

Sept. 29, 1953

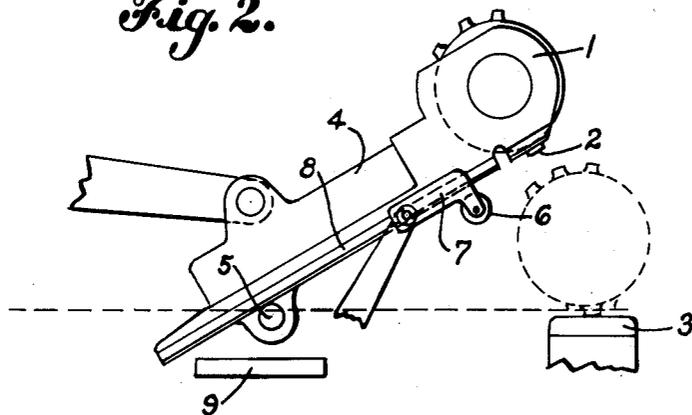
C. R. JOHNSON
METHOD OF INKING TYPE OF PRINTING
MACHINES WITH QUICK-DRYING INK
Filed Jan. 9, 1952

2,653,540

Fig. 1.



Fig. 2.



INVENTOR.

BY *Carl R. Johnson*
Louis C. Smith
Attorney

UNITED STATES PATENT OFFICE

2,653,540

METHOD OF INKING TYPE OF PRINTING MACHINES WITH QUICK-DRYING INK

Carl R. Johnson, Keene, N. H., assignor to F. A. Putnam Mfg. Co. Inc., Keene, N. H., a corporation of New Hampshire

Application January 9, 1952, Serial No. 265,604

3 Claims. (Cl. 101—426)

1

Quick-drying ink, which is now quite commonly used in the printing art, derives its quick-drying characteristics from the fact that the pigment or coloring ingredient and the binder ingredient of the ink are compounded with a volatile solvent, such as some of the esterified ethers of ethylene glycol.

Many printing machines use an inking roll of rubber, either natural rubber or synthetic rubber such as neoprene, for inking the type. Such rolls often have the capacity of absorbing volatile solvents of the type used in quick-drying ink, and when such an ink roll is used there is a tendency for some of the solvent in the ink on the ink roll to become absorbed in or to migrate into the ink roll, thereby depleting the solvent content of the ink on the roll. As a result the ink on the ink roll becomes deficient in solvent content, and after a few hours develops an undesirable tackiness which deleteriously affects the quality of the imprints made by the type, thereby necessitating the cleaning of the ink roll.

It is an object of this invention to provide novel means for not only preventing the migration of solvent from the ink on the ink roll into said roll, but also for supplying the ink on the ink roll with additional solvent which is taken in sufficient quantity from a supply of solvent carried by the ink roll, to replace solvent which may evaporate from the ink on the ink roll, whereby such ink will remain in proper workable condition for a long period of time.

This end is secured by substantially saturating the rubber ink roll with a solvent having solvent characteristics similar to those of the solvent in the ink, and then applying the ink to the roll. The solvent-saturated condition of the ink roll prevents migration of solvent into the roll from the ink thereon, and the solvent stored in the roll constitutes a reservoir from which solvent is supplied to the ink on the roll to make up any deficiency of solvent in the ink resulting from evaporation.

My invention is adapted to be used with almost any printing machine in which the type is inked by an inking roll of rubber or any other suitable material which will absorb solvent having the characteristics of the solvent used in quick-drying ink, and merely for illustrative purposes there is shown somewhat diagrammatically in the drawings a marking machine operating in this way.

In the drawings:

Fig. 1 shows the operation of saturating the ink roll with solvent.

2

Fig. 2 illustrates the operation of supplying the solvent-saturated ink roll with ink.

In Fig. 2, 1 indicates the printing head of a marking machine of a known type which is provided with printing type 2; and 3 indicates a work support or platen which supports the work on which the imprint is to be made.

The printing head 1 has the usual vertically reciprocating movement toward and from the platen, and is illustrated as carried by an arm 4 pivotally mounted at 5. The ink roll for inking the type is shown at 6 and it is carried by an ink roll carrier 7 that has sliding movement in ways 8 with which the arm 4 is provided. When the arm is moved upwardly into raised position the carrier 7 is moved forwardly to bring the ink roll into contact with the type 2 and when the arm 4 moves downwardly to make the imprint the carrier 7 moves backwardly and brings the ink roll into engagement with an ink plate 9.

