Jan. 5, 1971 F. BROUWER ET AL 3,553,715

FACSIMILE PRINTER CONTACT ASSEMBLY

Filed July 17, 1967 2 Sheets-Sheet 1

Fig. 1.

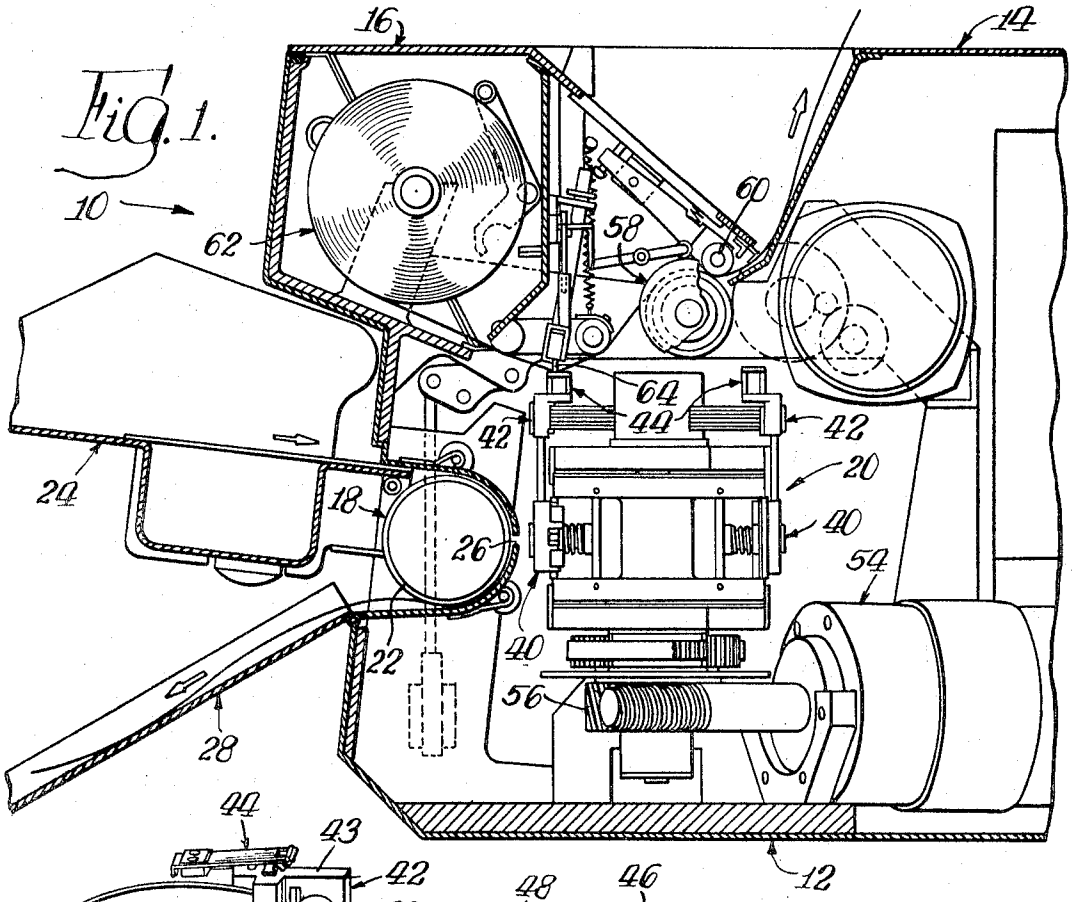


Fig. 2.

