Jan. 25, 1966 R. M. PINE ETAL 3,231,268

OUTFEED MECHANISM

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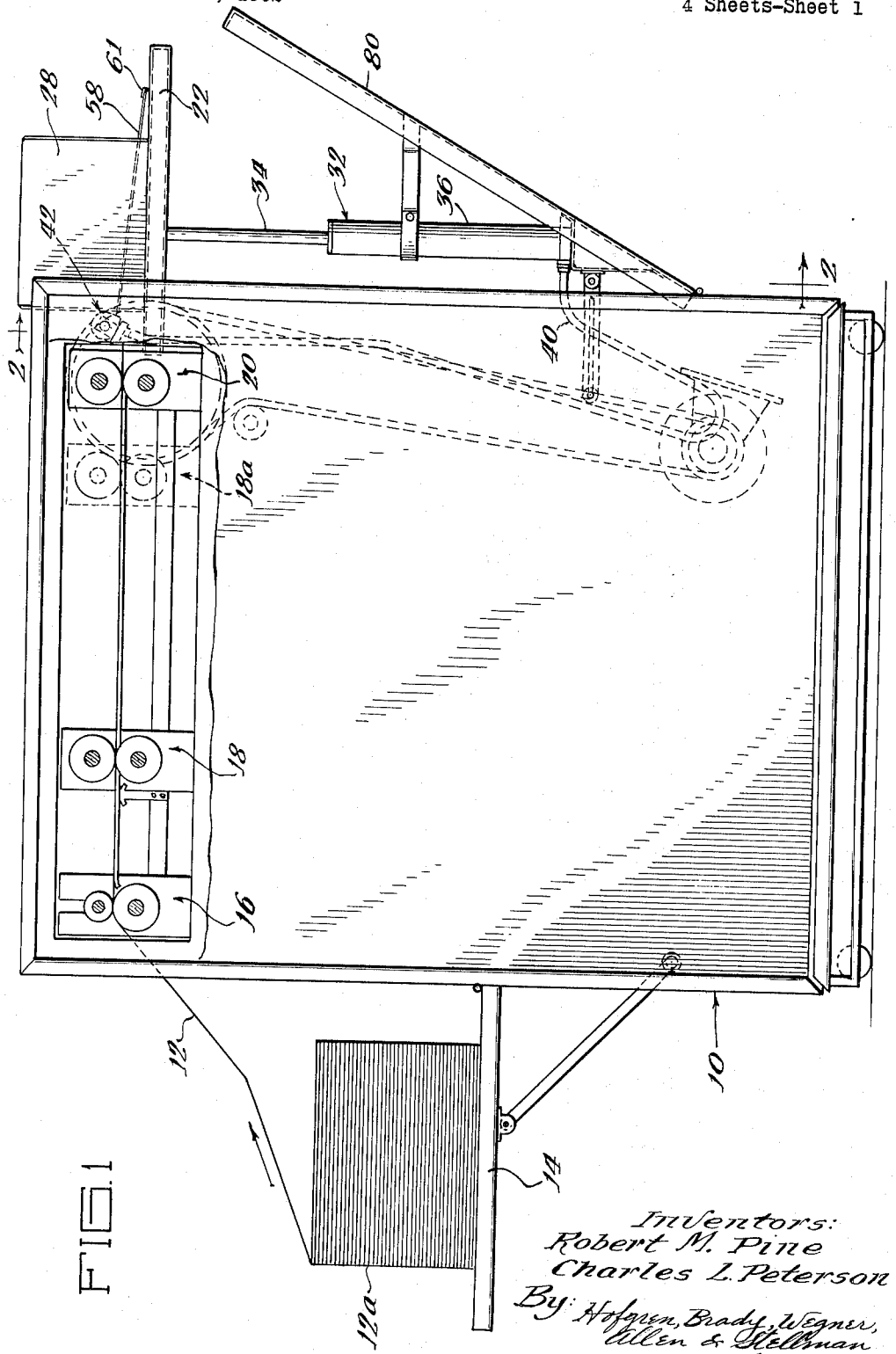


