

Oct. 2, 1951

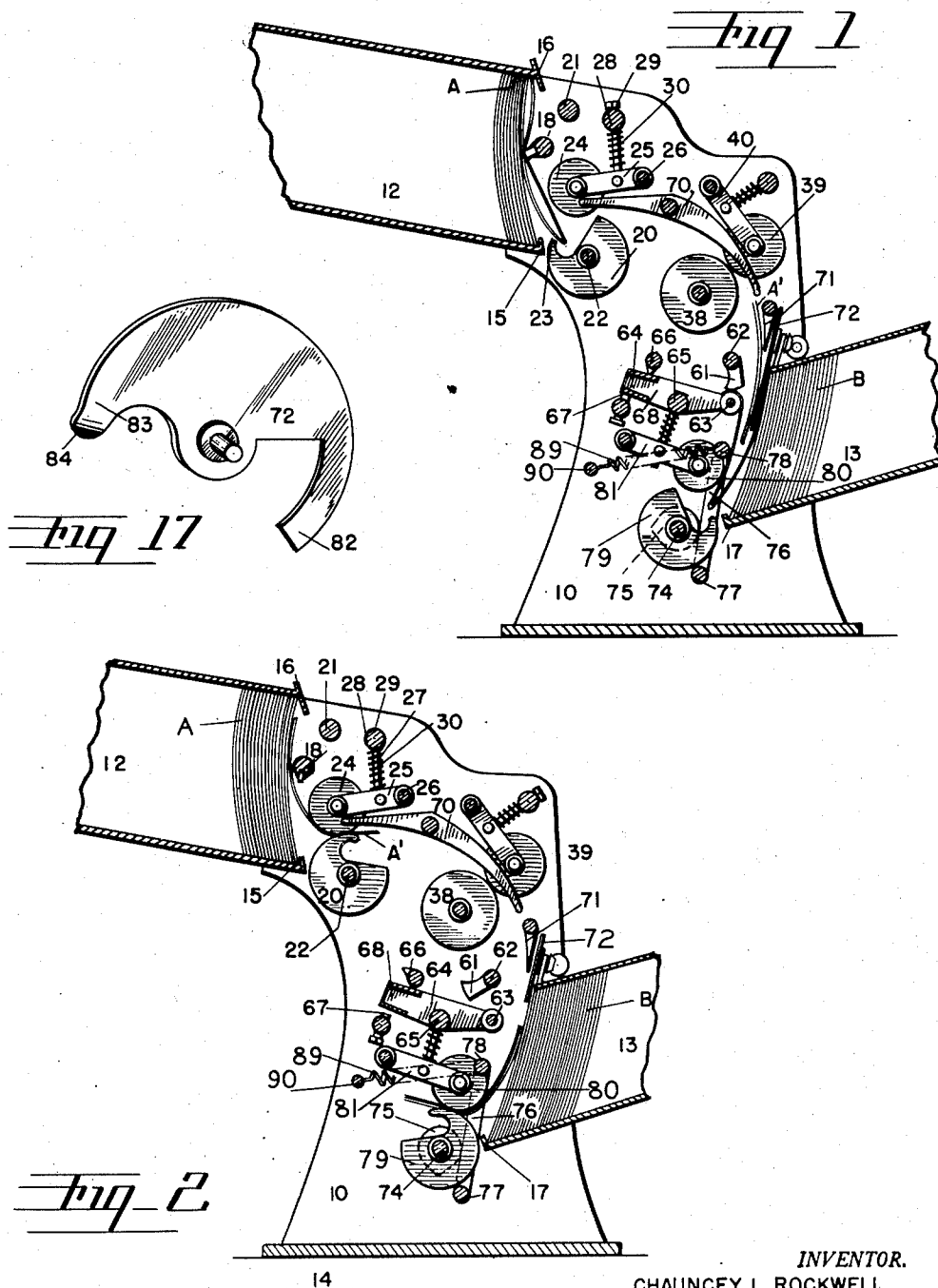
C. L. ROCKWELL

2,569,692

NEWSPAPER INSERTING MACHINE

Filed Oct. 8, 1949

5 Sheets-Sheet 1



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NEWSPAPER INSERTING MACHINE

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Fig 12

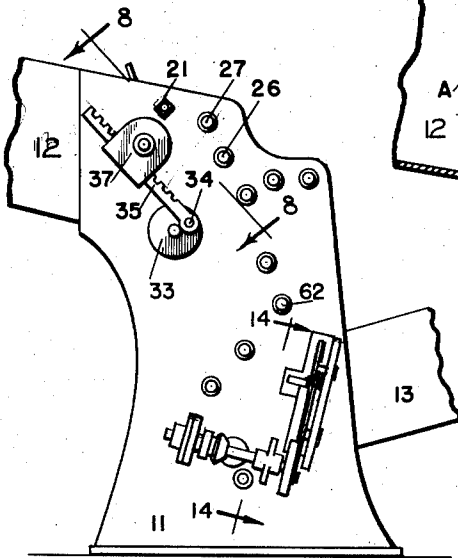


Fig 3

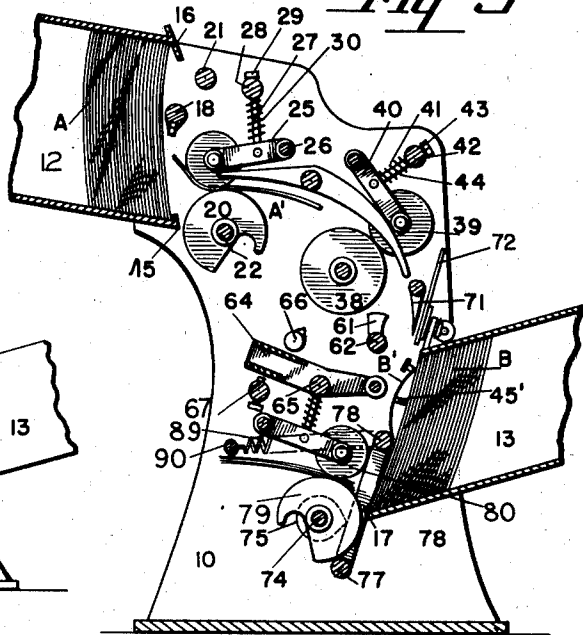


Fig 13

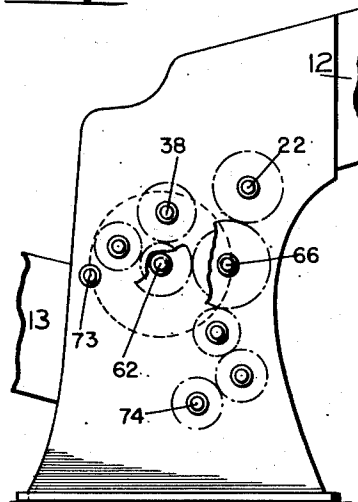
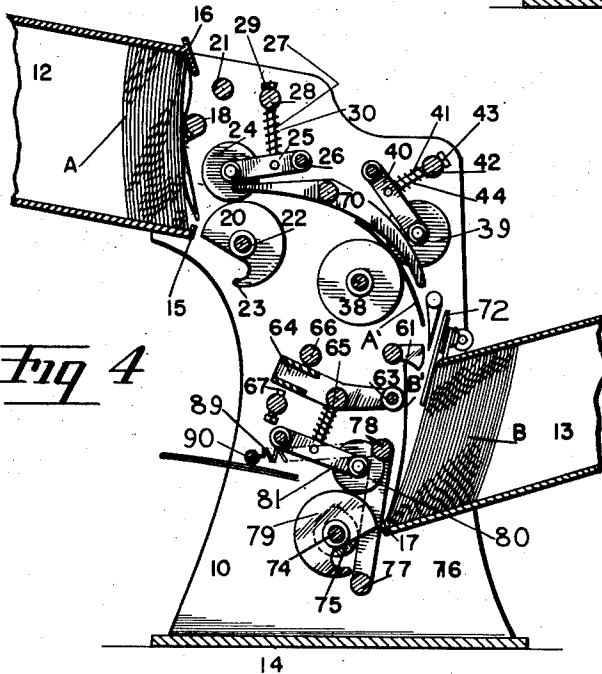


