

June 12, 1934.

F. GRIFFITH

1,962,713

DOUBLE DRAG CONVEYER

Filed July 8, 1932

2 Sheets-Sheet 1

FIG. 3

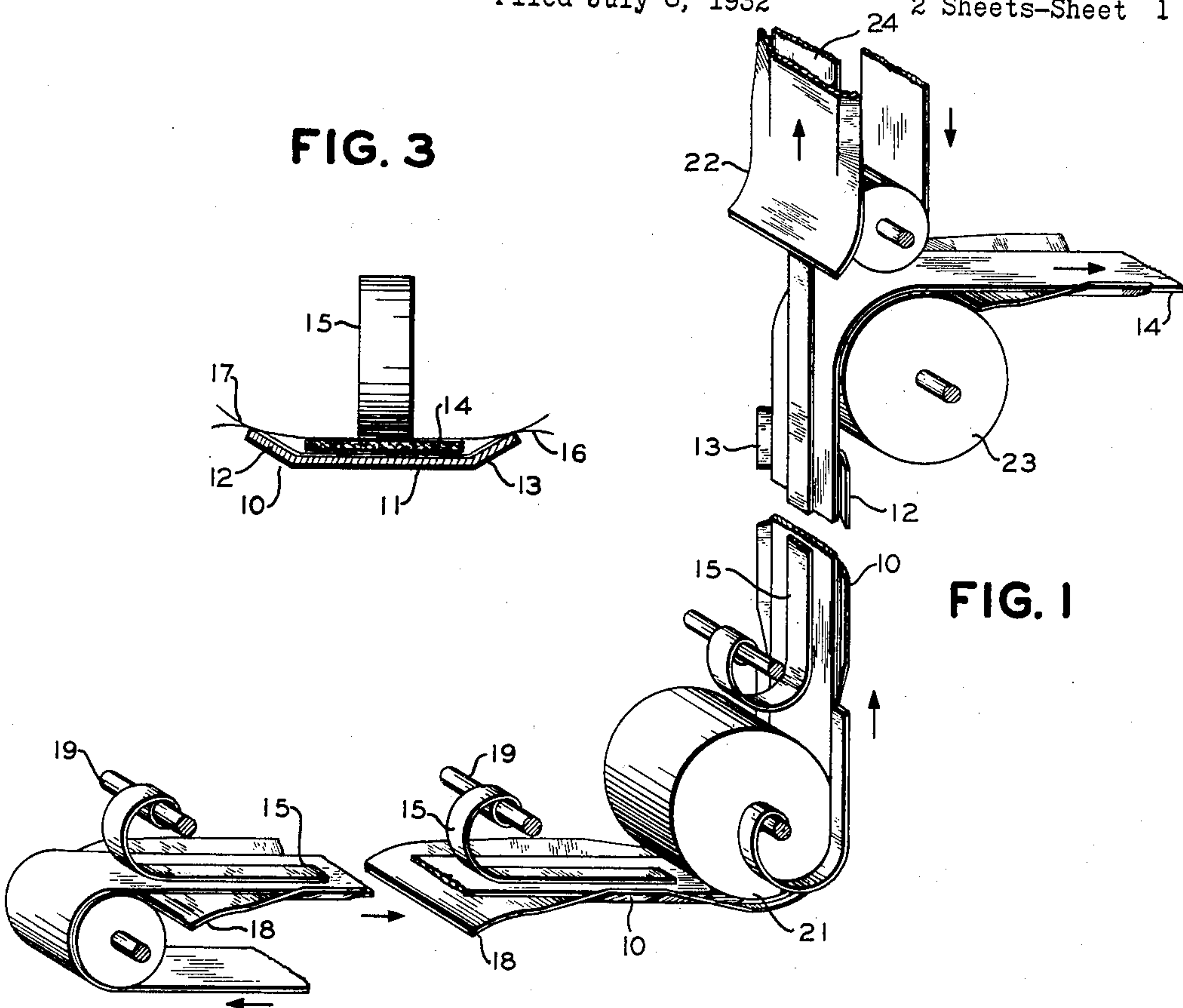