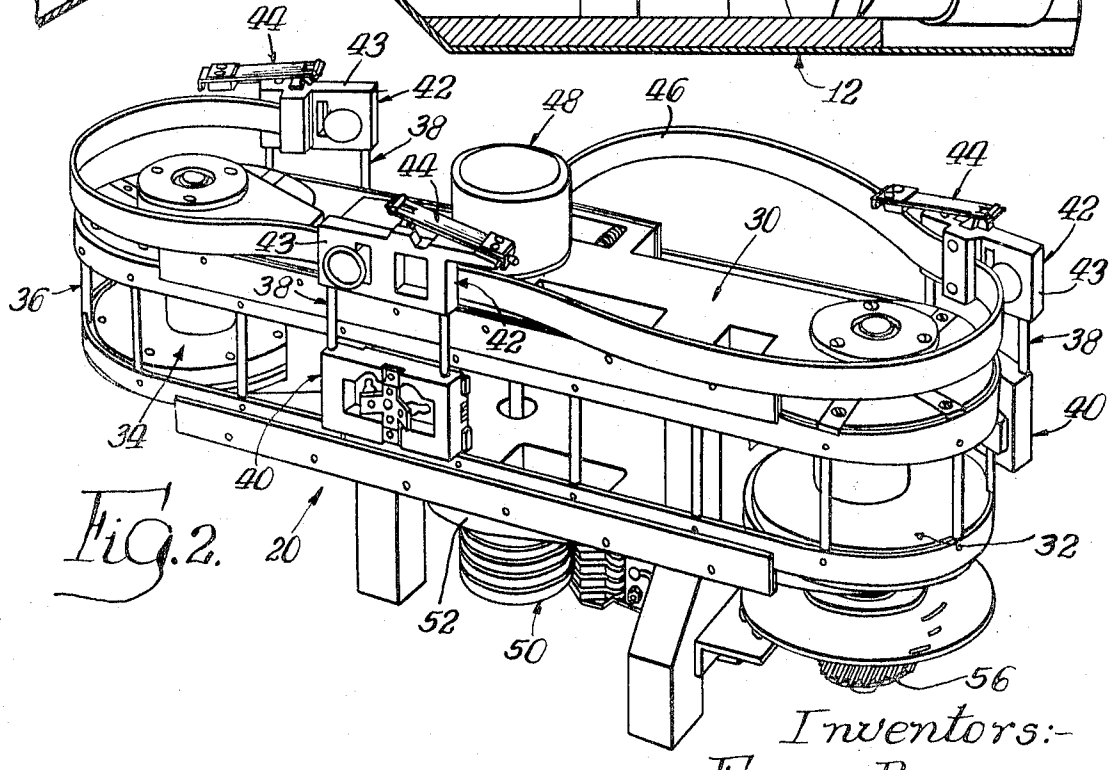


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Fig. 3.

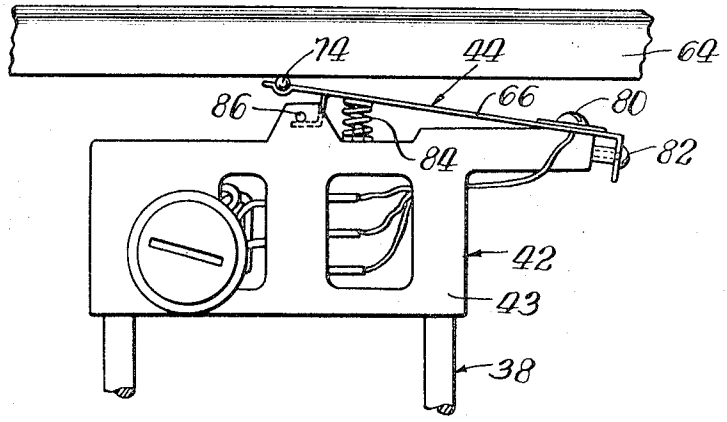



Fig. 4.

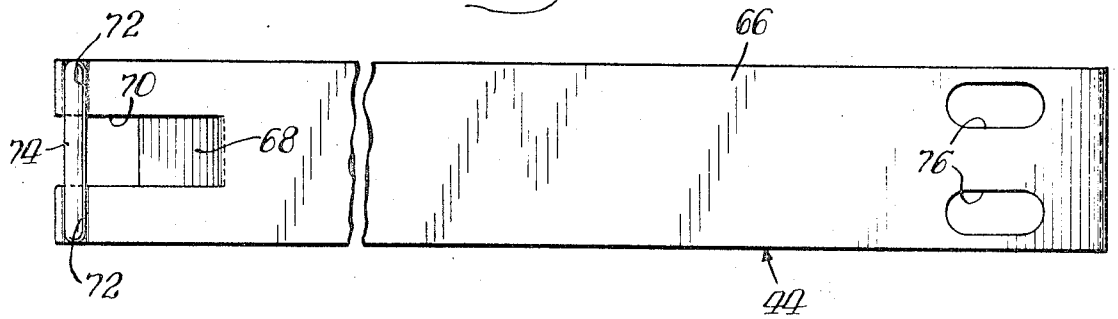
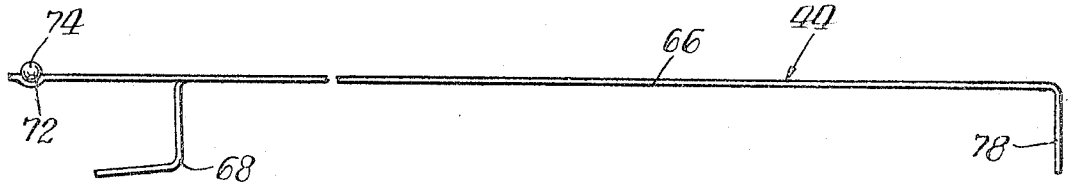



Fig. 5.