Fig 4



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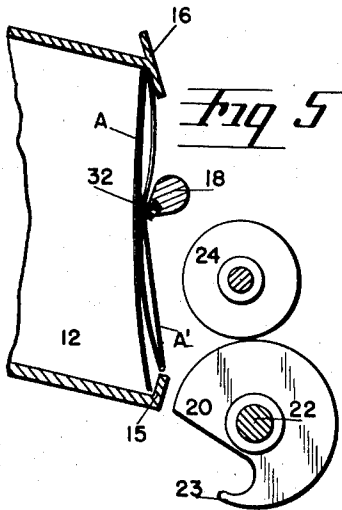
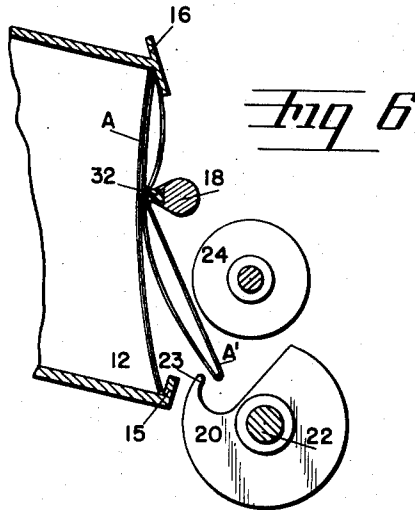
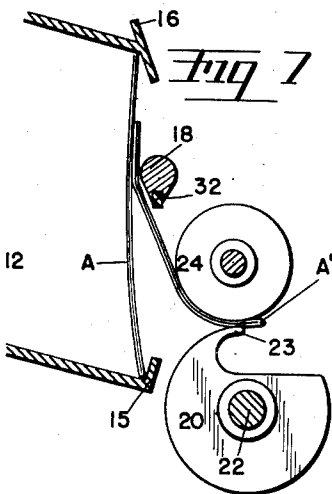
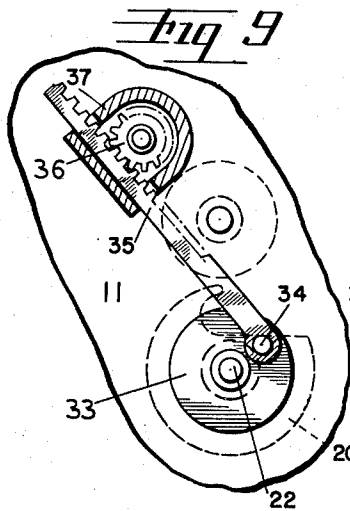
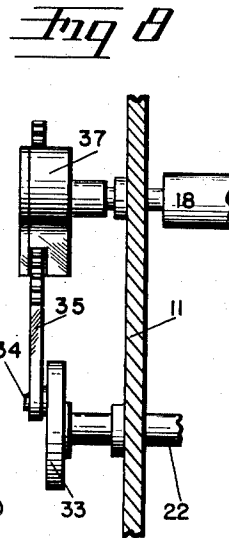
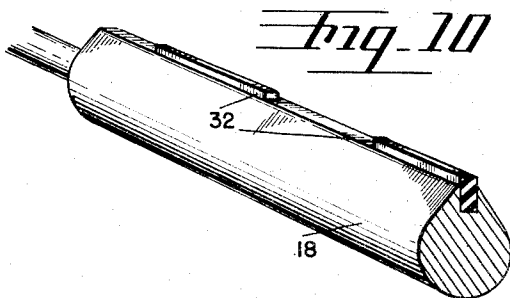
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5 Sheets-Sheet 3



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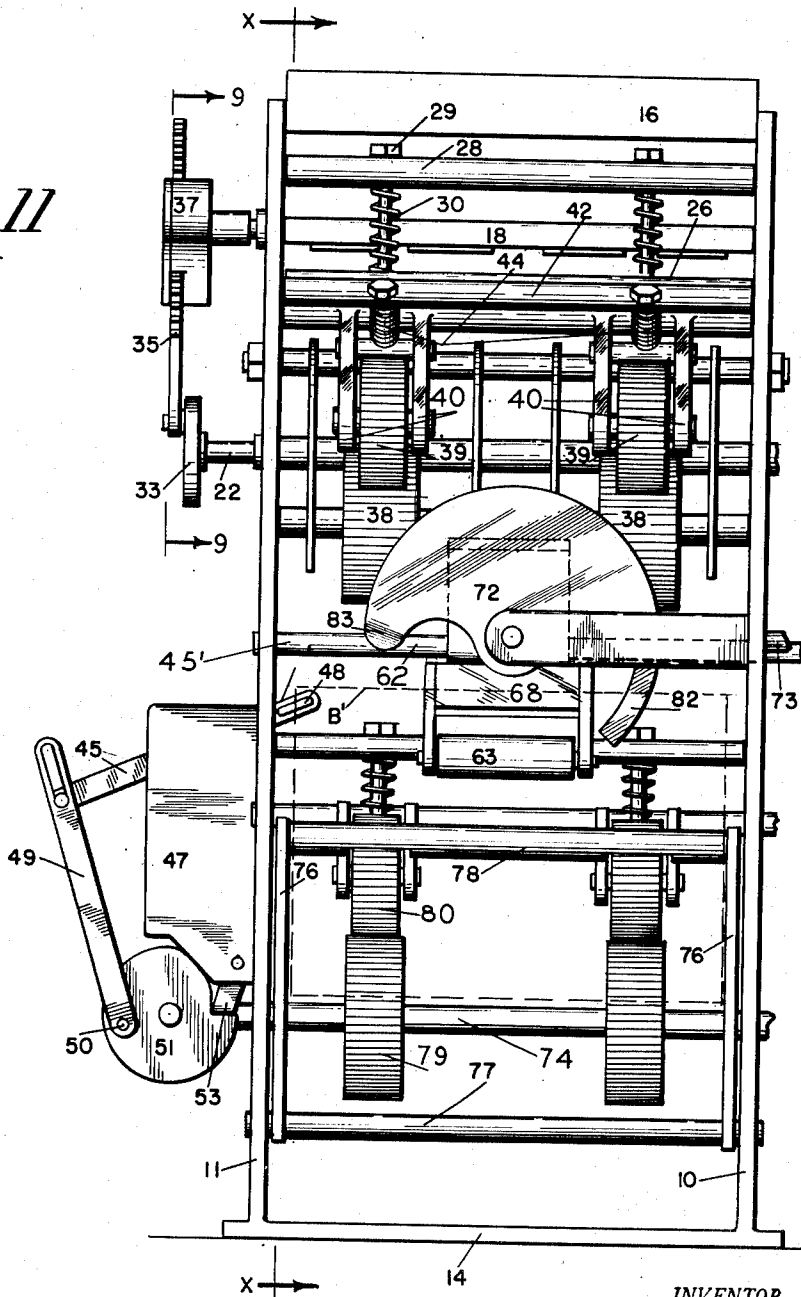
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Fig. 11