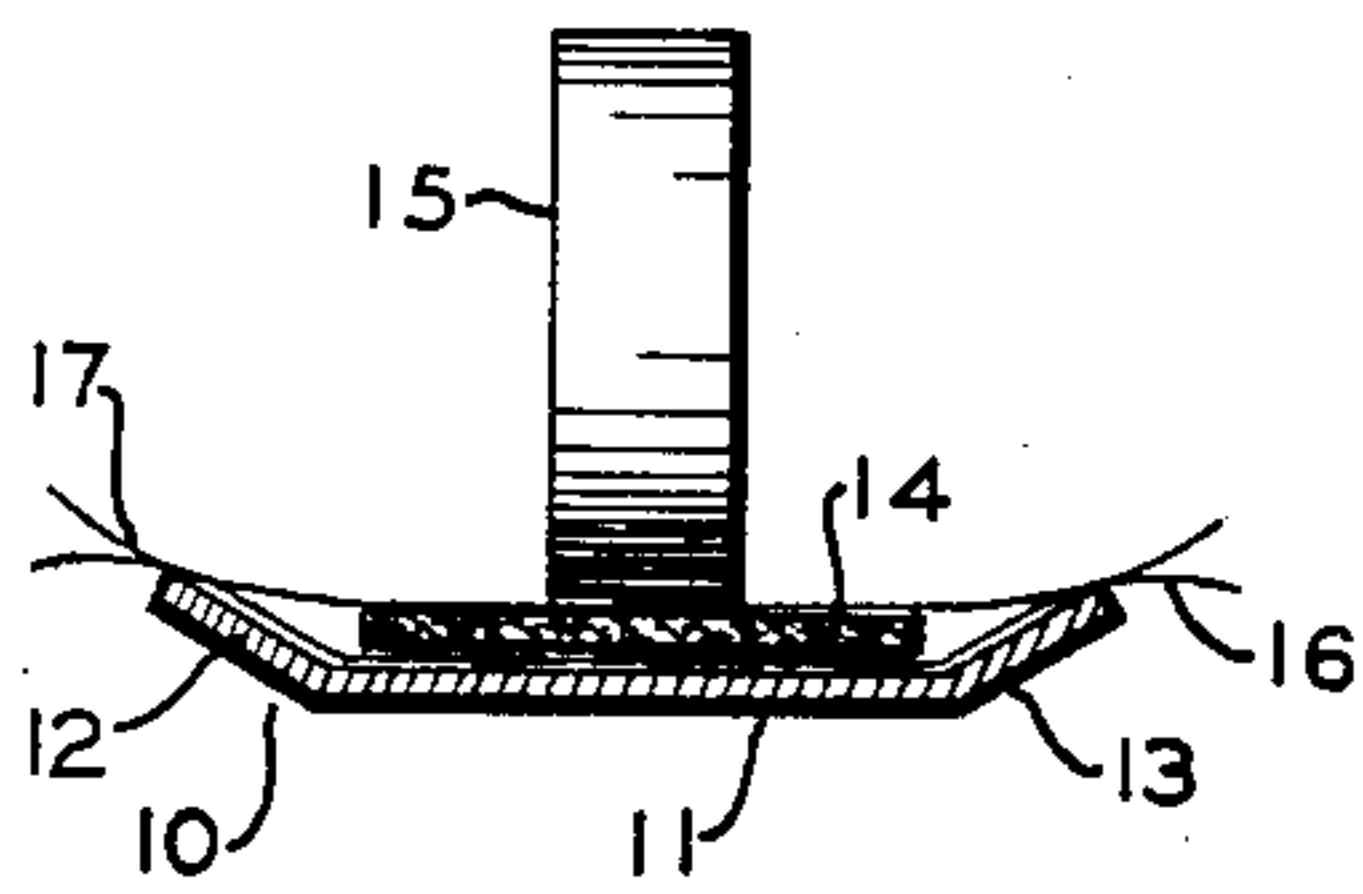
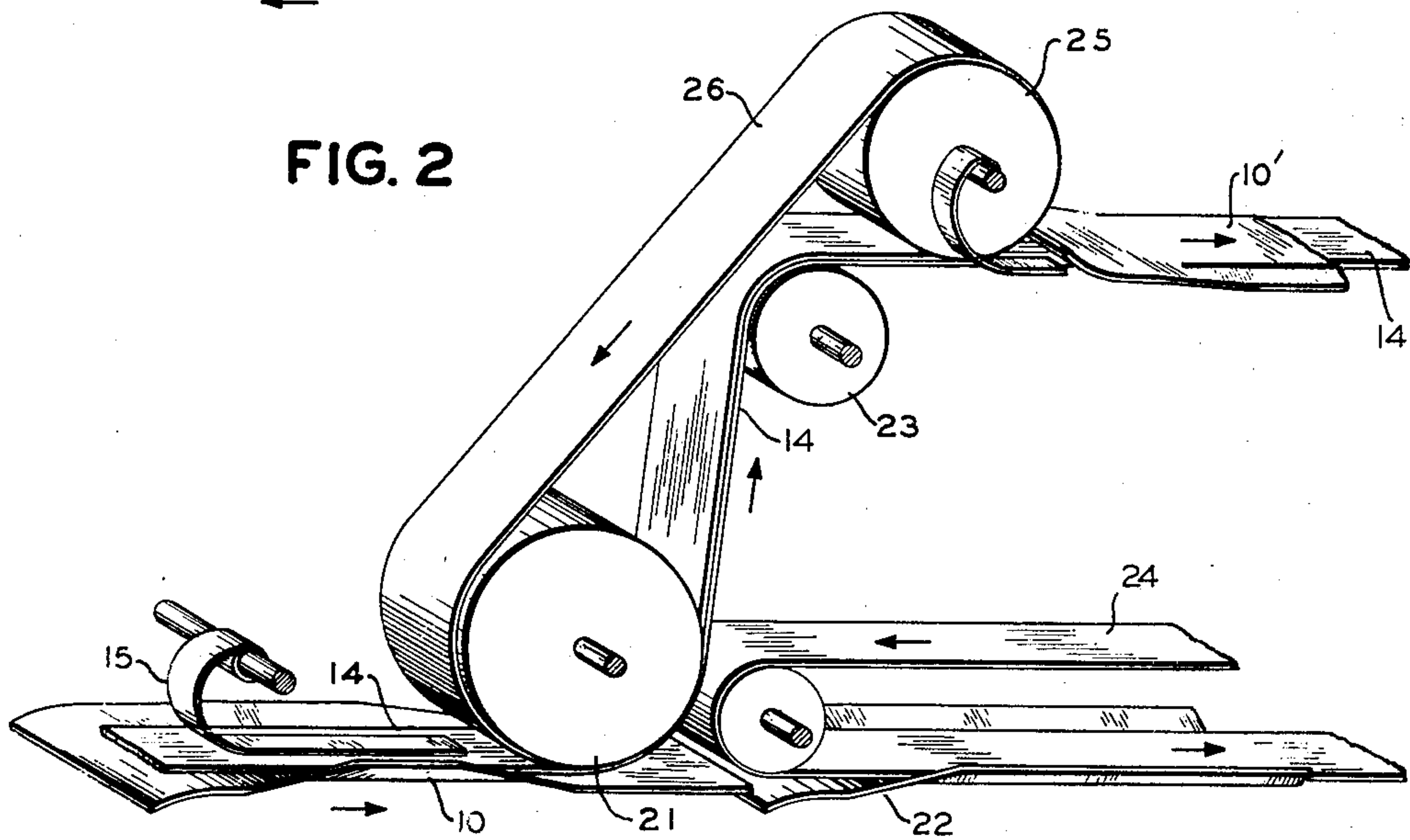


