

Jan. 27, 1953

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2,626,801

AIR FLOAT JOGGER DEVICE

Filed July 1, 1949

2 SHEETS—SHEET 1

FIG. 1.

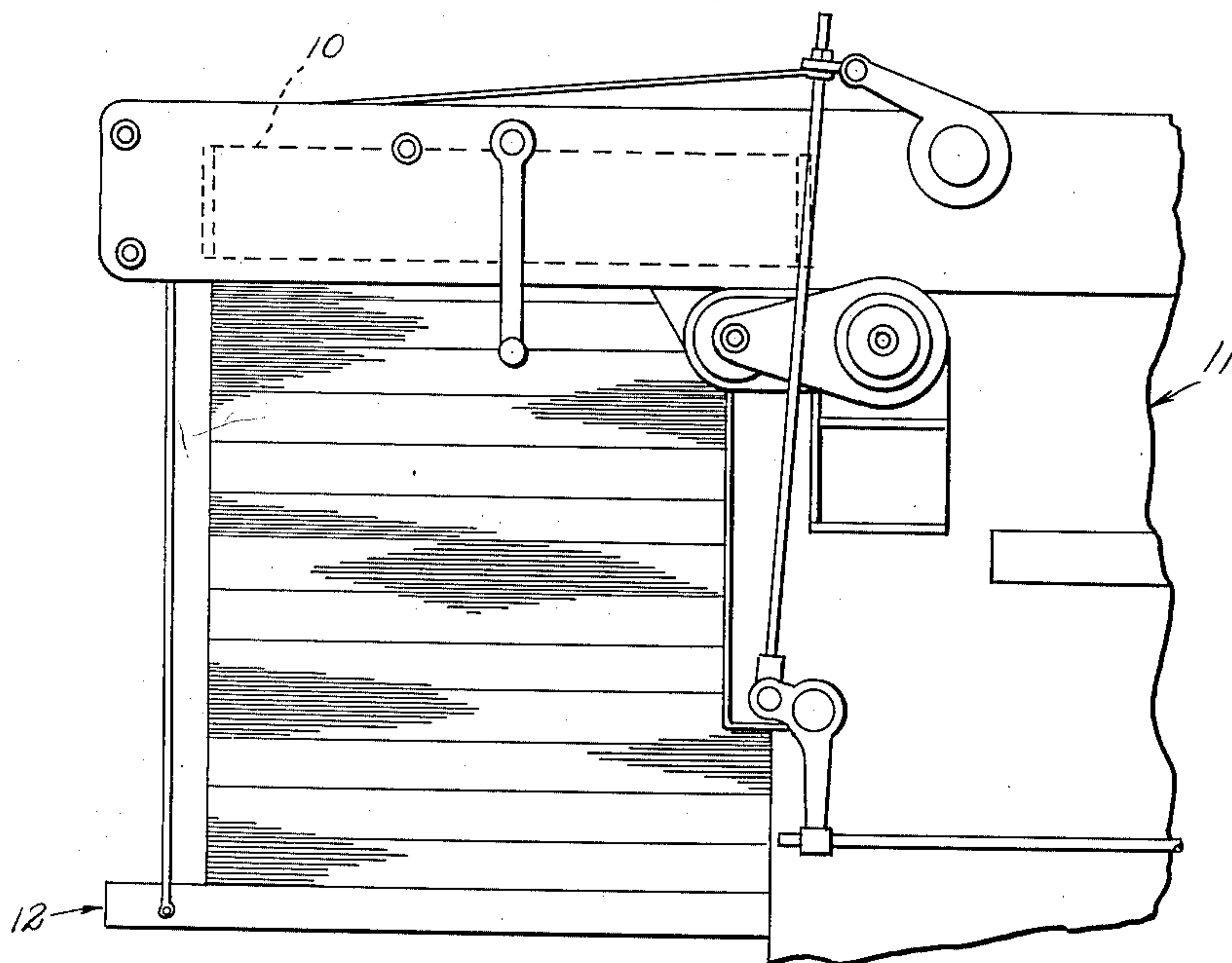
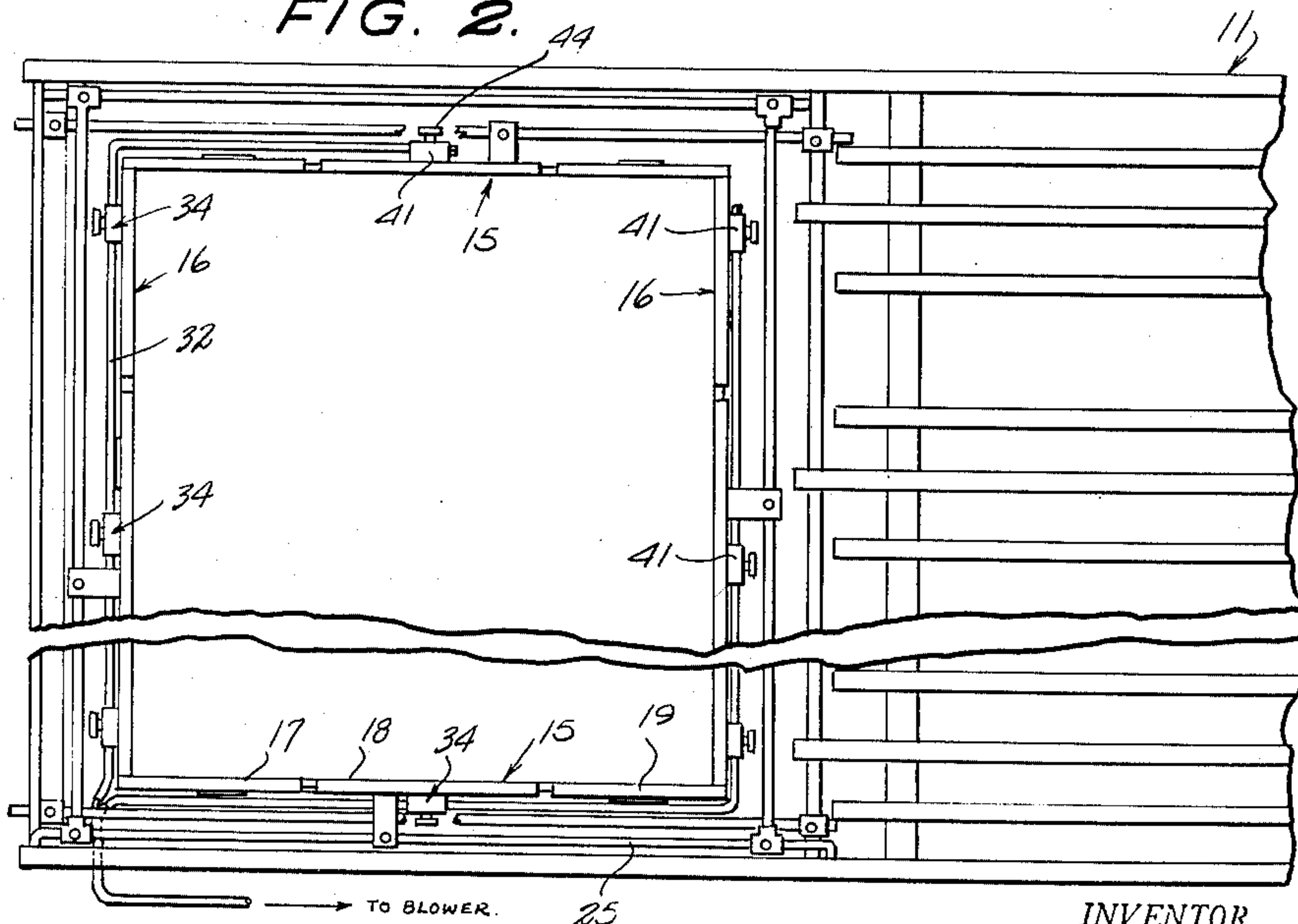


