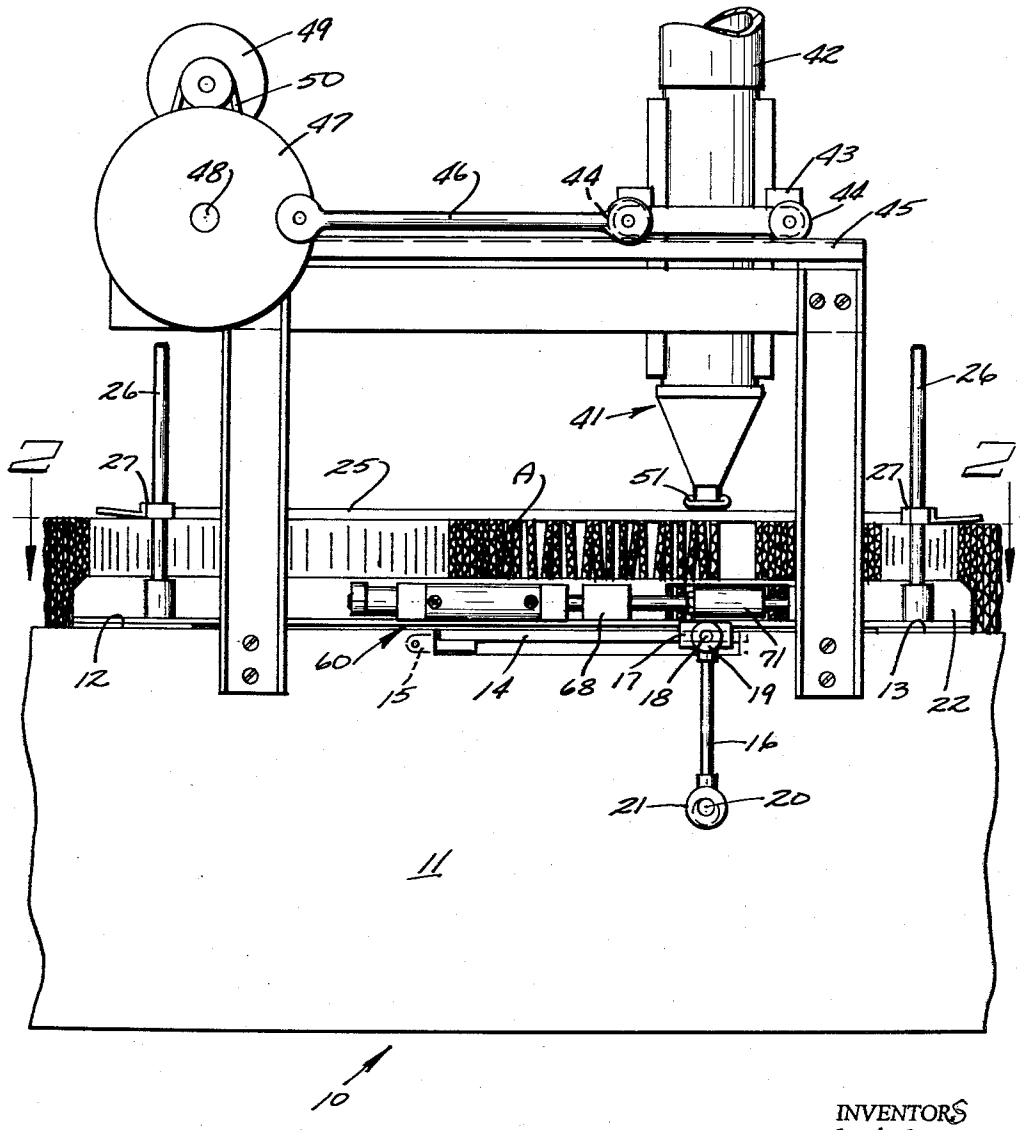
Dec. 19, 1961 F. A. McCORMICK ET AL 3,013,292

