

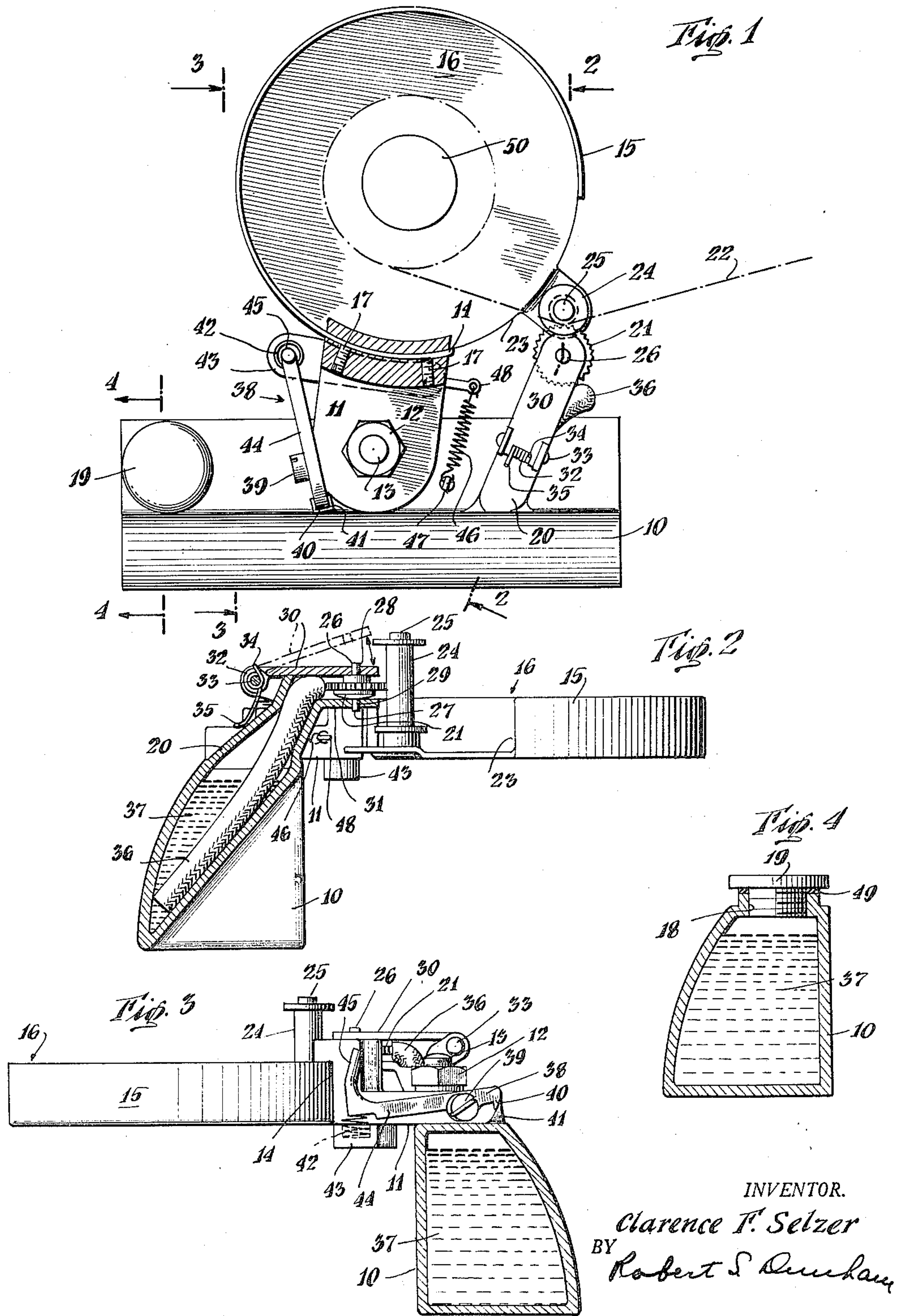
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INKING DEVICE

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## INKING DEVICE

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This invention relates to a device for supplying ink to typing ribbons, while in position in typing machines, and is directed particularly to a method and apparatus for maintaining a constant content of ink in a typing ribbon.

Ink containing ribbons which are used in typing machines such as typewriters, adding, teletyping and other such machines must be replaced frequently, and because of the inconvenience of changing the ribbons and the expense involved in replacing them, various attempts have been made to provide devices which would restore the ink supply in the ribbons while they are in position in the machines. Great difficulty has been encountered in producing suitable devices which are capable of supplying the proper quantity of ink to replace the minute amounts which are withdrawn by each pass of the ribbon through the typing machines. There has also been trouble in preventing the supply of ink from becoming unevenly distributed when such inking devices were used and in preventing the flooding of the ribbon when the machines are idle. The moving parts of the devices have tended to clog in use and the costs of such devices, with complicated mechanisms subject to breakdowns, have not justified their general adoption.

