July 27, 1926. 1,594,104

J. T. MILLER

TOY

Filed Nov. 11, 1925 2 Sheets-Sheet 1

Fig. 1.

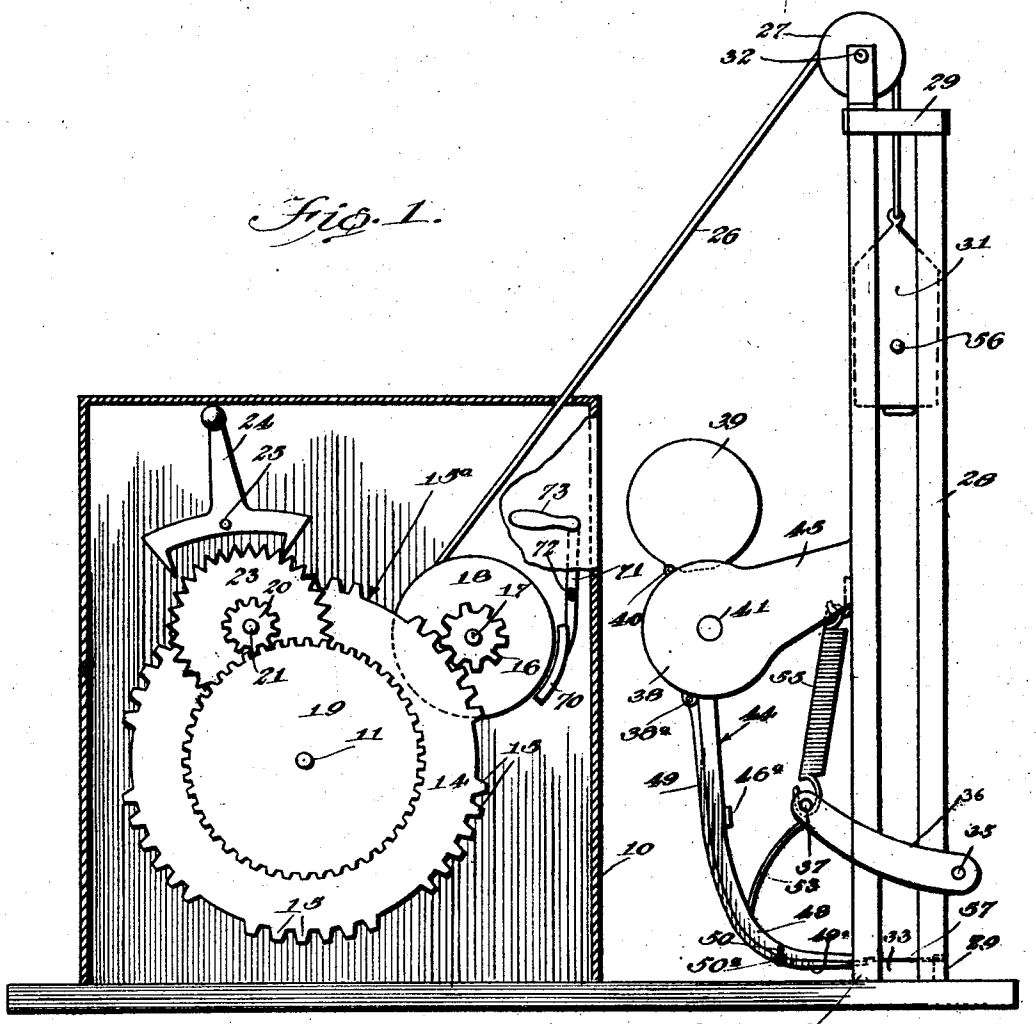
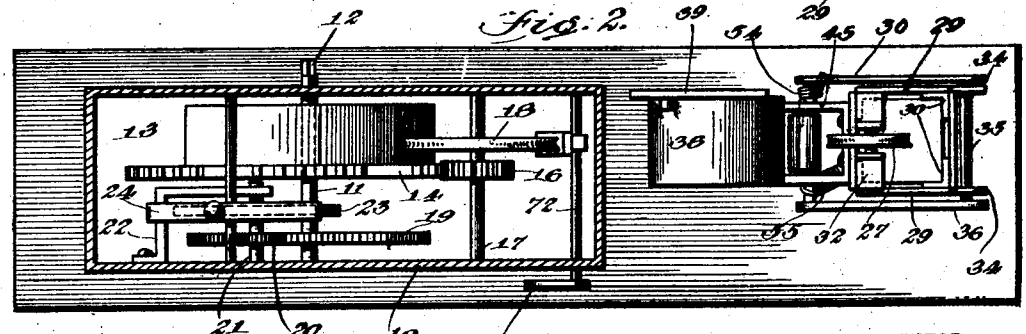


Fig. 2.



