

Nov. 22, 1949

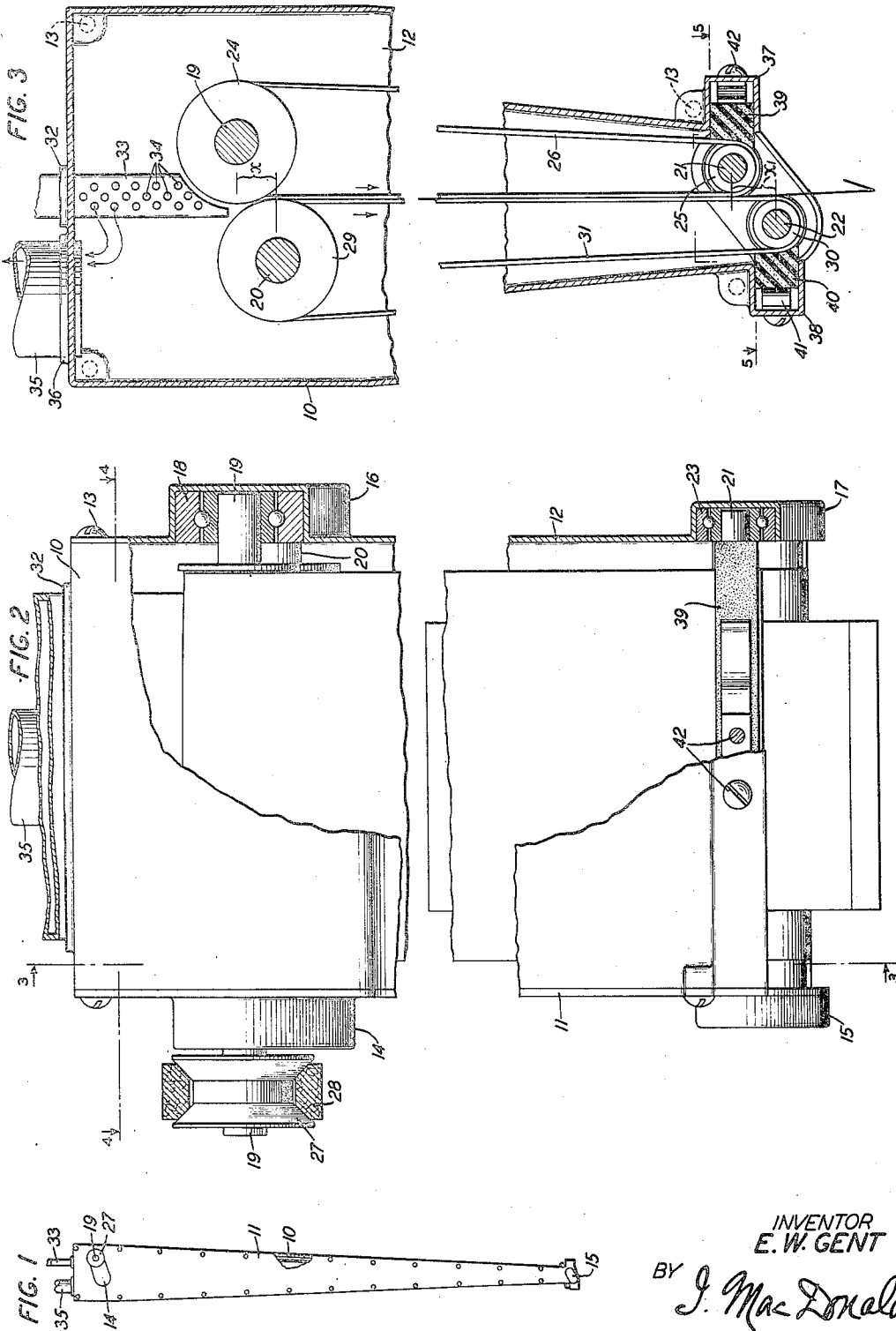
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2,489,025

