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PNEUMATIC CONVEYOR SYSTEM

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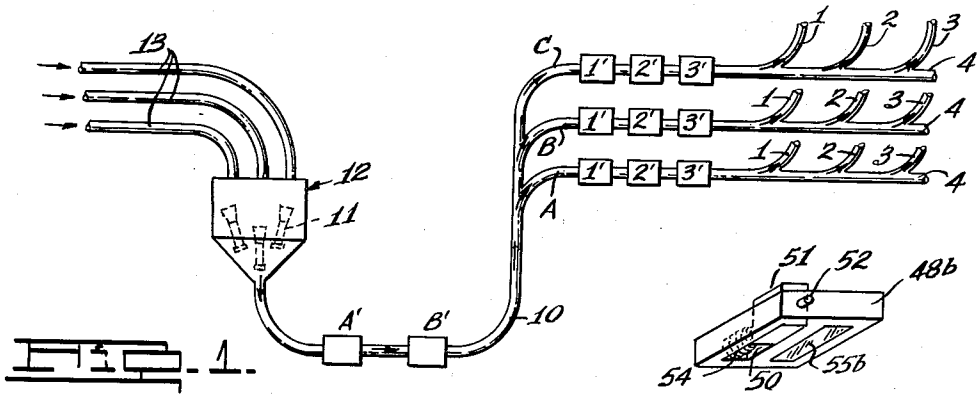


FIG. 1.

FIG. 5.

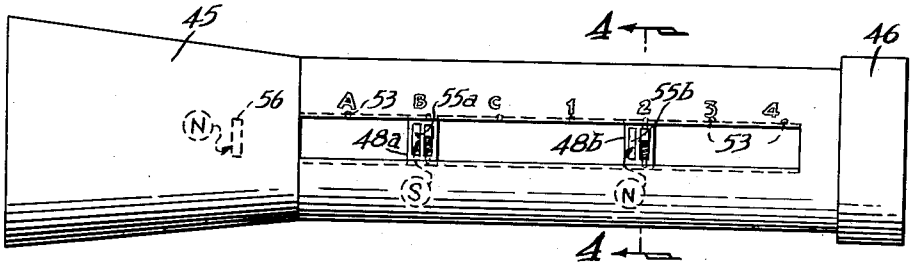


FIG. 3.

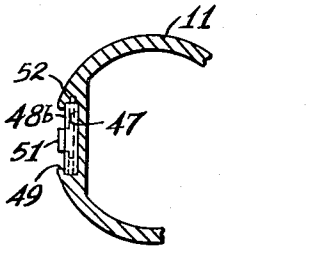


FIG. 4.

FIG. 2.

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PNEUMATIC CONVEYOR SYSTEM

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17 Claims. (Cl. 243—16)

This invention relates to a conveyor system and in particular to a pneumatic conduit system having a suitably addressed message carrier adapted to be dispatched from any one of a number of stations or message centers and automatically conveyed through tubular conduits to a predetermined one of the other stations or centers.

It is common in such systems to provide an electromagnetically actuated selector mechanism at each station adapted to operate in response to a predetermined signal from the message carrier to divert the latter to the proper station to which the carrier is addressed. By suitably adjusting the signal, the carrier can be addressed to any desired station. A commonly employed type of signal comprises one or more signal rings of ferro-magnetic material for example adjustable axially along the carrier so as to actuate a prearranged magnetically responsive selector mechanism associated with the station to which the carrier is addressed without actuating a similar selector mechanism responsive to different spacings of the signal rings. A serious difficulty encountered in the use of such signal rings is their great inertia and the abuse to which the carriers are subjected as a result of high speed travel and sudden starts and stops, whereby the rings eventually break loose from their securing means and batter the carriers out of shape, as well as move out of the desired axial adjustment required for actuation of the proper selector mechanism.