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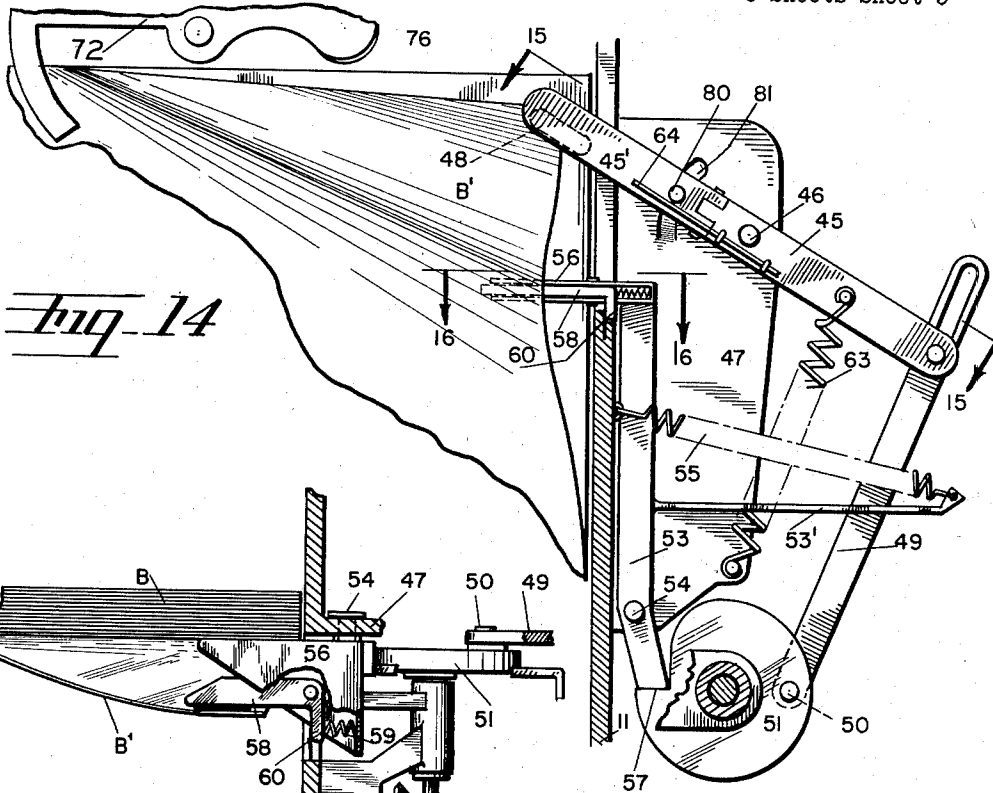


Fig. 14

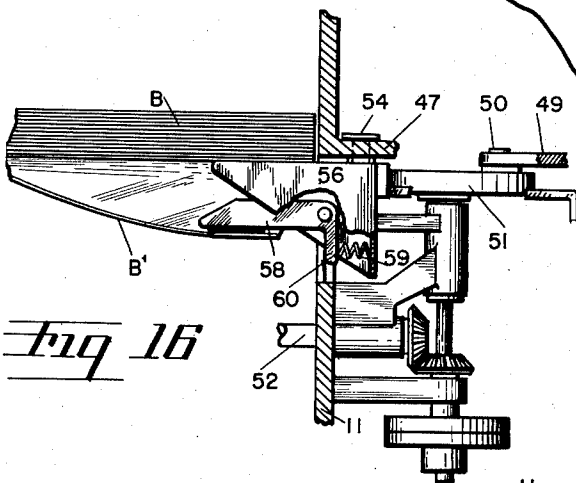


Fig. 16

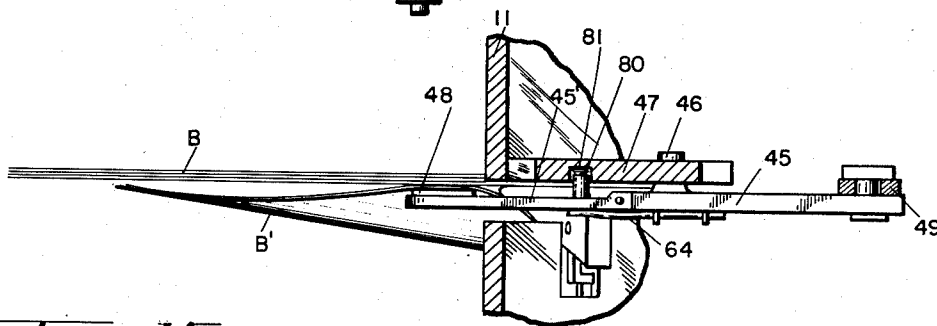


Fig. 15

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UNITED STATES PATENT OFFICE

2,569,692

NEWSPAPER INSERTING MACHINE

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of one-half to The Oregonian Publishing Com-
pany, Portland, Oreg., a corporation of Oregon

Application October 8, 1949, Serial No. 120,242

14 Claims. (Cl. 270—57)

1

This invention relates to means for inserting one section of a newspaper into another section, as, for example, inserting a magazine section or comic or rotogravure section into a main section or latest current news section.

It is customary with metropolitan newspapers in particular to issue larger Sunday editions which include special sections in addition to the regular current news section. Also it is customary in such cases to have the special sections printed considerably in advance of the issue date which they bear and to have them in readiness for insertion into the main or current news section as soon as the latter comes off the press. In the case of Sunday editions this inserting of the Sunday feature sections in the current news section must be done late Saturday night or early Sunday morning and consequently, since there is only a limited amount of time in which this can take place, it is necessary with newspapers having a large circulation to have the work done as rapidly as possible.

Although several machines have been invented for performing this work of inserting or "stuffing" one newspaper section into another, to the best of my knowledge such machines, for various reasons, have not proven entirely successful and as a result this work, to a large extent, is still being done by hand. Thus it is not unusual for a newspaper to employ a large special force on Saturday nights solely for the purpose of inserting or "stuffing" the special sections into the late news section in order to prepare the Sunday editions for delivery.

The object of the present invention is to provide an improved machine for performing this work of inserting one newspaper section into another.

Some machines which have previously been invented for such work attempt to employ air suction especially as a means for opening up a folded newspaper section preparatory for inserting another section into the same. The employment of air suction in this connection is not satisfactory chiefly because a high rate of operating speed can not be attained and also because of the difficulties encountered in regulating and controlling the air suction means. By way of further explanation I might mention that it is a well understood fact that air suction can not lift a sheet of paper from a tightly packed stack of paper until and unless air enters in between the sheet and the rest of the stack. Also the opening up of a folded newspaper section comprising several sheets is considerably more difficult with

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air suction than the moving of a single loose sheet.

Accordingly another object of the present invention is to provide an improved newspaper inserting machine in which the use of air suction means will be entirely avoided.

A related object is to provide an improved machine for inserting newspaper sections, which machine can be operated satisfactorily at a high rate of speed.

A further object of this invention is to provide a relatively simple and compact machine which will be capable of handling a considerable volume of work efficiently as well as rapidly, and which will require a minimum amount of attention and skill on the part of the machine operator.

These objects and other advantages I have been able to attain with my improved machine, with the various parts constructed, arranged and cooperating in the manner hereinafter described with reference to the accompanying drawings.