ADVANCER-SPACER ASSEMBLY

Filed Jan. 28, 1959 4 Sheets-Sheet 1

FIG 1

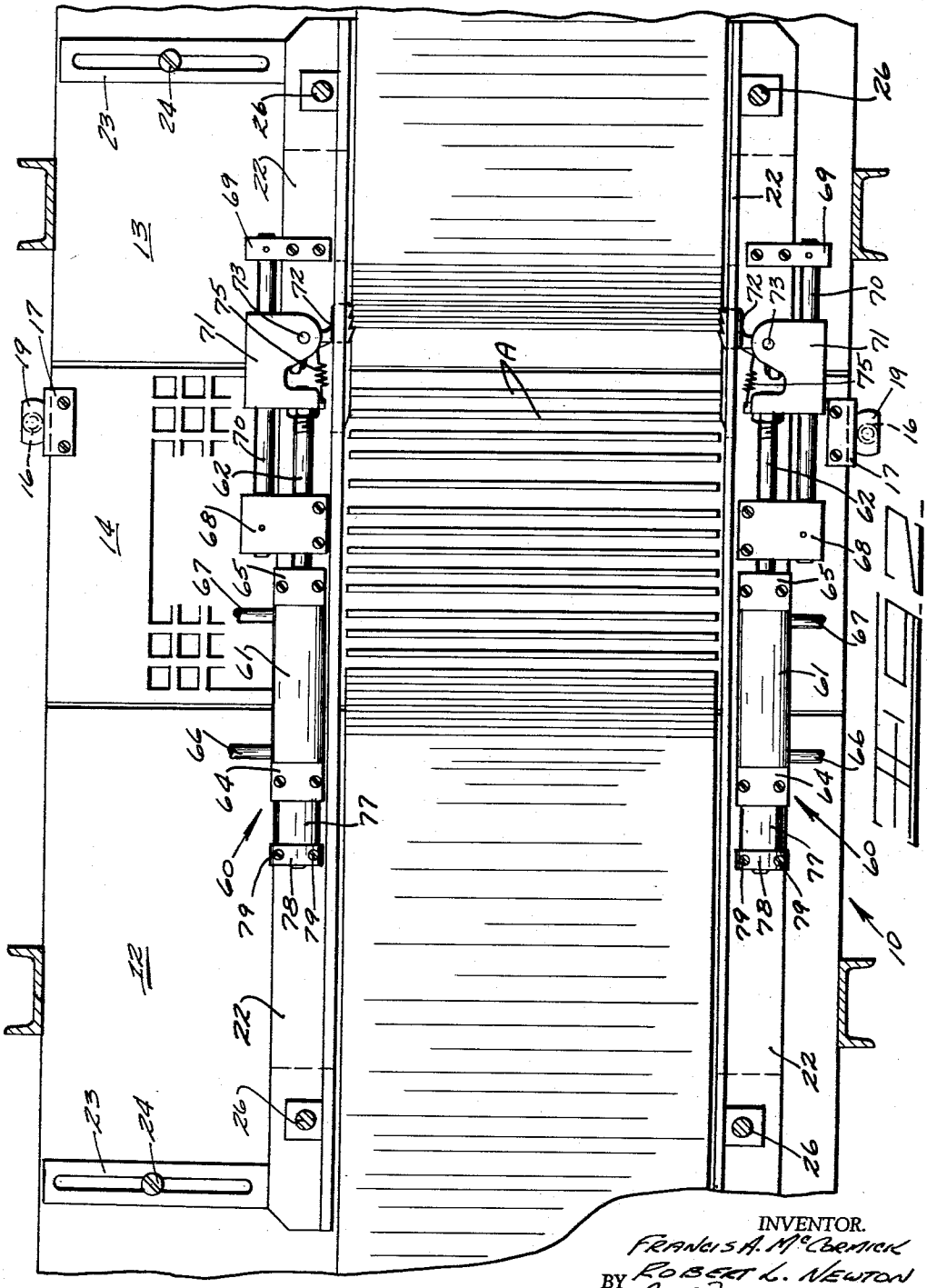


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ADVANCER-SPACER ASSEMBLY

Filed Jan. 28, 1959 4 Sheets-Sheet 2

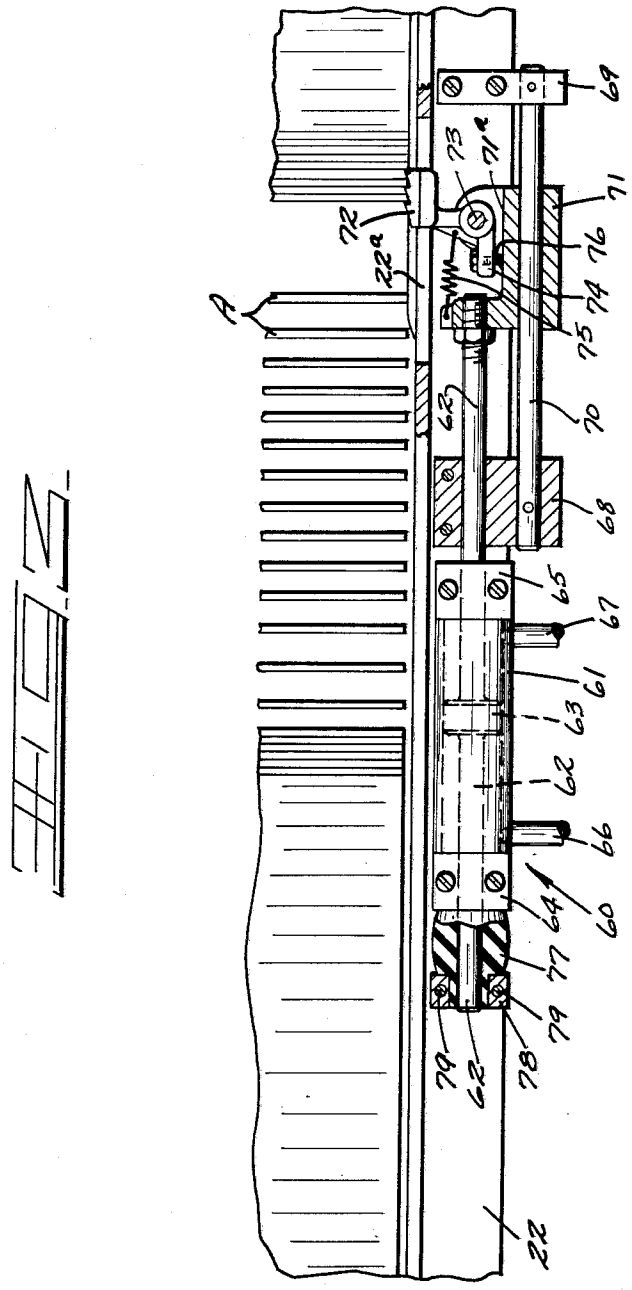


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ADVANCER-SPACER ASSEMBLY

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ADVANCER-SPACER ASSEMBLY

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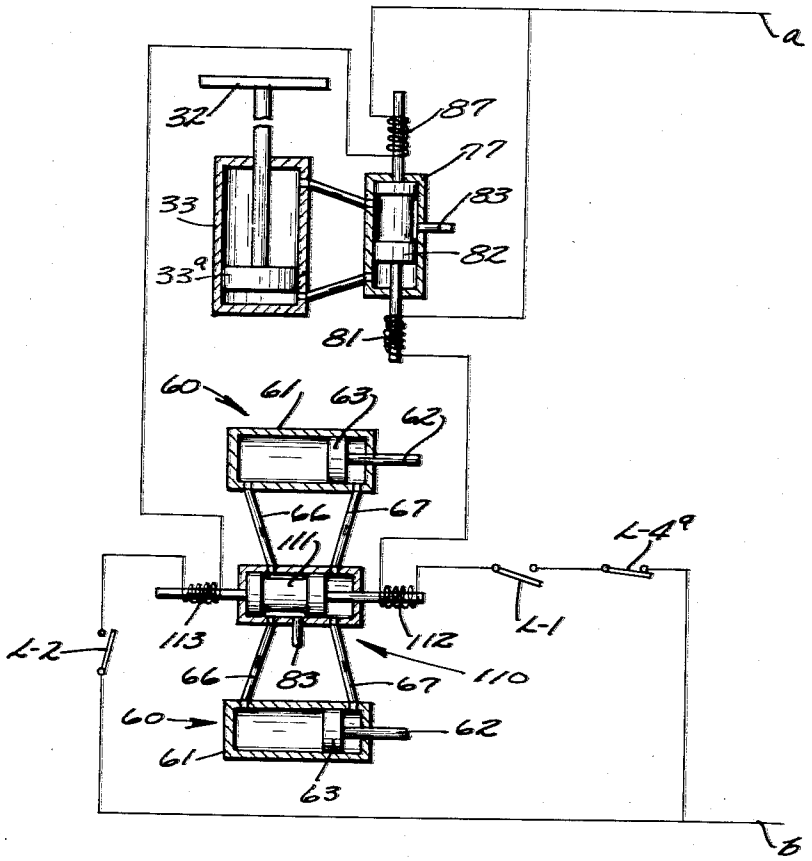


FIG. 4

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3,013,292
ADVANCER-SPACER ASSEMBLY

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Filed Jan. 28, 1959, Ser. No. 789,643
5 Claims. (Cl. 15—308)

This invention relates to an improvement in means for cleaning dust particles from formed partition strips of corrugated board or the like, and more particularly, to an advancer-spacer assembly for use with a machine for cleaning sawed partition strips subsequent to their being sawed and slotted but prior to assembly into containers or cartons. A machine of this nature is disclosed in a copending application of Mervyn M. Jenkins and Jay R. Macy, Serial No. 728,644, filed April 15, 1958, entitled, "Method & Apparatus for Cleaning Corrugated Partition Strips," and is owned by the assignee of the present application.

In conjunction with the operation of this machine, strips of corrugated board or similar material are sawed into shorter lengths. In its preferred embodiment, the machine of the Jenkins et al. application is to be connected in tandem with a partition saw of the type described in U.S. Patent 2,855,009, issued to F. A. McCormick, co-inventor in the present application, and assigned to the assignee common to the Jenkins et al. application and the present application. As a part of the process for forming the partitions, the strips that are sawed to short lengths are compacted, while upright on edge, and moved between guides so as to pass over a plurality of slotting saws which cut a pattern of vertical slots in the strips. These slotted strips are later assembled in combination with other partition strips to form a gridwork of cells or rectangular compartments in a shipping container or carton. Subsequent to forming and compacting these partitions, they are fed in a column along a table surface and between guides which extend through the cleaning zone of the machine disclosed in the Jenkins et al. application. At that zone, the partitions are worked upon in groups or charges so as to clean the loose particles of corrugated or paper dust by shaking the partitions of the charge while in the column and applying a reciprocating stream of high velocity air through the charge, thereby agitating the partitions of the charge so that they will, while undergoing treatment, strike one another and dislodge the foreign matter.

