

April 12, 1932.

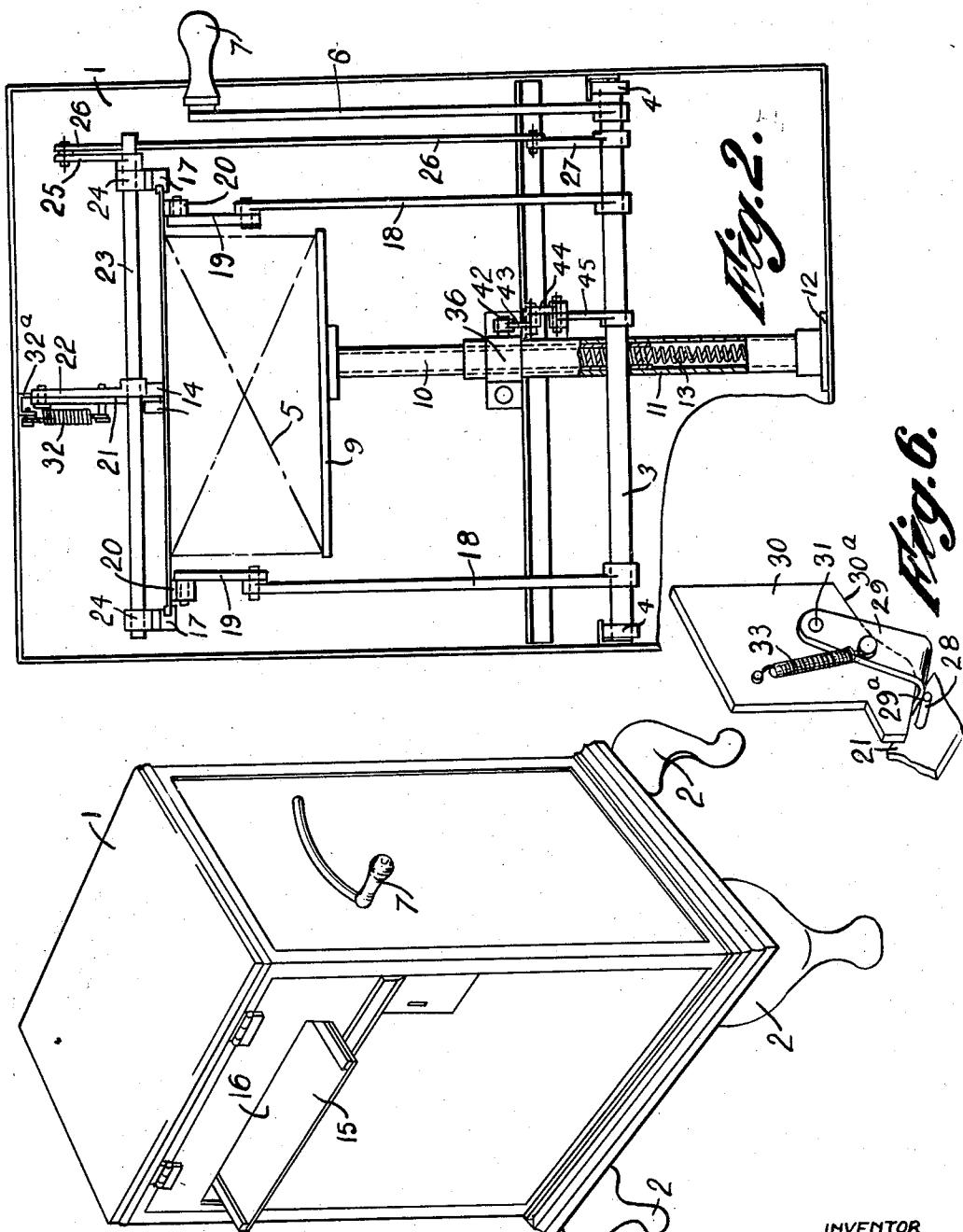
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1,853,926