FIG. 1

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FIG. 2

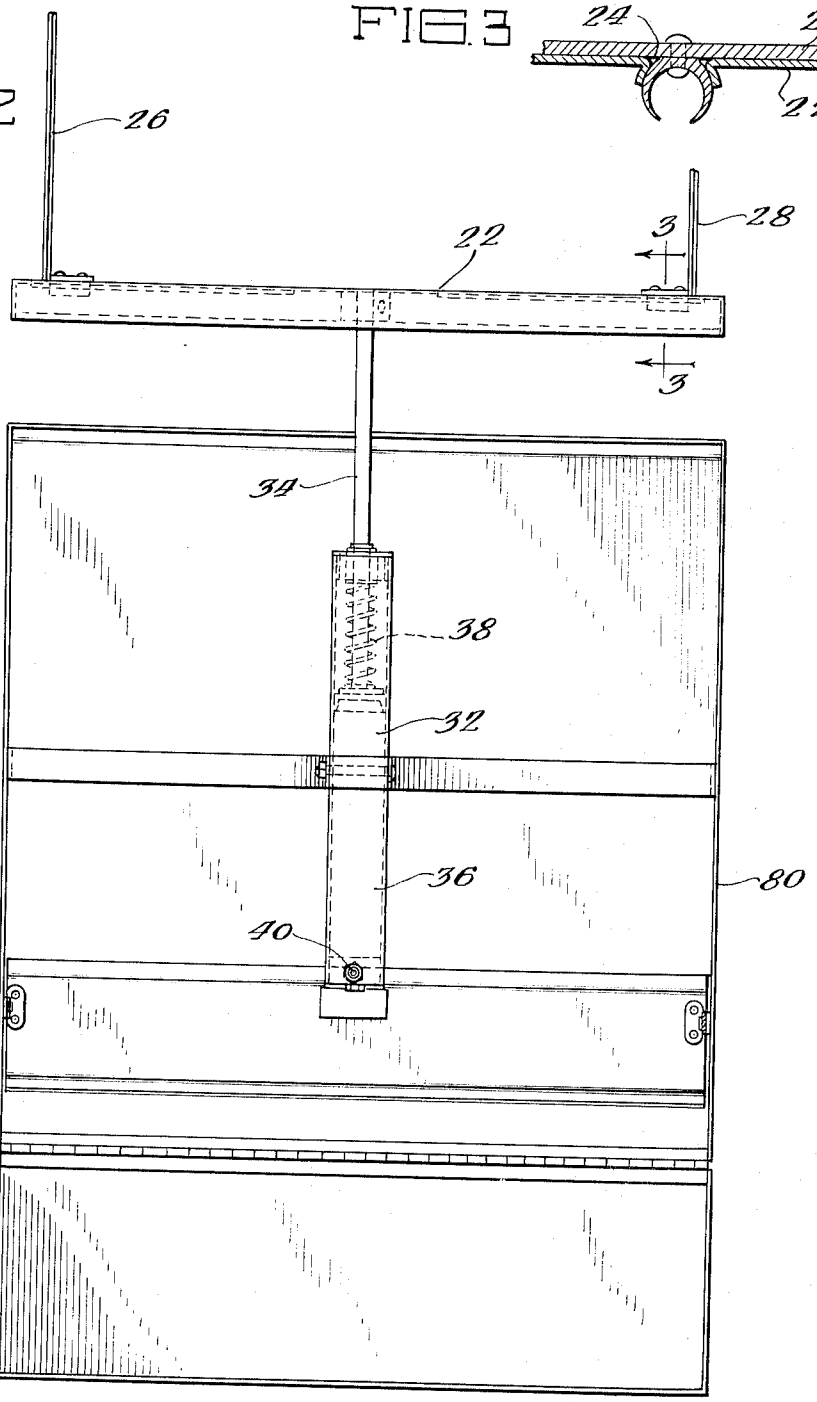


FIG. 3

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FIG. 4

