

April 3, 1928.

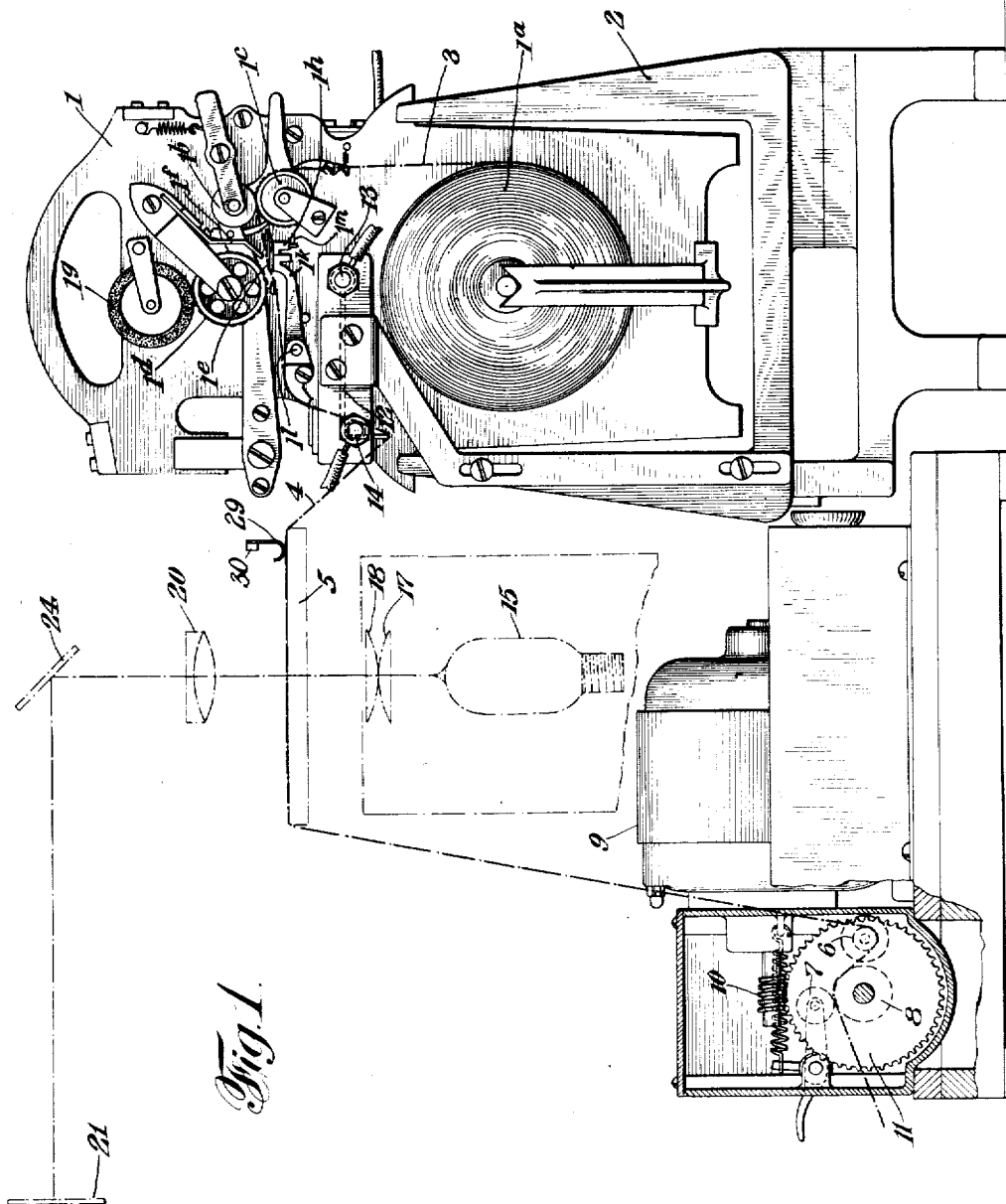
1,664,772

R. L. DAINE

METHOD AND MEANS FOR FEEDING TAPE

Original Filed Feb. 4, 1926

3 Sheets-Sheet 1



Robert Louis Daine, INVENTOR.
BY *Wm S. Churchill* ATTORNEY

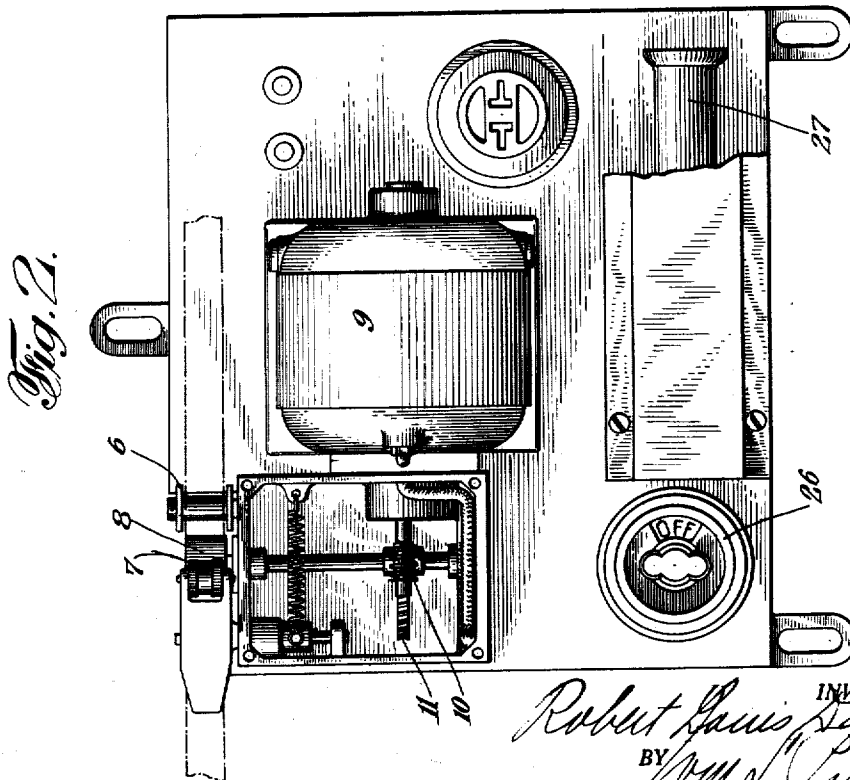
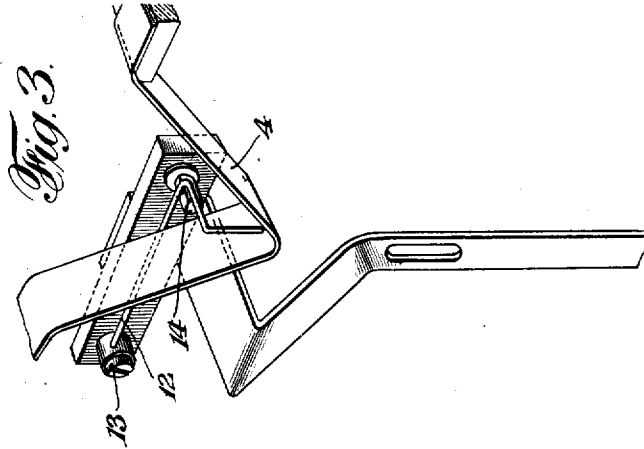
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R. L. DAINE