APPARATUS FOR DELIVERING ARTICLES

Filed Feb. 20, 1930

2 Sheets-Sheet 1



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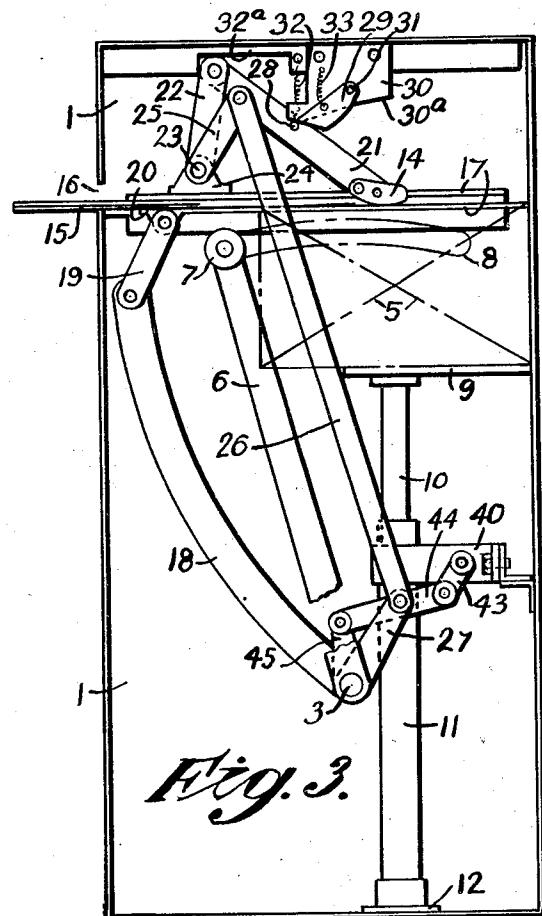


Fig. 3.

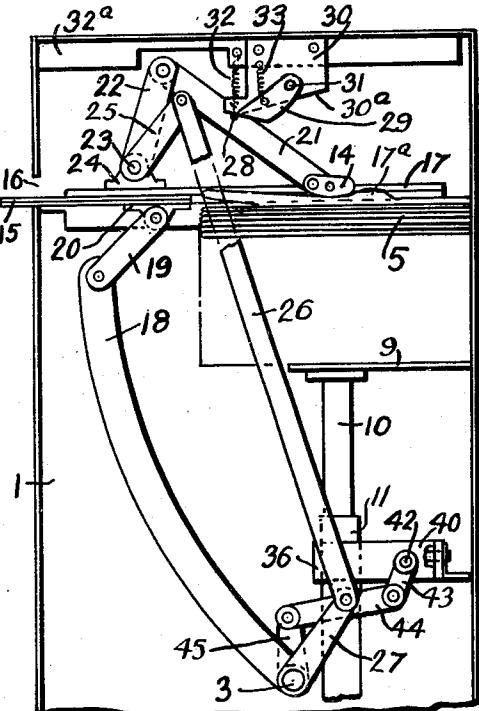


Fig. 4.

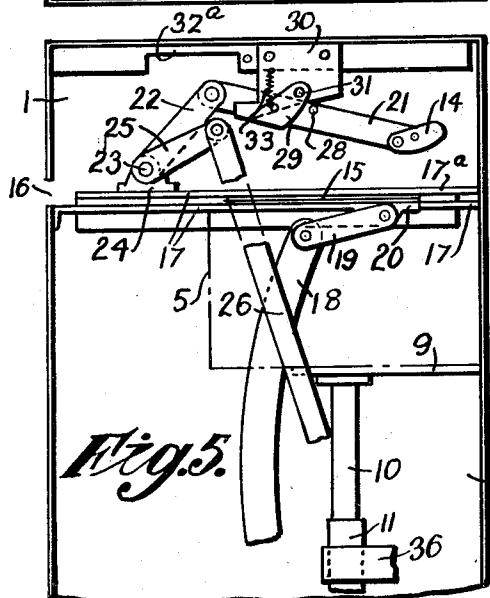
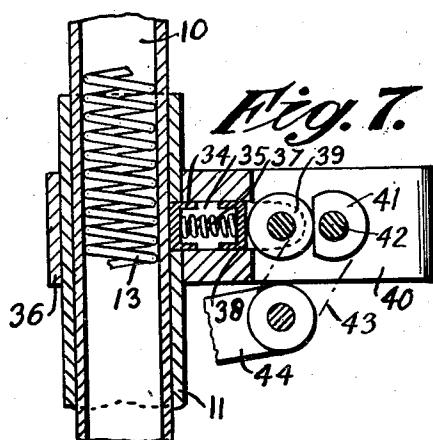


