May 23, 1933. A. D. EITZEN 1,910,154

TAPE LOCKING MEANS

Original Filed Feb. 28, 1929 2 Sheets-Sheet 1

Fig. 1

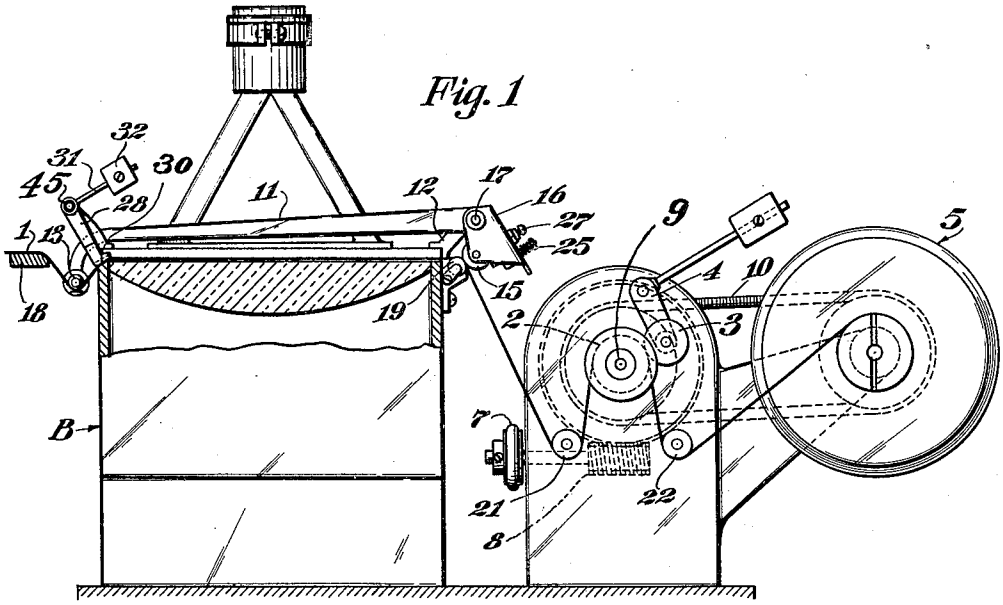
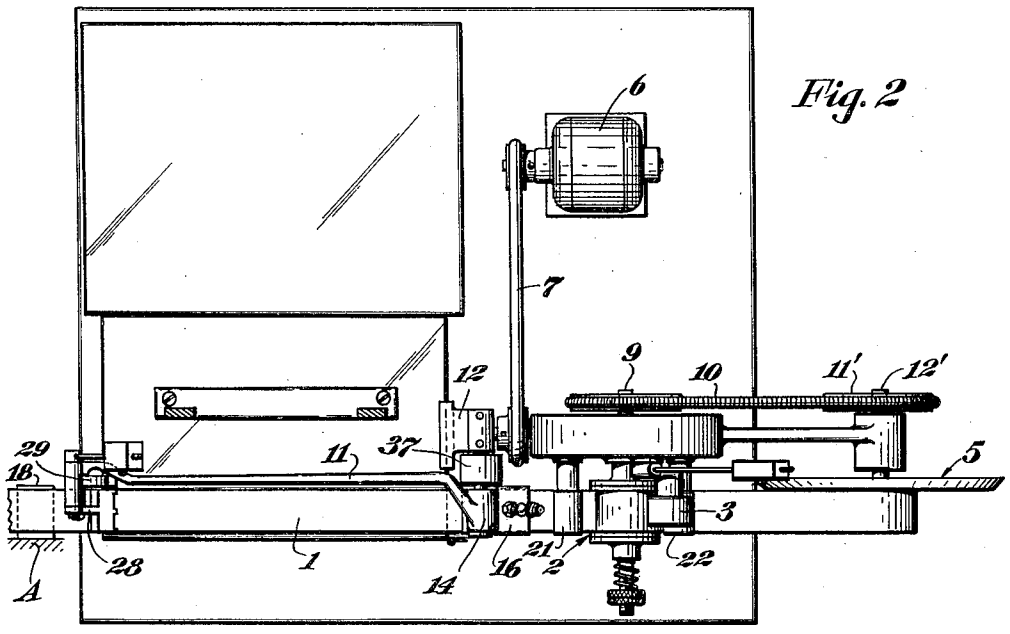


