April 8, 1958 E. W. JOHANSON 2,829,799

DEVICE FOR DISPENSING SHEET MATERIAL FROM STOCK PILE

Filed May 28, 1954 2 Sheets-Sheet 1

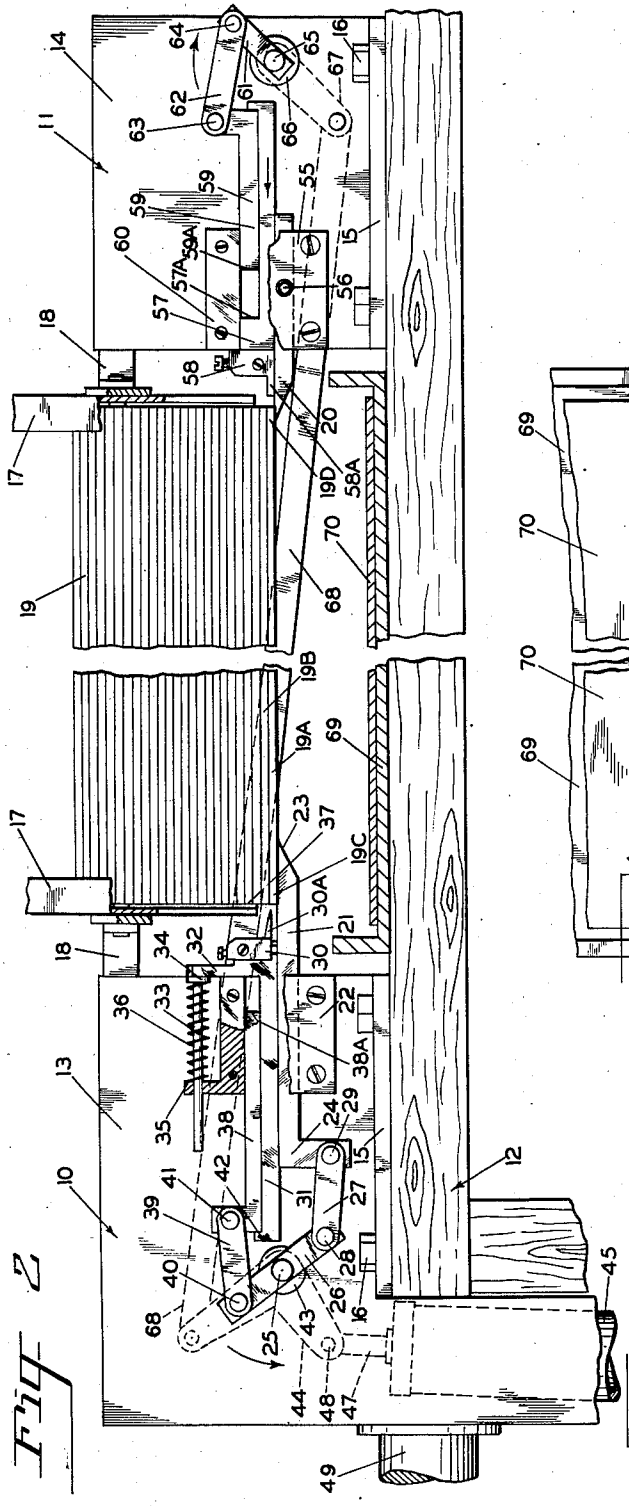


Fig. 2

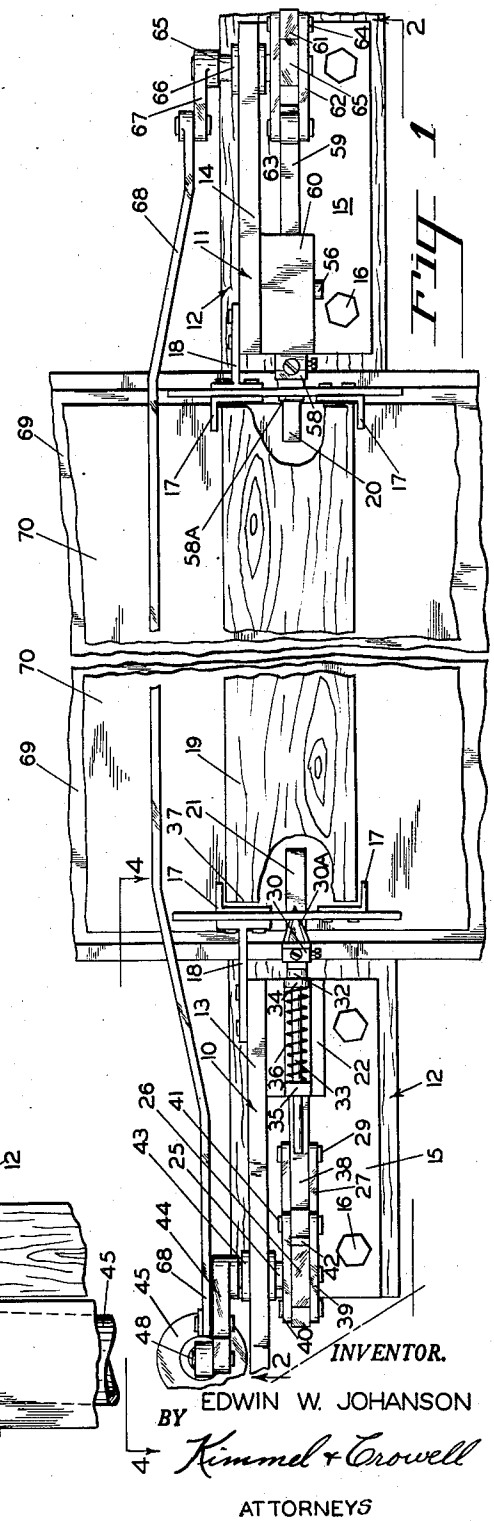