Fig. 5.



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APPARATUS FOR DELIVERING ARTICLES

Application filed February 20, 1930, Serial No. 430,007, and in Great Britain March 2, 1929.

The present invention has for its object to provide a simple and reliable mechanism for delivering successively periodicals or the like from an accumulation of them accommodated in a suitable compartment. The invention can be used with a coin freed mechanism whereby upon the insertion of a predetermined value of coinage in an appropriate part of the apparatus the mechanism will be freed for delivering one periodical from a stack of periodicals within the compartment.

My invention is broadly characterized in that the articles to be delivered are accommodated in a compartment and are engaged successively by an endless band or a reciprocating sliding member adapted in one direction of its movement to be forced between the uppermost pair of a stack of articles to be delivered whereby the uppermost article becomes supported by the sliding member, and in the other direction of its movement to be projected with the said uppermost article outside the said compartment, means being provided for moving the stack of articles a distance equal to the thickness of one article upon each delivery of an article whereby the articles are successively fed to the plane at which they are engaged by said reciprocating member for delivery outside the said compartment.

The said reciprocating member is preferably a flat tray or platen operating in a horizontal plane and reciprocating through a slot in one wall of said compartment, the edges of the tray parallel with its direction of movement being raised to form abutments for the corresponding edges of the article being delivered. The compartment may be a box accommodating the whole of the mechanism or it may be constituted by a panel containing the said slot and located in a wall of a bookstall or shop where an attendant can readily replenish the stack when required. However, it is preferred for the apparatus to be self-contained.

The stack of books, folded newspapers or other articles it is desired to deliver are mounted in a neat stack upon the upper surface of a suitable platform which is mounted

to move upwards by a succession of short movements and for such purpose is guided and loaded in any suitable manner. For instance it can be arranged to slide along vertical guides and be connected by suitable ligatures to a depending weight, or it can be carried by a vertical pillar slidable in a telescopic manner in a fixed vertical sleeve accommodating a coiled compression spring urging the pillar upwards.

A suitable abutment normally engaging the uppermost article of the stack of articles predetermines the position of the uppermost article and this abutment is arranged to be moved automatically at the appropriate moment to enable the reciprocating tray to slide under the uppermost article to receive it for delivery upon the return movement of the tray, the said abutment being automatically returned to its normal position as the uppermost book or other article is delivered so as to again predetermine the position of the next article in succession to be delivered. In advance of, or simultaneously with the inward movement of the tray to engage the uppermost article a suitable device is brought into operation to prevent any movement of the said platform until the said abutment consequent upon the removal of the uppermost of the articles is returned to its normal position, whereupon the platform is automatically released to enable it to move upwards under the influence of the said suspended weight or coiled compression spring until the uppermost article abuts against the said abutment. This restraining device may be a friction brake type of device operating on the said slidable pillar carrying the platform and normally out of operation but brought automatically into operation upon the commencement of actuating the apparatus to deliver the desired article.

The apparatus can be manually or electrically operated and is preferably provided with any suitable coin release mechanism necessitating the insertion of a predetermined value of coinage before the apparatus can be operated. In order to avoid complications in description I have refrained from showing a coin release mechanism or an elec-

trically operated prime mover as there are available many suitable devices for this purpose.

