July 14, 1953 J. P. KNIGHT 2,645,202

DEVICE FOR SUPPLYING INK TO RIBBONS

Filed Nov. 18, 1950 2 Sheets-Sheet 1

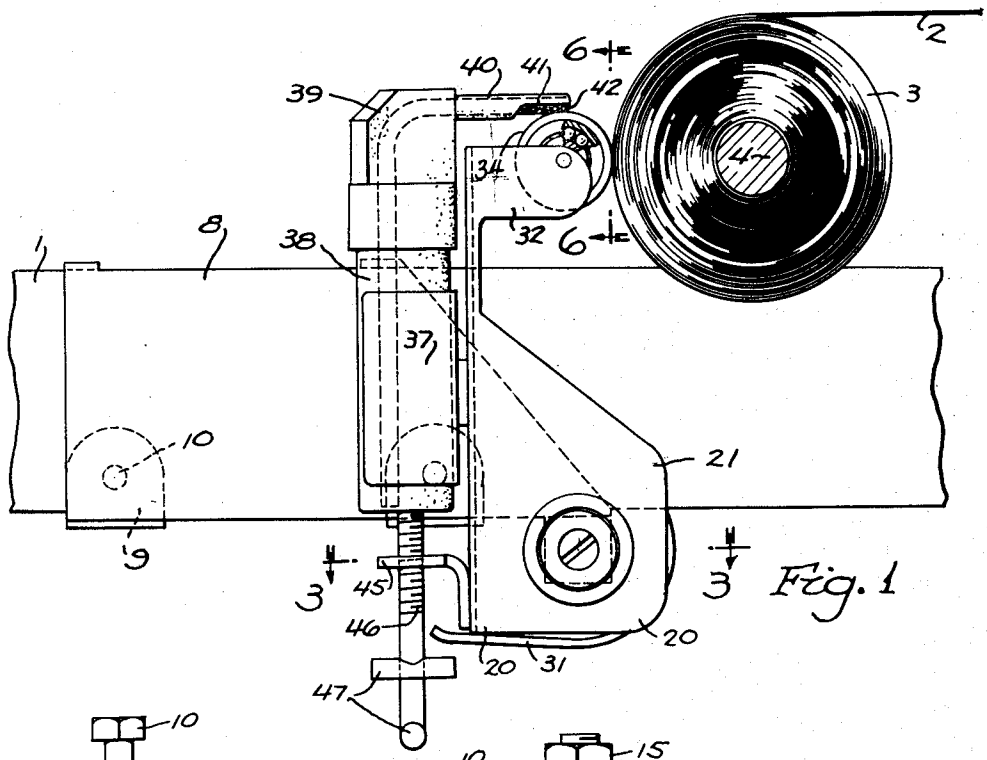


Fig. 1

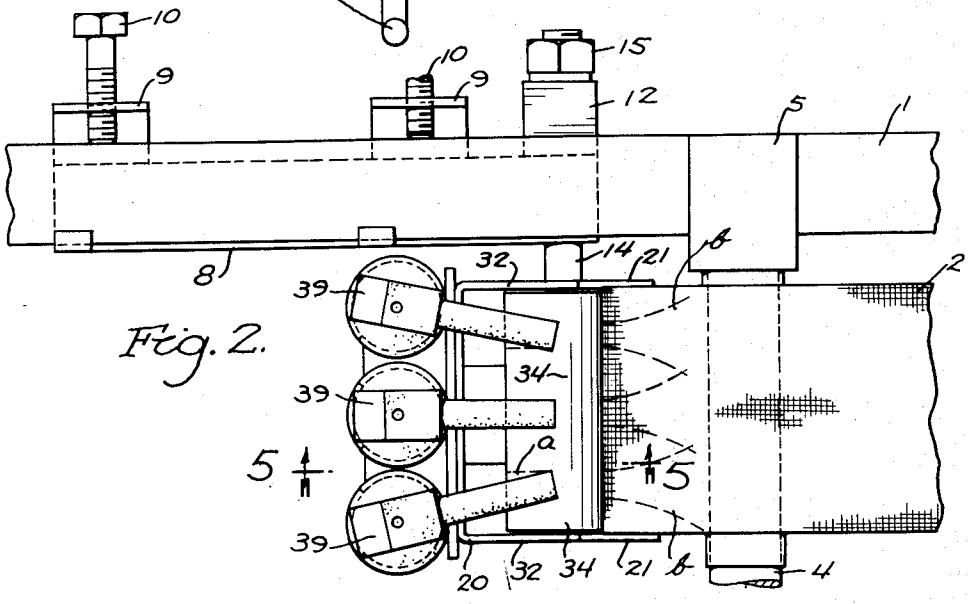


Fig. 2.

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DEVICE FOR SUPPLYING INK TO RIBBONS

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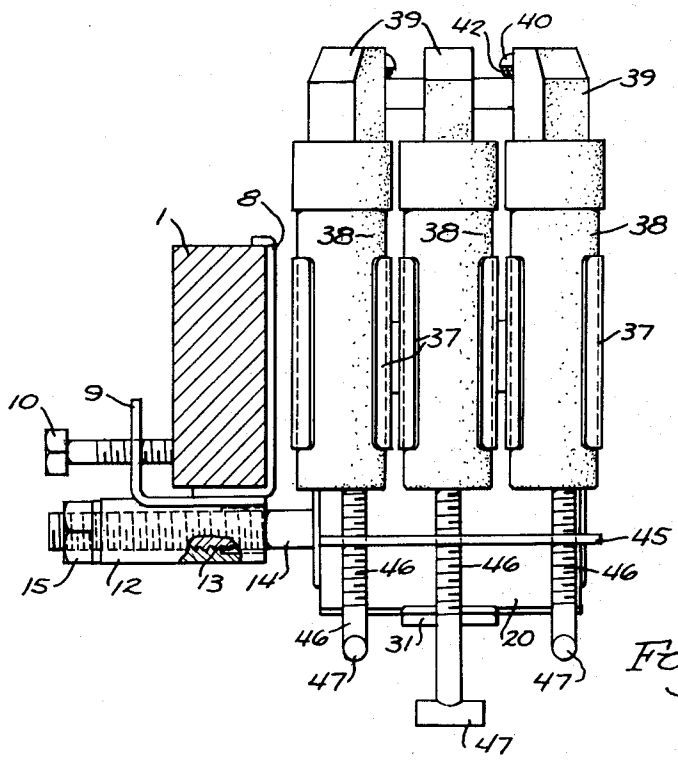


Fig. 4.

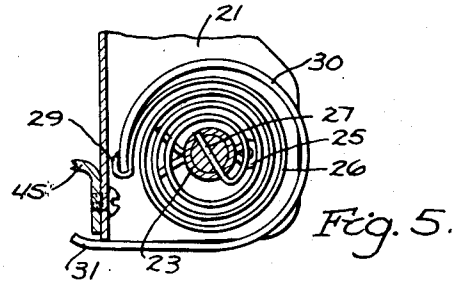


Fig. 5.

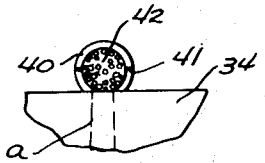


Fig. 6.

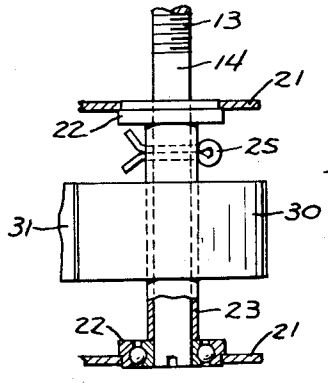


Fig 3

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DEVICE FOR SUPPLYING INK TO RIBBONS

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8 Claims. (Cl. 118—255)

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This invention relates to a device for supplying ink to a ribbon which is then to be transferred to indicia or embossments on a plate or to surfaces of any form of type or other object for printing purposes.