Fig. 1

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DEVICE FOR DISPENSING SHEET MATERIAL FROM STOCK PILE

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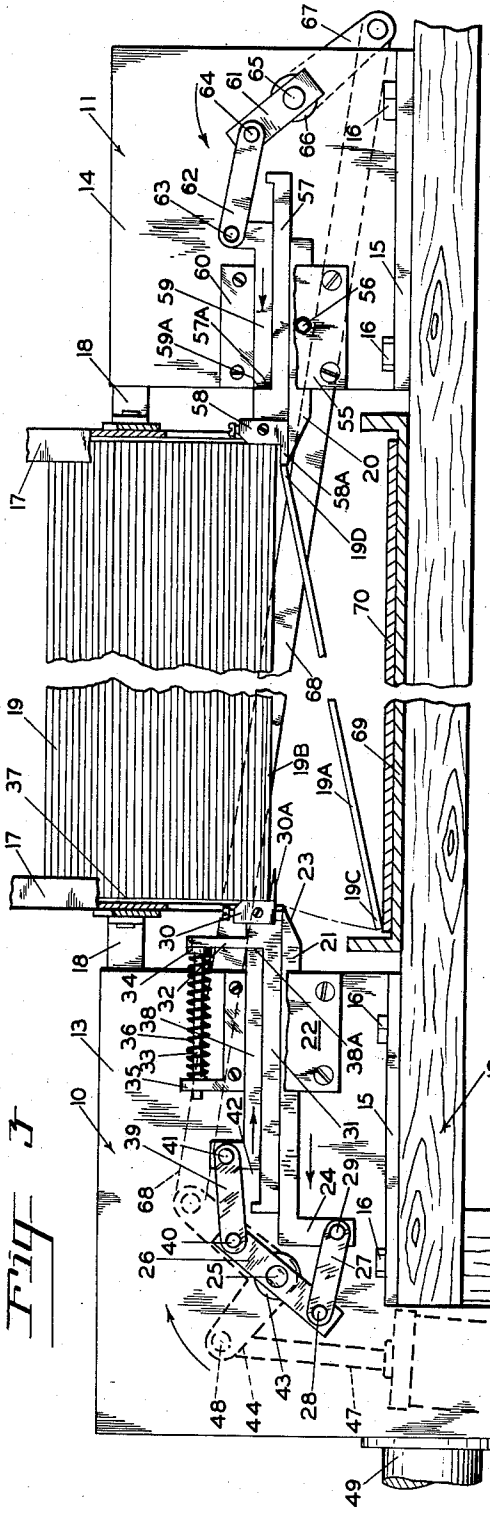


