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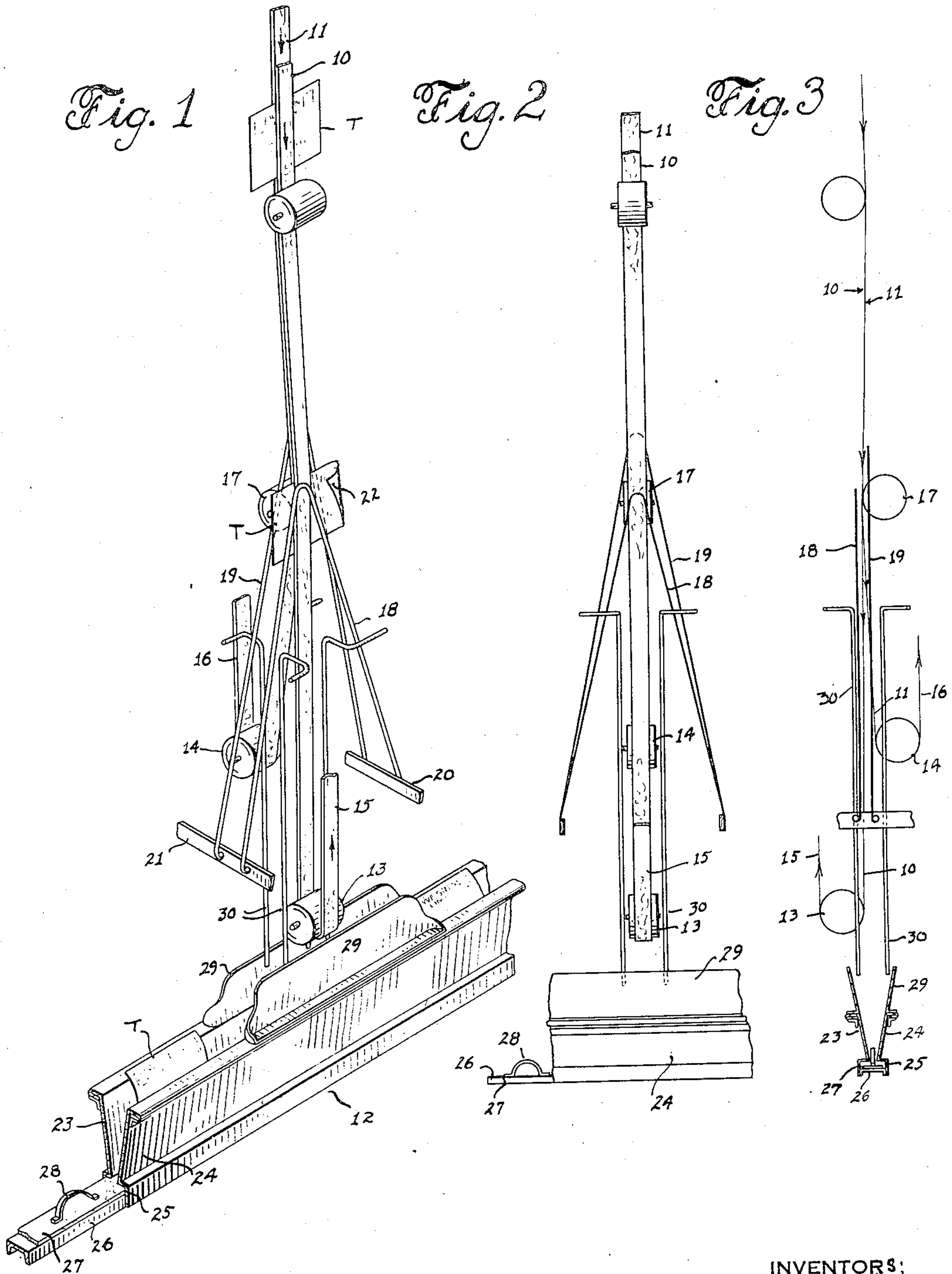
B. BEARDSLEY ET AL