An important object of the present invention is to provide an improved highly efficient pneumatic dispatch and selector system which is comparatively simple and economical in construction and operation, comprising a main trunk conduit branching into two or more primary branch conduits or loops which in turn branch into one or more secondary branch conduits leading to the message centers or stations, in combination with a message carrier adapted to travel along said conduits, and a plurality of fixed signal detectors arranged axially along the conduits in advance of certain of the branches, each detector being responsive to a predetermined signal from the carrier to actuate a diverter or switch mechanism to switch the carrier to a desired station.

Another object is to provide such a system wherein the signal from the carrier is carried by a number of small lightweight radially polarized magnetic signal elements adjustably arranged on the carrier in accordance with the spacing pattern of the signal detector to be actuated, and wherein each signal detector comprises a detector coil around one of the conduits, such as an induction coil or a coil of wire sensitive to a magnetic field, coupled with an electronic circuit adapted to actuate the diverter or switch mechanism.

Another and more specific object is to provide a system of the foregoing character which achieves a maximum number of feasible signal combinations with a minimum of complexity in the arrangement and adjustability of the signal elements, wherein the latter are adjustable axially with respect to each other along a guideway extending axially of the carrier and comprise

three radially polarized magnets in axial alignment on the carrier, the two endmost magnets having the same radial polarity and the intermediate magnet having the opposite radial polarity. Accordingly for any given arrangement of the three radially polarized axially spaced magnets, one thereof is adapted to be paired with each of the other two to effect two different types of usable magnetic field signals as the carrier travels along the conduit system.

Another object is to provide in combination with an arrangement of signal magnets on a carrier as above, a selector system comprising a number of paired signal detectors arranged along the conduit system, each pair being responsive not only to the relative axial spacing between the pair of signal magnets emitting one type of magnetic field signal, but also to the polarity of both magnets in that pair and being thereby responsive only to that one type of field signal, but not to the other. Accordingly, each signal magnet in each pair is cooperable with one of the signal magnets in the other pair for emission of its respective type of field signal, yet the relative axial spacing between the two magnets of either pair is adjustable completely independently of the relative axial spacing between the two magnets of the other pair.

Other objects of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

Fig. 1 is a fragmentary schemtaic view of a pneumatic tube dispatch and selector system embodying the present invention.

Fig. 2 is an enlarged diagrammatic view of portions of the system illustrated in Fig. 1, showing details of one of the selector circuits.

Fig. 3 is an enlarged elevational view of a carrier embodying the present invention.

Fig. 4 is a fragmentary sectional view taken in the direction of the arrows substantially along the line 4—4 of Fig. 3.

Fig. 5 is an enlarged perspective view from below of one of the magnetic signal elements removed from the carrier.

It is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring to the drawings, a pneumatic dispatch system is illustrated comprising a main or trunk tubular conduit **10** having a number of primary branching tubular conduits commonly referred to as loops or circuits, each of the latter in turn having a number of secondary branching tubular conduits commonly referred to as stations. In the present instance by way of example, three loops identified by the letters A, B, and C, respectively, are each provided with four stations identified by the numbers **1, 2, 3,** and **4** respectively, although it will be apparent from the following that additional loops or stations will be provided where required in larger systems.

Immediately preceding the loops A, B, and C are a pair of loop selector systems A' and B', each being adapted to respond to a predetermined signal from a passing message carrier **11** traveling along the conduit system and to be actuated in response to that signal to divert the carrier into the corresponding loop A or B. Each message carrier is provided with adjustable signal

means for predetermining its signal, whereby the carrier is addressed to a particular station as described below. When the carrier passes a selector system which is not responsive to the signal from the carrier, that system will not be actuated and the carrier will continue to travel uninterruptedly along the conduit. Accordingly only two loop selector systems are required in the present instance. If neither system A' nor B' is actuated, the carrier will automatically travel into loop C, which may be considered a continuation of the main trunk **10**. Similarly, preceding the stations **1** through **4** in each of the loops A through C are three station selectors **1'**, **2'**, and **3'**, each being responsive to a predetermined signal from the message carrier **11** traveling along the corresponding loop, thereby to be actuated to divert the carrier into the proper station **1**, **2**, or **3**. If none of the selectors **1'**, **2'**, **3'** is actuated, the carrier will automatically travel to the station **4**.