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3,553,715

# FACSIMILE PRINTER CONTACT ASSEMBLY

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U.S. Cl. 346—74 2 Claims

## ABSTRACT OF THE DISCLOSURE

A printer contact assembly comprised of an elongated strip with a contact element secured thereon, and wherein the strip is formed with an aperture adjacent the contact element to prevent fibers of paper from accumulating on the assembly as the contact element is moved across recording paper during print-out of graphic data in facsimile apparatus.

## BACKGROUND OF THE INVENTION

### Field of the invention

The present invention pertains generally to facsimile apparatus for recording on paper graphic data transmitted by wire, and more particularly to improved printer contact means for use in such apparatus.

### Description of the prior art

In one type of facsimile recorder apparatus, such as disclosed and claimed in the copending application of Frans Brouwer and Frank L. Sobchak, Ser. No. 613,545, filed Feb. 2, 1967, electrical signals from a facsimile transmitter are converted to printing current and passed through associated printer contact means and a linear printer bar. The printer contact means is moved lengthwise of the printer bar, while moist electrolytic recording paper is drawn between the printer contact means and the printer bar transversely of the latter. Metal from the printer bar is deposited on the recording paper and reacts with chemicals therein to produce, in various shades from black to white, an image of the transmitted copy. In facsimile print-out mechanism of this nature, fibers of paper tend to accumulate on the printer contact means during movement of the latter lengthwise of the printer bar. Such buildup of fibers has proved undesirable because it interferes with proper contact between the printer contact means and the recording paper.

## SUMMARY OF THE INVENTION

The present invention is concerned with improved printer contact means for facsimile recorder apparatus of the general type described above. This invention contemplates the provision of a printer contact assembly comprised of elongated strip means, a contact element secured to the strip means transversely thereof, and an aperture formed in the strip means adjacent the contact element. The aperture in the strip means serves to prevent the accumulation of fibers of paper on the assembly as the contact element is moved across recording paper lengthwise of the associated printer bar. By thus eliminating the buildup of fibers on the printer contact assembly, proper contact is at all times maintained between the contact element and the recording paper, thereby effecting uniform and high quality reproduction of data.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view, partly in section and partly in elevation, of the front portion of a facsimile transceiver incorporating the principles of the present inventon;

FIG. 2 is a perspective view looking toward the front of the scanner assembly of the facsimile transceiver of FIG. 1;

FIG. 3 is an elevational view, on an enlarged scale, of the printer contact assembly of the present invention and portions of the supporting and cooperating elements of the transceiver associated therewith;

FIG. 4 is a plan view, on a further enlarged scale, of the printer contact assembly of FIG. 3; and

FIG. 5 is a side elevational view of the printer contact assembly of FIG. 4.



## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, there is indicated generally by the reference numeral **10** one type of facsimile apparatus—a facsimile transceiver—in which the printer contact assembly of the present invention may be incorporated. The facsimile transceiver **10** comprises a main frame **12** enclosed by a cover assembly **14** and a top door assembly **16**.

Operable in the transmission mode of the facsimile transceiver **10** are a copy feed mechanism indicated generally at **18** and a scanner assembly indicated generally at **20**. The copy feed mechanism **18** includes a transverse power driven copy feed roller **22** which draws copy material from a copy feed tray **24**, feeds the copy material past a longitudinal scanning slot **26**, and discharges the same onto a tray **28**. The scanner assembly **20** extends parallel to the copy feed roller **22**, and as shown in FIG. 2, includes frame means **30**, drive and idler pulley assemblies **32** and **34**, a timing belt assembly **36** trained about the pulley assemblies **32** and **34**, combined scanner and printer contact units **38** carried by the timing belt assembly **36**, and associated synchronizing and electrical transmission means. Each scanner and printed contact unit **38** includes a lower optical scanner carriage assembly **40**, and an upper carriage and contact essembly **42** comprised of a carriage block **43** and a printer contact assembly **44** of the present invention to be described hereinafter. The combined scanner and printer contact units **38** are adapted to be connected to other electrical components of the transceiver **10** by means of a ribbon tape **46** and a rotor assembly **48**. The rotor assembly **48** includes a commutator assembly **50** and is adapted to be driven from the drive pulley assembly **32** by means of a belt **52**. A motor **54** (FIG. 1) is arranged to drive a gear **56** at the lower end of the drive pulley assembly **32**.

