

Aug. 7, 1923.

1,464,265

F. C. GRISWOLD

FILM SPLICER

Filed March 22, 1922

3 Sheets-Sheet 1

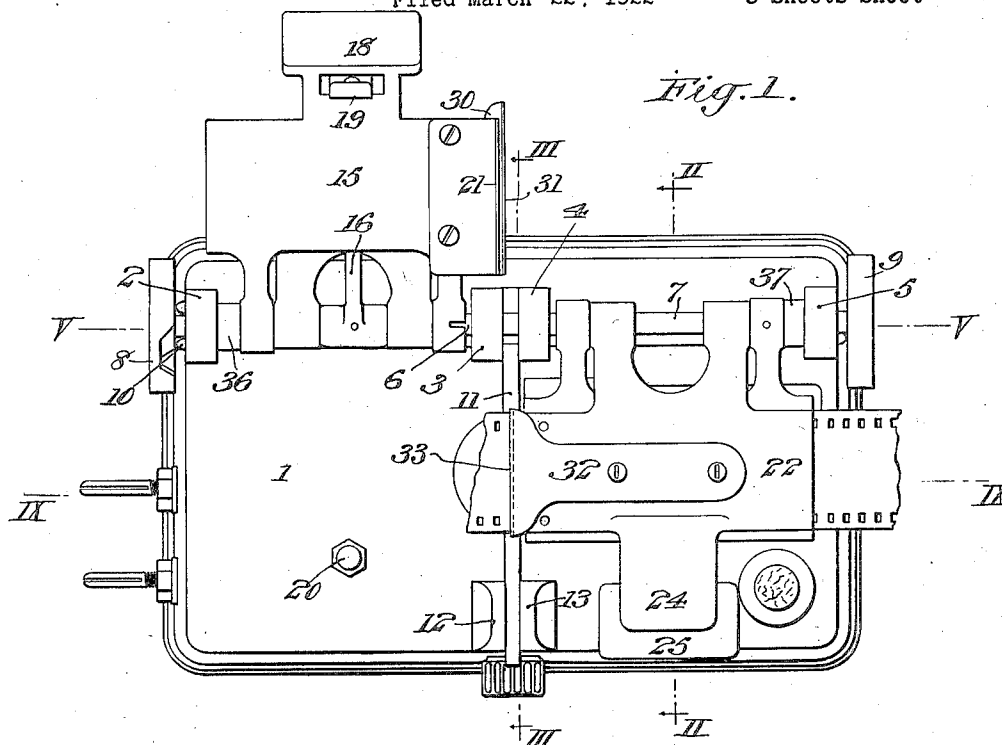


Fig. 2.

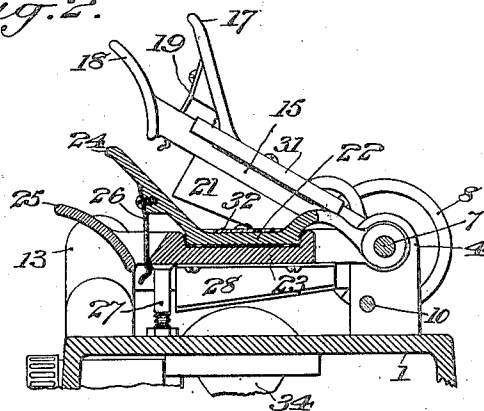
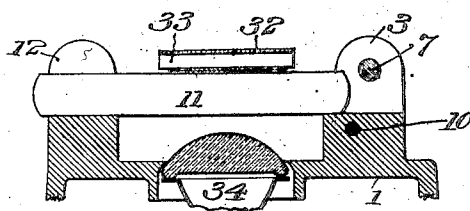


Fig. 3.



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Fig. 4.