The tubular conduit system may be conventional and is accordingly not described in further detail. Preferably one or more message carriers **11** are conveyed along the conduit system by pneumatic pressure exerted in the direction of the arrows. Located in the main trunk **10** in advance of the loop selectors A' and B' is a suitable carrier spacing device indicated generally by the numeral **12** operative to release the carriers **11** in timed relation for travel along the trunk **10**. Accordingly, after one carrier **11** is released from the spacing device **12**, sufficient time will lapse to permit actuation and resetting of the selector system before the next successive carrier is released. The conduit system includes any feasible number of carrier sending stations from which the carriers **11** are conveyed to the spacing device **12** via feed conduits **13**, three being shown in present instance.

Thus by properly adjusting the signal means of the carrier, the latter may be dispatched from any sending station via one of the feed conduits **13** to the device **12** and thence to the station to which it is addressed. For example, if a message is to be sent to the second station (2) branching from the second loop (B), the signal means on the carrier will be adjusted to actuate only the loop selector B' and only the station selector **2'**. The carrier will then be fed into one of the conduits **13** along which it is carried by pneumatic pressure to the spacing device **12**. Thereafter the carrier is released to travel along the trunk **10** through the loop selectors A' and B'. The latter selector will be actuated in response to the signal on the carrier to actuate a switch, whereby the carrier is diverted into loop B. Upon continued travel of the carrier in loop B through the station selectors **1'**, **2'**, and **3'**, the selector **2'** will be actuated to cause shifting of a switch to divert the carrier into station **2**.

Details of a preferred selector and diverter system comprising a diverter mechanism and an electronic selector circuit associated with each branch conduit are illustrated by way of example in Fig. 2. A portion of the trunk conduit **10** is shown connected by a Y-coupling **14** to the loop conduit B. The diverter mechanism of the system comprises a swinging gate or switch member **15** pivotal at **16** to swing from a vertical open position in parallelism with the conduit **10**, Fig. 2, to an angular diverting position in parallelism with the conduit B at the location of its juncture with the conduit **10**. The gate **15** is normally urged to the open position by means not shown and is operated by a lever **17** keyed to the gate at the pivot **16** to swing the gate clockwise to the diverting position upon downward swinging of the lever **17**. The latter is also pivotally connected at **18** to the vertically shiftable core **19** of a solenoid **20** and is swung downward about the pivot **17** in unison with downward movement of the core **19** when the solenoid **20** is energized. The diverter mechanism may be conventional if desired and is accordingly not described in further detail.

The electronic circuit of the selector B' comprises a pair of axially spaced signal detector induction coils **21** and **22** arranged coaxially around the conduit **10** and illustrated in the drawings without reference to proportions. Ordinarily the axial length of each coil will be but a fraction of an inch, whereas the several conduits **10** may be several inches in diameter.

The coils **21** and **22** are suitably coupled through amplifying and shaping circuits **23** and **24** respectively with the control and screen grids **25** and **26** respectively of a thermionic gaseous discharge tube or thyratron **27**. The latter's plate circuit extends in series through a relay coil **28**, normally closed relay shunt switch **29**, low resistance shunt **30**, limit switch **31**, plate potential source **32**, and back to cathode. A predetermined negative bias on both grids is indicated by the potential source **32***a* connecting the cathode of tube **27** with said grids through the circuits **23** and **24**, whereby firing of tube **27** is prevented until predetermined positive potential impulses are applied to both grids simultaneously.

By the circuit described, potential impulses induced in the coils **21** and **22**, as for example by suitably polarized permanent magnetic signal means on the message carrier **11** traveling along the tube **10**, are transmitted to the circuits **23** and **24** respectively. The latter are designed to amplify and shape predetermined impulses from the associated detector coils **21** and **22** and to apply the amplified impulses to the associated grids **25** and **26** to raise the potentials of the latter to the necessary levels at which tube **27** will fire. Inasmuch as numerous circuits for this purpose are well known to the art, the circuits **23** and **24** are not shown in detail.