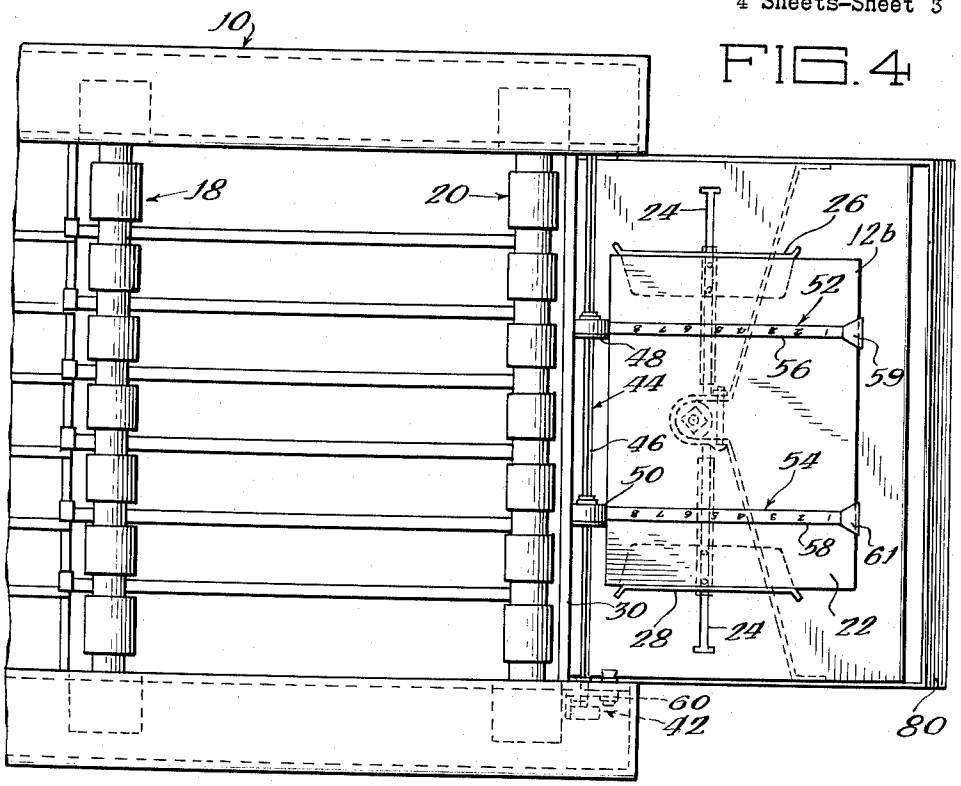


FIG. 6

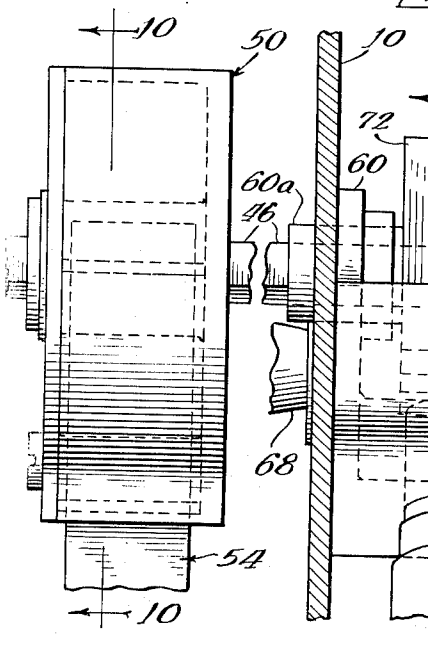
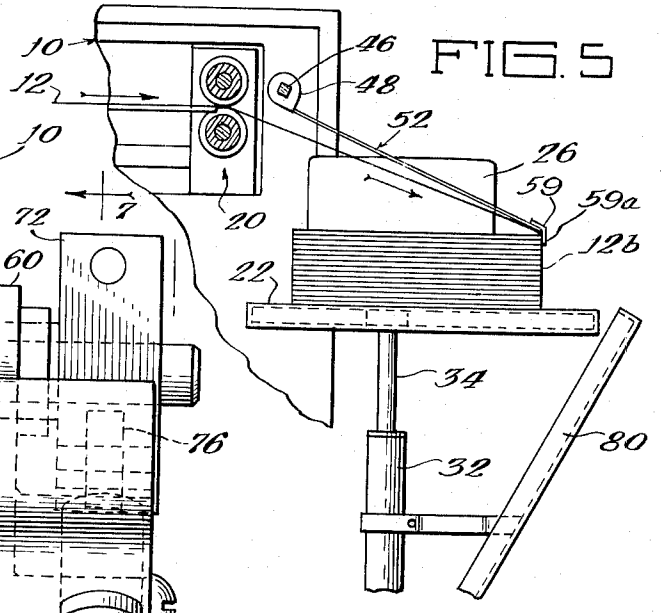


