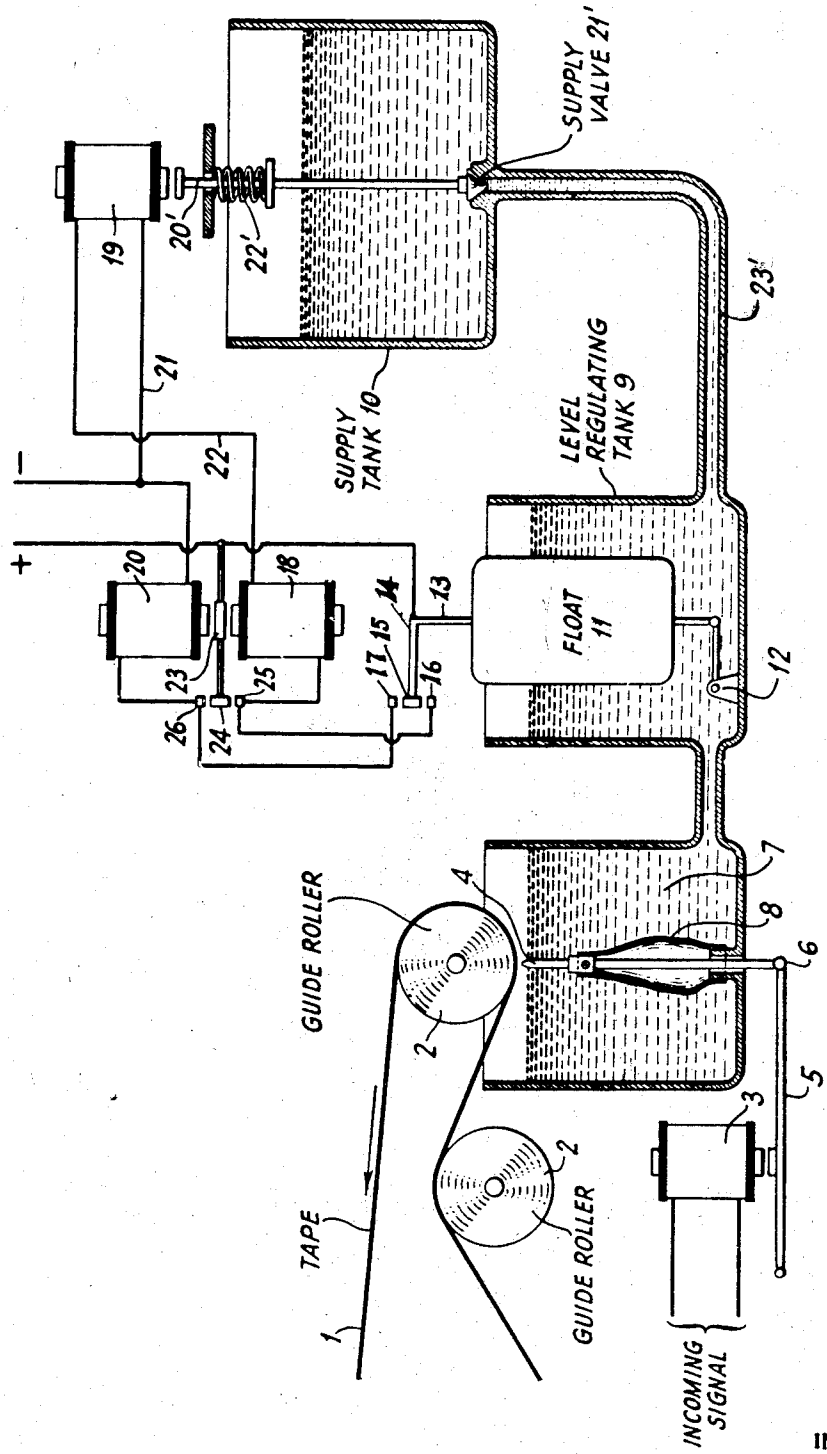
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FACSIMILE INK RECORDER

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FACSIMILE INK RECORDER

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This invention relates to improvements in ink recorders, and particularly to such recorders for use in facsimile systems.

A difficulty heretofore experienced in the use of known types of ink recorders in facsimile systems has been due to the irregular flow of ink from the printing pen. This irregular flow of ink has been mainly caused by the clogging of the marking fluid in narrow capillary channels through which it flows, and has especially manifested itself when a number of pens operate in close proximity to each other.

One of the objects of the present invention is to overcome the foregoing difficulty. This is achieved in accordance with the invention by providing an open inkwell with the printer points protruding through the surface of the ink for marking the tape. In this way the use of narrow capillary channels, in which the ink may clog, is avoided.

The following is a detailed description of the invention accompanied by a single drawing which illustrates a preferred form of an ink recorder for use in a facsimile system.

In the drawing, there is shown the usual tape 1 which is run over a series of guide rollers 2, 2 and upon which it is desired to print markings in accordance with the received signals. A signal relay 3 functions in response to the received incoming signals to actuate the printer rod 4 through a suitable armature 5 and link 6. Printer rod 4 is arranged to extend through the bottom of an inkwell 7 in such manner that its tip just sticks up above the level of the marking fluid in the inkwell so that it is constantly moistened by the ink as it moves up and down from the tape 1 extending over the guide roll 2. A rubber tube 8, or metal bellows, seals the lower portion of the printer rod from thee ink and enables the printer rod to move freely therethrough. The top of rod 4 is within striking distance of the tape 1 and applies the marking fluid to the tape whenever a signal energizes relay 3 to attract armature 5.

