April 7, 1936. E. M. CALMES 2,036,919

FEED MECHANISM FOR SEPARATING COUPONS, TICKETS OR THE LIKE

Filed Jan. 26, 1933 4 Sheets-Sheet 1

Fig. 1

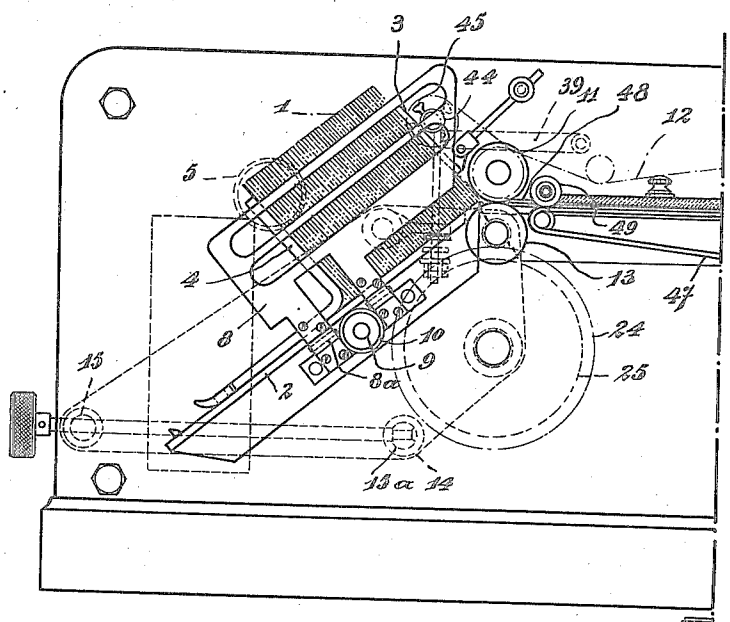
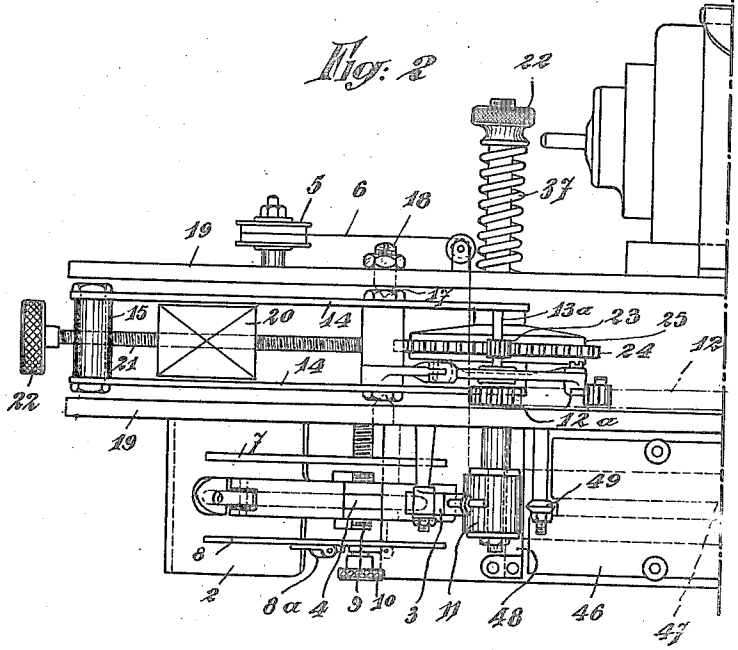


