

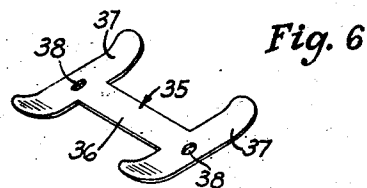
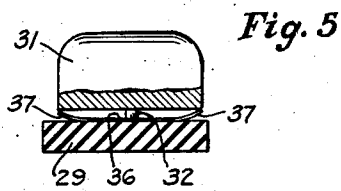
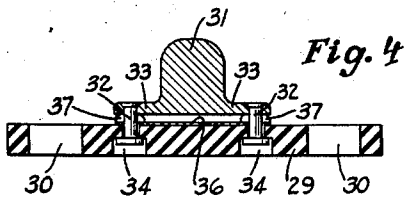
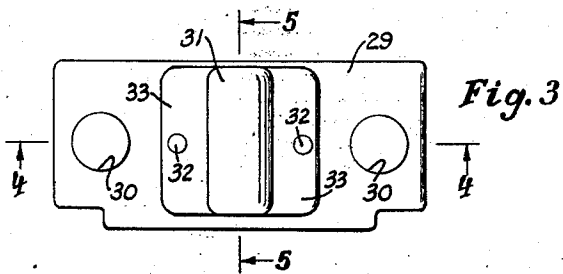
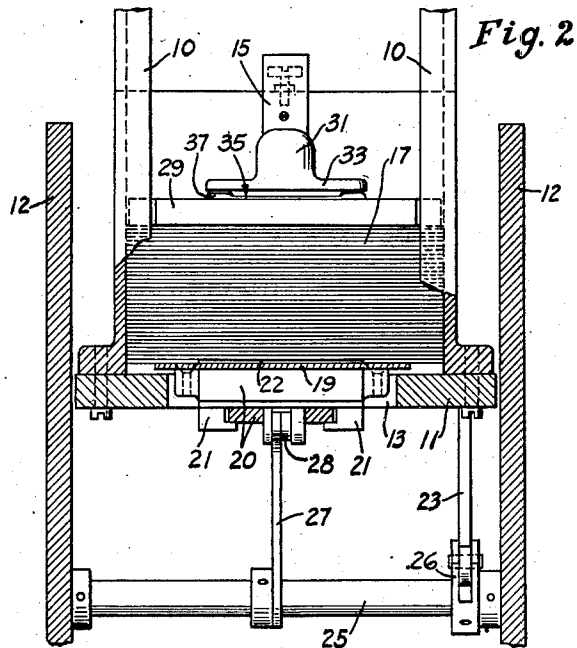
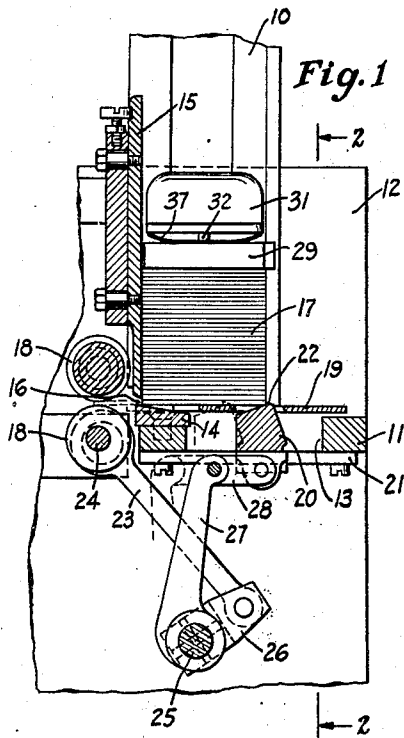
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CARD FEEDING DEVICE

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CARD FEEDING DEVICE

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8 Claims. (Cl. 271-44)

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This invention relates to improvements in feeding mechanisms such as may be employed in record controlled machines and has particular reference to a device for controlling the feed of cards from the magazines of machines of this general character.

In such machines, it has been customary to place a stack of cards in a magazine and successively feed the bottom cards of the stack through a micrometer slot to an analyzing means. This feed has been accomplished by both reciprocating and rotating mechanisms and, in either case, there is imparted to the stack of cards a jogging or vibratory motion the rapidity of which increases with the speed at which the cards are fed, and the amplitude of which becomes greater as the height of the stack, and consequent weight thereof, decreases. The rapid jogging motion of the stack sometimes results in improper feeding and consequent jamming of the bottom card at the outlet slot of the magazine. In attempting to overcome this difficulty, the common practice has been to place a weighted member or plate of unitary structure upon the top of the stack and depend upon this solid mass to exert sufficient pressure upon the stack to maintain the jogging motion of the latter within such limits that the bottom card will properly feed through the micrometer slot. Although this practice has been found to be fairly satisfactory, it has not entirely eliminated the jamming of cards in the magazine.