In the drawings:

Figs. 1, 2, 3 and 4 are sectional side elevations taken on line x—x of Fig. 11, but drawn to a smaller scale, and illustrating the general manner in which the machine operates;

Figs. 5, 6 and 7 are fragmentary diagrammatic sectional side elevations, corresponding in part to Fig. 1, but drawn to a larger scale, and illustrating the operation of the "pick-up" cams and oscillating cam roller in the first stages of the picking up of a newspaper section for insertion into an outer section;

Fig. 8 is a fragmentary sectional elevation taken on line 8—8 of Fig. 12, but drawn to a larger scale;

Fig. 9 is a sectional elevation taken on line 9—9 of Fig. 11;

Fig. 10 is an enlarged perspective view of the oscillating cam roller;

Fig. 11 is a more or less diagrammatic front elevation of the entire machine;

Fig. 12 is an elevation of the side of the machine taken from the left of Fig. 11, but drawn to a smaller scale;

Fig. 13 is a corresponding side elevation of the machine taken from the right of Fig. 11;

Fig. 14 is a fragmentary transverse sectional elevation taken on line 14—14 of Fig. 12, but drawn to a larger scale;

Fig. 15 is a section taken on line 15—15 of Fig. 14;

Fig. 16 is a section on line 16—16 of Fig. 14;

and

Fig. 17 is a view of the specially formed holding disc for outer or covering newspaper sections, showing the disc entirely separated from the rest of the mechanism.

Referring first to Figs. 1, 2, 3, 4 and 11, the frame of the machine, in which or on which the various parts and rotatable and movable members are supported, includes a pair of side plates 10 and 11 mounted on a suitable base 14, which side plates are rigidly held in parallel vertical position by suitable cross rods, of which one such cross rod 21 is shown in Figs. 1-4.

A delivery chute, indicated in general by the reference character 12, has its discharging end supported by the side plates in the upper part of the machine. The newspaper sections which are to be inserted or "stuffed" into the other sections, as, for example, the Sunday magazine sections, are delivered to the machine via this upper chute 12. By suitable well known means, which is not shown, and which need not be described since it does not constitute part of the present invention, these newspaper sections are delivered into the chute 12 with their horizontal or mid-page folds at the bottom, and are moved along the chute 12 from left to right, as viewed in Figs. 1 to 4, so that as fast as the sections are removed one by one from the delivery end of the chute by the machine their places will be taken by others during the operation of the machine. These newspaper sections are given the reference character A in Figs. 1 to 4. Flanges 15 and 16 at the bottom and top respectively of the delivery end of the chute 12 hold the newspaper sections A in the chute pending their removal serially by the machine.

Another similar chute 13, extending in the opposite direction, has its discharge end supported by the side plates 10 and 11 in the lower and opposite position as indicated in Figs. 1 to 4. Through the medium of this second chute 13 the other newspaper sections, for example, the main news sections, into which the previously mentioned sections A are to be inserted or "stuffed," are delivered to the machine. As in the case with the newspaper sections A for the upper chute 12, suitable means (not shown) causes the outer newspaper sections, designated by the reference character B in Figs. 1 to 4, to be delivered into chute 13 with their horizontal or mid-page folds at the bottom, and to be moved along in chute 13 from right to left (as viewed in Figs. 1 to 4). A flange 17, at the bottom of the delivery end of the chute 13, prevents the folded bottom ends of the newspaper sections B from being pushed from the chute 13 into the machine, and separate means, to be described later, restrain the upper portions of these sections B from moving into the machine except as each section in turn is taken up by the mechanism in the manner later explained.

A pair of "pick-up" cams 20 are keyed or otherwise secured to a driven shaft 22. These cams are identical in shape and size and are identically positioned. The "pick-up" cams 20 are specially shaped, their shape being clearly shown in Figs. 1 to 7, and these cams are each formed with a rim hook 23 extending into their cut-away portion, which rim hooks 23 are adapted to pick up a newspaper section coming into their path. The direction of rotation of these "pick-up" cams 20 is clockwise as viewed in Figs. 1 to 7 inclusive.

A pair of squeeze rolls 24 are mounted above and in vertical alignment respectively with the

"pick-up" cams 20. Each squeeze roll 24 is mounted at one end of a pivoted bracket 25, the brackets 25 being pivoted on a stationary bar 26 extending between the side plates 10 and 11. A pin 27 is secured to each bracket and extends upwardly from the bracket. The pins 27 extend through holes in the shaft 28 and are slidable up and down through the shaft 28. The upper end of each pin 27 is threaded and a nut 29, adjustably mounted on the top of each pin 27, limits the downward movement of the pin and thereby limits the downward swing of the bracket 25 when the squeeze roll is not contacting the periphery of the cam 20. A compression spring 30 is carried on each pin 27 and held under compression between the bracket 25 and the shaft 28. Thus these squeeze rolls 24 will engage and ride on the outer peripheries of the cams 20 as soon as the cams turn sufficiently to enable their circular peripheries to be engaged by the squeeze rolls, and the nuts 29 can be adjusted so that the squeeze rolls 24 will bear against the peripheries of the cams 20 with a desired limited amount of pressure so that a newspaper section after being brought into engagement with the "pick-up" cams 20 will be pulled along between the cams and their squeeze rolls as illustrated by the newspaper section A' in Figs. 2, 3 and 7. Preferably the peripheries of the cams 20 and their companion squeeze rolls 24 are knurled or roughened slightly to enable them to pull the newspaper sections along more easily.

In order to cause the bottom edge or fold of each newspaper section A to be moved out from the end of the chute 12 and positioned in the path of the rotating "pick-up" cams 20, as shown in Figs. 1 and 6, I provide a partially-rotating and oscillating cam roller 18 which is arranged and constructed in the special manner now to be described.

This cam roller 18 (see also Fig. 10), has a longitudinally-extending cam portion which preferably is provided with recesses, into which recesses surface-engaging elements 32 of rubber or any other suitable material can be inserted and secured. When these surface-engaging elements 32 are brought into contact with the surface of an adjacent newspaper section and the cam roller 18 is given a partial rotation in clockwise direction (as viewed in Fig. 5), the surface-engaging elements 32 will cause the outer portion of the newspaper section to be pulled a short distance upwardly. This upward pull on the paper will lift the bottom fold of the newspaper section up and out from the flange 15 and will swing the fold of the newspaper section into the path of the rotating "pick-up" cams 20 as illustrated by the newspaper section A' in Fig. 6. The rotating cams 20 will engage this portion of the newspaper section and press this portion against the squeeze rolls 24. When this takes place the newspaper section A' will then be pulled away from the chute 12 and from the next newspaper section in the chute 12 and will occupy the successive positions illustrated in Figs. 2, 3 and 4.

If, when the newspaper section A' is pulled away from the other newspaper sections in the discharging end of the chute 12 by the "pick-up" cams 20 and their associated rolls 24, the outer portion of the newspaper section A' were to be pulled over the surface-engaging elements 32 on the cam roller 18 the rubbing of the paper over the elements 32 might blur some of the printing on the paper and would at least cause some wear on the surface of the contacted paper. In order

to prevent this the movement of the oscillating cam roller 18 is so synchronized that as the newspaper section is seized and pulled by the "pick-up" cams 20 and their squeeze rolls 24, the oscillating roller 18, with its engaging elements 32, will move in counter-clockwise direction at such speed that the speed of movement of the engaging surfaces of the elements 32 will be the same as the speed with which the engaged paper moves. This counter-clockwise partial rotation of the cam roller 18 continues until the elements 32 have moved down far enough to no longer contact the surface of the paper. Thus by having the elements 32 move with respect to the paper at the same speed as the paper, until they no longer are in engagement with the paper, rubbing action between the elements 32 and the engaged paper surface is substantially eliminated. This is one of the special features of my invention. When the elements 32 have been rotated out of contact with the paper any slight sliding contact of the paper with the smooth cylindrical surface of the remaining portion of the roller 18 will not produce any appreciable marring or rubbing of the paper.