FIG. 2.



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2 SHEETS—SHEET 2

FIG. 3.

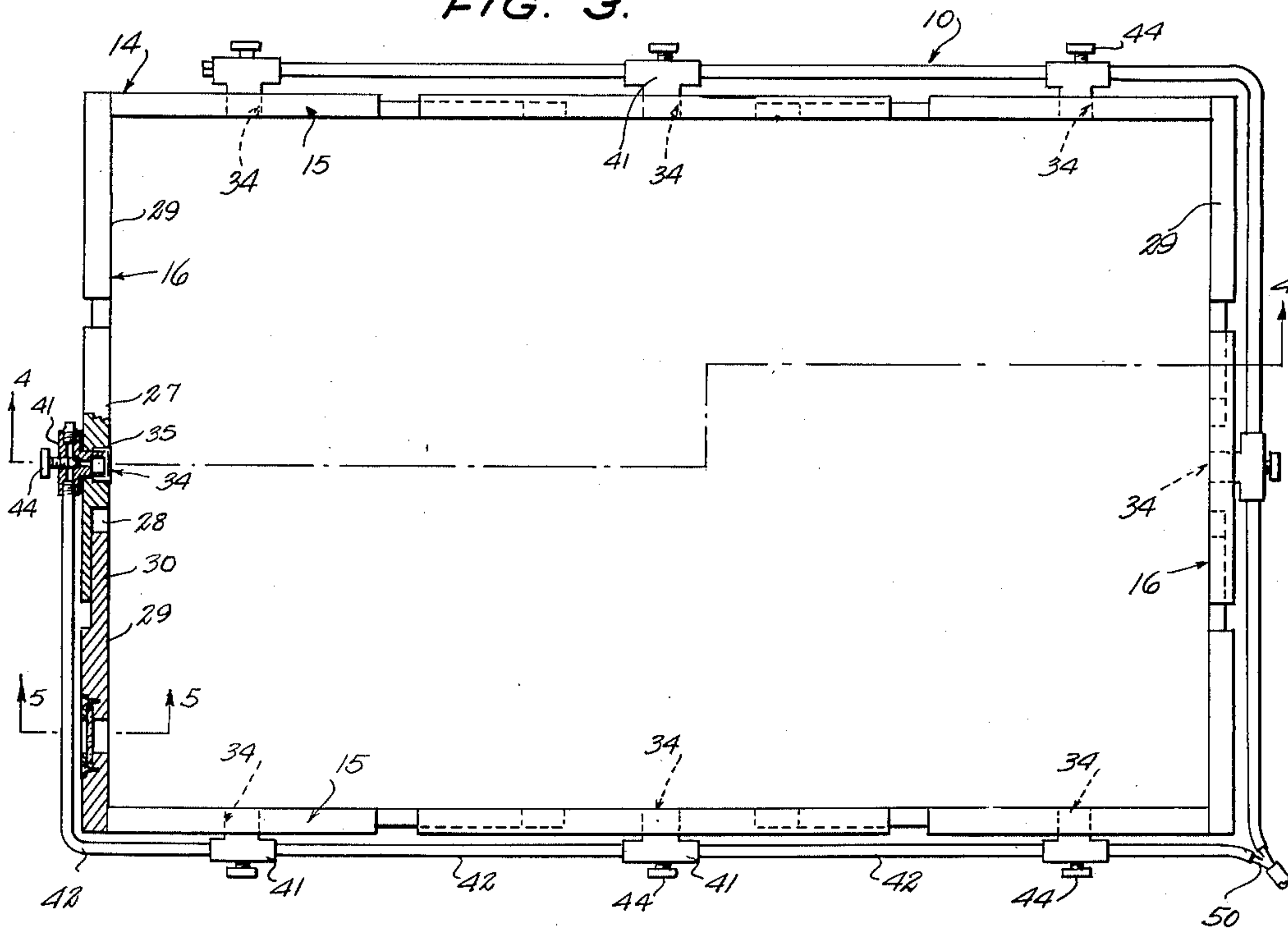


FIG. 4.

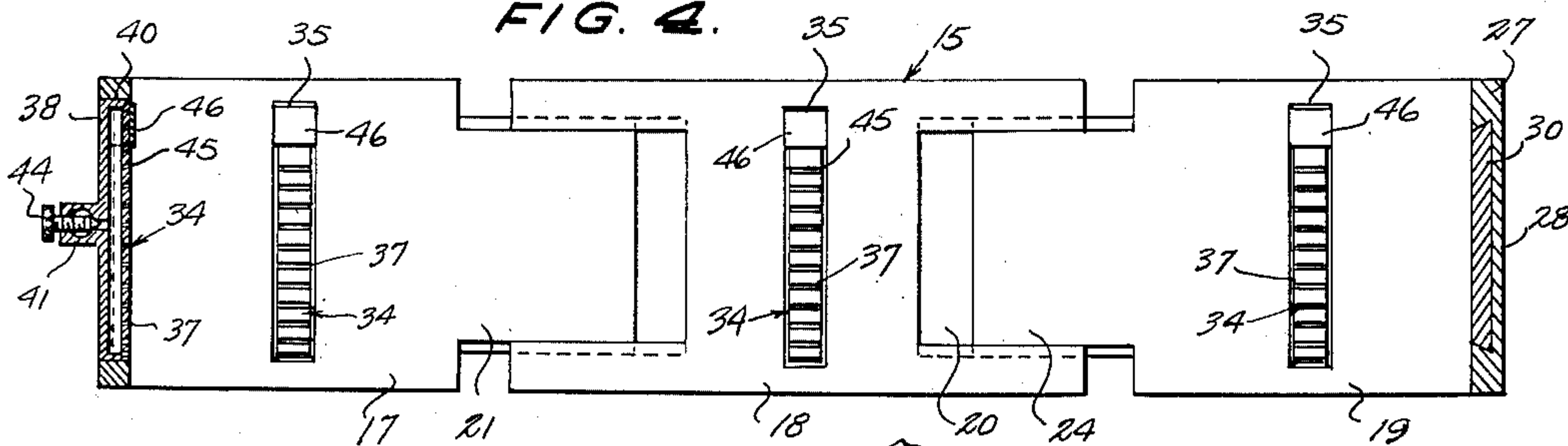


FIG. 6.