It is apparent that when the predetermined impulses are momentarily induced simultaneously in the coils **21** and **22**, tube **27** will fire, energizing relay coil **28**, closing the normally open relay switch **33**, and opening shunt switch **29**. As a result, a circuit through switch **33**, potential source **34**, and solenoid **20** is closed, energizing the latter to cause clockwise shifting of gate **15** to the diverting position as described above, whereupon a message carrier **11** traveling along conduit **10** in the direction of the arrow will be diverted into the loop or branch conduit B. Immediately after being diverted into loop B, the carrier **11** will strike a limit switch operator **35** in the sidewall of conduit B, thereby opening limit switch **31** to interrupt the plate circuit of tube **27**. Relay **28** will then be de-energized, permitting switches **29** and **33** to return to their normal conditions indicated in Fig. 2. Opening of switch **33** will also de-energize solenoid **20**, permitting gate **15** to return to its normally open or non-diverting position, Fig. 2.

In the event that the signal means of a carrier **11** passing through coils **21** and **22** is not adapted to induce the aforesaid predetermined impulses in both coils simultaneously, it is apparent that tube **27** cannot fire, the diverter mechanism will not be actuated, and the carrier will continue along conduit **10** and through the coupling **14** without diversion. Once the tube **27** has been caused to fire, however, as for example by passage of a carrier **11** having the necessary signal required to induce the aforesaid predetermined potential impulses in the coils **21** and **22** simultaneously, the tube will continue to conduct until its plate circuit is interrupted, as for example by the opening of limit switch **31**. Accordingly a resistance **36** is provided in parallel with switch **29** and shunt **30** to protect relay **28** from the full sustained plate current while tube **27** is conducting.

The circuit and mechanism for loop selector A' as well as for each of the station selectors is similar to the corresponding factors of the loop selector described above, so that only partial details of the circuit of the station selector **2'** and of the diverter mechanism for the associated station **2** in loop B are illustrated herein. The circuit in selector **2'** comprises a pair of axially spaced signal detector induction coils **37** and **38** comparable to the coils **21** and **22** and arranged coaxially around the loop B. The

terminals of the loops 37 and 38 are connected to amplification and shaping circuits comparable to the circuits 23 and 24 respectively in a thyratron circuit identical in all respects to the above described circuit associated with loop selector B'.

Thus upon the simultaneous induction of predetermined potential impulses in the coils 37 and 38, as for example by passage of a message carrier 11 therethrough, the latter coils will cause firing of a thyratron tube as above described to energize solenoid 39 having its armature pivotally connected to the outer end of a switch or gate actuator 40. Actuator 40 is keyed to a swinging gate 41 at the axis of the latter's pivotal mounting on a Y-coupling 43 which branches from loop B to station 2. In consequence of energizing solenoid 39, actuator 40 swings gate 41 counterclockwise from the horizontal open position shown to an angular diverting position substantially in parallelism with the station branch conduit at the coupling 43.

When a carrier 11 bearing the proper magnetic signal to actuate coils 37 and 38 simultaneously passes therethrough, gate 41 will be swung to the diverting position to switch the carrier to station 2. Otherwise the carrier will travel without interruption along loop B. Also similar to the limit switch actuator 35, a limit switch actuator 44 is provided in the branch conduit to station 2 in order to open the associated thyratron circuit and reset gate 41 to its normal open position after passage of the carrier. Coupling means connecting actuator 44 with a limit switch comparable in all respects to limit switch 31 is indicated by the broken line 44*a*. The terminals 39*a* of solenoid 39 are connected in a circuit similar in all respects to the circuit for solenoid 20. Accordingly, the structural and circuit details for the selector and diverter mechanism associated with station 2 are not described further.

The carrier 11 illustrated in Fig. 3 comprises a hollow cylindrical body of suitable material such as aluminum which will not interfere with a magnetic field. The body is adapted to be readily opened for insertion of a message and also to travel along the tubular conduit system. At the rear end of the carrier, a flared skirt 45 of leather or plastic material is provided. The forward end comprises a bumper 46 of felt, leather, or other suitable material. The carrier construction described thus far may be conventional and serves to facilitate its proper orientation when it is inserted into one of the feeder conduits 13.