WITNESSES

Lawrence C. Manstein

INVENTOR

J. T. Miller,

BY Munn & Co.

ATTORNEYS

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J. T. MILLER

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Fig. 3.

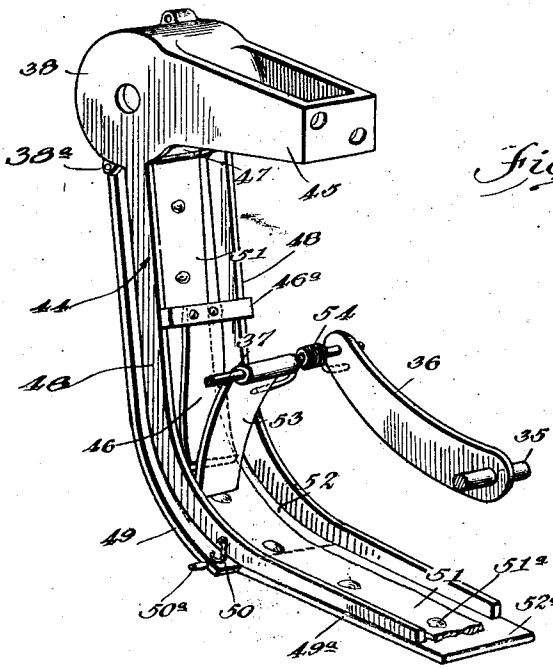
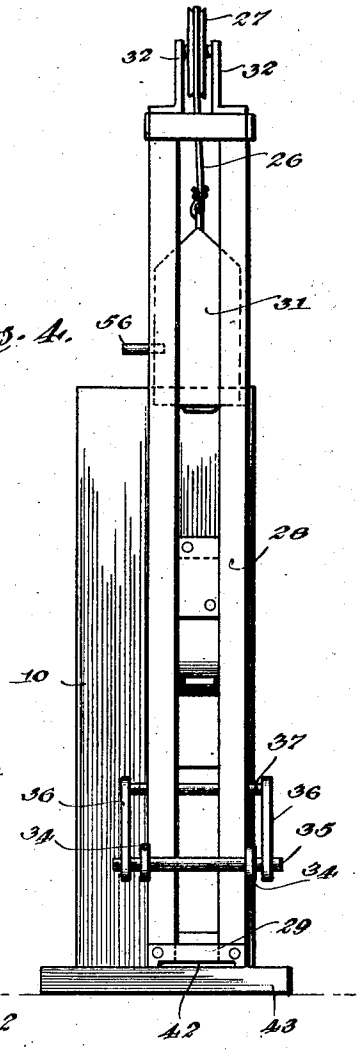


Fig. 4.



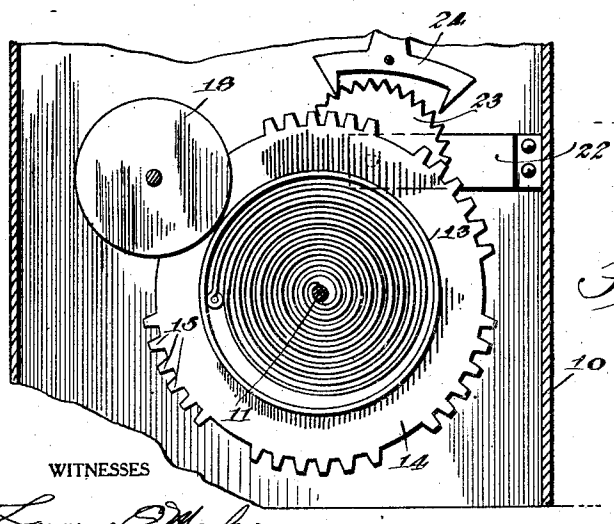


Fig. 5.