Fig. 2



INVENTOR
August D. Eitzen,
BY
Gustav Drews
ATTORNEY

May 23, 1933. A. D. EITZEN 1,910,154

TAPE LOCKING MEANS

Original Filed Feb. 28, 1929 2 Sheets-Sheet 2

Fig. 3

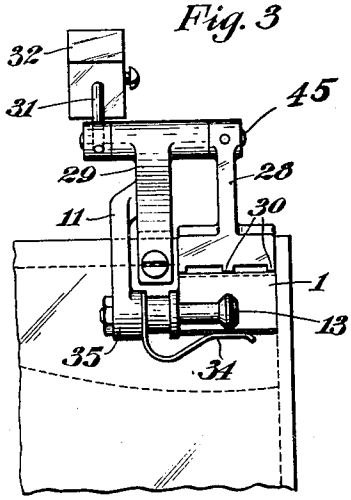


Fig. 4

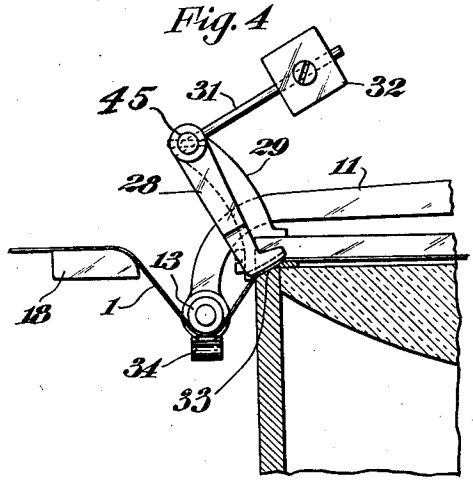


Fig. 5

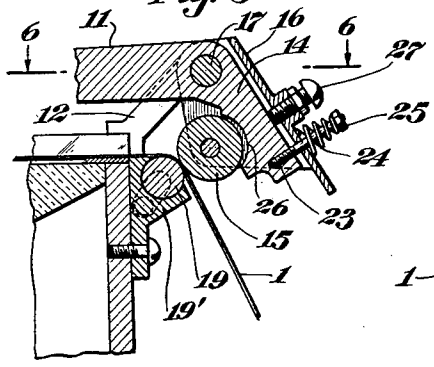


Fig. 6

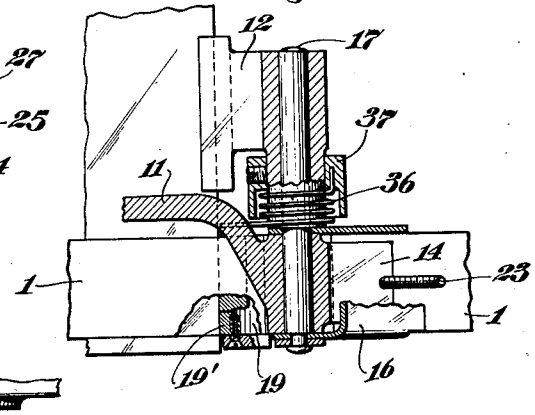


Fig. 7

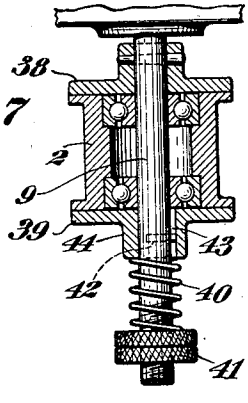
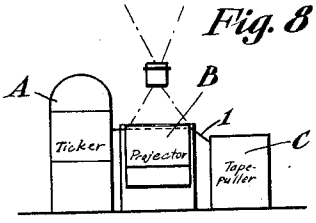


Fig. 8



INVENTOR
August D. Eitzen,
BY Gustav Drews
ATTORNEY

Patented May 23, 1933

1,910,154

UNITED STATES PATENT OFFICE

AUGUST D. EITZEN, OF ROCKVILLE CENTER, NEW YORK, ASSIGNOR TO NEWS PROJECTION CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

TAPE LOCKING MEANS

Application filed February 28, 1929, Serial No. 343,363. Renewed December 11, 1931.

This invention relates to improvements in the feed mechanism apparatus of news printing tickers such as stock quotation tickers in general, and is particularly applicable to stock quotation projecting machines in which the tape, as it is discharged by the ticker, is pulled through the projecting machine by a tape puller.

