

- [54] **PNEUMATIC TUBE SYSTEM SWING TUBE
DIVERter CONSTRUCTION**
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- [52] U.S. Cl. 243/31, 243/29
[51] Int. Cl. B65g 51/24
[58] Field of Search..... 243/29, 30, 31

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- 3,281,093 10/1966 Barber 243/29

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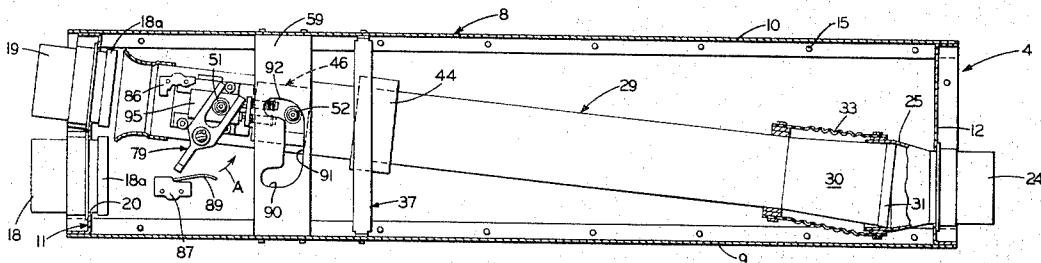