Fig. 2



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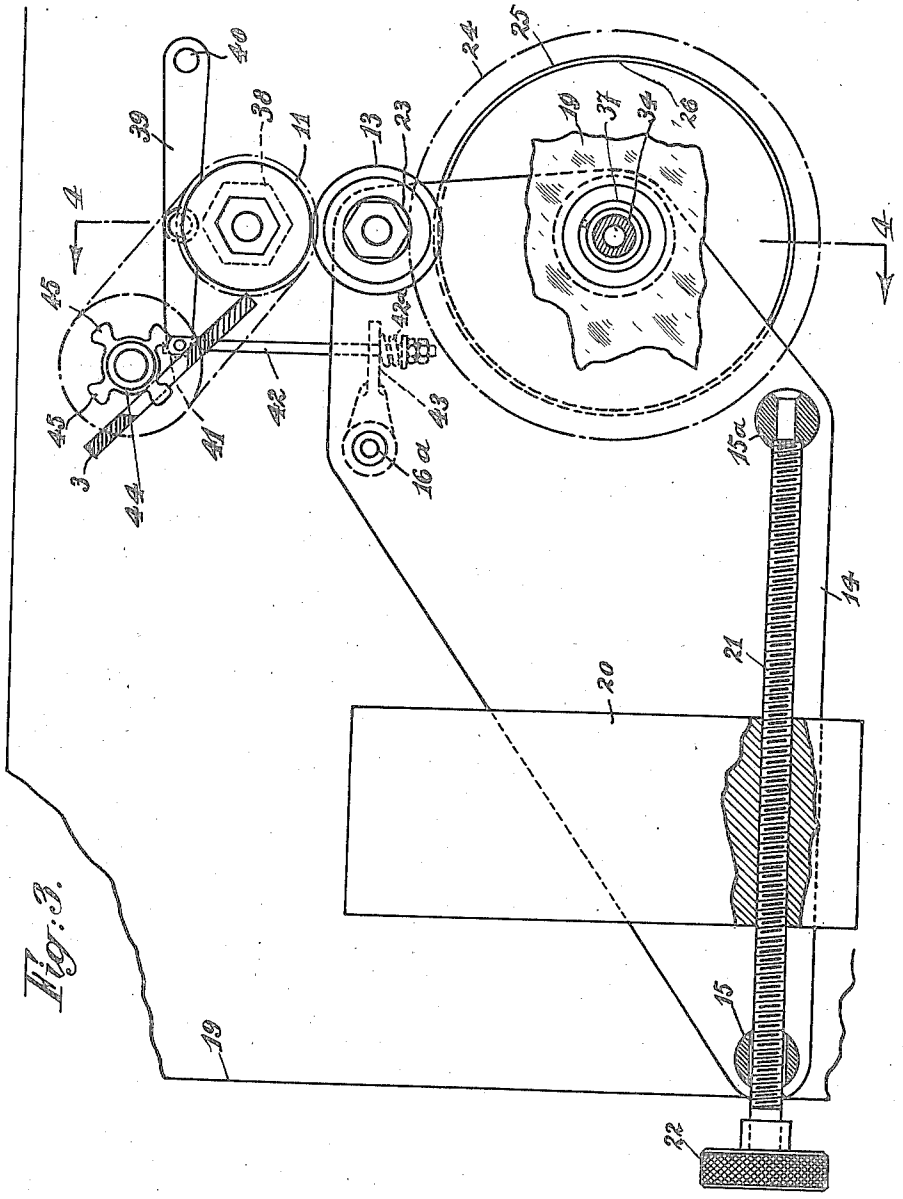


Fig. 3.

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Fig. 4.

