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STYLUS FOR FACSIMILE RECORDERS

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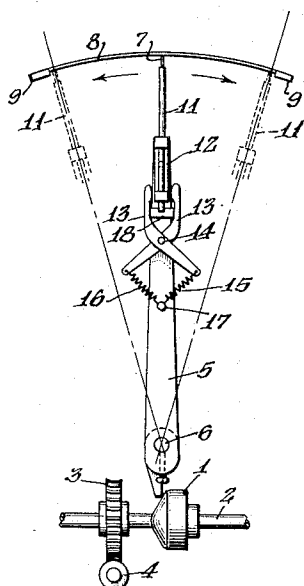


Fig: 1

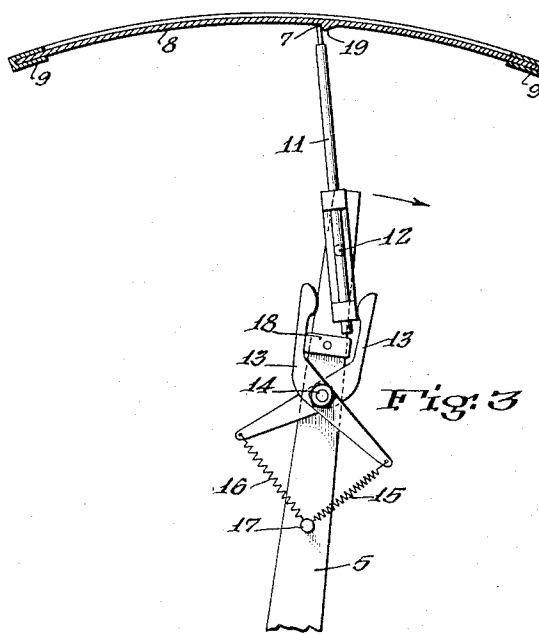


Fig: 3

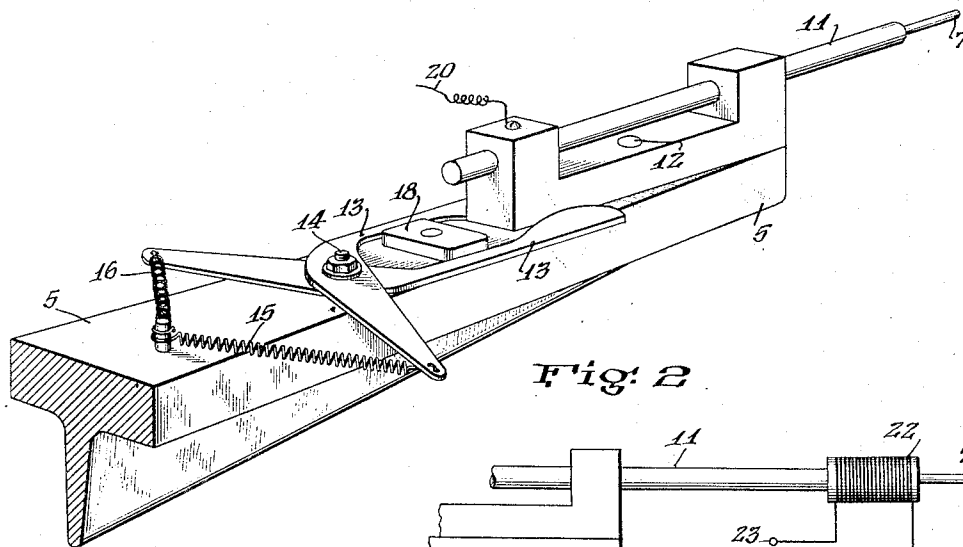


Fig: 2

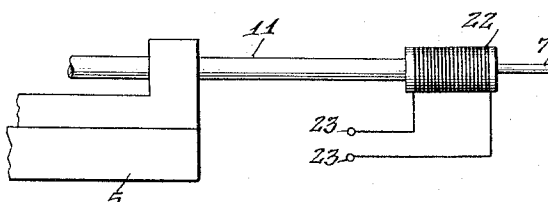


Fig: 4

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STYLUS FOR FACSIMILE RECORDERS

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3 Claims. (Cl. 178—11)

My invention relates to novel apparatus for the reception of visual images, by wire or radio, and more particularly relates to improvements for the stylus used for recording upon sensitized paper.

5 In my Patents 2,032,558 and 2,036,128, I have described facsimile apparatus for transmitting and translating facsimile images by wire or radio. In these patents are shown means for continuously recording messages on sensitized paper supplied from a roll fed through the recording mechanism. In recording, a stylus is pivotally arranged to scan sensitized paper in an arcuate path, from one edge of the sheet to the other. The stylus carries a marking point, which is moved towards and from the paper or otherwise electrically controlled in response to the received signals, to imprint a facsimile of the original image on said paper.

I have found that there is a tendency for the surface of the sensitized paper at times to pile up in front of the advancing stylus point dependent upon the nature of the surface of the paper and the pressure of the marking point. The effect is to seriously obstruct the free travel of the marking point to a degree such that the paper is torn at that point. Subsequently, as the marking stylus is moved over the paper, it will catch in the torn spot of the paper and continually enlarge said torn spot until the paper is torn. An important advantage resulting from my invention resides in the prevention of distortion in the received image due to lumps or creases in the paper or any other type of frictional impedance to the free movement of the stylus.