When the gear **56** is rotated, the drive pulley assembly **32** and the timing belt assembly **36** are correspondingly rotated, and the optical scanner carriage assemblies **40** are accordingly moved in a continuous closed path a portion of which extends parallel to the copy feed roller **22**. As copy material is drawn about the copy feed roller **22**, it is scanned, line-by-line, an elemental area at a time. The images received by the optical scanner carriage assemblies **40** from the copy material are converted to electrical signals by suitable circuitry, and these signals are sent to another transceiver or other suitable facsimile recording device for reproduction of the original copy material. For further details concerning the construction and operation of the above described components of the transceiver **10**, reference may be made to the aforesaid copending application of Frans Brouwer and Frank L. Sobchak.

In the receiving mode of the facsimile transceiver **10**, electrical signals received from another transmitter are converted to printing current by suitable circuitry, and this current is used to produce an image of the transmitted copy on electrolytic recording paper. As shown in FIG. 1, the print-out mechanism comprises a transverse power driven combined drive and heat roller assembly **58** and an associated pressure roller **60** which together

serve to withdraw moist electrolytic recording paper from a roll **62**, move the paper beneath a transverse linear printer bar **64**, and issue the paper with reproduced data for viewing. Arranged for cooperation with the printer bar **64** are the above described printer contact assemblies **44**.

As shown in FIGS. 3–5, each printer contact assembly **44** is comprised of elongated strip means in the form of an elongated strip or leaf spring member **66**. At one end of the strip **66** a depending generally L-shaped leg portion **68** is struck therefrom whereby to define a generally rectangular aperture **70** which extends lengthwise of the strip **66** centrally thereof and is open at the one end of the strip. The same end of the strip **66** is also formed with semi-cylindrical depressed portions **72** extending transversely thereof in alignment on each side of the aperture **70**. Secured at its ends in the depressed portions **72** is a contact element **74** in the form of a cylindrical pin member. The other end of the printer contact block **43**. Also, extending through the depending arm portion **78**. In mounted position, the printer contact strip **66** extends along the top side of the carriage block **43**, and is secured to an inclined top surface thereof by means of screws **80** projecting through the slots **76** and into the block **43**. Also, extending through the depending arm portion **78** is an adjustment screw **82** which is threaded into the adjacent wall portion of the carriage block **43**. The free end of the contact assembly **44** is normally biased upwardly by a coil spring **84**, and the leg portion **68** is engageable with a lateral limit pin **86**.

The printer bar **64** (FIG. 1) is disposed vertically above and in the straight line path of travel of the scanner and printer contact units **38** along one side of the scanner assembly **20**. In the receiving mode, the printer bar **64** is biased downwardly and presses the paper from roll **62** downwardly into contact with the printer contact element **74** of the adjacent printer contact unit **38**. As the timing belt assembly **36** is rotated, the printer contact units **38** are moved in the aforementioned continuous closed path and the printer contact elements **74** are successively moved lengthwise of the printer bar **64**. Printing current is passed through the associated printer contact elements **74**, the recording paper, and the printer bar **64**, and iron from the printer bar **64** is deposited on the recording paper and reacts with chemicals therein to produce an image of the transmitted copy. In this manner, copy is reproduced, line-by-line, an elemental area at a time, in synchronism with another transceiver or suitable transmitter in which copy material is being scanned. As the recording paper passes over the combined drive and heat roller assembly **58**, it is dried and the electrolytic printing process is completed. Further details of the construction and operation of the various components of the print-out mechanism associated with the printer contact assemblies **44** of the present invention are disclosed in the aforesaid copending application of Frans Brouwer and Frank L. Sobchak.



During movement of the printer contact elements **74** lengthwise of the printer bar **64** in the receiving mode, fibers are normally loosened from the electrolytic recording paper. In this connection, the aperture **70** formed in each printer contact strip **66** accommodates movement of such fibers away from the printer contact element **74** and thereby prevents the accumulation of fibers at the contact element. The printer contact assembly of the present invention is thus self-cleaning. By eliminating the buildup of fibers about the printer contact elements **74**, interference by the fibers with proper contact between the contact element and the recording paper is eliminated.

While there has been shown and described a preferred embodiment of the present invention, it will be understood by those skilled in the art that various rearrangements and modifications may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

**1.** For use in facsimile print-out mechanism having a linear printer bar, a self-cleaning printer contact assembly adapted to be repeatedly drawn along the printer bar to mark recording paper therebetween in accordance with electric current passing therethrough comprising a cantilevered leaf spring strip, an elongated contact element on said strip at its free end and positioned transversely thereof for contacting the recording paper at its mid-portion along the printer bar, and said strip being formed with an aperture adjacent the leading edge of said contact element at its mid-portion to permit paper fibers to pass therethrough.

**2.** The printer contact assembly of claim **1** wherein said leaf spring is formed with semi-cylindrical depressed portions extending transversely thereof in alignment on each side of said aperture, and said pin member is secured at its ends in said depressed portions.


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U.S. Cl. X.R.

178—6.6; 346—139