April 17, 1951 R. W. HARRIS 2,549,196

TYPEWRITER RIBBON REJUVENATING DEVICE

Filed June 26, 1948

FIG. 1

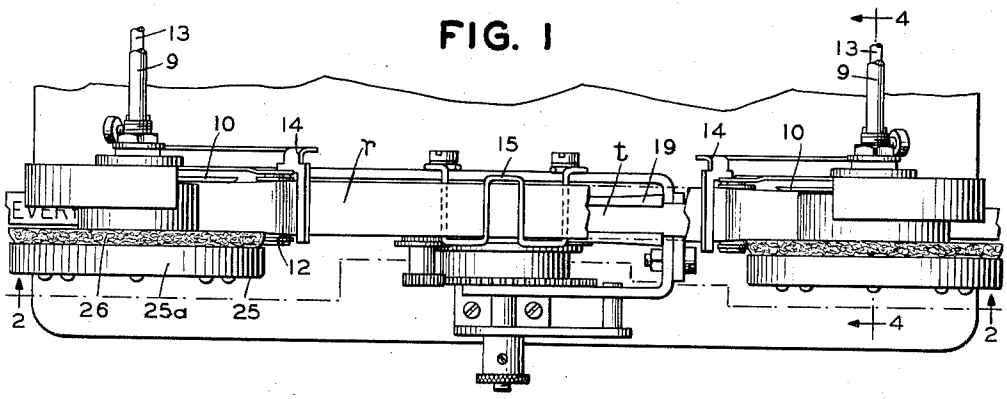


FIG. 2

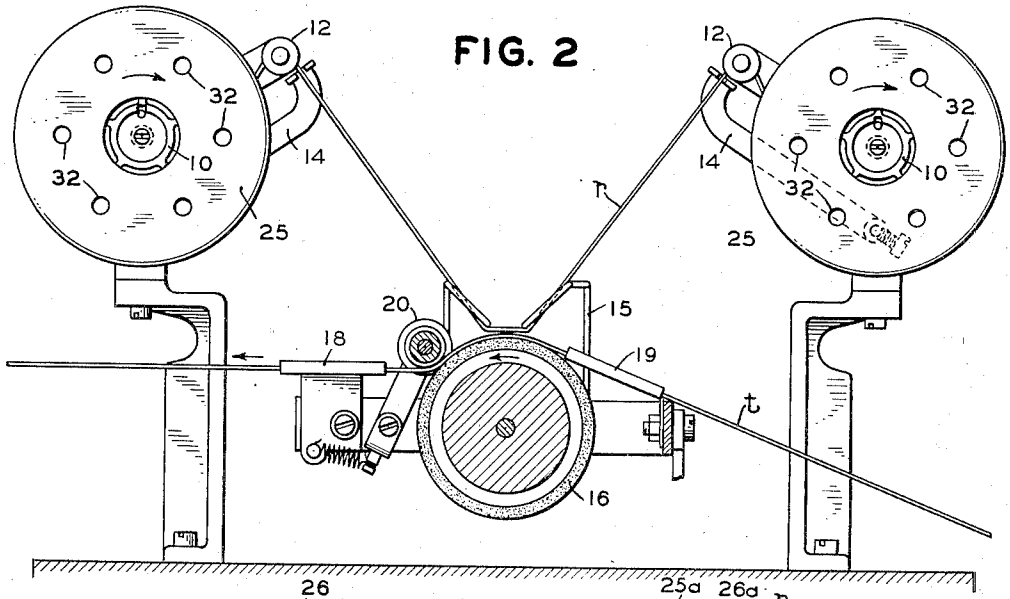


FIG. 3

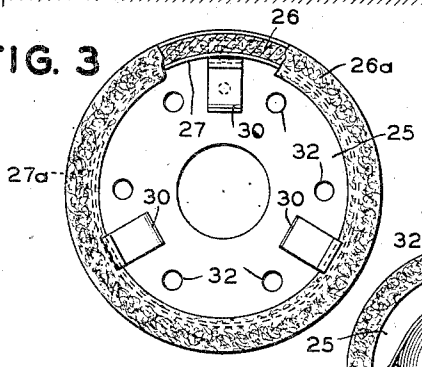


FIG. 5

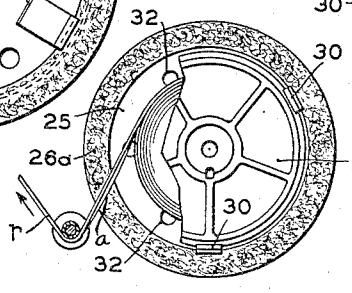
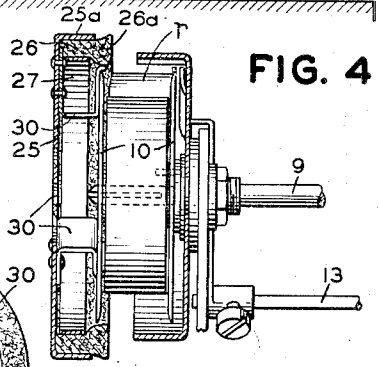