FIG. 5



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FIG. 7

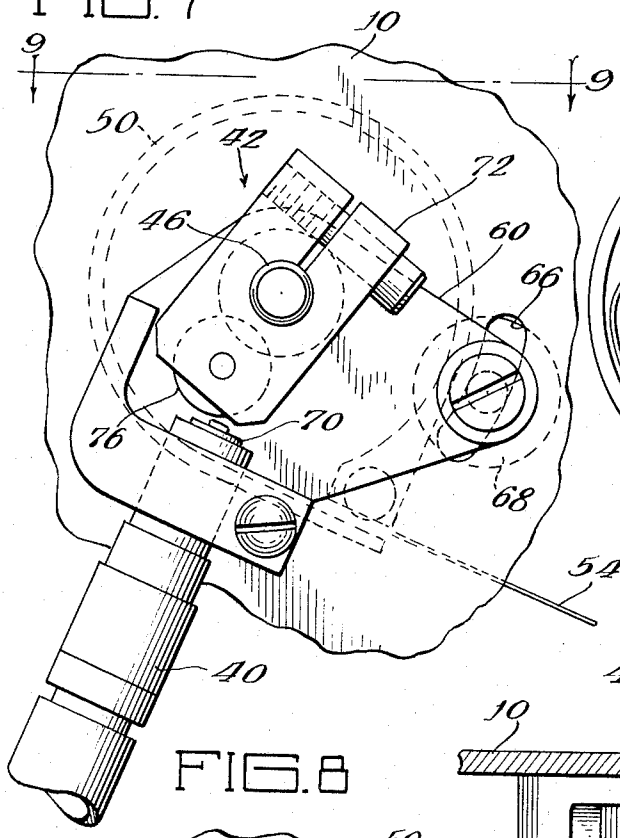


FIG. 8

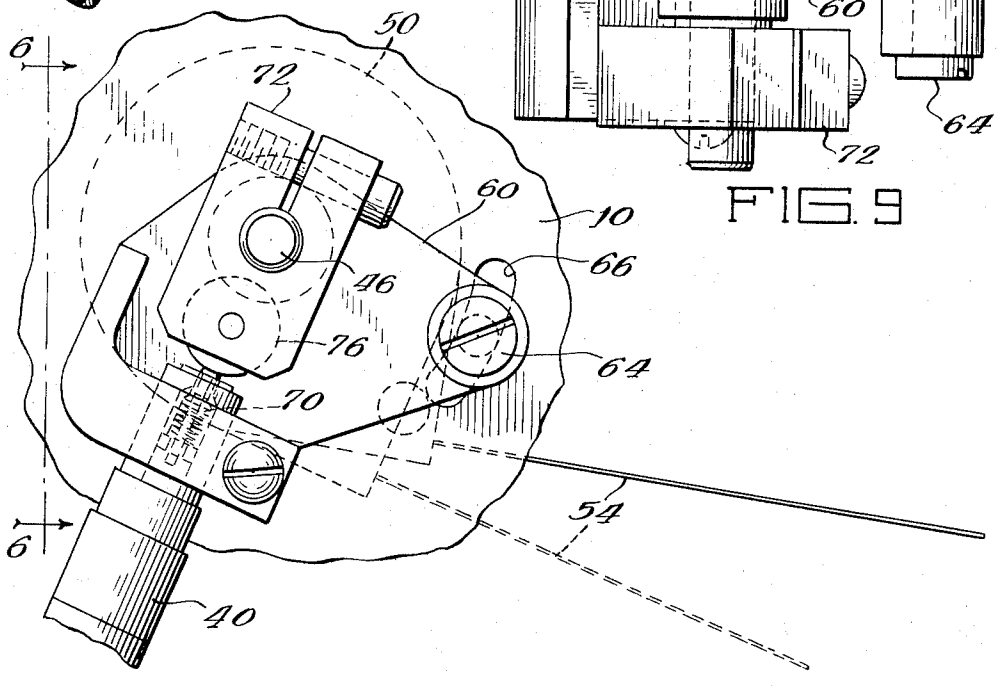
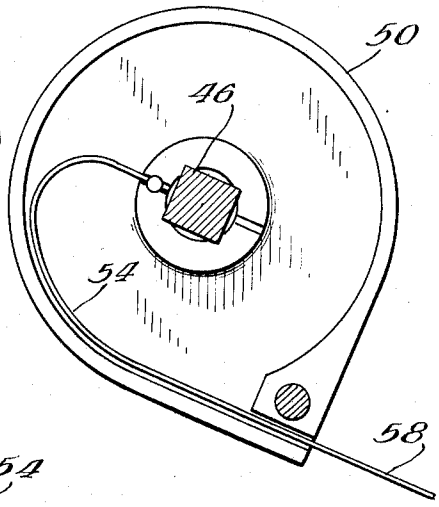


FIG. 10



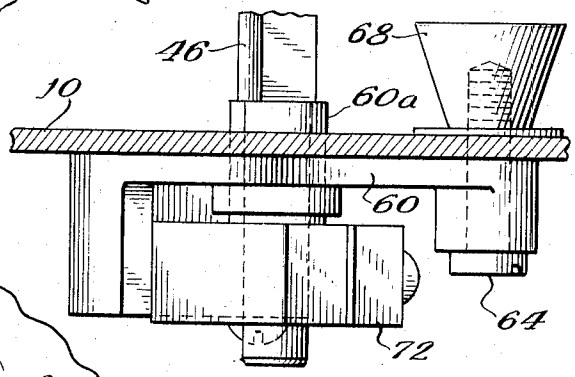


FIG. 9

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3,231,268

OUTFEED MECHANISM

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Filed Mar. 28, 1962, Ser. No. 183,253
6 Claims. (Cl. 271—88)

This invention relates to bursters and more particularly to an outfeed mechanism for use in a burster.

A critical feature in the successful operation of burster mechanisms is the angle at which separated form lengths are dispensed from the machine, commonly known as the "stacking angle." The optimum stacking angle for use in a burster depends upon the individual form length of the stationery, the speed of the burster and other factors. The "stacking angle" is a critical feature in that the separated forms will not stack properly if the optimum angle is not maintained. Bursters currently in use have various forms of mechanically adjustable devices for producing an optimum stacking angle. However these devices are not capable of automatically adjusting for each piece of stationery that is placed on the stack and thus the optimum stacking angle is kept for only a relatively small number of stationery form lengths. This results in either uneven stacks of separated form lengths or, to prevent such a condition, frequent attention to the machine and frequent removal of small stacks of separated form lengths.

It is therefore a primary object of this invention to provide a new and improved burster outfeed mechanism.

It is another object of this invention to provide a new and improved burster outfeed mechanism which continually provides an optimum stacking angle upon the initial positioning of such an angle.

It is still another object of this invention to provide a new and improved burster outfeed mechanism wherein each form length is dispensed onto a stack of separated form lengths at the same angle as each preceding form length.

