

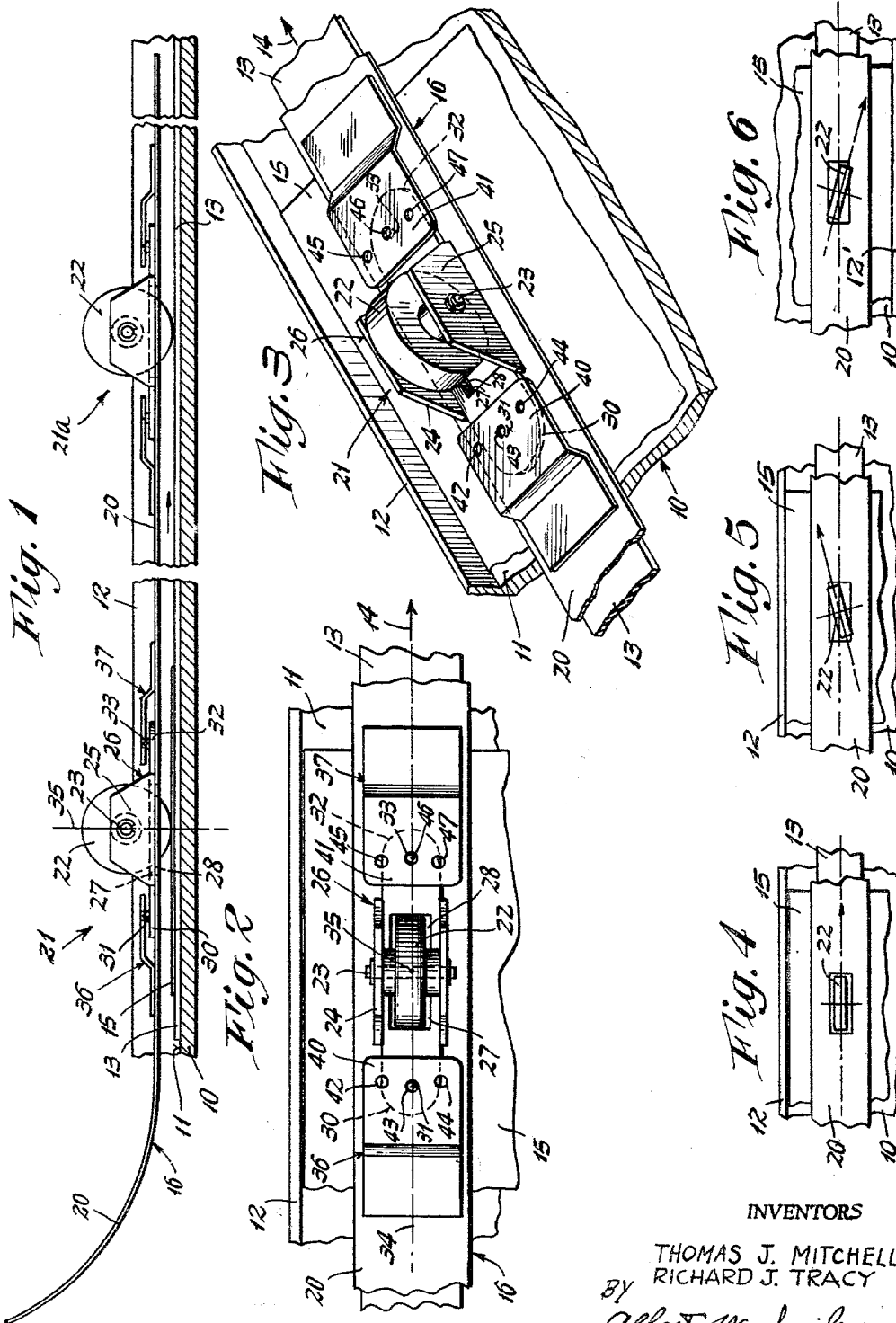
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ROLL GUIDE MEANS FOR SHEET HANDLING DEVICES

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ROLL GUIDE MEANS FOR SHEET HANDLING DEVICES

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This invention relates to an improved guide roll support arrangement. More particularly the invention relates to a novel guide roll supporting and setting means for use with paper handling devices whereby the individual paper work sheets may be efficiently and reliably retained in a desired path of travel during feeding movement.