Fig. 3

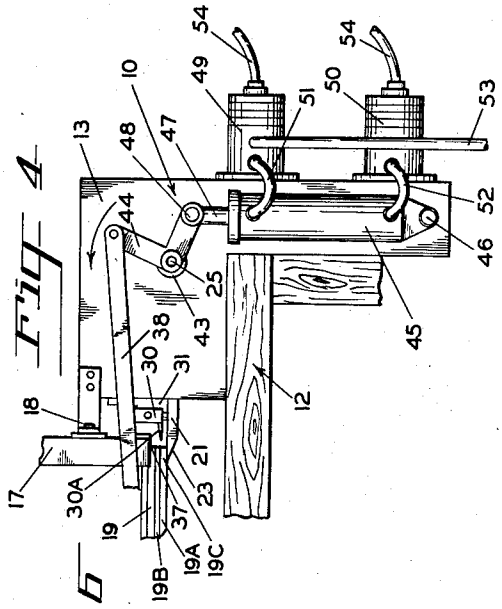


Fig. 4

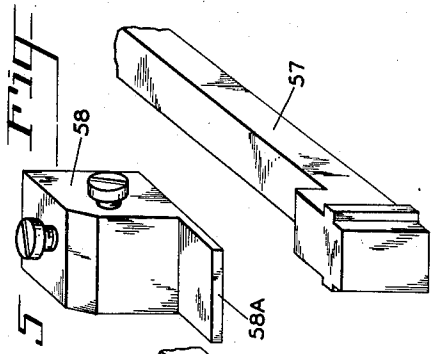


Fig. 5

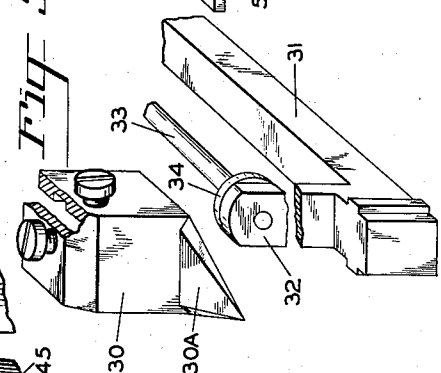


Fig. 6

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2,829,799

DEVICE FOR DISPENSING SHEET MATERIAL FROM STOCK PILE

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Application May 28, 1954, Serial No. 433,196

3 Claims. (Cl. 221—293)

My invention relates to devices for dispensing sheet material from stockpiles and is particularly adapted for dispensing a sheet material, one sheet at a time, at predetermined intervals of time.

My new and improved dispensing device for sheet material is particularly adapted to be used in connection with dispensing box parts on assembly lines in box assembly plants.

Another object of my invention is the provision of means within the device for dispensing various thicknesses of sheet material and means for dispensing material that may be slightly out of line or warped.

A further object of my invention is to forcibly separate the sheets while dispensing a sheet one at a time.

A still further object of my invention is to be able to dispense sheet material that may vary in thickness, this difference in thicknesses being automatically compensated for with my new and improved machine.

These and other incidental objects will be apparent in the drawings, specification and claims.

Referring to the drawings:

Figure 1 is a plan view of my new and improved sheet dispensing device, parts broken away for convenience of illustration.

