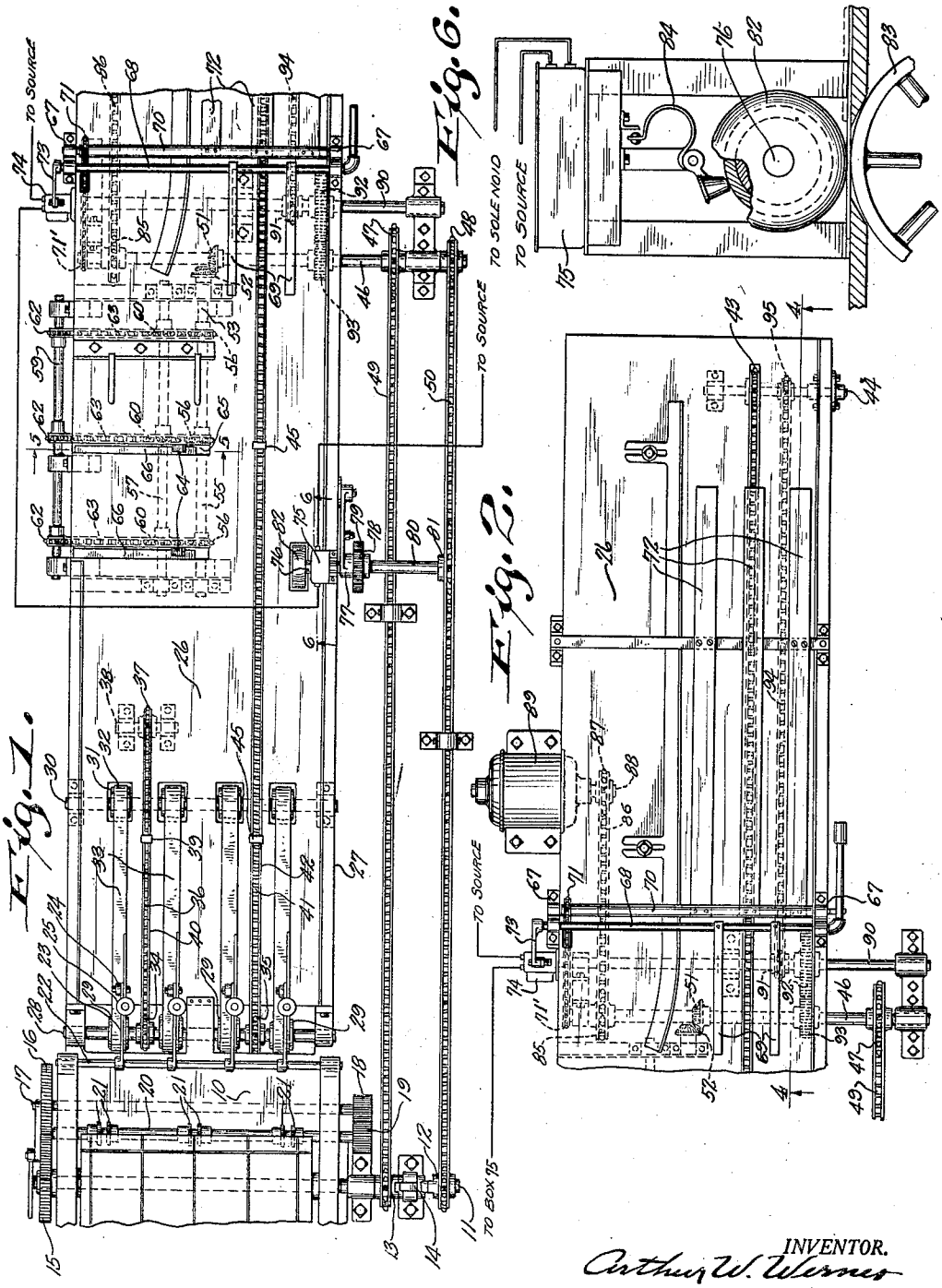
Feb. 23, 1932. A. W. WERNER 1,846,776

SHEET CONVEYER

Filed July 27, 1929 2 Sheets-Sheet 1



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SHEET CONVEYER

Filed July 27, 1929 2 Sheets-Sheet 2

Fig. 3.