FIG. 5.

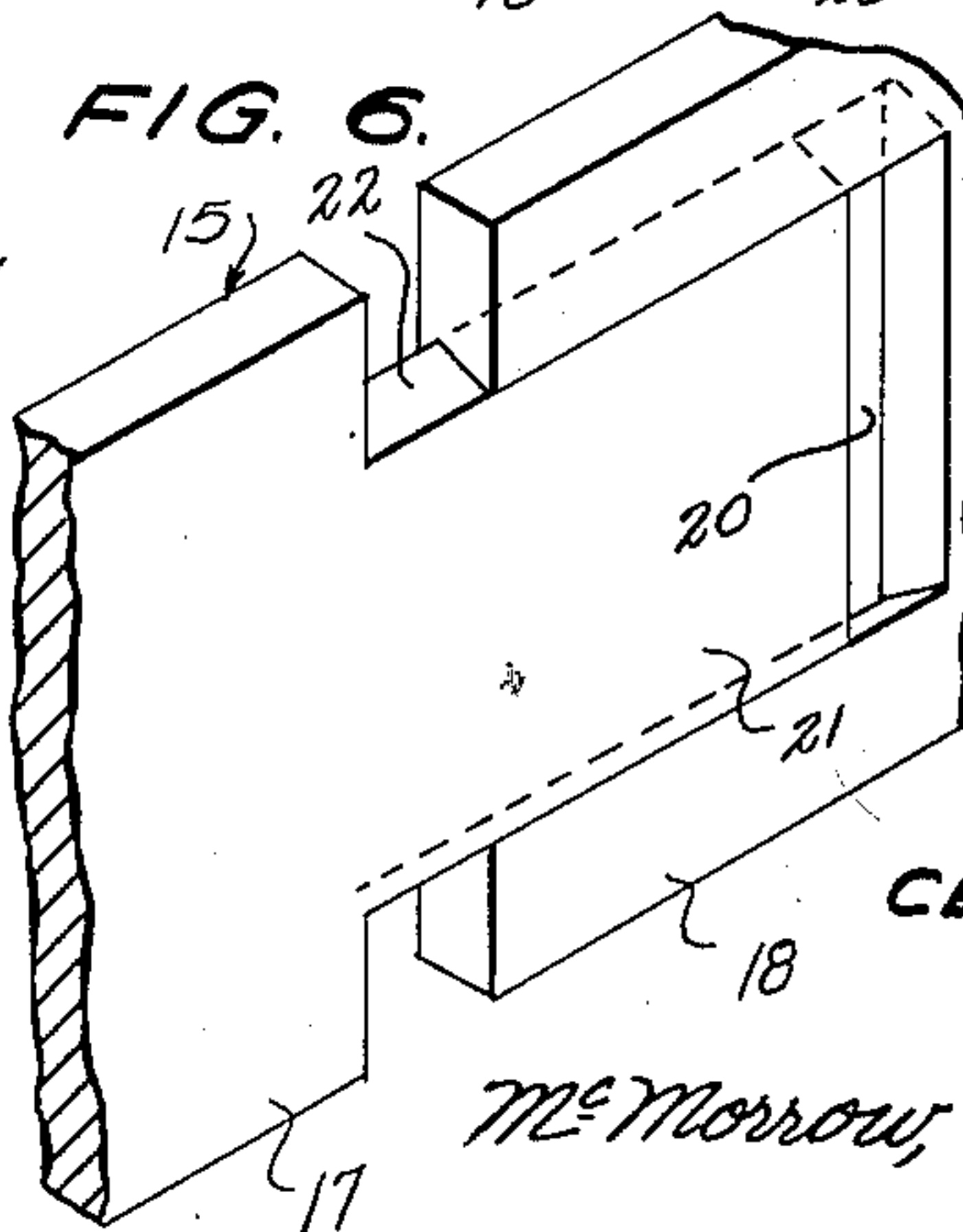
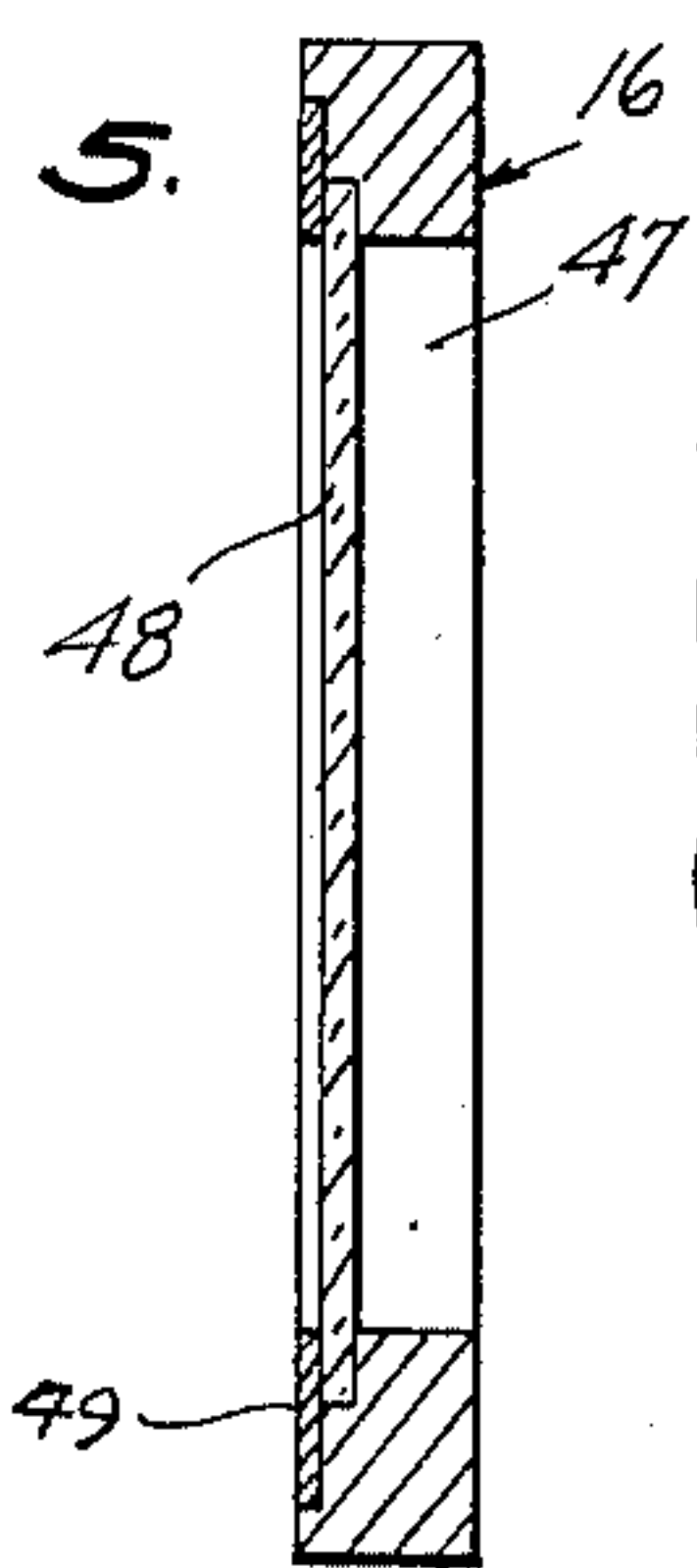