In order that my invention may be clearly understood and readily carried into effect, I have appended hereto a sheet of drawings illustrating for example a manually operated self-contained apparatus for successively delivering articles from a stack, and 10 wherein:—

Fig. 1 is a perspective view showing a suitable configuration of outer casing accommodating the mechanism of the apparatus.

15 Fig. 2 is a part sectional front elevation view of the operating mechanism.

Fig. 3 is a side elevation view of Fig. 2 showing the normal condition of the operating mechanism.

20 Fig. 4 is a broken side elevation view showing the first stage of operation of the mechanism.

Fig. 5 is a broken side elevation view 25 showing the stage in the operations at which the reciprocating tray picks up the uppermost article of the stack of articles.

Fig. 6 is a detail perspective view showing a suitable device for regulating the movement of the abutment which predetermines 30 the position of the uppermost of the stack of articles, and

Fig. 7 is a detail sectional elevation view 35 to a larger scale showing a suitable form of friction device for restraining movement of the platform supporting the stack of articles during the delivery of an article.

Referring to the drawings the operating mechanism is shown as accommodated in a box-like casing 1 which can be supported on 40 suitable feet 2. The various parts of the mechanism receive their operation from a main shaft 3 which is axially rotated in suitable bearings 4 when it is desired to deliver an article from a stack of articles 5. The desired rotation of the shaft 3 can be effected 45 by a lever 6 secured at one end to the shaft 3 and carrying a lateral handle 7 at its free end projecting through a slot 8 in the casing 1.

50 The stack 5 of books or other articles is supported upon a platform 9 carried by the upper end of a vertical post 10 slidable in a telescopic manner in a fixed sleeve 11 which can be provided with a flange 12 at its lower 55 end whereby it can be bolted to the base of the casing 1. A strong coiled compression spring 13 accommodated in the sleeve 11 and also preferably in the post 10 urges the platform 9 with its load of books or other articles 5 upwards against a normally stationary abutment 14 which is so located that when the uppermost book or other article abuts against it the said book or other article is in alignment with and approximately the

60 same plane as a plate 15 mounted to recip-

rocate through an opening 16 in the front wall of the casing 1 along guides 17.

The plate 15 is normally located with its rear edge nearly touching the front edge of the uppermost book or other article 5 and when the shaft 3 is rotated by a rearward movement of the handle 7 the plate 15 is forced beneath the front edge of the uppermost article 17a and ultimately between such uppermost article and the one immediately beneath it until the plate reaches the position shown in Fig. 5, in which position it supports the uppermost article and has a slight clearance from or only a very light contact with the article immediately beneath it. In order to deliver the article now supported by the plate 15 the shaft 3 is rotated in the reverse direction by returning the handle 7 to its normal position, when the plate 15 is protruded through the opening 16 so that the book or other article carried by it can be removed.

80 The sliding plate 15 can be operatively connected to the shaft 3 by a pair of arms 18 extending from the shaft and links 19 connecting these arms to lugs 20 depending from the plate 15.

When dealing with periodicals or magazines their flexibility can be utilized to assist 95 in introducing the plate 15 between the uppermost pair for which purpose the abutment 14 is forced slightly downwards and rearwards along the uppermost book until the book has puckered up as shown in Fig. 4 a sufficient amount to enable the plate to 100 slide under the uppermost book when the abutment 14 is raised clear of the stack of books as shown in Fig. 5.

105 The abutment 14 is preferably a block of rubber formed with arcuate edges as shown so that it does not injure the articles 5 and is fixed to the free end of an arm 21 extending downwards from the upper end of a crank 22 fixed to a transverse shaft 23 free to rotate in suitable fixed bearings 94. The shaft 23 is connected for rotation to the shaft 3 by a crank 25 at one end and a connecting rod 26 pivoted to a crank 27 fixed to the shaft 3.