WITNESSES

Lawrence C. Manker

INVENTOR

J. T. Miller,

BY Munn & Co

ATTORNEYS

Patented July 27, 1926. 1,594,104

UNITED STATES PATENT OFFICE.

JOHN T. MILLER, OF CLOVIS, NEW MEXICO.

TOY.

Application filed November 11, 1925. Serial No. 68,362.

This invention relates to improvements in toys, and has for its object the provision of a device in which a spring motor is adapted to drive a mechanism for causing an alternating upward and downward movement of a body or figure, and wherein the mechanism will release the body at predetermined intervals so that the body is permitted to fall and come to rest for a period of time.

This invention will be best understood from a consideration of the following detailed description in view of the accompanying drawing forming a part of the specification; nevertheless it is to be understood that the invention is not confined to the disclosure being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention, as expressed in the appended claims.

In the drawings:

Figure 1 is a vertical section of the toy,

Figure 2 is a horizontal section,

Figure 3 is a view in perspective of a magazine and cap feeder,

Figure 4 is an end view of the toy, and

Figure 5 is a fragmentary vertical section showing a detail of the operating mechanism of the toy.

Referring more particularly to the drawings, the present embodiment of the invention comprises three essential elements, a motor, a tower supporting a hammer, and a magazine and feeding device for percussion caps which are fired by the hammer operated by the motor.

The motor is mounted in a housing 10 in which a motor shaft 11 is journaled transversely of said housing, the shaft having one end squared at 12 and projecting beyond said housing to receive a winding key. A motor spring 13 is arranged on the shaft in the usual manner for driving said shaft. A wheel 14 is rigid with shaft 11 and has a plurality of series of teeth 15 adapted to mesh periodically with a pinion 16 rigid with a shaft 17. A pulley 18 is also secured to the shaft, which is journaled in the housing and disposed parallel with the motor shaft.

A gear wheel 19 is secured to the motor shaft and meshes with a pinion 20 mounted for rotation with a shaft 21 journalled at one end on the housing and at its other end in a bracket 22 carried by the housing. A ratchet wheel 23 is also rigidly mounted on shaft 21 and operates a well known form of governor 24 mounted on a shaft 25 carried by the housing, the governor controlling the speed of the motor.

A cable 26 is secured to the pulley 18 and passes upwardly from the housing and is trained over a pulley 27 on a tower 28 which is rectangular in cross section and braced at its upper and lower ends by bars 29 secured to the angle iron uprights 30 forming the tower. The cable is secured to a ring on the upper end of a hammer 31 providing a weight which is guided by the uprights of the tower. The pulley 27 is mounted on a shaft 32 at the upper end of said tower. A firing plate 33 is disposed at the bottom of the tower upon which the weights are adapted to be periodically dropped.

Lugs 34 carry a shaft 35 at one side of the lower end of the tower upon which are secured a pair of curved arms 36 disposed in spaced parallel relation with the sides of the lower end of said tower and extend upwardly and rearwardly to points at the rear of the tower. The arms are capable of being rocked. A shaft 37 is journaled in the free ends of the arms. A cylinder 38 which has one end open and the other closed provides a magazine for a ribbon of toy percussion caps. A sliding lid 39 pivoted at 40 to one end of the cylinder forms a closure for the open end. A spool 41 is provided for rolling the ribbon in said cylinder. Openings 42 are formed at the front and rear of the tower and between the bars 29 and a base plate 43 upon which the housing and tower is mounted in order to guide the ribbon of caps over the firing plate 33.

A bracket 45 formed integrally with the cylinder 38 is bolted to the tower. A guide generally designated by the numeral 44 is formed integrally with the cylinder 38 and extends downwardly and inwardly towards the tower. A spring 46 has a free end adapted to engage a ribbon 51, the other end being secured to a transverse bar 46[a] connected to the outer free edges of the side flanges 48 which form part of the guide 44. The transverse bar 46[a] is located below an opening 47 in the cylinder 38 through which

the ribbon of caps is adapted to be withdrawn. A portion of the base of the guide, as shown at 49, is pivotally mounted at 38ª at the bottom of the cylinder and is movable towards or away from the side flanges 48. This swinging base portion provides an opening 52 which will aid in the insertion of the ribbon of caps when the device is being prepared for operation. The portion 49ª of the base is rigidly connected to the side flanges 48 and has an end 52ª projecting beyond the lower free ends of the flanges 48 which is adapted to be inserted between the pair of the angle iron bars which form the tower with the base of the end 52ª flush with the top of the firing plate 33. Latches 50 are pivoted on the side bars 48 adjacent the lower free end of the swingable base 49 and are adapted to engage pins 50ª projecting from the side edges of the swingable base so that said base may be locked in close contact with the outer edges of the side flanges 48. The percussion caps 51ª which are located above the surface of the ribbon 51 are adapted to be engaged by the plunger 53 when the arm 36 is operated for forcing the ribbon of caps downwardly and beneath the hammer 31.

