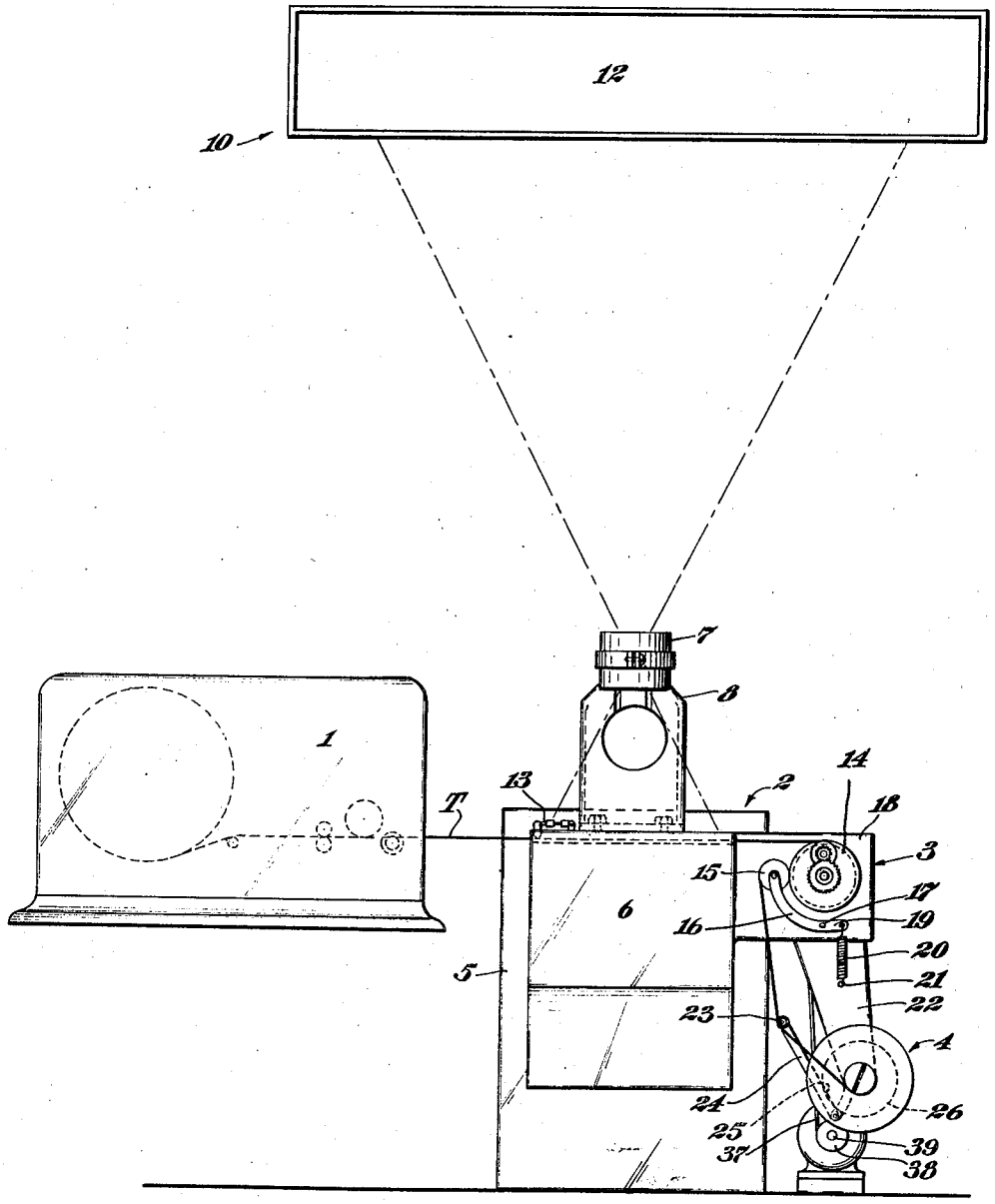
June 23, 1936. A. D. EITZEN 2,045,537

STOCK QUOTATION PROJECTING MACHINE

Filed May 13, 1930 4 Sheets-Sheet 1

Fig. 1



INVENTOR
August D. Eitzen,
BY
Gustav Drews
ATTORNEY

June 23, 1936. A. D. EITZEN 2,045,537

STOCK QUOTATION PROJECTING MACHINE

Filed May 13, 1930 4 Sheets-Sheet 2

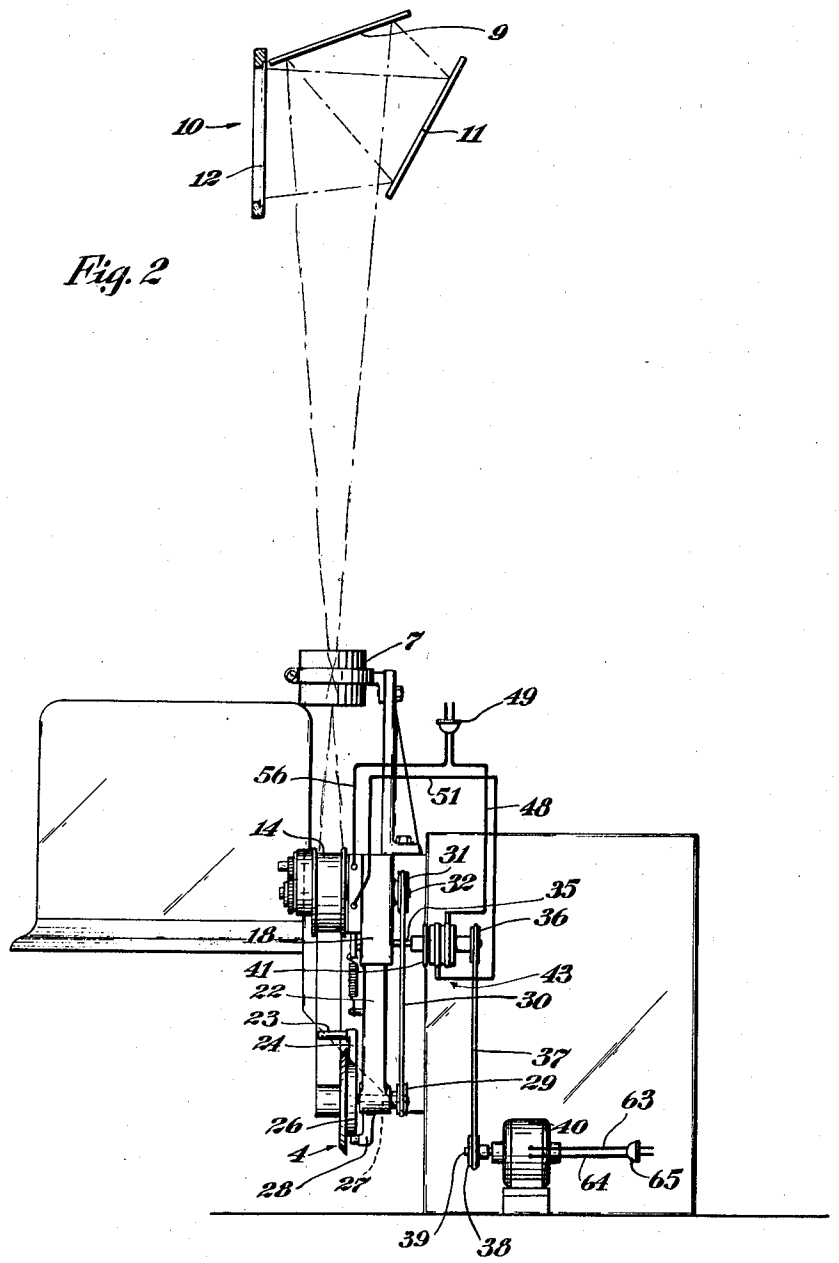