In machines for printing addresses, for example, embossed plates are often used and an impression is made on the paper or other material for receiving the printing. One way to apply the ink for printing is to interpose an ink carrying ribbon between the paper or other object and the embossed plate or other printing device. Of course, in due time, the ink carried by the ribbon is used up and the ink in the ribbon may be substantially exhausted. The device of the present invention is for use with such a ribbon to keep the ribbon constantly supplied with ink. Such ink carrying ribbons may be used in places other than in machines employing address plates as, for example, in connection with the inking of a master plate for an offset printing process.

The objects of the invention include the provision of a device for holding a supply or supplies of ink and for engaging the ribbon with the desired or necessary pressure by an ink transfer device so that the ink is transferred from the supply to the ribbon as the ribbon is in use. In this connection, certain adjustable features are embodied for conveying and delivering the ink from the supply to the transfer device and also to cause the transfer device to engage the ribbon with a pressure suitable for the particular ribbon or machine with which the device is employed. The invention is accordingly concerned with the provision of the device which will maintain a requisite amount of ink in a ribbon as it is used, as distinguished, perhaps, from the idea of originally impregnating or saturating or partially saturating the ribbon with ink.

A device constructed in accordance with the invention is disclosed in the accompanying drawings:

Fig. 1 is a view largely in side elevation showing the device of the present invention mounted on a support of a machine in a position engaging a coil or spool of ribbon.

Fig. 2 is a top plan view showing the transfer device applied to the ribbon.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1, showing structural features.

Fig. 4 is a rear elevational view showing the ink cartridges.

Fig. 5 is a view taken substantially on line 5—5 of Fig. 2 with some parts broken away and other parts omitted, showing a spring arrangement for holding the transfer device against the ribbon yieldably.

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Fig. 6 is a view taken substantially on line 6—6 of Fig. 1 showing a wick applied to the transfer device.

In Fig. 1 a structural member of a machine, such for example, as a machine for printing addresses, is shown at 1 and an ink carrying ribbon 2, normally held in the form of a coil or spool 3 is mounted on an axis or spindle 4 which is supported at one or both ends as indicated at 5. In the use of the machine, the ribbon is drawn from the coil and suitable means (not shown) applies the ribbon with pressure to the embossments, type or other indicia to transfer ink thereto.

The ink applying device embodies a suitable bracket 8 with ears or portions 9 and set screws 10 which are applicable to the structural member 1. Obviously the nature and construction of the bracket may vary with variations in shape of the structural member. The bracket carries a supporting member 12 securely fastened thereto and which has an opening therethrough which is internally threaded as at 13 and a stud or pin 14, which is threaded, is positioned in the supporting member and threaded therein. A nut 15 may be applied to the end of the stud to thus clamp it in position so that it is normally held against rotation since the nut 15 acts as a lock nut. It may be pointed out that the stud 14 may be axially and rotatably adjusted by loosening the nut 15 turning the stud on the threads 13 and then again tightening the nut 15.

There is a frame generally indicated at 20 fashioned to provide wings 21 which are journalled on the stud, preferably through the means of antifriction bearings 22 (Fig. 3) there being a suitable hub or spacer 23 surrounding the stud between the plates 21 for holding the bearings in place. The assembly may be held on the stud 14 by a suitable pin 25 which passes through the hub and the stud.

Thus, the frame 20 is journalled on the stud and it is acted upon by a spring which, as shown, takes the form of a spiral spring 26 positioned between the plates 21 (Fig. 3). One end of this spring, as at 27, is located in a slot in the stud 14, the hub 23 also having a slot through which the end 27 extends. The outer end of the spring is engaged as at 29 with a curved arm 30 which has an end portion 31 which engages under the frame 20. Thus, with the stud held against rotation, the spring tends to rock the frame clockwise as Fig. 1 is viewed.

The frame also has a pair of wings 32 and a

transfer roller **34** of suitable material, preferably metal, is pivotally mounted between these wings, preferably through anti-friction bearings as shown.