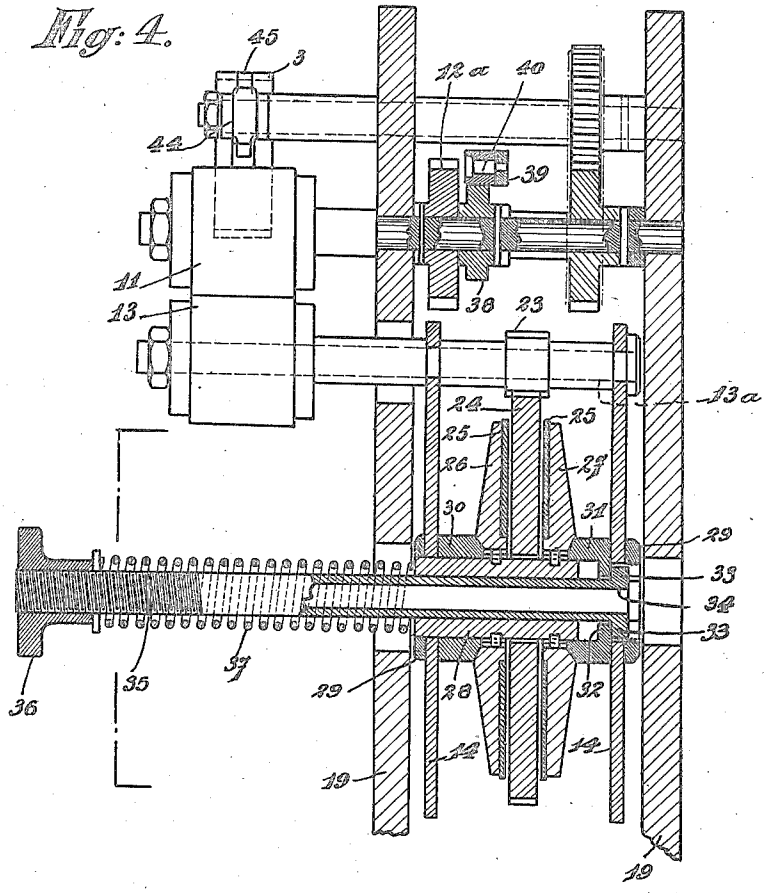
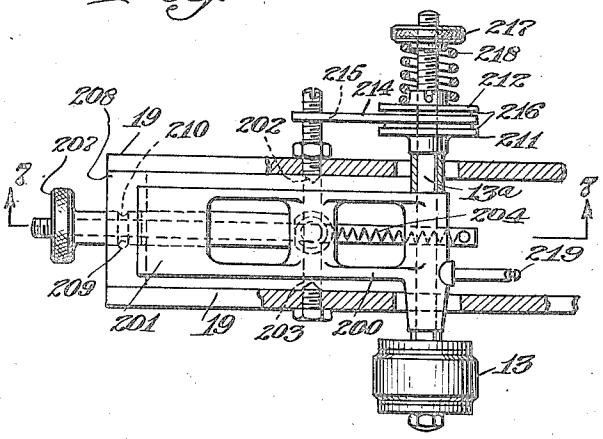


Fig. 6.



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Filed Jan. 26, 1933 4 Sheets-Sheet 4

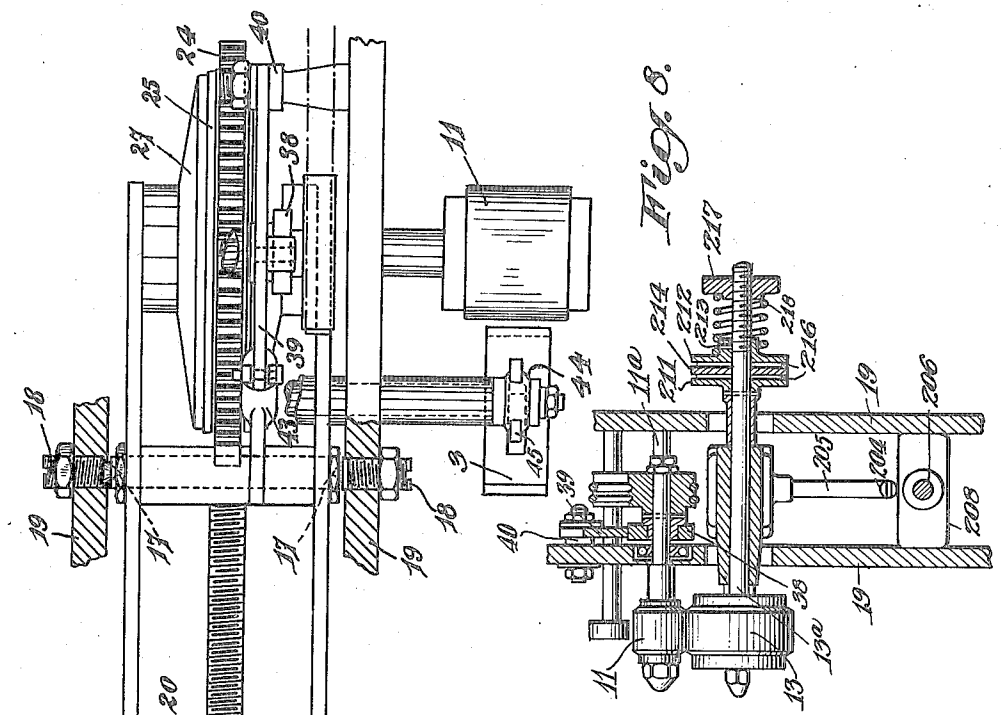


Fig. 8.