FIG. 1

FIG. 2



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2 Sheets-Sheet 2

FIG. 4

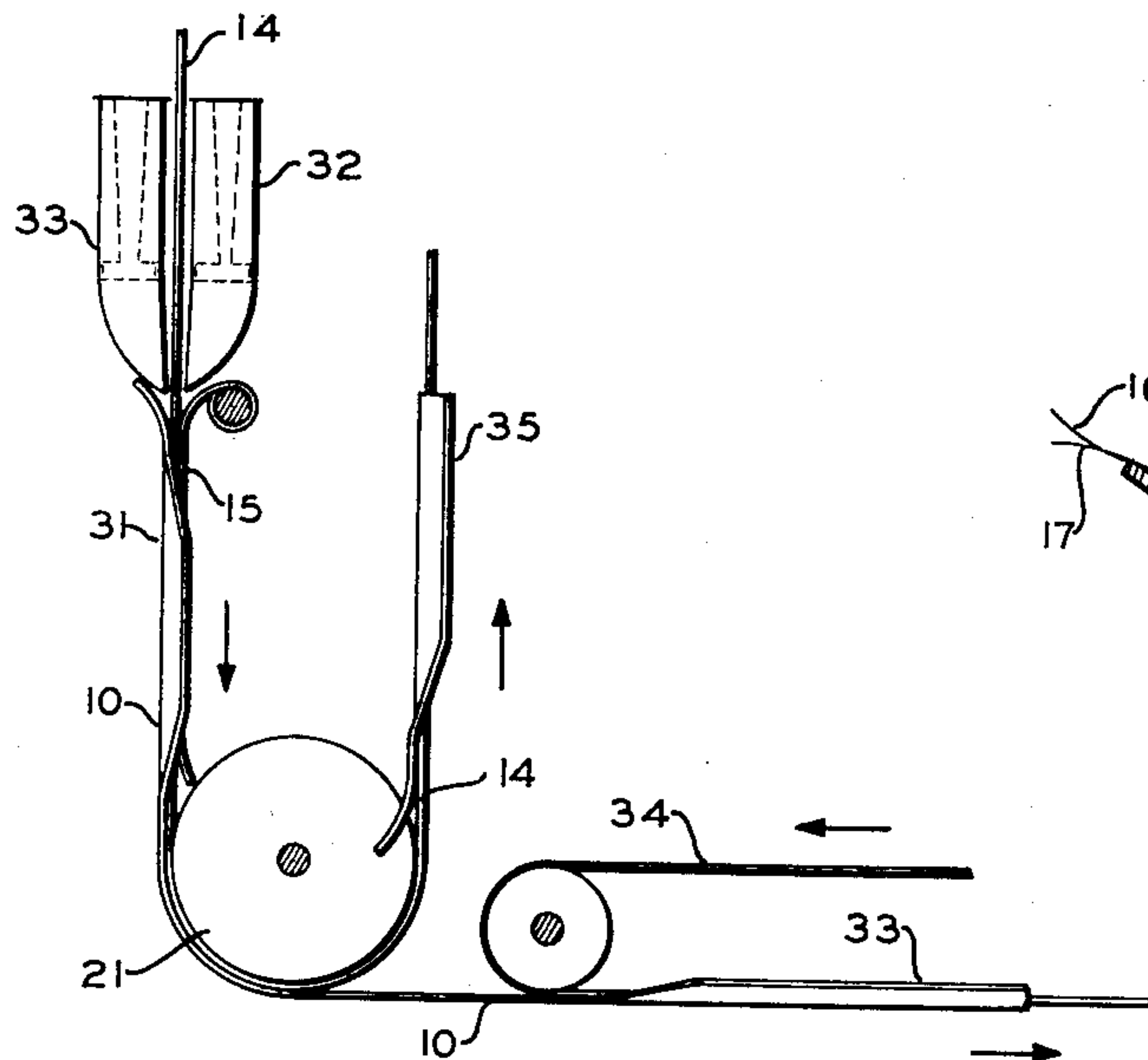


FIG. 6

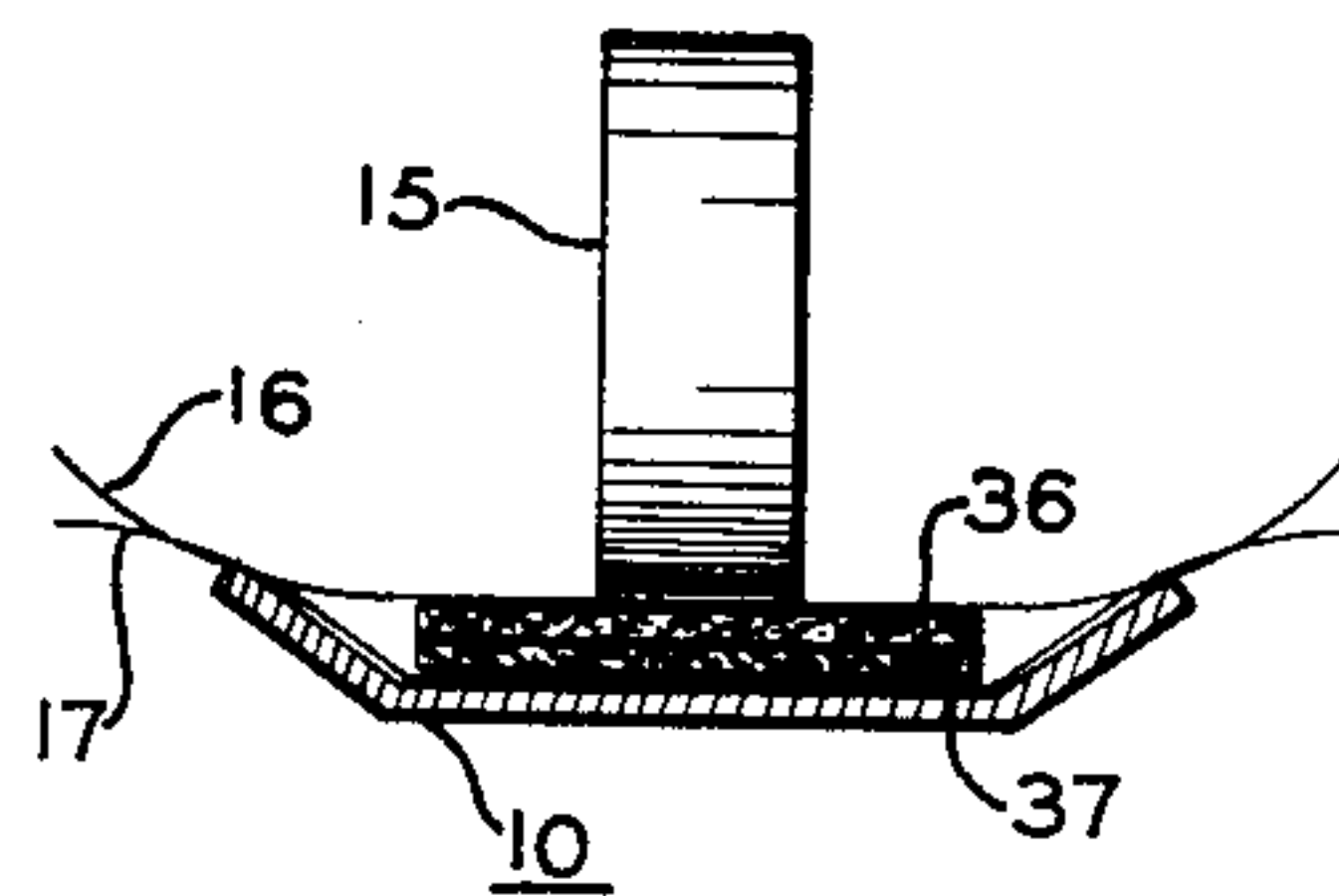
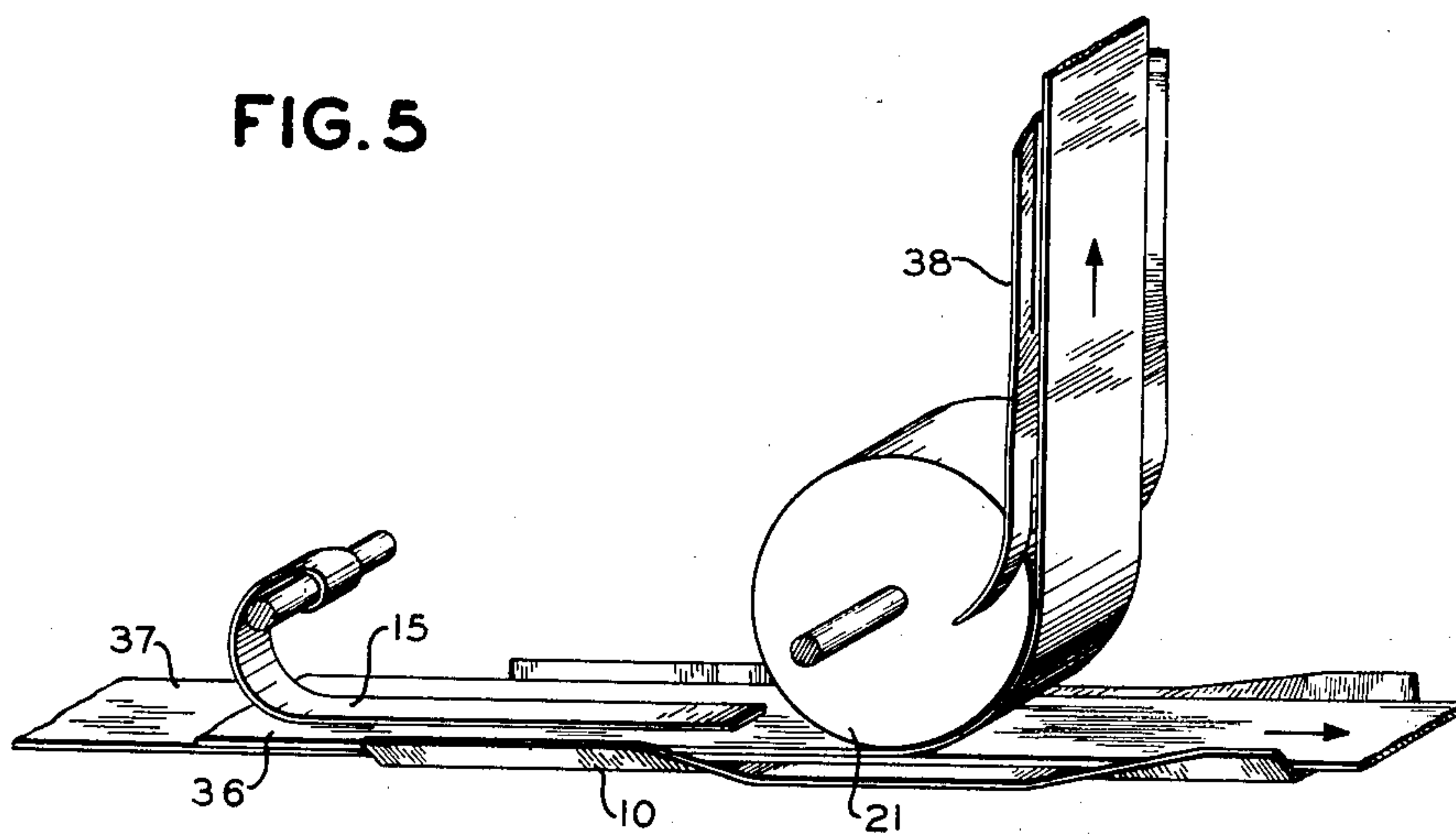