In paper feed devices that are used with various data processing machines the successive work sheets are usually transported along extended guideways whereby said sheets are conducted from station to station through the machine. These guideways are usually equipped with a series of small rollers which engage one side of the work sheets and serve to press the latter into frictional engagement with a sheet driving belt so as to cause a transporting of the sheets in the direction of belt travel. In many cases these rollers are mounted so as to be slightly skewed with respect to the belt feed direction whereby a lateral biasing force may be imposed on the work sheets being fed so the work sheets are moved toward and along a fixed predetermined guide edge or shoulder formed on said guideway. The instant invention contemplates a novel construction and support arrangement for a guide roll whereby the latter is capable of selectively biasing a work sheet in either or neither lateral direction as the sheet moves endwise along the guideway.

The primary object of the invention is to provide a simple reliable sheet guide roller that may be selectively indexed to a plurality of different angular positions relative to an associated guideway.

Another object of the invention is to provide a novel paper guide roller support arrangement whereby a guide roll is mounted so that its rotational axis is shiftable in the plane that is substantially parallel to the adjacent portion of a flexible paper drive member.

Other objects of the invention will become apparent as the disclosure progresses.

In the drawings:

FIG. 1 is a front elevational view of a portion of the flexible roller strip arrangement.

FIG. 2 is a plan view of one longitudinal section of the apparatus of FIG. 1.

FIG. 3 is a perspective view of the structure shown in FIG. 2.

FIGS. 4, 5 and 6 are diagrammatic sketches illustrating the various indexed positions for the guide roll.

Referring to FIGS. 1-3 a portion of a sheet guideway 10 is shown and is provided with a smooth horizontal surface 11 and a vertically disposed guide edge member 12. A flexible belt 13 is adapted to be longitudinally driven, as indicated by arrow 14, over the surface 11 thereby affording a means for frictionally driving a work sheet 15 along the guideway 10. In combination with this more or less conventional type apparatus there is provided a unique support arrangement 16, FIG. 2 for a longitudinal array of guide rolls each of which is adapted to bias the work sheet 15 into frictional driving engagement with the said drive belt 13 and is also capable of biasing the work sheet in either or neither lateral direction during the paper feed movement as will be described.

The roll support means 16 comprises an elongated flexible strap 20 having a plurality of similar longitudinally spaced roll support units 21, 21a, etc. mounted thereon.

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The roll supporting unit 21 shown in FIGS. 1-3 includes a guide roll 22 which is rotatably mounted on a shaft 23 that is operatively supported on the upstanding ears 24 and 25 of a bracket 26. The lower portion of the roll extends through the registering apertures 27 and 28 respectively formed in the horizontal portion of the bracket and the strap 20 and engages the upper surface of the belt 13. The leading horizontal end portion or ear 30, FIG. 1 of the bracket 26 is provided with an upwardly extending hemispherical projection 31 FIG. 1, while the trailing horizontal end portion or ear 32 of the bracket is provided with a similar upwardly extending hemispherical projection 33, FIG. 1. The projections 31 and 33 are located along the longitudinal center line 34, FIG. 2, of bracket 26 and are spaced substantially equidistant from the vertical center line or axis 35, FIG. 1 passing diametrically through the axial midpoint of the roll 22. The axis 35 is disposed in a plane which is substantially normal to the effective plane of the guideway 10 or strap 20. The bracket 26 is adapted to be releasably secured on the upper surface of the flexible strap 20 by means of a pair of retaining ears 36 and 37 which are spot welded or otherwise fixed to the strap in spaced relation. The mutually facing portions 40 and 41, FIG. 3, of ears 36 and 37 are each vertically offset from the upper surface of strap 20 by a distance which corresponds to the respective thickness of the related horizontal end portions 30 and 32 of the bracket 26. The offset portion 40 of ear 36 is formed with an arcuate array of three holes 42, 43 and 44 while the ear portion 41 is formed with a similar array of three holes 45, 46 and 47. The center of curvature for both arcuate arrays of holes is located on the vertical axis 35, FIG. 1. The hemispherical bracket projection 31 is adapted to selectively detentingly cooperate with the three ear holes 42, 43 and 44 while the bracket projection 33 is adapted to simultaneously selectively detentingly cooperate with the three ear holes 47, 46 and 45.

