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2,058,232

ROTARY PRINTING MACHINE

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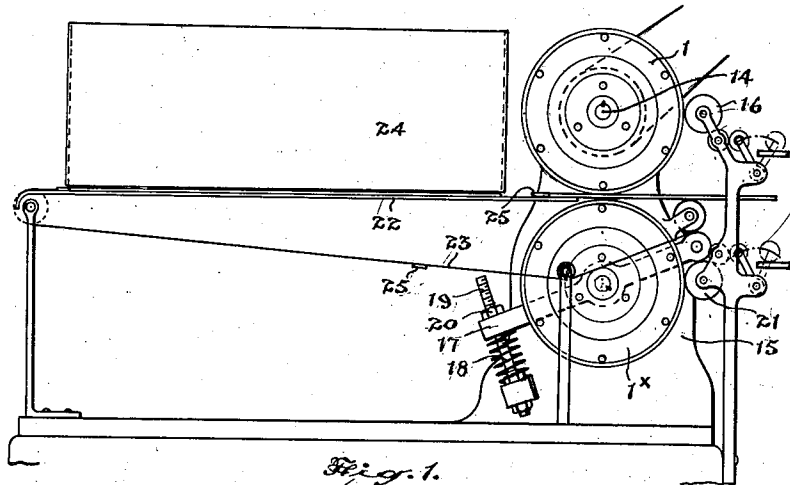


Fig. 1.

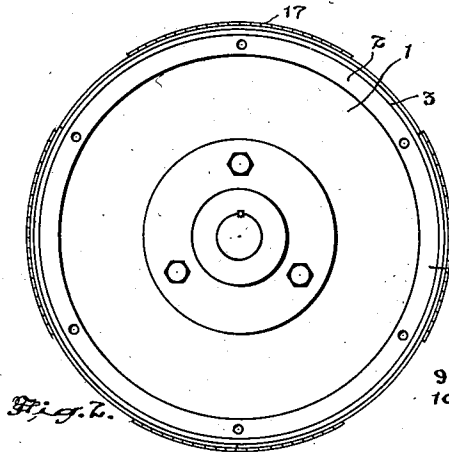


Fig. 2.

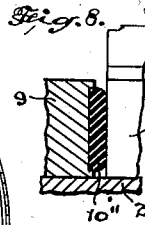


Fig. 8.

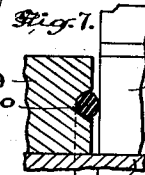


Fig. 7.

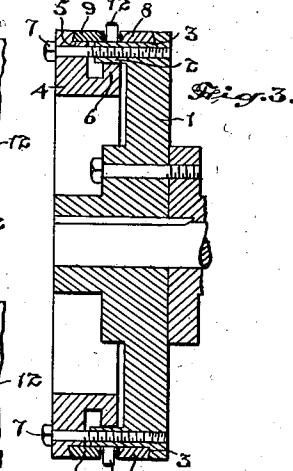


Fig. 3.

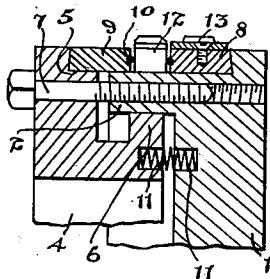


Fig. 4.

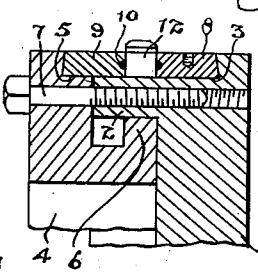


Fig. 5.

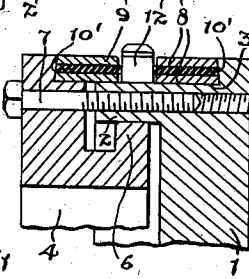


Fig. 6.

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UNITED STATES PATENT OFFICE

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ROTARY PRINTING MACHINE

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Application February 4, 1935, Serial No. 4,860

7 Claims. (Cl. 101—36)

The principal object of this invention is to facilitate the application of a printing surface to rotary printing rollers whereby a desirable printing set-up may be quickly produced in accordance with the requirements of any particular printing job, and to provide an improved construction of printing roller for this purpose.