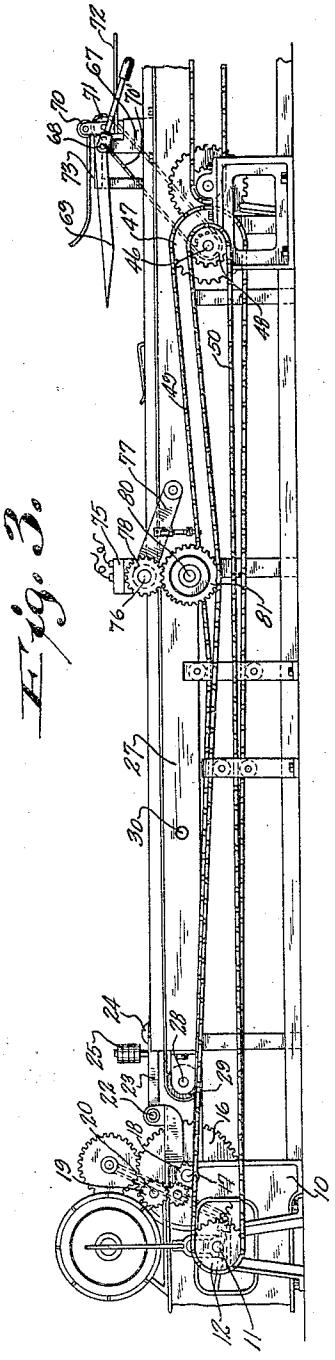


Fig. 5.

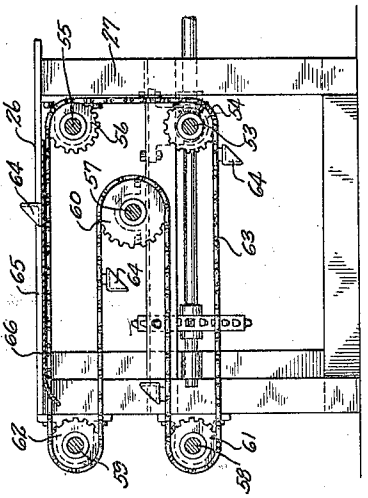
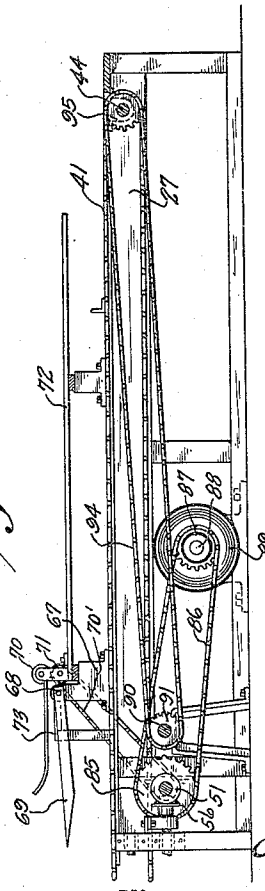


Fig. 4.



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SHEET CONVEYER

Application filed July 27, 1929. Serial No. 381,470.

This invention relates to improvements in sheet conveyers.

It is one of the objects of this invention to provide an improved sheet conveyer adapted to receive sheets of material in a double row, in which novel means is employed for automatically shifting said sheets into single file as they are being conveyed. The said conveyer is particularly adapted for use in connection with a unitary box making machine such as is described in the application af Emery L. Walker and Arthur W. Werner, Serial No. 364,293.

A further object of this invention is to provide an improved sheet conveyer of the type described, in which means is provided for automatically shunting sheets which have doubled up on one another in passing along the conveyer so that said doubled up sheets will not interfere with subsequent operations of the box making machine.

With the above and other objects in view, the invention consists of the improved sheet conveyer, and all its parts and combinations, as set forth in the claims, and all equivalents thereof.

In the accompanying drawings, illustrating one complete embodiment of the preferred form of the invention, in which the same reference numerals designate the same parts in all of the views:

Figs. 1 and 2 illustrate a plan view of the conveyer, a portion of a box making machine being shown in connection therewith;

Fig. 3 shows a side elevation of the portion of the conveyer shown in Fig. 1;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is an enlarged sectional detail view taken on line 5—5 of Fig. 1; and

Fig. 6 is an enlarged sectional detail view taken on line 6—6 of Fig. 1.

Referring to the drawings, the numeral 10 designates a unit of a box making machine having a drive shaft 11 journaled therethrough. The said drive shaft carries on one end loosely mounted sprocket wheels 12 and 13 which are adapted to be selectively engaged by a clutch member 14. On its other end, the shaft 11 carries a rigidly mounted gear 15 which meshes with a gear 16 rigidly mounted on a shaft 17. On the other end of the shaft 17 is a rigidly mounted gear 18 which drives a gear 19 rigidly mounted on a shaft 20. The latter shaft carries cutting disks 21 which are adapted to sever a sheet of material extending the entire width of the unit 10 into two sections and to trim the outer edges of same to the proper size for forming a container.