It is still another object of this invention to provide a new and improved burster outfeed mechanism wherein the stacking angle is automatically adjusted in response to dispensed form lengths which are added to the stack.

Other objects, features and advantages of the present invention will be apparent from the following description of a preferred embodiment illustrated in the accompanying drawings, in which:

FIGURE 1 is a diagrammatic view of a burster embodying this invention;

FIGURE 2 is a section view taken along the line 2—2 of FIGURE 1;

FIGURE 3 is a section view taken along the line 3—3 of FIGURE 2;

FIGURE 4 is a top plan view of the device as shown in FIGURE 1;

FIGURE 5 is a fragmentary side elevational view of a portion of the outfeed device shown in FIGURE 1;

FIGURE 6 is a broken view in partial section taken along the line 6—6 of FIGURE 8;

FIGURE 7 is an enlarged fragmentary side elevational view of the control shown in FIGURE 6;

FIGURE 8 is a view of the device of FIGURE 7 in an alternate position;

FIGURE 9 is a fragmentary view taken along the line 9—9 of FIGURE 7; and

FIGURE 10 is a fragmentary enlarged view of a control element of this invention.

In FIGURE 1 there is shown a general burster operation including an illustrated embodiment of this invention. The burster, indicated generally at 10, receives continuous form stationery 12 from a stack 12a positioned on

a feeding shelf 14 of the burster. The stationery is fed into the burster by driven rollers 16 and onto the roller units 18 and 20 each having a coacting pair of bursting rollers which separate the stationery into individual form lengths and feed it out the rear of the burster onto a platform 22. Depending upon the dimensions of the individual form lengths of stationery, the roller unit 18 may be adjusted to varying distances from the rear unit 20 corresponding to the length of the form as indicated in dotted outline at 18a.

Platform 22 is provided for receiving and maintaining a stack of individual form lengths of stationary dispensed from the burster. The platform consists of a generally rectangular shaped metal member adapted to receive and stack the form lengths in an upright stack. For this purpose, a longitudinal slot 24 is formed in the platform for providing slidable mountings for guide plates 26 and 28 which are adjustable relative to each other to conform to the width of the stationery.

A variable height support 32 is provided for holding the weight of the platform and stationery in varying elevated positions. The support 32 has an extensible portion and includes a piston rod 34 which is supported by a column of air within the air cylinder 36. A spring 38 about the rod 34 buffers the rod against strong upstroke when the platform 22 is being raised. An air hose 40 is positioned at the lower end of the air cylinder 36 and establishes communication between the cylinder and a control means 42 as shown in FIGURES 1 and 6. The control means 42 regulates the height of the platform 22 by releasing to the atmosphere amounts of air from the cylinder 36 through the air hose 40.

Sensing means 44 are provided for detecting each individual form length which is dispensed from the burster onto the platform 22. This sensing means includes a rod 46 pivotally mounted to extend across the burster above the outward travel of the forms from roller unit 20. A pair of housings 48 and 50, mounted on the rod for turning therewith, each includes an extensible member or sensing tapes 52 and 54, respectively. The tapes 52 and 54 may be pulled out of the housings 48 and 50 to a desired position and will remain in that position until pulled farther or pushed back into the housings 48 and 50, in a manner similar to many conventional "steel tapes." Each tape 52 and 54 consists of an arm portion 56 and 58 and a finger portion 59 and 61, respectively. The finger portions 59 and 61 have a downwardly extending lip, such as 59a, which serve to limit the outward movement of any form length discharged from the burster and causes the dispensed form lengths to assume a neat stack. The extensible portions 52 and 54 are adapted to be pulled out to varying positions depending upon the dimensions of the form lengths being processed in the burster. The arm portions 56 and 58 of the extensible members 52 and 54, respectively, may be scaled in units of measure. The sensing means 44 is positioned so that the arms 56 and 58 will intersect the linear path of travel of the stationery 12. The rod 46 is so mounted as to be responsive to the slightest amount of rotational motion imparted to it by the displacement of the arms 56 and 58. Each individual form length which is discharged from the burster displaces the arms 56 and 58, causing a slight rotation of the rod 46. The rotational movement is imparted to the control means 42 which is secured at one end of the rod 46. As paper is stacked higher on the platform, the sensing means operates a control to let air out of the cylinder lowering the platform to maintain the correct stacking angle automatically.