Fig. 2

INVENTOR
August D. Eitzen,
BY Gustav Drews
ATTORNEY

June 23, 1936. A. D. EITZEN 2,045,537

STOCK QUOTATION PROJECTING MACHINE

Filed May 13, 1930 4 Sheets-Sheet 3

Fig. 3

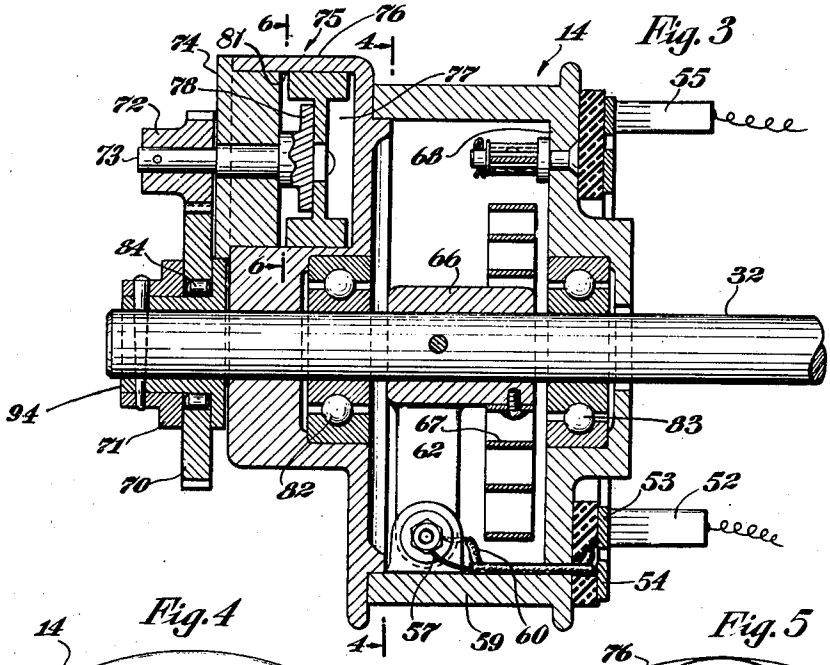


Fig. 4

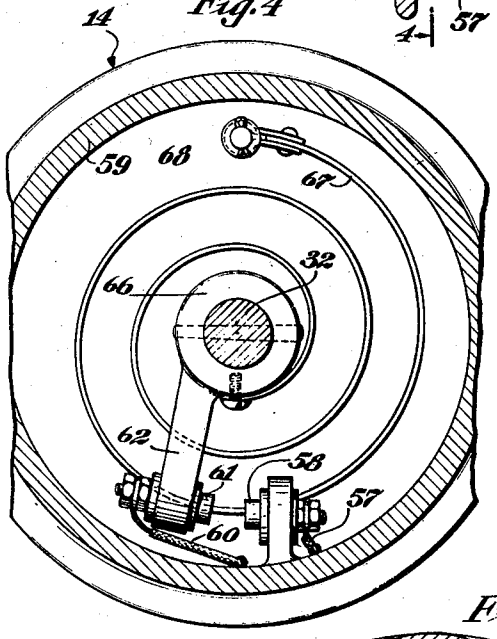


Fig. 5

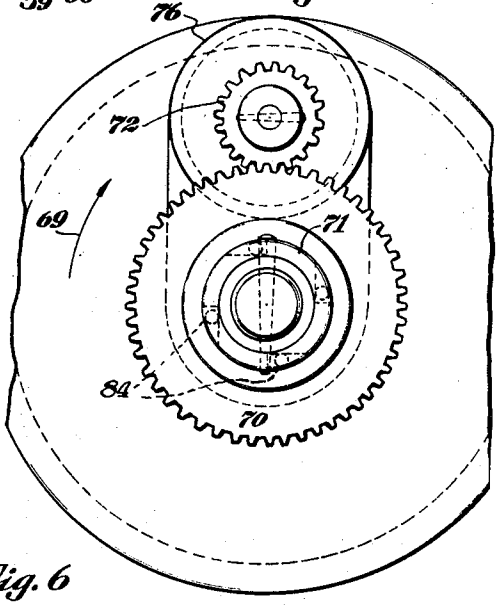
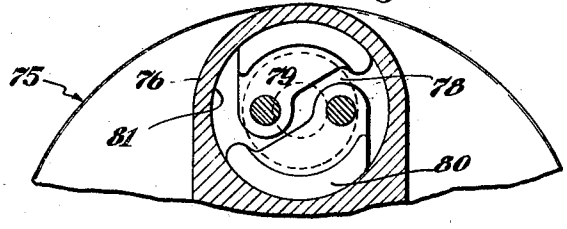


