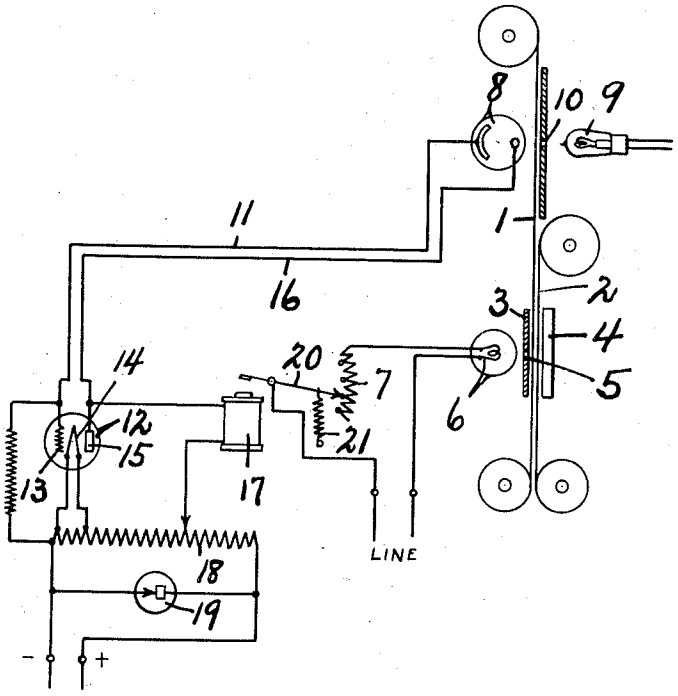
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AUTOMATICALLY REGULATING THE INTENSITY OF A PRINTING LIGHT

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AUTOMATICALLY REGULATING THE INTENSITY OF A PRINTING LIGHT

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2 Claims. (Cl. 95—75)

This invention relates to certain new and useful apparatus for automatically regulating the intensity of a printing light.

The main object of the invention is the production of a regulating apparatus in combination with an apparatus for printing a sound positive from a sound negative by means of which the intensity of the printing light is automatically regulated to the correct value in accordance with the average density of the portion of the sound negative which is about to be subjected to the printing light whereby a more effective positive is produced.

Other objects and advantages relate to the details of the apparatus and the association and relation of the parts thereof all as will more fully appear from the following description taken in connection with the accompanying drawing in which:—

The figure is a diagrammatic illustration of an embodiment of the invention.

As illustrated in the drawing the negative sound record film 1 and the film 2 which is adapted to constitute the positive sound record are moved in overlying relation in any suitable and well known manner between gate members 3 and 4 which may be of any usual and well known construction. The gate member 3 is provided in the usual manner with an opening or slot 5 of suitable size for effecting printing. The printing light may be an ordinary incandescent lamp 6, the light from which passes through the slit 5. If desired the light from lamp 6 may be diffused in any suitable and well known manner.

The lamp 6 is maintained lighted by line current flowing in a circuit connected to the lamp, such circuit including a rheostat 7. The structure so far described may however be of any suitable and well known construction adapted for printing a positive from a negative, the invention here residing in the combination with such apparatus of automatic means for regulating the intensity of the light rays emanating from the printing light 6. For the purpose of regulating such intensity of such light in accordance with the average density of the sound record which is about to be subjected to such light there is illustrated a photoelectric cell 8 of any suitable and well known construction which is subjected to rays of light produced, as for instance, by a lamp 9 and passed through a slit 10 and through the sound record upon the negative 1 and thereupon as modified by the sound record falls upon the photoelectric cell 8.

The slit or opening 10 should be of such a size so that the total light falling upon the photoelectric cell passes at any instant through a section of the negative sound record several wave lengths long of the lowest note recorded. One full wave length should accomplish the desired result but several will reduce error that might result because of the non-uniformity of the film itself.

The total light available for modulating the photoelectric cell to regulate the intensity of light 6 is then proportional to the average density of the negative or what would be obtained from an unmodulated section of the sound track of the film.

The lead 11 from one electrode of the photoelectric cell is tapped into the grid filament circuit of an audion 12 which includes grid 13, filament 14 and plate 15. The lead 16 from the other electrode of the photoelectric cell 8 is tapped into the plate filament circuit of the audion 12, such circuit including an iron core magnet 17 and a variable resistance 18 which resistance may also bridge the terminals of the filament 14. The supply line for current to the audion circuits may be connected to the opposite ends of the resistance 18 with a voltage regulator 19 across the circuit. The iron core magnet 17 and the rheostat 7 in which the contact arm 20 is normally drawn by spring 21 in a direction opposed to the magnetic pull of magnet 17 constitutes a relay of the type in which variation in current flowing through the magnet 17 moves the contact arm 20 against the action of spring 21 to vary the resistance included in the printing light circuit.

It will be apparent, therefore, that variations in the current flow in the audion circuits as effected by variations in the intensity of the light to which photoelectric cell 8 is subjected will include a variation of the current flowing in the coil of magnet 17 thereby varying the magnetic pull of the iron core magnet 17 to effect movement of the contact arm 20 to vary the resistance in the circuit of the printing light 6 in accordance with the average density of that portion of the record passing the slot or opening 10.

By this arrangement of apparatus it is therefore possible to affect automatic regulation of the printing light 6 to a correct value which is proportional to the average density of that portion of the negative sound record which is about to be subjected to the printing light, and altho I have shown and described a specific apparatus for accomplishing this result it will be apparent that various and many changes may be made in the character of the apparatus and the association

and relation of the parts thereof without departing from the spirit of this invention as set forth in the appended claims.

I claim:

1. A printing apparatus including a printing light, means for simultaneously moving a negative sound record and a film adapted to constitute a positive sound record in overlying relation, a printing light to which the said negative is exposed, and means for varying the intensity of the printing light in accordance with the average density of a portion of the sound record that has not yet reached the point of exposure of the printing light, said means comprising an electric circuit, including a photo-electric cell connected in circuit with an audion amplifier, means for subjecting the photo-electric cell to light waves varied in accordance with the average density of said portion of the sound record, a circuit connected to the printing light and including a resistance, electro-magnetic means including a coil connected in the output circuit of said audion amplifier for varying the resistance in said light circuit in accordance with variations in the photo-electric cell circuit and means for controlling the steady component of current through said coil.

2. A printing apparatus including a printing light, means for simultaneously moving a negative sound record and a film adapted to constitute a positive sound record in overlying relation, a printing light to which the said negative is exposed, and means for varying the intensity of the printing light in accordance with the average density of a portion of the sound record that has not yet reached the point of exposure of the printing light, said means comprising an electric circuit, including a photo-electric cell connected in circuit with an audion amplifier, means for subjecting the photo-electric cell to light waves varied in accordance with the average density of said portion of the sound record, a circuit connected to the printing light and including a resistance, an electro-magnet connected in the output circuit of said audion amplifier and disposed to effect a variation of the resistance included in the printing light circuit a manually adjustable source of direct current potential for said audion output circuit and for adjusting the steady current component through said electro-magnet, and means for maintaining the voltage of said source at a constant value.

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