

Feb. 12, 1952

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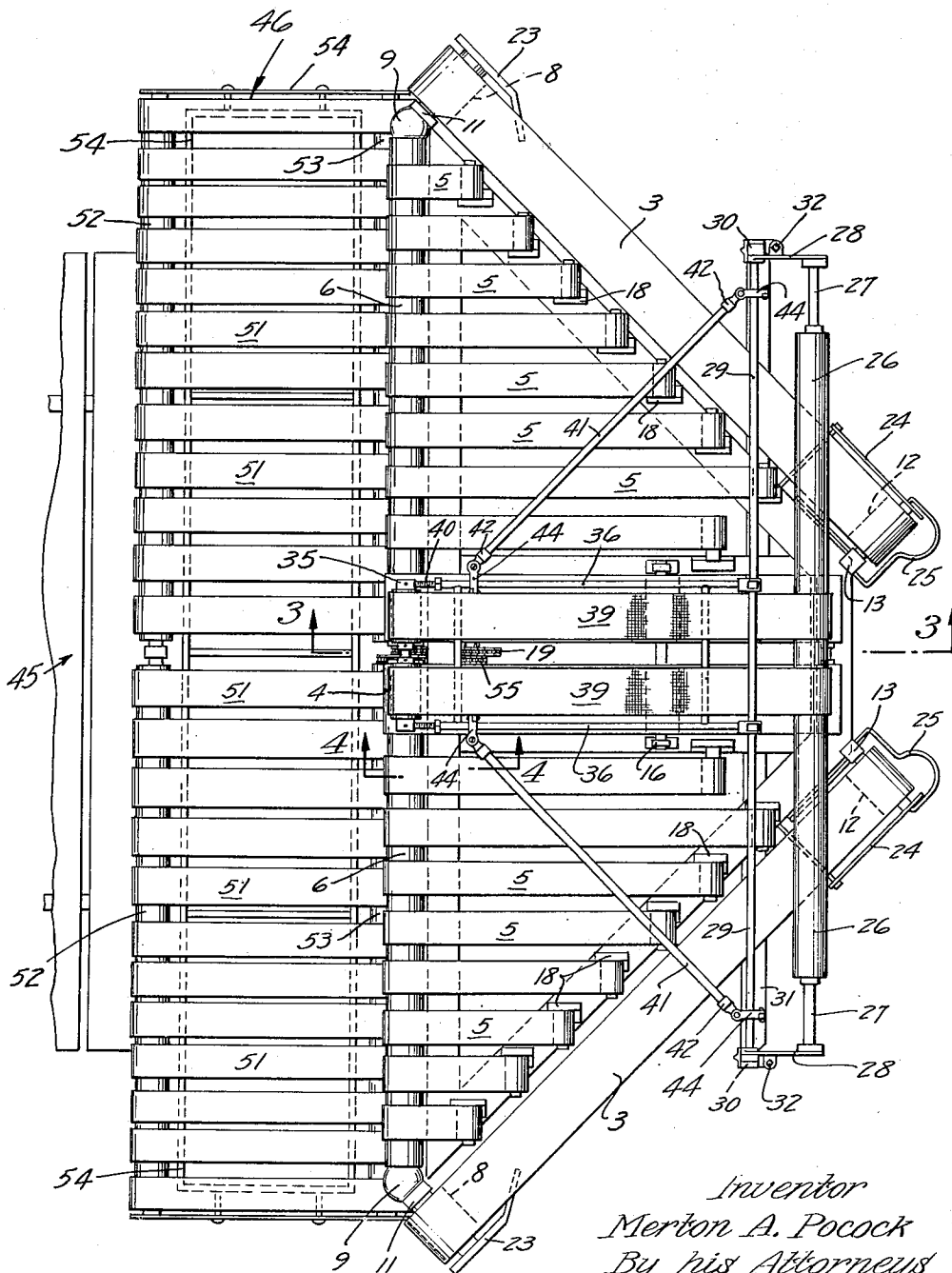
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LAUNDRY FLAT PIECE SPREADER