The means by which this synchronized oscillating movement of the roller 18 with respect to the rotation of the "pick-up" cams 20 is obtained is shown in Figs. 8 and 9, and the operation is illustrated most clearly in Figs. 5, 6 and 7. The driven shaft 22, to which the "pick-up" cams 20 are secured, has a disc 33 attached to one end beyond the side plate 11 of the machine. The disc 33 carries a crank pin 34 to which a rack bar 35 is attached. The teeth of the rack bar engage a pinion 36 secured to an outer end of the shaft of the cam roller 18. The rack bar 35 slides in a channel provided in a housing 37 which is rotatably mounted on the shaft of the cam roller 18 and which housing encloses the pinion 36. The size of the pinion 36, the distance of the crank pin 34 from the axis of the disc 33, and the position to which the "pick-up" cams 20 are secured on end shaft 22, are so arranged that the elements 32 will move upwardly in clockwise direction (as viewed in Fig. 5), when the cut-out portion of the pick-up cams are approaching the squeeze rolls 24. This upward movement of the elements 32, as previously mentioned, by pulling the opposed face of a newspaper section A' upwardly, lifts the horizontal fold at the bottom of the newspaper section out into the path of the rim hooks 23 of the "pick-up" cams 20. After this has taken place and the newspaper section A' is in the position illustrated in Fig. 6, the elements 32 cease their upward movement while the rim hooks 23 approach the squeeze rolls 24. Before starting on its downward stroke, the rack bar 35 acts to tilt the cam roller 18 in counter-clockwise direction and this preliminary downward movement of the elements 32 allows sufficient slack to develop in the outer portion of the newspaper section A' between the elements 32 and the bottom fold, to enable all the sheets of the newspaper section A' to lie in contact with each other as the rim hooks 23 proceed to pinch the bottom fold against the squeeze rolls 24. Then the rack bar 35 starts its downward travel causing the elements 32 to move downwardly and rapidly in counterclockwise direction from the position of Fig. 6 to the position of Fig. 7. The elements 32 during this stage move at substantially the same speed as the newspaper section, as previously mentioned, until the elements 32 reach their low-

est position where they are out of contact with the newspaper section.

When the newspaper section has nearly completed its travel between the cams 20 and the squeeze rolls 24 it is engaged by a pair of driven rolls 38 and their cooperating squeeze rolls 39 (Figs. 3 and 4). While the driven rolls 38 are of approximately the same diameter as the "pick-up" cams 20, the shaft to which the rolls 38 are secured and the shaft to which the "pick-up" cams 20 are secured are connected by gear means in such manner that the surface speed of the rolls 38 will be considerably greater than that of the cams 20, so that the travel of the newspaper section A' will be speeded up to enable the section A' to be dropped into the opened up outer newspaper section B' at the proper moment.

The squeeze rolls 39, like the squeeze rolls 24, are mounted on the ends of pivoted brackets 40. Pins 41, secured to the brackets 40, are longitudinally slidable in holes through a shaft 42 and have nuts 43 mounted on the upper threaded ends beyond the shaft 42. A coil spring 44 is mounted on each pin 41 and is held under slight compression between the bracket 40 and the shaft 42, enabling the pressure of the squeeze rolls 39 against the driven rolls 38 (and against the newspaper section A' being moved along by the rolls 38) to be adjusted as desired.

A plurality of guides 70 (Figs. 1 to 4) aid in directing the course of the newspaper section A' to and past the rolls 38 and their squeeze rolls 39, and further guides 71 direct the newspaper section downwardly to enable the newspaper section A' to drop into an outer newspaper section B' which is delivered from the lower chute 13 and which is opened up to receive the newspaper section A' in a manner now to be explained.

A push-bar 45 (Figs. 11, 14 and 15), extending in a transverse plane and pivoted on a pin 46 mounted on a bracket 47, which bracket is secured on the outer face of the side plate 11, has a hinged inner end 45' extending a short distance into the machine and so positioned and located as to contact an upper corner along a vertically folded edge of an adjacent face of an outer newspaper section B' to be removed from the delivery end of the chute 13. An engaging element 48, of rubber or other suitable material, is mounted on the adjacent face of the inner end portion 45' so as to be capable of frictional engagement with the upper corner and the adjacent face of the newspaper section B'. The outer end of the pivoted bar 45 (Fig. 14) is connected by means of a slotted link 49 to a rotated disc 51, the slotted link 49 being attached to the disc 51 by a crank pin 50. A coil spring 63 (Fig. 14) tends to pull the outer end of the bar 45 downwardly to the extent permitted by the link 49 but the rotation of the disc 51 and upward movement of the link 49 moves the bar 45 against the force of the spring 63. A flat spring 64 normally holds the inner end 45' of the bar 45 in the same plane as the main portion of the bar 45. The disc 51 (see also Fig. 16) is connected by suitable bevel gears to a driven shaft 52 and the shaft 52 is connected at its opposite end to a gear train so that the shaft 52 is driven from the single main drive for the entire machine.

The hinged inner end 45' of the bar 45 carries a pin 80 (Figs. 14 and 15), the outer end of which rides in a curved groove 81 formed in the bracket 47. The bottom of the groove 81 throughout most of its extent is parallel to the face of the bracket 47, but at the lower end of the groove

the bottom slopes rather abruptly towards the face of the bracket 47 as viewed in Fig. 14. Thus when the hinged inner end 45' is moving downwardly (thus in counter-clockwise direction as viewed in Fig. 14), and approaches the end of its downward travel, the pin 80, bearing against the bottom of the groove 81, pushes the hinged end 45' against the force of the spring 64 and out from the plane in which the remaining or main portion of the bar 45 moves. The reason for this will be explained later.

An arm 53 (Fig. 14) is pivoted on a stub shaft 54 mounted on the bracket 47, the arm 53 being spaced from the bracket 47 by a suitable spacing sleeve (not shown) so as to move in a plane parallel to the face of the bracket 47 (see also Fig. 16). The disc 51 (Fig. 14) has a peripheral cam surface against which the bottom end of the arm 53 is held by means of the coil spring 55, one end of the coil spring being attached to the side plate 11 and the other end of the coil spring being attached to the outer end of a bracket arm 53' rigidly mounted on the arm 53 and extending outwardly from it, the outer tip being bent at a suitable angle to keep the coil spring spaced from the arm 53. An inwardly extending wedge-shaped finger 56 (Fig. 16) is mounted on the upper end of the arm 53. The peripheral cam surface of the disc 51 is formed with a sudden drop or shoulder 57 (Fig. 14) and when the cam-follower lower end of the arm 53 passes over this shoulder 57 (the disc 51 being rotated in counter-clockwise direction as viewed in Fig. 14), the finger 56 is suddenly thrust inwardly through a suitable opening provided in the side plate 11, the finger 56 then occupying the position illustrated in Figs. 14 and 16.

A supplemental finger 58 (shown most clearly in Fig. 16) is pivotally mounted in the main finger 56, as shown in Fig. 16. This supplemental finger 58 is in the form of a bell crank and is normally held in closed position by a compression spring 59. An engaging portion 60 of the side plate 11 is so arranged as to engage the projecting arm of the supplemental finger 58 as the arm 53 and the main finger 56 reach the limit of their inward movement. The purpose of the main finger 56, supplemental finger 58 and bar 45 with its engaging element 48 will be explained presently.

A driven shaft 62 has a flange 61 (Figs. 1 to 4), with an outer curved surface which is so arranged as to be capable of contacting and partially rotating a freely-mounted roller 63 mounted at one end of a pivotally-supported arbor 64. The arbor 64 is pivotally supported at its central point on a shaft 65 and is held between an adjustable stop 67, carried in a cross bar, and a small cam secured on a rotating shaft 66. The cam of shaft 66 engages a flat spring 68 in a recess in the corresponding end of the arbor 64. Both the shaft 66 and the shaft 62 are driven by means of suitable gears from the main drive of the machine and are so synchronized with respect to each other that the cam on shaft 66 will push the engaged end of the arbor 64 down (and thus raise the roller 63) a slight distance as the flange 61, rotating in a clockwise direction (as viewed in Figs. 1 to 4) approaches the roller 63.