One of the main objects of the invention is a tape controlling device for cooperating with, and locking, the tape between the projecting machine and the tape puller to lock the tape against the pull of the tape puller when the ticker comes to rest.

Another object is a tape controlling device cooperating with the tape between the ticker and projecting machine and between the projecting machine and tape puller.

A further object is a stripper cooperating with the locking device to facilitate releasing the tape when the movement of the tape is again initiated.

A further object is to so lock the tape between the ticker and the projecting machine, and between the projecting machine and the tape puller, against movement, when the ticker comes to rest, so that a tension will be exercised on the tape between these locked points of the tape, in the projecting machine.

A further object is a vibration dissipating device engaging the tape between the ticker and the projecting machine, the said vibration dissipating device being mounted whereby to dissipate any tape vibrations irrespective of the amount of slack in the tape.

A still further object is an adjustable friction clutch for connecting the tape pulling roller with the driving mechanism to vary the frictional clutching engagement between the tape pulling roller and the driving mechanism.

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

Figure 1 is a fragmental side elevation, partly in section, of a stock quotation projecting machine equipped with the present improvements;

Fig. 2 is a plan of the parts shown in Fig. 1;

Fig. 3 is a fragmental enlarged end elevation of the initially acting portion of the tape controlling mechanism;

Fig. 4 is a side elevation, partly in section, of the parts shown in Fig. 3;

Fig. 5 is an enlarged longitudinal section of the locking portion of the tape controlling mechanism;

Fig. 6 is a section on the line 6—6 of Fig. 5;

Fig. 7 is an enlarged transverse section of the clutch associated with the tape puller; and

Fig. 8 illustrates diagrammatically a projector equipped with the present invention associated with a ticker and tape pulling mechanism.

According to this invention, the tape 1, as it is discharged by the ticker A, is pulled through a projecting machine B by a tape puller consisting of a tape pulling roller 2 over which the tape 1 passes, said tape being held in surface contact with the tape pulling roller 2 by means of a roller 3 on a weighted arm 4, and is wound on a wind-up reel 5. An electric motor 6 drives the tape pulling roller 2 and wind-up reel 5 by means of a belt 7, worm gear 8, drive shaft 9 and spring belt 10 engaging a pulley 11′ on the shaft 12′ of the wind-up reel 5.

One of the principal characteristics of the invention is a tape controlling device cooperating with the tape 1 between the ticker A and the projecting machine B, and between the projecting machine B and the tape pulling roller 2, to lock the tape 1 against movement when the ticker stops. In the example shown in the drawings, this tape controlling device consists of a lever 11 mounted on a bracket 12 on the casing of the projecting machine B.

The lever 11 extends transversely of the projecting machine B and has on one end thereof a finger 13 to engage the tape 1 between the ticker A and the projecting machine B. The opposite end of the lever 11 is

constructed with a limb 14 to cooperate, in a manner to be hereinafter described, with a rotatable roller 15 mounted in a casing 16 on the bracket 12, the tape 1 passing between the said roller 15 and a stripping roller 19 mounted on the casing of the projecting machine.

The lever 11 and casing 16 are mounted on a pivot 17 in the bracket 12, the said limb 14 having a pivotal movement about the pivot 17 to contact with the roller 15 and prevent the rotation thereof.

The tape 1, as it is discharged from the ticker A, is pulled by the tape pulling roller 2 from a guide 18, under the finger 13 at the end of the lever 11 across the projecting machine B, and passes between the rotatable roller 15 and the stripping roller 19 to a tension roller 21, the tape pulling roller 2 and a second tension roller 22, and is wound on the wind-up reel 5.

The end of the lever 11 having the finger 13 thereon is supported by the tape 1 between the ticker A and the projecting machine B, and as long as the tape is issuing from the ticker, the lever 11 will remain by reason of its weight in the position shown in Fig. 1. When the ticker comes to rest, the tape pulling roller 2 continues to pull the tape through the projecting machine B and tensions the tape between the ticker and tape pulling roller 2. The tensioning of the tape raises the lever 11 and the finger 13, and imparts a rocking movement to the limb 14 about the pivot 17. The limb 14 is resiliently connected to the casing 16 by means of a stud 23 fixed in the limb 14, said stud 23 extending through the casing 16, and a compression spring 24 acting between the surface of said casing 16 and the stud nut 25.