METHOD AND MEANS FOR FEEDING TAPE

Original Filed Feb. 4, 1926 3 Sheets-Sheet 2



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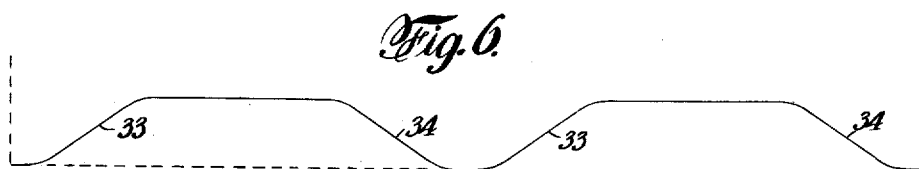
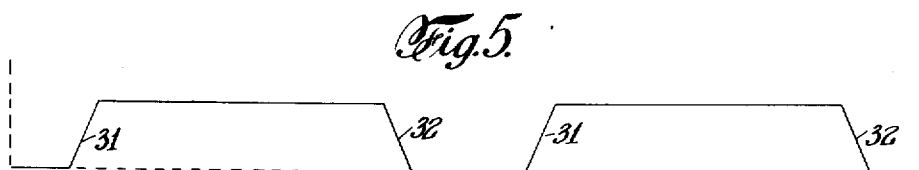
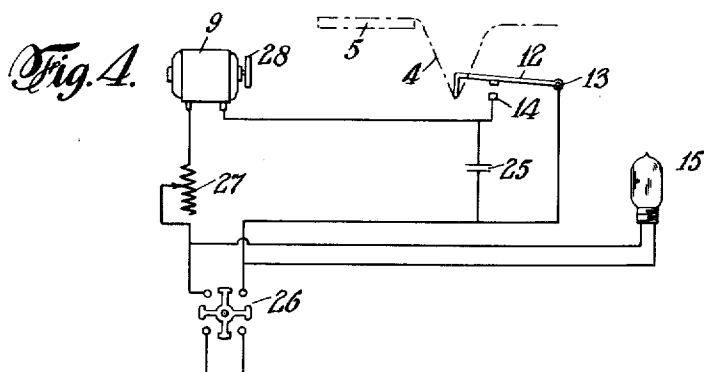
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R. L. DAINE