PNEUMATIC TICKET RECEIVING VALVE

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2 Sheets-Sheet 1



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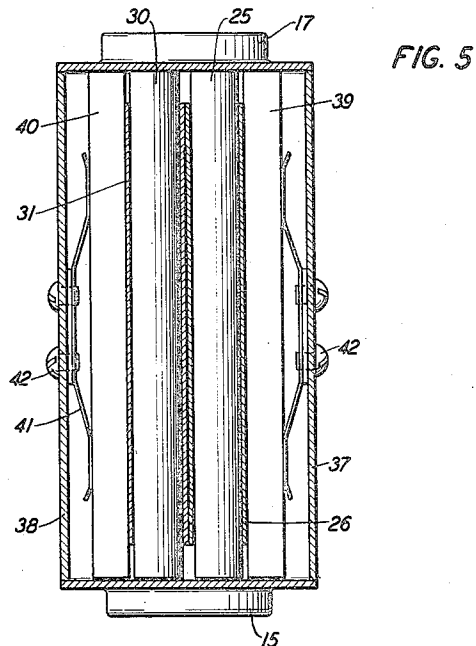
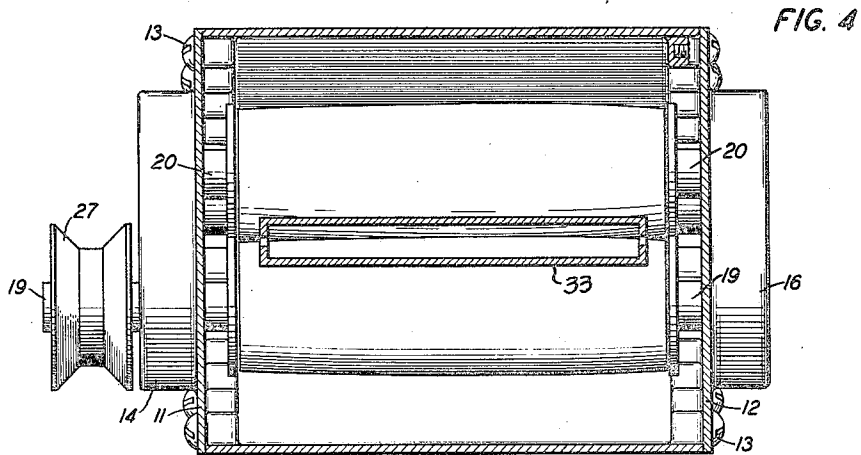
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2 Sheets-Sheet 2



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PNEUMATIC TICKET RECEIVING VALVE

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4 Claims. (Cl. 302-2)

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This invention relates to pneumatic ticket distributing systems and more specifically to a ticket receiving valve for use in such systems.

In connection with pneumatic ticket distribution as used in certain telephone exchanges, for example, a type of receiving valve is used which because of its large dimension necessitates being mounted beyond the reach of the operator so as not to jeopardize the available jack space at the operator's position. This mounting arrangement, however, necessitates that an extended handle be provided to make possible the manipulation of the valve by the operator for releasing the ticket which then falls by gravity while the operator attempts to catch the ticket while in motion in the air.

The object of the present invention is the provision of a pneumatic ticket receiving valve of the type above referred to which is of simple construction, convenient in use and in which the ticket is delivered at a convenient position from the telephone operator.

In the drawing:

Fig. 1 is an assembly view reduced;

Fig. 2 is a front view shown with the casing and a number of operating parts with portions broken away;

Fig. 3 is a longitudinal sectional view taken on line 3-3 of Fig. 2;

Fig. 4 is a cross-sectional view taken on line 4-4 of Fig. 2; and

Fig. 5 is a cross-sectional view taken on line 5-5 of Fig. 3.

In accordance with the pneumatic ticket receiving valve of this invention, an elongated tapered casting 10 is provided with two side plates 11 and 12 secured to the casting 10 by a plurality of similar screws 13 to form a casing for housing the operating mechanism which will be hereinafter described in detail. The side plates 11 and 12 are formed at similarly disposed ends with embossed portions 14-16, respectively, into which are fitted ball bearings such as 18, Fig. 2, for supporting the parallelly-disposed shafts 19 and 20, while two parallelly-disposed shafts 21 and 22 are supported by ball bearings 23 fitted in embossed portions 15 and 17 formed with plates 11 and 12 at the delivery end of the valve.