FIG. 4



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UNITED STATES PATENT OFFICE

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TYPEWRITER RIBBON REJUVENATING DEVICE

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6 Claims. (Cl. 197—171)

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This invention relates to a rejuvenating device for applying ink to the ink ribbons of typewriting machines, and more particularly to such a device that is readily attachable to and detachable from the conventional ink ribbon spool used in typewriting machines such as a typewriter or telegraph printer.

The useful life of a typewriter ribbon is usually terminated by a loss of the ink or evaporation of the vehicle thereof rather than by injury to the fabric. Successful rejuvenation of the ribbon involves replacement of this loss of vehicle or ink in correct amount properly distributed and easily applied. It has heretofore been proposed to re-ink the ribbon after unwinding it, but this involved excessive labor and equipment costs. Also, various devices have been proposed for re-inking the ribbon while on the machine, but these have not proved satisfactory for various reasons among which are that the devices unduly complicate the structure of the typewriter or printer in which they are embodied; the ink is not transferred uniformly to the entire length of the ribbon; in a number of the devices the ink was deposited directly in the type slug path or otherwise applied in a manner which resulted in initial over-inking; and other devices were subject to the disadvantage that there was a transfer of ink when the typewriter or printer was not operating, thus resulting in an excess of ink localized in certain portions of the ribbon which subsequently gums and fills the type slugs and results in smeared copy.

Among the objects of the invention are to provide a typewriter ribbon inking device which is free from the foregoing objections, and which will distribute ink automatically and uniformly to the entire length of the ribbon in just the right amount, and in which substantially no transfer of ink can occur except while the typewriter or printer is operating.

Another object is to provide an inking device of the character described which is readily attachable to or removable from a conventional ribbon spool, and which does not interfere with the movements of the ribbon spool or other typewriting machine parts.

Other objects are a rejuvenating device of the character described which is easily installed without tools and which in general requires no added mechanism or alteration of existing mechanisms; the device may easily be maintained in proper inking condition; the inking pad in the device which applies ink to the ribbon is covered so that ink cannot accidentally get on the

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hands or clothing of the operator; the ink ribbons may be reversed in the normal manner by reversing spool positions in order to gain increased life; and copy may be maintained at full "new ribbon" intensity until the fabric of the ribbon fails.

Other objects and advantages will be apparent from the following detailed description of a preferred embodiment of the invention, taken in connection with the accompanying drawings, in which:

Fig. 1 is a top plan view of two of the ink ribbon rejuvenators as applied to the ribbon spools of a telegraph tape printer;

Fig. 2 is a side view of the mechanism with certain parts in section, looking in the direction of the arrows 2—2 of Fig. 1;

Fig. 3 is a detailed view of one of the ribbon inking attachments removed from the ribbon spool;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1; and

Fig. 5 is a fragmentary detailed view showing how the ink is transferred from the inking pad to the typewriter ribbon.

Referring particularly to Figs. 1 and 2, there is shown the ribbon feed mechanism of a well known type of telegraph tape printer having a type basket and means responsive to incoming permutation code signals for selecting and causing the proper type bars to be actuated for printing the received characters on a narrow tape *t*. The printer may be any of various well known types in the art such, for example, as disclosed in the Morton et al. Patent No. 1,745,633, issued February 4, 1930. Also, the printer may be a page printer such, for example, as disclosed in the Noxon et al. Patent No. 2,231,215, issued February 11, 1941. The ribbon feed mechanism comprises ribbon drive shafts 9 which respectively actuate two conventional ribbon spools 10 on which the typewriter ribbon *r* is alternately wound and unwound, the ribbon passing around the roller guides 12. As is well known, the ribbon is fed first in one direction until it is nearly unwound from one of the spools 10, at which time the direction of feed is reversed, this reversal of the direction of the ribbon feed being effected at each side of the machine by means of a shaft 13 rotated by a ribbon reverse arm 14 which is engaged and actuated by a metal eyelet in the end of the ribbon.