Fig. 6



INVENTOR
August D. Eitzen,
BY Gustav Drews
ATTORNEY

June 23, 1936. A. D. EITZEN 2,045,537

STOCK QUOTATION PROJECTING MACHINE

Filed May 13, 1930 4 Sheets-Sheet 4

Fig. 7

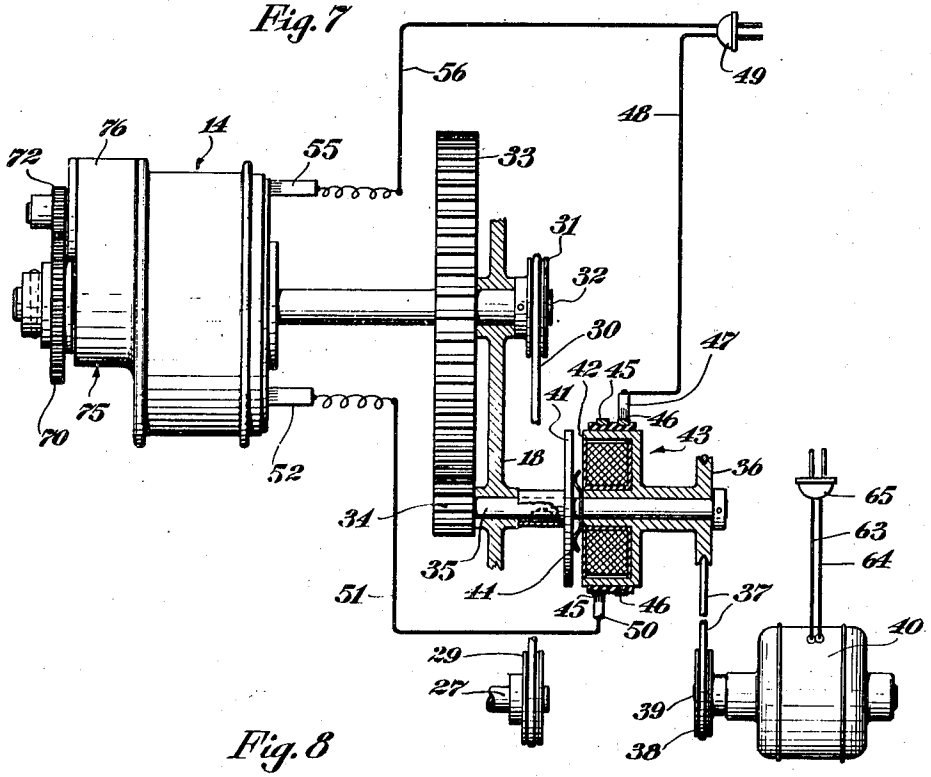
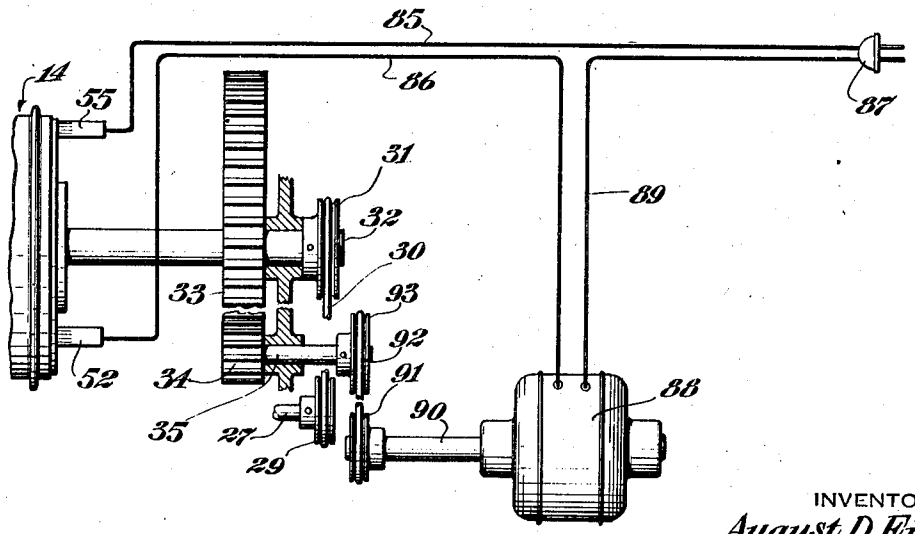


Fig. 8



INVENTOR
August D. Eitzen,
BY Gustav Drews
ATTORNEY

Patented June 23, 1936 2,045,537

UNITED STATES PATENT OFFICE

2,045,537

STOCK QUOTATION PROJECTING MACHINE

August D. Eitzen, Flushing, N. Y., assignor to News Projection Corporation, New York, N. Y., a corporation of New York

Application May 13, 1930, Serial No. 451,921

41 Claims. (Cl. 271—2.3)

This invention relates to a stock quotation projecting machine.

Among the objects of the present invention it is aimed to provide an improved stock quotation projecting machine in which the controlling mechanism for the tape feed is disposed beyond the discharge end of the projecting mechanism.

It is still a further object of the present invention to provide an improved tape pulling mechanism whereby the start and stop of the pulling action is gradual and does not depend upon the inertia of an electric motor or the like.

These and other features, capabilities and advantages of the invention will appear from the subjoined detail description of specific embodiments thereof illustrated in the accompanying drawings in which

Figure 1 is a front elevation of a projecting machine equipped according to the present invention;

Fig. 2 is an end elevation of the same;

Fig. 3 is an enlarged transverse section of a part of the improved controlling mechanism;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is an end elevation of the controlling mechanism illustrated in Fig. 3;

Fig. 6 is a fragmental section on the line 6—6 of Fig. 3;

Fig. 7 is a side elevation, partly in section, showing the association of the control mechanism with the motor and clutch when a continuously operating motor is used; and

Fig. 8 is a side elevation with parts broken away diagrammatically showing the association of the control mechanism with a motor when the operation of the motor is directly controlled by the control mechanism.