FIG. 5



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1,962,713

DOUBLE DRAG CONVEYER

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Western Union Telegraph Company, New York,
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Application July 8, 1932, Serial No. 621,454

7 Claims. (Cl. 198—160)

This invention relates to conveyers of the drag type and particularly to a drag conveyer in which the conveyer belt is arranged to carry material at both faces thereof.

5 The particular object of this invention is to provide conveyer channel means with a belt traveling therealong and arranged to convey sheet material at both faces of the belt to form a pair of parallel paths along the initial portion of the
10 conveyer and means for separating the material conveyed along one face of the belt from that conveyed along the other face of the belt, so that they may travel from the point of separation over separate and distinct pathways.

15 Another object of this invention is to provide a particular arrangement of conveyers which will cause the material traveling at one face of the conveyer, when it reaches the point of path separation, to be diverted from the conveyer belt,
20 continued past the separation point in a normal direction and discharged into suitable receiving means, such as another conveyer or receptacle.

It has become quite common in the use of conveyers for conveying sheet material, such as message blanks and the like, to provide two conveyer channels forming two separate paths extending along a desk at which the message blanks are written or filled in, so as to provide an initial selection or assorting of the blanks by inserting
25 certain of the blanks in one conveyer and the other blanks in the other conveyer. Since the space along the desk or table described is very limited, it is highly desirable that the two conveyer paths be embodied in apparatus of as compact
30 form as possible.

According to this invention the two conveyer paths are provided at the opposite faces of a single belt and means provided for diverting the messages from one face of the belt into a separate conveyer channel at a certain point along
40 the conveyer.

In order to more fully understand this invention reference may be had to the following description and claims taken in connection with the
45 accompanying drawings in which:

Fig. 1 is a view illustrating one form of the invention in which the material from one face of the belt is separated therefrom and carried forward in a separate channel;
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Fig. 2 is a view illustrating another form of the invention in which the material traveling along the other face of the belt is separated therefrom and carried forward in a separate channel;

55 Fig. 3 is a cross-sectional view of a section of

the conveyer in which material is traveling at both faces of the belt;

Fig. 4 is a view illustrating the form of the invention in which centrifugal force acts to aid in the separation;

Fig. 5 is a view of another form in which two belts are arranged to travel along the double section of the conveyer; and,

Fig. 6 is a cross-section of the conveyer illustrated in Fig. 5.

Referring to Figs. 1 and 3, the portion of the conveyer in which the material is conveyed at both faces in the belt comprises in its preferred form a conveyer channel or guide member 10 having a flat bottomed portion 11 and outwardly flaring side portions 12 and 13. A belt 14 is arranged to travel along the bottom portion 11 of the channel. An additional member 15 is disposed adjacent the upper face of the belt. The member 15 is preferably mounted so as to yield with respect to the member 10. As sheets of material, such as message blanks and the like, are inserted into the conveyer between either the belt 14 and the member 15 or the belt and the member 10, the material will be conveyed along the respective conveyer members by frictional engagement with the respective adjacent faces of the belt 14. Referring particularly to Fig. 3 it will be observed that both of the sheets of material 16 and 17 are carried along the conveyer and held in a substantially non-planiform shape. The lower sheet 16 is more definitely deformed in cross-section than the upper sheet 17.

For the purpose of simplifying the description herein, the first or lower face of the belt which rides upon the guide member 10 acting to support the belt and provide the lateral guiding portions 12 and 13 will be referred to as the primary face of the belt, and the conveyer path formed by the belt and this member will be referred to as the primary path. Conversely, the second or upper face of the belt at which the member 15 is disposed will be referred to as the secondary face of the belt, and the conveyer pathway formed between the belt and the member 15 will be referred to as the secondary path.

In order to facilitate the feeding of the sheets into the conveyer at several points therealong, both the lower channel or guide member 10 and the upper channel or guide member 15 may be sectionalized. At the outer end of each section, the conveyer element or guide member is bent away from the face of the belt in order to provide for a substantially wedge-shaped entrance space to permit sheets to be inserted between

the guide member and the belt. The lower members 10 are flattened out at their outer ends to form a depending lip 18. Suitable supporting means (not shown) may be provided for each section. The upper guide member 15 is preferably of a width not greater than the width of the belt 14. As shown, it is substantially less in width than the belt. In its preferred form the outer ends of the members 15 are bent up and coil around a supporting member 19. If the guide members 15 are in horizontal position they may be fastened rigidly to the supporting member 19 so as to yieldably press upon the face of the belt with a springlike action. On the other hand, they may be pivotally mounted on the supporting member 19 so that they rest upon the upper or secondary face of the belt under their own weight. The yieldable feature of this is very desirable so that material of varying bulk may be transported by the conveyer without binding or causing excess friction.

The direction of the double conveyer path may be changed by passing the conveyer belt around a direction-changing roller, such as the roller 21. For this purpose the guide member 15 extends to within a short distance of the roller and is terminated. The lower guide member 10 is either flattened out or the side members cut away. This provides for sheets to change from a non-planiform shape to a cylindrical shape as they pass around the roller. The central section of the guide member 10 or another suitable member is disposed in spaced relation to the outside roller and extended around the bend of the conveyer channel to provide means to guide the sheets at the outer or primary face of the belt around the bend. At a point beyond the roller the outwardly extending side members resume their normal position and a further member 15 is placed at the inner or secondary face of the belt.

At any point along the conveyer where it is convenient to change the direction of the belt, a discharge or separation of material from one face of the belt may be accomplished. This might be regarded as a separation of the two conveyer paths. The material at one face of the belt passes around a direction-changing roller in a manner substantially as described in Patent No. 1,793,953 granted to F. E. d'Humy et al. on February 24, 1931, and assigned to The Western Union Telegraph Company. The material at the other face of the belt is held in substantially non-planiform shape, as it approaches the point of channel separation, due to its engagement with the sides 12 and 13 of the guide member 10 and the guide member 15 at the secondary face of the belt, as best illustrated in Fig. 3. As the sheet advances to a point adjacent to the direction-changing roller 23 its non-planiform shape will hold it substantially rigid and will cause it to be peeled away or separated from the face of the belt 14 and moved forward into the entrance of the conveyer 22. When the sheet is passed forward a sufficient amount, it will be engaged by the conveying element 24 of the conveyer 22 and will be drawn into the latter conveyer. From this point forward the material is conveyed over a separate conveyer channel and may be discharged at any suitable point.