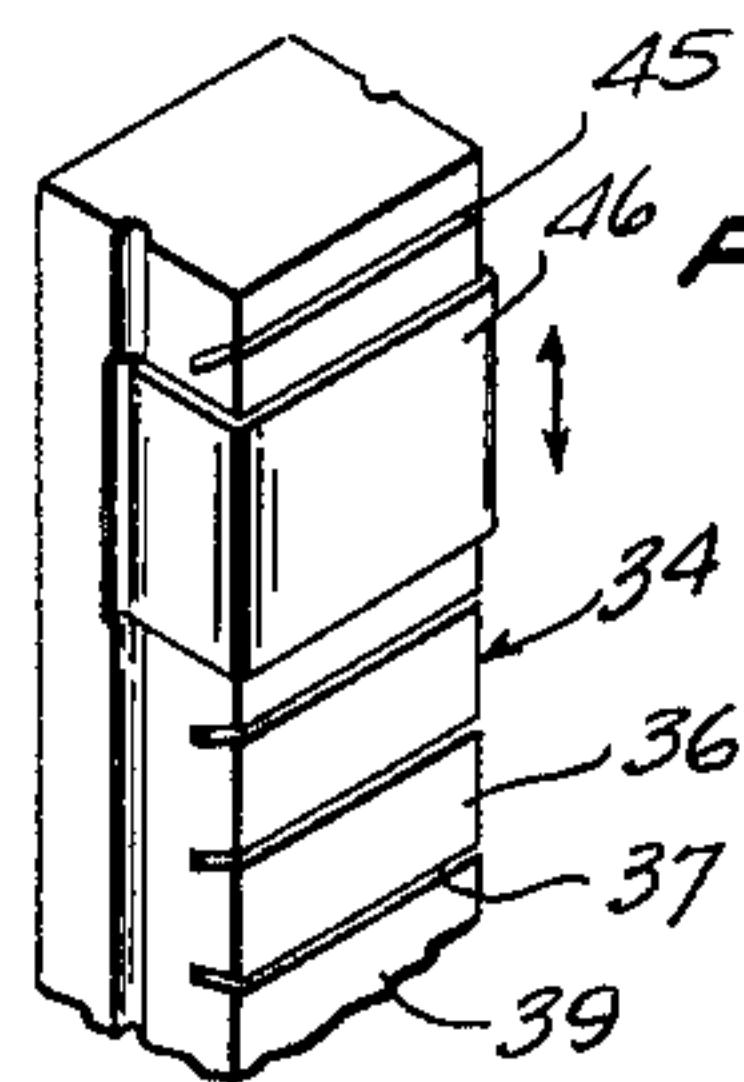


FIG. 7.