Filed Oct. 20, 1949

3 Sheets-Sheet 1

Fig. 1



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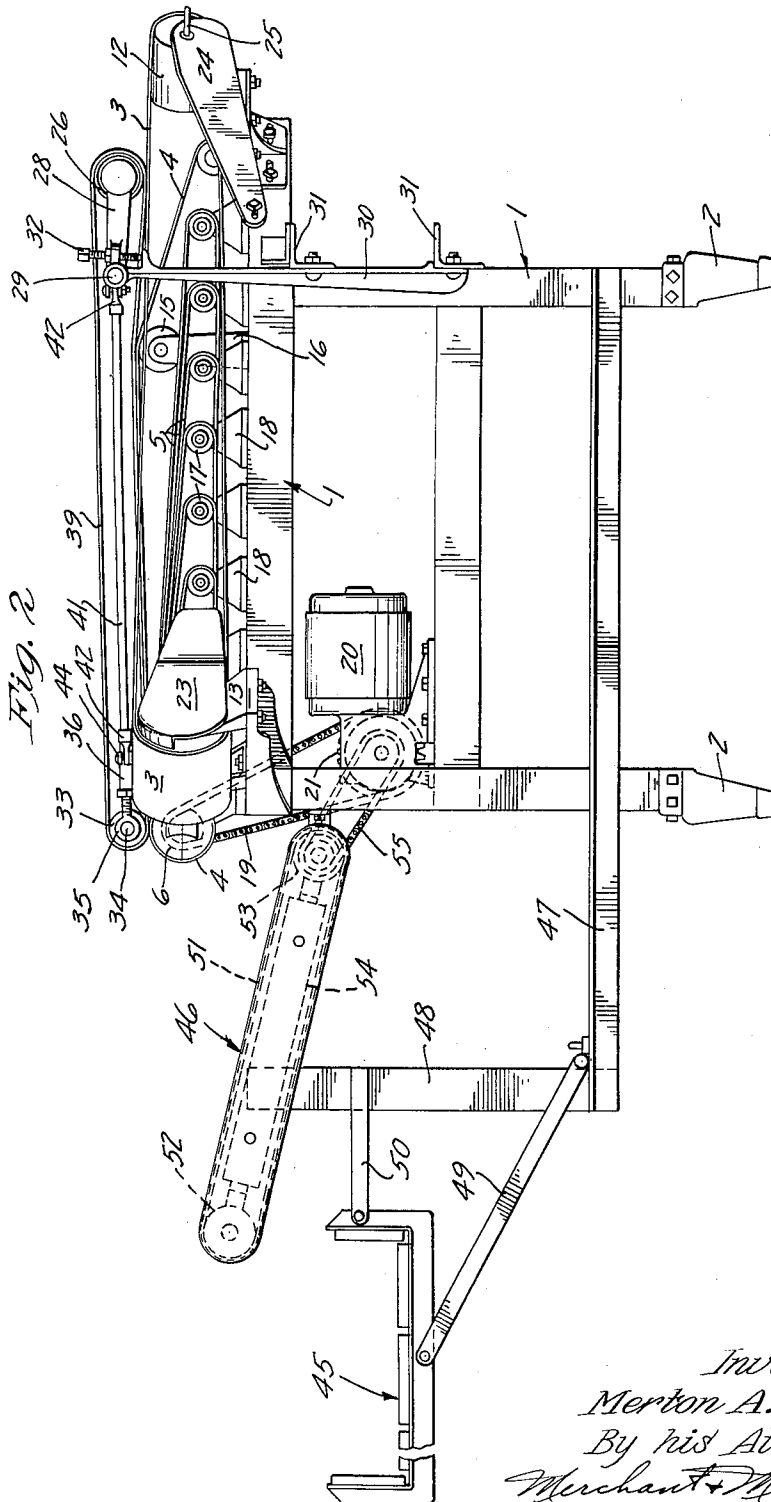
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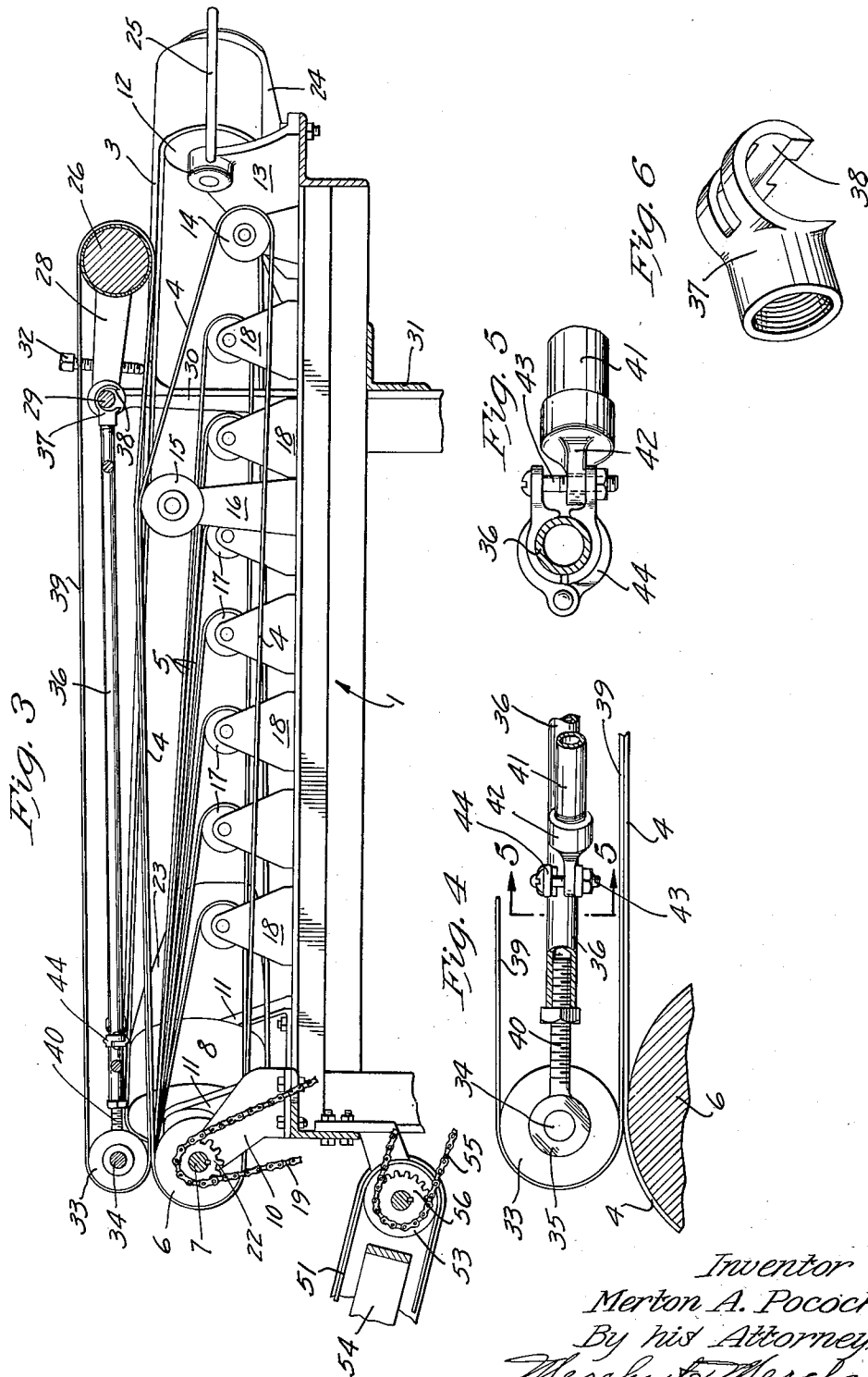
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UNITED STATES PATENT OFFICE

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LAUNDRY FLAT PIECE SPREADER

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6 Claims. (Cl. 38—143)

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My invention relates to flat piece spreaders for laundries and the like and is in the nature of an improvement upon the structure of United States Patent No. 1,891,782.