A divider plate 72, of the irregular shape shown in Figs. 11 and 17, is secured on a stub shaft above the inner end of the chute 13 and mounted for rotation in an inclined plane substantially parallel to the newspaper sections B in the chute 13. The shaft for the disc 72 is connected by

bevel gears to a shaft 73 (Fig. 11) which in turn is driven from the main drive of the machine. The divider plate 72 has a long finger-like peripheral extension 82 at one side and a shorter peripheral extension 83 on the opposite side. The latter shorter extension terminates in a slight outwardly-curved lip 84.

A driven shaft 74 (Figs. 1 to 4) carries a pair of cams 75 inside the side plates 10 and 11 respectively and these cams 75 engage a pair of arms 76 respectively which are hinged at the bottom ends on a cross rod 77 and which support a press bar 78 at their top ends. A coil spring 89, having one end connected to the center of the press bar 78 and the other end anchored to a cross rod 90, holds the arms 76 against their cams 75.

The manner in which the newspaper sections B are opened up one by one in order to receive the newspaper sections A and the manner in which each opened newspaper section B' in turn is handled and removed from the end of the chute 13 and finally delivered with the corresponding inserted section A' in place, can now be briefly described with reference to Figs. 1, 3, 4, 11, 14, 15 and 16. The newspaper sections B have their horizontal folds on the bottom in chute 13, as previously mentioned, and their vertical folds are at the left, as viewed in Fig. 11. The line of the top edge of the newspaper sections B, as these sections are positioned to be opened up, is indicated by the broken line B' in Fig. 11.

At the start of this part of the operation, the divider plate 72 is in raised position entirely out of contact with the newspaper section B' to be opened up and discharged from the chute 13 except for the extended finger portion 82. The outer corner of this newspaper section B' rests against the inner end 45' of the bar 45. The arms 76 will have been moved against the force of spring 79 by their cams 75 and caused the press bar 78 to bear against the adjacent face of the newspaper section B'. The inner end 45' of the bar 45 now starts moving downwardly a short distance pushing the corner of a portion of the newspaper section B' with it and causing the same to bulge outwardly into the machine between the bar end 45' and the press bar 78, as illustrated in Figs. 3 and 14. The finger 56, carried by the arm 53, next moves inwardly quickly and the wedge-shaped portion of the finger 56 moves into the bulge in the newspaper section. As the finger 56 reaches the end of its inward movement the supplemental finger 58 is engaged by the element 60 which causes the supplemental finger to move out quickly with respect to the main finger 56 as illustrated in Fig. 16 which increases the bulge in the corresponding portion of the newspaper section B' to the extent of pulling the bulged half of the section out from under the end 45' of the bar 45. As the inner end 45' of the bar 45 approaches the end of its downward travel, its pin 80, in contact with the sloping bottom at the lower end of the groove 81, pushes the end 45' inwardly until the end 45' no longer presses firmly against the paper. The purpose of this is to enable the paper now to be pulled out from under the end 45' of the bar 45 whereupon the end of the bar 45' subsequently will move back up to its starting position for the next newspaper section. The return upward movement of the bar end 45' is produced by the action of the spring 63. The slot in the upper end of the link 49 (Fig. 14) enables the bar

end 45' to remain in the raised position, with the pin 80 contacting the upper end of the groove 81, until the upward movement of the link 49 again causes the bar end 45' to push downwardly. Now the press bar 78 moves inwardly while the short peripheral extension 63 of the divider plate 72 moves downwardly (the divider plate rotating counter-clockwise as viewed in Fig. 11) to enter into the center of the opened newspaper section B', and to hold the outer half portion in the chute 13. The newspaper section B' will then be in the position illustrated in Fig. 4. The rotating flange 61 now engages the top edge of the inner half of the newspaper section B' in its path and moves this over against the roller 63 into the position illustrated in Fig. 1. The roller 63 is raised so that the engaged top portion of this half of the newspaper section B' is pressed between the cam-like member 61 and the roller 63. Further movement of the member 61 causes the engaged portion of the newspaper section B' to be pulled upwardly and inwardly, thus pulling the bottom fold of the newspaper section up out of the chute 13. While the newspaper section is held in this position the newspaper section A' dropping down out of engagement with the driven rolls 38 and companion squeeze rolls 39 drops into the opened section B'.

A pair of "pick-up" cams 79, similar in shape and size to the "pick-up" cams 20 previously described, are secured on the shaft 74. A pair of squeeze rolls 80 similar to the squeeze rolls 24 and 39 are mounted on brackets 81 above the "pick-up" cams 79 respectively. The brackets 81 are mounted in the manner similar to the brackets 25 and 40 previously described. The "pick-up" cams 79 rotate in counter-clockwise direction as viewed in Figs. 1 to 4. As the "pick-up" cams 79 engage the bottom fold of the outer newspaper section B' (with the newspaper section A' inserted in final position in the newspaper section B'), the two sections are pulled between the squeeze rolls 79 and their companion press rolls 80 as illustrated in Figs. 2 and 3, and finally the two newspaper sections are delivered from the cams 79 and rolls 80 onto a suitable endless conveyor (not shown) and this removed from the machine.

I claim:

1. In a newspaper inserting machine of the character described, having a guideway for delivering folded inner newspaper sections to one portion of the machine with their folds at the bottom, and having a second guideway for delivering folded outer newspaper sections to another portion of the machine with their folds at the bottom, means for opening said outer newspaper sections one by one as delivered from said second guideway, and means for picking up said inner newspaper sections from said first mentioned guideway one by one and dropping each inner newspaper into an opened outer newspaper section, said latter mentioned means including a cam member mounted on a substantially horizontal axis for engaging each newspaper section of said first mentioned newspaper sections successively as these sections reach the delivery end of said first mentioned guideway, means for producing oscillating partial rotation of said cam member first in the direction causing said cam member to move the engaged face of the newspaper section upwardly and thus cause the bottom fold of the newspaper section to be pulled upwardly and inwardly in the machine, and then for producing return partial rotation of said cam

member in the opposite direction, a pick-up cam with a cooperating squeeze roll, said pick-up cam mounted on a substantially horizontal shaft and means for rotating said shaft, said pick-up cam having a rim hook portion for carrying said inwardly pulled bottom fold of the newspaper section into engagement between said pick-up cam and said squeeze roll, whereby the engaged newspaper section will be moved along into the machine past said pick-up cam and squeeze roll, and synchronizing means connecting said cam member oscillating means and said pick-up cam shaft rotating means, whereby said return partial rotation of said cam member will take place when the engaged newspaper section is being pulled between said pick-up cam and squeeze roll.

2. In a newspaper inserting machine of the character described, having a guideway for delivering folded inner newspaper sections to one portion of the machine with their folds at the bottom, and having a second guideway for delivering folded outer newspaper sections to another portion of the machine with their folds at the bottom, means for opening said outer newspaper sections one by one as delivered from said second guideway, said means including a push-bar having an inner end extending a short distance over the delivery end of said second mentioned guideway, said push-bar pivotally mounted to swing in a plane transverse with respect to said second mentioned guideway and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said second mentioned guideway, operating means for said push-bar whereby said inner end of said bar will push the engaged upper corner of said latter mentioned newspaper section downwardly and thereby cause a portion of said latter mentioned section to bulge into the machine, a finger mounted for limited movement into said machine and so positioned as to be movable into said bulge in said latter mentioned newspaper section, means, synchronized with said push-bar moving means, for moving said finger, a rotating element so positioned as to engage the top of said portion of said latter mentioned newspaper, and means for picking up said inner newspaper sections from said first mentioned guideway one by one and dropping each inner newspaper into an opened outer newspaper section.