METHOD AND MEANS FOR FEEDING TAPE

Original Filed Feb. 4, 1926 3 Sheets-Sheet 3



Robert Louis Daine
INVENTOR
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UNITED STATES PATENT OFFICE.

ROBERT LOUIS DAINE, OF NEW YORK, N. Y., ASSIGNOR TO TRANS-LUX DAYLIGHT PICTURE SCREEN CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

METHOD AND MEANS FOR FEEDING TAPE.

Application filed February 4, 1926, Serial No. 86,107. Renewed February 25, 1928.

This invention relates to a method and means for feeding a tape and more particularly a tape such as is commonly employed in connection with a stock ticker, although not limited to use with such a device. The invention finds utility wherever it is desirable to convert an intermittent motion of a tape into a relatively continuous motion. For the purpose of illustration, however, I shall describe my invention as employed with a stock ticker, as it has proven of particular value when used therewith.

Apparatus has been devised whereby the tape from a stock ticker or the like may be fed across a table or other support, from which the data on the tape may be projected upon a screen, a suitable optical system being provided for this purpose. The tape is ejected by the ticker intermittently and, if caused to travel across the table in the same manner and at the same rate as ejected by the ticker, that is in synchronism with the ticker, the result is an intermittent, jerky projection of the data upon the screen which is extremely tiresome for the eyes and unsatisfactory for that reason and for others which will be apparent to those skilled in the art. The trouble has been avoided to some extent by providing a feed roll to pull the tape across the table, the roll being operated by an electric motor controlled by a switch whose operation in turn is governed by the amount of slack in a loop of tape disposed between the ticker and the table. When the ticker ceases operation, the arrangement is such that the motor continues its operation until it has taken up sufficient tape to shorten the loop and open the switch thereby stopping the motor. When the ticker starts its operation again, the loop increases in size until the switch is again closed, when the motor starts feeding the tape. The tape is then pulled across the table until the ticker again ceases its operation. The motion of the tape while the motor is in operation is fairly uniform, but it is interposed between abrupt starting and stopping of the motion. When it is borne in mind that the ticker is usually started and stopped at frequent intervals, it will be seen that the resultant projection on the screen is still intermittent and jerky.

Therefore, the object of my invention is to provide means that will result in a gradual

acceleration of the motion of the tape in starting and a gradual retardation in stopping. The gradual acceleration may be accomplished by providing a device for feeding the tape across the projection position and having a fly wheel effect. This effect may be accomplished in a number of ways as by employing a motor with a heavy armature or one which is designed to operate at high speed. In either case the kinetic energy developed is relatively great.

In the accompanying drawings in which I have shown a selected embodiment of my invention:

Figure 1 is an elevation of an apparatus embodying my invention, the optical system being shown diagrammatically in dot and dash lines.

Figure 2 is a plan view of the tape feeding device.

Figure 3 is a perspective view of the switch for controlling the operation of the motor.

Figure 4 is a wiring diagram illustrating the operation of my device.

Figure 5 is a graph showing the approximate variation in speed of a tape as actuated by means employed in the prior art.

Figure 6 is a graph similar to Figure 5 but showing the variations in the speed of a tape when operated by my invention.

The numeral 1 designates a data recording device, such as a standard ticker mechanism, shown in this case as a Western Union stock ticker, although the details of the mechanism are no essential part of my invention. The ticker 1 is placed upon a heavy stand 2 to allow its accurate placement and adjustment. The ticker is provided with the supply roll of tape 1^a which is usually transparent or translucent paper and the tape 3 from this roll passes between two feed rolls 1^b, 1^c, and thence between the guard 1^d and the two hammers 1^e, 1^f, being ejected into the pendulous loop 4. The ticker contains a type wheel 1^g which is usually split in two halves perpendicular to a common axis, one of the halves carrying letters upon its periphery and the other carrying numerals. The two hammers 1^e, 1^f are disposed below these two wheels so that, when either hammer is raised, the tape will be pressed against the type wheel and receive the impression of either a numeral or a letter, depending upon which

hammer is raised. The type wheel 1^d is inked continuously by the ink saturated felt roll 1^e which is in contact with the type wheel at all times.

