Aug. 9, 1938. O. WITTEL 2,126,298

FILM SPLICING APPARATUS

Filed March 4, 1936

FIG. 1.

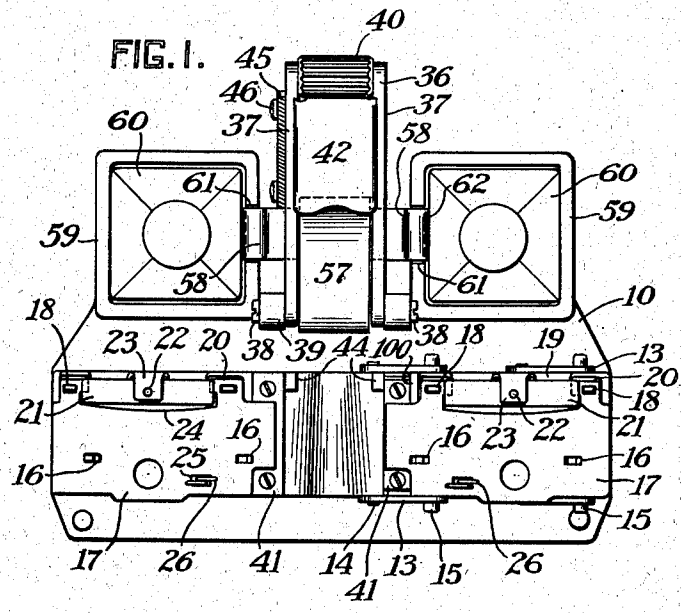


FIG. 8.

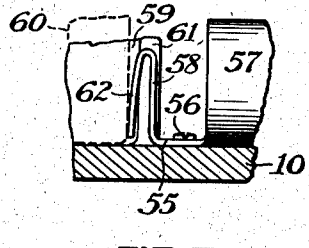


FIG. 7.

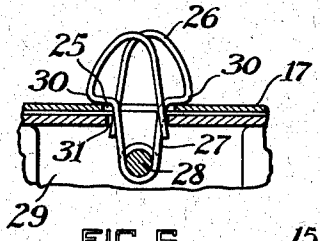


FIG. 2.

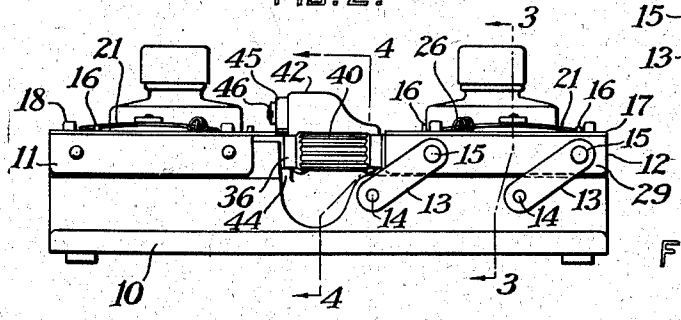


FIG. 6.

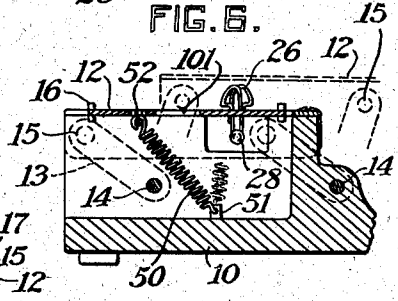


FIG. 5.

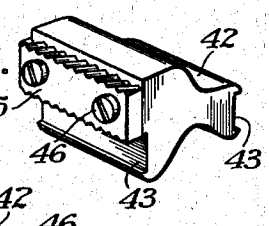


FIG. 3.

