A facsimile recorder with a web compartment for a roll of moist electrolytic recording paper drawn along a path through a recording zone at the opening of a second compartment for a marking electrode has an apertured non-conductive sheet overlying the opening to prevent contact between the electrode and web outside the recording zone and to pass moisture to the electrode so as to prevent accumulation of recording by-products on the electrode.
ELECTROLYTIC RECORDER WITH PERFORATE SHEET ADJACENT RECORDING ZONE

BACKGROUND OF THE INVENTION

Electrolytic recording paper has the advantage of receiving clear, permanent records, but must be kept moist until marked between recording electrodes. During recording an accumulation of paper fibres and other recording by-products may build up on an electrode and dry with irregular distribution so as to insulate the electrode from the paper and cause blank streaks along the marked paper. The accumulation is difficult to remove from an electrode even by brush scrubbing or abrasion, is time consuming and requires stopping operation of the recorder. Accumulation of recording by-products can be reduced by confining a marking electrode in a humidor, but maintenance of a water supply in the humidor requires operator attention, which if neglected will require stopping the recorder.

Accordingly the object of the present invention is to prevent accumulation of recording by-products by maintaining the marking electrode in a moist atmosphere with means which require no operator attention.

DRAWINGS

FIG. 1 is a side section of an electrolytic facsimile recorder according to the invention; and
Fig. 2 is a top plan view of the recorder, shown partly broken away.

SUMMARY OF THE INVENTION

According to the invention, a facsimile recorder for moist electrolytic paper recording comprises means to feed a supply of moist web along a path through a recording zone, a marking electrode operative on the web through the opening, and a sheet underlying the paper path and extending over the opening substantially to the recording zone, the sheet having apertures therethrough communicating through the opening with the electrode for passing moisture vapor to the electrode, thereby to supply moisture to the electrode and prevent the accumulation of recording by-products on the electrode.

DESCRIPTION

As shown in the figures an electrolytic facsimile recorder comprises a housing with a base 1 and a cover 2 hinged to the base at 3. Along the top of the base is a plate 4 defining a reference plane. A supply roll of moist electrolytic recording paper 6 is contained in a web compartment 7 having an opening 8 through the top plate. Feed rolls 9 draw the paper on a path from the web compartment generally along the reference plane through a recording zone Z to an exit 11 at the unhinged end of the cover 2. A second compartment 12 in the base surrounds a rotating drum 13 carrying a helical electrode 14 described more fully in U.S. Pat. Nos. 3,417,405 and 3,577,150. The second electrode compartment 12 has an opening 16 through the top plate close to and surrounding the recording zone Z. At the recording zone the helical electrode is opposed by a linear or blade electrode 17 resiliently suspending from the cover 2, and lowered by closing the cover into engagement with stops 15 on the top plate 4, of which one is shown. The stops position the blade with a predetermined pressure upon the recording paper 6 and resilient, helical electrode 14.

As is well known in the facsimile recording art, rotation of the drum 13 causes the pressure point of helix and blade to scan repeatedly transversely of the paper path. Electric signals applied to the helical and blade electrodes causes release of metallic ions which combine with a lake former in the moist electrolytic impregnation of the paper to mark the paper with a colored lake. Most of the lake is retained in the paper, but after several hours of operation an accumulation of lake, electrolyte, paper fibres and particles and other recording by-products tend to accumulate on the electrodes. Accumulation of the by-products on the blade 17, which is preferably an endless loop, may be minimized as disclosed in my copending application Ser. No. 129,518, filed Mar. 30, 1971.

Accumulation of the electrolytic by-products on the rotating helical electrode 14 is not serious during normal operation. But if the helix is run at slow speeds or is stopped for a period, particularly in low atmospheric humidity, the by-product accumulation will dry on the helix randomly insulating points or areas along its outer, effective recording edge. The dry deposits insulate or space the paper from the helix causing the helix to leave unrecorded to blank streaks along the paper when recording is resumed. To remove the dry deposit the drum must be scrubbed with a brush and water, or a piece of abrasive material held against the recording edge of the helix as it is rotated, raising the hazard of spreading foreign matter and abrasive through the recorder.

According to the invention accumulation recording by-products on the helix is largely prevented by means of a sheet of non-conductive material 18 secured to the base and extending from the paper web compartment 7 along the top plate 4 and over the opening 16 from the helical electrode compartment 12. The sheet 18 bridges the opening 16 laterally of the paper path and extends almost to the recording zone Z. Where the sheet 18 overhangs the opening 16 the sheet has circular or otherwise shaped apertures 19 communicating with the electrode compartment 12. The perforate sheet 18 underlies the path of the most recording paper 6 and allows moisture vapor, mainly water vapor, to pass through its apertures to the helical electrode 14 in the compartment 12. This moisture supply is adequate during slow or fast recording to maintain sufficient or an excess of humidity around the helical electrode for preventing subsequently harmful accumulation of recording by-products. A minor accumulation may occur but by maintaining the helical electrode moist, large accumulations do not develop, but rather are released into the paper compartment. In any event, the helix, after being allowed to dry while the recorder is stopped, will resume recording substantially completely without the streaking that occurred without the perforate sheet.