The force exerted by the compression spring 24, acting between the stud nut 25 and the casing 16, is such that when the lever 11 is rocked by the tensioning of the tape 1, the casing 16 will be angularly moved about the pivot 17 to increase the pressure of the rotatable roller 15 on the tape. The continued rocking of the lever 11 rocks the limb 14 against the action of the compression spring 24, until the concave surface 26 of the limb 14 contacts with the roller 15 and prevents rotation thereof, thus finally locking the tape 1 between the roller 15 and the stripping roller 19 against the pulling action of the tape pulling roller 2.

By this means a gradual retardation of travel of the tape through the projecting machine B is obtained, firstly by the increased pressure contact of the rotatable roller 15 on the tape 1 and the subsequent braking action on the roller 15 by the limb 14.

A set screw 27 is provided to adjust the amount of arcuate movement of the limb 14 in one direction in the casing 16.

The stripping roller 19 is mounted in a bracket 19′ on the projecting machine casing, and when the tape 1 is being normally pulled through the projecting machine B by the tape pulling roller 2, the stripping roller 19 rotates only when the roller 15 is released and with sufficient frictional contact between the roller 19 and the tape 1, the pull of tape 1 being tangential. Due to the pressure contact on the tape 1 by the roller 15 when moved to lock the tape against the pulling action of the tape pulling roller 2, there is a tendency for the tape, especially when composed of cellophane, to stick to the said stripping roller 19, with the result that when the ticker feed continues and the tape is again subjected to the pull of the tape pulling roller 2, the initial motion of the tape may be a decided jerk. By reason of the fact, however, that the stripping roller 19 is rotatably mounted, the tape will strip therefrom when it is released by the locking device, and the resultant motion of the tape, a smooth start. This motion is desirable to an observer of the projected enlarged image.

A further characteristic of the invention is a device to lock the tape against movement between the ticker A and the projecting machine B, which cooperates with the locking device between the projecting machine B and the tape puller C, whereby the said locking devices when in locking position exercise a gradual increase in tension on the portion of the tape disposed between B and C.

If particular reference will be had to Figs. 3 and 4 of the drawings, it will be seen that this device consists of a lever 28 pivotally mounted on a bracket 29 on the upper surface of the casing of the projecting machine B, said lever 28 having gripping fingers 30 on the free end thereof to engage the tape 1. Attached to the pivotal end of the lever 28 is an arm 31 having an adjustable counter weight 32 thereon. The tape 1 is pulled, by the tape pulling roller 2, between the fingers 30 of the lever 28 and an inclined surface 33 on the projecting machine B. In the drawing, three such gripping fingers 30 are shown, which ensures a firm and evenly distributed gripping action on the tape, and at the same time clears the two rows of printed matter on the surface thereof.

The operation of the device is as follows: The counter weight 32 tends to rock the lever 28 in a clockwise direction and wedge the fingers 30 against the inclined surface 33, but the adjustment of the weight 32 on the arm 31 is such that the pull on the tape 1 by the tape pulling roller 2 counteracts the turning movement of the lever 28 in a clockwise direction and pulls the tape through the projecting machine. When, however, the tape is locked by the rollers 15 and 19, the pulling force on the tape is released, and the counter weight 32 acts to move the lever 28 in a clockwise direction and wedges the tape

1 between the finger 30 and the inclined surface 33 on the projecting machine. This wedging action locks the tape at this location and by reason of the fact that the finger 30 constituting a face is an arc eccentric to pivot 45 and acts against the inclined surface 33, a gradual tensioning or pulling back action is exerted on the portion of the tape disposed between said locking devices.

A still further important characteristic of the invention is a vibration dissipating device engaging the tape 1 between the ticker A and the projecting machine B.

Particular attention must be given to the mounting and location of such a vibration dissipating device, as any vibrations in the tape must be dissipated before the tape passes through the projecting machine and, moreover, the dissipating device must dissipate any vibrations, irrespective of the tension of the tape.

In carrying out this invention, the dissipating device is mounted on the end of the lever 11 adjacent the finger 13, and comprises a flat spring 34, one end of which is rigidly secured to the bearing 35 for the finger 13 on the end of the lever 11. The free end of the spring 34 is bent to engage the under surface of the tape 1 at the point engaged by the finger 13, on the upper surface thereof, holding the tape 1 in surface contact with said finger 13 and dissipating any vibrations in the tape. It will be appreciated that the dissipating device, so mounted on the lever 11, will be effective in its operation irrespective of the tension in the tape, and will act at all times when the tape is being drawn through the projecting machine. This ensures that the vibrations in the tape will be dissipated during both the locking and the releasing operations of the aforementioned locking devices.