A rod 22, at the outer end of the unit 10 carries arms 23 which are provided with rollers 24. Weights 25, on said arms, hold said rollers in contact with the sheets as they are fed from the unit 10 to the platform 26 of a conveyer frame 27.

Journaled in the end of the conveyer frame 27 adjacent the unit 10 is a shaft 28 carrying rigidly mounted rollers 29. Another shaft 30 carries rigidly mounted rollers 31 which project through openings 32 in the top portion 26 of the frame. Endless belts 33 for conveying the sheets, connect said rollers. Also rigidly mounted on the shaft 28 are sprocket wheels 34 and 35. The sprocket wheel 34 is connected by an endless chain 36 with a sprocket 37 mounted on a shaft 38 below the frame. The said chain carries sheet engaging lugs 39 which move in a slot 40 in the top portion of the platform 26.

The sprocket wheel 35 is connected by an endless chain 41 which moves in a slot 42, with a sprocket 43 on a shaft 44 (see Fig. 2). The said chain also carries lugs 45.

Journaled transversely below an intermediate portion of the conveyer frame is a shaft 46 having sprocket wheels 47 and 48 rigidly mounted thereon. The latter are connected by endless chains 49 and 50 with the sprocket wheels 13 and 12 respectively on the unit 10. As the sprockets 47 and 48 are of different sizes, the shaft 11 on the unit 10 may be driven at two different speeds, according to which of the sprockets 12 and 13 is engaged by the clutch 14.

The shaft 46 also carries a rigidly mounted bevel gear 51 which meshes with a bevel gear 52 on a shaft 53 journaled below the frame. The shaft 53 carries three rigidly mounted sprocket wheels 54. Mounted on a shaft 55

above the shaft 53 are three other sprocket wheels 56. Other shafts 57, 58 and 59, journaled as shown in Fig. 5, each carry sets of sprocket wheels 60, 61 and 62, respectively. Chains 63 connect each set of sprocket wheels as shown, and said chains have sheet engaging lugs 64 extending from their sides, the said lugs being adapted to travel in slots 65 in the conveyer platform 26, and to rest upon guiding plates 66, as shown in Fig. 5.

When double sheets come out of the unit 10, the sheets carried by the chain 36 are moved to the portion of the frame having the slots 65, within which the lugs 64 are travelling. Here the sheets are engaged by said lugs, and are moved in a direction at right angles to their former direction of travel, between the sheets being carried by the chain 41. Thus, the sheets which come out of the unit 10 in pairs, are operated on by the chains 63 so that they travel in single file.

Brackets 67 on opposite sides of the frame have a rod 68 journaled therein which carries rigid arms 69. Pull rollers 70 are also journaled between the brackets 67 and said rollers are driven by an endless chain 70′ connecting a sprocket wheel 71 with a sprocket 71′ on the shaft 46. A platform 72 extends from the brackets, parallel to the frame but spaced thereabove.

Extending from an end of the rod 68 is an arm 73 having a piston extending downwardly therefrom, and pivoted thereto. The said piston enters the core of a solenoid 74 which is wired to a conduit box 75 (see Fig. 6). The said conduit box is positioned above a shaft 76, the latter being journaled in a bearing 77. One end of said shaft carries a gear 78 which meshes with a gear 79 on a shaft 80. The latter shaft has a sprocket wheel 81 which is driven by the endless chain 50. The other end of the shaft 76 carries a roller 82 below which is a roller wheel 83 rigidly mounted on the shaft 80. The two rollers are normally held sufficiently far apart to permit a single thickness of cardboard to pass therebetween. If, through some accident, two sheets pass between the rollers, the roller 82 will be raised up to close a switch 84 below the conduit box 75. This will cause the solenoid 74 to be energized, thereby pulling down on the arm 73, causing the shaft 68 to be turned, and the arms 69 to be moved downwardly so that their end portions engage the top of the frame. The sheets of cardboard, instead of being permitted to travel in their normal course, will pass over the arms 69, between the rollers 70 and will be shunted onto the emergency platform 72.

The shaft 46 is also provided with a rigidly mounted sprocket wheel 85 which is connected by an endless chain 86 with a sprocket wheel 87 on the drive shaft 88 of a motor 89. A shaft 90 is provided with a rigidly mounted sprocket wheel 91 and with a gear 92 meshing with a gear 93 on the shaft 46. The sprocket 91 is connected by an endless chain 94 with a sprocket wheel 95 on the shaft 44.