A presser foot 53 is mounted at its upper end on the shaft 37 and a coil spring 54 on said shaft maintains the foot in engagement with the ribbon of caps in the guide.

A second coil spring 55 connected at one end to the bracket 45 and at its other end to the shaft 37 maintains the shaft 37, presser foot 53 and arms 36 in a predetermined elevated position and is adapted to return these elements to such position after the weight or hammer 31 has depressed the arms 36 by the engagement of pins 56 on the weight when said weight has been dropped.

The operation of my device is as follows: The gear wheel 14 is constructed with spaced groups of teeth 15. The gear wheel 19 is provided with a continuous set of teeth which drives the governor. When gear 14 is revolved by the motor on shaft 11, the pulley 18 is rotated by the intermittent gear 16 and the groups of teeth on gear 19 so that cable 26 is wound on drum 18. Winding of the cable 26 lifts weight 31 until a blank space 15ª releases gear 16, drum 18 and thus weight 31. The weight falls to the plate 33 firing the cap placed thereon.

When the weight falls, the pin 56 on the weight will engage one of the arms 36, causing said arms to rock downwardly on shaft 35. The plunger or feeding arm is forced downwardly by arms 36 until the free end engages a raised charge 51ª on the ribbon 51 of the caps, whence the ribbon is forced downwardly along the guide and shifting a fresh cap beneath the descending weight 31 before the weight strikes the plate 33. The spring 46 has its lower free end pressing against the ribbon of caps to prevent buckling of the ribbon by too great a freedom of movement of the ribbon when shifted by the plunger 53. As soon as the next set of teeth 15 of the rotating gear 14 engages the gear 16 the drum is revolved, winding cable 26 thereon and raising weight 31. When the pin 56 is elevated by the weight the spring 55 pulls arms 36 and feeding plunger 53 upwardly until the free end of said plunger rests upon the free end of spring 46.

When the gear 14 has again presented a toothless space 15ª to gear 16, said gear slips, releasing the weight and through pin 56, arms 36 and plunger 53, another cap is fed on the firing plate 33 just before the weight strikes said plate.

These operations are repeated until the spring motor requires rewinding.

A brake shoe 70 carried by an arm 71 is adapted to be forced into engagement with the drum 18 when desired to check or control the unwinding of the cable 26. The arm 71 is rocked by a shaft 72 mounted in perforations in the side walls of the casing 10. A crank 73 on the shaft 72 is manipulated for rocking said shaft.

I claim:

1. A toy comprising a motor, a fractional gear driven by the motor, a second gear driven intermittently by the fractional gear, a drum rotated by the second gear, a tape adapted to be wound on the drum, a weight attached to the free end of the tape and resisting winding of the tape, means for supporting the tape adjacent the weight to suspend the weight at a height, said fractional gear releasing the second gear and weight, a ribbon of percussion caps, and means for feeding the caps periodically beneath the falling weight.

2. A toy comprising a motor, a fractional gear driven by the motor, a second gear driven intermittently by the fractional gear, a drum rotated by the second gear, a tape adapted to be wound on the drum, a weight attached to the free end of the tape and resisting winding of the tape, means for supporting a tape adjacent the weight to suspend the weight at a height, said fractional gear releasing the second gear and weight, a ribbon of percussion caps, means for feeding the caps periodically beneath the falling weight, and means for returning the feeding means to a normal inoperative position.

3. A toy comprising a motor, a fractional gear driven by the motor, a second gear driven intermittently by the fractional gear, a drum rotated by the second gear, a tape adapted to be wound on the drum, a weight attached to the free end of the tape and resisting winding of the tape, means for supporting the tape adjacent the weight to sus-

pend the weight at a height, said fractional gear releasing the second gear and weight, a ribbon of percussion caps, means for feeding the caps periodically beneath the falling weight, and means for regulating the feeding of the ribbon of caps.