1,941,144

STRAP CONVEYER SYSTEM

Filed Nov. 12, 1929

3 Sheets-Sheet 1



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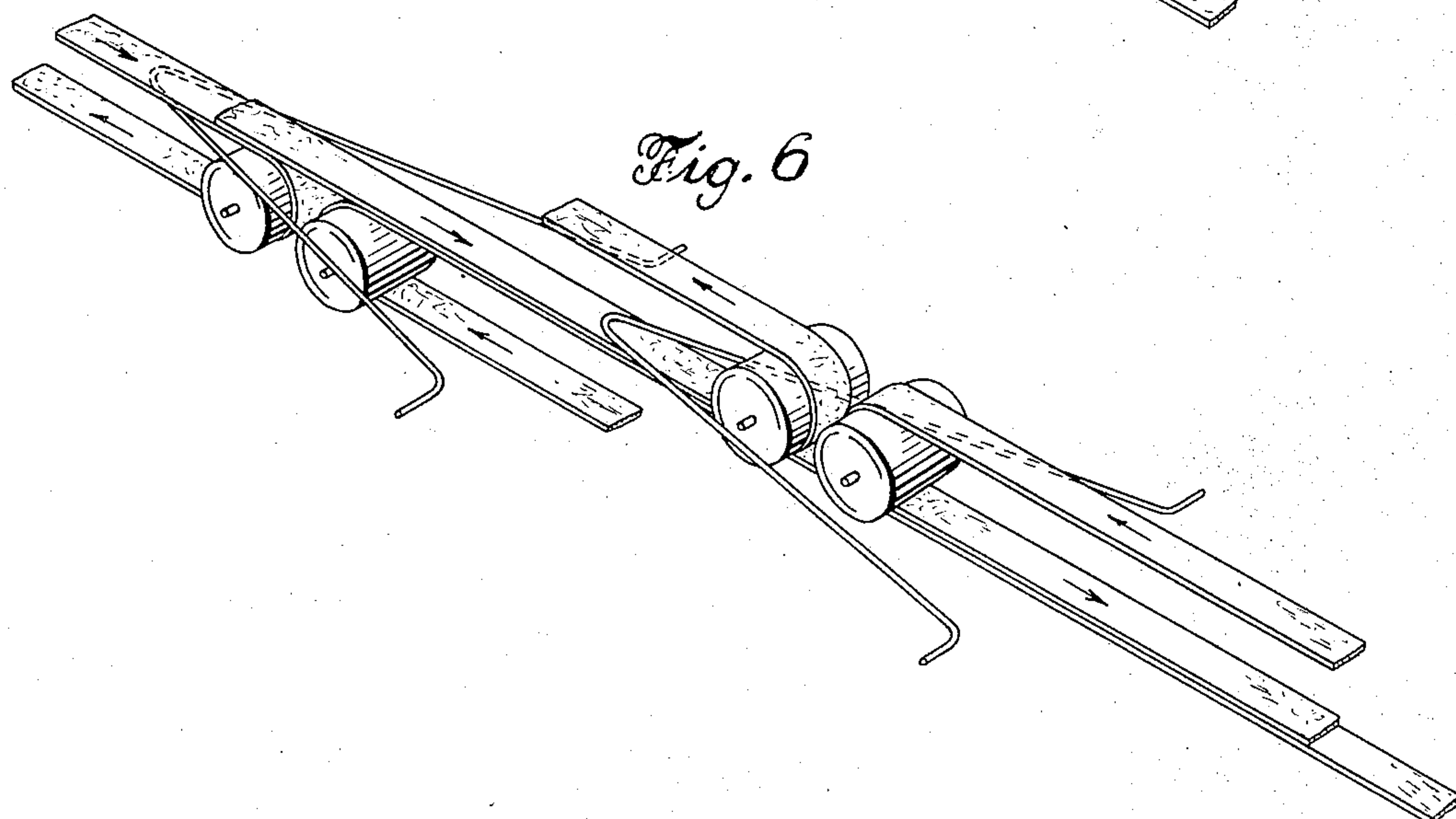
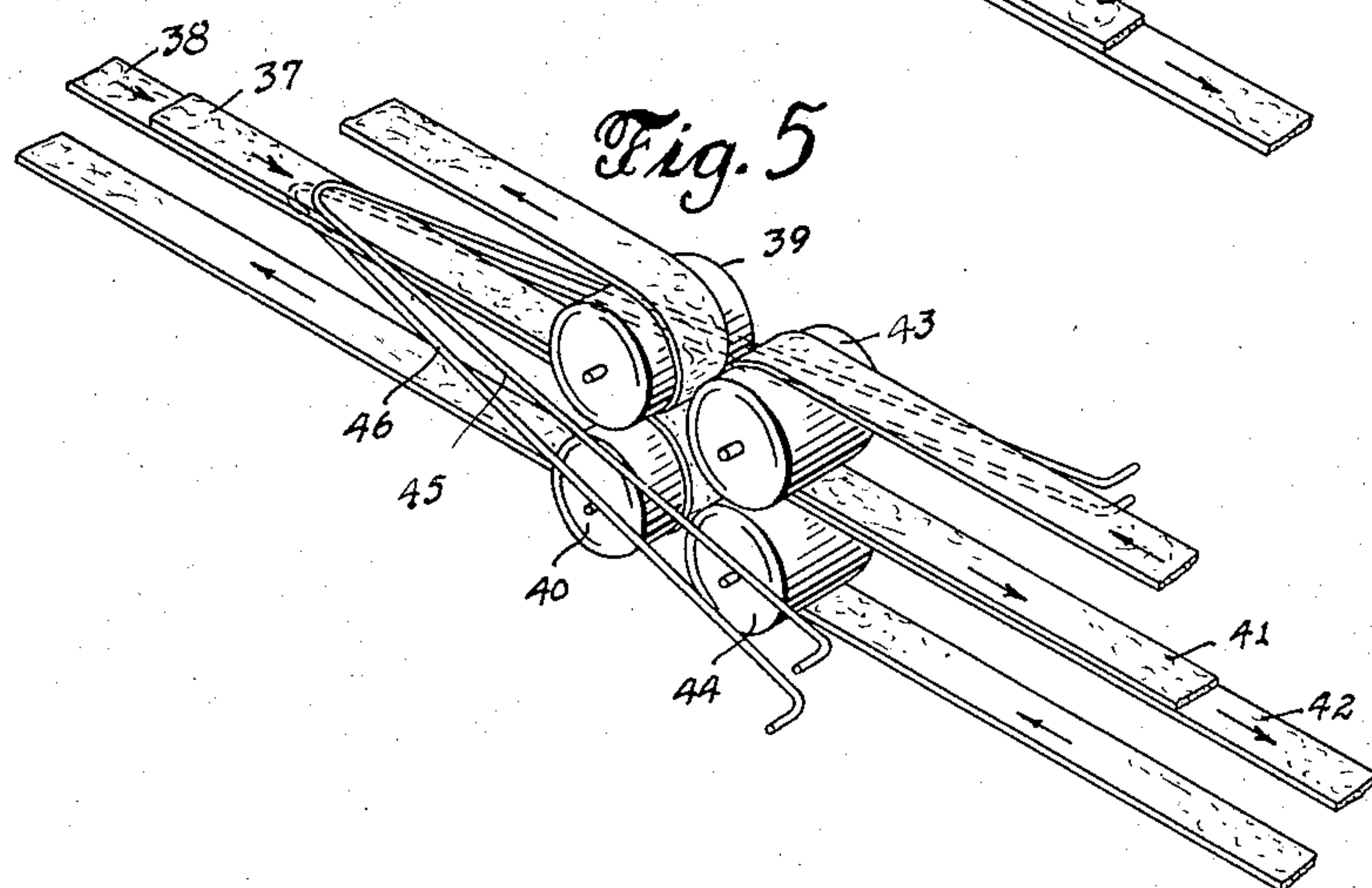