Any foreign matter, after it is dislodged, is conveyed by the air stream, and collected and carried to a remote location. In moving the partitions through the cleaning area, a pusher intermittently moves the column forward. If the cleaning apparatus is used in tandem with the aforementioned partition saw, the pusher on the saw, which moves the corrugated strips of stock past the saw, may be utilized to provide to the column this intermittent forward movement.

As the column is moved forward, the partitions undergoing cleaning must be loosened from the compacted relationship they had in the column in order to effect efficient cleaning. In the apparatus disclosed in the Jenkins et al. application, this spacing or loosening of the partitions was accomplished by manually removing the cleaned partitions from the forward end of the column. Also, the vibrating section of the table disposed at the cleaning zone, which was assisted somewhat by the agitation created by the reciprocating air stream, served to loosen the partitions in the cleaning zone. The spacing thus provided is not controllable uniformly and sometimes the spacing was insufficient.

It is, therefore, one of the objects of the present invention to provide a means controllable permitting uniformly positively spacing apart the partitions in each charge thereof undergoing cleaning.

Another important object of the invention is the provision of an advancer-spacer assembly for establishing a spacing between partitions in a compacted column by gripping a forward portion of the column at opposite sides and advancing that forward portion of the column a predetermined amount.

Another object of the invention is the provision of an integrated control mechanism for actuating the advancer-spacer mechanism forward in synchronized relation with the pusher means being utilized to intermittently move the entire column of partitions.

A still further object of the invention is to provide control mechanism for advancing and retracting the advancer-spacer mechanism connected to cooperate with and operated responsive to the control mechanism of the partition saw, disclosed in the mentioned McCormick patent. By having this partition saw and the cleaning apparatus operated in tandem, the feed pusher of the saw serves as the pusher to feed the column of partitions through the cleaner apparatus. The control mechanism for operating the advancer-spacer mechanism is, in the preferred form of the present invention, connected into the control circuit of the saw such that when the control is set for actuating the pusher of the saw for advancing the stock into the saw to add more partitions to the column and further advance the column, the advancer-spacer is retracted, and when the pusher of the saw is retracted to initiate another partition sawing cycle, the control will actuate the advancer-spacer for spacing apart the partitions in the column at the cleaning station. In other words, the cyclic operation of the advancer-spacer mechanism is substantially 180° out of phase with the column pusher.

Other objects and advantages of the present invention will become apparent from a reading of the following description of a preferred embodiment, the appended claims, and the accompanying drawings of the preferred embodiment to which reference is made and in which:

FIG. 1 is a side elevational view of the improved partition cleaning apparatus which includes the advancer-spacer apparatus of the present invention.

FIG. 2 is a plan view taken along line 2—2 of FIG. 1.

FIG. 3 is an enlarged segmentary plan view, showing one side of the advancer-spacer mechanism located along one side of the column of partitions being supported on the table of the partition cleaning apparatus.

FIG. 4 is a schematic diagram including the air motors and electrical control system for the advancer-spacer apparatus integrated for operation responsive to the control system of the pusher feed of a partition sawing and feeding apparatus of the type disclosed in U.S. Patent 2,855,009.

The invention, which is illustrated herein in a preferred form, includes novel combination and subcombination of elements which cooperate in carrying out the function of loosening a charge or group of partitions in a compacted column thereof to obtain improved results in cleaning partitions as they are worked on in groups or charges. In its most practical adaptation, the invention is disclosed as including a mechanism for providing in an intermittent and successive order a continuous supply of partitions which are instituted into the column of partitions and fed through the cleaning apparatus by an intermittent advancing movement along a continuous table surface. As the column progresses in its advancing movement, it reaches a cleaning area whereat a high velocity air stream is projected past the individual partition surfaces. However, for this cleaning to be performed most effectively, the spacing between the partitions in the charge of the column must be regulated. This requires that the spacing

of the partitions within the charge be opened up or loosened at the proper time. The advancer-spacer assembly is thus provided to advance the portion of the column of partitions that lie just forward of the cleaning area on the table. It operates to engage the aft partitions of that portion of the column and push all the partitions of that portion lying forward of the cleaning area along the table surface in an advancing direction. Preferably, this advance is done during a time when the pusher mechanism which serves to advance the entire column is inactive so that the advancing movement performed by the advancer-spacer assembly is out of phase with the pusher mechanism. For example, when the pusher of the partition forming saw is retreating or retracting in preparation for supplying further partitions and advancing the column, the advancer-spacer unit is operating to advance the end portion of the column forward from the cleaning area. Thusly, end pressure at both ends of the intermediate portion of the column is relieved and the partitions in the charge in the cleaning area are easily separable. The horizontally reciprocating vertically directed air stream will thereby impart a "fluttering" or "feathering" action to the partitions of the charge at the cleaning area. By the provision of this positive spacing, a more efficient and thorough cleaning of the partitions will result.