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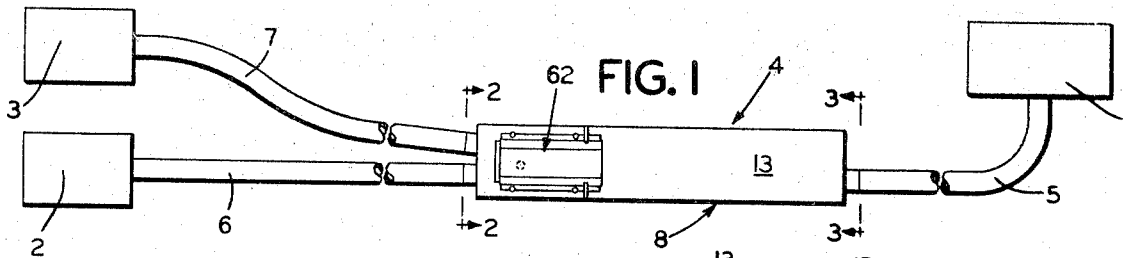
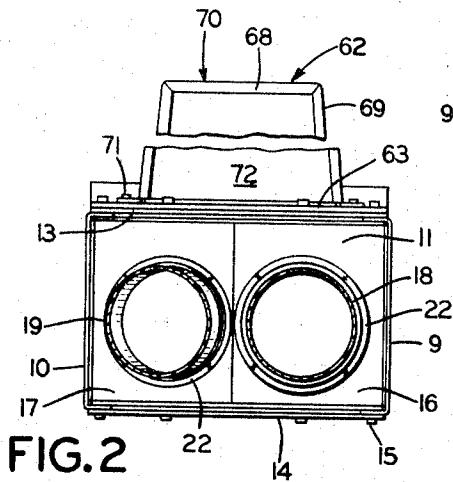
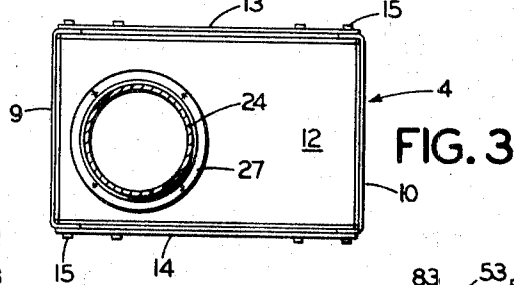
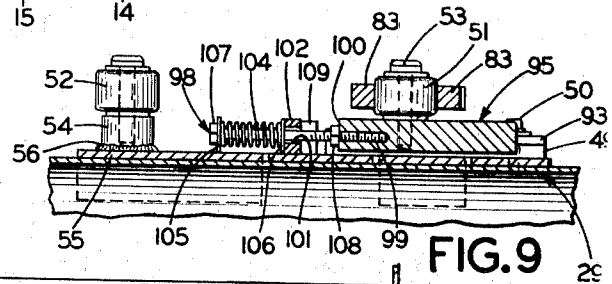
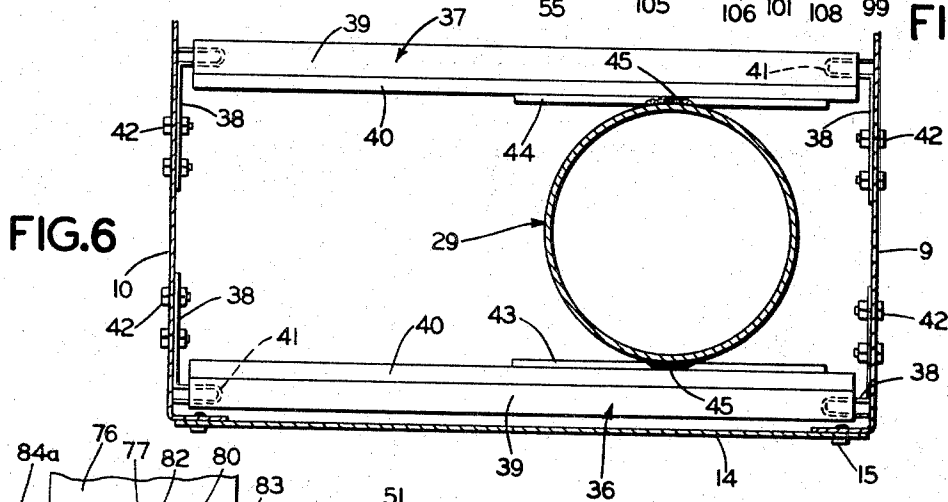
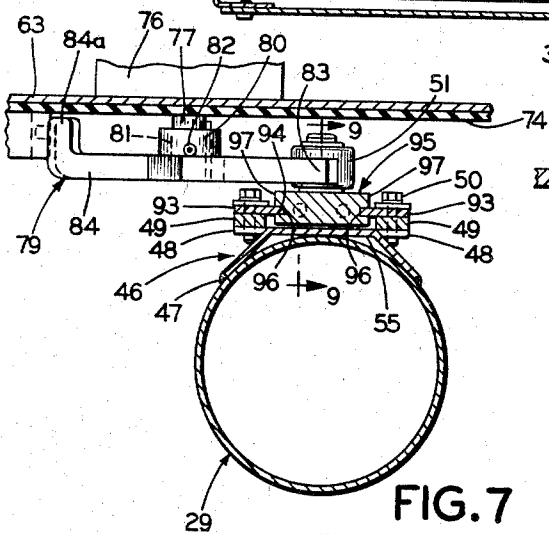
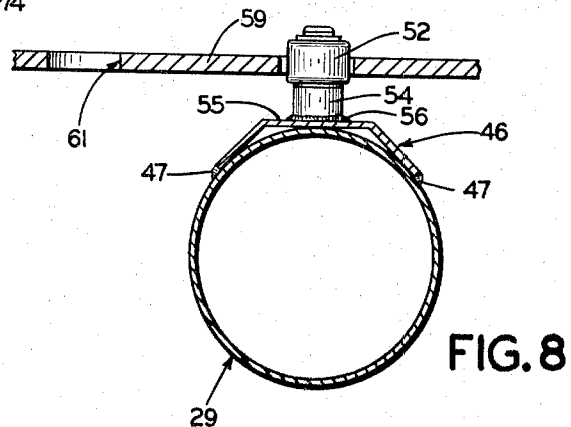
Primary Examiner—Evon C. Blunk
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Attorney—John H. Bishop et al.