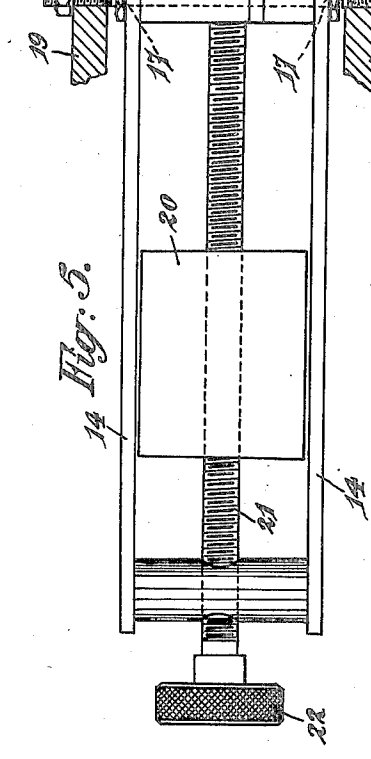


Fig. 3.

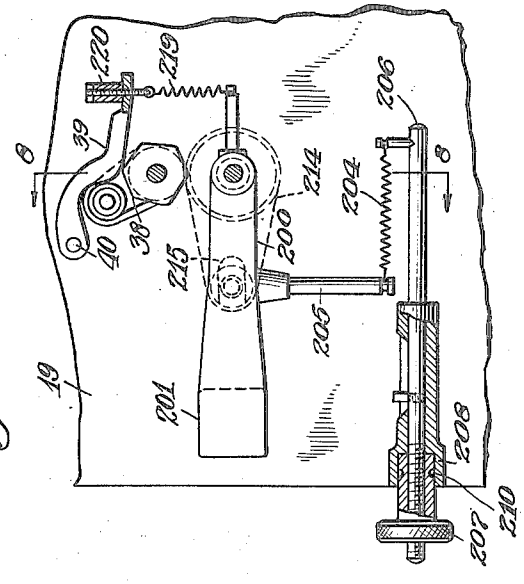


Fig. 7.

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Patented Apr. 7, 1936 2,036,919

UNITED STATES PATENT OFFICE

2,036,919

FEED MECHANISM FOR SEPARATING COUPONS, TICKETS, OR THE LIKE

Eugène Martin Calmes, Paris, France

Application January 26, 1933, Serial No. 653,728
In France February 3, 1932

11 Claims. (Cl. 271—39)

The object of the present invention is to provide a feed mechanism for separating coupons, tickets, labels, sheets of paper, bands of paper, etc.

The mechanism according to my invention is intended to take up successively the sheets of a pack or pile placed on the feed board. This mechanism includes an inclined plate along which slides a push piece serving to apply the pile of sheets against a stop plate at the bottom of which the sheets are taken up one by one. The push piece is pulled by a cable connected to a drum which urges it against the stop plate. Side plates at an adjustable interval are adapted to move in opposite directions through the action of a right-and-left screw. The selecting mechanism comprises a driving roller adapted to move the sheets forward and against which is applied a second roller supported by an oscillating frame, said frame being provided with a counterweight. The counterweight can occupy, with respect to the axis of rotation of the frame, a position adjustable by means of a screw.

According to another embodiment of my invention the selecting device comprises, instead of a frame, a mere lever provided with a fixed counterweight which comprises, as means for adjusting the pressure transmitted to the roller, a spring or the equivalent which may be more or less tensioned through a suitable control organ.

Preferred embodiments of my invention will be hereinafter described with reference to the accompanying drawings, given merely by way of example, and in which:

Fig. 1 is an elevational view of the mechanism according to the present invention;

Fig. 2 is a plan view corresponding to Fig. 1;

Fig. 3 is a detail elevational view showing the device for taking and selecting the tickets that are to be checked;

Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a plan view corresponding to Fig. 3;

Fig. 6 is a plan view of another embodiment of the device for taking and selecting the tickets or coupons to be checked;

Fig. 7 is a vertical sectional view on the line 7—7 of Fig. 6;

Fig. 8 is a transversal sectional view on the line 8—8 of Fig. 7.

The coupons, sheets, etc., to be checked are placed so as to form a pile at 1 (Fig. 1) on an inclined plate 2 acting as the feed board. They are applied against a stop plate 3 by a sliding push piece 4 subjected to the action of a drum 5 to which it is connected by a cable 6 suitably guided by pulleys.