Referring to FIGS. 1 and 2, a table 10 having two parallel upstanding side members, such as 11, includes a horizontal top surface comprised of end sections 12 and 13 and an intermediate grated section 14. The grated section is pivotally connected at one laterally disposed side to an end section of the table, such as section 12, by a pair of spaced apart hinges 15, and the marginal edges of section 14 spaced from the stationary portions of the table 10 to permit limited oscillatory pivotal movement about the pivot of hinges 15. The grated section 14 is connected near its free end to a pair of rocker arms 16 by side brackets 17. The brackets 17 are each bolted to the sides of section 14 and have an integral rocker shaft 18 pivotally connected with bearing 19 at the upper end of the rocker arms 16. A transverse shaft 20 is journal mounted in bearings (not shown) bolted on the two upstanding side members 11 of table 10. At the opposite ends of shaft 20 are similar integral cranks whose central axes are eccentric with the axis of the intermediate portion of shaft 20. End bearings 21 are provided on the lower ends of rocker arms 16 and are journaled on the end crank portions of shaft 20. Rotation of shaft 20 in either direction will thereby provide vibratory movement to the grated section 14 through rocker arms 16.

At the top of the table 10 are a pair of parallel side guide members 22 which are disposed longitudinally along the table surface and extend over the three sections of the table 10, as seen in FIG. 2. The one guide member 22 (uppermost in FIG. 2) is adjustably mounted on the table top by a pair of slotted brackets 23, the slots thereof receiving set screws 24 threaded into the top of table 10 and which, when tightened, secure that guide member in a fixed position. This adjustment permits varying the spacing between the two side guide members 22 to accommodate various lengths of partition strips which are passed therebetween.

The guide members 22 are each constructed as angle members having integral horizontal sections which lie adjacent to the top surface of the table and upstanding sections which define the guide path for the partitions. A pair of top guide members 25 are vertically adjustable on upright posts 26. Members 25 have attached end brackets 27 which fit over posts 26 and are clamped in place.

As seen on FIG. 1, the top guides 25 are set to an operating position of a height to permit the column of corrugated partitions A to pass beneath them and to allow only a limited amount of vertical movement of the partitions as they pass over the vibrating grate section 14 of the table.

The partitions A may be fed onto the end section 12 of table 10 by any convenient means and are advanced from left to right (FIGS. 1–3). In supplying the partitions to the table, they are stacked in an upright position on one of their edge surfaces and are pushed into a closed or compacted relationship. The stacked partitions may be supplied to the table either continuously or intermittently. It is preferred, however, that the supply be intermittent by utilizing the discharge supply of the partition sawing machine disclosed in U.S. Patent 2,855,099 of McCormick. In such an arrangement, the discharge end of the table would be placed in abutting and aligned relationship with the end of section 12 of table 10. The pusher 32 of the feed mechanism of the partition sawing machine may then be utilized for advancing the stacked formed partitions intermittently through the defined guide path between members 22 on table 10. The pusher ram 32 of the partition saw machine is intermittently operated by air motors and controlled according to a control system, a portion of that control system being hereinafter described in connection with FIG. 4. As stock for making partitions is supplied ahead of the saw pusher 32 in the form of bundles of paperboard strips, it is intermittently moved across the saw to form the partitions A and compact them at the rear end of the column that is shown extending through the guide path between side guides 22 and to the far end section 13 of the table 10. Extension of the pusher 32 will also advance the column. As the column of partitions A is advanced, a portion thereof is subjected to a cleaning treatment by a high velocity blast of air emitted through nozzle assembly 41, this stream of air serving to remove any dust particles of corrugated paper or other foreign matter that may be present on the partitions A. In FIG. 1, the air nozzle assembly is designated generally as 41 and comprises an upper tubular portion 42 mounted for horizontal oscillating movement with a carriage 43. The carriage is provided with four rollers 44 which ride on a horizontal track 45. Carriage 43 is connected to one end of a pitman 46 having its other end pivotally connected to a crank on wheel 47. Wheel 47 is mounted for rotation with a horizontal shaft 48. The shaft 48 is driven by a motor 49 through belt 50. Thus, it may be seen that driving rotation transmitted by motor 49 to shaft 48 will rotate the crank wheel 47 and provide a crank and pitman drive for reciprocating the carriage 43 along the overhead track 45. This will carry the air nozzle assembly 41 back and forth in a reciprocating fashion over the top edge of the column of partitions A as they are fed therebeneath. The high velocity air stream is supplied to the upper tubular portion 42 of the nozzle assembly and conducted into the lower nozzle 51. The nozzle 51 extends transversely of the table and along the length of the underlying partitions A.

The detailed construction of the nozzle assembly and related parts is more completely described in the application of Jenkins et al, identified previously herein.