Machines of the above type include a pair of diverging generally horizontally-disposed endless conveyor spreader belts and an endless main conveyor belt intermediate said diverging spreader belts which feeds in a direction parallel to a line bisecting the angle of said diverging belts. In the operation of such machines, I have found that, in the event that the sheet being spread is fed into the machine in an uncentered manner, whereby unequal weight is placed upon one of the diverging belt, the feeding direction of the sheet will be generally parallel to the feeding belt which carries the greater weight instead of the intended direction, that is, parallel to the main feeding belt.

The primary object of my invention is the provision of means for maintaining the feeding action of the sheet through the spreaders constantly in the direction of the main feeding belt, to wit, in a direction parallel to a line bisecting the angle of the diverging feed rolls, irrespective of whether the sheet is sufficiently centered to cause an unequal amount of weight thereof to be borne by one of the diverging feed belts.

A further object of my invention is the provision of inexpensive highly efficient and durable means for accomplishing the above object.

A still further object of my invention is the provision of guiding means of the type above-described, which may be readily secured to and detached from a machine of the class described.

The above and still further highly important objects and advantages of my invention will become apparent from the following detailed specification, appended claims, and attached drawings.

Referring to the drawings, wherein like characters indicate like parts throughout the several views:

Fig. 1 is a view in plan of a flat piece spreader with my novel device secured thereto, some parts being broken away;

Fig. 2 is a view in side elevation of the machine of Fig. 1;

Fig. 3 is a fragmentary section on an enlarged scale, taken substantially on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmentary sectional detail taken substantially on the line 4—4 of Fig. 1;

Fig. 5 is a still further enlarged detail, partly in section and partly in elevation, taken substantially on the line 5—5 of Fig. 4; and

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Fig. 6 is a view in perspective of a coupler utilized in my novel device.

Referring with greater particularity to the drawings, the numeral 1 indicates, in its entirety, a frame mounted on legs 2 and supporting in a generally horizontal plane a pair of forwardly-feeding diverging endless conveyor spreader belts 3 which are spaced apart at their input ends to provide an operator's station therebetween. Likewise, suitably mounted on the frame 1 are a pair of central endless main conveyor belts 4 between the belts 3 and a plurality of endless secondary conveyor belts 5 between each belt 4 and the adjacent belt 3. All of the belts 4 and 5, at their forward ends, run over rolls 6 fast on a transverse driven shaft 7; and the belts 3, at their front ends, run over rolls 8 driven by universal couplings or bevel gears not shown but contained within casings 9. The rolls 6 of the shaft 7 are journaled in bearing brackets 10 rigidly secured to the frame 1 and the rolls 8 are similarly journaled in bearing brackets 11 also rigidly secured to the frame 1. The spreader belts 3, at their rear ends, run over idler rolls 12 journaled for rotation on brackets 13 bolted or otherwise rigidly secured to the frame 1. The central main conveyor belts 4, at their rear input ends, run over idler rolls 14, the upper runs of the belts 4 being disposed considerably below the level of the upper runs of the spreader belts 3 at their input ends. Intermediate their input and output ends, the upper feeding runs of the main conveyor belts 4 run over a pair of idler rolls 15 disposed at an elevation to bring said intermediate portions slightly above the plane of the feeding runs of the spreader belts. The rolls 15 are journaled in suitable bearings 16 mounted on the frame 1. By reference to Figs. 2 and 3, it will be seen that each of the intermediate belts 5, at their input ends, run over rolls 17 journaled in bearings 18 secured to the frame 1, and that the rolls 17 are disposed at a common level below that of the drive roll 6, whereby the upper feed runs of the belts 5 incline forwardly toward the level of the main conveyor belts 4.