Extending axially of the body of the carrier 11 along one side thereof is a guide channel 47 along which a pair of axially adjustable riders 48*a* and 48*b* are slidable. The lateral edges of the channel 47 are undercut, so that portions 49 of the carrier overlap the riders as indicated in Fig. 4 to prevent their accidental displacement from the channel. Each of the riders preferably comprises a lightweight non-magnetic material, as for example nylon, and is provided with a transverse slot 50 for a transversely slidable detent operator 51 also of non-magnetic material. A transverse detent pin 52 of suitable non-magnetic material is carried by the operator 51 and projects from one end thereof as indicated in Fig. 4 for selectively registering with one of a plurality of detent recesses 53 spaced axially of the channel 47 and opening into the side thereof. The detent pin is normally urged into its registering recess 53 by a coil spring 54 coaxially with the pin 52 and under compression between the operator 51 and the endwall of the slot 50.

In order to adjust either of the riders 48*a* and 48*b* axially of the carrier 11, the corresponding operator 51 is shifted by finger pressure along its slot 50 until the pin 52 is withdrawn from the registering recess 53. The rider is then shifted axially along the channel 47 until the pin 52 registers with another of the detent recesses 53 at a desired position of adjustment, whereupon the operator 51 is released and the spring-urged pin 52 snaps into the registering recess 53 to lock the rider against movement with respect to the carrier.

In the above regard, each operator 51 projects radially outwardly from its rider sufficiently to be readily engageable for finger actuation. The channel 47 is sufficiently deep so that the outer surface of the operators 51 are recessed below the cylindrical contour of the body portion of the carrier, Fig. 4. As indicated in Fig. 3, the positions of the detent recesses 53, which determine the positions to which the riders can be adjusted and interlocked with the carrier, are suitably identified to facilitate addressing of a carrier to any desired station. In the present instance, the first three adjustment positions are identified by the letters A, B, and C, corresponding to the three loop conduits A, B, and C respectively. The next four adjustment positions are identified by the numerals 1, 2, 3, and 4 corresponding to the stations 1, 2, 3, and 4 respectively in each of the several loop conduits.

Also carried by the riders 48*a* and 48*b* are radially polarized permanent magnets or slugs 55*a* and 55*b* respectively, each of which is cooperable with a radially polarized fixed magnet or slug 56 aligned axially with the channel 47 adjacent the rear end thereof and under the outer surface of the skirt 45. The term "radially polarized" is employed herein and in the appended claims with reference to the carrier 11, so that the magnets 55*a*, 55*b*, and 56 are magnetically polarized radially with respect to the principal axis of the carrier 11, i.e. normally to said axis. Thus the intermediate magnet may be polarized so that its outer end will be either a north or a south pole. It is important however that the two outer magnets are polarized oppositely from the intermediate magnet. In the present instance, the intermediate magnet is polarized so that its radially outer end is a south pole, indicated by the letter S in Fig. 3. The radially outer ends of the endmost magnets are thus north poles as indicated by the letters N.

By virtue of the arrangement of the permanent magnets described, three distinct combinations thereof in pairs are possible, any two of the pairs being useful as signal means for actuating a magnetically responsive selector of the type described above. Any one of the three magnets can be fixed with respect to the carrier, provided that the remaining two magnets are adjustable axially with respect to the fixed magnet. The fixed magnet is a reference magnet from which the positions of axial adjustment of the other magnets are measured. Accordingly it is important that the fixed magnet be common to each of the two pairs of magnets employed for signal purposes.

In the present instance the fixed magnet 56 is paired with magnet 55*a* to provide the loop selector signal, and is paired with magnet 55*b* to comprise the station selector signal. As will be explained below, because of the polarity described, the pair of magnets 55*a* and 55*b* which is not used for signal purposes will be unable to actuate any of the loop or station selectors, regardless that the spacing between the latter magnets might be identical with the spacing between one or the other of the pairs of magnets used for signal purposes.