In accordance with the present invention, it is proposed to further reduce the possibility of improper feeding of cards through a magazine outlet by the provision of a portable pressure device which, when mounted on the stack, will act to counter or suppress the jogging motion of the cards at and adjacent the bottom of said stack by relative movement between two elements constituting said device.

A further feature of the invention is to coordinate the pressure of two elements of a pressure device to reduce to a minimum any vibratory action taking place in a card stack as the cards are fed from the bottom thereof.

The inventive idea involved is capable of receiving a variety of mechanical expressions one of which, for purposes of illustration, is shown in the accompanying drawing; but it is to be expressly understood that said drawing is employed only to facilitate the description of the invention as a whole and not to define the limits thereof, reference being had to the appended claims for this purpose.

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In the drawing—

Fig. 1 is a fragmentary vertical section taken through a card feeding mechanism, showing the present invention in position therein.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a top plan view of a pressure device embodying the features of the present invention.

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

Fig. 5 is a transverse section on the line 5—5 of Fig. 3, and,

Fig. 6 is a perspective view of a spring member forming part of the pressure device.

The invention is applicable to any card feeding mechanism of the general type illustrated in Figs. 1 and 2 wherein said mechanism is shown as comprising a magazine 10 having a bottom member 11 supported between the side plates 12 of a machine and having an opening 13 therein. At the forward end of the bottom member 11 the same has mounted thereon an upwardly and forwardly inclined guide plate 14 with which is associated a vertically adjustable throat plate 15 that combines with said plate 14 to provide a micrometer slot 16 through which only the lowermost card of a stack 17 will pass, upon each operation of the feeding mechanism, to the feed rollers 18 driven from the main shaft (not shown) of the machine in a manner well understood in the art.

The feeding mechanism is of the reciprocating type and comprises a sliding plate 19 upon a portion of which rests the lowermost card of said stack preparatory to said card being fed through the slot 16 and to the feed rollers 18. Said face plate 19 is supported by the block 20 movable in the opening 13 between the parallel guides 21 from the full to the dotted line positions shown in Fig. 1. Said block 20 carries the picker knife 22 which, upon each forward movement of the block, engages the rear edge of only the lowermost card in the magazine and feeds the same forwardly through the slot 16 for further advancement by the rollers 18. To reciprocate the knife 22, a pitman 23 is connected to the shaft 24 upon which the roller 18 is mounted and which is driven from said main shaft. Said pitman is joined to and oscillates the rocker shaft 25 through the link 26. A rocker arm 27 secured to the shaft 25 has its upper end connected to the sliding block 20 by a link 28 so that said block is reciprocated to successively feed the cards from the magazine.

It is well known that as the knife 22 is reciprocated, there is imparted to the stack 17 a jog-

ging or vibratory motion caused by the alternate lowering of the forward and rear edges of the cards, and that this motion increases perceptibly as the stack is reduced in size. When the cards are being fed at a high speed, as is customary in machines of the character in which these feeding mechanisms are employed, the jogging motion imparted to the stack may become excessive, particularly as the stack decreases in size, and sometimes causes the leading edge of the bottom card to jam against the lower edge of the throat plate 15 instead of passing through the slot 16; and this occurs in spite of the customary use of a solid weight on top of the stack.

The present invention, detailed in Figs. 3 to 6, is designed for the purpose of reducing the vibratory or jogging motion of the stack 17 to a minimum, thereby tending to eliminate said motion as a cause for the jamming of the cards in the magazine. To this end, the invention comprises a pressure device adapted to rest upon the stack 17 during a feeding operation in the same manner that known weights are employed. Said device consists of a card engaging member or base plate 29 of substantially rectangular formation adapted to fit in the magazine for vertical movement therein and made of any suitable material, such as a phenolic composition. Adjacent its ends, the plate 29 is provided with sight openings 30 to enable the operator of the machine to observe when all cards have been fed from the magazine so that the machine may be manually stopped in the event that it is not supplied with an automatic stopping means.