110 The abutment 14 is maintained in contact with the uppermost book and forced along it to obtain the puckering action as above described for the desired period by forming a lateral projection 28 (see more particularly Fig. 6) on the arm 21, this projection 28 normally residing in juxtaposition to the front edge of a horizontal lateral extension 29a of a pawl 29 pivoted to a fixed bracket 30 by a pin 31. The pawl 29 is prevented from moving upwards from its normal position by reason of the engagement of the lateral extension 29a with the lower edge of the bracket 30 consequently when the sliding plate 15 is urged inwards the lateral projection 28 carried by the arm 21 must slide 115 under the pawl 29, the time taken for the 120

125 pawl 29 to move downwards being sufficiently great to insure that the uppermost book 5 is 130

amount of movement required for the projection 28 to clear the pawl 29 being that required to enable the plate 15 to enter between the uppermost pair of books 5 after which the projection 28 trips over the pawl 29 and strikes the lower edge 30a of the bracket 30 which is inclined rearwardly upwards to permit the abutment 14 to rise clear of the uppermost book under the influence of a coiled tension spring 32 connected to the arm 21 and a fixed bracket 32a. The rear edge of the lateral extension 29a of the pawl has a good clearance from the lower edge of the bracket 30 therefore it will be apparent that upon the return or delivery movement of the plate 15, the lateral projection 28 of the arm 21 can slide between the lower edge of the bracket 30 and the pawl 29, a coiled tension spring 33 ensuring the pawl 29 at the completion of the sequence of operations being returned to its normal position.

It is desirable during the operations of selecting and delivering the articles to prevent any movement of the platform 9 under the influence of the spring 13, but to release the platform for such movement immediately the plate 15 is projected through the opening 16 in order to bring the remaining uppermost article against the abutment 14 ready for a recommencement of the sequence of operations. For this purpose I provide a device with the sleeve 11 which upon commencing to operate, the apparatus is brought into operation to act as a brake on the post 10 to restrain its movement. The device is more clearly shown in Fig. 7 and consists of a friction shoe 34 slidable in a radial passage 35 in a collar 36 surrounding the sleeve 11 and normally engaging the post 10 under the slight pressure of a coiled compression spring 37 normally in the extended position and located between the shoe 34 and a like member 38 carrying a roller 39 disposed between the limbs of a bifurcated extension 40 of the collar 36. The roller 39 is pressed by the spring 37 against a cam like member 41 fixed in a spindle 42 mounted across the limbs of the bifurcation 40 and adapted to be rotated by the movement imparted to a limb 43 radiating from it and connected by a further link 44 to a crank 45 fixed to the shaft 3. Normally the smallest radius of the cam like member 41 contacts with the roller 39, consequently immediately the apparatus is set into operation the coiled spring 37 is set under compression and the brake shoe 34 applies sufficient pressure against the post 10 to prevent it from moving during the desired period. To obtain a quick operation of this brake device the cam like member 41 normally presents a straight segmental edge to the roller 39 as shown in Fig. 7, the remainder of the periphery of the member 41 being circular and concentric with its spindle 42.

It will be apparent that the invention can

be adapted to the delivery of packets of articles other than books and the like particularly packets of stationery, handkerchiefs and other flexible articles.

I claim:

1. Apparatus for delivering articles comprising in combination a compartment in which the articles to be delivered are accommodated, a reciprocating sliding member adapted in one direction of its movement to be forced between the uppermost pair of a stack of articles to be delivered whereby the uppermost article becomes supported by the sliding member and in the other direction of its movement to be projected with the said uppermost article outside the container compartment, means for moving the stack of articles a distance equal to the thickness of one article upon each delivery of an article whereby the articles are successively fed to the plane at which they are engaged by said reciprocating member for delivery outside the said compartment, said means comprising a platform adapted to support the stack of articles, means adapted to move the platform to raise the stack, means to prevent movement of the platform during the displacement of the reciprocating sliding member across the top of the stack, said means comprising a compression spring loaded brake shoe in which its spring is normally extended, means being provided for placing said spring under compression automatically upon operation of the apparatus to set the reciprocating plate into action.