At the printing position the ink ribbon passes through a guide member 15 adjacent to the printing roller or platen 16. The narrow tape *t* on

which the incoming message is printed passes between the platen and ribbon so that as the ribbon is struck by the type slugs carried by the type bars which are actuated in response to the incoming signals, the desired characters are printed on the tape. Guide members 18 and 19 and a feed roller 20 coact with the platen 16 to advance the tape, in the direction of the arrow, and keep it properly aligned during the printing operations.

The rejuvenator attachment comprises a circular metal retainer casing 25 having a turned edge portion 25*a*, Figs. 3 and 4. Received within the edge portion 25*a* is an inking ring 26 preferably composed of woolen felt, the felt being retained firmly in position by means of a resilient split ring 27, the ends of which ring overlap as indicated in dotted lines at 27*a* in Fig. 3. The face 26*a* of the resilient felt ring applies ink to an edge of the ribbon *r* as printing proceeds, in a manner described below.

Secured to the inner surface of the shell 25, as by riveting or otherwise, are three spring clips 30, the free ends of which are adapted to resiliently engage the periphery of the outer face of the ribbon spool thereby to clamp the inking device onto the spool, as seen in Fig. 4. Fresh ink is added in drops to the rejuvenator felt merely by inserting the snout of a small oil can in each of the several holes 32 in the casing 25. The ends of the clips 30, which are riveted to and lie against the inner surface of the casing 25, serve to space the inner edge of the split ring 27 a slight distance from the inner flat surface of the casing 25 and thus provide sufficient clearance to enable the ink readily to flow to the inner edge of the felt ring 26 and impregnate the ring. Various types of inks having the proper fluidity and tinctorial strength may be used with the rejuvenator. For example, an ink composed of glyceryl mono-ricinoleate or a diethylene glycol mono-ricinoleate, or a mixture of these, with from four percent to twelve percent of added soluble dye of suitable color may be employed, such as disclosed in the Kline Patent No. 2,435,222, issued February 3, 1948. Another ink suitable for the purpose may comprise the following formula:

	Parts
Lard oil	2
Mineral oil SAE 10	2
Oleic acid	1
Mineral seal or spindle oil	1

Dye 4% to 15% of above depending on color and intensity desired.

Referring to Figs. 4 and 5, the inner face 26*a* of the inking felt extends inwardly past the outer edge 10 of the ribbon spool, that is, it overlaps the face of the spool a distance preferably from one-sixteenth of an inch to one-eighth of an inch, and this insures that as the ribbon is wound or unwound from its spool during operation of the printer, a wipe-squeeze action occurs at *a* between the surface 26*a* and the slightly deflected contacting edge of the ribbon, which action slightly compresses or squeezes the inking felt and places a small amount of the inking fluid near but not on the type slug path of the ribbon. Travel of the ink across the width of the ribbon is then accomplished by capillarity. This wipe-squeeze action causes transfer of ink to the ribbon by the movement of the ribbon past the surface 26*a* of the felt, which is during operation of the machine, but substantially no transfer of inking fluid occurs when the machine is stationary, at which time the ribbon does not travel past the face 26*a*, and over-inking of the ribbon never occurs.

In applying the rejuvenator to an ink ribbon spool, care should be taken to insure that the felt 26 is properly in position against the rear of the retainer casing 25 so that the felt projects evenly at the outer edge 26*a*. About twenty dropperfuls of ink will be found sufficient to initially impregnate the felt, the ink being added evenly to the felt around the periphery through the medium of the holes 32. When the felt is saturated, the surface 26*a* will have a shiny wet appearance. If through error too much ink has been added, excess fluid may be removed with a blotter.

Before installing the rejuvenator on the ribbon spool, care should be taken to see that the ribbon spools are not bent out of shape; this can readily be checked by rotating the ribbon drive shaft 9. The retainer is held in the hand, felt side up, and then the outer edge of the spool is inserted so that it is securely held by the three clips 30. If the proper amount of ink has been applied to the felt, and the printer is operated, a narrow track of fluid will be found along the outer edge of the ribbon *r*. This fluid will in the course of fifteen or twenty minutes of operation work its way across the ribbon into the type slug path, and there will be little variation in the intensity of the typed characters during the rejuvenating period or the first hour of operation. Whatever differences may be observed will disappear with further use, as the fluid equalizes its distribution throughout the ribbon length. Sufficient fluid will be transferred from the rejuvenator to the ribbon in the course of an hour's operation of the printer to afford a period of service approximating a new ribbon. When a ribbon again shows evidence of exhaustion, ink is again applied to the rejuvenator by means of a small oil can. Two or three drops in each of the holes 32 of the casing will be sufficient to reimpregnate the ribbon. As an alternative procedure, one drop of ink may be added at shorter periods, thus maintaining at all times the inking strength of a new ribbon. Field tests of the rejuvenator in various telegraph offices throughout this country have shown that the life of a ribbon used in a telegraph printer is from four to eight times longer than that of an identical ribbon under the same service conditions, which is not rejuvenated in the manner disclosed herein.