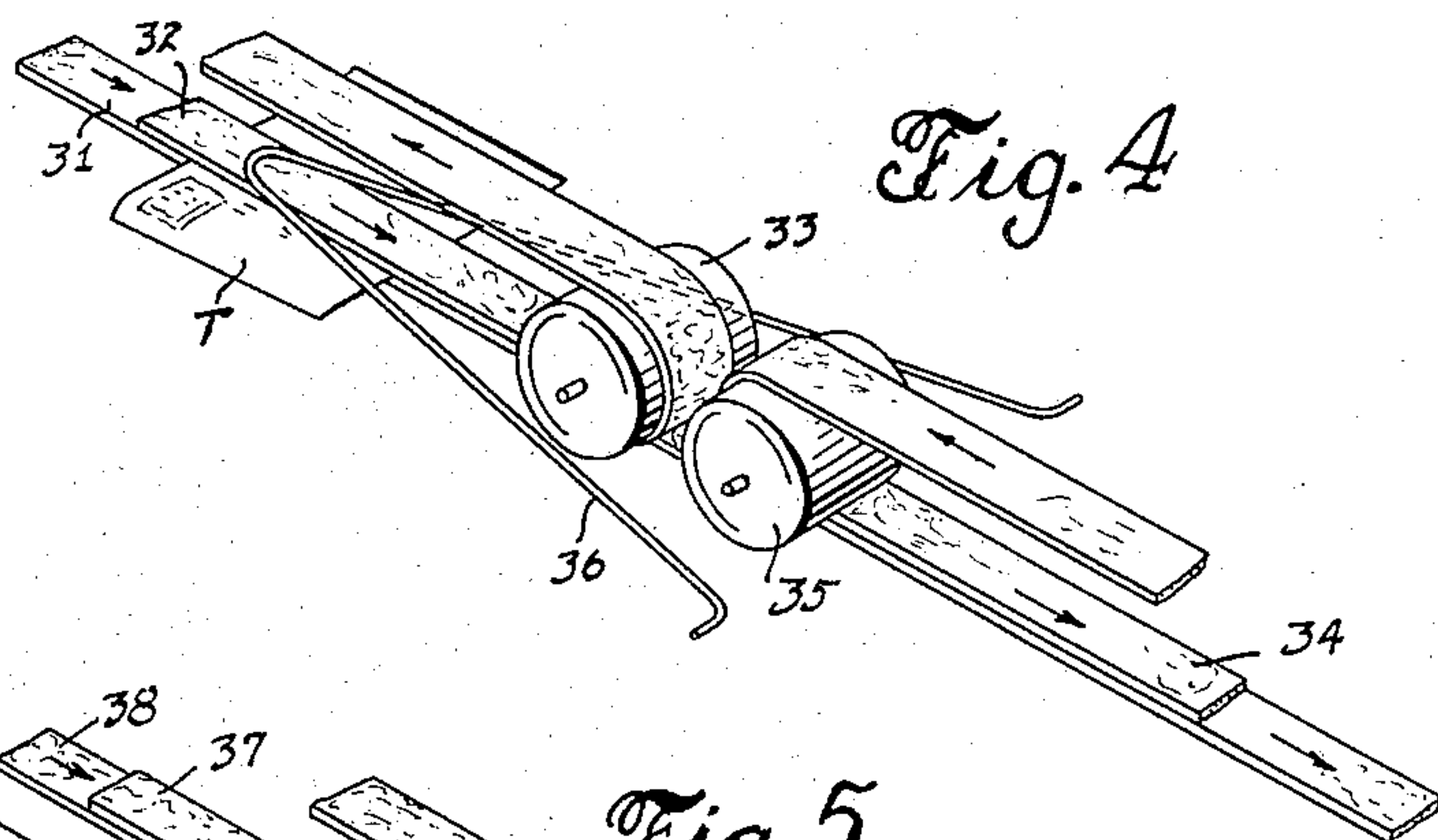
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STRAP CONVEYER SYSTEM

