

Oct. 31, 1933.

E. W. GENT

1,933,252

TRANSLATING DEVICE

Filed Feb. 27, 1931

2 Sheets-Sheet 1

FIG. 1

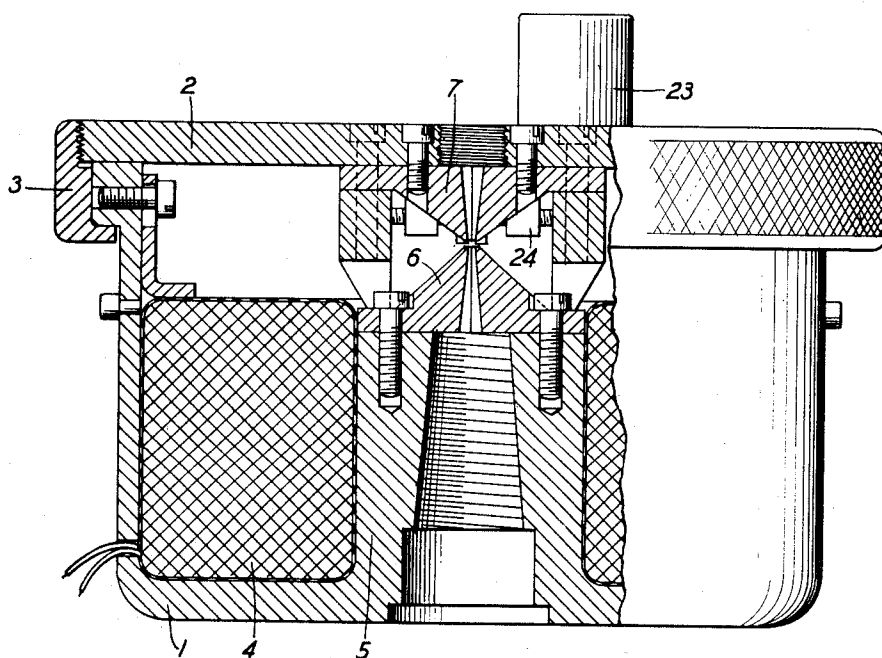
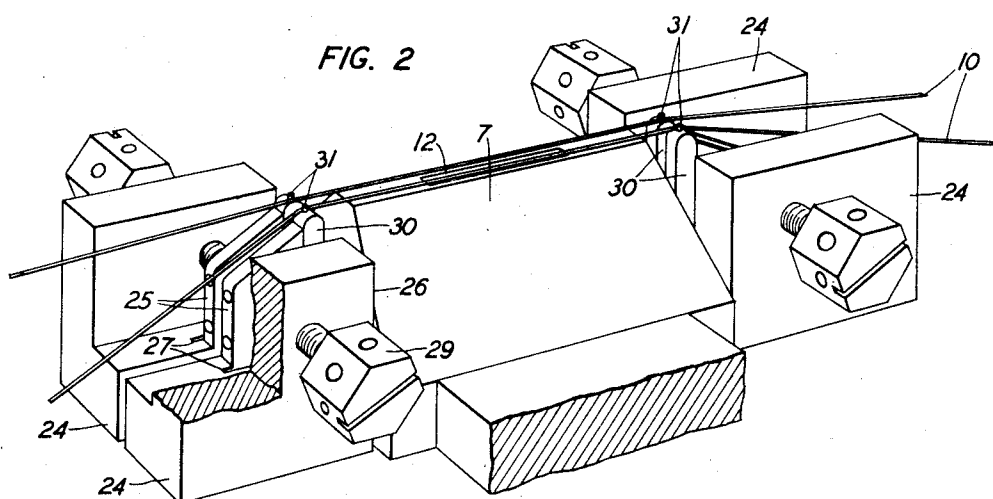