Having just described the particular partition apparatus to which the present invention is adapted as an improvement, the advancer-spacer assembly will now be described.

Referring to FIGS. 2 and 3, a pair of piston motors 60 are mounted at the top of table 10. Each of the piston motors comprises a cylinder 61, a piston rod 62 and a piston 63 mounted on the piston rod 62. The piston is keyed onto the piston rod at an intermediate point and the piston rod 62 extends through both ends of the cylinder 61. Each cylinder 61 is bolted to the top side of the horizontal angle of a corresponding side guide member 22 by end brackets 64 and 65. Each cylinder has ports 66 and 67 which communicate with opposite ends of the cylinder. The cylinders are mounted such that each piston rod 62 extends parallel to a corresponding side guide member 22. Slide guides comprising a journal member 68 and a bracket member 69 are mounted on the table to the outside of the guide members. An

intermediate slide rod **70** is mounted at its ends in the journal member **68** and bracket member **69**. Each rod **70** is disposed parallel with its corresponding side guide member **22** and piston rod **62**. Each piston rod **62** is journaled through its corresponding member **68** and is free to slide horizontally therethrough. The end of each piston rod **62** is bolted to a crosshead **71** mounted for sliding movement on a rod **70** of the slide guides. Each crosshead **71** has a sawtooth gripping element **72** pivotally mounted thereon by a pin **73**. The mounting of element **72** on its pin **73** permits rotation of the former about the latter. Each sawtooth element **72** is extensible into the guide path defined between the side guide members **22** through an elongated slot **22***a* in the vertical angle portion thereof. The elements **72** are urged to pivot inwardly into the guide path and toward the ends of the partitions A by a coil spring **75** attached between the end of the crosshead **71** and the elements **72**. Each element **72** has an integral bell crank extension **74**. An adjustable stop means, such as bolt **76**, is threaded through the outer end of bell crank extension **74** of element **72** and bears against an inner facing **71***a* of the crosshead **71**. The stop means just described defines the extent of rotation of each element **72** in a direction for extending it into the guide path and limits the engaging force of the teeth in gripping the partitions.

As may be seen from the details on FIG. 3, when the piston **63** of the motor is driven forward (to the right on FIG. 3), each sawtooth element **72** is then being urged into the guide path by spring **75** so that the teeth will engage the ends of adjacent partitions A of the column. This driving force causes the elements **72** to bite into the partitions from their opposite ends and grip them firmly so that, as the piston drives crosshead **71** forward, the gripped partitions and all those ahead of them will be moved in the forward direction. When piston **63** is reversed and retracted, the teeth of the elements **72** will each tend to drag against the ends of the partitions A which will rotate them about their respective pins **73** and revolve the sawtooth elements against their spring **75** and out of the guide path. This will release their gripping engagement and permit the teeth to slip past the edges of the partitions.

Mounted at the outer end of the piston rod **62** is a resilient cushion in the form of a cylindrical rubber pad **77**. This cushion could just as well be in the form of a coil spring. The pad **77** receives the piston rod **62** through a central bore therein and is secured in place by an end clamp **78**. The end clamp **78** is of split ring construction and the halves thereof are bolted together by screws **79** which clamp the cylindrical pad **77** tightly onto piston rod **62**. As is seen in FIG. 3, this pad will engage the adjacent end of cylinder **61** and define the end of the stroke of the piston in its forward direction. The stroke of the motor may thus be varied by loosening the split ring clamp **78** and adjusting its position along the piston rod **62**. When the piston **63** is driven in the opposite or rearward direction, the end of the stroke is defined by the piston **63** bottoming in the end of the cylinder **61** (left-hand end, FIG. 3).

Referring now to FIG. 4, each of the motors **60** is operated under the control of solenoid operated valve **110**. The valve **110** is connected to a pressure line **83** which conducts fluid under pressure from a suitable source of fluid pressure. The valve **110** is provided with a spool **111** shiftable therein for alternatively connecting the pressure from line **83** to opposite ends of the two cylinders **61** through their end ports **66** and **67**. The valve **110** is shifted between its alternative settings by energizing either of the solenoids **112** or **113**. The circuits for energizing these solenoids will be presently described. When solenoid **113** is energized, it will shift the valve spool **111** to its valve setting for extending both the pistons **63** to advance the gripping elements **72** in unison. On the other hand, when the solenoid **112** is energized, it will shift the valve spool **111** to a setting so that fluid pressure is supplied to retract both pistons **63** and drive the gripping elements **72** in the opposite direction. This latter setting will retract the gripping elements for their next advancing stroke.

A piston motor **33** on the partition saw is operatively connected by a linkage (shown but schematically on FIG. 4) to actuate the pusher **32** through a reciprocating horizontal stroke of movement. The piston motor **33** is controlled by a reversing valve **77**. The valve spool **82** of valve **77** is shifted by energizing either of the solenoids **81** or **87**. When solenoid **87** is energized, the valve spool **82** is set to connect the fluid pressure in line **83** to the lower end of the cylinder motor **33**. The piston **33***a* is thereby actuated to move the pusher **32** forward thereby feeding the paper-board stack into the saw, severing a group of partitions A and advancing the entire column of partitions along table **10**. When solenoid **81** is energized, the valve spool **82** is shifted to actuate the piston **33***a* in the opposite direction and retract the pusher **32** to make ready for the next advancing stroke.