[57] **ABSTRACT**

A swing tube diverter construction for multiple station pneumatic tube systems. A pneumatic tube section is mounted at one end to swing between two positions extending from a tube system main line. A pair of rollers is mounted on the swinging tube section adjacent the swinging end thereof. A rotatable drive yoke connected to a reversible motor has a slot engaged with one of the rollers. The other roller is engaged in a fixed generally U-shaped cam track. The cam roller follows the path of the cam track in cooperation with movement imparted to the swinging tube section by the other roller engaging the yoke. This selectively connects the swinging tube section to one or the other of two branch tube system legs. Thus a carrier may travel in either direction between the main line and a selected branch leg.

5 Claims, 12 Drawing Figures





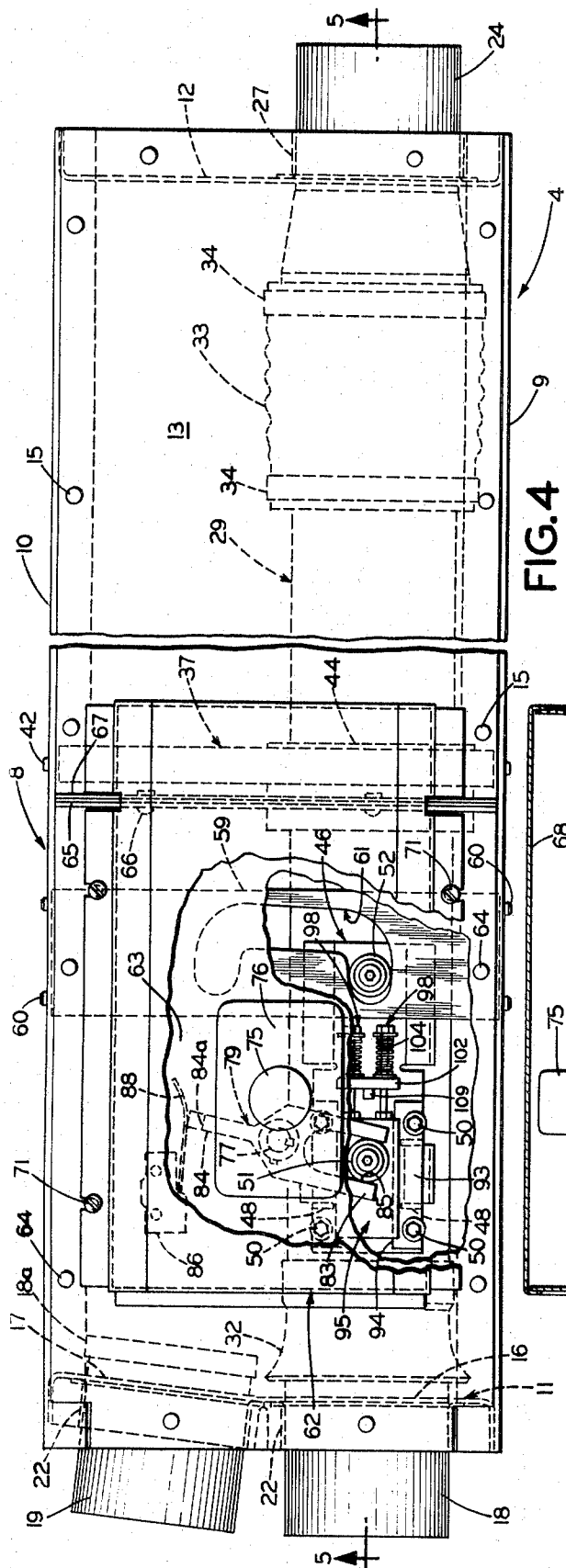


FIG. 4

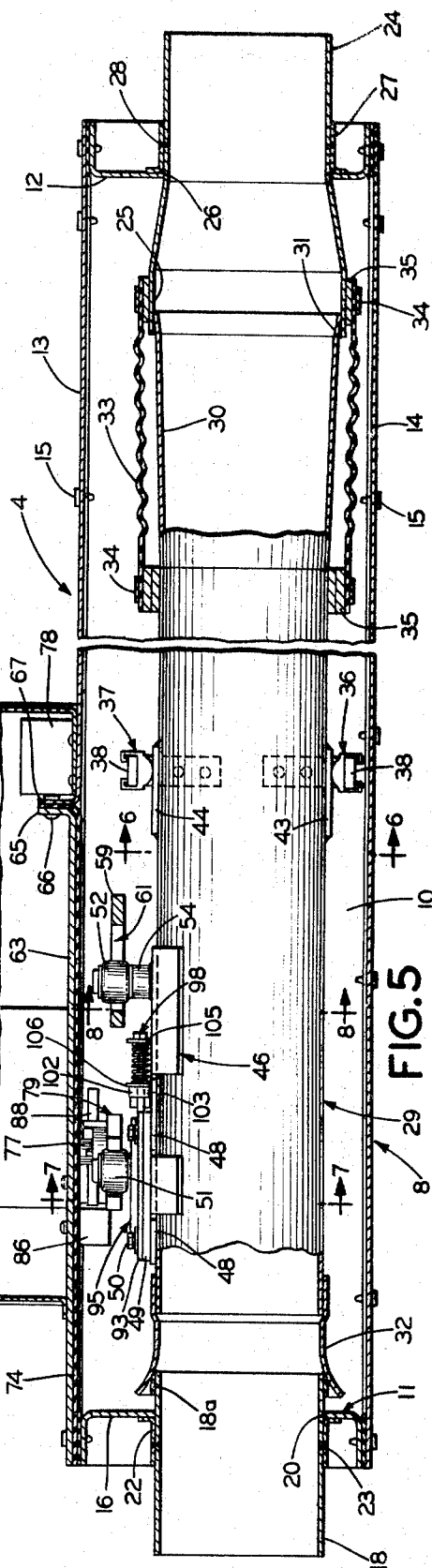


FIG. 5

PNEUMATIC TUBE SYSTEM SWING TUBE DIVERTER CONSTRUCTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to pneumatic tube systems and particularly to diverter constructions for such systems. More particularly the invention relates to a swing tube diverter construction which may be placed at various locations in a single tube, multiple station pneumatic tube system for diverting a moving carrier between either of two branch legs and a main line, regardless of the direction of carrier travel. The swing tube diverter may be controlled by limit switches and by a variety of electrical control mechanisms.

2. Description of the Prior Art

Various types of structures and mechanisms are used in pneumatic tube systems for diverting a moving carrier from a main line into branch lines at a junction station. Deflector structures are used at many terminal stations for deflecting the carrier into the proper terminal. Such deflectors consist of curved lever arms which project into the tube and deflect the carrier when the carrier strikes such member while the air pressure continues in the main line and is unaffected by the deflector.

Other carrier diverters used in pneumatic tube systems are similar to a deflector structure except that the diverter has the added feature of diverting the air flow as well as the carrier. The branch leg not traversed by the carrier moving through the tube junction is sealed off. The carrier therefore is propelled through the junction into the branch or main leg by the system air pressure without substantial impact with the diverting member in changing the direction of carrier travel.

Such a diverter construction is shown and described in the copending application of Pieter J. Ekama, Ser. No. 115,181, filed Feb. 16, 1971, now U.S. Pat. No. 3,701,496, dated Oct. 31, 1972.