The drive shaft 7 is driven by an endless link chain 19 from an electric motor 20 mounted on the frame 1. The chain 19 runs over a sprocket 21 on the output shaft of the motor 20 and another sprocket 22 keyed or otherwise rigidly secured to the drive shaft 7. Guard plates 23 and 24 are disposed adjacent the outer ends of the driving rolls 8 and the idler rolls 12 respectively; and auxiliary spreading devices in the nature of guard rails 25 extend generally trans-

versely of the diverging spreader conveyors 3 at their input ends.

Cooperating with the spreader conveyor belts 3 is a floating pressure roll 26 extending transversely of the direction of feed and having axially-extending shafts 27 mounted fast to opposite ends thereof. Shafts 27 are journaled in one end of a pair of arms 28, the opposite ends of which are journaled on the end portion of a supporting rod 29. At its extreme ends, the supporting rod 29 is carried by a pair of upstanding supporting frame members 30 secured to the frame 1 by means of transverse angle bars or the like 31. The pressure exerted by the floating pressure roll 26 upon the upper runs of the diverging spreader belts 3 is regulated to some extent by a pair of adjustment screws 32 which have threaded engagement on each with one of the arms 28 and abut a portion of the upstanding frame member 30 (see particularly Fig. 3). Adjustment of the screws 32 will raise or lower the floating pressure roll 26 with respect to the underlying spreader conveyor belts. Cooperating with the pressure roll 26 is a pair of floating pressure rolls 33 mounted on a transverse shaft 34 and overlying the main conveyor belts 4 directly above the power-driven rolls 6. The shaft 34 is journaled at its opposite ends in bearings 35 which are mounted to the front end portion of a generally rectangular frame 36. At its rear end, the frame 36 is provided with a pair of spaced couplers 37 which are provided with downwardly-opening hook-like portions 38 that receive and rest upon the transverse supporting bar rod 29. A pair of laterally-spaced guide belts 39 run over the intermediate portion of the pressure roll 26 and one each over one of the rolls 33. It will be noted that the belts 39 overlie and are in operative engagement one each with one of the feed belts 4, and that the belts 4 and 39 feed in a direction parallel to a line bisecting the angle of divergence of the spreader conveyor belts 3. The bearings 35 are provided with radially-projecting studs 40 that are screw-threaded into the front end portions of the frame 36, whereby to independently vary the distance between each roll 33 and the pressure roll 26 to compensate for slight differences which may occur in the length of the belts 39, and to adjust the tension to the belts 39.

The frame 36 is held against movements transversely of the direction of feed by a pair of diagonally-disposed brace members 41 each having a perforate coupler member 42 at its opposite ends. The coupler members 42 have extended therethrough nut-equipped bolts 43 which extend through opposite ends of hinged clevises 44. At the forward ends of the brace members 41, the clevises 44 are clamped to the front end portions of the frame 36; and, at the rear ends of the brace members 41, the clevises 44 are clamped to opposite end portions of the supporting rod 29. It will be also noted that the distance between the free end portions of the clevises 44 permits limited upward and downward movement of the frame 36 with respect to the frame 1, whereby to permit the pressure rolls 33 to float in a vertical direction with respect to the underlying rolls 6. The frame 36, the pressure rolls 33, and the brace members 41 may be quickly and easily removed from the machine merely by removing the clevises 44 from the transverse rod 29 and lifting the hook-equipped couplers 37 out of engagement with the transverse rod 29. The belts 39 may be moved transversely of the machine to depend at

either side thereof from the upstanding frame members 30.