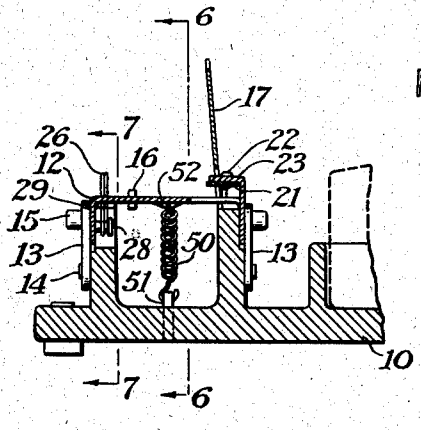
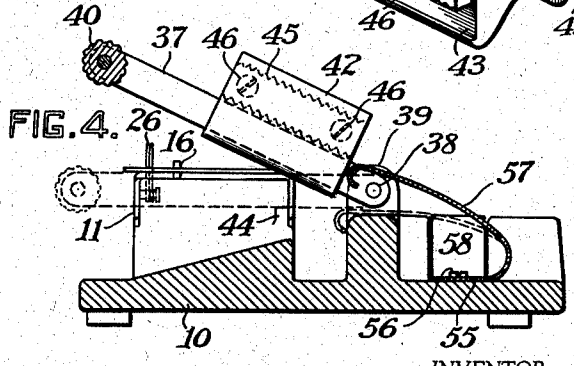


FIG. 4.



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UNITED STATES PATENT OFFICE

2,126,298

FILM SPLICING APPARATUS

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Application March 4, 1936, Serial No. 67,086

12 Claims. (Cl. 154—42)

This invention relates to photography and particularly to film splicing apparatus. One object of my invention is to provide a film splicer in which the scraping tool is slidably mounted between a pair of cutting knives and confined thereon by means of a spring member mounted on the base of the splicer so that it can be pressed to release said scraper from its sliding engagement with said knives for the purpose of cleaning said scraper. Another object is to provide a splicer in which said above-mentioned confining spring member is provided with arms which project into the liquid receptacles on the base of the splicer to act as spring clips for frictionally holding the bottles of liquid in said receptacles. And still another object is to provide a movable mount for a film table by which the table may be swung to a stationary table with the film in the proper position. Another object is to provide a spring tension for the movable table so that said table acts as a pressing means for the spliced joint when it is swung toward the stationary table. Another object is to provide a simple, cheap and efficient means for hinging the platen on a film holding table so that they will be spring pressed into their film engaging positions. Another object is to provide a simple and efficient spring catch for frictionally engaging said platens and holding them in film engaging positions. And another object in my invention is to provide a scraping tool which is slidably mounted between a pair of knives so that it will not hinder the trimming action of said knives regardless of its position thereon; but which has sufficient weight to carry it out of scraping position when the knives are raised in their inoperative position.

The novel features that I consider characteristic of my invention are set forth with particularity in the appended claims. The invention, itself, however, both as to its organization and its methods of operation, together with additional objects and advantages thereof, will best be understood from the following description and specific embodiments when read in connection with the accompanying drawing in which,

Figure 1 is a plan view of the splicer constructed in accordance with and embodying a preferred form of my invention;

Figure 2 is a front elevation of the splicer of Figure 1 with the knife in cutting position;

Figure 3 is a section taken on line 3—3 of Figure 2;

Figure 4 is a section taken substantially on line 4—4 of Figure 2.

Figure 5 is a perspective of the film scraper;

Figure 6 is a section taken on line 6—6 of Figure 3;

Figure 7 is a enlarged partial section taken on line 7—7 of Figure 3 and showing the platen engaging clips, and

Figure 8 is an enlarged partial section of the splicer particularly showing the means for frictionally holding the liquid containers in the receptacles on the base of the splicer.

Like reference characters refer to corresponding parts in the several figures.

Referring to Figures 1 and 2, wherein a preferred embodiment of my invention is illustrated, the splicing apparatus consists of a base 10 supporting a stationary table 11, and a movable table 12, said movable table carried by a plurality of parallel links 13, these links being supported on the base by being pivoted at 14 and being attached to the table 12 by pivots 15. This movable table may, therefore, swing from the cutting and scraping positions shown in Figures 1 and 2 to a splicing position wherein it overlaps said stationary table 11 by a given amount, the path of said table taken in swinging between its cutting and splicing positions being indicated by broken lines in Figure 6.