Another type of carrier diverter used in pneumatic tube systems consists of a section of tube connected at one end with the main line and swingable between the branch lines for engagement therewith by the opposite swing tube end. Such a swing tube diverter construction is shown in U.S. Pat. No. 3,367,603.

The swing tube diverter construction disclosed in U.S. Pat. No. 3,367,603 provides a satisfactory device which solves many existing problems. Such diverter constructions, however, require spring means for the final movement of the swing tube into a sealed position and to ensure a seal in the final sealed position. Likewise, the moving force is applied to the swing tube through a lever-cam arrangement in which the cam has grooves for sliding engagement with the lever and swing tube. It is preferable to have the moving force applied more directly to the swing tube with reduced sliding engagement between the various components.

Likewise, prior swing tube diverters have involved difficulties in stopping the movement of the swing tube at the exact location desired, upon its connection with the selected branch tube. Override of the swing tube drive motor may improperly force the swing tube into or against the branch tube and may cause possible damage to the motor or misalignment of tubes and related components resulting in repair and maintenance problems. If adjustment is made for the motor override, a proper seal may not be achieved between the con-

nected tubes should the amount of motor override vary. The use of motors having necessary built-in override protection and controls involves considerable extra expense.

Thus, a need exists for a swing tube diverter construction for use in a single tube pneumatic tube system which may be maintained easily, which permits a carrier to travel and be propelled in either direction through the diverter, which properly seats the swinging end of the tube sealed with respect to the selected branch tube without additional spring means, which provides a more direct coupling between the swing tube driving force and the swing tube, and which reduces the problem of motor override.

SUMMARY OF THE INVENTION

Objectives of the invention include providing a pneumatic system swing tube diverter construction which can be placed at various locations in a single tube pneumatic tube system; providing a swing tube diverter which permits a carrier to travel in both directions in the main leg and in both directions in the branch legs; providing a swing tube diverter which can be maintained or serviced easily; providing a swing tube diverter which can be controlled by limit switches and by various electrical control mechanisms; providing a swing tube diverter which has a stationary cam plate, and which has a direct coupling connected to the swing tube drive motor which is slidably engaged with the swing tube; providing a swing tube diverter which tightly seats the swing tube with respect to the branch leg ends without additional spring components; providing a swing tube diverter having motor override protection to prevent damage to the diverter construction, and to eliminate the need for extreme accuracy in the manufacture and assembly of the diverter and in the electrical control mechanism; and providing a swing tube diverter of simple construction which achieves the stated objects in a simple, effective and inexpensive manner, and which solves problems and satisfies needs existing in the art.

These and other objectives and advantages may be obtained by the swing tube diverter construction for a pneumatic tube system having main and branch tubes, the general nature of which may be stated as including swing tube means having first and second ends; means operative connecting the swing tube means first end to the system main tube providing limited axial and angular movement of said swing tube means with respect to said main tube, said connection means being substantially airtight; first and second pin means mounted on the swing tube means; drive means for moving the swing tube means between two positions each aligned with an end of one of two branch tubes, and for selectively engaging and disengaging the swing tube means second end with an end of a selected branch tube; said drive means including cam means formed with a generally U-shaped cam track engaged with the first pin means; yoke means having spaced leg means forming a slot therebetween engaged with the second pin means; reversible motor means operatively connected to the yoke means for rotating said yoke means; the pin means including roller means, the first pin means being journaled on spacer means mounted on the tube means; the second pin means being slidably mounted for limited axial movement along the swing tube means; spring means biasing the second pin means towards the

swing tube means first end; and switch means engaged by the yoke means controlling said drive means; said switch means deenergizing said drive means when the swing tube means engages a selected branch tube.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention — illustrative of the best mode in which Applicant has contemplated applying the principles — is set forth in the following description and shown in the drawings, and is particularly and distinctly pointed out and set forth in the appended claims.

FIG. 1 is a diagrammatic view of a pneumatic tube system in which one of the improved swing tube diverters may be used;

FIG. 2 is an enlarged sectional view of the swing tube diverter taken on the line 2—2, FIG. 1;

FIG. 3 is a similar view of the other end of the swing tube diverter taken on the line 3—3, FIG. 1;

FIG. 4 is a fragmentary top plan view of the swing tube diverter with portions broken away;

FIG. 5 is a fragmentary sectional view taken on line 5—5, FIG. 4;

FIG. 6 is an enlarged sectional view taken on line 6—6, FIG. 5;

FIG. 7 is an enlarged fragmentary sectional view taken on line 7—7, FIG. 5;

FIG. 8 is an enlarged fragmentary sectional view taken on line 8—8, FIG. 5;

FIG. 9 is a sectional view taken on line 9—9, FIG. 7; and

FIGS. 10, 11 and 12 are diagrammatic views showing the swing tube diverter in various positions of operation between the pneumatic tube branch legs.

Similar numerals refer to similar parts throughout the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A typical multiple station single-tube pneumatic tube system is illustrated diagrammatically in FIG. 1 and includes a central station 1 connected with substations 2 and 3 through the improved swing tube diverter 4. A single main pneumatic tube 5 is connected to station 1 and communicates at diverter 4 with branch tubes 6 and 7 which are connected to stations 2 and 3, respectively.

