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AUTOMATIC INK SUPPLY FOR SIGNAL RECORDERS

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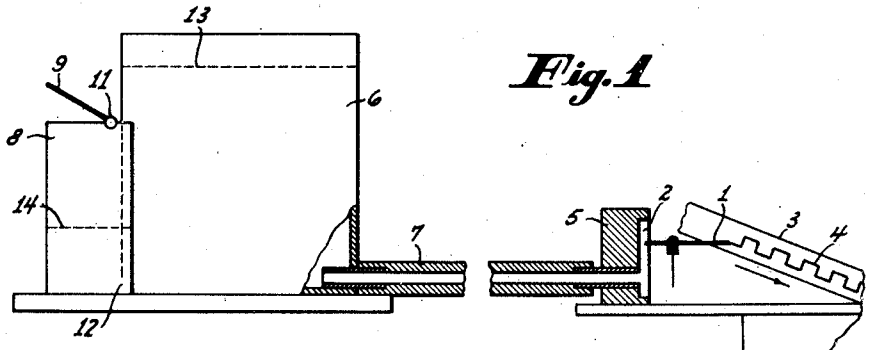


Fig. 1

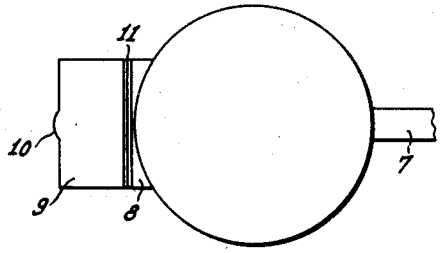


Fig. 2

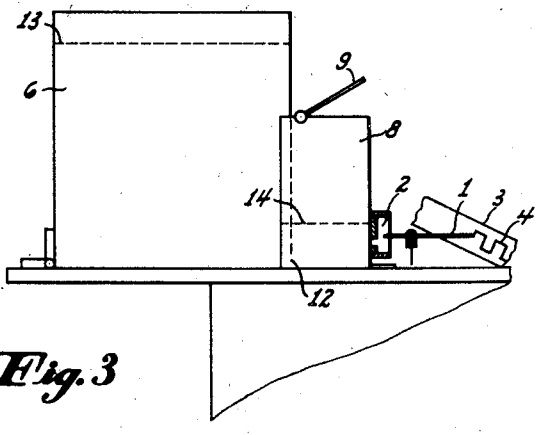


Fig. 3

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AUTOMATIC INK SUPPLY FOR SIGNAL RECORDERS

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3 Claims. (Cl. 178—96)

This invention relates to ink reservoirs for telegraph recorders and similar devices.

It has long been the practice to record signals such as the Morse and similar codes on moving tapes in land-line, cable and radio telegraphy. The hollow stylus or pen used to mark the dots and dashes or equivalent on such tapes has one end moving in a slot in a head supplied with ink by a flexible tube connected to an ink pot and the other end moving against or adjacent the tape. The ink flows into the slot through the tube by the combined force of gravity and capillarity and the inkpot is supported so that it can be raised and lowered in respect to the ink slot to permit the ink to flow into the slot.

The slot is narrow enough so that the capillary attraction prevents the ink from flowing out of the slot so long as the hydrostatic pressure from the inkpot stays within narrow working limits.

Frequent adjustments of the inkpot is required in practice and if great care is not used in making these adjustments the pressure is likely to increase sufficiently to cause the ink to overflow through the pen slot. The inkpot is either open at the top or is covered by a loose fitting cap so that air can flow into the assembly at the top. The rate of evaporation is accordingly high. This is not only wastes ink but also renders the remainder murky and less fluid whereby caking frequently results.

It is an object of my invention to produce an ink supply system for recorders that reduces evaporation to a minimum, requires no hand adjustment of ink level and prevents overflow and caking.

Another object of the invention is to maintain the level of the ink in the feed chamber within suitable narrow limits that prevents overflow and maintains an adequate supply of ink for an extended period.