5 In operation, the mechanism of the ticker rotates the type wheel 1^d until the desired character is presented downward to the opening in the guard 1^f. The projecting wire 1^m is then moved by a suitable mechanism, not shown, so as to engage the downward projection of either the hammer 1^b or the hammer 1^k exclusively and is then moved upwards forcing the tape 3 into contact with the type to receive the impression. The hammer is then allowed to drop and the feed rolls 1^b, 1^k are then actuated to feed the tape forward by the width of one character, after which the cycle is repeated.

10 The tape 3 passing out of the ticker into the loop 4 is drawn up over a support, such as a glass table 5, by a tape feeding mechanism shown both in Figure 1 and for a greater clarity in plan view in Figure 2. This mechanism consists of a guide roll 6, a pressure roller 7 and a traction roll 8 driven by the motor 9 through the worm 10 and the worm gear 11.

15 The loop of tape 4 supports a contact arm 12 shown in greater detail in Figure 3. The arm 12 is comparatively light and is pivoted at the point 13 and, when the loop of tape is sufficiently long, drops down and makes contact with the member 14 thereby closing an electric circuit which operates the motor 9. Reference to Figure 4 will show how the connections are made. Electric power is applied through the snap switch 26 from any suitable commercial power circuit. For convenience, the lamp 15 of the projection system is also controlled by this switch. The contact between the members 12, 14 is in series with the motor 9 and is bridged by the condenser 25 to avoid sparking when the contact is broken. The adjustable resistance 27 is in series with the motor to allow a certain amount of adjustment of the pick-up speed of the motor.

20 In Figure 4 I have shown the motor 9 as provided with a fly wheel 28. As a matter of fact, however, I have found it unnecessary to employ a fly wheel in order to obtain the necessary and desired acceleration of the tape. The same result may be obtained by employing a motor with a relatively heavy armature or by employing a high speed motor. In either case the developed kinetic energy is increased, and a fly wheel effect is obtained without the necessity of actually using the fly wheel. However, a fly wheel may be employed if found desirable.

25 In order to prevent the intermittent jerky motion of the tape as it leaves the ticker from being transmitted to the tape on the table 5, I dispose a tension device adjacent the end of the table next the ticker so as

to hold the tape resiliently in contact therewith. This tension device is exemplified by a curved spring 29 supported as by a bracket 30 and acts as a brake on the tape, the braking action being sufficient to prevent the tape from being pushed along the table by the same force which ejects it from the ticker, but being insufficient to prevent the tape from being pulled along the table by the traction roll 8.

30 In operation the tape is printed and ejected from the ticker in the usual manner and is fed through the projection position on the table 5 by means of the traction roll 8 operated by the motor 9. The movement of the tape at the point where it is ejected from the ticker is intermittent and jerky. The loop 4 permits the tape to be thus ejected intermittently but fed continuously through the projection position by the motor driven feed, the difference in motion being taken up in the loop. The tension device exemplified by the spring 29 definitely terminates the loop at the table 5 and effectually prevents the variations in the loop from being transmitted to the tape on the table. These variations obviously correspond to the intermittent jerky movement caused by the ticker, and the spring tension device prevents this movement from reaching the table. The continuous feed is controlled by variations in the loop in the manner described above and is started and stopped by the closing and opening respectively of the switch disposed in the loop. The motor having a fly wheel effect will cause the acceleration both at the starting and stopping of the continuous feed to be very gradual, and the result is that the data on the tape is projected on the screen so as to make it appear as if provided with a continuous motion from one side of the screen to the other. When the motion ceases, the stoppage is so gradual as not to be objectionable, and similarly, when the motion starts, it does so gradually so as to avoid any appearance of jerking.

35 In Figures 5 and 6 I have shown contrasting graphs indicating the comparative accelerations of two devices, the device whose operation is indicated in Figure 5 belonging to the prior art and the device whose operation is indicated in Figure 6 being constructed according to my invention. The abscissas indicate time and the ordinates indicate speed. The slopes of the curves, therefore, indicate acceleration. Referring to Figure 5 it will be seen that the portions 31 and 32 of the curve indicating respectively the positive and negative accelerations of speed are quite steep, this being true of ordinary motors. In Figure 6, however, the portions 33 and 34 indicating respectively the positive and negative accelerations, when my invention is employed, are relatively flat and terminate in curves,

that is, the acceleration is more gradual than in the prior art. Of course, it is to be understood that the curves shown are not to scale and merely indicate the comparison between accelerations obtained by two different types of devices. The horizontal portions of each curve indicate the average speed of the respective motors, the graphs being intended solely to bring out the comparison between the accelerations.