The frame **20** is provided with spring clips **37** arranged in pairs as shown in Fig. 4 and each pair is arranged to receive and clip an ink cartridge **38**. Each cartridge has a head piece **39** and a laterally extending finger **40**. The fingers **40** are hollow and a wick **42** of suitable absorbent material passes through the fingers **40**, through the head piece and into the cartridge as shown in Fig. 1. The fingers are cut away as illustrated at **41** to thus expose an end portion of the wicks. The exposed portions of the wicks engage the surface of the transfer roller **34**. As shown in Figs. 2 and 4, there are three ink cartridges or ink wells although more can be provided depending upon the desires and depending upon the width of the ribbon.

The frame **20** has an element **45** mounted thereon for receiving a threaded adjusting member **46** for each cartridge, the adjusting members conveniently having heads **47** thereby that may be rotated. The center adjusting screw **46** may be longer than the other two as shown in Fig. 4 in order to provide clearance for the arm **31**.

In use, the device is installed as shown in the drawings and the spring **26** is adjusted to cause the transfer roller **34** to engage the ribbon with the desired pressure. As stated above this can be done by loosening the nut **15**, turning the stud **14** and then tightening the nut **15**. Adjustment of the stud **14** in the support also adjusts the frame and transfer roller **34** laterally and this adjustment can be made with the device detached from the machine. The exposed portions of the wicks can be caused to engage the surface of the transfer roller with the desired pressure by adjusting the respective ink cartridges in their holding clips **37**. To increase the pressure of engagement of the wicks with the transfer roller the screws **46** may be backed off and the cartridges may be pushed slidably downward by pressure of the hand. To decrease the engagement it is only necessary to turn the desired adjusting screw **46** to elevate the cartridge in its friction clip.

As the ribbon is used in the operation of the machine, it is, of course, pulled from the coil **3** and due to the fact that the transfer roller **34** engages the peripheral surface of the coil of ribbon, the transfer roller rotates. In rotating it picks up ink supplied by the wicks **42**. The ink may thus be transferred to the surface of the transfer roller in the form of strips *a*. This ink is then transferred to the ribbon. It is important that the transfer roller engages the ribbon in the coil or spool form. The ink is transferred to the outermost convolution of the ribbon in strip form as at *a*. The ink penetrates through the ribbon and any excess ink is dispersed laterally between the convolutions of the ribbon probably by capillarity. Of course, there is some lateral spreading of the ink in the ribbon itself irrespective of the convolutions. Accordingly, about the time when the inked ribbon leaves the coil or shortly thereafter the applied ink is practically uniformly dispersed therethrough. The spreading of the ink is indicated at *b* in Fig. 2. This representation is not intended to indicate the rapidity with which the ink spreads. Suffice it to say the ink does spread so that the ribbon is maintained adequately loaded with ink in a substantially uniform manner.

It will be appreciated that the exposed portions of the wicks, where the wicks are round in cross section, as shown in Fig. 4, engage the surface of the transfer roller theoretically with a line contact when there is only a light pressure. If an ink cartridge is adjusted downwardly to apply more pressure, the rounded wick is flattened somewhat so that the strip *a* is widened. Thus, it will be seen that vertical adjustment of the cartridges may vary the amount of ink supplied to the ribbon. The tension of the spring **26** is regulated to get the proper transfer of ink to the ribbon.

The use of several ink cartridges, as shown herein, facilitates applying ink to the ribbon in a regulated manner. If the printing is such that there is a concentration of indicia or type along the ribbon, adjacent one edge for example, or in the center, the ink may be supplied to that portion of the ribbon in a greater quantity than in other portions. The cartridges may be rotated in their mounting and thus the width of the strips varied. Also, a single cartridge or, for example, two cartridges may be used for applying ink to the ribbon at the location of heavy use. In connection with the use of the term "heavy use," it might be pointed out that a series of plates may have a line of embossments where the embossments are in considerable numbers on each plate, whereas another line of embossments or type may embody only a few. Thus, more ink is used by the line having the greater number of type or embossments. Accordingly, the cartridges may be selected and adjusted as above stated to supply more ink in one place on the ribbon and less in another as required.