In cooperation with the signal magnets on the carrier 11, each of the left hand signal detector coils of the loop selectors A' and B', as well as each of the signal detector coils of the station selectors 1', 2', and 3' in any loop A, B or C, is wound on the conduit system and connected with its respective thyratron grid so as to induce the predetermined positive firing potential thereat upon passage of each of the endmost signal magnets 56 and 55*b* therethrough during travel of the carrier 11, but not upon passage of the intermediate magnet 55*a*. Similarly each of the right hand signal detector coils of the loop selectors A' or B' is wound on the conduit system and connected with its respective thyratron grid so as to induce the predetermined positive firing potential thereat upon passage of the magnet 55*a* therethrough, but not upon passage of the magnets 56 and 55*b*. Thus for example, each of the

coils 21, 37 and 38 is responsive only to the outwardly directed north magnetic poles of the magnets 56 and 55*b*. Coil 22 is responsive only to the outwardly directed south magnetic pole of magnet 55*a*. The reversed relationship of coil 22 with respect to coils 21, 37 and 38 is schematically indicated in the drawing by being wound on conduit 10 reversely with respect to coils 21, 37, and 38. Preferably however, all of the detector coils are wound alike to facilitate construction and merely the terminals of the right hand detector coils in each of the loop selectors are reversed with respect to their associated amplification and shaping circuits.

In operation of the present invention, the carrier 11 is addressed to a desired station by suitably adjusting the riders 48*a* and 48*b* axially with respect to the fixed magnet 56. In order to convey the carrier 11 to station B2 for example (second station in loop B) rider 48*a* is shifted to position B and rider 48*b* is shifted to position 2, as in Fig. 3. At such an adjustment the axial spacing between magnets 56 and 55*a* will equal the axial spacing between coils 21 and 22, and the axial spacing between magnets 56 and 55*b* will equal the axial spacing between coils 37 and 38. Accordingly as the carrier 11 is caused to travel along the conduit system from the spacing device 12, selector B' will be actuated to divert the carrier into loop B, as described above, and thereafter selector 2' will be actuated to divert the carrier into station 2. Even though the axial spacing between magnets 55*a* and 55*b* might equal the axial spacing between one or more of the several paired selector coils, the latter will not be responsive to the polarity of the magnetic field signal of the magnets 55*a* and 55*b*, so that conflicting addressing is avoided and optimum station selectivity is accomplished with minimum complexity of adjustment.

Fifty stations for example can be arranged along five loops of ten stations each. Rider 48*a* will require but five positions of adjustment and rider 48*b* will require but ten positions of adjustment. A carrier 11 for a comparatively complex conveyor system will thus feasibly employ a minimum number of riders adjustable along a single axial guide channel 47, whereby both the construction and operation of the carrier are simplified and the possibility of inadvertently addressing the carrier incorrectly is minimized.

It is to be noted that the arrangement shown also simplifies the construction and installation of the selector system, wherein as in the usual instance the total number of loops is less than the number of stations in each loop. The shorter axial spacing between magnets 56 and 55*a* is employed for the loop signal, so that the several loop selectors are feasibly contained in a single physical assembly adapted to be preassembled at the factory. Also by employing one of the endmost magnets as the fixed magnet, as for example the magnet 56 rather than the intermediate magnet 55*a*, the total number of signal detector coils that require reversed terminals in order to adapt the selector system to the polarization of the signal magnets is also minimized, thereby to reduce costs by simplifying the manufacture, installation and servicing of the system.

We claim:

1. In a message carrier system, a carrier adapted to travel along a conduit means, a guideway extending axially of said carrier, and a plurality of magnetic slugs polarized radially of said carrier and shiftable axially with respect to each other along said guideway.

2. In a message carrier system, a carrier adapted to travel along a conduit means, a guide channel recessed into the outer surface of said carrier and extending axially thereof, three magnetic slugs on said carrier spaced axially thereof and polarized radially thereof, two of said magnets being confined within said channel and shiftable axially with respect to each other along said channel, the third magnet being concealed and fixed with respect to said carrier, the two axially endmost of said three magnets being polarized oppositely to the intermediate magnet thereof.