On shaft 19 is keyed a roller 24 operatively connected to a roller 25 keyed on the shaft 21 by a rubber belt 26, one end of shaft 19 extending beyond the embossed portion 14 of casing plate 11 as shown in Fig. 2 for securely receiving a pulley 27 for operatively connecting the shaft 19 as by a belt 28 to a motor, not shown. On shaft

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20 is keyed a roller 29 operatively connected to a roller 30 by a rubber belt 31 having one side disposed in parallel frictional engagement with the adjacent side of belt 26 for a purpose which will be hereinafter described in detail.

The casing 10 is formed with an embossed portion 32 into which extends the end of a ticket guiding tube 33, this portion of the ticket guiding tube being disposed tangent to the adjacent periphery of rollers 24 and 29 for guiding the ticket therebetween and the adjacent side of belts 26 and 31 which are coaxial with the end of the ticket guiding tube as best seen in Fig. 3.

The portion of the ticket guiding tube which extends into the casing 10 is provided at its opposite side with a plurality of drilled holes 34 for permitting the escape of the propelling air into the casing and hence into an air return or exhaust tube 35, this tubing like the ticket guiding tube 33 being fitted in an embossed portion 36 formed with a casing 10.

The ticket delivery end of casing 10 is formed as shown in Figs. 1, 2, 3 and 5 with outwardly bulging portions 37 and 38 serving as guiding elements for bars 39 and 40 constructed of graphite material which are pressed against the rubber belts 26 and 31 for preventing the escape of air from the casing at these points, the graphite bars 39 and 40 being pressed against the rubber belts by similarly shaped springs 41 held in position in the bulging portions 37 and 38 by a pair of similar screws 42.

According to an important feature of the present invention, the shafts 19 and 20 for rollers 24 and 29 at the ticket entrance of the valve and shafts 21 and 22 at the ticket delivery end of the valve are disposed in staggered relation to each other as best seen in Fig. 3 so as to permit a relatively great number of tickets to pass simultaneously between the rollers 24 and 29 to be carried by the movement of the belts 26 and 31, avoiding the necessity of using a complex mechanism so as to permit changes in the spaced relation between the shafts 19-20 and 21-22, at the ticket receiving and delivering end of the valve.

In a typical example of operation, supposing that a ticket or a plurality of tickets which are propelled into the ticket guiding tube by an air stream which travels at a speed of substantially 36 feet per second reach the end of the tube 33 into casing 10. These tickets are gripped by the motion of the belts 26 and 31 moving in the direction indicated by the arrow in Fig. 3 at substantially the same speed of the air stream flow-

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ing into the ticket guiding tube so as to prevent any impact of the ticket at the tangential point of the belts on the rollers 24 and 29 to be carried to the rollers 25 and 30, while the air is exhausted from the casing into the return tube 35 which may have its opposite end connected to the inlet side of the air compressor (not shown), the graphite bars 39 and 40 being held in frictional contact against the belts 26 and 31 by the tension of their respective springs 41 to form as above mentioned air seals at these points, the distance from rollers 24 and 29 to rollers 25 and 30 being in actual practice approximately 30 inches.

Supposing now that a relatively great number of tickets arrive at the end 33 of the ticket guiding tube under that condition, the portion of the belt 26 marked *x* in Fig. 3 will be flexed according to the amount of ticket passing this point simultaneously, thus avoiding the damaging of tickets by excessive pressure, while avoiding the use of a complex mechanism for permitting axial displacement of the rollers according to the thickness of the tickets when passing between these rollers. Similarly the passing of a number of tickets at the delivery end of the valve, a portion of the belt 31, marked *x*1 will be flexed as in connection with that portion of belt *x* above described.

What is claimed is:

1. A pneumatic ticket receiving valve having a tapered casing the enlarged end of which forms the ticket receiving end of said valve and the small end the ticket delivery end of said valve, a pair of roller members mounted in staggered relation in said casing adjacent the receiving end thereof, a pair of rollers mounted in staggered relation in said casing at the delivery end thereof, a belt operatively connecting each of said rollers at the ticket receiving end of said casing with a roller at the delivery end of said casing, one side of each of said belts being disposed in parallel frictional engagement with a side of the other of said belts, the frictionally engaging parts of said belts being cooperable for carrying the ticket from the receiving to the delivery end of said casing, said belts being constructed of an elastic material for permitting said belts to stretch upon the passing of a plurality of tickets simultaneously between said rollers at the ticket receiving end and the delivery end of said valve, and bars of air excluding material extending between said casing and said belts and in frictional engagement with said belts to form air seals between said casing and said belts.