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

Fig. 7

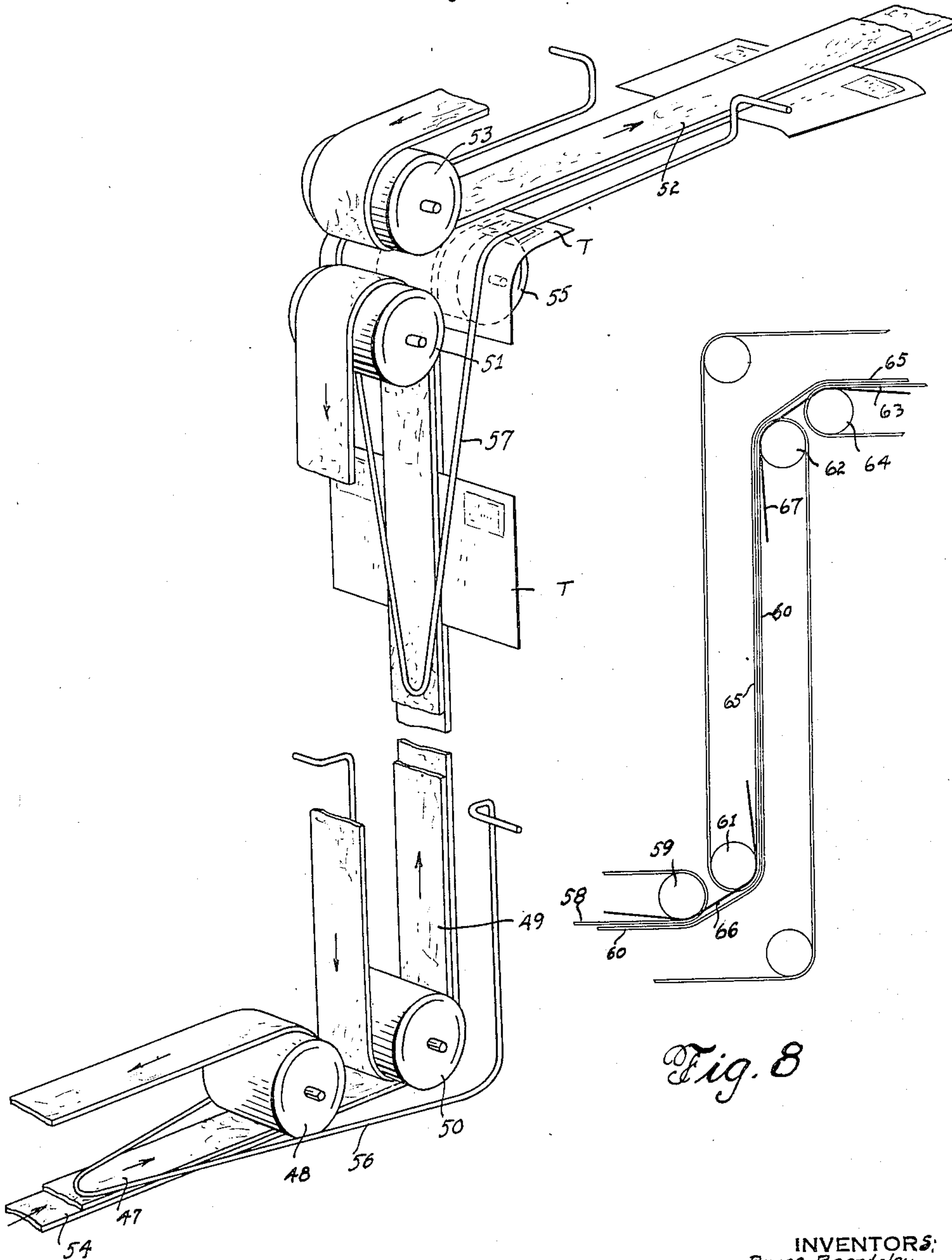


Fig. 8

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UNITED STATES PATENT OFFICE

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STRAP CONVEYER SYSTEM

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Application November 12, 1929

Serial No. 406,655

10 Claims. (Cl. 198—165)

This invention relates to a conveyer system and more particularly to a system employing an endless belt for the transportation of flat articles, such as telegrams, letters and the like, in which such papers are carried between two contacting belts or straps traveling in the same direction and usually of less width than the articles being transported.

In the handling of telegrams at a central office it is desirable to transfer the telegram blanks from one part of the building, or from one operator or attendant, to another by means of conveyers. These conveyers take a variety of forms depending upon the service to be performed, the length of the conveyer, etc., and the conveyer system of a large office may consist of a number of conveyers of different forms feeding into one another. For instance, for vertical conveyers and for conveyers of considerable length, it is advantageous to employ an endless double strap system which may receive the telegram blanks from or deliver them to a so-called V-belt conveyer, in which the blanks are carried on edge or in a vertical position within a substantially V-shaped trough, by means of a flat horizontal belt.

The present invention is especially concerned with a conveyer of the double strap type, but in one of its aspects it relates to the transfer of telegrams, letters and similar articles from such a double strap conveyer into a conveyer of the V-trough type.

In the construction of double strap conveyers for transporting small objects, such as letters and telegrams, it is desirable to make the straps as light as is commensurate with the service to be performed and to operate them at a relatively high speed. In long conveyers it is not possible to employ a single strap extending from one end of the system to the other since the power required to drive such a length of strap may exceed the strength of the strap. It is difficult, moreover, to maintain such a long length of light strapping at the proper tension and for these reasons it is desirable to employ a number of shorter lengths in tandem. However, difficulty has been experienced when employing a number of short lengths due to the papers following around one of the straps, where a break or gap occurs between two straps, and thus feeding out of the conveyer or becoming engaged with the driving or idler pulleys at the break and thus being mutilated or destroyed.

It is one of the objects of the present invention, therefore, to provide in a conveyer having a plu-

ality of lengths of strap in tandem, means for overcoming these difficulties and to guide the objects being conveyed so that they will be properly transferred from one of such lengths to another thereof.

Another object is to provide means cooperating with a double strap conveyer, to facilitate the deposit of the transported articles from the strap conveyer into a tray or a horizontal belt conveyer such as a V-trough conveyer.

Other objects and advantages will hereinafter appear.