Another object is to employ an automatic feed chamber that maintains the ink level within narrow limits in the ink reservoir.

Other objects will appear in the following description, reference being had to the drawing in which:

Fig. 1 is an elevation of an inking assembly embodying my invention.

Fig. 2 is a plan view of the supply chamber and reservoir shown in Fig. 1.

Fig. 3 is a modification.

Referring to Fig. 1, a hollow stylus or pen 1 has one end movably positioned in the ink slot 2 and the other sufficiently close to moving tape 3 to bring the ink in the pen against the tape for recording signals such as shown at 4. The pen is moved up and down in Fig. 1 by any well known mechanism not shown. The tape is moved to the right in Fig. 1 by well known ratchet or other feed mechanism that also is not illustrated. These parts specifically are not parts of my invention and need not be further described since they are well known.

The narrow ink slot 2 is formed in a head 5 and communicates with a supply reservoir 6 by a suitable tube 7.

Reservoir 6 is hermetically sealed at the top and is attached to a small inkpot 8 having a hinged top 9 that may be lifted by any suitable arrangement such as a projecting tab 10. This lid makes a fairly tight fit with the inkpot as sufficient air leaks in around the hinge 11 to permit the ink level to change as later described. The interior of the inkpot communicates with the interior of the supply chamber only through a small opening 12 at the bottom. This opening may be a hole or a slot without affecting the method of operation, which will now be described.

Suppose the chamber 6 is filled to level 13 and the inkpot 8 to level 14. These levels will remain stationary as long as ink is not being used in the pen for recording. The ink in chamber 6 will be held at level 13 by barometric pressure and the level in head 5 is maintained by adhesion between the ink and the walls of slot 2 in opposition to gravity. The height of the ink in the slot therefore depends to some extent upon the hydrostatic head, that is, on the height of the ink level 14 in pot 8. Ink is drawn by capillary attraction through pen 1 and deposited on the tape 3 in recording signals. When sufficient ink has been used by the pen the level 14 of the ink in pot 8 will fall to slot 12 whereupon an air bubble will pass through the ink slot 12 into chamber 13. This permits a corresponding volume of ink from chamber 6 to flow into inkpot 8, lowering the level 13 and raising the level 14 above slot 12. This cycle will be repeated as long as the pen uses ink, until the ink in chamber 6 is depleted down to the opening in the tube 7. However, before this much ink is used the chamber B would be filled by the operator. The filling can be accomplished by tilting the assembly so that the inkpot 8 and slot 12 are on top and then flowing ink through a small tube inserted through inkpot 8 and slot 12.

In Fig. 3 I have shown the pen slot 2 communicating directly with the interior of inkpot 8.

Similar parts in Figs. 1 and 3 have been given similar reference characters and the operation of this modification will be readily understood. It is practically the same as that of Fig. 1, the only difference being that the ink is fed from inkpot 8 directly to the pen slot 2 and the ink for chamber 6 refills the inkpot to its original level.

Various other modifications may be devised without departing from the spirit of the invention.

Having described my invention, what I claim is:

1. In an ink supply for pen-type recorders, a supply head having a narrow ink slot a recording stylus having one end adapted to move in said slot for receiving its ink supply, an ink pot communicating with said slot and means to automatically replenish the ink in said pot when it lowers a predetermined amount.

2. In an ink supply for pen-type recorders, a supply head having a narrow ink slot, a recording stylus having one end adapted to move in said slot for receiving its ink supply an ink pot open at the top to atmospheric pressure, an ink supply chamber closed at the top to atmospheric pressure, said slot, pot and chamber being interconnected, the connection between the pot and chamber being a restricted opening near the bottom of each.

3. In an ink supply for pen-type recorders, an ink chamber closed at the top to atmospheric pressure, an inkpot open to atmospheric pressure at the top and connected to the chamber by a relatively small opening at the bottom, said chamber and pot being closed at the bottom except for said openings, a supply head having a narrow slot connected to said inkpot through an opening near the bottom.

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