A substantially oblong weight 31, considerably heavier than the plate 29 and provided with lateral extensions 33 at its lower elongated edges, is supported in a horizontal position slightly above said plate for relative movements between said elements and is of such configuration that it constitutes a convenient grip by means of which the device may be readily handled when placing the same in position on a stack of cards in the magazine and removing it therefrom. Said weight is interconnected with said plate by means of two studs 32 secured to and depending from the lateral extensions 33 of the weight and loosely projecting into shouldered apertures 34 formed in said plate, the lower heads of said studs engaging the shoulders of said apertures in the normal position of the two relatively movable members. The weight 31 is resiliently supported above the plate 29 by means of a spring member, generally indicated at 35, which rests upon said plate and comprises a central section 36 extending longitudinally of the plate and two upwardly bowed end sections 37 that extend transversely of said plate, with the extremities of the latter sections engaging the under surface of said weight so as to support the same in spaced relation to the plate. The studs 32 extend through openings 38 formed in the sections 37 adjacent the extremities of the central section 36, and thereby retain the member 35 against displacement from its operative position between the elements 29 and 31.

With the weight 31 thus resiliently supported, it is apparent that when said plate 29 oscillates about a longitudinal axis thereof, due to the jogging motion imparted to the stack 17 by the feeding mechanism, a certain amount of such oscillation is absorbed by the spring 35 and the plate will move relative to the weight 31. Said spring tends, in turn, to transmit this oscillating movement to said weight but the inertia of the latter

counters or suppresses such tendency, partly due to the fact that it is considerably heavier than said plate and, in so doing, the effect of its inertia is transmitted to said stack to reduce the amplitude of the jogging action thereof so that the bottom card of the stack will be more positively fed through the slot 16.

What is claimed is:

1. A pressure device for mounting upon a stack of cards to be fed from a magazine, said device comprising two relatively movable elements, and a spring member interposed between said elements and having bowed portions contacting one of them.

2. A pressure device for mounting upon a stack of cards to be fed from a magazine, said device comprising two relatively movable elements, a spring member engaging one of said elements and having bowed portions contacting the other element to resiliently support the latter for relative movement between said elements, one of said elements having shouldered apertures therein, and studs on the other element projecting into said apertures and engageable with the shoulders therein.

3. A device for suppressing oscillations imparted to a card stack by cards fed therefrom in the direction of the planes of the cards, said device comprising two relatively movable and juxtaposed elements one of which is supported by said stack for oscillation thereby, and a leaf spring member interposed between said elements and having a plurality of spaced portions contacting with one of them to maintain it in spaced relation to the other element.

4. A device for suppressing oscillations imparted to a card stack by cards fed therefrom in the direction of the planes of the cards, said device comprising two spaced apart elements relatively movable toward and away from each other and one of which is supported by said stack for oscillation thereby, a leaf spring member interposed between said elements and having a plurality of spaced portions contacting one of them, and means connecting said elements to maintain the same in cooperative relation during their relative movements.

5. A pressure device for mounting upon a stack of cards to be fed from a magazine, said device comprising two elements supported one above the other in spaced relation for relative movements therebetween, and a member to so support said elements, said member comprising a section engaging one of said elements and provided with laterally extending resilient portions having their extremities offset from the plane of said section and engaging the other of said elements to support the same in their spaced relationship and for relative movements therebetween.

6. A portable, self-contained pressure device for removable mounting upon a stack of cards to be fed from a magazine, said device comprising a plate adapted to rest upon said stack, a weight supported above and spaced from said plate for movements relative thereto and comprising an elongated portion horizontally disposed in parallel relation to said plate and constituting a grip by means of which the device may be inserted into said magazine and removed therefrom, and a spring member interposed between said plate and weight for supporting the latter.

7. A portable, self-contained pressure unit for insertion wholly within and withdrawal from the confines of a card magazine and freely supported upon a stack of cards therein, said device com-

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prising a plate and weight arranged in spaced relation one directly above the other for relative movements therebetween, said weight having a central elongated portion extending parallel to said plate and further having lateral extensions projecting from opposed longitudinal edges of said central portion, and a plurality of spring elements interposed between said plate and weight and engaging said lateral extensions at spaced apart points.

8. A portable, self-contained pressure unit for insertion wholly within and withdrawal from the

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confines of a card magazine and freely supported upon a stack of cards therein, said device comprising a plate engaging said stack and oscillated thereby as cards are fed therefrom, a spring member engaging said plate, and a weight supported on said spring member in spaced relation to said plate for suppressing the oscillations thereof and having an elongated portion arranged parallel to said plate and constituting a grip by means of which said device may be withdrawn from said stack and replaced thereon.

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