35 In carrying out my invention, I mount the stylus point which coacts with the recording sheet upon the oscillating stylus arm and provide means whereby the stylus may move with respect to the rigidly motivated record arm to permit the stylus point to avoid obstructions in its path of coaction with the sheet to prevent rupture of the record sheet and also to maintain synchronous reproduction of the facsimile image. The stylus point remains stationary for an instant until the scanner arm moves forward sufficiently to effectively foreshorten the radial distance of the point from its pivotal motivating center so that the stylus would immediately pass over the raised point on the sheet into its proper predetermined position on the scanner arm. I specifically provide a scissors arrangement with springs to effect the improvement set forth as my invention.

It is accordingly an object of my invention to provide a novel stylus for facsimile recording.

55 Another object of my invention is to provide a

novel stylus mounted upon a rigidly motivated recording arm to prevent distortion or loss in synchronism in facsimile recording.

Still another object of my invention is to provide a marking stylus which will automatically prevent tearing of the paper, should the stylus for any reason catch in the surface of said paper.

A further object of my invention is the provision of a marking stylus which will automatically return to the correct recording position relative to the oscillating arm, after having passed over an irregularity in the surface of the paper.

Other objects of this invention will become evident in the detailed description which is to follow in connection with the drawing in which:

Figure 1 is a plan view of the stylus assembly.

Figure 2 is an enlarged partial plan view of the stylus mechanism, in an impeded position.

Figure 3 is partial perspective view of the stylus assembly.

Figure 4 is a detail of a modified form of stylus point.

Referring now to Figure 1, cam 1 is mounted on shaft 2 which is rotatable by means of the worm gear 3 engaging with worm 4, which is in turn rotatable by means of a synchronous motor (not shown).

Positioned adjacent cam 1 is arm 5 suitably pivoted at 6 so that rotation of cam 1 will cause the point of the recording stylus 7 to describe an arc, thus scanning the sensitized recording paper 8 as shown. The sensitized recording paper 8 is continuously supplied from a roll (not shown) and moves past the recording point 7 in regular steps through paper guides 9—9 by means of mechanism supplied for that purpose as is well known in the art.

Heretofore, the end of the stylus 7, provided for marking the sensitized paper, has been rigidly mounted relative to the moving arm 5 and formed an integral part thereof.

Referring now to Figure 2 of the drawing, I have shown a secondary arm 11 in pivoted relationship to arm 5. An arm 11 is shown pivoted at 12 and having at the marking extremity the point, or stylus 7, which is caused to make contact with or otherwise mark paper 8 in response to the incoming picture signals.

If now an obstruction 19 on the surface of the paper 8 impedes the regular travel of the marking point 7, it will be evident that if the stylus arm 11 were rigidly secured to the moving arm 5, the paper would be torn at the point 19, because of the propelling force brought to bear on the arm 5.

However, in accordance with my present invention, arm 11 is free to turn relative to arm 5 when such an obstruction is encountered. Due to the effective foreshortening of the stylus when it tilts, the point 7 will ride over the obstruction 19 without injuring the paper.

In order that the stylus point 7 may be caused to return to normal recording position relative to the arm 5, scissor clamps 12-13, pivoted at 14 and held in position against arm 11 by springs 15 and 16 retain the arm 11 parallel with arm 5 as shown in Figure 1. Stop 18 prevents displacement of the clamps beyond normal recording position in more than one direction, so that relative tensions of the separate springs will not cause misalignment. Springs 15-16 have sufficient tension to keep the recording arm 11 in proper position for recording, but permit free movement of the arm 11 under the pressure caused by an obstruction on the surface of the paper or any other reason for impeding the free travel of the point 7.

Details of the construction of arm 11 and the scissor clamps 12-13 are more clearly evident in Figure 3. In this figure is shown connection 20 which is made to the signal currents for recording purposes. Any convenient marking medium such as a high-tension spark or electrolytic decomposition, or means for melting a wax coating on paper with a heated stylus or equivalent systems may be used in connection with my invention.

In Figure 4 is a modified stylus point where a heater coil 22, with connections 23-23 for a suitable source of electrical heating current are shown. Any suitable means for bringing the point of the marking stylus to bear against the sensitized paper in accordance with the received

signal may also be utilized in practicing my invention, by reciprocating arm 11 of Figure 4.

I claim:

1. The combination with an oscillatory scanner arm of a recording stylus pivotally mounted and arranged in a predetermined normal scanning position on said arm, and a pair of mechanically biased members grasping opposite sides of said stylus, said members crossing each other and being pivoted upon said scanner arm, said stylus being maintained in said normal position on said arm solely by said biased members.

2. The combination with an oscillatory scanner arm of a recording stylus pivotally mounted and arranged in a predetermined normal scanning position on said arm, a pair of members grasping opposite sides of said stylus, said members crossing each other and being pivoted upon said scanner arm, spring means for mechanically biasing said members and stylus in said predetermined position upon said arm, said stylus being maintained in said normal position on said arm solely by said biased members.

3. The combination with an oscillatory scanner arm of a recording stylus pivotally mounted and arranged in a predetermined normal scanning position on said arm, a pair of members grasping opposite sides of said stylus, said members being pivoted upon said scanner arm, and spring means for mechanically biasing said members and stylus in said predetermined position upon said arm whereby obstructions in the oscillatory recording path may momentarily displace the stylus in either side with respect to said scanner arm for overcoming said obstructions, said stylus returning to said predetermined position on said arm.

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