Figure 2 is a transverse sectional view of a material conveyor having my new and improved dispensing device mounted thereabove supporting sheet stock, parts broken away for convenience of illustration, taken on line 2—2 of Figure 1.

Figure 3 is the same as Figure 2, except that the device is in a position for dispensing a sheet of material.

Figure 4 is a fragmentary detailed rear view of the device, taken on line 4—4 of Figure 1, showing the completed parts which Figure 1 does not show, as part of Figure 1 is broken away.

Figure 5 is an exploded perspective view of the separating and holding shoe illustrating how they can be adjusted for various thicknesses of material.

Figure 6 is an exploded perspective view of the sheet dispensing shoe.

Referring more specfically to the drawings:

My new and improved dispensing device consists of oppositely disposed dispensing assemblies 10 and 11, mounted on a suitable supporting member 12. The assemblies 10 and 11 consist of frames 13 and 14. These frames consist of vertical plates having flanges 15 adapted to support the said frames on the supporting member 12 by way of the bolts 16. Vertical guideways 17 are secured, by any suitable means, as brackets 18, to the frames 13 and 14. These guideways are adapted to hold and guide the stack of material 19, as best illustrated in Figure 1.

The material rests upon supporting fingers 20 and 21. The finger 20 is fixedly adjusted while the finger 21 is movable, the operation of which I will now describe. The finger 21 extends through the guideway or bearing 22, referring to Figure 2, and its tip 23 is adapted to support the material 19. Its opposite end terminates in a

right angle arm 24. Journalled to the frame 13 is a shaft 25. Keyed to this shaft is a double ended crank 26. To one end of this crank is connected a link 27, which is pivotally connected at 28 to the said crank and at 29 to the arm 24 of the movable finger 21.

An adjustable material separating foot 30 is fixedly secured to the reciprocating bar 31 by way of the T slot assembly 31*a*, the foot being best illustrated in Figure 5. Extending upwardly at right angles is an arm 32 formed integral with the bar 31. A rod 33 is anchored to the upper end of the arm 32 by any suitable means at 34. The opposite end of the rod passes through a guide 35 forming part of the frame 13 and a spring 36 is adapted to bear against the guide 35 and against the arm 32, tending to force the bar 31 and the shoe 30 towards the end 37 of the material 19.

When the device is in the position shown in Figures 1 and 2 the shoe 30 is being held away from the material through the action of the operating bolt 38, which is adapted to slide within the bearing 22. This bolt is connected to the double ended crank 26 by way of the link 39, which is pivotally connected to the crank at 40 and to the bolt 38 at 41. The movable bar 31 is held in the position shown in Figure 2 by the action of the bolt 38 bearing against the upturned lug 42 forming part of the bar 31.

The shaft 25 is journalled within the bearing 43 of the frame 13 and has a bell crank 44 keyed to the opposite end to that of the double ended crank 26. This bell crank is adapted to be operated by the air cylinder 45. The air cylinder 45 is pivotally mounted to the frame 13 at 46 and having its piston rod 47 pivotally connected to the crank 44 at 48. The cylinder 45 receives its operating fluid from either of the electric control valves 49 or 50 by way of the hose connections 51 and 52, the valves receiving their supply of operating fluid through the hose line 53. The valves are operated by electric energy supplied through the conductors 54 from a suitable timing apparatus not here shown.

As stated before, the finger 20 is fixedly mounted within the bearing unit 55 by a locking screw 56. Slidably mounted within the said bearing is a bar 57, which has the dispensing foot 58 secured thereto, as best illustrated in Figure 6. A bolt or plunger 59 is slidably mounted upon the bar 57 and within the bearing 60. This bolt or plunger is connected to the crank 61 by way of the link 62, which is pivotally connected at 63 to the plunger and at 64 to the crank 61.