From the above it will be apparent that I have devised a novel and improved method and means for feeding a tape and also for projecting data from the tape on to a screen. The practical result of my invention is to convert an intermittent jerky motion of the tape into a motion which is so smooth and continuous that it may be projected upon a screen and be observed without causing eye strain. The invention has been thoroughly tested out and put into successful commercial practice. While I have illustrated and described my invention as employed in connection with a stock ticker tape, I do not desire to be limited thereby, as it is obvious that my invention may be practiced whenever it is desired to convert an intermittent motion of a tape into a continuous motion.

It will be obvious to those skilled in the art that various modifications in the method and mechanism described may be made without departing from the scope of my invention, and I do not intend to limit myself except as by the appended claims.

I claim:

1. The method of converting an intermittent motion of a tape into a continuous motion which consists in forming a loop in the tape where it is moving intermittently, applying a brake to the tape adjacent the end of the loop, feeding the tape from the brake with a continuous motion, and starting and stopping said continuous motion with a gradual acceleration and gradual retardation.

2. The method of converting an intermittent motion of a tape into a continuous motion which consists in forming a loop in the tape where it is moving intermittently, applying a brake to the tape adjacent the end of the loop, feeding the tape from the brake with a continuous motion, starting and stopping said continuous motion with a gradual acceleration and gradual retardation, and controlling said starting and stopping by variations in said loop.

3. The method of converting an intermittent motion of a tape into a continuous motion which consists in applying a brake to said tape, feeding the tape to the brake with an intermittent motion, feeding the tape away from the brake with a continuous motion, and starting and stopping the continu-

ous motion with a gradual acceleration and gradual retardation.

4. The method of converting an intermittent motion of a tape into a continuous motion which consists in applying a brake to said tape, feeding the tape to the brake with an intermittent motion, feeding the tape away from the brake with a continuous motion, starting and stopping the continuous motion with a gradual acceleration and gradual retardation and controlling said starting and stopping by movement of the part of the tape having intermittent motion.

5. The method of projecting data from a tape which consists in ejecting a tape from a data recording device and with an intermittent motion, feeding said tape through the projecting position with a continuous motion, projecting upon a screen the data on said tape, and starting and stopping said continuous feed with a gradual acceleration and gradual retardation.

6. The method of projecting data from a tape which consists in ejecting a tape from a data recording device and with an intermittent motion, feeding said tape through the projecting position with a continuous motion, projecting upon a screen the data on said tape, starting and stopping said continuous feed with a gradual acceleration and gradual retardation, and controlling said starting and stopping by movement of the part of the tape having intermittent motion.

7. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support, means to feed said tape across said support with a continuous motion, and means starting and stopping said continuous feed with a gradual acceleration and gradual retardation.

8. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support, means to feed said tape across said support with a continuous motion, and means starting and stopping said continuous feed with a gradual acceleration and gradual retardation, said starting and stopping means being controlled by movement of the part of the tape having intermittent motion.

9. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support across which said tape is adapted to be fed, said tape having a loop therein between said recording device and said support, a tension device holding said tape against said support at the end of said loop, means for feeding the tape from said tension device with a continuous motion, and means for starting and stopping said continuous feed with a gradual acceleration and gradual retardation.

10. In combination, a recording device

adapted to eject a tape therefrom with an intermittent motion, a support across which said tape is adapted to be fed, said tape having a loop therein between said recording device and said support, a tension device holding said tape against said support at the end of said loop, means for feeding the tape from said tension device with a continuous motion, means for starting and stopping said continuous feed with a gradual acceleration and gradual retardation, and means for controlling said starting and stopping by variations in said loop.

11. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support across which said tape is adapted to be fed, a tension device holding said tape against said support, means for feeding the tape from said tension device with a continuous motion, and means for starting and stopping said continuous feed with a gradual acceleration and gradual retardation.

12. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support across which said tape is adapted to be fed, a tension device holding said tape against said support, means for feeding the tape from said tension device with a continuous motion, means for starting and stopping said continuous feed with a gradual acceleration and gradual retardation, and means for controlling said starting and stopping by the part of the tape between said recording device and said tension device.

13. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support to receive said tape, a tension device holding the tape against the support, and means for feeding the tape from said tension device across said support, said means comprising a motor with a fly wheel effect.

14. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support to receive said tape, a tension device holding the tape against the support, means for feeding the tape from said tension device across said support, said means comprising a motor with a fly wheel effect, said tape forming a loop between said recording device and said tension device, and means operated by variations in said loop to start and stop said motor.

15. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support to receive said tape, and means to feed the tape across said support and comprising a motor having a fly wheel effect.

16. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support to receive

said tape, means to feed the tape across said support and comprising a motor having a fly wheel effect, said tape forming a loop between said recording device and said tension device, and means operated by variations in said loop to start and stop said motor.

17. In combination, a record recording device adapted to eject a tape therefrom with an intermittent motion, a support, means to feed said ejected tape across said support with a continuous motion, and means for starting said continuous feed of the tape with a gradual acceleration.

18. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support across which said tape is adapted to be fed, a tension device on said tape, means for feeding said tape from said tension device with a continuous motion, and means for starting said continuous feed with a gradual acceleration.

19. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a support across which said tape is adapted to be fed, said tape having a loop therein between said recording device and said support, a tension device on said tape at the end of said loop, means for feeding the tape from said tension device with a continuous motion, means for starting said continuous feed with a gradual acceleration, and means for controlling said starting by variations in said loop.

20. The method of converting an intermittent motion of a tape into a continuous motion which consists in applying a brake to said tape, feeding the tape to the brake with an intermittent motion, feeding the tape away from the brake with a continuous motion, and starting the continuous movement of the tape with a gradual acceleration.

21. A method of projecting data from a tape which consists in ejecting a tape from a data recording device with an intermittent motion, feeding said tape through the projecting position with a continuous motion, projecting upon a screen the data on said tape, and starting said continuous feed with a gradual acceleration and controlling said starting of said continuous motion by variations in the part of the tape having an intermittent motion.

22. In combination, a data-recording device adapted to eject a tape therefrom, a projection system, means to form a loop in said tape, a lever operating on said tape whereby the tape is caused to advance when the tension of said tape is released, and a tension device adapted to exert a predetermined pressure on said tape and independent of said lever.

23. In combination, a data-recording device adapted to intermittently eject a tape therefrom, means for forming a loop in said

tape, a projection system, means operated by the variations in said loop to control the feed of said tape through said projection system, and a tension device independent of the loop-operated means engaging said tape whereby the intermittent jerky movement is substantially reduced.

24. In combination, a data-recording device adapted to intermittently eject a tape therefrom, means for forming a loop in said tape, a projection system, means operated by the variations in said loop to control the feed of said tape through said projection system, and a tension device independent of the loop-operated means engaging said tape whereby the intermittent jerky movement is substantially smoothed out, said tension device being disposed between said data-recording device and said projection system.

25. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means to feed said tape through said projection system, and tension means independent of said feeding means to exert a uniform predetermined pressure on said tape whereby the intermittent jerky motion is substantially reduced.

26. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for feeding said tape through said projection system, and means independent of the feed mechanism to prevent the transmittal of the intermittent variations to the tape in projecting position.

27. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for feeding said tape through said projection system, and tension means independent of the feed mechanism to prevent the transmittal of the intermittent variations in the tape to the tape in projecting position.

28. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for feeding said tape through said projection system, and means independent of the feed mechanism exerting a predetermined pressure on said tape whereby the transmittal of the intermittent variations is prevented.

29. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for feeding said tape through said projection system, and means independent of the feed mechanism exerting a predetermined pressure on said tape whereby the transmittal of the intermittent variations is prevented, said means being disposed between the data-recording device and the projection system.

30. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for

feeding said tape through said projection system, and means independent of the feed mechanism to prevent the transmittal of the intermittent variations in the tape, said means comprising a spring tension member.

31. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means to feed said tape through said projection system, and a tension device independent of said feeding mechanism exerting a braking action on said tape, said braking action being sufficient to prevent the tape from being pushed through the system by the same force which ejects it from the data-recording device but insufficient to prevent the tape from being pulled by the feed mechanism.

32. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means to feed said tape through said projection system, and a tension device independent of said feeding mechanism and disposed between said ticker and said projection system exerting a braking action on said tape, said braking action being sufficient to prevent the tape from being pushed through the system by the same force which ejects it from the data-recording device but insufficient to prevent the tape from being pulled by the feed mechanism.

33. In combination, a data-recording device adapted to eject a tape therefrom, means for forming a loop in said tape, a projection system, means operated by the variations in said loop to control the feed of said tape through said projection system, and a tension device independent of said control and feed mechanism to exert a braking effect on said tape.