Each of said film tables is provided with a pair of definitely spaced locating pins 16 which are adapted to engage the perforations of a film strip and properly locate said film strip for the cutting, scraping and splicing operations. The film is held on said tables by means of a pair of hinged spring pressed platens 17. For hingedly connecting the platens to said tables in a simple and efficient manner, the rearward edges of said tables are suitably stamped out to form a plurality of upturned ears 18 and recesses 19. The rearward side of the platen is provided with a pair of L-shaped fingers 20 which are perforated to slip over the upturned ears 18 and allow said platen a 90 degree rotation with respect thereto. To provide a spring pressing means for the platen, a bent leaf spring member 21 is pinned at 22 to an L-shaped lug 23, bent up from the film holding table, so that its opposite ends are normally resting on a portion of the L-shaped fingers 20 of the platen, and thereby normally force said platen to its film holding position. The platen is suitably cut accurately, as shown at 24, to allow said platen to be rotated to a vertical position without interfering with the leaf spring member 21 mounted at the hinge thereof.

The film platens 17 are frictionally held in their film engaging positions on the tables by the engagement of an aperture 25 in said platens and a spring catch 26. Referring to Figure 7, the spring catch designated broadly by 26, consists of a spring 27, which is wound around a pin 28 fixed to vertical portion 29 of the film table 11 or 12. Opposite ends of the spring 27 are suitably formed to provide nose portions 30 which project up through a slot 31 in the film tables 11 or

12, and overlap the confines of the aperture 25 in the platen to frictionally hold said platen 17 in its lowered position. The spring catch 26 is of such resilient strength and shape as to allow the platen 17 to be snapped into engagement therewith under the action of the spring pressing means 21, and to allow disengagement of the fastening when a sufficient lifting force is applied to the platen by the operator.

After placing the film to be spliced on the tables 11 and 12, the ends may be cut by means of a knife 36 comprising two individual shearing members 37 which are individually rotatably hinged to the base 10 by having studs 38 fixed thereto rotating in bearings 39 fixed to the base 10. The forward ends of the shearing members 37 are connected by a cross member 40 which serves as a handle for bringing the knife into its cutting position as shown in Figure 2, so that the shearing members 37 cut the film across the fixed shear blocks 41 and 41'.

As shown in Figure 5, the film scraper consists of a comparatively heavy slide member 42 provided with grooves 43 which extend lengthwise of the member, said grooves being adapted to fit the shearing members 37 of the knife 36 and give the slide member 42 a sliding engagement therewith after it is slid thereonto from the rear or open end of said shearing members 37. Two stop members 44, see Fig. 1, are provided on the base 10 in the path of the knife 36 to engage the separate shearing members 37 thereof for the purpose of limiting its movement so that when the knife is in the cutting position, shown in Figure 2, the top edges of the shearing members 37 will be flush with the upper surface of the shear blocks 41 and 41'.

A serrated tool 45 is adjustably mounted on the side of the slide member 42 to slide therewith to act as a film scraper when said slide member 42 is reciprocated on the shearing members 37 in the position shown in Figure 2. The mounting of the serrated tool 45 on the side of the slide member 42 is suitably made to provide for a slight amount of adjustment of said tool relative to said slide member so that it can be adjusted to just remove the emulsion coating of the film when it is reciprocated on the shearing members 37, in the position shown in Figure 2, but not scrape away or injure the film base. Therefore, when the tool 45 is properly positioned on the slide it will not contact the upper surface of the shear block 41 or the shearing member 37, but will remove a given width of emulsion from the film positioned on said stationary table 11.