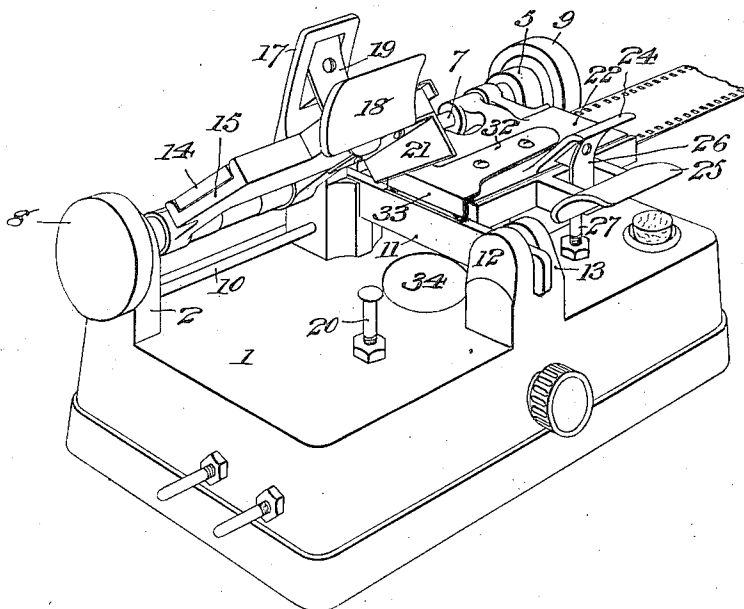


Fig. 5.

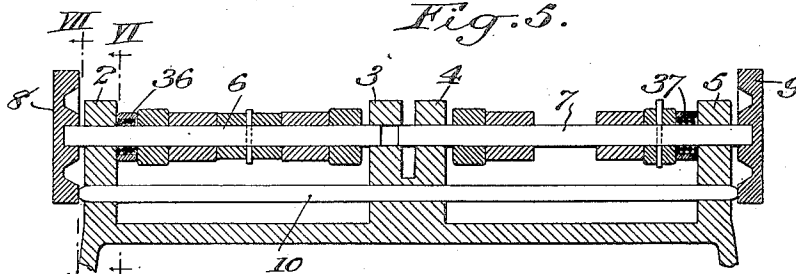


Fig. 6.

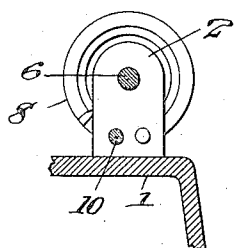


Fig. 7.

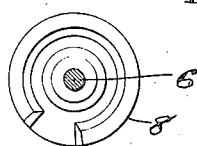
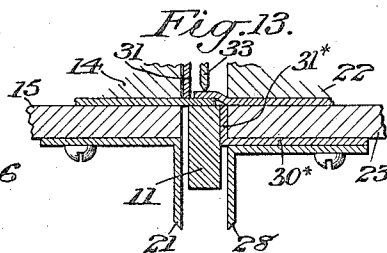


Fig. 13.



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Fig. 8.

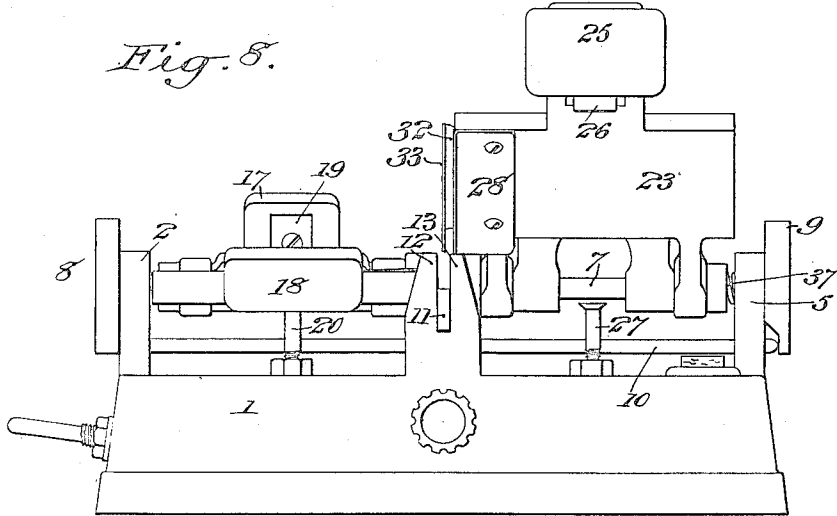


Fig. 9.