3. In a message carrier system, a carrier adapted to travel along a conduit means, a guide channel recessed into the outer surface of said carrier and extending axially thereof, three magnetic slugs on said carrier spaced axially thereof and polarized radially thereof, two of said magnets being confined within said channel and shiftable axially with respect to each other along said channel, the third magnet being concealed and fixed with respect to said carrier, the two axially endmost of said three magnets being polarized oppositely to the intermediate magnet thereof, and said third magnet being one of said endmost magnets.

4. In a message carrier system having a loop conduit branching from a trunk conduit and having a station conduit branching from said loop conduit, a carrier adapted to travel along said conduits, three permanent magnets mounted on said carrier and adjustable axially thereof with respect to each other, said magnets being polarized radially of said carrier and two thereof being polarized oppositely to the third thereof, loop selector means responsive to the magnetic field of one pair of said three magnets on said carrier approaching said loop conduit to direct the carrier thereinto, station selector means responsive to the magnetic field of a second pair of said three magnets on said carrier approaching said station conduit to direct the carrier thereinto.

5. The combination in a carrier system as set forth in claim 4 wherein said third magnet is axially intermediate the other two of said magnets.

6. The combination in a carrier system as set forth in claim 5 wherein the magnet that is common to both of said pairs of magnets is fixed with respect to said carrier.

7. The combination in a carrier system as set forth in claim 4 wherein a guide channel extending axially of said carrier is recessed within one side thereof, two of said magnets are slidably mounted in said channel for axial adjustment therealong, the other magnet is concealed and fixed with respect to said carrier, and said third magnet is mounted in said channel axially intermediate the other two magnets.

8. The combination in a carrier system as set forth in claim 4 wherein said third magnet is mounted on said carrier axially intermediate the other two magnets and one of said other two magnets is fixed with respect to said carrier.

9. In a message carrier system, a carrier adapted to travel along a conduit means, a reference magnet fixed on said carrier, a pair of adjustable magnets, each of the three magnets comprising a permanently magnetized slug polarized radially of said carrier, guide means on said carrier having a portion for guiding axial movement of one of said adjustable magnets at locations spaced axially from said reference magnet and also having a portion for guiding axial movement of the other of said adjustable magnets at locations axially intermediate the first named portion and said reference magnet, said other magnet being polarized oppositely from the first two magnets.

10. In a message carrier system having a loop conduit branching from a trunk conduit and having a station conduit branching from said loop conduit, a carrier adapted to travel along said conduits, a plurality of permanent magnets polarized radially of said carrier and mounted thereon for adjustment axially thereof, the radially outer end of each of a predetermined number of said magnets having one magnetic polarity and the radially outer end of each of the remainder of said magnets having the opposite magnetic polarity, loop selector means associated with said loop conduit for directing the carrier thereinto in response to a predetermined signal of said one polarity from said magnets on said carrier approaching the loop conduit, and station selector means associated with said station conduit for directing the carrier thereinto in response to a predetermined signal of said oppo-

site polarity from said magnets on said carrier approaching the station conduit.

11. A message carrier system having a number of loop conduits branching from a trunk conduit and having a number of station conduits branching from said loop conduits, a carrier adapted to travel along said conduits, a plurality of permanent magnets polarized radially of said carrier and mounted thereon for adjustment axially thereof, the radially outer end of each of a predetermined number of said magnets having one magnetic polarity and the radially outer end of each of the remainder of said magnets having the opposite magnetic polarity, loop selector means associated with each loop conduit for directing the carrier thereinto in response to a predetermined signal of said one polarity from said magnets on said carrier approaching the associated loop conduit, and station selector means associated with each station conduit for directing the carrier thereinto in response to a predetermined signal of said opposite polarity from said magnets on said carrier approaching the associated station conduit.