After the film has been cut, scraped, and cemented, and the knife has been raised from between the film tables, the movable table 12 is swung into overlapping position with the stationary table 11 in the customary manner, as indicated in Figure 6, and the two prepared film ends are properly overlapped for splicing. As appears in Figs. 1 and 6, the movable table 12 is provided with spaced cut-out portions 100 and 101 into which the stationary shear block 41 associated with said table 12 is adapted to extend when the movable table is in either of its two positions. When the table 12 is in its cutting position, see Fig. 1, the shear block 41 extends through the cut-out portion 100 in said table a sufficient distance to be flush with the top of the table and form a support on which one end of the film strip is held by the platen 17. The other opening 101, see Fig. 6, is equal in width to the shear block 41 and is situated intermediate the ends of the table 12 so as to receive the shear block 41 when the table is moved to its splicing position. The cooperation between the cut-out 101 and the shear block 41 permits the table 12 to assume the same plane as the table 11 when moved to its splicing position, in which position the platen 17 on the movable table overlaps the shear block 41' associated with the stationary table to effect a proper overlapping and splicing of the film strip. As shown most clearly in Figure 6, a toggle spring 50 has one end fastened to a pin 51 which is fixed to the base 10, while the other end is fastened to a depression 52 in the movable film table 12. The pin 51 is so located with respect to the two optional positions of the movable table 12 that the point of fastening of said spring on the table will not be directly above the pin 51 when the links 13 of said table are in the vertical position, in which case there would be a tendency to hold the movable table 12 in a half-way position, but will always provide a resilient force to throw the table into either its cutting or splicing position relative to the stationary table 11. This toggle spring 50, therefore, serves to resiliently force the movable table 12 into either its proper cutting or splicing position and hold the same therein until altered by the operator, and in the splicing or overlapping position of the table this spring 50 provides a resilient means for pressing the spliced joint until it is sufficiently dry to be removed from the splicing table.

Referring now to Figure 4, a spring member 55 is fixed to the base 10 by means of screws 56 and is provided with a flexible finger 57 which is adapted to enter the open end of the shearing members 37 to prevent the slide member 42 from accidentally sliding off of said shearing members. If it is found desirable to remove the serrated tool 45 for any purpose, such as cleaning, etc., the flexible spring finger 57 can be pressed to the position shown in dotted lines wherein the open end of the shearing members 37 is left unobstructed and the slide member 42 and along with it tool 45 can be slid off and on said shearing members 37 with ease.

Integral with the spring member 55 are a pair of spring arms 58 which are adapted to extend into a pair of receptacles 59 which are provided on the base for receiving bottles 60 of liquid required in splicing a film. These receptacles are shown as being cast on the base 10, but it is to be understood that they may be associated with the splicing apparatus in any suitable manner so long as they are portable therewith. As shown clearly in Figure 8, a portion of the walls 61 of receptacles 59 is removed, and the ends 62 of the spring arm 58, which are bent in the form of a U to provide suitable spring portions, extend into the receptacles 59 a sufficient distance to frictionally engage the containers 60 when they are slid thereinto to hold said containers against accidental removal therefrom.

Although I have shown and described certain specific embodiments of my invention, I am fully aware that many modifications of the same are possible. Therefore, my invention is not to be limited except in so far as is necessitated by the prior art and the spirit of the appended claims.

Having thus described my invention, what I declare is new and desire to secure by Letters Patent is:

1. In a film splicing block, the combination with, a base, a pair of film holding tables mounted thereon for receiving film, of a double bladed

knife pivoted on said base and adapted to move between said tables to sever a film thereon, a film scraper slidably mounted on the blades of said knife, and suitable means fixed to said base and projecting into the path of said film scraper to prevent its removal from said knife.

2. In a film splicing block, the combination with, a base, a pair of film holding tables mounted thereon for receiving film, of a knife pivoted on said base and adapted to move between said tables to sever a film thereon, a film scraper slidably mounted on said knife to remove a given width of emulsion from said film, and suitable means mounted on said base and projecting into the path of said film scraper to limit its travel in one direction.

3. In a film splicing block, the combination with a base, a pair of film holding tables mounted thereon for receiving film, of a knife supported by the base and comprising a pair of parallel shearing members adapted to sever the film on the two tables simultaneously, a scraper slidably mounted on said shearing members, and a retractable member mounted on said base and adapted to normally project into the path of said scraper for limiting its sliding movement in one direction.

