying members installed in the periphery of said cylinder, line imprinting rings of split radially resilient construction in surrounding relation to said cylinder, the free ends of said rings embracing said members, and adjustable connections between said rings and said cylinder for tightening and loosening said rings upon the cylinder.

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