12. A message carrier system having a number of loop conduits branching from a trunk conduit and having a number of station conduits branching from said loop conduits, a carrier adapted to travel along said conduits, a permanent magnet polarized radially of said carrier and fixed thereon to comprise a reference magnet, a plurality of adjustable permanent magnets polarized radially of said carrier and mounted thereon for adjustment axially thereof, the radially outer end of each of a predetermined number of said adjustable magnets having one magnetic polarity and the radially outer end of each of the remainder of said adjustable magnets having the opposite magnetic polarity, loop selector means associated with each loop conduit for directing the carrier thereinto in response to a predetermined signal of said one polarity from said adjustable magnets on said carrier approaching the associated loop conduit, and station selector means associated with each station conduit for directing the carrier thereinto in response to a predetermined signal of said opposite polarity from said adjustable magnets on said carrier approaching the associated station conduit.

13. A message carrier system having a number of loop conduits branching from a trunk conduit and having a number of station conduits branching from said loop conduits, a carrier adapted to travel along said conduits, three magnets mounted on said carrier at locations spaced axially thereof and adjustable axially with respect to each other, each magnet comprising a permanently magnetized slug polarized radially of said carrier, the intermediate magnet being polarized oppositely from the other two magnets, loop selector means associated with each loop conduit for directing the carrier thereinto in response to a predetermined signal from one pair of said three magnets on said carrier approaching the associated loop conduit, and station selector means associated with each station conduit for directing the carrier thereinto in response to a predetermined signal from another pair of said three magnets on said carrier approaching the associated station conduit.

14. A message carrier system having a number of loop conduits branching from a trunk conduit and having a number of station conduits branching from said loop conduits, a carrier adapted to travel along said conduits, three magnets including a fixed reference magnet and two adjustable magnets mounted on said carrier at locations spaced axially thereof, said adjustable magnets being adjustable axially of the carrier, each magnet comprising a permanently magnetized slug polarized radially of said carrier, the intermediate magnet being polarized oppositely from the other two magnets, loop selector means associated with each loop conduit for directing the carrier

thereinto in response to a predetermined signal from said reference magnet and one of said adjustable magnets on said carrier approaching the associated loop conduit, and station selector means associated with each station conduit for directing the carrier thereinto in response to a predetermined signal from said reference magnet and the other of said adjustable magnets on said carrier approaching the associated station conduit.

15. A message carrier system having a number of loop conduits branching from a trunk conduit and having a number of station conduits branching from said loop conduits, a carrier adapted to travel along said conduits, three magnets including a fixed magnet and two adjustable magnets mounted on said carrier at locations spaced axially thereof, said adjustable magnets being adjustable axially of the carrier, each magnet comprising a permanently magnetized slug polarized radially of said carrier, the intermediate magnet being polarized oppositely from the other two magnets and one of said other two magnets being said fixed magnet, loop selector means associated with each loop conduit for directing the carrier thereinto in response to a predetermined signal from said fixed magnet and one of said adjustable magnets on said carrier approaching the associated loop conduit, and station selector means associated with each station conduit for directing the carrier thereinto in response to a predetermined signal from said fixed magnet and the other of said adjustable magnets on said carrier approaching the associated station conduit.

16. A carrier for use in a tube type conveyor having sets of receptor coils spaced axially at various distances on the tube exterior for creating electric impulses responsively to magnetic signals from within the tube, said carrier comprising, a body, said body being adapted to receive items to be conveyed, said body having an integral axially extending recess forming a track on its exterior, said track having sides extending generally rectilinearly and parallel to each other, a plurality of slides slidably mounted within said track, a magnet on each slide, a fixed magnet in said track adjacent one end of said body, said magnets extending generally radially of said body, each of said magnets having one pole disposed immediately adjacent the radial periphery of said body, each of said magnets having a length generally equal to the depth of said recess, at least two of said magnets having their poles reversed relatively to each other, said slides being movable selectively and independently for adjusting the intervals between said magnets, locking means on each of said slides, said locking means being engageable against one of said sides of said recess for locking said slides in selected positions.

17. In a message carrier system, an elongated carrier adapted to travel along a conduit means and having a longitudinal axis parallel to its direction of travel, a guideway extending axially of said carrier, and a plurality of magnetic slugs each polarized so that its poles lie in a plane which includes the longitudinal axis of the carrier, said magnets being shiftable relative to one another along said guideway.

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