3. In a newspaper inserting machine of the character described, having a guideway for delivering folded inner newspaper sections to one portion of the machine with their folds at the bottom, and having a second guideway for delivering folded outer newspaper sections to another portion of the machine with their folds at the bottom, means for opening said outer newspaper sections one by one as delivered from said second guideway, said means including a push-bar having an inner end extending a short distance over the delivery end of said second mentioned guideway, said push-bar pivotally mounted to swing in a plane transverse with respect to said second mentioned guideway and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said second mentioned guideway, an engaging element carried on the inner end of said push-bar, operating means for said push-bar whereby said inner end of said bar will push the engaged upper corner of said latter mentioned newspaper section downwardly and thereby cause a portion of said latter mentioned section to

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bulge into the machine, a wedge-shaped finger mounted for limited movement into said machine and so positioned as to be movable into said bulge in said latter-mentioned newspaper section, means, synchronized with said push-bar moving means, for moving said finger, a rotating element so positioned as to engage the top of said portion of said latter mentioned newspaper section, and means for picking up said inner newspaper sections from said first mentioned guideway one by one and dropping each inner newspaper section into an opened outer newspaper section, said latter mentioned means including a cam member mounted on a substantially horizontal axis for engaging each newspaper section of said first mentioned newspaper sections successively as these sections reach the delivery end of said first mentioned guideway, means for producing oscillating partial rotation of said cam member first in the direction causing said cam member to move the engaged face of the newspaper section upwardly and thus cause the bottom fold of the newspaper section to be pulled upwardly and inwardly in the machine, and then for producing return partial rotation of said cam member in the opposite direction, and a pick-up cam with a cooperating squeeze roll, said pick-up cam mounted on a substantially horizontal shaft and means for rotating said shaft, said pick-up cam having a rim hook portion for carrying said inwardly pulled bottom fold of the newspaper section into engagement between said pick-up cam and said squeeze roll, whereby the engaged newspaper section will be moved along into the machine past said pick-up cam and squeeze roll.

4. In a newspaper inserting machine of the character described, having a guideway for delivering folded inner newspaper sections to one portion of the machine with their folds at the bottom, and having a second guideway for delivering folded outer newspaper sections to another portion of the machine with their folds at the bottom, a cam roller mounted on a substantially horizontal axis for engaging each newspaper section of said first mentioned newspaper sections successively as these sections reach the delivery end of said first mentioned guideway, means for producing oscillating partial rotation of said cam roller first in the direction causing said cam roller to move the engaged face of the newspaper section upwardly and thus cause the bottom fold of the newspaper section to be pulled upwardly and inwardly in the machine, and then for producing return partial rotation of said cam roller in the opposite direction, a pair of pick-up cams with a cooperating pair of squeeze rolls, said pick-up cams mounted on a substantially horizontal shaft and means for rotating said shaft, each of said pick-up cams having a rim hook portion for carrying said inwardly pulled bottom fold of the newspaper section into engagement between the pick-up cam and its squeeze roll, whereby the engaged newspaper section will be moved along into the machine past said pick-up cams and squeeze rolls, a push-bar having an inner end extending a short distance over the delivery end of said second mentioned guideway, said push-bar pivotally mounted to swing in a plane transverse with respect to said second mentioned guideway and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said second mentioned guideway, an engaging element carried on the inner end of said push-bar, operat-

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ing means for said push-bar whereby said inner end of said bar will push the engaged upper corner of said latter mentioned newspaper section downwardly and thereby cause a portion of said latter mentioned section to bulge into the machine, a wedge-shaped finger mounted for limited movement into said machine and so positioned as to be movable into said bulged portion in said latter mentioned newspaper section, means, synchronized with said push-bar moving means, for moving said finger, a rotating element so positioned as to engage the top of said portion and move said portion of said latter mentioned newspaper section inwardly into the machine, a cooperating roller movable in the path of said rotating element to cause said engaged portion of said latter mentioned newspaper section momentarily to be pulled between said element and said cooperating roller, thereby holding said latter mentioned newspaper section in open position to have said first mentioned inner newspaper section deposited therein, and means for engaging the bottom fold of said outer newspaper section with said first mentioned inner newspaper section in place therein and moving said combined newspaper sections into position for delivery from the machine.

5. In a newspaper inserting machine of the character described, having means including a guideway for delivering folded inner newspaper sections to one portion of the machine with their folds at the bottom, a cam roller mounted on a substantially horizontal axis for engaging each newspaper section successively as these sections reach the delivery end of said guideway, means for producing oscillating partial rotation of said cam roller first in the direction causing said cam roller to move the engaged face of the newspaper section upwardly and thus cause the bottom fold of the newspaper section to be pulled upwardly and inwardly in the machine, and then for producing return partial rotation of said cam roller in the opposite direction, a pick-up cam with a cooperating squeeze roll, said pick-up cam mounted on a substantially horizontal shaft and means for rotating said shaft, said pick-up cam having a rim hook portion for carrying said inwardly pulled bottom fold of the newspaper section into engagement between said pick-up cam and said squeeze roll, whereby the engaged newspaper section will be moved along into the machine past said pick-up cam and squeeze roll, synchronizing means connecting said cam roller oscillating means and said pick-up cam shaft rotating means, whereby said return partial rotation of said cam roller will take place when the engaged newspaper section is being pulled between said pick-up cam and squeeze roll.

6. The combination set forth in claim 5 with said squeeze roll mounted on a pivoted bracket above said pick-up cam, a pin secured to and extending upwardly from said bracket and having slidable engagement with a supporting cross shaft, means on said pin restricting the downward movement of the pin, and cushioning means exerting a force against the upward movement of said pin, whereby said squeeze roll can be held in desired position, and caused to bear against the periphery of said pick-up cam with desired amount of pressure.

7. In a newspaper inserting machine of the character described, having means including a guideway for delivering folded inner newspaper sections to one portion of the machine with their

10 folds at the bottom a cam roller mounted on a substantially horizontal axis and carrying engaging elements for engaging each newspaper section successively as these sections reach the delivery end of said guideway, means for producing oscillating partial rotation of said cam roller first in the direction causing said engaging elements to move the engaged face of the newspaper section upwardly and thus cause the bottom fold of the newspaper section to be pulled upwardly and inwardly in the machine, and then for producing return partial rotation of said cam roller in the opposite direction, a pair of pick-up cams with a cooperating pair of squeeze rolls, said pick-up cams mounted on a substantially horizontal shaft and means for rotating said shaft, each of said pick-up cams having a rim hook portion for carrying said inwardly pulled bottom fold of the newspaper section into engagement between the pick-up cam and its squeeze roll, whereby the engaged newspaper section will be moved along into the machine past said pick-up cams and squeeze rolls, said cam roller oscillating means including crank means connected to said pick-up cam shaft, a rack bar connected to said crank means, and a pinion connected with said cam roller and in engagement with said rack bar.

8. The combination set forth in claim 7 with each of said squeeze rolls mounted on a pivoted bracket, a pin secured to and extending upwardly from each bracket and having slidable engagement with a supporting cross shaft, a nut on each pin restricting the downward movement of the pin, and a spring exerting a force against the upward movement of each pin, whereby each of said squeeze rolls can be held in desired position and caused to bear against the periphery of the corresponding pick-up cam with desired amount of pressure.