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AIR FLOAT JOGGER DEVICE

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2 Claims. (Cl. 271—89)

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This invention relates to a jogger device, and more particularly to a jogger device for sheet-piling machines and printing presses having means for preventing offsetting on the overlying sheets.

It is an object of this invention to provide a jogger device of the kind to be more particularly described hereinafter having an expansible and contractible sheet-confining box or frame including air jets arranged for directing air under the sheets to be guided through the box for retarding the falling of the sheets through the box to permit the ink to substantially dry before the sheets are piled on the underlying sheets.

Another object of this invention is to provide a jogger device of this kind to provide air jets spaced about the periphery of the frame for introducing air under the printed sheets engaged in the box for suitably controlling the arc of the falling sheets whereby the entire surface of the sheet will be retarded an equal length of time from engagement with an underlying sheet.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a side elevation, partly broken away, of a printing or sheet-piling machine having a jogger device constructed according to an embodiment of this invention;

Figure 2 is a top plan view of the jogger device and machine shown in Figure 1;

Figure 3 is a top plan view, partly broken away and partly in section, of the jogger box removed from the assembly with the sheet-piling machine;

Figure 4 is a longitudinal section taken on the line 4—4 of Figure 3;

Figure 5 is a fragmentary transverse section through one end wall, taken on the line 5—5 of Figure 3;

Figure 6 is a perspective view, partly broken away and partly in section, showing the telescoping engagement of a pair of adjacent side or end wall sections;

Figure 7 is a perspective view, partly broken away, of an air jet unit removed from the assembly.

Referring to the drawings, the numeral 10 designates generally an air-float jogger device constructed according to an embodiment of my invention for application on a sheet-piling machine 11 for properly controlling the printed sheets as they are removed from the machine to be piled

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on a platform 12 adjustably carried by one end of the machine 11. The purpose of this invention is to insert air into the jogger of a printing press, varnishing machine and other machines that pile paper. By inserting air into the joggers of these machines, it is possible to control the descent of the paper or cardboard and keep the sheets separated for a longer period of time than is possible on the conventional type of jogger. By this control it is possible to increase the depth of the conventional type of jogger. With the deeper jogger and corresponding lengthening of the air jets, the paper has a greater distance to drop and the additional slots in the air jets keep the paper separated for a longer period of time. This process greatly reduces the possibility of the printing sheets offsetting, or the varnished sheets sticking together.

The jogger device 10 is formed with a substantially rectangular jogger box 14 having telescopic side walls 15 and telescopic end walls 16.

The side walls or boards 15 are formed of a plurality of telescopic sections 17, 18 and 19, which are supported on one end of the machine 11 transversely thereof. The center section or panel 18 is substantially rectangular in configuration having a pair of outwardly-opening, longitudinally-extending, dove-tailed recesses or grooves 20 at the opposite ends thereof. The grooves 20 open at the ends of the center board or panel 18 and open on the outer side thereof. The end panel 17 is formed with a forwardly-extending tongue or slider element 21 having downwardly and outwardly-inclined side edges 22 on the opposite longitudinal edges thereof for sliding engagement within the dovetailed groove 20 of the center panel 18. The other end panel 19 is formed with a rearwardly-extending tongue or connecting element 24 which is slidably engageable in the forwardmost recess or groove 20 of the center panel 18. The center panels 18 of both of the side walls of the box or frame 14 are adapted to be secured to the supporting frame members 25 of the machine 11 by suitable clamping or fastening elements 26. The center sections of each of the side boards 15 are adapted to be substantially fixedly and rigidly carried by the machine 11 while the outer panels 17 and 19 are telescopically engaged on the center panel 18.

The end walls 16 are formed in substantially the same manner as the side walls 15 and include a fixed center section 27 formed with outwardly-opening rabbeted grooves or recesses 28 on the opposite ends thereof and the outer or end panels

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29 on the opposite sides of the center panel 27 are slidably or telescopically engaged therewith. Each of the outer sections or panels 29 is formed with an inwardly-extending tongue 30 which is slidably engageable in the outwardly-opening groove 28. The center panel 27 of the end walls 16 is adapted to be fixedly secured to the adjusting frame 25 on the machine 11 by a suitable clamp or fastening element 31 which is fixed on the center panel 27 and adjustably engaged on a transverse frame member 32 carried by the machine 11.