One advantage of the present invention lies in the fact that the pen and elastic tubing do not cause any variation in the level of the fluid, because of the motion thereof. Both pen and tubing displace the same amount of fluid whether in motion or stationary.

In order to maintain the marking fluid in the inkwell 7 at a constant level due to use of the fluid and evaporation thereof, there is provided a level regulating tank 9 and a supply tank 10, both of which communicate with the inkwell 7.

In the regulating tank 9 there is shown a float 11 which moves up and down with the change in level of the marking fluid in the tank. If the amount of fluid in tank 9 diminishes below the desired level, the float 11 which is hinged to element 12 at the bottom of the tank 9, will be lowered and will also lower rod 13 and arm 14, thus causing contact 15 at the end of rod 14 to engage contact 16. The closure of contacts 15 and 16 will close an obvious circuit to energize relays 18 and 19 in series. The path for the circuit will be from the negative side of a suitable source of potential, indicated by the minus sign, lead 21, winding of relay 19, lead 22, winding of relay 18, contacts 25, 16 and 15, arm 14 to the positive side of the same source of potential indicated by the plus sign. The energization of relay 18 will attract its armature 23 thus causing contacts 24 and 25 to engage, locking the relays 18 and 19 in operative position. This locking circuit, it will be seen, shunts out the connection including arm 14 and contacts 15 and 16 and thus prevents arcing on these contacts. The actuation of relay 19 will raise the armature 20' and supply valve 21' against the action of coil spring 22', thus permitting the fluid in the supply tank 10 to flow into the channel 23' to raise the level of the ink in the regulating tank 9, and at the same time raise the float 11. When the ink in the regulating tank 9 has reached the desired level so as to cause the fluid in the inkwell 7 to reach its predetermined level, the float 11 will be raised an amount sufficient to cause the arm 14 to leave contact 16 and engage contact 17 by means of contact 15. The engagement of contacts 15 and 17 will then close an obvious circuit to energize relay 20 which will attract armature 23 upwards, thus locking the relay 20 over its contacts 26 and 24. The upward movement of armature 23, due to the energization of relay 20, will open the circuit between contacts 24 and 25, thus restoring relays 18 and 19 and enabling spring 22' to restore armature 20' and valve 21' to normal position, in which position the supply valve 21' will close channel 23' from the supply tank 10. It should be noted at this time that the locking circuit for relay 20, which extends over contacts 26 and 24, will shunt out the circuit including contacts 17, 15 and 14 so as to prevent arcing of these contacts as the float 11 moves up and down with slight changes in the level of the fluid in tank 9. Relay 20 will remain operated until the ink in the regulating tank 9 diminishes to an extent which will cause float 11 to again cause contacts 15 and

16 to engage, at which time the cycle of operations hereinabove outlined will be repeated.

One of the advantages of the present invention resides in the fact that the force of gravity on the marking fluid in the inkwell overcomes smearing of the ink on the tape. A further advantage is that there is no mechanism employed in the invention which can be clogged up by the drying of the ink.

It will be understood, of course, that by means of suitable adjustment of the length of the printer rod 4, the tip of the rod will be above the ink level, while at the same time the capillary force of the ink will keep the tip continuously moistened.

What is claimed is:

1. In a facsimile system, a vertical pen for marking signals on a tape located within striking distance of said pen, a well with marking fluid, said pen having its marking tip normally positioned at the top of the pen slightly above the level of said fluid in said well, a relay for raising and lowering said pen to strike said tape, in accordance with signals applied to said relay, whereby the tip of said pen is constantly moistened by the fluid in said well, said pen displacing the same amount of fluid when in movement as when stationary, whereby the level of said marking fluid remains substantially constant during movement of said pen, and supply means for said well responsive to a decrease of said level for replenishing said fluid to the desired level.

2. In a facsimile system, a vertical pen for marking signals on a tape located within striking distance of said pen, a well with marking fluid, said pen having its marking tip normally positioned at the top of the pen slightly above the level of said fluid in said well, a relay for raising and lowering said pen vertically to strike said tape, in accordance with signals applied to said relay, whereby the tip of said pen is constantly moistened by the fluid in said well, said pen extending through the bottom of said well, an elastic tubing contained wholly within said fluid for sealing the bottom portion of said pen from said fluid, said pen and tubing displacing the same amount of fluid when in motion as when stationary, whereby the level of said marking fluid remains substantially constant during movement of said pen and elastic tubing, and supply means for said well responsive to a decrease of said level for replenishing said fluid to a desired level.

3. In a facsimile system, a vertical pen for marking signals on a tape located within striking distance of said pen, a well with marking fluid, said pen having its marking tip normally positioned at the top of the pen slightly above the level of said fluid in said well, a relay for raising and lowering said pen vertically to strike said tape in accordance with signals applied to said relay, whereby the tip of said pen is constantly moistened by the fluid in said well, said pen displacing the same amount of fluid when in movement as when stationary, whereby the level of said marking fluid remains substantially constant during movement of said pen, and supply means for said well responsive to a decrease of said level for replenishing said fluid to the desired level, said supply means including a level regulating tank communicating with said well and a supply tank communicating with said level regulating tank, said supply tank having a valve for opening and closing the path of flow of the fluid therein to said regulating tank, said regulating tank having a floating element responsive to the level of the fluid in said regulating tank for enabling the opening and closing of the valve in said supply tank.

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