In another embodiment of this invention, such as illustrated in Fig. 2, the material traveling at the primary face of the belt in engagement with the non-planiform element 10 is separated from the belt while the material at the other face of the belt continues along that conveyer

path over which the belt 14 travels. The material approaching the direction-changing roller 21 in this case is held in non-planiform shape substantially in the same manner as in the illustration of Fig. 1. By referring to Fig. 3, however, it will be observed that the sheets 16 at the lower face of the belt are held more definitely in non-planiform shape than those at the upper face of the belt. Under these conditions the lower sheets will be held in a more rigid condition as they pass beyond the roller 21 into the entrance of the auxiliary conveyer 22. It has been found in practice that apparently due to the rigid condition of the sheet a definite and effective separation or discharge of the sheets from one side of the conveyer belt is readily accomplished.

In the latter arrangement instead of extending the guide member 15 beyond the roller 21, a double strap or double belt arrangement is provided for carrying the sheets past the second direction-changing roller 23 to a point where the material is brought into engagement with a forward section of a channel member 10'. A roller 25 is provided adjacent the entrance to the channel section 10' and an endless belt 26 is arranged to travel between the rollers 21 and 25 and in contact with the belt 14 as it passes from the double channel section over the roller 23 into the continuation of the conveyer as a single channel section.

The arrangement in Fig. 4 differs from those illustrated in Figs. 1 and 2 in that the material is not separated from the conveyer belt at the approach side of the direction-changing roller but at a point where the continuation of the conveyer departs from the direction-changing roller. The arrangement comprises a double channel section 31 with a conveyer belt 14 traveling therein. This section and belt is illustrated as in a vertical position and arranged for material to be discharged into the double section from chutes 32 and 33. These chutes may be the termini of other conveyers or merely chutes in which material is dropped by hand. As the material travels downwardly, it passes around a direction-changing roller 21 to the point where the outer conveyer member 10 departs from the roller and extends forward to form the supplementary conveyer 33. The material traveling at the outer face of the belt at a substantial rate will be separated from the belt at the point where the guide member 10 departs due to centrifugal force. After the forward end has separated it will come in contact with the belt 34 traveling in the supplementary conveyer 33 and be carried forward along that conveyer. On the other hand, the material traveling at the inner face of the belt will be carried farther around the roller 21 and guided into the entrance of the continuation of the conveyer formed by the belt 14 and the guide member 35.

Figs. 5 and 6 illustrate still another form of this invention in which two conveyer belts 36 and 37 travel together at substantially the same speed and in the same direction in the double-path part of the conveyer in the same manner as the single belt of the other embodiments. The same type of guide members 10 and 15 may be employed up to the point where pathway separation is desired. In this embodiment where two belts are employed, separation is accomplished merely by the upper belt 36 passing around the direction-changing roller 21 while the other belt 37 continues along an extension of the guide member 10. After the upper belt has passed around the roller 21 it is brought into contact with a supplementary

guide member 38 of substantially the same type as guide member 10. In this arrangement the separation of the conveyer pathways is practically absolutely assured since there is no separating of the material from one of the faces of the belt and no space across which the material must be discharged in order to enter the supplementary conveyer. It will be observed that the arrangement is simpler in form and requires only the additional element of an extra belt for the double channel portion of the conveyer. It will be observed that at the point of direction changing the channel member 10 is flattened out to permit the sheets to assume the proper shape to pass around the roller 21.

From the foregoing description it will be observed that a conveyer arrangement has been provided embodying a double conveyer path or channel which may be disposed in any suitable position such as along a row of desks or the like with means providing for material to be fed into the double channel section of the conveyer at either face of the conveyer belt. In addition, the material traveling along parallel double paths is separated or the paths caused to diverge at a suitable point and the material conveyed to separate destinations. Further it will be observed that a novel means has been provided for discharging or separating the sheets from one face of the belt at the point where the conveyer paths diverge.

While this invention has been shown in but four forms it will be obvious to those skilled in the art that it is not so limited but is susceptible to various other changes and modifications without departing from the spirit thereof and it is desired, therefore, that only such limitations shall be placed thereon as are imposed by the prior art or are specifically set forth in the appended claims.

What I claim is:

1. In a conveyer for sheet material, the combination of a conveyer belt and a pair of stationary members disposed at the opposite faces of the belt and arranged so that sheets of material inserted between either member and the belt is conveyed by frictional engagement with the latter, one of said members having a width not greater than the width of the belt, the other member having a width greater than the belt and arranged to form a channel embodying upwardly extending side portions joined by a middle portion against which the belt travels, said side portions disposed to extend beyond the plane of the remote face of the belt so that material traveling along either face is held in non-planiform shape.