In accordance with our invention we provide, at each break occurring in a strap conveyer, a guide member which engages the telegrams in advance of the break, straightens them out and maintains them in a straightened condition as they pass the break so that they are maintained clear of the driving or idler rollers at the break. The guide serves the additional function of directing the papers past the break so they cannot feed around the end of the strap in which the break occurs. In the case of a double break, that is where breaks occur in both runs of the conveyer at the same point, two of such guiding members are provided, one being associated with each run.

At the delivery end of the system a similar guide may be provided for maintaining the telegram blanks clear of the end rollers and to separate the blanks from the conveyer belt should they adhere thereto for any reason, as by static and to guide them from the strap conveyer into another conveyer or into a tray.

In order that the invention may be more fully understood reference will be had to the accompanying drawings in which:

Figure 1 is a perspective view of the delivery end of a strap conveyer provided with means embodying our invention, to facilitate the delivery of the transported article into a V-trough conveyer;

Figure 2 is a front elevation of the construction shown in Figure 1;

Figure 3 is an end elevation thereof;

Figure 4 is a perspective view of a horizontal or vertical length of a strap conveyer having a break in one run thereof;

Figure 5 is a perspective view of a strap conveyer having a double break therein;

Figure 6 is a perspective view of a strap conveyer showing a single break in each run thereof;

Figure 7 is a perspective view of a strap conveyer system showing the belt and guide arrange-

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ment where changes in direction of the conveyer occur; and

Figure 8 is a side elevation of a modified arrangement of the construction shown in Figure 7.

Referring first to Figures 1, 2 and 3, we have shown the delivery end of a double strap conveyer composed of two vertical runs, consisting of two contacting straps 10 and 11, discharging into a V-trough conveyer designated generally at 12. The telegrams or other articles being transported are carried between the two straps which travel at the same speed in the same direction, one preferably being driven by the other. The straps 10 and 11 may be of a width considerably less than that of the articles being conveyed.

Strap 10 passes around a pulley 13 disposed immediately above the V-trough conveyer and the strap 11 passes around a pulley 14, the return lengths 15 and 16, respectively, of these straps returning to the opposite end of the system or to the opposite end of the delivery length thereof. The pulley 14 is spaced away from the strap 10 and the straps are engaged by an idler pulley 17, so as to cause them to diverge slightly at the lower end, to release the telegrams and permit them to fall freely into the V-trough conveyer 12.

In order to straighten out the telegrams and remove them from the strap should they adhere thereto for any reason, a pair of guiding and straightening members 18 and 19 are provided, each of said members consisting of a wire bent in the form of a hair pin or inverted V. The apex or bight portion of the guide 18 is disposed adjacent to the rear surface of the strap 10 with the legs thereof diverging downwardly substantially in the plane of the strap but crossing over from the rear to the front side thereof. Guide 19 is similarly disposed relative to strap 11. The lower ends of each of the guides are spaced apart sufficiently to permit the telegrams to pass there between and such ends are secured to two horizontal members 20 and 21 by which the guide members are supported.

It will be evident, in the absence of such guides, that the ends of a telegram T, being conveyed by the straps, may become bent around one of the straps, as indicated at 22, so that when it reaches the pulley 13 it may be caught between the pulley and the belt and hence carried around the end of the pulley and mutilated or deposited outside of the conveyer 12. With the guides 18 and 19 in place, however, such turned-in portions of the telegrams will engage the diverging legs of the guides and be straightened out so as to clear the pulleys 13 and 14. Due to the divergency of the straps 10 and 11 at their lower ends, the telegrams will be released therefrom so as to drop freely into the trough of conveyer 12, being guided in their vertical descent partially by the guides 18 and 19. Should the paper tend to adhere to one of the belts it will be pulled away therefrom by the guides which, as stated, cross over from the plane of the rear surface of the straps to beyond the plane of the front surface thereof.

The conveyer 12 comprises a substantial V-shaped trough composed of two side plates 23 and 24, bent around at the lower end to form a substantially rectangular housing or conduit 25, having a bottom wall composed of an inverted channel 26. The flat conveyer belt 27 travels through the conduit 25 and is provided at intervals with clearing-out straps 28, which extend up into the trough to engage the telegrams as they are deposited into the conveyer to carry them there-

through. The telegrams are conveyed through the conveyer in a vertical position as shown.

A pair of flaring extensions 29 are provided on the trough adjacent to the lower end of the strap conveyer to guide the telegrams into the trough and a number of vertical wires 30 extend from within the flaring extensions 29 to adjacent the idler pulley 17, to direct the telegram blanks downwardly into the conveyer 12.