The pile 1 of coupons is, on the other hand, suitably maintained between two side plates 7 and 8 one of which is hinged at 8a so as to be swung laterally in order to permit to more easily place in position the coupons on feed board 2.

The distance between side plates 7 and 8 can be modified at will through a right and left screw adapted to be actuated through its milled head 10. Owing to this arrangement, side plates 7 and 8 can be brought to a distance from each other exactly equal to the width of the coupons.

Stop plate 3 is disposed in tangential relation to a roller 11 that drives by friction, owing to its rubber periphery, the coupons of the pile 1.

Roller 11 is given a continuous rotation through a chain 12 carried by a pinion 12a, said chain being driven in any suitable manner as will be hereinafter described.

Under roller 11 there is disposed another roller 13, as shown in Figs. 5 to 7.

Roller 13 is carried by a pivoting frame consisting of side plates 14 maintained at a suitable interval by spacing members 15 and 16.

The axis of member 16 is the pivot about which the frame oscillates and it is mounted between the points 17 of screws 18 carried by the side plates 19 of the frame of the apparatus.

Due to its being mounted in an oscillating frame, roller 13 can be more or less applied against, or moved away from, roller 11.

The strength with which said roller 13 is applied against roller 11 is determined by counterweight 20, which can be moved with respect to the axis of member 16 by means of screw 21 actuated through its milled head 22. As said screw is journalled in spacing member 15a but cannot slide with respect thereto, it will readily be understood that by turning it the moment of the weight which determines the pressure exerted by roller 13 on roller 11 can be increased or reduced at will.

On the spindle 13a of roller 13 is keyed a pinion 23 meshing with a toothed wheel 24 of large diameter. Said toothed wheel 24, which is mounted loose on it journal, is placed between two friction disks 25, themselves disposed between cheeks 26 and 27 keyed on hollow shaft 28 which is fixed to side plates 14 by nuts 29. Cheek 26 is maintained at a fixed distance from side plate 14 by spacing member 30, and cheek 27 can be moved toward cheek 26 through ring 31, which is provided for this purpose with two lugs 32 against which bear lugs 33 integral with axle 34.

The end 35 of said axle is threaded. A nut 36 is screwed on said threaded end against the action of a spring 37, so that cheek 27 is caused by spring 37 to apply against cheek 26 the whole of the disks and toothed wheel 24. The rotary movement of said wheel is therefore braked and that braking action is transmitted to roller 13 through pinion 23.

It is possible, by acting on nut 36, to adjust at

will the tension of spring 37, and therefore to accurately adjust the braking of roller 13.

Under these conditions, the selection of the sheets or coupons takes place through the difference of adhesion, so that the upper sheet of the pile is the only one to be driven. As a matter of fact, if two sheets are driven simultaneously by driving roller 11, the adhesion between the lower sheet and the upper sheet is smaller than the difference between the lower sheet and roller 13, which is mounted loose and is braked. Due to the braking of said roller and to the pressure with which it is applied against roller 11, the lower sheet and roller 13 do not move while the upper sheet is driven. When driving roller 11 takes only one sheet from the pile, said sheet passes between the two rollers, the lower roller 13 being driven through adhesion.

Due to the reduction resulting from the difference between the radiuses of wheel 24 and pinion 23, and due to the large braking surface, the selection of the coupons or sheets as above explained is performed in a rigorous and perfect manner.

In order to obtain a regular operation of the selecting mechanism, for instance in the case of the lower roller being worn off or out of order, and in order to nevertheless obtain a good drive of said roller, I have provided a device which periodically varies the pressure with which roller 13 is applied against roller 11, so as to cause it to pass from a maximum to a minimum.

Said periodicity is produced by a cam 38 (in the drawings I have shown a cam of hexagonal outline, but there may be any number whatever of projections on the outline of the cam). Said cam acts on a lever 39 pivoted at 40 on the frame of the apparatus.

The end 41 of said lever is connected through a rod 42 with an arm 43 integral with the spindle 16*a* of frame 14. Rod 42 and arm 43 are connected through a spring 42*a* which, due to the action of cam 38, which periodically moves lever 39, has its tension periodically modified so that roller 13 is applied against roller 11 with a pressure depending on the tension of the spring.

Furthermore, a roller 44, provided at its periphery with bosses 45, is disposed opposite stop plate 3 and is driven in a continuous manner by roller 11.