34. In combination, a data-recording device adapted to eject a tape therefrom, means for forming a loop in said tape, a projection system, means operated by the variations in said loop to control the feed of said tape through said projection system, and a tension device independent of said control and feed mechanism to exert a braking effect on said tape, said tension device being disposed between said data-recording means and said projection system.

35. In combination, a data-recording device adapted to eject a tape therefrom, means for forming a loop in said tape, a projection system, means operated by the variations in said loop to control the feed of said tape through said projection system, and a tension device independent of said control and feed mechanism to exert a braking effect on said tape, said braking action being sufficient to prevent the tape from being pushed through the system by the same force which ejects it from the data-recording device but insufficient to prevent the tape from being pulled by the feed mechanism.

36. In combination, a data-recording device adapted to eject a tape therefrom, means for forming a loop in said tape, a projection system, means operated by the variations in said loop to control the feed of said tape through said projection system, and a tension device independent of said control and feed mechanism to exert a braking effect on said tape, said tension device being disposed between said data-recording means and said projection system, said braking action being sufficient to prevent the tape from being pushed through the system by the same force which ejects it from the data-recording device but insufficient to prevent the tape from being pulled by the feed mechanism.

37. In an apparatus for feeding a tape through a projection system, means to form a loop in said tape, a motor feed mechanism, means operated by the variations in said loop to control the operation of said motor, and means independent of said control and feeding mechanism to exert a uniform braking action on said tape adjacent the projecting position.

38. In an apparatus for feeding a tape through a projection system, means to form a loop in said tape, a motor feed mechanism, means operated by the variations in said loop to control the operation of said motor, and tension means independent of said control and feeding mechanism to exert a uniform braking action on said tape prior to projection.

39. In combination, a ticker adapted to eject a tape therefrom with an intermittent movement, a projection system, a support for maintaining the tape during projection, and means in cooperative relation with said support to substantially reduce the intermittent jerky movement of the tape.

40. In combination, a ticker adapted to eject a tape therefrom with an intermittent movement, a projection system, a support for maintaining the tape during projection, and brake means in cooperative relation with said support to substantially reduce the intermittent jerky movement of the tape.

41. In combination, a ticker adapted to eject a tape therefrom with an intermittent movement, a projection system, a support for maintaining the tape during projection, and tension means in cooperative relation with said support to substantially smooth out the intermittent jerky movement of the tape.

42. In combination, a recording device adapted to eject a tape therefrom with an intermittent jerky motion, a projector, a support adjacent said projector, and means in cooperative relation with said support to substantially smooth out the said intermittent jerky motion into a continuous motion.

43. In combination, a recording device

adapted to eject a tape therefrom with an intermittent motion, a projector, a support adjacent said projector, and means holding the tape in contact with said support whereby the intermittent variations are prevented from being transmitted to the tape in projecting position on the support.

44. In combination, a recording device adapted to eject a tape therefrom with an intermittent motion, a projector, a support adjacent said projection system, and tension means holding the tape in contact with said support whereby the intermittent variations are prevented from being transmitted to the tape in projecting position on the support.

45. In combination, a data-recording device, a projection system, means for feeding a tape therethrough, said feeding means comprising a motor and a switch element carried by said tape adapted to make and break a circuit whereby said motor is started and stopped.

46. In combination, a data-recording device, a projection apparatus, and means to feed the tape therethrough, said means comprising a motor and a switch element controlled by the variations in a loop of the tape and adapted to close and open a circuit whereby the motor is started and stopped.

47. In combination, a data-recording device, a projection apparatus, means for feeding a tape therethrough, said feeding means comprising a motor and a switch element carried by said tape adapted to make and break a circuit whereby said motor is started and stopped, and means independent of said feeding means to effect a braking action on said tape.

48. In combination, a data-recording device, a projection system, means for feeding a tape therethrough, said feeding means comprising a motor and a switch element carried by said tape adapted to make and break a circuit whereby the motor is started and stopped, and means adjacent the projection system and independent of said feeding means to effect a braking action on said tape, said means comprising a spring tension member.

49. In combination, a data-recording device, a projection system, means for feeding a tape therethrough, said feeding means comprising a motor and a switch element carried by said tape adapted to make and break a circuit whereby said motor is started and stopped, and means independent of said feeding means to effect a braking action on said tape, said braking action being insufficient to prevent the feeding of the tape through the system by said feeding means.

50. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means to feed said tape through said projection system, and tension means to exert a uniform

predetermined pressure on said tape whereby the intermittent jerky motion is substantially reduced.

51. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for feeding said tape through said projection system, and means exerting a predetermined pressure on said tape whereby the transmittal of intermittent variations is prevented, said means being disposed between the data-recording device and the projection system.

52. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for feeding said tape through said projection system, and means to prevent a transmittal of the intermittent variations in the tape, said means comprising a spring tension member.

53. In combination, a data-recording device adapted to eject a tape therefrom, means for forming a loop in said tape, a projection system, means operated by the variations in said loop to control the feed of said tape through said projection system, and a tension member to exert a braking effect on said tape, said tension device being disposed between said data-recording means and said projection system.

54. In combination, a data-recording device, a projection system, means for feeding a tape therefrom, said feeding means comprising a motor and a switch element carried by said tape adapted to make and break a circuit whereby said motor is started and

stopped, and means adjacent the projection system and independent of said feeding means to effect a braking action on said tape, said means comprising a spring tension member.

55. In combination, a data-recording device adapted to eject a tape therefrom, a projection system, means to form a loop in said tape, a lever operating on said tape whereby the tape is caused to advance when the tension of said tape is released, and a tension device adapted to exert a predetermined pressure on said tape adjacent said loop.

56. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means to feed said tape through said projection system, said feeding means including a motor having a fly wheel effect, and tension means independent of said feeding means to exert a uniform predetermined pressure on said tape whereby the intermittent jerky motion is substantially reduced.

57. In combination, a data-recording device adapted to intermittently eject a tape therethrough, a projection system, means for feeding said tape through said projection system, said means including a motor having a fly wheel effect, and means independent of the feed mechanism to prevent a transmittal of the intermittent variations in the tape, said means comprising a spring tension member.

In testimony whereof, I have affixed my signature to this specification.

ROBERT LOUIS DAINE.

DISCLAIMER.

1,664,772.—*Robert Louis Daine*, New York, N. Y. METHOD AND MEANS FOR FEEDING TAPE. Patent dated April 3, 1928. Disclaimer filed August 11, 1928, by the patentee, assignee, *Trans-Lux Daylight Picture Screen Corporation*, consenting. Hereby enters this disclaimer to claims Nos. 1-57, inclusive, of said patent. [Official Gazette August 28, 1928.]

predetermined pressure on said tape whereby the intermittent jerky motion is substantially reduced.

51. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for feeding said tape through said projection system, and means exerting a predetermined pressure on said tape whereby the transmittal of intermittent variations is prevented, said means being disposed between the data-recording device and the projection system.

52. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means for feeding said tape through said projection system, and means to prevent a transmittal of the intermittent variations in the tape, said means comprising a spring tension member.

53. In combination, a data-recording device adapted to eject a tape therefrom, means for forming a loop in said tape, a projection system, means operated by the variations in said loop to control the feed of said tape through said projection system, and a tension member to exert a braking effect on said tape, said tension device being disposed between said data-recording means and said projection system.

54. In combination, a data-recording device, a projection system, means for feeding a tape therefrom, said feeding means comprising a motor and a switch element carried by said tape adapted to make and break a circuit whereby said motor is started and

stopped, and means adjacent the projection system and independent of said feeding means to effect a braking action on said tape, said means comprising a spring tension member.

55. In combination, a data-recording device adapted to eject a tape therefrom, a projection system, means to form a loop in said tape, a lever operating on said tape whereby the tape is caused to advance when the tension of said tape is released, and a tension device adapted to exert a predetermined pressure on said tape adjacent said loop.

56. In combination, a data-recording device adapted to intermittently eject a tape therefrom, a projection system, means to feed said tape through said projection system, said feeding means including a motor having a fly wheel effect, and tension means independent of said feeding means to exert a uniform predetermined pressure on said tape whereby the intermittent jerky motion is substantially reduced.

57. In combination, a data-recording device adapted to intermittently eject a tape therethrough, a projection system, means for feeding said tape through said projection system, said means including a motor having a fly wheel effect, and means independent of the feed mechanism to prevent a transmittal of the intermittent variations in the tape, said means comprising a spring tension member.

In testimony whereof, I have affixed my signature to this specification.

ROBERT LOUIS DAINE.

DISCLAIMER.

1,664,772.—*Robert Louis Daine*, New York, N. Y. METHOD AND MEANS FOR FEEDING TAPE. Patent dated April 3, 1928. Disclaimer filed August 11, 1928, by the patentee, assignee, *Trans-Lux Daylight Picture Screen Corporation*, consenting. Hereby enters this disclaimer to claims Nos. 1-57, inclusive, of said patent. [Official Gazette August 28, 1928.]