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2,539,133

LIGHT VALVE HAVING ELECTRICAL CONTROL MEANS

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Fig. 1

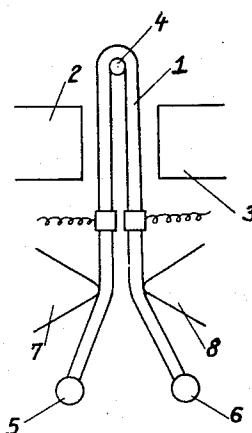


Fig. 2

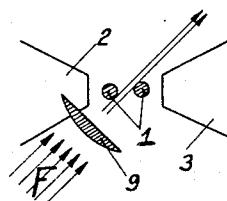
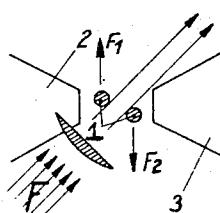


Fig. 3



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## LIGHT VALVE HAVING ELECTRICAL CONTROL MEANS

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3 Claims. (Cl. 88—61)

1

The present invention relates to an oscillograph intended for sound recording.

Two systems of sound recording on films are known to exist.

1. With fixed density.
2. With variable density.

The recording with fixed density is made by means of an oscillograph with mirror on which a light-ray is given out by a fixed pinhole source of light.

The mirror, pivoting according to the frequencies sent in the loop of the oscillograph, throws a light on the film which imparts a black surface on said film the contour of which takes the shape of a broken line, after the development of the said film.

The invention consists essentially in doing away with the mirror of the oscillograph having the usual mirror and to only use the two wires of the loop of the oscillograph, making them play the parts of diaphragm or of masks to modulate the pencil of rays emitted by the fixed pinhole source of light with said pencil rays being turned obliquely in relation to the plane of the loop and passing through the oscillograph.

According to a first method of embodiment, the pencil of light rays passes between the wires of the loop and is modulated as a result of the vibrations of the wire loop which has a modulated current passing through it.

According to a second method of embodiment, the pencil of light rays is modulated between one of the silvered poles of the oscillograph and one of the arms of the loop.

On the accompanying drawing to which reference is made by way of example and relative to the first method of embodiment:

Fig. 1 shows diagrammatically, on a large scale and in elevation, an oscillograph laid down according to the invention;

Fig. 2 is a plan view showing the normal relative position of the members;

Fig. 3 is a view corresponding to Fig. 2 but showing the increase in width of the pencil of light going through the loop when its wire is moved out of shape under the action of the current going through it.

According to the first method of embodiment, the pencil of light is stepped down between the two wires of a loop 1 whose plane is placed in the direction of the lines of force connecting poles 2 and 3 of the armature.

The wire constituting the loop 1 is of round section in the drawing, but may have a flat section so as to help in the aim sought for.

2

Loop 1 is stretched between the fixed isolated supports 4—5 and 6 and the portions of wire placed between the poles 2 and 3 are made parallel by the isolating blades 7 and 8.

9 is a field lens having for its object to merge the pencil of light F emitted by a pinhole source of light (not shown) onto the loop.

When the loop 1 has a modulated current passed through it, its arms are moved out of shape in the direction of the arrows F<sub>1</sub> and F<sub>2</sub> and as the pencil of light is thrown between these wires according to a sloped plane in relation to a normal vertical plane to the plane of these wires, it will be understood that these constitute the masks allowing more or less light to pass. This is why the flat section is recommended.

On the output side of the loop, the pencil of rays is taken up by an objective and then used in the usual manner.

It should be noted that the displacement of the wires is made in the parallel planes between them and perpendicular to the normal plane of the loop. It is therefore impossible for the wires to touch whatever may be the amount of their movement contrary to the usual valves, light modulators and the like used for recording with variable density.

According to the second method of embodiment, the pencil of light rays is directed between one of the silvered poles of the oscillograph and one of the arms of said loop.

Having thus described my invention, what I claim is:

1. A light valve comprising an armature having a pair of poles whose ends extend opposite to one another and in alignment, an open end wire loop having a pair of spaced arms forming a light emitting opening therebetween, means normally retaining said arms parallel to one another and with both arms in a plane parallel to the magnetic lines of force produced by said poles, means for supplying a modulated electric current to said arms for vibrating each arm perpendicular to said magnetic lines of force, means for supplying an electric current to said armature, and means for directing a pencil of light between and through said light emitting opening on a slant to said magnetic lines of force.

2. A light valve comprising an armature having a pair of aligned poles, means for supplying an electric current to said armature, an open end wire loop having parallel spaced arms forming a light emitting opening therebetween and positioned between said poles with said arms

normally extending in a plane parallel to the lines of force of the magnetic field produced by said poles, means for supporting the open end portion of said loop and maintaining said loop in position, means for supplying a modulated electric current to said loop for causing each of said arms to vibrate perpendicular to said normal plane thereof, and means for directing a pencil of light at an acute angle to said plane and through said light emitting opening of said arms.

3. A light valve comprising an armature having a pair of poles whose ends extend opposite to one another and in alignment, means for supplying an electric current to said armature, a wire having a loop and a pair of arms extending from said loop, fixed means for supporting said loop and the ends of each of said arms with said arms normally positioned between said pole ends in a plane parallel to the lines of force produced by said poles, a pair of blades pressing on said arms for positioning the same parallel to each other in their length between said poles for

forming a light emitting opening, means for supplying a modulated electrical current to said arms, and means for directing a pencil of said light through said light emitting opening on a slant to said normal plane of said arms.

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## REFERENCES CITED

10 The following references are of record in the file of this patent:

## UNITED STATES PATENTS

Number	Name	Date
15 1,605,930	Egerton	Nov. 9, 1926
1,638,555	Wente	Aug. 9, 1927
1,686,355	Wente	Oct. 2, 1928
1,901,502	Fessenden	Mar. 14, 1933
1,943,112	Curtis	Jan. 9, 1934
20 2,131,293	Miller	Sept. 27, 1938
2,294,320	Ritzmann	Aug. 25, 1942