Diverter 4 (FIGS. 2—5) includes a housing 8 having side walls 9 and 10, end walls 11 and 12, and top and bottom walls 13 and 14. Top and bottom walls 13 and 14 preferably are assembled to form housing 8 by screws 15 in order that such walls may be removed easily for maintenance of the diverter components assembled within housing 8. End wall 11 has two sections 16 and 17. Section 16 is generally parallel to end wall 12, and section 17 extends inwardly into housing 8 forming an angle with wall section 16.

Two short branch tube sections 18 and 19 are secured by flange collars 22 within openings 20 and 21 formed in end wall sections 16 and 17, respectively. Collars 22 are spot welded at 23 to end wall 11 and to tube sections 18 and 19 (FIGS. 2 and 5). A short main line tube section 24 formed with a bell end 25, is secured within an opening 26 formed in end wall 12 by a flange collar 27. Collar 27 is spot welded at 28 to end wall 12 and to tube section 24 (FIGS. 3 and 5).

Tube sections 18 and 19, and tube section 24 may be provided with flanges or the like at their outer ends for connection to branch tubes 6 and 7, and main line tube 5, respectively. A resilient collar 18a is mounted on the inner ends of tube sections 18 and 19 within housing 8 to provide quietness of operation and seals.

A length of tube indicated at 29 is mounted for swinging movement within housing 8. Tube 29 is formed at one end with an outwardly tapered end section 30 which terminates in a chamfered end 31. The other end of tube 29 terminates in a bell tube section 32. Chamfered end 31 is slidably mounted within bell end 25 of tube section 24 (FIG. 5) enabling tube 29 to move freely, both axially and angularly with respect to tube section 24.

A flexible sleeve 33 extends between tube 29 and tube section 24 and forms an airtight connection therebetween. Banding straps 34 secure sleeve 33 to tubes 29 and 24, and one or more layers of leather strips 35 or the like, preferably surround tubes 29 and 24 at straps 34. Strips 35 prevent straps 34 from wearing through sleeve 33. Sleeve 33 enables tube 29 to move freely with respect to tube section 24 and prevents tube 29 separating from tube section 24, while providing an airtight seal therebetween.

A pair of spaced guide bars 36 and 37 are mounted within housing 8 by clips 38 and extend between side walls 9 and 10 for supporting and guiding swing tube 29 (FIG. 6). Bars 36 and 37 each have a channel member 39 in which a guide strip 40 is inserted to provide a smooth surface for sliding engagement with tube 29. Guide strips 40 preferably are made of a low friction plastic or are coated with a low friction material, such as sold under the trademark "Teflon."

Clips 38 have generally U-shaped flange ends 41, one of which is inserted into each end of channel 39 for properly positioning bars 36 and 37 above and below tube 29. Clips 38 preferably are bolted to side walls 9 and 10 by bolts 42.

A pair of slide plates 43 and 44 preferably are welded at 45 to tube 29 and are located to coincide with guide bars 36 and 37 (FIGS. 5 and 6), respectively. Plates 43 and 44 provide elongated smooth surfaces which slidably engage guide strips 40 during movement of tube 29, so that a depression will not be worn in tube 29 by strips 40 after repeated operations of diverter 4.

A channel-like bracket 46 is welded at 47 on tube 29 between slide plate 44 and bell tube end 32 (FIGS. 5, 7 and 8). A roller 52 is journaled on the upper end of a spacer hub 54 which extends upwardly from web 55 of bracket 46. Hub 54 is welded at 56 to bracket web 55. Roller 52, thus comprises pin means mounted or journaled on tube 29.

Pairs of ears 48 (FIG. 7) extend horizontally outwardly from both sides of bracket web 55. Spacer bars 49 extend parallel to the axis of tube 29 between each pair of ears 48 and are bolted thereto by bolts 50.

Guide bars 93 are mounted on spacer bars 49 by bolts 50. Each guide bar 93 has an inner side edge 94 which is spaced from and extends over web 55. A slide block 95 is formed with grooves 96 which extend along opposite sides 97 of block 95. Slide block 95 is slidably mounted on guide bars 93 by engagement of guide bar edges 94 in grooves 96. Guide bars 93 preferably mount slide block 95 above bracket web 55, as shown in FIG. 7, to prevent sliding friction therebetween.

A roller 51 is journaled on the upper end of a pin 53 which is fixed to and extends upwardly from slide block 95.

A pair of parallel bolts 98 are engaged in threaded bores 99 formed in an end 100 of block 95, which end 100 is adjacent roller 52. Bolts 98 extend through holes 101 formed in a retaining bar 102 which is welded at 103 to bracket web 55. Retaining bar 102 is located between roller 52 and slide block 95.

Compression springs 104 surround bolts 98 and are retained on bolts 98 by spaced washers 105 and 106 which abut boltheads 107 and retainer bar 102, respectively. Nuts 108 are threaded on each bolt 98 and are secured against end 100 of block 95 to lock bolts 98 in position with respect to block 95. Nuts 108 also may serve as stops for block 95 which is biased toward retaining bar 102 by springs 104.