An important object of this invention is to provide a device which is of simple construction and which will supply minute quantities of ink to a typing ribbon evenly, throughout its length. Another object of the invention is to provide a device which cannot flood the ribbon when the machine is idle but will keep the ribbon evenly inked continuously so that it yields typing of constant darkness.

It is a further object to provide a device which may be detachably secured to a typing machine and which will not clog with ink or be subject to ink seepage or spillage in use.

The general arrangement of the device is such that ink is supplied to the ribbon by a rotating ink transfer cog disc or wheel which is also in contact with an ink saturated wick.

The invention will be described more fully in conjunction and with reference to the drawings, wherein:

Fig. 1 is a plan view, partly in section, of an inking device, embodying the invention, in mounted position on the side of a standard ribbon spool cup;

Fig. 2 is a sectional side view taken along the line 2—2 in Fig. 1;

Fig. 3 is a sectional side view taken along line 3—3 in Fig. 1;

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Fig. 4 is a sectional side view taken along the line 4—4 in Fig. 1.

The form or embodiment of this invention shown in the figures comprises an ink containing body or reservoir 10, and a means for pivotally mounting the reservoir on the side of a ribbon spool cup, the means consisting of a bracket 11 which is pivotally fixed to the top of the reservoir 10 being mounted on pivot post 13 and maintained on the post 13 by nut 12 threaded on the upper end of the post. The post 13 is preferably permanently fixed on the outside of the ink containing body or reservoir 10; the attachment may be made by any suitable means such as welding or silver soldering, it having been found desirable to eliminate a hole through the top of the ink body 10 to prevent seepage around the bolt. The outward extension of the bracket 11 from the ink reservoir 10 is provided with an arc-shaped slot 14 (see Fig. 1) sized to receive the upstanding side 15 of a typing ribbon spool cup 16. Set screws 17 are tapped into the arcuate slot 14 to grip the outer surface of the spool cup side 15 when the inking device has been positioned on the spool cup. It has been found that Allen screws are particularly useful as set screws when the device is subject to considerable vibration. The form of the invention described herein is particularly adapted for use with teletyping machines wherein the platen carriage remains stationary, and the ribbon spools and type bar carriage move laterally. In such a machine the carriage return mechanism at the end of each line of typing puts a considerable strain on the inking device which is carried on the side of one spool cup. Further will be said with regard to the adaptation of the device to Teletype machines relative to the size and shape of the reservoir.

A refill opening 18 is provided in the upper surface of the ink reservoir 10, the opening being internally threaded to receive a screw cap 19 which may be detachably secured in the opening 18. A gasket 49 of rubber, or other suitable material, is interposed at the joint.

Channel 20 sized to receive an ink absorbing wick extends outwardly from the upper surface of the reservoir 10. Referring to Figs. 1 and 2, it will be noted that the channel 20 has a knurled, ribbon-contacting member 21 positioned between jaw-like extensions in its outer extremity. The disposition of the channel 20 is such that the knurled wheel member 21 is brought into light frictional contact with the ribbon 22 adjacent to the opening 23 in the side 15 of the spool cup 16 and at the point where the ribbon passes around



the ribbon guide roller 24 which is rotatably mounted on the upright post 25 fixed to the spool cup 16.

The knurled ribbon-contacting member 21 is a cog disc, or wheel, which is rotatable about pins 26 and 27 which are coaxial and extend from the upper and lower surfaces of the disc. It has been found that the use of such pins is to be preferred to mounting the wheel or disc upon a shaft because ink seeps into the axle clogging it and jamming the wheel on the shaft. The pins 26 and 27 are received in bearings 28 and 29 in the upper and lower jaws or extensions 30 and 31 of the channel 20, so that the knurled member 21 is freely rotatable about its vertical axis. The upper portion 30 of the channel 20 is pivotally mounted at 33 so that it may be raised and lowered, as indicated in Fig. 2, to permit the ready removal of the knurled ribbon-contacting member 21 and also to permit access to the wick 36 and wick channel 20.