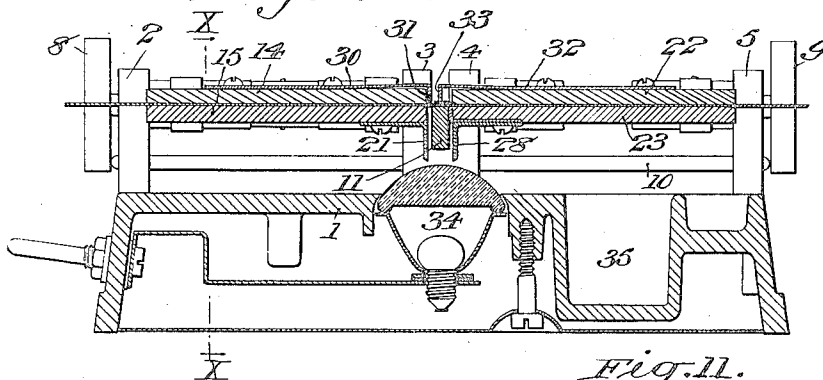


Fig. 11.

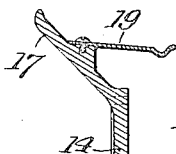


Fig. 10.

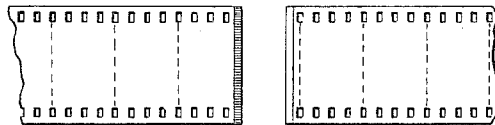
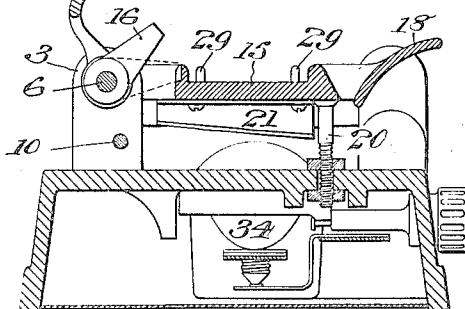


Fig. 12.



Inventor:
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UNITED STATES PATENT OFFICE.

FREDERICK CLARK GRISWOLD, OF PORT JEFFERSON, NEW YORK, ASSIGNOR TO OLIVE A. GRISWOLD, OF PORT JEFFERSON, NEW YORK.

FILM SPLICER.

Application filed March 22, 1922. Serial No. 545,785.

To all whom it may concern:

Be it known that I, FREDERICK CLARK GRISWOLD, a citizen of the United States, and resident of Port Jefferson, in the county of Suffolk and State of New York, have invented a new and useful Improvement in Film Splicers, of which the following is a specification.

My invention relates to certain improvements in the construction, form and arrangement of the several parts of a film splicer of the type illustrated in my United States Letters Patent No. 1,356,761, dated October 26, 1920, whereby the film sections to be joined may be moved to reduce the overlap and whereby the separate presser bar and its latch may be eliminated.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Fig. 1 represents the film splicer in top plan with one of the film clamps raised and the other film clamp lowered.

Fig. 2 represents a detail section taken in the plane of the line II—II of Fig. 1.

Fig. 3 represents a detail section taken in the plane of the line III—III of Fig. 1.

Fig. 4 represents the machine in perspective with the parts in the positions shown in Fig. 1, after the projecting end of one of the film sections has been trimmed by the knife on the film clamp which is shown raised.

Fig. 5 represents a section taken in the plane of the line V—V of Fig. 1.

Fig. 6 represents a detail section taken in the plane of the line VI—VI of Fig. 5.