2. A pneumatic ticket receiving valve comprising a casing, a ticket guiding tube extending from outside said casing to the inside of said casing to guide tickets into said casing, said ticket guiding tube extending downwardly in said casing and having an open end portion to permit tickets to pass into said casing, an air outlet tube extending through a wall of said casing to permit air to be withdrawn from said casing, the end portion of said ticket guiding tube extending within said casing having a plurality of apertures formed in its side wall to permit air to escape from said ticket guiding tube into said casing without passing through the opening in the extreme end portion of the ticket guiding tube, a pair of rollers supported in said casing adjacent the open end of said ticket guiding tube, one of said rollers being elevated relative to the other and extending upwardly beyond the lower end of said ticket guiding tube, a second pair of rollers supported

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in said casing and below the first-mentioned pair of rollers, one of the rollers in said second pair being elevated relative to the other roller in that pair, a pair of belts supported on said rollers and in close air-tight frictional engagement with each other, the meeting portions of said belts being in register with said ticket guiding tube, said belts being cooperable to carry a ticket from the open end of said ticket guiding tube and away from said ticket guiding tube, the elevated positioning of one roller in each pair relative to the other roller in that pair permitting an instant portion of one belt to move laterally a slight extent away from the other belt to accommodate bunched tickets coming between said belts where the belts are engaged by a pair of said rollers, an outlet end in said casing through which a ticket can be delivered from said casing, and a plurality of bars extending from said casing into frictional engagement with portions of said belts to form air closures between said belts and said casing.

3. In a pneumatic ticket receiving valve, a tapered casing having a wall closing one end thereof, a ticket guiding tube, an air exhaust tube, a plurality of means in said wall for receiving the ticket guiding tube and the air exhaust tube, one end portion of said ticket guiding tube extending through said wall and into said casing, said portion of said ticket guiding tube being of rectangular cross section and having its side walls perforated to provide a plurality of air openings through which air can escape into the interior of said casing and to said air exhaust tube, a pair of rollers mounted in said casing adjacent the perforated end portion of the ticket guiding tube, another pair of rollers disposed in said casing and at the opposite end of said casing from the position of the first-mentioned pair of rollers, a pair of belts, each of the belts in said pair operatively connecting one of the first-mentioned rollers to a corresponding one of the last-mentioned rollers, a side of each of said belts being disposed in parallel and frictional engagement with a side of the other of said belts and in line with the perforated end portion of the ticket guiding tube, said belts when in motion serving as means for carrying a ticket from the perforated end portion of said ticket guiding tube to the end of said casing opposite from the position of said ticket guiding tube and for delivery of the ticket from said casing, and a plurality of spring pressed means engaging the opposite side of each of said belts to form air closures between said belts and said casing.

4. A pneumatic ticket receiving valve comprising a tapered casing having a wall portion closing one end thereof, a ticket guiding tube, an air exhaust tube, a perforated end portion on said ticket guiding tube extending within said casing, means formed with said wall portion for receiving the perforated end portion of the ticket guiding tube, and other means for receiving one end of said air exhaust tube, a pair of shafts mounted for rotary movement in said casing at a point adjacent the perforated end portion of said ticket guiding tube, a roller carried by each of said shafts, one of said shafts having one end extending outside of said casing for connection to an actuating means, another pair of shafts mounted for rotary movement in said casing, at the end of said casing opposite the position of the first-mentioned pair of shafts, a belt operatively connecting one of the rollers on the first pair of shafts with a corresponding roller of the second-mentioned pair of shafts, a second belt opera-

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tively connecting the remaining roller on the first-mentioned pair of shafts with the remaining roller on the second-mentioned pair of shafts, one side of each of said belts being disposed in parallel and frictional engagement with a side of the other of said belts and the frictionally engaging parts of said belts being in coaxial relation with the perforated end portion of the ticket guiding tube, said belts being cooperable to carry the ticket from the perforated end portion of the ticket guiding tube to the end of said casing opposite from the position of said ticket guiding tube, a pair of bars of graphite material frictionally engaging said belts and extending from said casing to said belts, spring means for press-

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ing said bars against said belts to make said bars form air seals between said casing and said belts, and bulged recess means formed with said casing to form guide elements for said bars.

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The following references are of record in the file of this patent:

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