Coiled spring 32 surrounds the pivot pin 33 and is anchored at 34 and 35 to yieldingly press the upper portion 30 of the channel 20 down into the full-line position shown in Fig. 2. The wick 36 is positioned in the reservoir 10, in contact with the ink 37 contained therein, and extends upwardly through the channel 20 into contact with the knurled member 21. The material of the wick may be of any suitable absorbent material. One type of wick which has been found suitable is of hard wool felt containing a small percentage of cotton. The wick 36 is maintained in light frictional contact with the knurled disc 21 by drawing it out of the channel 20 into the bent position shown in Fig. 1 wherein the side of the wick is lightly pressed against the knurled member 21 to make it possible readily to adjust the wick when it has become worn at the point of contact with the knurled member. The restoring force due to the resiliency of the bent wick provides the proper light contact with the knurled member. The wick channel 20 is sufficiently large to accommodate the wick and permit air to seep into the reservoir, thereby avoiding the effect of atmospheric pressure changes, and eliminating the necessity for an additional air vent or hole through which ink might seep.

The mounting of the bracket 11 on the reservoir, which was briefly described above, is pivotal within a limited range to permit the knurled disc 21 to be moved into and out of contact with the ribbon 22. Because the knurled member 21 is fixed to the reservoir the movement is effected by pivoting the entire device. The device may be maintained out of contact with the ribbon by the locking device 38 which is pivotally mounted at 39 on the side of bracket 11. A hook 40 is provided at one end which is adapted to lock or catch upon the upstanding stud 41 on the upper surface of the reservoir 10. The hook is yieldingly pressed downward over the stud 41 by the action of the spring 42 which is carried on the extension 43 of the bracket 11 and contacts the under side of the arm 44 of the locking device 38. A trigger 45 is provided for the manual operation of the locking device. When the trigger 45 is pressed downward the hook 40 at the opposite end of the locking device 38 releases the stud 41, and the coil spring 46 causes the inking device to pivot slightly to bring the knurled member 21 into light frictional contact with the ribbon 22 at the point where the latter passes about the roller 24. One end of the coil spring 46 is attached to spring post 47 provided on the upper surface of the reservoir. The other end of the coil spring is

attached to a spring post 48 mounted at the side of the bracket 11, as best shown in Fig. 1. The pressure of the frictional contact of the knurled member 21 against the ribbon 22 may be regulated by changing the tension of the spring 46.

In operation, the ink reservoir is filled with ink, a part of which is absorbed by the wick 36 and transferred to the ribbon 22 by means of the knurled member 21 which carries minute quantities of ink upon the face of each knurl or cog tooth. The amount of ink to be supplied to the ribbon may be varied by changing the height or thickness of the knurled disc or wheel and by changing the number of knurls or teeth.

It has been found that particularly desirable results can be obtained by constantly using the inking apparatus from the time a new ribbon is first put on the machine; in such a case the new ribbon may be of a lightly inked type which gives a medium even darkness to the typing. By constantly replenishing the ink supply the medium dark typing may be maintained constantly throughout the life of the ribbon, whereas in the typical typing ribbon the printing is at first excessively dark and gradually becomes lighter. The amount of ink impregnated onto the ribbon preferably should be slightly more than is removed by the printing operations so as to prevent the ribbon from gradually losing ink and producing lighter typing. It has been found that a disc having a width or height of .037 inch, a diameter of .5 inch, and with 30 knurls or teeth to the round, will yield particularly desirable results in a continuous use type of operation. As will be noted from Fig. 2, the knurled member 21 contacts the central axis of the ribbon whereas the typing strikes above the center of the ribbon. The minute droplets which are deposited on the ribbon are absorbed into the typing area. When the disc 21 contacts the ribbon at the center position any additional wear on the ribbon at the point where the type strikes is avoided and ink has time to become evenly distributed before it enters the typing area. After prolonged use the ribbon may be inverted so that the unused lower part of the ribbon may be placed in the position where the type strikes.

In the particular device described herein and shown in the drawings, the configuration of the reservoir has been designed for use in printing telegraph equipment, specifically, in a Teletype machine. It will be appreciated, however, that the invention herein described may be adapted readily to any specific typing machine, for the space restrictions and the operational rigors to which the device is put in the Teletype machines are, perhaps, the most severe. It should be noted particularly that the inking device may be mounted without altering the standard machines.

It has been found that, whereas a standard cotton ribbon which is not re-inked will last about two days in use on a Teletype machine before the darkness of the type declines to a point at which it must be replaced, the same ribbon when continuously re-inked by the inking device described herein will give eight to twelve days' service, yielding good printed copy throughout the period. With the inking device, the ribbon could be kept in service indefinitely if it were not that the fabric of the ribbon wears out.