I claim:

1. A device for supplying ink to an ink carrying ribbon of an apparatus wherein the ribbon supplies ink for the printing of indicia on paper or the like comprising, a frame, a transfer roller journalled in the frame, means pivotally mounting the frame, a spiral spring inter-associated with the frame and its pivotal mounting for acting upon the frame to urge the transfer roller into engagement with the ribbon, means for adjusting the spring, and means on the frame for supporting ink supply means for applying ink to the transfer roller.

2. A device for supplying ink to an ink carrying ribbon of an apparatus wherein the ribbon supplies ink for the printing of indicia on paper or the like comprising, a frame, a transfer roller journalled in the frame for engaging a ribbon, an ink supply cartridge having a wick extending therefrom for engagement with the surface of the transfer roller, and means for adjustably mounting the ink cartridge on the frame to vary the contact of the wick with the transfer roller.

3. A device for supplying ink to an ink carrying ribbon of an apparatus wherein the ribbon supplies ink for the printing of indicia on paper or the like comprising, a frame, a transfer roller journalled in the frame for engaging a ribbon, an ink supply cartridge having a wick extending therefrom for engagement with the surface of the transfer roller, means for holding the ink cartridge on the frame for slidable adjustment, whereby the contact of the wick with the transfer roller may be varied by adjustment of the cartridge, and a positioning screw mounted in the frame for engaging the cartridge and fixing its position of adjustment.

4. A device for supplying ink to an ink carrying ribbon of an apparatus wherein the ribbon supplies ink for the printing of indicia on paper

or the like comprising, a frame, a transfer roller journalled in the frame for engaging a ribbon, at least one clip on the frame for removably and frictionally holding an ink cartridge, the ink cartridge having a wick for engaging the transfer roller, the cartridge being slidable in the clip, and a positioning screw mounted in the frame to engage and adjustably position the cartridge.

5. A device for supplying ink to an ink carrying ribbon of an apparatus wherein the ink in the ribbon is employed for the printing of indica on paper or the like comprising, a pivotally mounted frame, a transfer roller on the frame arranged to engage a ribbon, spring means acting upon the frame to hold the transfer roller in engagement with the ribbon, a plurality of spring clips on the frame, each adapted to hold an ink cartridge, each having a wick for engaging the roller to transfer ink thereto, so that the ink cartridges are slidable in their clips, and a positioning screw in the frame, one for each ink cartridge, for engaging and adjustably positioning the ink cartridges.

6. A device for supplying ink to an ink carrying ribbon of an apparatus wherein the ink in the ribbon is employed for printing purposes comprising, support means; a unit assembly including a frame, an ink transfer roller mounted on the frame, means on the frame for receiving and holding a vessel of ink which has means for supplying ink to the surface of the transfer roller; means movably mounting the unit assembly on the support means, and yieldable means arranged to act upon the unit assembly to shift the same on its movable mounting to maintain the transfer roller in engagement with the ribbon.

7. A device for supplying ink to an ink carrying ribbon of an apparatus wherein the ink in the ribbon is employed for printing purposes comprising, support means; a unit assembly including a frame, an ink transfer roller mounted on the frame, means on the frame for removably engaging and adjustably holding a container of ink which container has a wick for transferring ink to the transfer roller; means movably mounting the unit assembly on the support means, and yieldable means arranged to act upon the unit assembly to shift the same on its movable mounting to maintain the transfer roller in engagement with the ribbon.

8. A device for supplying ink to an ink carrying ribbon of an apparatus wherein the ribbon supplies ink for the printing of indicia on paper or the like comprising, a frame, a transfer roller journalled on the frame for engaging a ribbon, an ink supply cartridge having a wick extending therefrom for engagement with the surface of the transfer roller, means movably mounting the frame, yieldable means acting upon the frame to maintain the transfer roller in engagement with the ribbon, and means for adjustably mountin the ink cartridge on the frame to vary the contact of the wick with the transfer roller.

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