An air jet nozzle unit 34 is formed for insertion in mortices or cut-out sections 35 of selected ones of the side and end board panels in a manner to be more particularly described hereinafter. Each of the nozzle units 34 includes a vertically-extending body 36 having a plurality of transverse slots or apertures 37 along the vertical length thereof. The body 36 is hollow on the rear side thereof rearwardly of the slots 37 and the body 36 is adapted to be secured to a rear wall 38. The front wall 39 of the nozzle unit 34 is spaced forwardly from the rear wall 38, as clearly shown in Figure 4 of the drawings, the space 40 between the front and rear walls defining an air passage for communicating air to be introduced to the units 34 from a common inlet point to all of the apertures 37. A boss or fitting 41 is fixed to, or formed integrally with, the rear side of the rear wall 38 to provide for the connection of certain or selected air conduits 42. Each of the bosses or fittings 41 on each of the nozzle units 34 is formed with a valve 44 for selectively controlling the amount of air entering each selected one of the nozzle units 34.

A plurality of slots or air apertures 37 are formed on each of the nozzle units 34, and the uppermost slots 37 are inclined upwardly and inwardly, as clearly indicated by the numeral 45 in Figure 7. The successively lower slots or openings 37 are inclined upwardly and inwardly at a lesser angle, so that the lowermost slots are disposed substantially horizontally inwardly, as most clearly shown in Figure 4 of the drawings.

A sliding element 46 is slidably engaged along the length of the body 36 and is formed for overlying selected ones of the apertures 37. Particularly the slider 46 is provided for engagement over selected ones of the uppermost slots 37 for suitably controlling the direction of the air entering the jogger box 14 in a manner to be more particularly described hereinafter.

Certain of the side panels or wall sections of the jogger box 10 are formed with window openings 47 therethrough. A transparent closure member 48 is adapted to close the opening 47 and is secured on the panel by a metal frame 49 which is fixed to the panel and partially overlies the outer surface of the outer edges of the transparent pane 48.

As the sheet of the paper leaves the delivery of the machine and descends into the jogger 10, air from the upper slots 45 of the air jet nozzle units 34 retards the descent of the sheet as the sheet of paper comes in contact with each of the several succeeding slots of the air jets it is gently lowered, slot by slot, to the bottom of the jogger. The placement of the nozzle units 34 depends upon the size and weight of the paper or cardboard and the type of work manufactured. As there is a definite correlation between the size of paper and the presses, it is possible to predetermine the proper placement of the air jet nozzles 34. For example, on a sheet of paper of

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medium weight and 25 x 38 inches in size, an air jet is placed near each corner and in the center of the front and back jogger boards. Another air nozzle unit 34 is placed in the center of each side jogger board 15. On cardboard or larger sheets of paper, more air jets are inserted in the jogger boards to achieve the desired separating effect. When a sheet of paper is slit on the press, an air nozzle 34 is placed near each of the eight corners of the slitted sheet. If there are more mortices cut in the jogger boards, than air jets used, a metal plate may be inserted in the unused mortices to keep the air from escaping. All air jets of any selected shape, either oblong or round, and the metal plates are interchangeable to fit the mortices in the jogger boards.

Another feature of this device is that the air cushioning will minimize the harsh depositing of the paper in the jogger when the fly delivery is used. On some classes of work printed on both sides of the sheet of paper, it is more expedient to use the fly delivery if a pile feeder is used. By lining up the guide edge of the paper with a platform 12 beneath the jogger boards, a pile of eight or more thousand sheets can be trucked to the feeder. This process eliminates the necessity of repiling the paper by hand.

Paper may descend into the jogger in an arc-like or inverted arc-like position, depending on the grain of the paper. On paper that descends into the jogger in an arc-like position, the edges of the paper touch the previously-printed sheet first and the air trapped in the center of the conventional type of jogger allows a slower descent of this portion of the sheet. There is less possibility of offset in the center of the sheet due to its slower descent.

To correct the upwardly-bowed descent of the paper and give all portions of the paper the advantage of a level descent, the upper slots 45 of the air nozzles 34 are cut at an upward angle, as described above. The air blown at an upward angle on the edges of the paper tends to level it. On paper that descends into the jogger in an upwardly-bowed arced position, the partial sleeve or plate 46 is moved on the body 36 to cover the upper slots of the air jets and allow a faster descent of the front and back of the sheet of paper, thus again leveling the descending paper.