Fig. 7 represents a detail section taken in the plane of the line VII—VII of Fig. 5.

Fig. 8 represents a front view of the machine with the right hand film clamp raised.

Fig. 9 represents a section taken in the plane of the line IX—IX of Fig. 1 with both film clamps lowered.

Fig. 10 represents a transverse section taken in the plane of the line X—X of Fig. 9 with the upper jaw of the left hand film clamp raised.

Fig. 11 represents the trimmed ends of adjacent film sections separated.

Fig. 12 represents the trimmed ends of adjacent film sections united.

Fig. 13 represents a detail section on an enlarged scale of the shear block and adjacent parts.

The base of the machine is denoted by 1. Lugs 2, 3, 4 and 5 uprise from the base at the back thereof, which lugs form supports for aligned endwise yielding rock shafts 6 and 7 which form hinge supports for the film clamps to be hereinafter described. The rock shaft 6 is provided with a cam 8 and the rock shaft 7 is provided with a cam 9, which cams are located exterior to the lugs 2 and 5 respectively with their cam faces inward. A cam bar 10 is slidably mounted in the uprising lugs 2 and 5, and the base of the uprising lugs 3 and 4 with the ends of the bar 10 projecting into engagement with the faces of the cams 8 and 9. A double shear block 11 is seated at its rear end between the lugs 3 and 4, and at its front end between lugs 12 and 13 uprising from the front of the base 1. This shear block has a flat horizontal top face on which the trimmed overlapping ends of the film sections are united.

The upper and lower jaws of the left hand film clamp are denoted by 14 and 15, said upper and lower jaws being loosely mounted on the rock shaft 6. This left hand film clamp may be connected to the rock shaft for rocking it by means of an arm 16 fast on the shaft, arranged in position to be engaged by the lower jaw 15 of the clamp. The upper and lower jaws 14 and 15 of the film clamp are provided with suitable handles 17 and 18, the handle 17 being provided with a spring catch 19 which serves the double function of locking the two jaws together and of locking the clamp to its adjustable stop 20.

The lower jaw 15 is provided with a shear blade 21, arranged to coact with the adjacent side of the shear block 11 for trimming off the rough projecting end of the film section carried by the right hand film clamp.

The right hand film clamp comprises the upper and lower jaws 22, 23, the upper jaw being loosely mounted on the rock shaft 7 and the lower jaw being fixedly mounted thereon. These upper and lower jaws are provided with handles 24, 25, the handle 24 being provided with a spring catch 26 which serves the double function of locking the two jaws together and of locking the clamp to its adjustable stop 27. The lower jaw 23 of this right hand film clamp is provided with a shear blade 28 which is arranged to coact with its adjacent side of the shear

block 11 for trimming off the rough projecting end of the film section carried by the left hand film clamp.

The lower jaws of the two film clamps are 5 channeled along their upper faces to provide guides for receiving the film sections adjacent the ends to be united, registering pins 29 being provided for engaging the perforations along the film sections, the upper 10 jaws being provided with holes for receiving the registering pins when the jaws are closed.

Combined guards and guides 30, 30* are respectively secured to the upper jaw 14 of the left hand clamp and the lower jaw 23 of 15 the right hand clamp, which guards and guides are respectively provided with downwardly and upwardly turned lips 31, 31*, arranged to bear against the film sections a short distance back from their trimmed 20 ends. These guards and guides serve two purposes; first, to limit the distance back that the emulsion is to be scraped off from a film section, and second, to prevent the spreading of the cement along the film section 25 beyond the overlapping ends of the film sections.

A spring presser blade 32 is secured to the upper jaw of the right hand film clamp in the present instance, which spring presser 30 blade is provided with a downwardly turned lip 33, forming a knife edge arranged to press the overlapping ends of the film sections together on the shear block after the cement has been applied.

35 Lighting means, such for instance as an electric lamp 34 is mounted in the base 1 of the machine beneath the shear block. This lighting means will materially assist in the proper matching up of the film sections and 40 also in manipulating the same.