A pad 109 of leather or resilient material preferably is mounted on retainer bar 102 between bolts 98 and extends outwardly beyond nuts 108 to absorb any stopping shock between block 95 and bar 102. Pad 109 also provides quiet operation of diverter 4.

Bores 99 extend further into slide block 95 than the ends of bolts 98, as shown in FIG. 9, to permit bolts 98 to be adjusted with respect to block 95 to vary the compression tension of springs 104.

Roller 51 thus is mounted movably axially with respect to tube 29 for movement away from and toward roller 52 by the sliding connection between slide block 95 and guide bars 93. Springs 104 bias block 95 and roller 51 toward roller 52. The function and purpose of slide block 95 and attached roller 51 are discussed below.

A cam plate 59 is mounted within housing 8 extending between side walls 9 and 10, and is attached to walls 9 and 10 by bolts 60. Cam 59 is spaced above tube 29 and is formed with a generally U-shaped cam track slot 61 into which roller 52 extends.

A second housing 62 is mounted on the outside of housing 8 and houses the drive means for swing tube 29. Housing 62 includes a motor mounting plate 63 which along with top wall portion 13 forms the complete top wall for housing 8. Plate 63 is connected by screws 64 to side walls 9 and 10 and to front end wall 11. The rear end of plate 63 is flanged at 65 and is bolted at 66 to top wall flange 67 (FIG. 5).

The top and side walls 68 and 69, respectively, of housing 62 are formed by a hood-like cover 70 which is connected by screws 71 to motor plate 63 (FIG. 7). Front and rear end wall panels 72 and 73 are welded to hood cover 70 to form housing 62. A gasket 74 of neoprene or the like may be cemented to the bottom surface of motor plate 63.

The drive means for swing tube 29 preferably includes a motor 75 and a gear box 76 mounted on motor plate 63. A shaft 77 is connected to and extends from gear box 76 through an opening in plate 63 and gasket 74 into housing 8. An electrical wiring terminal block 78 or other electrical control components may also be mounted within housing 62 (FIG. 5).

A yoke 79 is mounted on the extended end of shaft 77 within housing 8 and engages roller 51 (FIG. 7). Yoke 79 includes a hub 80 formed with an opening 81 in which shaft 77 is engaged and secured therein by set screws 82. A pair of spaced parallel legs 83 extend outwardly from hub 80 forming a slot 85 between legs 83.

Slot 85 has a width generally equal to the diameter of roller 51 and traps roller 51 therein.

A third yoke leg 84 extends outwardly from hub 80 in a direction opposite to that of legs 83. An upturned tip 84a is formed on the extended end of leg 84 for operating diverter control switches.

A pair of such control micro switches 86 and 87 preferably are mounted on motor plate 63 within housing 8 for controlling diverter drive motor 75. Actuating levers 88 and 89 extend outwardly from switches 86 and 87, respectively, which are engaged by yoke tip 84a when swing tube 29 reaches a predetermined position to stop motor 75.

The operation of diverter 4 is shown diagrammatically in FIGS. 10, 11 and 12, to switch swing tube 29 between branch tube section 18 and 19 for movement of a carrier through main tube 5 and branch tubes 6 and 7. Swing tube 29 is shown in FIG. 4 in engaged position with branch tube section 18 for movement of a carrier in either direction in main line 5 and branch line 6. Slide block 95 is moved towards the branch tube section, compressing springs 104, when swing tube 29 is in the engaged position of FIG. 4.

Switching of diverter 4 for carrier movement between station 1 and stations 2 and 3 is achieved through various usual control circuits which energize motor 75. When energized, motor 75 rotates shaft 77 at the desired speed through gear box 76. Shaft 77 rotates yoke 79 in the direction of arrow A, FIG. 10, and as yoke 79 moves, roller 51 engaged in slot 85 moves slide block 95 rearwardly towards retainer bar 102, expanding springs 104, until block 95 abuts stop pad 109. Tube 29 then is moved axially rearwardly in the direction of arrow B from the engaged or seated position shown in FIG. 4 to the retracted position shown in FIG. 10, due to the continued force exerted by yoke 79 on roller 51 which now is held fixed with respect to tube 29.

Tube 29 moves axially rearwardly a distance "X" (FIG. 10) due to roller 52 following axially aligned leg 90 of cam track slot 61. Thus, bell tube section 32 of tube 29 is disengaged from tube section 18 only that distance necessary for bell tube 32 to swing clear of tube section 18. Chamfered end 31 of tube 29 slides easily within bell end 25 of tube section 24 the distance "X" while flexible sleeve 33 continues to connect tubes 29 and 24.

As shaft 77 continues to rotate in the counterclockwise direction of arrow A (FIG. 11), bell tube 32 and tube 29 swing generally angularly within housing 8 to the position shown in FIG. 11, where tube 29 is axially aligned with tube section 19. The path of movement of tube 29 is controlled by roller 52 following the generally laterally extending center section 91 of cam track slot 61. Tube end 31 shifts accordingly in bell end 25 of tube section 24 to compensate for the swinging movement of tube 29, enabling tube 29 to remain connected with the tube section 24.