In the embodiment shown in Figs. 1 to 7 inclusive, the ticker tape T issues from the ticker 1 illustrated generally as a high speed ticker, passes to the stock quotation projecting machine generally designated as the reference character 2, from there passes to the control mechanism generally designated as the reference character 3 and then down to the reel 4. The projecting machine 2 is of the type extensively used, having a lamp housing 5, an extension 6 provided with a light aperture across which the tape T passes, and an objective lens 7 disposed above the light aperture and secured to the lamp housing by the bracket 8 from which the light beam and images are directed onto the mirror 9 of the screen housing 10, from which mirror 9 the images are directed onto the mirror 11 and then onto the screen 12.

At the front end of the light aperture on the extension 6, there is provided a contact member 13 for engaging the tape and smoothing out the same before it passes across the light aperture to dissipate any vibrations transmitted to the tape by the ticker.

The tape control mechanism, which also serves as the tape puller, consists essentially of a cylindrical faced element 14 to receive the tape, the tape passing around the cylindrical face of the element 14 and being frictionally held in engagement with the same by the pressure roller 15 mounted on the end of the arm 16 pivotally mounted on the pin 17 secured to the side of the housing 18 extending from the lamp housing 5. The short arm 19 of the lever 16 is connected by the spring 20 to the abutment 21 formed on the extension 22 of the housing 18 for resiliently pressing the pressure roller 15 against the cylindrical portion 14.

As will appear from Fig. 1, the tape passes around the cylindrical surface of the device 14 and then up and over the pressure roller 15, and then down around the finger 23 of the brake arm 24 whose surface 25 engages the brake drum 26 of the reel 4. The shaft 27 of the reel 4, and therefore also of the brake drum 26, is journaled in the lower end of the extension 22. The extension 22 has an arm 28 extending downward therefrom to the end of which is pivotally connected the lower end of the brake lever or arm 24. The shaft 27 has a sheave 29 fixed on its rear end which is connected by the spring belt 30 with the sheave 31 on the shaft 32 on which the control roller 14 is freely rotatable.

As is clearly shown in Fig. 7, the shaft 32 has a gear 33 mounted thereon which meshes with the pinion 34 on the shaft 35 mounted in the casing 18. The shaft 35 has mounted thereon the sheave 36 which is connected by the belt 37 with the sheave 38 on the shaft 39 of the motor 40. The sheave 36 is freely mounted on the shaft 35 and has fixed thereto the clutch member 43 adapted to attract the disc 41 which is fixed to the shaft 35.

As shown in Fig. 7, the disc 41 is normally spaced from the coil 42 of the magnet 43 by the spring 44. The magnet 43 is provided with the collector rings 45 and 46, the collector ring 46 being engaged by the brush 47 which is connected by the conductor 48 to the outlet plug 49 and the collector ring 45 being engaged by the brush 50 which is connected by the conductor 51 with the brush 52. The brush 52, see Fig. 3, is disposed to engage the collector ring 53 of the cylindrical

member 14. The cylindrical member 14 is provided with a second collector ring 54 which is engaged by the brush 55 which is connected to the outlet plug 49 by the conductor 56.

As shown in Figs. 3 and 4, the collector ring 54 is connected by the conductor 57 with the contact 58 mounted on the cylindrical portion 59 of the cylindrical device 14, and the collector ring 53 is connected by the conductor 60 with the contact 61 which is mounted on the free end of the arm 62 fixed on the shaft 32 centrally of the cylindrical device 14. The motor 40 is connected by the conductors 63 and 64 to the outlet plug 65. The hub 66 of the arm 62 has connected thereto one end of a coil spring 67, the other end of which is secured to the disc portion 68 of the cylindrical device 14 adjacent to the cylindrical wall 59 thereof.

From the foregoing, it will be seen that when the ticker 1 starts operating and feeding the tape T therefrom, assuming the contacts 61 and 58 to be open as illustrated in Fig. 4, the tension in the spring 67 will first act upon the cylindrical device 14 to bring the contact 58 into engagement with the contact 61. Thereupon, through the brushes 55 and 52 the current from the outlet plug 49 will pass through the magnet 43, see Fig. 7, to energize the same and attract the clutch disc 41, whereupon the shaft 35 will be drivingly connected to the sheave 36 which is driven by the motor 40 being connected by the belt 37 to the sheave 38 of the motor 40. In turn, the shaft 35 through its pinion 34 being in mesh with the gear 33 will actuate the shaft 32 on which the arm 62 is mounted and rotate the shaft 32 in the direction of the arrow 69, see Fig. 5, to actuate the cylindrical device 14 to cooperate with the pressure roller 15 as a tape puller on the tape T. This tape pulling action will at all times be yieldable, due to the fact that the shaft 32 is not positively connected to the cylindrical device 14 but only drives it through the intervening spring 67.

From the foregoing it will also appear that when the ticker 1 comes to rest and stops feeding the tape T therefrom, the tape T will act on the cylindrical device 14 to stop the same, while the arm 62 will continue to rotate with the shaft 32. As soon as the arm 62 causes the contact 61 to leave the contact 58, the circuit to the magnet 43 will be interrupted to release the clutch disc 41 and thereby free the shaft 35 from rotation with the sheave 36. Consequently, the arm 62 will only move a short distance beyond the contact 58, just sufficient to effect an interruption in the current to the magnet 43.

In order to prevent the spring 67 actuating the cylindrical housing 14 too suddenly when the ticker starts, the control mechanism now to be described has been provided.