The mentioned solenoids **81** and **112** and **87** and **113** are connected into circuits under the control of limit switches L^1 and L^2. As shown on FIG. 4, solenoids **81** and **112** are connected in series in a circuit with limit switch L^1. Switch L^1 is also shown connected in circuit with limit switch L^{4a}. The operation of switch L^{4a} in the circuit of the partition saw is fully described in U.S. Patent 2,855,009 to McCormick. Solenoids **87** and **113** are connected in a circuit in series with limit switch L^2. Electric current is supplied to these circuits through mains *a* and *b*. As disclosed in the aforementioned McCormick patent, the limit switch L^1 is mounted on a gauge rail of the partition saw and is actuated upon engagement by paperboard stock fed onto the saw table ahead of pusher **32** when the pusher **32** is fully retracted. When the limit switch L^1 is closed thusly, the circuit is completed to energize solenoids **81** and **112**. When energized, these solenoids set their valves respectively for operating motor **33** for advancing the pusher **32** of the partition saw to feed the stock to the saw and form additional partitions. These partitions are thereupon added to and compacted into the column and further extension of pusher **32** advances the column across the table **10** of the cleaning apparatus. At this same time the motors **60** are operated in unison to retract the gripping elements **72**. As previously described, these elements retreat along the column of partitions with their teeth in slipping engagement with the ends of the partitions during the time that the column is advancing by force of the pusher **32**. When the pusher passes switch L^1, the switch is permitted to open and break the circuit energizing solenoids **81** and **112**.

The limit switch L^2 is situated along the path of the pusher **32** and at the end of its forward stroke. As the pusher completes its forward stroke, switch L^2 is closed. The mechanism for operating switch L^2 is also fully disclosed in the mentioned McCormick patent.

When the limit switch L^2 is closed thusly, the circuit is completed to energize solenoids **87** and **113**. When energized, these solenoids set their valves respectively for operating motors **33** and **60** in their opposite direction. Motor **33** retracts so that pusher **32** returns to position for loading further paperboard stock ahead of it. Meanwhile, motors **60** are driven forward and gripper elements **72** grip some of the partitions in the column and advance a forward portion of the column, as previously described.

Many modifications of the details of the illustrated embodiment of the invention will be obvious or will readily occur to those skilled in the art, and it is not intended that the present invention be limited in any respect other than is necessitated by the scope of the appended claims.

We claim:

1. An advancer-spacer assembly in combination with a partition cleaning apparatus, the latter having a table surface, horizontally disposed spaced parallel guide members along said table surface defining a guide path through which a compacted column of formed upright partition strips are moved, means for directing a high velocity stream of air vertically through the column of upright partitions, means for reciprocating said last-mentioned means over a span overlying said guide path, and means for intermittently adding sawed partitions at the rearward end of the column and, concomitant therewith, advancing the column a predetermined amount, said means being reciprocably operable alternately through advancing and retracting movements, said advancer-spacer assembly comprising gripping means slideably mounted on the table top for forward and rearward movement parallel with said guide path and at the side of each of the parallel guide members, said gripping means extending into said guide path and engageable with partitions of said column to grip partitions within said column at their opposite sides during forward movement of said gripping means, reciprocating motor means operatively connected to said gripping means for imparting movement to the latter, and control means operatively connected to control said motor means, said control means being operated responsive to the retracting movement of said means for adding sawed partitions to the column to actuate said motor means for moving the gripping means forward in unison and advance the gripped partitions ahead of partitions in the column that are behind the gripping means, thereby spacing apart the partitions of the compacted column behind the gripping means, and said control means being operated for reversing the actuation of the motor means responsive to advancing movement of the column.