Roller 51 remains in biased position within yoke slot 85 as tube 29 swings laterally away from tube 18 until tube 29 is axially aligned with tube 19 (FIG. 11).

Tube 29 then moves axially forwardly (arrow C, FIG. 12) along cam track leg 92 a distance "Y" towards and with respect to tube section 19 as shaft 77 continues to rotate yoke 79, slightly compressing springs 104, until bell tube 32 is firmly seated against tube section 19 (FIG. 12). Leg tip 84a of yoke 79 contacts switch actuating lever 89 when bell tube 32 reaches its seated posi-

tion with the tube section 19, deenergizing motor 75 and stopping rotation of shaft 77. Motor 75 remains deenergized until the diverter controls receive the proper signal for actuating motor 75 in the other direction and for moving swing tube 29 back to sealed engagement with tube section 18.

The operation of the mechanism to move tube 29 from the position of FIG. 12 back to the position of FIG. 4 is similar to that described for movement of tube 29 from the position of FIG. 4 to that of FIG. 12. Motor 75 rotates shaft 77 and yoke 79 in the reverse or clockwise direction moving roller 52 along cam track slot 61. Tube 29 first moves axially away from tube 19, disengaging bell tube 32 from tube 19, then tube 29 swings from the position of FIG. 11 to that of FIG. 10, and then tube 29 moves axially toward and engages bell tube 32 with tube section 18 (FIG. 4). Yoke 79 actuates switch lever 88 when bell tube 32 seats against tube section 18, deenergizing motor 75.

Branch tube section 18 and cam track leg 90 are aligned axially with respect to one another as shown in FIGS. 4 and 10 when tube 29 is seated against tube 18. Tube section 19, likewise is axially aligned with cam track leg 92, as shown in FIGS. 11 and 12 when tube 29 is seated against tube 19. This relation is obtained by the inclined position of end wall portion 17 and the formation of cam track leg 92 at an angle with respect to cam track leg 90.

The strips 40 in guide bars 36 and 37 preferably maintain sliding contact with slide plates 43 and 44 at the various positions of tube 29, during movement of tube 29 between branch tube sections 18 and 19, as is shown in FIGS. 5, 10, 11 and 12. Lower bar 36 supports the weight of tube 29 and in cooperation with upper bar 37 properly positions tube 29 with respect to tubes 18 and 19. Bar 37 prevents tube 29 from moving away from lower bar 36 from forces exerted on tube 29 by the propelling air currents or by a carrier moving through tube 29.

An important concept and aspect of the invention is the spring-biased, movable mounting of roller 51 in order to provide motor override protection. Diverter 4 would operate satisfactorily should roller 51 be mounted stationary with respect to tube 29 as is roller 52 since it is the force exerted on roller 51 by the legs 83 of yoke 79 which moves bell tube 32 into sealing engagement with the branch tube sections and not the resilience of springs 104 or the sliding movement of block 95.

However, it is difficult and expensive to provide a control system for and to maintain exact alignment between, the various components of the diverter so that the movement of the tube 29 is stopped at the exact instant that the tube 29 seats with a selected branch tube. The motor can coast or override after being deenergized. This may jamb tube 29 against the selected branch tube and may result in damage to or misalignment of the tubes or damage to the motor, control or operating mechanisms.

The construction of the spring-biased, movably mounted slide block 95 and attached roller 51, and the particular formation of cam plate track slot 61 minimizes such override and alignment problems. When tube 29 is in carrier transfer position with bell tube 32 properly engaged with a branch tube (FIGS. 4 and 12), roller 52 is not located at the end of one of the cam legs 90 and 92. Thus, bell tube 32 may move axially through

the clearance space to properly seat and seal against the branch tube, before the roller 52 engages an end of one of the leg openings 90 and 92.

If motor override does occur, springs 104 are compressed by the continual forward movement of slide block 95 and roller 51, and absorb the override force instead of this force being exerted directly against and absorbed by the connected branch tube. Roller 52 can continue to travel a short override distance in cam track slot 61 before contacting cam plate 59. Spring 104, however, will absorb any override before roller 52 reaches the end of cam track 61 preventing undesirable forces from acting on the diverter components.

Tube 29 including bell tube 32, and branch tube sections 18 and 19 preferably are made of metal such as aluminum. This metal-to-metal contact between bell tube 32 and a branch tube provides a sufficiently airtight seal for satisfactory diverter operation. Such contact however, does create undesirable noise which is eliminated easily by mounting resilient collars 18a on the inner ends of branch tube sections 18 and 19.

Diverter 4 may be placed at any desired location in a pneumatic tube system and will accept carrier movement in either direction through any of its legs or branches, since there are no guide members controlled by or dependent upon movement of the carrier.