In the course of its rotation, the roller in question strikes successively through one of its bosses the pile of sheets disposed on the feed board and causes the first sheet to move due to its being struck obliquely and for the same reason as above stated, difference of value between the adhesion of the two first sheets with respect to each other and the adhesion of the first sheet with respect to boss 45. This slight displacement of the first, or uppermost sheet of the pile facilitates its insertion between rollers 11 and 13 and the selection is perfect.

In the embodiment of Figs. 6 to 8 that is now to be described, the braking of roller 13 is obtained in the following manner (Figs. 6 to 8):

On the spindle 13*a* that carries roller 13, there is keyed a disk 211. On said spindle is also mounted a second disk 212 connected to said spindle through a sliding key 213. Between said two disks is disposed a third disk 214 having an arm integral with it that is provided with a slot 215 in which is inserted the end of pivot screw 202, so that disk 214 is not allowed to rotate about shaft 13*a*.

Between disk 214 and disks 211 and 212, there are inserted felt washers 216, and a nut 217 acting, through a spring 218, on disk 212 is screwed on the end of spindle 13*a*. Said spring 218 therefore applies more or less strongly disks 212 and 214 against fixed disk 211. Felt washers 216 then exert a soft and constant braking action, which is an essential condition of a good working of the device for taking and selecting the coupons to be checked.

It has been above stated that it was more advantageous to periodically vary the pressure with which roller 13 is applied against roller 11. In the first described embodiment the variation of said pressure was obtained through the action of a cam on a pivoting lever the free end of which was connected to the frame carrying the lower roller.

In the embodiment that is now being described, a lever 39 pivoted at 40 to side plate 19 is periodically moved upwardly by a cam 38 keyed on the shaft 11*a* of roller 11. Lever 39 is connected to lever 200 through a spring 219. Preferably, the tension of said spring is adapted to be adjusted, for instance by means of a nut 220.

From the preceding description it results that the pressure applying roller 13 against roller 11 results from the combined action of mass 201, spring 204, and spring 219. As the action of said two springs can be adjustable, it is understood that the desired pressure can be very exactly obtained.

While I have described what I deem to be practical and efficient embodiments of my invention, it should be well understood that I do not wish to be limited thereto as there might be changes made in the arrangement, disposition and form of the parts without departing from the principle of my invention as comprehended within the scope of the appended claims.

What I claim is:

1. A feed mechanism for causing a certain number of flat objects disposed in a pile to be taken one by one from said pile, which comprises in combination, a driving roller imperatively actuated, guiding means for said pile, means for pushing said pile so that the end object thereof is applied tangentially against said driving roller, a loose roller movably mounted opposite said driving roller with its axis constantly parallel to the axis of said driving roller, yielding means for pushing said loose roller against said driving roller whereby the objects carried along by said driving roller are squeezed along between said two rollers, and means for braking the rotary movement of said loose roller.

2. A feed mechanism for causing a certain number of flat objects to be taken one by one from said pile, which comprises in combination, a frame, a driving roller journalled in said frame adapted to rotate with a continuous motion, guiding means for said pile carried by said frame, means for pushing said pile so that the end object thereof is applied tangentially against said driving roller, a loose roller opposite said driving roller radially movable with respect thereto with its axis constantly parallel to the axis of said driving roller, yielding means for pushing said loose roller against said driving roller whereby the objects carried along by said driving roller are squeezed along between said two rollers, and adjustable means for braking the rotary movement of said loose roller.

3. A machine according to claim 2 further comprising means for periodically varying the pres-

sure with which the loose roller is pushed against the driving roller, so that said pressure varies constantly between a maximum and a minimum value.

4. A mechanism according to claim 2 further comprising a driven roller located opposite said pile of objects, and a plurality of bosses or projections on the last mentioned roller adapted to periodically strike said pile in order to slightly displace the end object thereof.

5. A feed mechanism for causing a certain number of flat objects disposed in a pile to be taken one by one from said pile, which comprises in combination, a frame, a driving roller journalled in said frame adapted to rotate with a continuous motion, guiding means for said pile carried by said frame, means for pushing said pile so that the end object thereof is applied tangentially against said driving roller, a support pivoted to said frame, a roller mounted loose in said support about an axis parallel to, and located in substantially the same vertical plane as, the axis of said driving roller, a counterweight carried by said support so as to push said loose roller against said driving roller whereby the objects carried along by said driving roller are squeezed along between said two rollers, and adjustable means for braking the rotary movement of said loose roller.