When the ticker again operates, the issue of tape will continue and the weight of the lever, supported by the tensioned tape, will cause the free end of the lever to gradually drop until the limb 14 rocks out of contact with the rotatable roller 15 and moves the said roller 15 to free the tape to be pulled by the tape pulling roller 2.

Means are provided to counterbalance the lever 11, said means comprising a coil spring 36, one end of which engages the under side of the lever 11, the opposite end of said spring being anchored in a collar 37 to the non-rotatable hub of the bracket 12.

Driving motion is imparted to the tape pulling roller 2 by means of a friction clutch. The said tape pulling roller 2 is freely mounted to rotate, on suitable ball bearings, about the drive shaft 9, and the drive is imparted to the tape pulling roller by means of a disc 38, see Fig. 7, fixedly mounted on the drive shaft 9 and an axially movable disc 39, said tape pulling roller 2 being held intermediate the said driving discs 38 and 39 in frictional contact therewith by means of a compression spring 40 extending between the axially movable disc 39 and an adjustable thumb screw 41 on the drive shaft 9. Rotating motion is imparted to the axially movable disc 39 by a pin 42 in the drive shaft 9 engaging a slot 43 in the hub 44 of the disc 39.

The adjustment of the thumb screw 41 is such that the pressure exerted on the axially movable disc 39 by the spring 40 is insufficient to hold the tape pulling roller 2 and driving discs 38 and 39 in frictional driving contact when the tape is held by the locking devices, the said discs rotating with the drive shaft 9 and the tape pulling roller remaining stationary.

It is desirous that the electric motor 6 should run continuously to avoid heating thereof due to intermittent switching operations, and accordingly, when the tape is locked against movement by the rollers 15 and 19, the drive imparted to the wind-up reel, which is held from rotation by the locked tape, can be compensated by the employment of the spring belt 10 which will slip over the pulley 11′ on the shaft 12′ of the wind-up reel 5.

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 projecting machine, the combination with a ticker, of a projecting machine, a tape puller for pulling the tape through the projecting machine as it is discharged by the ticker, and a tape controlling device cooperating with the tape between the ticker and the projecting machine and with the tape between the projecting machine and the tape puller to lock the same against movement when the ticker comes to rest.

2. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for pulling the tape through the projecting machine as it is discharged by the ticker, and a tape controlling device engaging the tape between the ticker and the projecting machine and between the projecting machine and the tape puller, the tension of the tape between the ticker and the projecting machine cooperating with said device to cause it to lock the tape between the projecting machine and the tape puller against movement when the ticker is at rest.

3. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a tape con-

trolling device for locking the tape between the projecting machine and the tape puller when the ticker comes to rest, and a stripping roller cooperating with said locking device to facilitate releasing the tape when the movement of the tape is again initiated.

4. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, and tape locking devices for engaging the tape between the ticker and the projecting machine and between the projecting machine and the tape puller for locking the tape at such locations against movement when the ticker comes to rest.

5. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, and tape locking devices for engaging the tape between the ticker and the projecting machine and between the projecting machine and the tape puller for locking the tape at such locations against movement when the ticker comes to rest, said locking devices when in locking position exercising a tension on the portion of the tape disposed between them in the projecting machine.

6. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a lever, and a vibration dissipating device formed at the free end of said lever and engaging the tape between the ticker and the projecting machine.

7. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a tape controlling device cooperating with the tape between the projecting machine and the tape puller and between the ticker and the projecting machine comprising a bracket on the projecting machine, a pivot on said bracket, a casing mounted on said pivot, a roller mounted in said casing to contact with the tape between the projecting machine and the tape puller, a lever, and a roller on one end of said lever for engaging the tape between the ticker and the projecting machine, said lever cooperating with the roller in said casing for locking the tape against movement when the ticker comes to rest.

8. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a tape controlling device cooperating with the tape between the projecting machine and the tape puller and between the ticker and the projecting machine comprising a bracket on the projecting machine, a pivot on said bracket, a casing mounted on said pivot, a roller mounted in said casing to contact with the tape between the projecting machine and the tape puller, a lever, a finger on one end of said lever for engaging the tape between the ticker and the projecting machine, and a stripping roller, said lever cooperating with the roller in said casing for locking the tape against movement when the ticker comes to rest between the roller in said casing and said stripping roller.

9. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine having a light aperture and an inclined surface between said light aperture and said ticker, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a tape locking device cooperating with the tape between the ticker and the tape puller, and a locking device cooperating with the tape and said inclined surface to lock the tape between the ticker and the projecting machine when the ticker comes to rest and exercise a tension on the portion of the tape in the projecting machine between said locking devices.

10. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine having a light aperture and an inclined surface between said light aperture and said ticker, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a tape locking device cooperating with the tape between the ticker and the tape puller, a locking device comprising a weighted lever pivotally mounted on the projecting machine, and a gripping face on said lever to engage the tape for locking the tape on said inclined surface when the ticker comes to rest.

11. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a tape locking device including a pivoted lever, a finger on the free end of said lever for engaging the tape between the ticker and said projecting machine, and a vibration dissipating device fixed on said free end of said lever to contact with the tape to dissipate the vibrations transmitted to the tape by said ticker.

12. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a tape locking device including a pivoted lever, a finger on the free end of said lever for engaging the tape between the ticker and said projecting machine, and a spring vibration dissipating

device fixed on said lever adjacent said finger to contact with the tape to dissipate the vibrations transmitted to the tape by said ticker.

13. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a tape controlling device cooperating with the tape between the projecting machine and said tape puller and between the ticker and the projecting machine comprising a bracket on the projecting machine, a pivot on said bracket, a casing mounted on said pivot, a roller mounted in said casing to contact with the tape between the projecting machine and the tape puller, a lever, a finger on one end of said lever for engaging the tape between the ticker and the projecting machine, a limb on said lever cooperating with said roller in said casing for locking said roller against movement when the ticker comes to rest, a spring, and an adjustable stud and nut in said limb cooperating with said spring to retard the movement of said lever, said lever cooperating with the roller in said casing for gradually building up the tension and finally locking the tape against movement when the ticker comes to rest.

14. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for drawing the tape through the projecting machine as it is discharged by the ticker, a lever, a vibration dissipating device formed at the free end of said lever and engaging the tape between the ticker and the projecting machine, means for counteracting the weight of said lever including a bracket, a fixed collar on said bracket supporting said lever, and a coil spring cooperating between said collar and said lever.

15. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a driving shaft, a tape pulling roller freely rotatable on said driving shaft for drawing the tape through the projecting machine as it is discharged by the ticker, means for exercising tension on the portion of the tape located in the projecting machine to maintain it smooth and free from vibrations, a friction clutch for connecting the tape pulling roller with said driving shaft, and means for adjusting the clutch to vary the frictional clutching engagement thereof to correspond to the tension exercised by said tension means.

16. In a stock quotation projecting machine, the combination with a tape puller for pulling the tape across the light aperture of the projecting machine, of a vibration dissipating device cooperating with the tape before it enters the light aperture of the projecting machine, said dissipating device including a floating tape follower, and means for frictionally anchoring the tape in engagement with said follower.

17. In a stock quotation projecting machine, the combination with a tape puller for pulling the tape across the light aperture of the projecting machine, of a vibration dissipating device cooperating with the tape before it enters the light aperture of the projecting machine, said dissipating device including a floating tape follower, and a spring for frictionally anchoring the tape in engagement with said follower.

18. The combination with a ticker, of a continuously operating motor, a tape puller for advancing the tape across the light aperture of a projecting machine as it is discharged from the ticker, a tape retarding device disposed between the light aperture and the tape puller, a finger responsive to a deflection of the tape, actuating means for causing actuation of said device into and out of tape retarding position for imparting a retarding effect on the tape sufficient to cause said tape puller to cease advancing the tape, and means for operatively connecting said finger to cause actuation of said actuating means whereby decrease in deflection of the tape upon the arrest of the ticker will actuate said finger in turn to cause actuation of said actuating means, to cause actuation of said device, to engage the tape and retard its advance, and whereby increase of deflection of the tape upon the resumed operation of the ticker will actuate said finger in turn to cause actuation of said device out of tape retarding position, to release the tape and permit the tape puller under the influence of said motor to resume the advancement of the tape.