Flat pieces, such as sheets, spreads, or the like, to be spread and smoothed in preparing the same for an ironer or the like, are fed by the operator to the input end of the machine at the converging ends of the spreader conveyor belts 3, the intermediate portion of one side edge of the work piece being fed between the main feed conveyors 4 and guide belts 39. The feed belts 4 tend to carry the work piece directly forwardly, the diverging belts 3 exerting an oblique outward pull thereupon during feeding movements, thus tending to spread and smooth the work piece. In the event that the work piece is not centered precisely with respect to the feed belts 4, the work-piece has a tendency to move obliquely in the direction of the portion thereof exerting the greatest weight upon the diverging spreader belt 3. Upon making contact with the pressure roll 26 and the lower or feeding run of the guide belts 39, oblique movements of the work piece in one direction or another are hindered to some extent. However, as soon as the work piece reaches the point of engagement between the main conveyor belts 4 and the guide belts 39 overlying the intermediate rolls 15, engagement thereof by said belts will effectively prevent any further oblique movement of the work piece in either direction and cause the same to be fed in the direction of the belts 4 and 39, the spreader belts 3 simply working to spread the work piece laterally at its edge portions to remove wrinkles and the like therefrom.

As the work piece is discharged from the output end of the machine, it may be fed directly to a flat piece ironer, or as shown, to a basket or tray 45. Means for transporting the work piece from the spreader to the basket or tray 45 comprises a conveyor 46 supported from the frame 1 by horizontal and vertical supporting members 47 and 48 respectively. As shown in Fig. 2, the tray 45 is supported by laterally-projecting arms 49 and 50 rigidly secured to the supporting frame members 47 and 48 respectively. The conveyor is made up of a plurality of conveyor belts 51 running over spaced rolls 52 and 53, the latter of which underlies the power-driven rolls 6 of the spreading machine. The rolls 52 and 53 are journaled in suitable bearings in a generally rectangular frame 54, the rolls 53 being driven from the motor 20 by an endless link chain 55 running over a sprocket 56 fast on the shaft of the rolls 53 and another sprocket secured to the shaft of the motor 20.

From the above, it will be evident that a sheet or like piece of cloth material to be spread may be fed into the machine without particular regard to accurate centering of the sheet with respect to the conveyor belts. Thus, the work is made easier for the operator and less time is required to determine the exact center of the side edge of a sheet and subsequent accurate placement thereof on the conveyor belts.

My invention has been thoroughly tested and found to be accurate for the accomplishment of the objectives set forth; and, while I have shown a commercial embodiment of my improved device, it will be understood that the same is capable of modification without departure from the spirit and scope of the invention as defined in the claims.

What I claim is:

1. In a device of the class described, including a pair of generally horizontally-disposed

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forwardly-feeding diverging endless conveyor spreader belts, an endless forwardly-feeding main conveyor belt between said pair of belts, the input end of said main conveyor belt being in a horizontal plane below said diverging belts, and drive means for each of said belts, the combination of a floating pressure roll loosely resting on the upper run of the diverging spreader belts adjacent the input end thereof, a second floating pressure roll loosely resting on the upper run of the main conveyor belt adjacent the output end thereof, and a guiding belt running over said floating pressure rolls, said guiding belt feeding in a direction parallel to a line bisecting the angle of said diverging belts.

2. In a device of the class described, including a pair of generally horizontally-disposed forwardly-feeding diverging endless conveyor spreader belts, an endless forwardly-feeding main conveyor belt between said diverging belts, said main conveyor belt feeding in a direction parallel to a line bisecting the angle of divergence of said first-mentioned belts and terminating at their input ends in a horizontal plane lower than said diverging belts, said belts being provided at their output ends with power-operated drive rolls and at their input ends with idler rolls, the combination of an elongated floating pressure roll loosely resting on the upper run of said diverging spreader belts adjacent their input ends and in spaced relation to said idler rolls, means for imparting vertical adjustments to said floating pressure roll, a second floating pressure roll loosely resting on the upper run of said main conveyor belt and overlying the power-driven roll thereof, means for varying the distance between said floating pressure rolls, and a guide belt running over said floating pressure rolls.