4. In a film splicing block, the combination with a base, a pair of film holding tables mounted thereon, movable mounts for one film table, of a double-bladed knife pivoted on said base and adapted to move between said tables to sever the film thereon, a film scraper slidably mounted on said knife, and a retractable member mounted on said base in the path of said scraper to prevent its accidental removal from said knife.

5. In a film splicing block, the combination with a base, a pair of film holding tables mounted thereon for receiving film, a movable mount for one table, a knife pivoted to said base to move between said film tables to sever the film thereon, said knife comprising a pair of parallelly displaced shearing members closed at one end by a handle and opened at the pivoted end, a film scraper slidably mounted on the shearing members, and a spring member mounted on said base to extend into the open end of said shearing members to prevent said film scraper from being accidentally disengaged from said knife.

6. In a film splicing block, the combination with a base, a pair of tables mounted thereon for receiving film, a knife adapted to move between said tables to sever the film, said knife comprising a pair of parallel shearing members individually pivoted to said base and closed at their free ends by a cross-bar, a film scraper slidably mounted on said knife, of a spring member fixed to said base and normally extending into the path of said slide member to limit the travel thereof in one direction, said spring member adapted to be depressed to allow said scraper to be removed from said knife for cleaning purposes.

7. In a film splicing block, the combination with a base, a pair of tables mounted thereon for receiving film, a knife adapted to move between said tables to sever the film, said knife comprising a pair of parallel shearing members individually pivoted to said base and closed at their free ends by a bar member, a film scraper slidably mounted on said knife, of a suitable means associated with the pivoted end of said knife adapted to optionally confine said scraper to sliding engagement on said knife or release it therefrom for cleaning purposes.

8. In a film splicing block, the combination with a base member, a pair of film tables mounted thereon for receiving film, of a knife adapted to move between said tables to sever the film, said knife comprising a pair of parallel shearing members individually pivoted to said base, of a bar member across the free ends of said shearing members to act as a handle, and a film scraper slidably mounted on said shearing members for reciprocal motion transversely of said film table.

9. In a film splicing block, the combination with a base member, a pair of film tables mounted thereon for receiving film, of a knife adapted to move between said tables to sever the film, said knife comprising a pair of parallel shearing members individually pivoted to said base, of a slide member slidably mounted on said shearing members, and a serrated tool adjustably mounted on said slide member and adapted to scrape a given width of emulsion from said film as said slide member is reciprocated on said shearing members.

10. In a film splicing block, the combination with a base member, a pair of film tables mounted thereon for receiving film, of a knife adapted to move between said tables to sever the film, said knife comprising a pair of parallel shearing members individually pivoted to said base, a bar member across the free ends of said shearing members to act as a handle, of a slide member slidably mounted on said shearing members, a serrated tool adjustably mounted on said slide member and adapted to scrape a given width of emulsion from said film as said slide member is reciprocated on said shearing members, and a spring member fixed to said base and adapted to extend into the path of said slide member to prevent its accidental removal from said shearing members.

11. In a film splicing apparatus, the combination with a base, a pair of film holding tables mounted thereon for receiving a film, one table being fixedly mounted on the base, and the other table being movable, a plurality of links pivoted to the base and to the movable table, whereby the movable table may swing to or from a film splicing position relative to the stationary table, a platen hingedly mounted on the movable table for holding a film thereon, the platen on said movable table overlapping the stationary table in film splicing position, and resilient means fixed to said base and said movable table for alternately forcing said movable table into one of its two positions relative to said stationary table, and for causing the platen on the movable table to press the film splice in said film splicing position.

12. In a film splicing apparatus, the combination with a base, a pair of film holding tables mounted thereon for receiving a film, one table being fixedly mounted on the base, and the other table being movable, a plurality of links pivoted to the base and to the movable table, whereby the movable table may swing to or from a film splicing position relative to the stationary table, a platen hingedly mounted on the movable table for holding a film thereon, the platen on said movable table overlapping the stationary table in film splicing position, and a toggle spring fixed to said base and said movable table for alternately forcing said movable table into one of its two positions relative to said stationary table, and for causing the platen on the movable table to press the film splice in said film splicing position.

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