In the operation of the device, the sheets of material which have been severed into two sections by the cutting disks 21 pass in a double row from the unit 10, beneath the rollers 24, onto the platform 26. The said rollers, being weighted down by the weights 25, hold the sheets flat upon the platform. The sheets are then engaged by the lugs 39 on the chain 36 and by the lugs 45 on the chain 41, and are conveyed in a double row. When the sheets which are being moved by the chain 36 reach the portion of the platform which is provided with the transversely extending chains 63, the sheets are moved in a direction at right angles to their former direction of travel, between the sheets which are being conveyed by the chain 41. Thus, the conveyer is adapted to receive sheets in a double row and to automatically shift said sheets into single file so that they may be fed in the latter order into a subsequent machine.

It is to be noted that the conveyer chains 36 and 41 and the shifting chains 63 have interrelated driving mechanism, the latter being so arranged that the chains 63 will be driven at a relatively high speed, and will be so timed with relation to the chain 41 as to cause sheets to be shifted into the spaces between the sheets which are being conveyed by the latter chain.

Although only the preferred form of the invention has been shown and described, it is not desired to be limited to this exact showing, as the broad concept of the invention contemplates all changes and modifications as may fairly come within the scope of the claims.

What I claim is:

1. A conveyer comprising a platform, means on said platform for simultaneously conveying material in the same direction in a double row, and endless shifting means on said platform engageable with the material in one row only for causing said two rows to be combined into a single row.

2. A conveyer comprising a platform, means on said platform for conveying material in a double row, and means extending at substantially right angles to said conveying means and engageable with an edge of the material in one of said rows for causing said material to be shifted into the other row.

3. A conveyer comprising a platform, means on said platform for conveying material in a double row, and means engageable with an edge of the material in one of said rows for causing said material to be moved in a direction at substantially right angles to

its former direction of travel in line with the sheets in the other row.

4. A conveyer comprising a platform, endless conveying means for conveying material in one row on said platform, endless conveying means movable in the same general direction as said first-mentioned conveying means for conveying material in another row on said platform, one of said conveying means being shorter than the other, and endless shifting means adjacent the end of the short conveying means for shifting material therefrom onto the other conveying means.

5. A conveyer comprising a platform, endless conveying means for conveying material in one row on said platform, endless conveying means movable in the same general direction as said first-mentioned conveying means for conveying material in another row on said platform, one of said conveying means being shorter than the other, and endless shifting means adjacent the end of the short conveying means and extending at right angles thereto for shifting material therefrom onto the other conveying means.

6. A conveyer comprising a platform, endless conveying means for conveying material in one row on said platform, endless conveying means movable in the same general direction as said first-mentioned conveying means for conveying material in another row on said platform, one of said conveying means being shorter than the other, and endless chain conveying means adjacent the end of the short conveying means and extending at right angles thereto for shifting material therefrom onto the other conveying means.

7. A conveyer comprising a platform, means on said platform for conveying material in the same direction in a double row, endless means engageable with the material in one of said rows for causing said material to be shifted into the other row, and interrelated driving mechanism for said conveying means and said endless shifting means so that the material will be shifted from one row to the other at definite time intervals.

8. In a conveyer, conveying means for normally moving a single thickness of sheets of material therealong, a platform positioned above said conveyer, movable guiding arms adjacent said platform, switch means adjacent said conveying means operable by said sheets when they have doubled up on one another, a solenoid operable by said switch, and means between said solenoid and said guiding arms to cause the latter to be moved downwardly to shunt sheets which have doubled up onto the platform above the conveyer.

9. In a conveyer, conveying means for normally moving a single thickness of sheets of material therealong, a platform positioned above said conveyer, movable guiding arms adjacent said platform, switch means adjacent said conveying means operable by said sheets when they have doubled up on one another, a solenoid operable by said switch, means between said solenoid and said guiding arms to cause the latter to be moved downwardly to shunt sheets which have doubled up onto the platform above the conveyer, and roller means for moving the sheets onto said platform.

10. A conveyer comprising a platform, endless conveying means for conveying material in one row on said platform, endless conveying means extending in the same general direction as said first-mentioned conveying means for conveying material in another row on said platform, one of said conveying means being shorter than the other, and endless means having its effective surface horizontally disposed for shifting material from said short conveying means onto the other conveying means.

In testimony whereof, I affix my signature.

ARTHUR W. WERNER.