As will be apparent the above described construction permits the bracket 26 together with the roll 22 to be selectively indexed to and yieldably retained in three different rotative positions relative to the strap as is indicated by FIGS. 4-6 respectively. When the bracket projections 31, 33 detentingly engage the related pair of holes 43 and 46 the plane of the guide roll will be substantially parallel to the longitudinal center lines of the strap 20 and the belt 13 as indicated in FIG. 4 whereby the work sheet is biased downwardly into engagement with the belt 13 but will not be biased in either lateral due to rotation of the roll 22. When the bracket projections 31, 33 detentingly engage the related pair of holes 44, 45 the plane of the roll will be disposed at an acute angle with respect to the center line of the belt 13, as indicated in FIG. 5, whereby the work sheet will be laterally biased toward guide edge 12 during a feed motion. When the bracket projections 31, 33 detentingly engage the related pair of holes 42, 47 the plane of the roll will be disposed at an acute angle with respect to the center line of the belt, as indicated in FIG. 6, whereby the work sheet will be laterally biased toward an opposite guide edge 12' during a feed motion. As will be apparent the bracket 26 together with the roll 22 may be readily manually adjusted about the vertical axis 35 so that the desired angular orientation of the roll 22 relative to the belt 13 is obtained. By this unique arrangement of particular parts a selective lateral bias adjustment may be reliably achieved.

Since many changes could be made in the embodiment of the invention as particularly described and shown herein without departing from the scope of the invention, it is intended that this embodiment be considered as ex-

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emplary and that the invention not be limited except as warranted by the following claims.

What is claimed is:

1. A roll support arrangement for sheet handling devices: comprising

a sheet guideway along which work sheets are adapted to move;

an elongated strap mounted along said guideway;

a plurality of guide rolls positioned in longitudinal spaced relation along said strap;

a bracket means for mounting at least one of said rolls on said strap for rotation about its geometric axis said bracket means having formed thereon two supporting ears that are disposed on opposite sides of the associated roll and substantially parallel to the axis of said roll; and retaining means on said strap and engaging both of said bracket ears for mounting said bracket means for pivotal adjusting movement about an axis that passes through the said associated roll.

2. Apparatus as defined by claim 1 wherein said strap is flexible and said retaining means is formed with a plurality of detent apertures which selectively cooperate with a detent projection formed on at least one of said ears.

3. A roll support arrangement for a sheet handling device: comprising

a sheet guideway along which work sheets are adapted to move;

a support strap mounted along said guideway;

a bracket;

a guide roll;

means for rotatably mounting said guide roll on said bracket; and

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means for detentingly mounting said bracket in various positions on said strap for adjusting the planar position of said roll relative to said strap;

said strap being flexible and being provided with a pair of spaced ears;

said bracket and ears being formed with cooperating holes and projections which permit said adjustment of the planar position of said roll relative to said strap.

4. A roll support arrangement for a sheet handling device: comprising

a sheet guideway along which work sheets are adapted to be moved;

a flexible support strap;

a pair of mutually facing ears secured to said strap; said ears each being formed with an arcuate array of holes;

a roll supporting bracket having opposed ends each formed with a detent projection, said projections being respectively disposed between said ears and said strap and being adapted to selectively detentingly engage related pairs of said holes whereby said bracket may be positionally adjusted about an axis that is substantially normal to said strap; and

a guide roll rotatably mounted on said bracket and adapted to engage a work sheet moving along said guideway.

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