9. In a newspaper inserting machine of the character described having means including a guideway for delivering folded newspaper sections to the machine with their folds at the bottom, a push-bar having an inner end extending a short distance over the delivery end of said guideway, said push-bar pivotally mounted to swing in a plane transverse with respect to said guideway and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said guideway, an engaging element carried on the inner end of said push-bar, operating means for said push-bar whereby said inner end of said bar will push the engaged upper corner of said newspaper section downwardly and thereby cause a portion of said newspaper section to bulge into the machine, a press-bar movable into position against the engaged face of said newspaper section below said push-bar end to limit the area of said bulge and thereby increase said bulge, a finger mounted for limited movement into said machine and so positioned as to be movable into said bulge in said newspaper section, means, synchronized with said push-bar moving means, for moving said finger, a divider plate moving in a plane substantially parallel to the newspaper sections in the delivery end of said guideway and mounted in position to move into said newspaper section behind said bulged portion, means for moving said divider plate in synchronism with said push-bar moving means and said finger moving means, and a rotating element so positioned as to en-

gage the top of said portion of said newspaper section.

10. In a newspaper inserting machine of the character described having means including a guideway for delivering folded newspaper sections to the machine with their folds at the bottom, a push-bar having an inner end extending a short distance over the delivery end of said guideway, said push-bar pivotally mounted to swing in a plane transverse with respect to said guideway and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said guideway, an engaging element carried on the inner end of said push-bar, operating means for said push-bar whereby said inner end of said bar will push the engaged upper corner of said newspaper section downwardly and thereby cause a portion of said newspaper section to bulge into the machine, a press bar movable into position against the engaged face of said newspaper section below said push-bar end to limit the area of said bulge and thereby increase said bulge, a wedge-shaped finger mounted for limited movement into said machine and so positioned as to be movable into said bulge in said newspaper section, means synchronized with said push-bar moving means, for moving said finger, a supplemental finger connected with said first mentioned finger, means for automatically moving said supplemental finger with respect to said first mentioned finger when said first mentioned finger is moved into said bulged portion.

11. In a newspaper inserting machine of the character described having means including a guideway for delivering folded newspaper sections to the machine with their folds at the bottom, a push-bar having a hinged inner end extending a short distance over the delivery end of said guideway, said push-bar pivotally mounted to swing in a plane transverse with respect to said guideway and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said guideway, an engaging element carried on the inner end of said push-bar, operating means for said push-bar whereby said inner end of said bar will push the engaged upper corner of said newspaper section downwardly and thereby cause a portion of said newspaper section to bulge into the machine, a wedge-shaped finger mounted for limited movement into said machine and so positioned as to be movable into said bulge in said newspaper section, means synchronized with said push-bar moving means, for moving said finger, and means for releasing the pressure of said hinged inner end of said push-bar against said newspaper section when said bulge has been formed in said newspaper section to permit said bulged portion to be pulled from under said push bar.

12. In a newspaper inserting machine of the character described having means including a guideway for delivering folded newspaper sections to the machine with their folds at the bottom, a push-bar having an inner end extending a short distance over the delivery end of said guideway, said push-bar pivotally mounted to swing in a plane transverse with respect to said guideway and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said guideway, an engaging element carried on the inner end of said push-bar, operating means for said push-bar whereby said inner end of said

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bar will push the engaged upper corner of said newspaper section downwardly and thereby cause a portion of said newspaper section to bulge into the machine, a finger mounted for limited movement into said machine and so positioned as to be movable into said bulge in said newspaper section, means, synchronized with said push-bar moving means, for moving said finger, a supplemental finger connected with said first mentioned finger, means for automatically moving said supplemental finger with respect to said first mentioned finger when said first mentioned finger is moved into said bulge, a divider plate moving in a plane substantially parallel to the newspaper sections in the delivery end of said guideway and mounted in position to move into said newspaper section behind said bulged portion, means for moving said divider plate in synchronism with said push-bar moving means and said finger moving means, a rotating flange so positioned as to engage the top of said portion of said newspaper section and move said portion inwardly into the machine and further away from said divider plate, and means including a cam and cooperating squeeze roll for engaging the bottom fold of said newspaper section and moving said newspaper section into position for delivery from the machine.

13. In a newspaper inserting machine of the character described having means including a guideway for delivering folded newspaper sections to the machine with their folds at the bottom, a push-bar having an inner end extending a short distance over the delivery end of said guideway, said push-bar pivotally mounted to swing in a plane transverse with respect to said guideway and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said guideway, operating means for said push-bar whereby said inner end of said bar will push the engaged upper corner of said newspaper section downwardly and thereby cause a portion of said newspaper section to bulge into the machine, a press bar movable into position against the engaged face of said newspaper section below said push-bar end to limit the area of said bulge and thereby increase said bulge, a wedge-shaped finger mounted for limited movement into said machine and so positioned as to be movable into said bulge in said newspaper section, means, synchronized with said push-bar moving means, for moving said finger, a divider plate moving in a plane substantially parallel to the newspaper sections in the delivery end of said guideway and mounted in position to move into said newspaper section behind said bulged portion, means for moving said divider plate in synchronism with said push-bar moving means and said finger moving means, a rotating element so positioned as to engage the top of said portion of said newspaper section, a cooperating roller movable in the path of said rotating element to cause said engaged portion of said newspaper section momentarily to be pulled between said element and said cooperating roller, thereby momentarily holding said newspaper section in open position, and means including a set of cams and cooperating squeeze rolls for subsequently engaging the bottom fold of said newspaper section and moving the same into position for delivery from the machine.

14. In a newspaper inserting machine of the character described, having means including a chute for delivering folded inner newspaper sec-

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tions to one portion of the machine with their folds at the bottom, and having means including a second chute for delivering folded outer newspaper sections to a lower portion of the machine with their folds at the bottom, means for picking up said inner newspaper sections from said first mentioned chute one by one and dropping each inner newspaper into an opened outer newspaper section, and means for opening said outer newspaper sections one by one as delivered from said second chute, said latter mentioned means including a push-bar having a hinged inner end extending a short distance over the delivery end of said second mentioned chute, said push-bar pivotally mounted to swing in a plane transverse with respect to said second mentioned chute and so positioned that said inner end will engage an upper corner of the adjacent face of a newspaper section at the delivery end of said second mentioned chute, an engaging element carried on the inner end of said push-bar, operating means for said push-bar whereby said inner end of said bar will push the engaged upper corner of said latter mentioned newspaper section downwardly and thereby cause a portion of said latter mentioned section to bulge into the machine, a press bar movable into position against the engaged face of said latter mentioned section below said push-bar end to limit the area of said bulge and thereby increase said bulge, a wedge-shaped finger mounted for limited movement into said machine and so positioned as to be movable into said bulged portion in said latter mentioned newspaper section, means, synchronized with said push-bar moving means, for moving said finger, a supplemental finger connected with said first mentioned finger, means for automatically moving said supplemental finger with respect to said first mentioned finger when said first mentioned finger is moved into said bulged portion, means for releasing the pressure of said hinged inner end of said push-bar against said latter mentioned section when said bulge has been formed in said latter mentioned section to permit said bulged portion to be pulled from under said push-bar, a divider plate moving in a plane substantially parallel to the newspaper sections in the delivery end of said second mentioned chute and mounted in position to move into said latter mentioned section behind said bulge, means for moving said divider plate in synchronism with said push-bar moving means and said finger moving means, a rotating flange so positioned as to engage the top of said portion of said latter mentioned newspaper section, and means including a pair of pick-up cams and cooperating squeeze rolls for engaging the bottom fold of said latter mentioned newspaper section and moving said latter mentioned outer newspaper section into position for delivery from the machine.

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