2. In a conveyer for sheet material, the combination of a conveyer belt of less width than the sheets to be conveyed, a rigidly supported trough-shaped member at one face of the belt for forming the first of a pair of parallel conveyer paths along which sheet material is transported by frictional engagement with the belt, and a yieldably supported longitudinally extending conveyer member disposed at the other face of the belt for forming the second of said pair of paths along which sheet material is conveyed by a frictional engagement of the belt, whereby the members may be separated to admit sheet material of increased bulk along either path.

3. In a conveyer for sheet material the combination of a conveyer belt of less width than the sheets to be conveyed, a rigidly supported trough-shaped member at one face of the belt for forming the first of a pair of parallel con-

veyer paths along which sheet material is transported by frictional engagement with the belt, and a yieldably supported longitudinally extending conveyer member disposed at the other face of the belt for forming the other of said pair of paths along which sheet material is conveyed by frictional engagement with the belt, and means at a certain point along the conveyer to provide for a divergence of the conveyer paths, said means comprising a roller for changing the direction of the belt, a first auxiliary channel member cooperating with said belt along its new direction of travel, and a second auxiliary channel member disposed with its inlet adjacent the point of divergence, a cooperating belt traveling along said second auxiliary channel member, and means for holding sheets of material traveling along the second conveyer path in a non-planiform shape until they pass beyond the point of divergence, whereby said sheets are carried into the inlet of said second auxiliary channel member.

4. The combination of a conveyer for sheet material embodying a pair of conveyer belts running together in the same direction, means comprising a stationary guide member disposed adjacent the outer face of each belt and forming in cooperation therewith a pair of parallel conveyer paths along which sheet material is transported by frictional engagement with the belts, means at a certain point along the conveyer for causing the conveyer paths to separate, said means embodying one of the conveyer belts and its cooperating guide member arranged to extend in one direction, the other belt and its cooperating guide member arranged to extend in another direction, and guide means between which the belts pass at the point of their departure from parallel paths.

5. The combination of a conveyer for sheet material embodying a conveyer belt and guide members adjacent the primary and secondary faces thereof for providing in cooperation therewith primary and secondary conveyer paths along which sheet material is transported by frictional engagement with the belt, means at a certain point along the conveyer providing for the separation of said conveyer paths, said means comprising first and second auxiliary guide members, said first guide member being arranged to extend beyond the separation point and substantially in alignment with the primary path and to form a continuation of the same, said second guide member extending at an angle to the first for forming a continuation of the secondary path, means at the point of separation for causing the belt to change its direction, follow the guide member forming a continuation of the secondary path and carry the material therealong, and means for holding the sheets traveling along the primary face of the belt in non-planiform shape for directing the same past the point of separation in the direction of their normal travel until they have entered the inlet of the first auxiliary guide member, and a belt cooperating with the extension of the first auxiliary guide member for engaging said sheets and conveying them along said member.

6. The combination of a conveyer for sheet material embodying a conveyer belt and guide members adjacent the primary and secondary faces thereof for providing in cooperation therewith primary and secondary conveyer paths along which sheet material is transported by a frictional engagement with the belt, means at a cer-

tain point along the conveyer providing for the separation of said paths, said means comprising first and second auxiliary guide members, said second guide member being arranged to extend
5 beyond the separation point and substantially in alignment with the secondary path to form a continuation of the same, said first guide member extending at an angle to the second for forming a continuation of the primary path, means at the
10 point of separation for causing the belt to change its direction and follow the guide member forming a continuation of the primary path and carry the material therealong, and means for holding the sheets traveling along the secondary face of
15 the belt in non-planiform shape for directing the same past the point of separation in the direction of their normal travel until they have entered the inlet of the second auxiliary guide member, and a belt cooperating with the extension of said
20 second auxiliary guide member for engaging said sheets and conveying the same along said member.

7. The combination of a conveyer for sheet material embodying a conveyer belt and guide
25 members adjacent the primary and secondary faces thereof for providing in cooperation there-

with a pair of parallel conveyer paths along which sheet material is transported by frictional engagement with the belt, the guide member at the primary face of the belt embodying upstanding side members arranged to hold sheets of material
80 conveyed therealong in a non-planiform shape, means at a certain point along the conveyer to provide for the separation of the conveyer paths, said means comprising an auxiliary guide member, a sheet material receiving apparatus, a direction-changing roller around which the belt
85 changes its direction of travel and which cooperates with said belt to guide the sheets at the secondary face of the belt into engagement with the auxiliary guide member, the upstanding side
90 members on the guide at the primary face of the belt being arranged to extend to a point adjacent said roller and acting to maintain the non-planiform shape of the sheets of material as they advance to the separation point, whereby the rigidity
95 of said sheets longitudinally of their path of travel prevent them from following the new direction of the belt but continue the sheets in the same direction into the inlet of the auxiliary receiving apparatus.

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