This control mechanism consists essentially of a gear 70 rotatably mounted in the bearing 71 fixed on the shaft 32. This gear meshes with the spur gear 72 mounted on the shaft 73 in the journal 74 secured to the cover 75 formed on the cylindrical device 14. The cover portion 75 is provided with an enlargement 76 having a chamber 77 in which operates the disc 78 forming the end of the shaft 73. On the disc 78 are pivotally mounted the friction shoes 79 and 80 for cooperating with the cylindrical surface 81 formed in the enlargement 76. The cover portion 75 and cylindrical device 14 are provided with the ball bearing faces 82 and 83 respectively as illustrated in Fig. 3. The bearing 71 is provided with the rollers 84 for engaging the gear 70, to allow rotation in a counter-clockwise direction only and to lock when gear is turned clockwise in relation to center clutch member 94 of the bearing member 71.

From the foregoing it will appear that when the cylindrical housing 14 starts to turn upon slack being formed in the tape T by the operation of the ticker 1, it will cause the gear 72 to rotate relative to the cover 75 by its engagement with the gear 70, and immediately upon such rotation will cause the shoes 79 and 80 to fly outward by centrifugal force into engagement with the cylindrical surface 81 of the enlargement 76 thereby to impede the free rotation of the gear 72 relative to the device 14 and in turn the free rotation of the cylindrical device 14. As soon as the gear 72 is thus locked against free rotation relative to the device 14, it will of course impart a clockwise rotation to the gear 70 and thereby cause the roller 84 to ride into locking engagement with the clutch member 94 of the bearing member 71 in turn to lock the device 14 to the shaft 32. This retarding action will prevent the sudden jar that might ordinarily be transmitted to the tape T by the release of the spring 67 when slack is formed in the tape T and thus prevent the sudden snap of the cylindrical device 14 by the spring 67. Note should also be taken of the fact that the arcuate lever 16 when engaging the face of the cylindrical device 14 facing the lamp housing 5 in the opposite direction to the path of movement of the tape T to the cylindrical device 14, will compensate to a certain extent for the rear acting force in the tape T to the pull of the cylindrical device 14, and thus diminish the wear on the bearings of the cylindrical device 14 and otherwise cooperate with the free and easy movement of this device.

In the embodiment illustrated in Fig. 8, the brushes 55 and 52 of the cylindrical device 14 are connected by the conductors 85 and 86 to the outlet plug 87 and motor 88 respectively. The motor 88 is connected to the outlet plug 87 by the conductor 89. In this case, the magnetic clutch is thus omitted and the contacts 61 and 58 of the cylindrical device 14 will act as a switch to close the circuit of the motor 88 when slack is formed in the tape T. The shaft 90 of the motor 88, as in the other case, is provided with a sheave 91 which is connected by the belt 92 to the sheave 93 on the shaft 35. From the shaft 35 through the pinion 34, gear 33, shaft 32, sheave 31 and sheave 29 of the shaft 27 on which the reel 4 is mounted, these parts may be identical with the parts illustrated in the embodiment of Figs. 1 to 7 inclusive. In this embodiment, the motor 88 will be started with the ticker and stopped when the ticker comes to rest whereas, in the other embodiment, the motor 40 is continuously operating during the market hours and the clutch interposed to connect the tape pulling device 14 for operation when the ticker operates and to disconnect the tape pulling device to come to rest when the ticker comes to rest.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. In a stock quotation projection machine, a tape smoothing device disposed at the anterior

end of the light aperture of the projection machine, a tape pulling device for pulling the tape across the light aperture of the projection machine, a motor, a magnetic clutch for operatively connecting said tape pulling device to said motor, and a tension device for initiating the actuation of said pulling device independent of said motor.

2. In a stock quotation projection machine, a tape pulling device for pulling the tape across the light aperture of the projection machine, tension means for initiating the actuation of said tape pulling device, and a motor for supplementing the tension device in the actuation of said pulling device.

3. In a tape pulling device, the combination with a tape receiving cylindrical member, of actuating means for actuating said cylindrical member including electric contacts for closing the circuit of said actuating means, and a tension device for initiating the actuation of said cylindrical member and positioning said contacts for closing the circuit of said actuating means to cooperate with said tension device to actuate said cylindrical member.

4. In a tape pulling device, the combination with a cylindrical member, of a driving device, a magnetic clutch for connecting said driving device with said cylindrical member, electric contacts in the circuit of said magnetic clutch, and a tension device for initiating the actuation of said cylindrical member and closing said contacts to complete the circuit of said magnetic clutch.

5. In a tape pulling device, the combination with a tape engaging cylindrical member, of a driving mechanism, a magnetic clutch for operatively connecting said driving mechanism with said cylindrical member, means including electric contacts for forming an electric circuit for said magnetic clutch, and a tension device for initiating the actuation of said cylindrical member and closing said contacts to complete the circuit of said magnetic clutch.

6. In a tape pulling device, the combination with a shaft, of a tape engaging cylindrical member mounted on said shaft, a drive mechanism, a magnetic clutch for operatively connecting said drive mechanism to said shaft, a tension device connecting said shaft to said cylindrical member for initiating the actuation of said cylindrical member, and means including electric contacts for closing the circuit of said magnetic clutch operatively connected to said tension device.

7. In a tape pulling device, the combination with a shaft, of a tape engaging cylindrical member mounted on said shaft, a drive mechanism, a magnetic clutch for operatively connecting said drive mechanism to said shaft, a tension device connecting said shaft to said cylindrical member for initiating the actuation of said cylindrical member, means including electric contacts for closing the circuit of said magnetic clutch operatively connected to said tension device, and a governor for controlling the operation of said tension device.

8. In a tape pulling device, the combination with a tape engaging cylindrical member, of a shaft on which said cylindrical member is rotatably mounted, a coil spring for connecting said shaft to said cylindrical member, a driving mechanism, a magnetic clutch for operatively connecting said driving mechanism to said shaft, an arm on said shaft, and means including electric contacts for completing the circuit of said magnetic clutch, one of said contacts being mounted on said arm and the other of said contacts being mounted on said cylindrical member, said coil spring being operative to initiate the actuation of said cylindrical member and to close said contacts.