FIG. 2



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FIG. 3

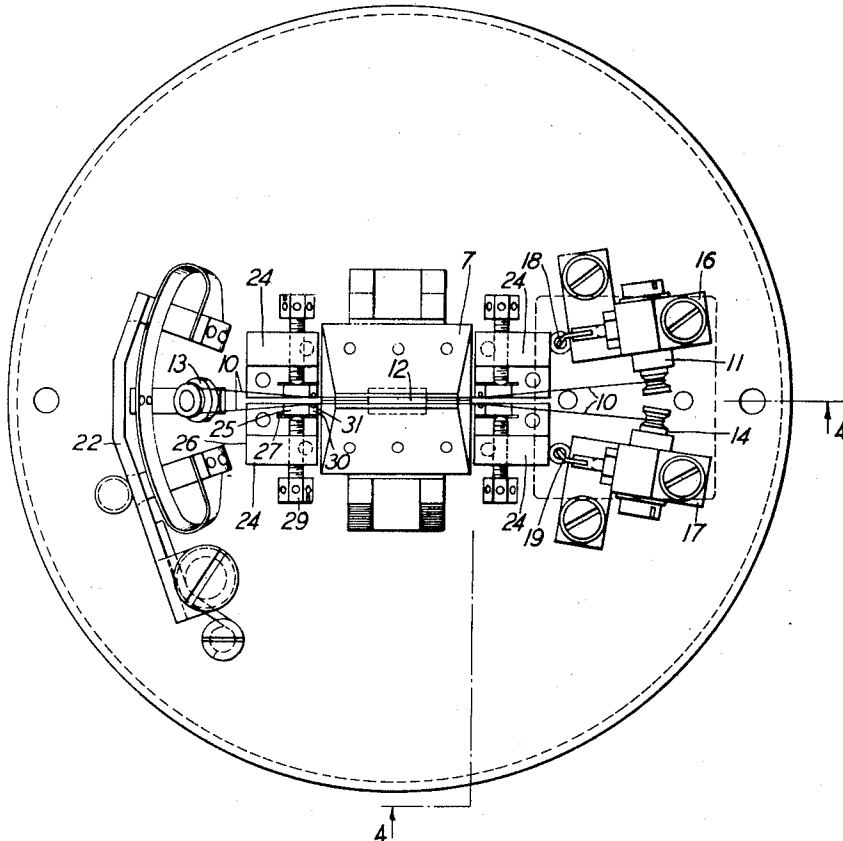
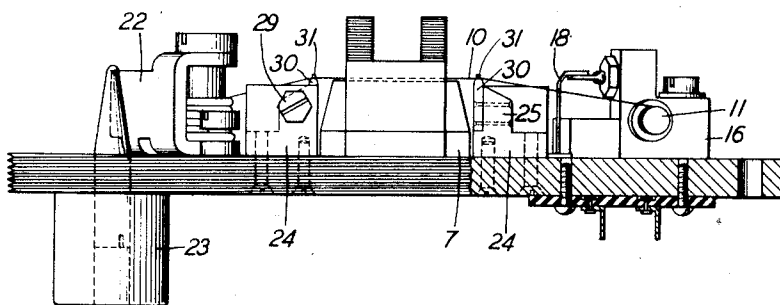


FIG. 4



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UNITED STATES PATENT OFFICE

1,933,252

TRANSLATING DEVICE

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Application February 27, 1931. Serial No. 518,742

9 Claims. (Cl. 88—61)

This invention relates to translating devices and particularly to light valves used for recording sound on a photographic medium.

The objects are to simplify the construction of light valves by reducing the size and number of parts involved, to facilitate accurate adjustment of the vibratory elements, to safeguard the device from losing its adjustment due to temperature changes, and to otherwise improve apparatus of this character.