2. An advancer-spacer assembly in combination with a partition cleaning apparatus, the latter having a table surface, horizontally disposed spaced parallel guide members along said table surface defining a guide path through which a compacted column of formed upright partition strips are moved, means for directing a high velocity stream of air vertically through the column of upright partitions, means for reciprocating last-mentioned means over a span overlying said guide path, and means for intermittently adding sawed partitions at the rearward end of the column end, concomitant therewith, advancing the column a predetermined amount, said means including a pusher operable through a reciprocating horizontal stroke of movement near one end of said guide path, a fluid pressure operated piston motor operatively connected to move said pusher through its stroke of movement and including a cylinder, reciprocating piston and piston rod, a solenoid operated reversing valve having alternative settings for connecting fluid pressure to opposite ends of the cylinder, said valve including first and second solenoids to affect the setting of the valve in either of its alternative settings, first and second limit switches normally open, a first circuit for energizing said first solenoid and including said first limit switch, a second circuit for energizing said second solenoid and including said second limit switch, said first limit switch being closeable by the presence of partitions ahead of the pusher when retracted to the rearward end of its said stroke and said second limit switch being closeable by the presence of partitions at a predetermined advanced position of the pusher in a direction toward the guide path, said advanced position defining the forward end of the stroke of the pusher, and said advancer-spacer assembly comprising a slide guide mounted on the table at each side of the guide path, a crosshead on each slide, a sawtooth element pivotally connected on each crosshead, the teeth of each said element being adapted for pivotal movement toward and away from the guide path, said teeth engaging the ends of partitions and gripping them at opposite ends thereof whenever said elements are pivoted toward said guide path, means normally urging each said element toward the guide path, two fluid pressure operated piston motors mounted on the table, each said motor being connected to drive one of said crossheads, each said motor including a cylinder, reciprocating piston and piston rod, the mounting for each piston motor aligning the piston rod parallel to the slide of its respective slide guide, a solenoid operated reversing valve having alternative settings for connecting fluid pressure to opposite ends of the latter-mentioned cylinders, said valve including first and second solenoids to affect setting the valve in either of its alternative settings, the first said solenoid being connected into said first circuit, whereby upon closing the first circuit, said first solenoid will be energized to set the valve for actuating the piston motors in unison to retract the sawtooth elements along the column of partitions and pivot said elements away from said guide path, and the second said solenoid being connected into said second circuit, whereby, upon closing the second circuit, said second solenoid will be energized to set the valve for actuating the piston motors in unison for pivoting the sawtooth elements toward gripping engagement with partitions in the column and thereafter advancing the gripped partitions beyond the portion of the column located rearwardly of said gripped partitions, thereby spacing apart the partitions of the compacted column immediately behind the gripped partitions.

3. In combination with cyclically operating means for horizontally intermittently moving a compact horizontally disposed stack of partition elements through an air blast cleaning zone, each cycle of said means providing active and inactive periods of movement of said stack, means for separating the partition elements moving through said zone comprising reciprocating partition grippers horizontally engageable with at least one partition element beyond said cleaning zone and constructed and arranged to move the grasped partition element horizontally and in a forwardly direction with respect to said zone, drive means operable for reciprocating said partition grippers, and control means for operating said drive means responsive to said cyclically operating means to reciprocate said partition grippers substantially 180° out of phase with said cyclically operating means whereby said partition grippers are moved forwardly during an inactive period for said cyclically operating means and are retracted during an active period for said last-mentioned means.

4. An advancer-spacer assembly in combination with a partition cleaning apparatus, the latter having a table surface, horizontally disposed spaced parallel guide members above said surface defining a guide path through which a compacted column of formed upright partition strips are to be advanced, means for directing a high velocity stream of air vertically through the column of upright partitions, means for reciprocating said last-mentioned means over a span along said path, means intermittently activated for advancing the column of said partitions a predetermined amount, said advanced-spacer assembly comprising oppositely acting gripping means slidably mounted on a guide means, the latter being supported on the table top and disposed in parallel relationship with each of the parallel guide members, each said gripping means comprising a slidable member carried on said guide means, a gripping element pivoted for limited pivotal movement on said member and extensible into said guide path for engagement with partitions of said column and disposed forward in said column of the said span of reciprocating movement of said stream of air, a spring means connected between each said gripping element and its said slidable member to normally pivot the gripping element toward engagement with said partition strips, reciprocating motor means connected to said slidable member for imparting reciprocating motion to the latter, and control means for operating said motor means intermittently to advance and retract said gripping means

successively, said control means operating the motor means responsive to said means for advancing the column of partions so that the gripping means will be advanced when said means for advancing the column is inactive, and the gripping means will be retracted when said means for advancing the column is activated.

5. In combination an advancer-spacer assembly and a partition cleaning apparatus, the latter comprising a table surface, horizontally disposed spaced parallel guide members above said surface defining a guide path through which a compacted column of formed upright partition strips are moved, means for directing a high velocity stream of air through the column of upright partitions, and means for reciprocating said last-mentioned means over a span along said path, said advancer-spacer assembly comprising reciprocating motor means operable for imparting driving motion parallel to said path, partition gripping means operable along the sides of said column of partition strips to grip partitions within said column at their opposite sides, each said partition gripping means comprising a movable member, a gripping element, means for mounting said gripping element on said member for

rocking movement toward and away from said partition strips, resilient means connected to said gripping element and acting on the latter to normally urge same toward said partition strips, guide means for each said movable member for maintaining the latter parallel to said parallel guide members, said movable member and said motor means being connected for reciprocating the former by the latter, such that during forward movement of the movable member the gripping elements are urged to securely grip a forward portion of the column of partitions by their rocking movement toward said partitions and coincidently advance said gripped partitions in a forwardly direction, thereby permitting separation of the partitions of the compacted column behind said gripped partitions.

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