Likewise, the velocity of the carrier after passage through diverter 4 is not affected, since the same air flow, pressure or vacuum, acts upon the carrier before and after movement through diverter 4. Any number of diverters may be used in a single pneumatic tube system since only those tube sections through which a carrier is directed to travel between selected stations are connected and open for carrier movement air flow. Thus, the air pressure or vacuum required for system operation is not substantially affected by the number of branch legs and stations present in a multiple station system.

Accordingly, the improved diverter construction provides for diverted carrier movement to or from either of two branch legs and a main leg at a Y-junction section regardless of the direction of carrier travel in a quiet and effective manner; enables a single tube pneumatic tube system to have numerous branch lines and terminal stations without substantially affecting the air flow requirements for operation of the system; enables a carrier to be diverted between a branch leg and a main leg at a Y-junction section smoothly and easily propelled by air flow in a pneumatic system; enables the diverter to be placed at various locations within a pneumatic tube system; reduces the problems caused by the override of the swing tube drive motor and provides for a more direct coupling with the drive motor; provides for positive seating of the swing tube with the branch tubes by force applied directly from the drive motor; provides such a construction which is effective, safe, inexpensive, and efficient in assembly, operation and use, and which achieves all the enumerated objectives, and provides for eliminating difficulties encountered with prior devices, and solves problems and obtains new results in the art.

In the foregoing description, certain terms have been used for brevity, clearness and understanding; but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such terms are used for descriptive purposes and are intended to be broadly construed.

Moreover, the description and illustration of the invention is by way of example, and the scope of the invention is not limited to the exact details of the construction shown or described.

Having now described the features, discoveries and principles of the invention, the manner in which the improved swing tube diverter is constructed, assembled and operated, the characteristics of the new construction, and the advantageous, new and useful results obtained; the new and useful structures, devices, elements, arrangements, parts and combinations are set forth in the appended claims.

I claim:

1. Swing tube diverter construction for a pneumatic tube system having a main tube and a pair of branch tubes including, swing tube means having first and second ends; means operatively connecting the swing tube means first end to the system main tube providing limited axial and angular movement of said swing tube means with respect to said main tube, said connection means being substantially airtight; first and second pin means mounted on the swing tube means; means resiliently mounting the second pin means on the swing tube means for limited axial movement therealong; drive means for moving the swing tube means between two positions each aligned with an end of one of the two branch tubes, and for selectively engaging and disengaging the swing tube means second end with an end of a selected branch tube; said drive means including a stationary cam plate spaced from and extending transversely across the swing tube means and formed with a U-shaped cam track; said cam track having a pair of spaced leg portions, each leg portion extending axially towards and aligned with one of the branch tubes; the first pin means being engaged with the cam track and movable therealong as the swing tube means moves between the branch tubes; yoke means spaced from the swing tube means and having spaced leg means forming a slot therebetween engaged with the second pin means; reversible motor means for rotating said yoke means; the motor means having a shaft; and the yoke means being mounted on said motor means shaft.

2. Swing tube diverter construction for a pneumatic tube system having main and branch tubes including, swing tube means having first and second ends; means operatively connecting the swing tube means first end to the system main tube providing limited axial and angular movement of said swing tube means with respect to said main tube, said connection means being substantially airtight; first and second pin means mounted on the swing tube means; means movably mounting the second pin means on the swing tube means for limited axial movement of said second pin means along said

swing tube means; spring means engaging the second pin means biasing said second pin means towards the swing tube means first end; drive means for moving the swing tube means between two positions each aligned with an end of one of two branch tubes, and for selectively engaging and disengaging the swing tube means second end with an end of a selected branch tube; said drive means including cam means formed with a generally U-shaped cam track engaged with the first pin means; yoke means having spaced leg means forming a slot therebetween engaged with the second pin means; and reversible motor means operatively connected to the yoke means for rotating said yoke means.

3. Diverter construction as defined in claim 2 in which the second pin means mounting means includes guide means mounted on the swing tube means; in which block means is slidably mounted on said guide means; and in which the second pin means is mounted on the block means.

4. Diverter construction as defined in claim 3 in which the spring means includes retainer means mounted on the swing tube means; in which bolt means having first and second ends are movably mounted on the retainer means; in which said bolt means first end is connected to said slide block means; in which the spring means also include a compression spring which surrounds a portion of said bolt means; and in which said compression spring is retained between the retainer means and the bolt means second end.

5. Swing tube diverter construction for a pneumatic tube system having main and branch tubes including, swing tube means having first and second ends; means operatively connecting the swing tube means first end to the system main tube providing limited axial and angular movement of said swing tube means with respect to said main tube, said connection means being substantially airtight; first and second pin means mounted on the swing tube means, said pin means each including a roller; a bracket mounted on the swing tube means; block means movably mounted on said bracket; the first pin means roller being journaled on the bracket and the second pin means roller being journaled on the block means; drive means for moving the swing tube means between two positions each aligned with an end of one of two branch tubes, and for selectively engaging and disengaging the swing tube means second end with an end of a selected branch tube; said drive means including cam means formed with a generally U-shaped cam track engaged with the first pin means; yoke means having spaced leg means forming a slot therebetween engaged with the second pin means; and reversible motor means operatively connected to the yoke means for rotating said yoke means.

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