4. A toy comprising a motor, a driving gear operated by the motor and having groups of spaced teeth, a second gear in meshing relation with the driving gear and adapted to be rotated and released by the driving gear, a drum rotated by the second gear, a tower, a tape having one end connected to the drum and the other end supported by the tower, a weight secured to the end of the tape supported by the tower, said weight being elevated when the second gear is revolved and permitted to fall when said gear is released, a ribbon of percussion caps, and means for feeding the caps periodically below the falling weight.

5. A toy comprising a motor, a driving gear operated by the motor and having groups of spaced teeth, a second gear in meshing relation with the driving gear and adapted to be rotated and released by the driving gear, a drum rotated by the second gear, a tower, a tape having one end connected to the drum and the other end supported by the tower, a weight secured to the end of the tape supported by the tower, said weight being elevated when the second gear is revolved and permitted to fall when said gear is released, a ribbon of percussion caps, and means for feeding the caps periodically below the falling weight, said tower being provided with a guide for controlling the downward movement of the weight.

6. A toy comprising a motor, a driving gear operated by the motor and having groups of spaced teeth, a second gear in meshing relation with the driving gear and adapted to be rotated and released by the driving gear, a drum rotated by the second gear, a tower, a tape having one end connected to the drum and the other end supported by the tower, a weight secured to the end of the tape supported by the tower, said weight being elevated when the second gear is revolved and permitted to fall when said gear is released, a ribbon of percussion caps, and means for feeding the caps periodically below the falling weights, said feeding means being actuated by the weight when descending.

7. A toy comprising a motor, a driving gear operated by the motor and having groups of spaced teeth, a second gear in meshing relation with the driving gear and adapted to be rotated and released by the driving gear, a drum rotated by the second gear, a tower, a tape having one end connected to the drum and the other end supported by the tower, a weight secured to the end of the tape supported by the tower, said weight being elevated when the second gear is revolved and permitted to fall when said gear is released, a ribbon of percussion caps, and means for feeding the caps periodically below the falling weights, pivotally mounted arms adapted to be moved for actuating the feeding means, and means on the weight engaging the arms for operating said arms.

8. A toy comprising a motor, a driving gear operated by the motor and having groups of spaced teeth, a second gear in meshing relation with the driving gear and adapted to be rotated and released by the driving gear, a drum rotated by the second gear, a tower, a tape having one end connected to the drum and the other end supported by the tower, a weight secured to the end of the tape supported by the tower, said weight being elevated when the second gear is revolved and permitted to fall when said gear is released, a ribbon of percussion caps, and means for feeding the caps periodically below the falling weights, said feeding means being composed of a plunger, depressible arms pivoted on the tower and connected to the plunger, a pin on the weight engaging and depressing said arm to actuate the plunger, the free end of the plunger engaging the caps and forcing the same along a definite path.

9. A toy comprising a motor, a driving gear operated by the motor and having groups of spaced teeth, a second gear in meshing relation with the driving gear and adapted to be rotated and released by the driving gear, a drum rotated by the second gear, a tower, a tape having one end connected to the drum and the other end supported by the tower, a weight secured to the end of the tape supported by the tower, said weight being elevated when the second gear is revolved and permitted to fall when said gear is released, a ribbon of percussion caps, and means for feeding the caps periodically below the falling weights, pivotally mounted arms adapted to be moved for actuating the feeding means, and means on the weight engaging the arms for operating said arms, a spring connected with arms for moving the arms to a normal inoperative position when the weight is raised.

10. A toy comprising a motor, a driving gear operated by the motor and having groups of spaced teeth, a second gear in meshing relation with the driving gear and adapted to be rotated and released by the driving gear, a drum rotated by the second gear, a tower, a tape having one end connected to the drum and the other end supported by the tower, a weight secured to the end of the tape supported by the tower, said weight being elevated when the second gear is revolved and permitted to fall when said gear is released, a ribbon of percussion caps, means for feeding the caps periodically

below the falling weight, and a firing plate at the bottom of the tower to receive the moving caps and the falling weight.