The control means 42 is provided for regulating the height of the platform 22 in response to the discharge of stationery 12 from the burster. Control means 42 includes a main frame member 60 having a bearing portion

60*a* supporting the same in the frame of the burster 10. Secured within frame 60 is the terminal end of the air hose 40. The air hose 40 is provided with a striker valve 70 similar to that found in a conventional tire valve. Mounted above the valve 70 and on the rod 46, is a valve striker assembly 72. This member 72 is secured to shaft 46 by a clamp screw and carries a depressing member or wheel 76 at its lower end for actuating the valve 70. In FIGURE 7 the striker assembly is shown in its inoperative position with the wheel 76 out of contact with the valve 70. When the individual form lengths are discharged from the burster and are urged to their optimum stacking angle by the arms 56 and 58, they cause a slight displacement thereof. This displacement is in turn transmitted to the shaft 46 and causes angular displacement thereof. Because the striker assembly 72 is fixedly secured to the shaft 46 it is similarly angularly displaced. Thus the displacement of the arms 56 and 58 upward, caused by the form lengths of stationery, will bring the wheel 76 into contact with the valve 70 of the air hose 40 as shown in FIGURE 8, causing air to be released from the cylinder 36 of the variable height support 32. This in turn causes the piston 34 to descend a distance proportional to the amount of air evacuated, and thus causes the platform 22, which rests on the piston, to be lowered also. Thus, in response to successive individual form lengths of stationery, the platform lowers so that a stack of discharged stationery 12*b* may be built up with the top of the stack remaining in a constant level and each individual form length being discharged from a burster machine at the same stacking angle.

The frame member 60 is provided with an adjustment knob 68 that is threadably secured to the screw 64. The screw 64 extends normal to the plane of the frame 60 and passes through an arcuate slot 66 in the wall of the burster 10. By loosening the knob 68 and moving it in the slot 66 of the frame 60, limited rotational movement may be imparted to the frame 60 about its bearing axis 60*a*. The valve portion 70 of the air hose 40 is fixedly secured to the frame 60 in the arcuate path of travel of the wheel 76. The movement of the frame 60 generally describes an arcuate path so as to maintain the valve 70 within the path of travel of the wheel 76, but displaced therefrom. As the valve 70 is moved away from the wheel 76, the arms 56 and 58 must be deflected higher to cause the wheel 76 to strike the valve 70. Different stacking angles may be obtained by varying the position of the frame 60 and the platform 22, in combination with the length to which the extensible tapes 52 and 54 may be pulled from the housings 48 and 50. After the frame 60 has been adjusted for optimum stacking angle the platform 22 is raised and the tapes 52 and 54 are pulled out to a distance appropriate for the width of the form length being dispensed, defining the critical stacking angle between the arms 56 and 58 and the platform 22. The arcuate slot 66 may be scaled in dimensions of form lengths to facilitate the proper initial frame adjustment.

The variable height support assembly 32 is carried on a rear door 80 which is hingedly mounted on the burster. When the burster is not in operation, both the platform and variable height support means can be stored inside the burster. This may be done by releasing air from the cylinder 36 allowing the descent of the piston 34 and therefore the platform 22 supported by it. Platform 22 will drop low enough so that the door 80 will close when the guides 26 and 28 have been removed from the platform, thus storing the aforementioned devices within the burster and providing a neat appearance for the burster when it is not in operation. The front platform 14 is also hingedly secured to the burster and, when not in use, is pivoted about its mounting to form part of the front of the burster and likewise serves to enhance the appearance of the burster when not in operation.