9. In a tape pulling device, the combination with a tape engaging cylindrical member, of a shaft on which said cylindrical member is rotatably mounted, a coil spring for connecting said shaft to said cylindrical member, a driving mechanism, a magnetic clutch for operatively connecting said driving mechanism to said shaft, an arm on said shaft, means including electric contacts for completing the circuit of said magnetic clutch, one of said contacts being mounted on said arm and the other of said contacts being mounted on said cylindrical member, said coil spring being operative to initiate the actuation of said cylindrical member and to close said contacts, and a governor for controlling the movement of said spring.

10. In a tape pulling device, the combination with a cylindrical member, of a shaft on which said cylindrical member is rotatably mounted, a coil spring for connecting said cylindrical member to said shaft, a drive mechanism, a magnetic clutch for operatively connecting said drive mechanism to said shaft, an arm on said shaft, and means including a switch for closing the electric circuit of said magnetic clutch, said switch having switch elements mounted on said arm and said cylindrical member, said spring initiating the actuation of said cylindrical member and actuating said switch elements to close said switch.

11. In a tape pulling device, the combination with a cylindrical member, of a shaft on which said cylindrical member is rotatably mounted, a coil spring for connecting said cylindrical member to said shaft, a drive mechanism, a magnetic clutch for operatively connecting said drive mechanism, to said shaft, an arm on said shaft, means including a switch for closing the electric circuit on said magnetic clutch, said switch having switch elements mounted on said arm and said cylindrical member, said spring initiating the actuation of said cylindrical member and actuating said switch elements to close said switch, and a governor operatively connecting said cylindrical member to said shaft for controlling the actuation of said spring.

12. In a stock quotation projection machine, a tape pulling roller at the posterior end of the light aperture of the projection machine, and a single pressure roller, the tape passing across the light aperture of the projection machine then around the tape pulling roller and then back over the pressure roller, said pressure roller exercising pressure through the tape upon the tape pulling roller in the same direction and parallel to the direction of movement of the tape across the light aperture of the projection machine thereby counteracting the lateral thrust on the bearing of the pulling roller and thus diminishing the wear on the same in addition to effecting an extensive wrap of the tape on the pulling roller.

13. In a stock quotation projection machine, a tape pulling roller at the posterior end of the light aperture of the projection machine, an arcuate lever, a single pressure roller at the end of said arcuate lever, the tape passing across

the light aperture of the projection machine then over the tape pulling roller and then back over the pressure roller, and a spring for directing the pressure roller to press the tape into frictional engagement with the tape pulling roller on the face of the tape pulling roller facing the light aperture of the projection machine, thereby not only to counteract the lateral thrust on the bearing of the pulling roller and thus diminishing the wear on the same but also causing the tape to wrap substantially two hundred and seventy degrees of the periphery of the tape pulling roller.

14. In a stock quotation projection machine, a tape pulling roller at the posterior end of the light aperture of the projection machine, an arcuate lever, a single pressure roller at the end of said arcuate lever, the tape passing across the light aperture of the projection machine, then over the tape pulling roller and then back over the pressure roller, and a spring for directing the pressure roller to press the tape into frictional engagement with the tape pulling roller on the face of the tape pulling roller facing the light aperture of the projection machine coinciding with a tangent substantially perpendicular to the path of movement of the tape across the light aperture of the projection machine, the arcuate lever extending down from the pressure roller substantially concentric with the tape pulling roller and said spring being connected to the lower end of said lever, thereby not only counteracting the lateral thrust on the bearing of the pulling roller due to the reaction of the tape being pulled across the light aperture of the projection machine but also causing the tape to wrap substantially three-fourths of the periphery of the tape pulling roller.

15. In a stock quotation projection machine, a tape pulling device for pulling the tape across the light aperture of a projection machine, a motor, means for drivingly connecting said motor to said tape pulling device, an electric switch for controlling the current to said motor, and means associated with said pulling device for normally actuating said switch into circuit making position but yieldable when said pulling device is arrested by an interruption in the supply of tape to actuate said switch into circuit breaking position.

16. In a tape pulling device, the combination with a tape engaging cylindrical member, of a shaft on which said cylindrical member is rotatably mounted, a coil spring for connecting said shaft to said cylindrical member, a motor operatively connected to said shaft, an arm on said shaft, and means including electric contacts for completing the circuit of said motor, one of said contacts being mounted on said arm and the other of said contacts being mounted on said cylindrical member, said coil spring being operative to initiate the actuation of said cylindrical member and to close said contacts.

17. In a tape pulling device, the combination with a tape pulling roller, of a shaft on which said roller is rotatably mounted, a spring for connecting said shaft to said roller, a motor operatively connected to said shaft, an arm on said shaft, and means including electric contacts for completing the circuit of said motor, one of said contacts being mounted on said arm and the other of said contacts being mounted on said roller, said spring being operative to initiate the actuation of said roller and to close said contacts.

18. In a tape pulling device, the combination with a tape pulling roller, of a shaft on which said roller is rotatably mounted, a spring for connecting said shaft to said roller and for expanding and thereby imparting a rotative impulse to said roller when slack is initially formed in the tape, and means for driving said shaft and therewith said roller after said initial slack has been taken up and for continuing under its own momentum in turn to contract said spring when said roller is retarded by tension in the tape.

19. In a tape pulling device, the combination with a tape pulling roller cooperating with a tape feed, of a shaft on which said roller is rotatably mounted, a spring for connecting said shaft to said roller, and means for driving said shaft and therewith said roller and for continuing under its own momentum in turn to contract said spring when said roller is retarded by tension in the tape, said spring serving as a yieldable connection between said roller and said shaft to expand and thereby impart a rotative impulse to said roller relative to said shaft when slack in the tape is initially formed by the tape feed and to contract when the slack in the tape is dissipated to permit rotation of said shaft relative to said roller after said roller has come to rest.

20. In a tape pulling device, the combination with a tape feed, of a tape pulling roller, a pressure idler cooperating with said roller to advance the tape as it is fed by said feed, a shaft on which said roller is rotatably mounted, a coil spring for connecting said shaft to said roller and for expanding and thereby imparting a tape pulling rotative force to said roller when slack is formed in the tape, and means for driving said shaft and therewith said roller when said spring is expanded and for continuing under its own momentum in turn to contract said spring when said roller is retarded by tension in the tape, said spring serving as a yieldable connection between said roller and said shaft when the slack in the tape is dissipated to permit a further rotation of said shaft relative to said roller after said roller has come to rest.