The crank 61 is keyed to the shaft 65, which is journalled within the bearing 66, forming part of the frame 14. Keyed to the shaft is another crank 67 which is connected by way of the link 68 to the crank 44, above described in connection with the assembly 10. This link maintains the assembly 10 and the assembly 11 in timed relationship with one another. I have illustrated a conveyor 69 underneath the stack of material 19. This conveyor is adapted to receive the dispensed sheets of material, one at a time in timed relation in regards to the movement of the conveyor belt 70.

I will now describe the operation of my new and improved device for dispensing sheet material. The pile of sheet material 19 rests upon the fingers 20 and 21. In Figures 1 and 2 the material is at rest, in fact the entire mechanism is at rest. When it is desired, by timing not here shown, to release or dispense a sheet of material, electric energy is supplied to the valve 50 from the said timing device. This will open the said valve, permitting operating fluid to flow from the supply line 53 into the lower end of the cylinder 14 by way of the flexible hose 52. This will raise the piston rod 47, moving the crank 44 in the direction of the arrow, Figure 4.

Referring now to Figure 3, the crank 44 will move

the double crank **26** in the direction of the arrow to the position shown in this figure, forcing the plunger **38** by way of the link **39** to the right, in the direction of the arrow. The end **38A** of the plunger will engage the vertical arm **32** of the movable bar **31**, moving the foot **30** against the end **37** of the material **19**, at the same time forcing the toe **30A** of the shoe **30** between the sheet **19A** and sheet **19B** at the bottom of the stock pile. This will support the stock pile on the toe **30A** while the tip **23** of the finger **21** is moved in the direction of the arrow by the crank **26** through the link **27**, thereby releasing the tip **19C** of the sheet **19A** from under the stock pile **19**.

At the same time this happens the link **68** will move the crank **61** rotating the shaft **65** in the direction of the arrow, moving the plunger **59** in the direction of the arrow. The tip **59A** of this plunger will engage the shoulder **57A** of the bar **57** forcing the same to the left in the direction of the arrow, causing the toe **58A** of the foot **58** to engage the end **19D** of the sheet **19A**, forcing the same from under the slat **19B** and the stock pile **19** of sheets, dispensing the same on to the conveyor belt **70**.

At the last end of the movement above described, the shoe **58** engages the end of the stockpile, as best illustrated in Figure 3, at which time we are now ready to return the shoes **30** and **58**, including the finger **23** to its original holding position, as illustrated in Figures 1 and 2.

The object of the spring **36** forcing the shoe **30** towards the material is to take up lost motion that I find necessary due to the fact that the shoe moves a shorter distance than the distance of the movement of the finger **21**, but on the final movement of the finger **21** the end **38A** of the plunger **38** will positively move the shoe **30** tightly against the end of the material.

What is claimed is:

1. A sheet material dispenser comprising a frame, upstanding material guide members fixed to said frame, a fixed material supporting member at the lower ends of certain of said guide members, a movable supporting member opposite from said fixed supporting member, a second movable supporting member above said first movable supporting member, means for moving said first movable supporting member outwardly to thereby release the adjacent edge of the lowermost sheet, operating means active with outward movement of said first movable supporting member for moving said second supporting member inwardly to engage beneath the penultimate sheet prior to the release of the lowermost sheet, a sheet ejector adjacent said fixed supporting member, and operating means active with inward movement of said second movable supporting member for pushing the lowermost sheet off of said fixed supporting member.

2. A sheet material dispenser as set forth in claim 1 including means effecting lost motion between said first named operating means and said second movable supporting member.

3. A sheet material dispenser comprising a frame, upstanding material guide members carried by said frame, a pair of oppositely disposed supporting members at the lower ends of said guide members, means for moving one of said supporting members outwardly to released position with respect to the lowermost sheet, means active with outward movement of said one supporting member for supporting the penultimate sheet, and means ejecting the lowermost sheet from the other one of said pair of supporting members subsequent to the release of the lowermost sheet by said one supporting member.

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