11. A toy comprising a motor, a driving gear operated by the motor and having groups of spaced teeth, a second gear in meshing relation with the driving gear and adapted to be rotated and released by the driving gear, a drum rotated by the second gear, a tower, a tape having one end connected to the drum and the other end supported by the tower, a weight secured to the end of the tape supported by the tower, said weight being elevated when the second gear is revolved and permitted to fall when said gear is released, a ribbon of percussion caps, means for feeding the caps periodically below the falling weight, and a manually operated brake adapted to engage the drum and control the speed of the falling weight.

12. A toy comprising a motor, a fractional gear driven by the motor, a second gear driven intermittently by the fractional gear, a drum rotated by the second gear, a tape adapted to be wound on the drum, a weight attached to the free end of the tape and resisting winding of the tape, means for supporting the tape adjacent the weight to suspend the weight at a height, said fractional gear releasing the second gear and weight, a ribbon of percussion caps, means for feeding the caps periodically beneath the falling weight, a governor connected with the motor for regulating the speed of the driving gear, and a brake adapted to engage the drum to control the speed of descent of the weight.

13. A toy comprising a motor, a drum, operating means connected between the drum and the motor for intermittently causing rotation of the drum, a tape adapted to be wound on the drum, a weight attached to the free end of the tape and resisting winding of the tape, means for supporting the tape adjacent the weight to suspend the weight at a predetermined height, means included in the operative means between the drum and the motor adapted to cause release of the motor for releasing the tape and the weight, a ribbon of percussion caps, and means for feeding the caps periodically beneath the falling weight.

14. A toy comprising a motor, a drum, operating means connected between the drum and the motor for intermittently causing rotation of the drum, a tape adapted to be wound on the drum, a weight attached to the free end of the tape and resisting winding of the tape, means for supporting the tape adjacent the weight to suspend the weight at a predetermined height, means included in the operative means between the drum and the motor adapted to cause release of the motor for releasing the tape and the weight, a ribbon of percussion caps, and means for feeding the caps periodically beneath the falling weight, and means for returning the feeding means to a normal inoperative position.

15. A toy comprising a motor, a drum, means operatively connected between the motor and the drum for causing intermittent rotation of the drum and release of the drum, a tower, a tape connected at one end of the drum slidably mounted at the top of the tower, a weight connected to the other free end of the tape and adapted to be guided downwardly in the tower when the tape is released, a ribbon of caps, means for feeding the ribbon of caps through the bottom of the tower in timed relation with the falling weight so that a cap will be disposed in line with the weight when the weight has reached the bottom of the tower for exploding the cap.

16. A toy comprising a motor, a drum, means operatively connected between the motor and the drum for causing intermittent rotation of the drum and release of the drum, a tower, a tape connected at one end of the drum slidably mounted at the top of the tower, a weight connected to the other free end of the tape and adapted to be guided downwardly in the tower when the tape is released, a ribbon of caps, means for feeding the ribbon of caps through the bottom of the tower in timed relation with the falling weight so that a cap will be disposed in line with the weight when the weight has reached the bottom of the tower for exploding the cap, said feeding means being adapted to be operated by the weight when it approaches the bottom of the tower.

17. A toy comprising a weight actuated by gravity, operating means for raising the weight, means for feeding a ribbon of caps periodically beneath the falling weight, said feeding means comprising a guide for supporting the ribbon of caps, a plunger adapted to engage the caps and force them periodically beneath the weight, said guide having a portion of its body hingedly mounted whereby said hingedly mounted portion may be swung away from the guide to permit the proper insertion of the caps.

18. A toy comprising a weight actuated by gravity, operating means for raising the weight, means for feeding a ribbon of caps periodically beneath the falling weight, said feeding means comprising a guide for supporting the ribbon of caps, a plunger adapted to engage the caps and force them periodically beneath the weight, said guide having a portion of its body hingedly mounted whereby said hingedly mounted portion may be swung away from the guide to permit the proper insertion of the caps, means for operating the plunger adapted to be set in motion by the falling weight.

19. A toy comprising a weight actuated

by gravity, operating means for raising the weight and for releasing the weight periodically, means for feeding a ribbon of caps periodically beneath the falling weight, said feeding means comprising a guide for supporting the ribbon of caps, a plunger adapted to engage the caps and force them periodically beneath the weight, said guide having a portion of its body hingedly mounted whereby said hingedly mounted portion may be swung away from the guide to permit the proper insertion of the caps.

JOHN T. MILLER.