A further object is to provide a machine, particularly applicable for the printing of measuring sticks, which will produce accurate and uniformly printed surfaces on one or both sides of the stick, and which will be extremely simple to operate and of inexpensive construction.

One of the principal features of the invention resides in the novel construction of the printing rollers whereby interchangeable type characters are assembled in frictional contact with a resilient holding medium between transversely-spaced clamping rim sections of the printing roller and are finally clamped securely in position for printing.

Further important features consist in the arrangement of a resiliently supported pressure roller adapted to hold the stick being printed in contact with the printing surfaces.

In the drawing Figure 1 is a side elevational view of a rotary rule-printing machine to which the present invention is particularly applicable.

Figure 2 is an enlarged side elevational view of one of the printing rollers.

Figure 3 is a vertical mid-sectional view through Figure 2 illustrating a preferred embodiment of my invention.

Figure 4 is an enlarged fragmentary sectional detail of the rim structure showing the clamping rim sections spaced for the reception and assembly of the type characters therebetween and the manner in which the type are temporarily frictionally held.

Figure 5 is a view similar to Figure 4, but showing the clamping rim sections drawn into clamping engagement with the type.

Figure 6 is a view similar to Figure 4 showing a slightly modified form of clamping structure.

Figure 7 is an enlarged fragmentary sectional view showing the frictional gripping element of one of the clamping rim elements and the manner in which it frictionally grips and holds the type characters.

Figure 8 is a view similar to Figure 7 showing a modified type of frictional gripping element.

It is customary in the printing of rulers to impress the surface of the wood with a printing surface in the form of an electrotpe in strip form which must be first produced at consider-

able expense to suit each particular printing job to be performed.

It is very desirable to provide some means whereby the typing surface can be quickly altered so that names or advertising matter of various kinds may be applied to the rulers concurrently with the printing of the graduation marks of the scale being applied.

The present invention proposes a rotary type of printing machine in which the ruler being printed is passed between a pair of pressure rollers, one or both of which carries a printing surface. In the form of printing roller herein shown, the roller 1 is formed with an annular flange 2 at one side and with an undercut peripheral flange 3 at the opposite side. An annular rim section 4 also provided with an undercut peripheral flange 5 mating the flange 3, has a reduced inward flange 6 which has its periphery faced to snugly engage the inner cylindrical surface of the flange 2 in sliding guiding contact.

Clamping screws 7 peripherally spaced extend through the rim section 4 and are threaded into the member 1.

Ring members 8 and 9, surround the peripheral surfaces of the members 1 and 4 between the flanges 3 and 5, and these are preferably bevelled on their outward sides to form an interlock with the undercut walls of said flanges.

An endless band 10 of resilient or friction material such as rubber is secured to the inward opposing face of each of the bands 8 and 9, preferably by being recessed thereinto or cemented thereto, so that they present spaced frictional gripping surfaces projecting a slight distance inwardly beyond the inward faces of the rings 8 and 9.

Compression spring elements 11 are shown exerting a separating influence on the members 1 and 4, so that by loosening the rim bolts 1, the spacing between the inner faces of the ring elements 8 and 9 may be varied, so that as shown in Figure 4, the type characters 12 may be readily placed in position in the groove formed between the elements 8 and 9, where they will be engaged by the frictional or resilient elements 10 which will serve to temporarily hold the type effectively in position until the complete type assembly has been effected. The clamping rim bolts 7 may be then tightened to bring the clamping rim elements 8 and 9 into firm clamping contact with the sides of the type characters 12, thus rigidly holding the same on the periphery of the printing roller.

In the modification shown in Figure 6, the

ring or band elements 8 and 9 are each shown of double or laminated formation, the inner and outer portions having confined therebetween a frictional holding band 10' which functions in a manner similar to the band 10.

In Figure 8 the band element 10'' is shown presenting an extensive flat type engaging surface to the sides of the type characters, while at the same time permitting the initial insertion of the type in frictional holding contact therewith.