19. The combination with a ticker, of a continuously operating motor, a tape puller for advancing the tape across the light aperture of a projecting machine as it is discharged from the ticker, a tape retarding device disposed between the light aperture and the tape puller, a finger responsive to a deflection of the tape for engaging the tape between the ticker and the light aperture, actuating means for causing actuation of said device into and out of tape retarding position for imparting a retarding effect on the tape sufficient to cause said tape puller to cease advancing the tape, and means for operatively connecting said finger to cause actuation of said actuating means whereby decrease in deflection of the tape upon the arrest of the ticker will actuate said finger in turn to cause actuation of said actuating means, to cause actuation of said device, to engage the tape and retard its advance, and whereby increase of deflection of the tape upon the resumed operation of the ticker will actuate said finger in turn to cause actuation of said device out of tape retarding posi-

tion, to release the tape and permit the tape puller under the influence of said motor to resume the advancement of the tape.

20. In a stock quotation projecting machine, the combination with a ticker, of a projecting machine, a tape puller for pulling the tape through the projecting machine as it is discharged by the ticker, a tape controlling device cooperating with the tape between the projecting machine and the tape puller to lock the same against movement when the ticker comes to rest, and means independent of said tape controlling device for dissipating the vibrations transmitted to the tape by the ticker.

21. The combination with a ticker, of a tape retarding device free to permit the advance of the tape as it is discharged from the ticker and responsive to retard the tape when the ticker comes to rest comprising a fixed bracket, a second bracket pivotally mounted on said fixed bracket, a lever directly connected normally to move with said pivoted bracket, one end of said lever engaging the tape to respond to a deflection in the tape in turn to rock said pivoted bracket, and a roller operatively associated with said pivoted bracket to permit the passage of the tape when the tape is deflected during the operation of the ticker and to be actuated into tape retarding position when said lever is deflected by the tape.

22. The combination with a ticker, of a tape controlling device for controlling the movement of the tape as it is discharged from a ticker comprising a fixed bracket, a second bracket pivotally mounted on said fixed bracket, a lever resiliently connected to said pivoted bracket and engaging the tape in turn to actuate said pivoted bracket according to deflection in the tape, and a tape retarding device operatively associated with said pivoted bracket and disposed in engagement with the tape normally to permit the movement of the tape, said lever when deflected by the tape, actuating said pivoted bracket in turn to actuate said tape retarding device into tape retarding position.

23. The combination with a ticker, of a tape controlling device comprising an abutment, a fixed bracket, a second bracket pivotally mounted on said fixed bracket, a roller operatively associated with said pivoted bracket to rotate when the tape is being discharged by the ticker, and a lever resiliently connected to said pivoted bracket and engaging the tape to deflect the tape into a loop when the ticker is discharging tape and to be deflected by the tape when the loop is dissipated in turn to actuate the pivoted bracket thereby to actuate said roller into tape retarding engagement with said abutment.

24. The combination with a ticker, of a tape controlling device comprising an abutment, a roller, a fixed bracket, a second bracket pivotally connected to said fixed bracket and operatively connected with said roller to rock said roller into rolling engagement with the tape or into retarding engagement of the tape with said abutment, and a lever resiliently connected to said pivoted bracket having one arm engaged by the tape to be actuated thereby according to the deflection in the path of movement of the tape at one time to rock said pivoted bracket and therewith said roller into rolling engagement with the tape when the ticker is operating and at another time when the ticker stops to actuate the pivoted bracket and therewith said roller into retarding engagement of the tape with said abutment.

25. The combination with a ticker, of a tape controller comprising an abutment, a roller, a bracket, and a lever yieldably and pivotally mounted on said bracket and operatively connected with said roller to rock said roller into rolling engagement with the tape or engage and rock said roller into retarding engagement of the tape with said abutment, said lever engaging the tape to respond to deflections in the tape in turn to actuate said roller, at one time when slack is formed in the tape to actuate said roller into rolling engagement with the tape and at another time when the slack in the tape is taken up to actuate said roller into retarding engagement of the tape with said abutment.

26. A tape controlling device for a tape puller comprising an abutment, a roller, a bracket, and a lever yieldably and pivotally mounted on said bracket and operatively connected to said roller to rock said roller into rolling engagement with the tape or into retarding engagement of the tape with said abutment, said lever engaging the tape to respond to deflections therein, at one time to take up the slack and thereby be rocked and actuate said roller into rolling engagement with the tape and at another time when the slack has been dissipated to be rocked in the opposite direction in turn to actuate said roller into retarding engagement of the tape with said abutment.