It has been proposed heretofore to mount the vibratory strings or ribbons of the light valve on suspension bridges and to adjust them with respect to each other and with respect to a light-transmitting aperture by means of adjusting elements which engage the ribbons at points adjacent to the points of suspension on the bridges. These adjusting elements, consisting of micrometer screws, together with the bridges involve a considerable amount of material which is subject to expansion and contraction due to temperature changes. This variation due to temperature is likely to disturb the proper adjustment of the ribbons. Moreover, it is difficult to obtain a proper adjustment of the ribbons due to the fact that the adjusting elements engage these ribbons at points somewhat removed from the bridge suspension points.

According to the present invention these objections are overcome by means of a light valve in which the suspension bridges on which the vibratory ribbons are supported are adjustable by means of micrometer screws. This enables the adjustment to be made exactly at the points of suspension of the ribbons. Also, since adjustment takes place at the point of suspension, it is possible to considerably reduce the amount of material involved in the supporting and adjusting parts. This, in turn, lessens the variation due to temperature changes.

This invention has been illustrated in the accompanying drawings in which, Fig. 1 shows a light valve partly in section which embodies the features of this invention; Fig. 2 shows in perspective the bridges that support the vibratory strings or ribbons and a portion of the pole piece over which these ribbons are suspended; Fig. 3 is a plan view of the interior of the casing cover shown in Fig. 1. This figure shows the complete suspension means for the ribbons and the associated pole piece as mounted on the cover; and Fig. 4 is a side view of this cover partly in section along the line 4—4 of Fig. 3.

The general structure of this light valve may be along the line disclosed in the patent of E. W.

Gent et al No. 1,852,774, filed January 31, 1929, granted, April 5, 1932. The principle of operation of light valves of this class is disclosed in the patent to E. C. Wentz No. 1,638,555 of August 9, 1927. Referring to Fig. 1 the valve consists of a casing 1 having a cover 2 secured to this casing by ring 3. The casing 1 contains an electro-magnet comprising a winding 4 and core 5. To this core 5 is secured a pole piece 6, while on the cover 2 is mounted a pole piece 7 and the ribbon suspension means shown in full detail in Fig. 3.

Referring now particularly to Figs. 3 and 4, it will be seen that one end of the ribbon 10 is secured to a take-up screw 11 and from there it is drawn across the pole piece 7 over the light-transmitting aperture 12 therein, passed around an idler pulley 13, back again over the pole piece 7 and terminating at the take-up screw 14. The take-up screws 11 and 14 are mounted on blocks 16 and 17, respectively. These blocks are secured to the cover 2 and connected to the blocks 16 and 17 are conductors 18 and 19 respectively. These conductors terminate in binding posts on the outside of the cover 2. Sound modulated current may therefore be supplied to the ribbon 10 through these binding posts.

The pulley 13 is mounted in the spring suspension device 22 which is secured to the cover 2. This device may be adjustable from the front of the cover 2, by means of a tapered screw surrounded by the guard 23, to regulate the tension on the ribbon 10.

To obtain accurate and reliable operation on the part of the ribbon the two portions thereof must be in exact space relation to each other and be in alignment across the face of the pole piece and the aperture 12. To this end there is provided means whereby the ribbon is adjusted at the bridge suspension points at opposite sides of the pole pieces 7 independently. This means consists of a bridge block 24 for each suspension point. Each of these bridge blocks 24 is secured by means of screws or other means to the cover 2 and consists of a projection 25, which is made flexible in relation to a projection 26 of the block 24 by means of a saw slot 27. This projection 25 may be adjusted in relation to projection 26 by a micromatic screw 29 threaded into projection 26. On the projection 25 is mounted an ivory strip 30 riveted thereto in any suitable manner and at the top of this strip is mounted a pin 31 in such a position that the ribbon may rest on the ivory strip and against the inner surface of the pin 31. By means of the screws 29 the projections 25 may be slightly moved to

adjust the ribbon at the suspension points in proper relation to the aperture 12, and the two portions of the ribbons suspended over the aperture may therefore also be adjusted in proper relation to each other. It is readily seen that this adjusting means comprising the bridge blocks 24, bridge projections 25 and 26 and screws 29 as well as the ivory strips 30 may be made comparatively small and therefore not materially subjected to temperature changes. The ribbon may therefore be maintained in proper position with the least possible disturbance in its adjustment.