2. Apparatus for delivering articles comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to support a stack of articles, an abutment adapted to engage the stack, means for forcing said platform towards the abutment against which the uppermost article on the stack is pressed so as to present one edge to one edge of the reciprocating plate, means for forcing said plate between the uppermost pair of articles in a stack of articles supported on said platform in one direction of movement of the plate, and means whereby said abutment is restrained against movement away from the stack until the sliding plate is located between the uppermost pair of articles but is moved clear of the stack of articles thereafter until the plate is returned to deliver the article above it.

3. Apparatus for delivering articles comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to support a stack of articles, an abutment adapted to engage the stack, means

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for forcing said platform towards the abutment against which the uppermost article on the stack is pressed so as to present one edge to one edge of the reciprocating plate, 5 means for forcing said plate between the uppermost pair of articles in a stack of articles supported on said platform in one direction of movement of the plate, means whereby said abutment is restrained against movement 10 away from the stack until the sliding plate is located between the uppermost pair of articles but is moved clear of the stack of articles thereafter until the plate is returned to deliver the article above it, and means to 15 prevent movement of the platform during the displacement of the reciprocating sliding member across the top of the stack.

4. Apparatus for delivering articles comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to support a stack of articles, an 20 abutment adapted to engage the stack, means for forcing said platform towards the abutment against which the uppermost article on the stack is pressed so as to present one edge to one edge of the reciprocating plate, means 25 for forcing said plate between the uppermost pair of articles in a stack of articles supported on said platform in one direction of movement of the plate, means whereby said abutment is restrained against movement 30 away from the stack until the sliding plate is located between the uppermost pair of articles but is moved clear of the stack of articles thereafter until the plate is returned to deliver the article above it, and means to 35 prevent movement of the platform during the displacement of the reciprocating sliding member across the top of the stack, said means comprising a compression spring loaded 40 brake shoe in which its spring is normally extended, means being provided for placing said spring under compression automatically upon operation of the apparatus to set the reciprocating plate into action.

5. Apparatus for delivering articles comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition, 55 adapted to support a stack of articles, an abutment adapted to engage the stack, means for forcing said platform towards the abutment against which the uppermost article on the stack is pressed so as to present one edge to one edge of the reciprocating plate, means 60 for forcing said plate between the uppermost pair of articles in a stack of articles supported on said platform in one direction of movement of the plate, means whereby said abutment is restrained against movement 65

away from the stack until the sliding plate is located between the uppermost pair of articles but is moved clear of the stack of articles thereafter until the plate is returned to deliver the article above it, means to prevent movement of the platform during the displacement of the reciprocating sliding member across the top of the stack, a shaft connected for rotation to an operating handle or other suitable prime mover, which shaft is operatively connected to said sliding plate, said abutment and said means for preventing movement of the platform.

6. Apparatus for delivering articles comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to support a stack of articles, 70 said platform being carried on the upper end of a post slideable in a fixed guide with which is associated spring means, for urging the platform towards an abutment against which the uppermost article on the stack is pressed so as to present one edge to one edge of the reciprocating plate, means for forcing said plate between the uppermost pair of articles in a stack of articles supported on said platform in one direction of movement of the plate, and means whereby said abutment is restrained against movement away from the stack until the sliding plate is located between the uppermost pair of articles but is moved clear of the stack of articles thereafter until the plate is returned to deliver the article above it.