27. A tape controlling device for a tape puller comprising a roller, a pivotally mounted bracket operatively associated with said roller, a bracket, and a lever yieldably and pivotally connected to said bracket and extending from said bracket and engaging the tape to respond to deflections therein in turn to rock said bracket about its pivot, a deflection such as slack in the tape causing said lever to be actuated and in turn rock said bracket to actuate said roller into tape advancing position and a deflection in the tape such as a dissipation of the slack causing said lever to be actuated in turn to rock said bracket to actuate said roller out of tape advancing position.

28. The combination with a ticker, of a

tape retarding device free to permit the advance of the tape as it is discharged from the ticker and responsive to retard the tape when the ticker comes to rest comprising a pivotally mounted bracket, an arm extending from said bracket and normally rocking as a unit with said bracket about the pivotal mounting of said bracket as a common axis, and a roller operatively associated with said bracket, the bracket and arm being controlled by gravity when said ticker operates to maintain said roller in position to permit the passage of the tape, the free end of the arm engaging the tape and being responsive to a deflection in the tape in turn to rock said bracket and therewith said roller into tape retarding position when said ticker comes to rest.

29. The combination with a ticker, of a tape retarding device comprising a bracket and an arm connected to one another and pivotally mounted normally to rotate as a unit about a common axis, an abutment, and a roller adapted to impinge the tape issuing from said ticker against said abutment, said bracket directly engaging said roller to rock said roller into and out of tape impinging position, one end of said arm engaging the tape to respond to a deflection in the tape in turn to rock said bracket, said bracket and arm normally controlled by gravity to maintain said roller out of tape impinging position when said ticker operates but responsive to a deflection in the tape when said ticker comes to rest to actuate said roller into tape impinging relation with said abutment.

30. The combination with a ticker, of a tape retarding device free to permit the advance of the tape as it is discharged from the ticker and responsive to retard the tape when the ticker comes to rest comprising a pivotally mounted bracket, a finger having one end engaging the tape as it issues from said ticker and having its other end connected to said bracket, a roller, and a shaft for said roller, said bracket directly engaging said shaft and normally rocking as a unit with said finger about the pivotal mounting of said bracket as a common axis, the bracket and finger being rocked by gravity when said ticker operates to actuate said roller into position freely to rotate as the tape issues from said ticker, the finger being responsive to a deflection in the tape in turn to rock said bracket and therewith said roller into tape retarding position when said ticker comes to rest.

31. The combination with a ticker, of a continuously operating motor, a tape pulling roller for advancing the tape across the light aperture of a projecting machine as it is discharged from the ticker, and a tape retarding device free to permit the advance of the tape as it is discharged from the ticker and responsive to retard the tape when the ticker comes to rest comprising a pivotally mounted bracket, an arm extending from said bracket normally rocking as a unit with said bracket about the pivotal mounting of said bracket as a common axis, and a retarding roller operatively associated with said bracket, the bracket and arm being controlled by gravity when said ticker operates to maintain said retarding roller in position to permit the pulling roller to draw the tape across the light aperture, the free end of the arm engaging the tape and being responsive to a deflection in the tape in turn to rock said bracket and therewith said retarding roller into tape retarding position when said ticker comes to rest.

32. The combination with a ticker, of a continuously operating motor, a tape pulling roller for advancing the tape across the light aperture of a projecting machine as it is discharged from the ticker, and a tape retarding device free to permit the advance of the tape as it is discharged from the ticker and responsive to retard the tape when the ticker comes to rest comprising a pivotally mounted bracket, an arm extending from said bracket normally rocking as a unit with said bracket about the pivotal mounting of said bracket as a common axis, and a retarding roller operatively associated with said bracket, the bracket and arm being controlled by gravity when said ticker operates to maintain said retarding roller in position to permit the pulling roller to draw the tape across the light aperture, the free end of the arm engaging the tape and being responsive to a deflection in the tape in turn to rock said bracket and therewith said retarding roller into tape retarding position when said ticker comes to rest, said arm being yieldable relative to said bracket in order gradually to absorb any sudden deflection of the tape.

AUGUST D. EITZEN.