A suitable sheet in a recorder of 19 inch wide paper is a semi-rigid rectangle of Mylar plastic approximately 0.005 inch thick and 5 inches long along the paper path and 19.5 inches wide. The overhanging end of the sheet has three rows of equally spaced seven thirty-seconds inch diameter apertures 19, the endmost row being approximately 1 inch from the end of the sheet overhanging the electrode compartment opening 16. The
amount of moisture supplied to the helix may be controlled by adjustment of the net aperture area, for example by increasing the diameter or number of apertures. Also, for example, delivery of moisture may be moved closer to the helix by locating the apertures close to the free end of the perforate sheet.

The sheet 18, underlying the recording paper 6, further serves as a barrier or separator preventing accidental contact of the helical electrode and paper prior to the paper's being fed to the recording zone 2. Fault recording and degradation of the desired record is thereby prevented.

Cooperating with the perforate sheet 18 is a similar but imperforate Mylar sheet 21 overlying the paper path and perforate sheet 18. The imperforate sheet 21 is secured on the underside of a metal sheet 22 carried on the cover 2, or, as shown, pivoting around the hinge 3 so that the metal and imperforate sheet may be lifted upwardly from the reference plane of the top plate 4. To the underside of the metal sheet left end of the metal sheet. These strips rest on the top plate 4 at the sides and left end of the paper web compartment 7 vapor sealing the compartment and maintaining the paper supply roll moist. The right end of the paper compartment where the paper exits is sealed by the sandwich of imperforate strip 21, paper 6 and perforate portions of the perforate sheet 18. When the paper is being fed during recording it carries moisture to the perforations 19. But when the recorder and paper feed are stopped the motionless paper conducts negligible moisture from the paper compartment 7. And almost half of the opening 16 from electrode compartment 12 is closed by the perforate and imperforate Mylar sheets, while the remainder of the opening 16 is largely closed by the recording paper.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A facsimile recorder for moist electrolytic recording comprising:
   a housing including a web compartment for holding a supply of moist web and having an exit, a second compartment having an opening, a closure covering the web compartment to vapor seal the same and extending over the web path, means for feeding the web on a path from the web compartment across the opening of the second compartment, a first electrode in the second compartment, a second electrode opposed to the first electrode along a recording zone on the web path at the opening of the second compartment, and the second compartment opening substantially to the recording zone, and means to supply moisture to the first recording electrode in the second compartment during feed of the web, so as to prevent the accumulation of recording by-products on the first electrode, the closure and means to supply moisture cooperating to prevent escape of moisture along the web when the web is stopped, and said means to supply moisture comprising a sheet underlying the web path and overlying the second compartment opening substantially to the recording zone, the sheet having apertures therethrough communicating with the second compartment for passing moisture vapor from the recording web to the second compartment.

2. A facsimile recorder for moist electrolytic recording comprising:
   a housing including a web compartment for holding a supply of moist web drawn therefrom along a path through a recording zone, the housing including a second compartment having an opening around the recording zone, a marking electrode in the second compartment operative on the web in the recording zone, and means to supply moisture to the electrode and prevent the accumulation of recording by-products on the electrode, said means to supply moisture comprising a sheet underlying the web path and extending over the second compartment opening substantially to the recording zone, the sheet having apertures therethrough communicating with the second compartment for passing moisture vapor to the second compartment.

3. A facsimile recorder for moist electrolytic recording comprising:
   means to feed a supply of most web along a path through a recording zone, wall means having an opening at the recording zone, a marking electrode operative on the web through the opening, and means to supply moisture to the electrode and prevent the accumulation of recording by-products on the electrode, said means to supply moisture comprising a sheet underlying the web path and extending over the opening substantially to the recording zone, the sheet having apertures therethrough communicating through the opening with the electrode for passing moisture vapor to the electrode.

4. A recorder according to claim 3 wherein the sheet is of non-conductive material preventing contact of the web and marking electrode outside the recording zone.

5. A recorder according to claim 3 further comprising a sheet means overlying the paper path and said sheet.

6. A recorder according to claim 5 comprising a compartment for the web supply wherein the sheet means comprises means for vapor sealing the web compartment and the web path to the recording zone whereby, when the paper is stopped the sheet, sheet means and web prevent moisture loss from the web compartment along the web path.

7. A recorder according to claim 3 further comprising a second compartment including said wall means and enclosing said electrode.

8. A recorder according to claim 3 further comprising a second marking electrode opposed to the first said marking electrode along the recording zone.

9. A recorder according to claim 3 further comprising a base, the feed means, wall means and sheet being supported on the base.