With the incorporation of the device of this invention in a burster machine the need for personal attention to the machine is greatly reduced, yet a neat stack of separated form lengths is maintained. The machine operator simply sets in an initial desired stacking angle on the adjustment knob and brings the stacking tray up to an initial point. Raising the tray to the top and setting the arms 56 and 58 thereon will lower the tray automatically to the proper height. Once the machine is activated each individual form length compensates for its addition to the stack of form lengths by displacing the arms of the extensible tapes as the form length is dispensed from the machine. Thus every individual form length is stacked at the same angle as the preceding form length. This allows the burster machine to be run for longer periods of time without the need for removal of the stack of dispensed form lengths, while maintaining a neat stack of separated form lengths.

The foregoing detailed description has been given for the clearness of understanding only and no unnecessary limitations should be understood therefrom for some modifications will be obvious to those skilled in the art.

We claim:

1. An outfeed mechanism for a continuous form stationery burster, comprising: a platform mounted on the burster in a position to receive individual form lengths of stationery from the burster; a variable height support for the platform including an air cylinder for storing a column of atmospheric air, said cylinder including a movable piston on said column of atmospheric air for supporting the weight of the platform and stationery in varying elevated positions, said piston and cylinder adapted to produce said column of atmospheric air upon manual movement of said piston relative to said cylinder; a release valve for releasing air in the cylinder to lower the platform, said release valve including a spring loaded valve member and a pivotally mounted depressing member for actuating said valve member; and sensing means for sensing the height of the stationery on the platform including a plurality of paper deflecting arms secured to a pivotally mounted shaft, said arms causing angular displacement of said shaft responsive to deflection of individual form lengths and said shaft being operatively connected to said release valve whereby the platform is automatically lowered generally in proportion to the increase of the stack of stationery to maintain proper discharge and collection of the stationery.

2. The device of claim 1 including a door hingedly mounted at the discharge end of said burster for closing the same wherein said height support and said platform are secured to the interior of said door and are adapted to be enclosed within said burster when not in use.

3. The outfeed mechanism of claim 1 wherein the sensing means includes extensible arms extending from said shaft outwardly over said platform in the path of form lengths to be discharged from the burster, said arms directing said form lengths onto the platform while controlling said release valve shaft position.

4. An outfeed mechanism for a continuous form stationery burster, comprising: a platform support having an upright cylinder with a reciprocable piston therein, a rod connected to the piston and extending upwardly out of the cylinder, a platform attached to the upper end of the rod and being supported thereby; an atmospheric air inlet to the lower end of the cylinder below said piston and a check valve controlling escape of air through said inlet from out of the cylinder so that a column of atmospheric air may be trapped within the cylinder for supporting the platform, rod and piston in a raised position relative to the cylinder; a movable sensing member extending over the platform and having a cam portion swingable with the sensing member relative to said check valve for opening the check valve during only a portion of said swinging movement, said platform, piston and rod providing a weight upon the trapped atmospheric air in said cylinder to cause the air to flow out of said inlet upon opening of said check valve by said sensing

member cam whereby the platform may be lowered under control of the position of the sensing member.

5. An outfeed mechanism for a continuous form stationery burster, comprising: a platform mounted on the burster in a position to receive individual form lengths of stationery from the burster; a variable height support for the platform including a cylinder having a piston therein above a column of atmopsheric air for holding the weight of the platform and stationery in varying elevated positions; a release valve for trapping air in the cylinder and alternatively releasing air from the cylinder to lower the platform; and sensing means for sensing the height of the stack of stationery on the platform and having a portion for operating the release valve responsive thereto whereby the platform is automatically lowered generally in proportion to the increase in the stack of stationery to maintain proper discharge and collection of the stationery.

6. The device of claim 5 including means for varying the ranges of sensitivity of the sensing means for controlling the stacking angle of individual form lengths

discharged from the burster toward the platform comprising said sensing means portion joined to an arm in superposed relation to said stack of stationery with said portion and arm being adjustably joined together for selected changes in angle therebetween so that operation of said release valve by said portion may be at predetermined position of said arm relative to said platform.

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