In Figure 4 we have shown a break occurring in one run of a horizontal or vertical reach of the conveyer. The lower run 31 is continuous past the break and the upper run 32 on the advance side of the break passes around the pulley 33. The upper run is continued by a second length of strap 34, passing around a pulley 35. In order to prevent the telegrams T from adhering to the belt 32 and passing out between the pulleys 33 and 35 and, on the contrary, hold them in engagement with strap 31 and also to maintain the telegrams clear of such pulleys while they pass from the belt 32 to the belt 34, I provide the wire guide 36, having its apex disposed in advance of the break and its leg portions substantially in the plane of the straps.

In Figure 5 we have shown a break occurring in each of the contacting runs of the conveyer. The straps 37 and 38 pass around the pulleys 39 and 40 respectively and return parallel to their operating reaches, the conveyer being continued by the two straps 41 and 42, having pulleys 43 and 44. In this case two guide wires 45 and 46 are provided, one for each of the contacting runs of the conveyer. The telegrams are engaged by the two guides and maintained in a straightened condition therebetween as they pass out from between pulleys 39, 40 and in between pulleys 43, 44.

In Figure 6 a break is shown occurring in both the upper and lower runs, one being disposed slightly in advance of the other. The arrangement of the straightening and guiding wires for each break is the same as shown in Figure 4.

Figure 7 shows the arrangement when a break occurs at a right angle bend. The direction of travel of the straps is as shown by the arrows. The strap 47, comprising the upper run of the conveyer, terminates at the pulley 48, the run being continued by a vertically extending strap 49 disposed around the pulleys 50 and 51. This run is further continued along the upper horizontal reach by a belt 52 guided about pulley 53. Strap 54 comprising the lower run of the belt is continuous, passing around the pulley 50, thence vertically in contact with strap 49 and then around a pulley 55 and horizontally in contact with strap 52. At the breaks occurring at the pulleys 48 and 51 we provide straightening and guiding wires 56 and 57, respectively, which maintain the telegrams clear of the pulleys and guide them from between the straps 47 and 54, to between the straps 49 and 54 at the lower end, and at the upper end from between the straps 49 and 54 around the pulley 55 and in between the straps 54 and 52. The guiding wires are disposed substantially in the plane of the straps. By this arrangement the sheets are held, not only away from the opening at the breaks, but in substantially continuous engagement with the strap continuing across the opening so that this conveying action tends to continue to carry the sheet forward across the break with undiminished effectiveness.

We have shown a modified arrangement of the belt at a right angle bend, in Figure 8. A break occurs in the upper run 58 of the conveyer at

the pulley 59. The lower run 60 passes around pulleys 59 and 61 and thence vertically upward to the end of the vertical portion of the conveyor where it passes around pulley 62 and re-
 5 turns back parallel to its self. The lower run is continued horizontally from the pulley 62 by the strap 63 passing around a pulley 64. The upper run is continued from the pulley 59 by a strap 65 guided around pulley 61 and around the pul-
 10 leys 62 and 64 in contact with straps 60 and 63.

It will be noted that the strap 60 is continuous over a portion of the lower horizontal reach and over the vertical reach and the strap 65 is continuous over the vertical reach and a portion
 15 of the upper horizontal reach.

Wire guides 66 and 67 are disposed at the breaks occurring at the pulleys 59 and 62 respectively. These guides have their apices disposed in advance of the pulleys 59 and 62, re-
 20 spectively, and the diverging leg portions are bent so as to follow the continuous belt around the angle. With this construction the telegram blanks pass around each of the bends in contact with the straps 60 or 65, being maintained in con-
 25 tact therewith by the guides 66 and 67.

We have described a number of modifications for the purpose of illustrating the invention, and it is to be understood that numerous other mod-
 30 ifications and applications of the invention will be apparent to those skilled in the art and we contemplate all such changes within the scope of our invention.

What we claim is:

1. A strap conveyor for transporting flat arti-
 35 cles, such as telegrams, comprising two opposed strap systems between which said articles are carried, at least one of said systems being com- posed of a plurality of endless straps disposed end to end, pulleys at the ends of the runs of
 40 each of said endless straps and a guide diverging outwardly from each side of one of the straps and disposed approximately in the plane thereof, for straightening said articles and guiding them from one of said straps to the other.