The ink roll is of that type which is absorptive of the solvent in the ink being used to make the printed impression, and is preferably made of rubber material such as neoprene, which will absorb such solvent up to the saturation point without undergoing any change of shape or size.

During the use of a printing machine such as is illustrated in the drawing, there will be a gradual loss of solvent from the ink on the ink roll 6, due partly to evaporation and partly to migration of the solvent from the ink into the ink roll. Such loss of solvent produces a deficiency of solvent in the ink on the ink roll notwithstanding fresh ink which may be supplied thereto from the inking plate 9, and as a result of such solvent deficiency the ink on the ink roll develops a tacky condition which has a harmful effect on the quality of the printed impression. When this condition arises it becomes necessary to clean the ink roll and remove therefrom all the solvent-deficient ink.

In accordance with my invention the solvent in the ink on the ink roll is prevented from migrating into the latter, thereby eliminating that source of solvent loss, and in addition solvent is supplied to the ink on the ink roll to replace solvent that may be lost by evaporation.

In practicing the invention the ink roll 6 is first saturated or well impregnated with a solvent of the character used in the ink with which the printed impression is to be used, and this may be accomplished in any suitable way such as by placing the roll in a bath of the solvent as shown in Fig. 1, in which 10 indicates a tank containing a bath 11 of such solvent, the ink roll 6 being

3

shown as submerged in such bath. The solvent used for the bath may be the same kind of solvent as that in the ink, or may be a solvent having the same solvent characteristics as the solvent in the ink.

The length of time which it is necessary to maintain the ink roll submerged in the solvent bath will vary somewhat depending on the physical and other characteristics of the material of the roll and may be as long as ten or twelve hours. In any event it is desirable to keep the roll in its submerged condition until it is well impregnated with the solvent.

The roll is then removed from the bath and placed in the printing or marking machine, after which it is properly inked in any suitable or usual way, with quick-drying ink containing solvent as above described. The machine is then ready for the printing operation.

Since the ink roll is saturated or well impregnated with solvent there will be no migration or transfer of solvent from the ink on the ink roll into the latter so that the only loss of solvent from the ink will be that due to evaporation.

The solvent carried by the ink roll constitutes a solvent supply from which solvent will migrate into the ink on said roll to replace solvent which may be lost by evaporation. In this invention, therefore, the ink roll itself becomes a reservoir of solvent from which the ink thereon is supplied with solvent as the solvent content of the ink is reduced by evaporation, and thereby the ink is maintained in good working condition for long periods of time.

The solvent used in the ink may vary considerably, but, as stated above, it has been found that esterified ethers of ethylene glycol are satisfactory for this purpose, especially phenyl ether of ethylene glycol.

I claim:

1. The method of inking with a quick-drying ink the type of a printing machine employing a rubber ink roll which is pervious to the solvent in the quick-drying ink, which method comprises saturating the ink roll with a solvent having substantially the same characteristics as the solvent

4

in the quick-drying ink, applying such quick-drying ink to the ink roll after it has been thus saturated with said solvent, and subsequently inking the type with said roll, the solvent with which the ink roll is saturated constituting a barrier which prevents the solvent in the ink on the ink roll from migrating into said roll.

2. The steps in the method of inking with quick-drying ink the type of a printing machine employing a rubber ink roll which comprises applying the quick-drying ink to the surface of the rubber ink roll and preventing migration of the solvent in the ink on the surface of the ink roll into the latter by saturating said inking roll with solvent having the same characteristics as the solvent in the ink prior to the application of the quick-drying ink to said ink roll.

3. The method of inking with a quick-drying ink the type of a printing machine employing a rubber ink roll, which method comprises saturating the rubber ink roll prior to the application of the quick-drying ink thereto with a solvent having the same solvent characteristics as the solvent in the quick-drying ink, applying said ink to the solvent-saturated ink roll, and supplying solvent from the solvent stored in the solvent-saturated ink roll to the ink on said roll to replace any solvent that may have evaporated from the ink carried by said ink roll.

CARL R. JOHNSON.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,202,194	Lang	Oct. 24, 1916
1,727,978	Huebner	Sept. 10, 1929
2,007,588	Wescott	July 9, 1935
2,347,619	Taylor et al.	Apr. 25, 1944
2,530,282	Brodie et al.	Nov. 14, 1950
2,562,627	McKay	July 31, 1951
2,578,921	Cramer	Dec. 18, 1951

OTHER REFERENCES

Du Bois: *Plastics*, rev. ed., 1943, American Technical Society, Chicago. Copy available in Div. 17. Only pp. 309 and 310 cited.