Near the center of the front and the back jogger boards 16 and near each corner of the side jogger boards 15, a viewing window 48 is inserted and held in place by the metal frame 49. The placement of this window can be predetermined to coincide with the placement of the air nozzle units 34. This glass is used as a window through which the contour of the descending sheets of paper may be viewed. Each air nozzle 34 can then be adjusted to maintain the maximum level separation of the paper. The air and nozzle units 34 are connected by suitable air hose or conduits 42 of various or selected lengths to accommodate the various sizes of paper the jogger will handle and the expanding action of the jogger. When this expanding action of the jogger is disconnected to use the boxing effect, metal or rigid tubing may be used if desired.

The air conduits 42 may be suitably connected for connecting the air nozzle units 34 on one side and one end of the box 10 together and the nozzle units on the other side and other end together, the two units then coming together at a common setting 50 to be connected to a suit-

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able source of air under pressure, as a pump and compressor, not shown in the drawings.

When the paper or cardboard being handled by the jogger 10 requires the ink to dry by oxidation, cold air is inserted through the conduits 42 and nozzles 34, and when the paper requires the ink to dry by penetration, hot air is applied.

Each of the four jogger boards 15 and 16 is formed in the three sections described above. The center piece of each jogger board is attached to the parts of the machine that ordinarily accommodate the conventional type of jogger boards. The end portions of the jogger boards are milled in a manner to telescope the center sections of the jogger boards, as described above and clearly shown in the drawings. The end sections are supplied in various lengths so they can be expanded or contracted to the exact size of the sheet of paper if the boxing effect is desired.

As a general rule, the front jogger board is not moved when the size of the paper is changed. The expansion or contraction of the jogger 10 to accommodate the longer or shorter paper is equally divided on the side jogger board 15. Practically all of the expansion or contraction for the wider and narrower paper is made on the back jogger board 16.

A jogger 10 on a printing press 11 is a box-like device about 5 inches deep in which the paper is deposited when printed. It consists of the side and end boards described above, and the jogger boards are adjustable to the various sized sheets. The jogger opens about one-half inch and then closes to the size of the printed sheets. On jobs that require a large quantity of ink, or on jobs with one color of ink imprinted over another color, the opening action of the jogger is disconnected so that the jogger will remain the same size as the printed sheet. The purpose of having the jogger in the closed position is to trap air in the jogger so that each succeeding sheet slowly descends on a cushion of air. The sheet drops from the delivery of the press into the jogger bowed upwardly or downwardly, depending upon the curl of the paper. On paper that curls down, the front end of the sheet falls first and the back end of the sheet falls more slowly. A pocket of air is formed in the center of the jogger suspending the center of the sheet for a longer period of time. Due to the slower descent of the center of the sheet, there is less possibility of offsetting the center of the sheet than on the edges.

The principle of this invention is to inject air into the jogger to increase the air cushioning effect of the conventional jogger. This end is attained by placing the air nozzle unit in the side and end boards at variously-spaced intervals depending upon the size, weight and curl of the paper or cardboard being handled. The valves 44 regulate the amount of air that is injected through the respective nozzle 34 and by judicious placement of the air nozzle units and by regulation of the air from each unit,

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the arc of the falling sheet is controlled and the entire sheet has the extra cushioning effect that the center of the sheet has on the conventional types of joggers. This cushioning effect is further increased by the air from the lower portions of the nozzle 34 which keeps the sheets separated for a longer period of time, and by the increase in the depth of the jogger which gives the sheet a greater distance to drop.

I do not mean to confine myself to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claims.

I claim:

1. In a jogger box for a sheet piling machine, said box having opposing side and end walls, a plurality of air jet nozzles mounted vertically in the walls and having vertically spaced orifices in their inner faces communicating with the interior of the box, said orifices being inclined upwardly so as to direct an upwardly inclined blast into the interior of the box, the successively lower orifices being inclined at a lesser angle than the preceding orifice, means connecting said nozzles to a source of air under pressure, means for adjusting the horizontal directional flow of the air from the nozzles into the box, and valves slidably disposed on the inner faces of the nozzles for controlling the flow of air in a vertical plane.

2. In a jogger box for a sheet piling machine, said box having opposing side and end walls, a plurality of air jet nozzles mounted vertically in the walls and having vertically spaced orifices in their inner faces communicating with the interior of the box, said orifices being inclined upwardly so as to direct an upwardly inclined blast into the interior of the box, the successively lower orifices being inclined at a lesser angle than the preceding orifice, means connecting said nozzles to a source of air under pressure, means for adjusting the horizontal directional flow of the air from the nozzles into the box, and valves slidably disposed on the inner faces of the nozzles for controlling the flow of air in a vertical plane, said nozzles having guideways formed therein and said valves having guide means formed thereon and slidably disposed in the guideways, said valves frictionally engaging the inner faces of the nozzles.

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