21. In a tape pulling device, the combination with a tape pulling roller, of a shaft on which said roller is rotatably mounted, a coil spring for connecting said shaft to said roller and for imparting a tape pulling rotative force to said roller when slack is formed in the tape, means for driving said shaft and therewith said roller, said spring serving as a yieldable connection between said roller and said shaft when the slack in the tape is dissipated to permit a further rotation of said shaft relative to said roller after said roller has come to rest, and control means cooperating with said spring and associated with said roller for effecting a slow even start to said roller.

22. In a tape pulling device, the combination with a tape pulling roller, of a shaft on which said roller is rotatably mounted, a coil spring for connecting said shaft to said roller and for imparting a tape pulling rotative force to said roller when slack is formed in the tape, means for driving said shaft and therewith said roller, said spring serving as a yieldable connection between said roller and said shaft when the slack in the tape is dissipated to permit a further rotation of said shaft relative to said roller after said roller has come to rest, control means cooperating with said spring and associated with said roller for effecting a slow even start to said roller, said control means consisting of a clutch, and frictional elements responsive to centrifugal

force to actuate said clutch to clutchingly engage said shaft with said roller.

23. In a tape pulling device, the combination with a tape feed, of a tape pulling roller, a pressure idler cooperating with said roller to advance the tape as it is fed by said feed, two actuating means independent of said tape feed and operatively connected to said roller for successively coming into action to successively impart a rotative moment to said roller as the tape is fed by said feed, and a device for disabling one of said actuating means and for storing up energy in the other of said actuating means.

24. In a tape pulling device, the combination with a tape pulling roller, of an initial rotation imparting actuator operatively connected to said roller, a main rotation imparting actuator, a clutch for operatively connecting said main actuator to said roller, and means operatively connected to said initial actuator to actuate said clutch into clutching engagement with said roller.

25. In a tape pulling device, the combination with a tape pulling roller, of an initial rotation imparting actuator operatively connected to said roller, a main rotation imparting actuator, a clutch for operatively connecting said main actuator to said roller, and means operatively connected to said initial actuator to actuate said clutch into clutching engagement with said roller, said initial actuator in turn cooperating with said roller when arrested to effect the disengagement of said clutch.

26. In a tape pulling device, the combination with a tape feed, of a tape pulling roller, drive means, and initiating means operatively connecting said roller with said drive means to impart a rotative moment to said roller as the tape is fed by said feed, said drive means being movable relative to said roller to store up energy in said initiating means when said tape feed is arrested.

27. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture as the same is fed thereto, a continuously operating motor, a slippage device for operatively connecting said motor to said tape pulling device, and a magnetic device for controlling said slippage device, said tape pulling device including a tension device for taking up the initial slack in the tape when the feed to the light aperture is resumed, said tension device being operatively associated with said magnetic device in turn to affect said magnetic device to enable said slippage device to resume actuation of said pulling device, said tension device cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

28. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture as the same is fed thereto, a continuously operating motor, a driving member operatively connected to operate with said motor, a driven member operatively connected to said tape pulling device, said driving member being free to slip relative to said driven member when the tension in the tape is increased due to interrupting the feed to the light aperture, and a magnetic device for controlling the movement of said driven member relative to said driving member, said tape pulling device including a tension device for taking up the initial slack in the tape when the feed to the light aperture is resumed, said tension device being operatively associated with said magnetic device in turn to cause said magnetic device to resume the actuation of said tape pulling device, said tension device cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

29. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture as the same is fed thereto, a continuously operating motor, a driving member operatively connected to operate with said motor, a driven member operatively connected to said tape pulling device, said driving member being free to slip relative to said driven member when the tension in the tape is increased due to interrupting the feed to the light aperture, a magnetic device for controlling the movement of said driven member relative to said driving member including an electromagnet, and an electromagnet circuit for said electromagnet including a pair of contacts, said tape pulling device including a tension device for taking up the initial slack in the tape when the feed to the light aperture is resumed, said tension device being operatively associated with said contacts to effect the movement of said contacts relative to one another when the slack in the tape is so taken up and in turn to control the electric current through said electromagnet to cause said magnetic device to resume the actuation of said pulling device, said tension device cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

30. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture as the same is fed thereto, a continuously operating motor, a driving member operatively connected to operate with said motor, a driven member operatively connected to said tape pulling device, said driving member being free to slip relative to said driven member when the tension in the tape is increased due to interrupting the feed to the light aperture, a magnetic device for controlling the movement of said driven member relative to said driving member including an electromagnet, and an electromagnet circuit for said electromagnet including a pair of contacts, said tape pulling device including a tension device for taking up the initial slack in the tape when the feed to the light aperture is resumed, said tension device being operatively associated with one of said contacts normally to maintain the same in engagement with the other of said contacts and to urge one contact into engagement with the other of said contacts when the slack in the tape is so taken up in turn to close the circuit of said electromagnet to resume the operation of said tape pulling device, said tension device cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

31. In a stock quotation projection machine, a tape smoothing device disposed at the anterior

end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture as the same is fed thereto, a continuously operating motor, a driving member operatively connected to operate with said motor, a driven member operatively connected to said tape pulling device, said driving member being free to slip relative to said driven member when the tension in the tape is increased due to interrupting the feed to the light aperture, a magnetic clutch for drivingly connecting the driven member with said driving member, and an electromagnet circuit for said electromagnet including a pair of contacts, said tape pulling device including a tension device for taking up the initial slack in the tape when the feed to the light aperture is resumed, said tension device being operatively associated with one of said contacts normally to maintain the same in engagement with the other of said contacts and to urge said one contact into engagement with the other of said contacts when the slack in the tape is so taken up to close the circuit of said magnetic clutch to resume the operation of said tape pulling device, said tension device cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

32. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture as the same is fed thereto, a continuously operating motor, a driving member operatively connected to operate with said motor, a driven member operatively connected to said tape pulling device, said driving member being free to slip relative to said driven member when the tension in the tape is increased due to interrupting the feed to the light aperture, and a magnetic device for controlling the movement of said driven member relative to said driving member, said tape pulling device including a roller and a spring cooperating with said roller to take up the initial slack in the tape when the feed to the light aperture is resumed, and said spring being operatively associated with said magnetic device in turn to cause said magnetic device to resume the actuation of said pulling device, said spring cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

33. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture including a driven shaft, a rewind reel, a slippage device for drivingly connecting said rewind reel to said driven shaft, a roller, and a spring cooperating with said roller to take up the tension in the tape when the feed to the light aperture is resumed after an interruption; a drive shaft; a continuously operating motor; a second slippage device for normally drivingly connecting said driven shaft to said drive shaft; an electromagnetic control for said second slippage device including an electromagnet, a circuit including two contacts, one contact movable with said roller either into engagement with, or to be spaced from, said other contact, either to establish or interrupt the current in said circuit, said roller being responsive to a change in tension in the tape so to control the engagement of said contacts; said spring cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

34. In a stock quotation projection machine, a tape smoothing device disposed at the entrance end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture including a driven shaft, an electric motor operatively associated with said driven shaft, a rewind reel, a slippage device for drivingly connecting said rewind reel to said driven shaft, a roller in engagement with the tape and a spring cooperating with said roller to take up the tension in the tape when the feed to the light aperture is resumed after an interruption, and a control for said motor including a circuit for said motor and a pair of contacts in said circuit, one of said contacts being movable with said roller either into engagement with, or to be spaced from, the other of said contacts either to establish or interrupt the current in said motor circuit, said roller being responsive to a change in tension in the tape so to control the engagement of said contacts, said spring cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

35. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture including a driven member, an electric motor operatively connected to drive said driven member, an electric circuit for said motor including a pair of contacts, said tape pulling device including a tension device for taking up the initial slack in the tape when the feed to the light aperture is resumed after an interruption, said tension device being operatively associated with said contacts to effect a movement of said contacts relative to one another when the slack in the tape is taken up in turn to establish the circuit of said motor to resume the actuation of said pulling device, said tension device cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

36. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture including a driven member, an electric motor operatively connected to drive said driven member, and an electric circuit for said motor including a pair of contacts, said tape pulling device including a roller and a spring cooperating with said roller to take up the initial slack in the tape when the feed to the light aperture is resumed, said spring being operatively associated with said contacts in turn to reestablish said motor circuit to resume the actuation of said tape pulling device, said spring cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

37. In a stock quotation projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape

across the light aperture including a driven shaft, a rewind reel, a slippage device for drivingly connecting said rewind reel to said driven shaft, a roller, and a spring cooperating with said roller to take up the tension in the tape when the feed to the light aperture is resumed after an interruption; a drive shaft, a continuously operating motor; a second slippage device for normally drivingly connecting said driven shaft to said drive shaft; an electromagnetic control for said second slippage device including an electromagnet, a circuit including two contacts, one contact movable with said roller either into engagement with, or to be spaced from, said other contact, either to establish or interrupt the current in said circuit, said roller being responsive to a change in tension in the tape so to control the engagement of said contacts.

38. In a stock quotation projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture including a driven shaft, an electric motor operatively associated with said driven shaft, a rewind reel, a slippage device for drivingly connecting said rewind reel to said driven shaft, a roller in engagement with the tape and a spring cooperating with said roller to take up the tension in the tape when the feed to the light aperture is resumed after an interruption, and a control for said motor including a circuit for said motor and a pair of contacts in said circuit, one of said contacts being movable with said roller either into engagement with, or to be spaced from, the other of said contacts either to establish or interrupt the current in said motor circuit, said roller being responsive to a change in tension in the tape so to control the engagement of said contacts.

39. In a stock quotation projection machine, a tape pulling device disposed at the posterior end of the light aperture for pulling the tape across the light aperture including a driven member, an electric motor operatively connected to drive said driven member, an electric circuit for said motor including a pair of contacts, said tape pulling device including a tension device for taking up the initial slack in the tape when the feed to the light aperture is resumed after an interruption, said tension device being operatively associated with said contacts to effect a movement of said contacts relative to one another when the slack in the tape is taken up in turn to establish the circuit of said motor to resume the actuation of said pulling device.

40. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, means disposed at the posterior end of the light aperture for controlling the advance of the tape across the light aperture as the same is fed thereto including a continuously operating motor, a driving member operatively connected to operate with said motor, a driven member, said driving member being free to slip relative to said driven member when the tension in the tape is increased due to interrupting the feed to the light aperture, a magnetic device for controlling the movement of said driven member relative to said driving member including an electromagnet and an electromagnet circuit for said electromagnet including a pair of contacts, said controlling means including a tension device for taking up the initial slack in the tape when the feed to the light aperture is resumed, said tension device being operatively associated with said contacts to effect the movement of said contacts relative to one another when the slack in the tape is so taken up and in turn to control the electric current through said electromagnet, said tension device cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

41. In a stock quotation projection machine, a tape smoothing device disposed at the anterior end of the light aperture of a projection machine, means disposed at the posterior end of the light aperture for controlling the advance of the tape across the light aperture including a driven shaft, a roller and a spring cooperating with said roller to take up the tension in the tape when the feed to the light aperture is resumed after an interruption; a drive shaft; a continuously operating motor, a slippage device for drivingly connecting said driven shaft to said drive shaft, and an electromagnetic control for said slippage device including an electromagnet, a circuit including two contacts, one contact movable with said roller either into engagement with, or to be spaced from, said other contact either to establish or to interrupt the current in said circuit, said roller being responsive to a change in tension in the tape so to control the engagement of said contacts; said spring cooperating with said tape smoothing device to maintain the tape smooth at the light aperture when the feed to the light aperture is interrupted.

AUGUST D. EITZEN.