7. Apparatus for delivering articles comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to support a stack of articles, said platform being carried on the upper end of a post slideable in a fixed guide with which is associated a spring for urging the platform towards an abutment, against which the uppermost article on the stack is pressed so as to present one edge to one edge of the reciprocating plate, means for forcing said plate between the uppermost pair of articles in a stack of articles supported on said platform in one direction of movement of the plate, means to prevent movement of the platform during the location of the reciprocating sliding member across the top of the stack, said means comprising a compression spring loaded brake shoe in which its spring is normally extended, means being provided for placing said spring under compression automatically upon operation of the apparatus to set the reciprocating plate into action, and means whereby said abutment is restrained against movement away from the

stack until the sliding plate is located between the uppermost pair of articles but is moved clear of the stack of articles thereafter until the plate is returned to deliver 5 the article above it.

8. Apparatus for delivering articles comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to support a stack of articles, said platform being carried on the upper end of a post slidably in a fixed guide with which is associated 10 a coiled compression spring for urging the platform towards an abutment against which the uppermost article on the stack is pressed so as to present one edge to one edge of the reciprocating plate, means for forcing said 15 plate between the uppermost pair of articles in a stack supported on said platform in one direction of movement of the plate, means to prevent movement of the platform during the location of the reciprocating sliding 20 plate member across the top of the stack, said means comprising a compression spring loaded brake shoe in which its spring is normally extended, means being provided for placing said spring under compression automatically upon operation of the apparatus to set the reciprocating plate into action, means whereby said abutment is restrained against movement away from the stack until the sliding plate is located between the uppermost 25 pair of articles but is moved clear of the stack of articles thereafter until the plate is returned to deliver the article above it, a shaft connected for rotation to an operating handle or other suitable prime mover, 30 which shaft is operatively connected to said sliding plate, said abutment and said means for preventing movement of the platform.

9. Apparatus for delivering articles, such as periodicals, newspapers and the like comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to 35 support a stack of articles, an abutment engaging the stack, which is forced thereagainst by a spring acting vertically upwards below the platform, said spring being contained within a telescopic post carrying the platform, the lower part of said post being fixed, a cam carried on a fork secured on the fixed part of the post, a spring loaded brake shoe adapted to be pressed onto the movable part of the post by rotation of the 40 cam to hold the said movable part against movement, means for restraining said abutment against movement until the sliding plate is in a suitable location, and means for actuating said sliding plate, said cam and 45 said abutment in timed relation.

10. Apparatus for delivering articles, comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to support a stack of articles, an abutment engaging the stack, which is forced thereagainst by a spring acting vertically upwards below the platform, said spring being contained within a telescopic post carrying the platform, the lower part of said post being fixed, a cam carried on a fork secured or formed on the fixed part of the post, a spring loaded brake shoe adapted to be pressed onto the movable part of the post by rotation of the cam to hold the said movable part against movement, means for restraining said abutment against movement until the sliding plate is in a suitable location, a shaft connected for rotation to an operating handle, which shaft is operatively connected to said sliding plate, said cam and said abutment to operate same in timed relation.

11. Apparatus for delivering periodicals, newspapers or like flexible articles comprising in combination a compartment or the like in which the articles to be delivered are accommodated, a reciprocating plate slidably mounted to move through a partition, a platform on one side of said partition adapted to support a stack of articles, an abutment engaging the stack which is forced thereagainst by a spring acting vertically upwards below the platform, an operating shaft connected to a handle or other prime mover, a reciprocating member to the shaft and carrying the abutment, said reciprocating member being adapted to be moved in one direction so that a part of it rides over a guiding surface inclined rearwardly away from said platform but containing a relatively movable pawl member over which the said part of the said abutment carrying member rides during the initial movement of the reciprocating plate into the stack of articles, a telescopic post having a fixed lower portion provided with an upwardly acting spring carrying the stack supporting platform, a cam actuated spring pressed brake shoe mounted on the fixed part of said post and adapted to engage the movable part to prevent motion thereof, a lever and link system to effect the rotation of the cam upon the rocking of the actuating shaft, and connections to said operating shaft whereby the said sliding plate is reciprocated when the shaft is rocked, whereby the abutment, the sliding plate, the cam, and the stack carrying platform are adapted to move in timed relation.

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