2. A strap conveyor for transporting flat arti-
 45 cles, such as telegrams, comprising two opposed strap systems between which said articles are carried, at least one of said systems being com- posed of a plurality of endless straps disposed
 50 end to end, pulleys at the ends of the runs of each of said endless straps and means, other than said straps, for straightening said articles and guiding them from one of said straps to the other, said means comprising a V-shaped guide,
 55 having its apex disposed in advance of said pulleys and adjacent to the rear surface of the terminating strap and having its divergent side portions extending beyond said pulleys substan- tially in the plane of said strap.

3. A conveyor for transporting sheet material comprising two strap conveyor systems side by side adapted to grip said sheet material there-
 60 between, each system being composed of one or more endless straps disposed end to end whereby breaks are formed in each of the conveyor sys- tems and means for preventing said sheet mate-
 65 rial from feeding out of the conveyor at such breaks, comprising a guide engaging the mate- rial in advance of the break and directing it from the working run of one of said endless
 70 straps to the working run of the adjacent one, said guide comprising a substantially V-shaped member, having its apex disposed adjacent the rear surface of said strap in advance of said
 75 break and having its sides diverging in the di-

rection of travel of the strap and extending be- yond said break.

4. A conveyor for transporting flat articles, such as telegram blanks and the like, comprising
 80 two opposed endless straps in contact with each other and adapted to grip said articles there- between, said straps diverging at the delivery end to release said articles and a guide member dis- posed adjacent each of said straps at the point
 85 of divergency thereof and extending in the di- rection of travel of the belts for directing the articles from said conveyor.

5. A conveyor for transporting flat articles, such as telegram blanks and the like, comprising
 90 two opposed endless straps in contact with each other and adapted to grip said articles there be- tween, said straps diverging at the delivery end to release said articles and a guide member dis- posed adjacent each of said straps at the point
 95 of divergence thereof and extending in the direc- tion of travel of the straps for directing said articles from said conveyor and a second con- veyer disposed adjacent the delivery end of said strap conveyor for receiving said articles there-
 100 from.

6. A conveyor comprising two endless strap con- veyer systems, said systems being disposed side by side and adapted to grip sheet material there between, each of said systems being composed of
 105 a number of endless straps arranged end to end, whereby breaks are produced therein, one of said systems being continuous across the break in the other system, and means adjacent to each break, separate from said straps but substantially in the
 110 plane thereof, for holding the sheets in frictional contact with the straps of the system continuing across said break.

7. A conveyor comprising two endless strap conveyor systems, having adjacent parts dis-
 115 posed at an angle to each other, said systems being arranged side by side and adapted to grip sheet material therebetween with said material extending outwardly beyond the sides thereof, each of said systems being composed of a number
 120 of endless straps arranged end to end, whereby breaks are produced therein, one of said systems being continuous over a part of each of said angularly disposed portions and the other system
 125 having a break at the junction of said angularly disposed portions and means, separate from said straps but substantially in the plane thereof, for engaging the outwardly extending sides of said material for holding said material while crossing
 130 the break formed on one system in engagement with the strap of the system continuing across said break.

8. A conveyor comprising two endless strap conveyor systems having adjacent parts disposed
 135 at an angle to each other, said systems being arranged side by side and adapted to grip sheet material therebetween, each of said systems being composed of a number of endless straps arranged end to end, whereby breaks are produced therein,
 140 one of said systems being continuous over a portion of each of said angularly disposed parts and the other system having a break at the junction of said angularly disposed parts, and means, separate from said straps, for guiding
 145 said material from one of said angularly dis- posed parts to the other thereof, said means com- prising a member having an apex disposed in advance of the break and diverging leg portions, extending around the junction of said angularly
 150 disposed portions of the conveyor in the direction

of travel of said straps and substantially in the planes thereof.

9. A conveyer for transporting sheet material comprising a belt having a width materially less than that of the material to be transported, means co-operating with said belt for conveying said material along one face of the belt with the ends of the material extending outwardly beyond the sides of the belt, and a guide member arranged adjacent the opposite face of the belt and having a forward portion of a width not materially greater than the width of said belt and sides diverging in the direction of travel of the belt.

10. A conveyer for transporting sheet material comprising a belt having a width materially less than that of the material to be transported, means co-operating with said belt for conveying said material along one face of the belt with the ends of the material extending outwardly beyond the sides of the belt, and a guide member extending along the opposite face of said belt and diverging outwardly beyond the sides of said belt for engaging said outwardly extending ends of said sheet material.

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