3. The structure defined in claim 2 in which the means for varying the distance between said floating pressure rolls comprises a transverse shaft journalling said second floating pressure roll, and means mounting the opposite ends of said shaft for independent adjustment of said ends with respect to the first-mentioned floating pressure rolls.

4. In a device of the class described, including a pair of generally horizontally-disposed forwardly-feeding diverging endless conveyor spreader belts, an endless forwardly-feeding main conveyor belt between said diverging belts, said main conveyor belt feeding in a direction parallel to a line bisecting the angle of divergence of said first-mentioned belts and terminating at their input ends in a horizontal plane lower than said diverging belts, said belts being provided at their output ends with power-operated drive rolls and at their input ends with idler rolls, the combination of an elongated floating pressure roll loosely resting on the upper run of said diverging spreader belts adjacent their input ends and in spaced relation to said idler rolls, a second floating pressure roll loosely resting on the upper end of said main conveyor belt and overlying the power-driven roll thereof, a guide belt running over said floating pressure rolls, a transverse shaft overlying said feed belts intermediate said first and second floating pressure rolls, a generally-horizontally-disposed frame, hook means on one end of said frame engageable with said transverse shaft whereby said frame is permitted floating pivotal movements,

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a transverse shaft journalling said second floating pressure rolls, and means mounting the opposite ends of said shaft to the free end of said frame for independent adjustment of said ends with respect to said transverse shaft.

5. In a device of the class described, including a pair of generally horizontally-disposed forwardly-feeding diverging endless conveyor belts which are spaced apart adjacent their input ends, a pair of laterally-spaced forwardly-feeding endless main conveyor belts between said diverging belts, said main feeding belts terminating at their input ends in a horizontal plane below said diverging belts and feeding in a direction parallel to a line bisecting the angle of said diverging belts, and drive means for each of said pairs of belts, the combination of a floating pressure roll loosely resting on the upper runs of said diverging spreader belts adjacent their input ends, a pair of laterally-spaced pressure rolls loosely resting one each on the upper runs of the main conveyor belts adjacent their output ends, a pair of laterally-spaced guide belts each running over said first-mentioned pressure roll and one each thereof over said last-mentioned pressure rolls, a transverse shaft overlying said feed belts intermediate the input and output ends of said conveyor belts, a generally horizontally-disposed frame intermediate said transverse shaft and said last-mentioned pressure rolls, hook means on one end of said frame engageable with said transverse shaft permitting free floating movements of said frame with respect to said transverse shaft, a shaft journalling said pair of laterally-spaced pressure rolls, and means mounting the opposite end of said last-mentioned shaft to said frame for independent adjustment of said ends with respect to said frame.

6. In a device of the class described, including a pair of generally horizontally-disposed forwardly-feeding diverging endless conveyor belts which are spaced apart adjacent their input ends, a pair of laterally-spaced forwardly-feeding endless main conveyor belts between said diverging belts, said main feeding belts terminating at their input ends in a horizontal plane below said diverging belts and feeding in a direction parallel to a line bisecting the angle of said diverging belts, and drive means for each of said pairs of belts, the combination of a floating pressure roll loosely resting on the upper runs of said diverging spreader belts adjacent their input ends, a pair of laterally-spaced pressure rolls loosely resting one each on the upper runs of the main conveyor belts adjacent their output ends, and a pair of laterally-spaced guide belts each running over said first-mentioned pressure roll and one each thereof over said last-mentioned pressure rolls, said spaced rolls being provided with independent means for varying the distance thereof from said first-mentioned pressure roll.

MERTON A. POCKOCK.

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