It will be noted that the ribbon, in effect, inks itself and controls the amount of ink which is transferred to it, that is, the movement of the ribbon 22 around the roller 24 as it moves into or out of the spool 50 contained in the spool cup



16 is the actuating means for the disc 21 which is the ink-transferring means of the inking device. The light frictional contact of the disc 21 with the ribbon 22 as the latter is moved causes the disc to rotate at a fixed and uniform rate with no appreciable slipping and to carry minute droplets of ink principally upon the face of each knurl or tooth into contact with the ribbon. When the typing machine is idle and the ribbon is consequently not moving, no ink is transferred to the ribbon and therefore, necessarily, the ribbon cannot be flooded.

It has been found that the inking device embodying this invention is adaptable to any standard type of typing ink, including the usual standard pigment inks. The device embodying the invention herein has been found particularly capable in overcoming the difficulty of clogging due to drying of the ink for the knurled disc 21 is the only moving part in contact with the ink and it may be easily removed for cleaning. The device also may be flushed readily because of the positioning of the refill opening 13 and the channel 20 at opposite ends of the reservoir. Furthermore, while in use the ink reservoir is completely sealed against ink seepage, for although the channel 20 remains open the absorbent quality of the wick 36 disposed therein prevents excess ink from seeping out.

In accordance with the patent statutes, I have described the best mode in which I have contemplated applying the principles of the invention but it will be understood that the structures disclosed are only illustrative and the invention may be carried out by other means. Also, while it is designed to use the various features and elements in the combinations and the relations described, some of these may be altered and modified in ways other than those suggested without departing from the spirit and scope of the invention.

#### I claim:

1. A ribbon inking device comprising an ink reservoir, clamping means for detachably mounting the reservoir on a ribbon spool cup, a channel adapted to receive a wick, extending from said reservoir, a knurled ribbon-contacting member rotatably mounted at the end of said channel remote to the reservoir, means for maintaining the knurled ribbon-contacting member in light frictional contact with the ribbon and a wick disposed in said ink reservoir, extending outward through the wick channel and into light frictional contact with the knurled ribbon-contacting member.

2. An inking device for use in continuously inking a typing machine ribbon comprising an ink reservoir having associated therewith a clamping means for detachably securing the reservoir on the rim of a ribbon spool cup, a wick receiving channel extending outwardly from said reservoir, a knurled ribbon-contacting disc rotatably mounted at the outward end of said channel, and a wick extending from the reservoir into the wick channel and extending outwardly into light frictional contact with the knurled disc.

3. In a typing machine utilizing an inked ribbon, a device for re-inking the ribbon comprising an ink-containing body with means for detachably mounting said body adjacent to the ribbon as it enters the ribbon spool cup, a channel ex-

tending from said ink-containing body having a knurled ribbon-contacting disc mounted at the end of said channel and an ink absorbing wick extending from said body through said channel into light frictional contact with the knurled disc, and a spring means to maintain the knurled disc in light frictional contact with the ribbon.

4. A typewriting ribbon inking device comprising an ink reservoir having means for detachably mounting said reservoir on the outside of a ribbon spool cup and adjacent the ribbon entrance to the cup and adjacent to the guide roller associated with said spool cup, a wick receiving channel extending outwardly from said reservoir and toward said guide roller, a toothed ribbon-contacting member rotatably mounted at the outward end of said channel and adapted to contact the ribbon as it passes around the said guide roller, and an ink absorbing wick positioned in said reservoir and extending outwardly through said channel into light frictional contact with the toothed ribbon-contacting member.

5. The device of claim 4 with means for moving said toothed ribbon-contacting member out of and into contact with the ribbon.

6. A ribbon inking device having means for attaching it to the ribbon spool cup in a typing machine and comprising an ink containing reservoir, a removably secured cap through which ink may be supplied to the reservoir, a wick receiving channel extending outwardly from said reservoir, a toothed ribbon-contacting member, means provided at the outward end of said channel for detachably securing, in rotatable position, said toothed ribbon-contacting member, a wick positioned in said reservoir and extending outwardly through said channel into light frictional contact with the toothed member, and means for moving said toothed member into light frictional contact with the ribbon.

7. In a ribbon inking device having a clamp for attaching it to the ribbon spool cup in a typing machine, an ink containing reservoir having a refill opening with a removably secured cap disposed therein, a wick channel extending outwardly from said reservoir, a toothed ribbon-contacting member having coaxial pins extending from its upper and lower faces, jaw-like means at the outer end of the channel for detachably securing, in rotatable position, said toothed ribbon-contacting member, said jaw-like means comprising a fixed lower extension of the channel and an upper extension pivotally mounted at its inner end so that the outer end may be raised or lowered, bearings provided in the upper and lower extensions to receive the coaxial pins, and a spring to yieldingly press the upper extension into the lowered position, in which the ribbon-contacting member is secured in rotatable position.

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