While this invention has been illustrated in but a single disclosure, it should be understood that it could readily be applied to other devices without departing from the spirit thereof and that the present disclosure is merely illustrative of one application of the invention.

What is claimed is:

1. The combination in a translating device of a mounting member, an element secured to said member and having a light-transmitting aperture therein, a bridge member secured to said mounting member, a vibratory string attached to the mounting member and suspended by said bridge to define the opening through said aperture, and means for moving said bridge with respect to the mounting member to effect an adjustment of said string.

2. The combination in a translating device of a mounting plate, an element secured to said plate and having a light-transmitting aperture therein, a pair of bridges secured to said mounting plate, a vibratory ribbon attached to the mounting plate and suspended by said bridges to define the opening through said aperture, and means for moving said bridges to effect an adjustment of said ribbon with respect to said aperture.

3. The combination in a light valve of a mounting plate, a member thereon having a light-transmitting slot therein, a pair of bridges secured to said mounting plate, a vibratory ribbon secured to said mounting plate and suspended by said bridges to define the opening through said slot, locking pins on said bridges for holding said ribbon in position thereon, and adjusting means for moving said bridges to adjust the position of said ribbon with respect to said slot.

4. The combination in a translating device of a mounting plate, a pair of pole pieces having coaxial light-transmitting slots therein, one of said pole pieces secured to said mounting plate, two bridges secured to said mounting plate, one on either side of said last mentioned pole piece, a vibratory ribbon attached to said mounting plate and having two portions suspended by said bridges to define the opening through said slot, and means for adjusting said bridges to shift the position of said portions with respect to said slot.

5. The combination in a light valve of a mount-

ing plate, an element thereon having a light-transmitting slot, a pair of bridges secured to said plate, a vibratory ribbon attached to said plate and having two portions suspended by said bridges to define the opening through said slot, means for adjusting the tension of said ribbon, locking pins in said bridges for retaining said portions in position with respect to said slot, and adjusting means for moving said bridges to shift the position of said portions with respect to said slot.

6. The combination in a light valve of a mounting plate, a member having a light-transmitting slot and secured to said plate, two bridges attached to said plate, each bridge consisting of two parts located adjacent to each other, a vibratory ribbon attached to said plate and having two portions suspended by said bridges to define the opening through said light-transmitting slot, and means for moving each part of each of said bridges separately to enable either end of either of said portions to be adjusted separately.

7. A light valve comprising a frame, a pair of aligned magnets supported by said frame, said magnets having aligned apertures, suspension members fixedly secured to said frame, an electrical conductor suspended by said members between the adjacent faces of said magnets and traversing the ends of said apertures to define a light-transmitting slot, each of said suspension members being slotted so as to render the suspending extremity slightly flexible with respect to the fixed portion of said member, and screw means cooperating between the fixed and flexible portions of said members for adjusting the position of said conductor with respect to said apertures.

8. In a light valve, a frame, a member supported by said frame and having a light-transmitting slot therein, a vibratory ribbon for defining the opening through said slot, blocks securely fixed to said frame for suspending said ribbon across the end of said slot, the suspending extremity of each block being slightly flexible, and means engaging the flexible portion of each block for adjusting the position of said ribbon with respect to said aperture.

9. The combination in a light valve of a mounting plate, a member secured to said plate and having a light-transmitting slot therein, a ribbon carrying an electrical current and attached to said mounting plate to form a loop having its two parallel portions traverse said slot to define the opening through which light may pass, blocks affixed to said plate for suspending said parallel portions of the ribbon and formed so that the ribbon supporting portions are slightly flexible, and screws engaging the fixed and flexible portions of said blocks for making a fine lateral adjustment of said ribbon with respect to said slot.

EDGAR W. GENT.

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