6. A feed mechanism for causing a certain number of flat objects disposed in a pile to be taken one by one from said pile, which comprises in combination, a frame, a driving roller journalled in said frame adapted to rotate with a continuous motion, guiding means for said pile carried by said frame, means for pushing said pile so that the end object thereof is applied tangentially against said driving roller, a support pivoted in said frame, a roller mounted loose in said support about an axis parallel to, and located in substantially the same vertical plane as, the axis of said driving roller, a counterweight carried by said support so as to push said loose roller toward said driving roller whereby the objects carried along by said driving roller are squeezed along between said two rollers, adjustable means for braking the rotary movement of said loose roller, an arm pivoted to said frame, a cam operatively connected to said driving roller adapted to cooperate with said arm so as to impart an oscillating movement of smaller amplitude thereto, and a spring connection between said arm and said support.

7. A feed mechanism for causing a certain number of flat objects disposed in a pile to be taken one by one from said pile, which comprises in combination, a frame, a driving roller journalled in said frame adapted to be rotated with a continuous motion, guiding means for said pile carried by said frame, means for pushing said pile so that the end object thereof is applied tangentially against said driving roller, a support pivoted to said frame about an axis parallel to the axis of said roller, a spindle journalled in said support parallel to, and in substantially the same vertical plane as, said axis, a roller keyed to said spindle opposite said first mentioned roller, a counterweight carried by said support so as to push said second mentioned roller toward said driving roller, whereby the objects carried along by said driving roller are squeezed along between these two rollers, at least two coaxial disks slidably mounted with respect to each other, so as to be able to frictionally engage each other, one of said disks being operatively connected with said spindle so as to be driven by it, and adjustable elastic means for forcing one of said disks against the other.

8. A feed mechanism according to claim 7 further comprising an arm pivoted to said frame, a cam operatively connected with said driving roller adapted to cooperate with said arm so as to impart an oscillating movement of small amplitude thereto, and a spring connection between said arm and said support.

9. A feed mechanism for causing a certain number of flat objects disposed in a pile to be taken one by one from said pile, which comprises in combination, a frame, a driving roller journalled in said frame adapted to be rotated with a continuous motion, guiding means for said pile carried by said frame, means for pushing said pile so that the end object thereof is constantly applied tangentially against said driving roller, a support pivoted to said frame about an axis parallel to the axis of said roller, a spindle journalled in said support parallel to, and in substantially the same vertical plane as, said axis, a roller keyed to said spindle opposite said first mentioned roller, a counterweight adjustably fixed to said support so as to push said second mentioned roller toward said driving roller, whereby the objects carried along by said driving roller are squeezed along between said two rollers, a pinion keyed to said spindle, a second spindle fixed to said support, a toothed wheel mounted loose about said second mentioned spindle and meshing with said pinion, two disks keyed to said second mentioned spindle on either side of said toothed wheel and frictionally contacting it, and adjustable elastic means for applying said disks against said toothed wheel with a certain pressure.

10. A feed mechanism according to claim 9 further comprising an arm pivoted to said frame, a cam coaxially fixed to said driving roller adapted to cooperate with said arm so as to impart an oscillating movement of small amplitude thereto, and elastic connecting means between said arm and said support for keeping said arm applied against said cam.

11. A feed mechanism for causing a certain number of flat objects disposed in a pile to be taken one by one from said pile, which comprises in combination, a frame, a driving roller journalled in said frame adapted to be rotated with a continuous motion, guiding means for said pile carried by said frame, means for pushing said pile so that the end object thereof is applied tangentially against said driving roller, a support pivoted to said frame about an axis parallel to the axis of said roller, a spindle journalled in said support parallel to, and in substantially the same vertical plane as, said axis, a roller keyed to said spindle opposite said first mentioned roller, a counterweight carried by said support so as to push said second mentioned roller toward said driving roller, whereby the objects carried along by said driving roller are squeezed along between said two rollers, a disk keyed on said spindle, another disk slidably keyed on said spindle, a third disk interposed between the two first mentioned disks, means for preventing the last mentioned disk from rotating about said spindle, and elastic adjustable means for applying said disks against one another so as to brake the rotary movement of said spindle.

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