While I have shown and described frictional holding elements in paired relation associated with opposite sides of the type characters, it will be understood that one of such holding elements may be eliminated so that the type in being initially placed will come in direct contact with one of the elements 8 or 9 while being held from the other side by the presence of the frictional holding element.

Preferably the printing of the graduation marks on the rule is effected by a separate printing surface 13 arranged in the form of a peripheral band at one side of the type characters 12 as shown in Figure 4, preferably with its printing surface flush with the printing surface of the type characters 12, so that simultaneous printing of the graduations and advertising or other matter may be carried out.

The printing surface 13 is preferably removably secured to the band 8 by suitable fastening screws threaded therinto.

In the form of machine illustrated, a printing roller 1 such as described is mounted on a shaft 14 journaled in a standard 15 and is suitably driven, and a suitable font 16 is arranged to apply ink to the type surface. An arm 17 is pivotally mounted on the standard 15 and a printing roller 1* is mounted thereon below the roller 1. A spring 18 mounted on a pin 19 secured on the standard holds the arm against the adjustable stop formed by the nut 20 threaded on the pin 19. A suitable font 21 is provided to apply ink to the type surface of the roller 1*.

A table 22 is arranged with its top surface aligned with the bottom of the periphery of the printing roller 1, and an endless feed belt 23 operates over said table and is adapted to feed the rulers to be printed from the bottom of a stack arranged in a holder 24 above said table, the belt having blocks 25 thereon to engage the rulers one at a time and withdraw same from the bottom of the stack.

The belt 23 feeds the rulers to be printed between the rollers 1 and 1* and the surfaces thereof are printed in passing through, the spring 18 applying sufficient pressure to the roller 1* to ensure the required type impression.

The roller 1* may be a printing roller as described, or it may be a plain pressure roller if printing on both sides of the ruler is not desired.

What I claim as my invention is:—

1. In a rotary printing machine, a rotary element having an axially constrictable type-hold-

ing groove extending peripherally thereof, said groove having yieldable friction means to temporarily grip and hold the type in the groove prior to the constriction thereof, whereby the interchange of type is greatly facilitated.

2. In a rotary printing machine, a rotary element having a constrictable type-holding groove extending peripherally thereof and presenting spaced solid surfaces for positive clamping contact with type characters, frictional means projectable into said groove beyond the groove wall when said groove is non-constricted and adapted to frictionally and interchangeably grip the type characters prior to constriction of said groove, and means for effecting a constriction of said type-holding groove to firmly clamp the solid surfaces of said groove against the frictionally-held type characters.

3. In a rotary printing machine, a rotary printing element formed with a peripherally-extending groove for the reception of type characters, and a resilient rubber element carried by the groove wall for frictionally engaging the individual type characters inserted in said groove to retain the same in their assembled relation.

4. Means as claimed in claim 3 in which said means for frictionally engaging the type characters comprises a resilient band of rubber extending peripherally along and recessed into the wall of the type-holding groove to frictionally engage the type characters at the sides.

5. In a rotary printing machine, a rotary element having clamping rim sections, separable annular bands recessed into the clamping rim sections on the outward side and presenting substantially parallel inward faces forming therebetween a peripherally extending groove, said annular bands having resilient rubber bands embedded thereinto and projecting beyond the parallel faces into the groove to frictionally and interchangeably hold type characters, and type characters inserted in said groove between said rubber bands and clamped between said band members.

6. A rotary printing element as claimed in claim 5 in which said separable annular bands each comprise inner and outer concentrically disposed bands having confined therebetween a band of rubber for frictional holding contact with the type characters.

7. In a rotary printing machine, a rotary element having in combination an annular band provided with a peripherally-extending printing surface, a second annular band spaced from the first-mentioned band, frictional means interposed between said bands for interchangeably holding a multiplicity of type characters in predetermined relation to said annular printing band, whereby the rotary element may be rotated in setting the type without the type falling therefrom, and means for axially constricting said bands in rigid clamping relation to the frictionally held type characters.

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