Preferably two rejuvenator devices are employed, one for each ribbon spool as illustrated, but for certain purposes and where the typewriter or printer is used infrequently, one of the devices attached to but one of the ribbon spools will be found sufficient. While there is shown and described herein a particular embodiment of the invention for the purpose of illustration, many other and varied forms and uses will present themselves to those versed in the art without departing from the invention which is, therefore, not limited except as indicated by the scope of the appended claims.

I claim:

1. An inking device for rejuvenating the ink ribbon of a typewriting machine in which the ribbon is fed to and from a spool during operation of the machine, comprising an ink pad having a resilient inking surface, means for rotating said ink pad only when the ribbon is advancing during operation of the machine, and means for positioning said ink pad so that its inking surface is out of contact with the edges of the

convolutions of the wound ribbon on the spool but projects into the path of travel of an edge portion of a single thickness only of the ink ribbon a distance sufficient to slightly deflect said edge portion as it passes across the inking surface to provide a wipe-squeeze action between said edge portion and the resilient inking surface of the rotatable pad only when the ribbon is advancing during operation of the machine.

2. An inking device for rejuvenating the ink ribbon of a typewriting machine in which the ribbon is fed from one spool to another during operation of the machine, comprising an ink pad having an inking surface, and means for positioning said pad so that its inking surface lies adjacent to a face of one of the ribbon spools and in the path of travel of an edge portion only of the ink ribbon to provide a wiping action between said edge portion and said inking surface only when the ribbon is being fed from one ribbon spool to another, said pad having a configuration such that its inking surface is spaced from the edges of the convolutions of the wound ribbon on said one of the ribbon spools adjacent to the inking surface of the pad.

3. An inking device for rejuvenating the ink ribbon of a typewriting machine in which the ribbon is fed from one spool to another during operation of the machine, comprising an ink pad having an inking surface, and means for detachably mounting said pad on one of the ribbon spools so that the inking surface lies adjacent to a face of said ribbon spool and in the path of travel of an edge portion only of the ink ribbon to provide a wiping action between said edge portion and said inking surface only when the ribbon is being fed from one ribbon spool to another, said pad having a configuration such that its inking surface is spaced from the edges of the convolutions of the wound ribbon on the spool on which the pad is mounted.

4. An inking device for rejuvenating the ink ribbon of a typewriting machine in which the ribbon is fed from one spool to another during operation of the machine, comprising a casing containing an ink pad having an inking surface, and spring clips on said casing for detachably mounting said pad on a face of one of the ribbon spools so that the inking surface lies adjacent to said face of one of the ribbon spools and in the path of travel of an edge portion only of the ink ribbon to provide a wiping action between said edge portion and said inking surface only when the ribbon is being fed from one ribbon spool to another, said pad having a configuration such that its inking surface is spaced from the edges of the convolutions of the wound ribbon on the spool on which the pad is mounted.

5. An inking device for rejuvenating the ink ribbon of a typewriting machine in which the ribbon is fed from one spool to another during operation of the machine, comprising an ink pad having a ring-shaped inking surface, and means for positioning said pad so that the ring-shaped inking surface thereof surrounds and lies adjacent to a face of one of the ribbon spools and in the path of travel of an edge portion only of the ink ribbon to provide a wiping action between said edge portion and said inking surface only when the ribbon is being fed from one ribbon spool to another.

6. An inking device for rejuvenating the ink ribbon of a typewriting machine in which the ribbon is fed from one spool to another during operation of the machine, comprising a casing containing an ink pad having a ring-shaped inking surface, a resilient spring member for securing the pad in position within the casing, and spring clips on said casing for detachably mounting said pad on a face of one of the ribbon spools so that the inking surface lies adjacent to said face of one of the ribbon spools and in the path of travel of an edge portion only of the ink ribbon to provide a wiping action between said edge portion and said ring-shaped inking surface only when the ribbon is being fed from one ribbon spool to another, said casing having apertured portions therein to enable fluid ink to be applied to said ink pad at places spaced around the periphery thereof.

ROBERT W. HARRIS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

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1,953,881	Hanable	Apr. 3, 1934
2,038,706	Beckman	Apr. 28, 1936

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Number	Country	Date
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