The base may also be provided with a reservoir 35 for the reception of the cement. Springs 36, 37 are provided for yieldingly 45 holding the cams 8 and 9 pressed against the ends of the cam bar 10, which springs also serve to yieldingly hold the film clamps at the limit of their lateral movement toward the shear block.

In splicing film sections together, the cycle of operations may be as follows:—

50 The left hand film clamp may be raised and the upper jaw of the right hand clamp may be raised sufficiently to permit the placing of the right hand film section in position 55 on the lower jaw, with the end of the film section to be trimmed projecting the required distance beyond the shear block.

60 The upper jaw of the right hand section is then closed, the presser blade carried by the upper jaw serving to hold the end of the film section snugly on the top of the shear block. The left hand film clamp is then lowered, thereby causing its shear 65 blade 21 to trim the projecting end of the film section.

The right hand film clamp is then raised and the other film section is properly positioned in the left hand film clamp with the end projecting beyond the shear block, the combined spring guard and guide serving 70 to hold the film firmly on the top of the shear blade. The right hand film clamp is then lowered, thereby causing its shear blade 28 to trim the projecting end of the film section. This will leave the end of the 75 two film sections overlapping on the top face of the shear block. The right hand clamp may then be swung back and the emulsion removed from the top surface of the projecting end of the film section held 80 by the left hand film clamp, the combined guard and guide serving to prevent the emulsion from being removed too far back from the end of the film section. The cement may then be applied to the exposed 85 surface of the film section, the combined guard and guide in this instance preventing the cement from spreading too far back from the end. The right hand film clamp may then be lowered, thus bringing the exposed 90 end of its film section onto the exposed end of the other film section and also bringing the knife edge of the presser blade into engagement with the top overlapping film end to press the overlapping film ends 95 together along a median line. This knife edge engagement of the presser blade will prevent the cement from being squeezed out of the joint between the overlapping ends as is a common fault where a presser bar of 100 considerable width has been used. After the film ends have been firmly united, the two upper jaws are opened to permit the removal of the united film sections.

The function of the aligned endwise movable rock shafts 6 and 7, which form the 105 pivots for the film clamps is to cause the right and left film clamps to be moved a short distance laterally away from the shear block to lessen the overlap between the 110 trimmed ends of the film sections. This is accomplished by the coaction of the cams 8 and 9 with the endwise movable cam bar 10, the relationship between the ends of the cam bar and the cams 8 and 9 being such 115 that when both film clamps are fully lowered, both ends of the cam bar are engaged by the raised portions of the cams to move the film clamps away from the shear block. 120 When one film clamp is fully lowered and the other film clamp is being lowered to trim the projecting end of the film, the ends of the cam bar will be opposite the depressed portions of the cams, thus causing the shear blade to snugly engage its side of the shear 125 block during the trimming operation.

While the operation of the machine has been described in connection with uniting two film sections, it is obvious that it might be employed for cutting out a portion of a

film and joining the remaining portions or it might be used for joining the ends of two different films.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention; hence I do not wish to be limited to the details herein shown and described, but what I claim is:—

1. In a film splicer, a double shear block, a pair of independently swinging film clamps arranged to alternately coact with the shear block to so trim the film sections as to leave overlapping ends, and means for automatically moving the clamps laterally away from the shear block to lessen the overlap of the film ends.

2. In a film splicer, a double shear block, a pair of independently swinging film clamps arranged to alternately coact with the shear block to so trim the film sections as to leave overlapping ends, means for automatically moving the clamps laterally away from the shear block to lessen the overlap of the film ends, said means including aligned endwise yielding rock shafts forming hinged supports for the film clamps, cams on said shafts, and an endwise movable cam bar actuated by said cams.

3. In a film splicer, a double shear block, a pair of independently swinging film clamps arranged to alternately coact with the shear block to so trim the film sections as to leave overlapping ends, means for automatically moving the clamps laterally away from the shear block to lessen the overlap of the film ends, said means including aligned endwise yielding rock shafts forming hinged supports for the film clamps, cams on said shafts, and an endwise movable cam bar actuated by said cams, the lower jaw of one clamp being fast on its shaft and the lower jaw of the other clamp having a lost motion connection with its shaft.

4. In a film splicer, a double shear block, a pair of independently swinging film clamps arranged to alternately coact with the shear block to so trim the film sections as to leave overlapping ends, means for automatically moving the clamps laterally away from the shear block to lessen the overlap of the film ends, said means including aligned endwise yielding rock shafts forming hinge supports for the film clamps, cams on said shafts, and an endwise movable cam bar actuated by said cams, the lower jaw of one clamp being fast on its shaft and the lower jaw of the other clamp having a lost motion connection with its shaft, said lost motion connection including an arm fast on the shaft arranged to be engaged by the said last named lower jaw.

5. In a film splicer, a double shear block, a pair of independently swinging film

clamps having cutting blades arranged to alternately coact with the shear block to so trim the film sections as to leave overlapping ends, and a presser blade carried by one film clamp in position to press the overlapping film ends together on the shear block.

6. In a film splicer, a double shear block, a pair of independently swinging film clamps having cutting blades arranged to alternately coact with the shear block to so trim the film sections as to leave overlapping ends, a presser blade carried by one film clamp in position to press the overlapping film ends together on the shear block, and a combined guard and guide carried by the other film clamp.

7. In a film splicer, a double shear block, a pair of independently swinging film clamps having cutting blades arranged to alternately coact with the shear block to so trim the film sections as to leave overlapping ends, a presser blade carried by one film clamp in position to press the overlapping film ends together on the shear block, and a combined guard and guide carried by the said film clamp.

8. In a film splicer, a double shear block, a pair of independently swinging film clamps having cutting blades arranged to alternately coact with the shear block to so trim the film sections as to leave overlapping ends, a presser blade carried by one film clamp in position to press the overlapping film ends together on the shear block, and combined guards and guides carried by both film clamps.

9. In a film splicer, a double shear block, a pair of independently swinging film clamps arranged to alternately trim the film sections on the shear block so as to leave overlapping ends, means for automatically moving the film clamps laterally away from the shear block to lessen the overlap of the film ends a presser blade carried by one film clamp in position to press the overlapping film ends together on the shear block, and a combined guard and guide carried by the other clamp.

10. In a film splicer, a double shear block, a pair of independently swinging film clamps arranged to alternately trim the film sections on the shear block so as to leave overlapping ends, means for automatically moving the film clamps laterally away from the shear block to lessen the overlap of the film ends, a presser blade carried by one film clamp in position to press the overlapping film ends together on the shear block, and combined guards and guides carried by both film clamps.

11. In a film splicer, a double shear block, a pair of independently swinging film clamps arranged to alternately trim the film sections on the shear block so as to leave

overlapping ends, and a presser blade carried by one film clamp and having a knife edge arranged to press the overlapping film ends together on the shear block.

- 5 12. In a film splicer, a double shear block, a pair of independently swinging film clamps arranged to alternately trim the film sections on the shear block so as to leave overlapping ends, a combined guard and
10 guide carried by one of the film clamps and having a downwardly turned lip for engaging its film end, and a presser blade carried by the other film clamp and having a downwardly turned lip provided with a knife
15 edge for pressing the overlapping film ends together on the shear block.

13. In a film splicer, a double shear block, a pair of film clamps located upon opposite sides of the block, each clamp being arranged to move a film section into and out
20 of engagement with the block, means carried by the clamps arranged to coact with the shear block for trimming the ends of the film sections, and a presser blade carried by
25 one of the film clamps in position to press the overlapping film ends together on the shear block.

In testimony, that I claim the foregoing as my invention, I have signed my name this 20th day of March, 1922.

FREDERICK CLARK GRISWOLD.