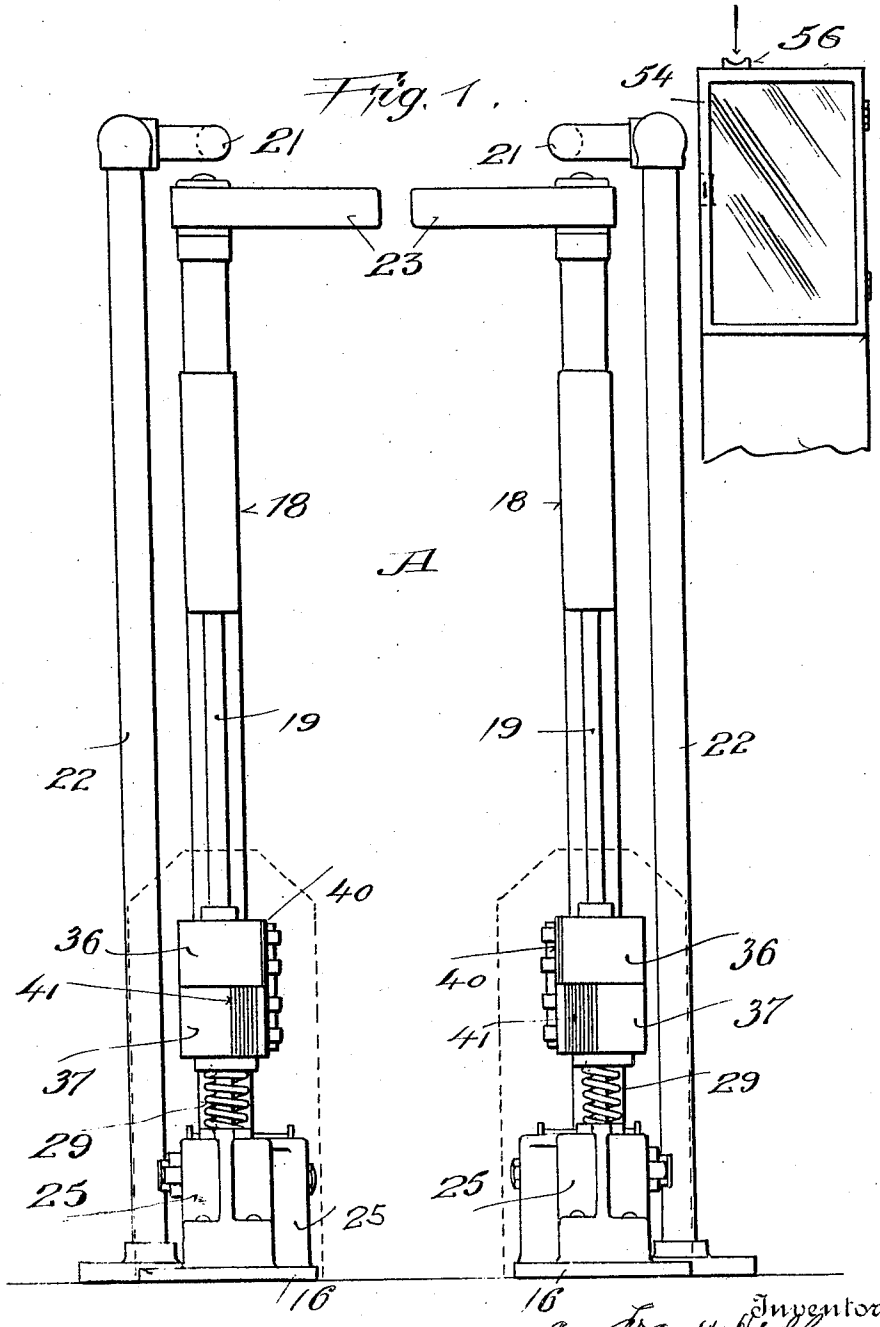
Oct. 23, 1928. 1,688,709

F. HEDLEY ET AL

PASSAGEWAY CONTROL MECHANISM

Filed Dec. 28, 1920 6 Sheets-Sheet 1

Fig. 1.



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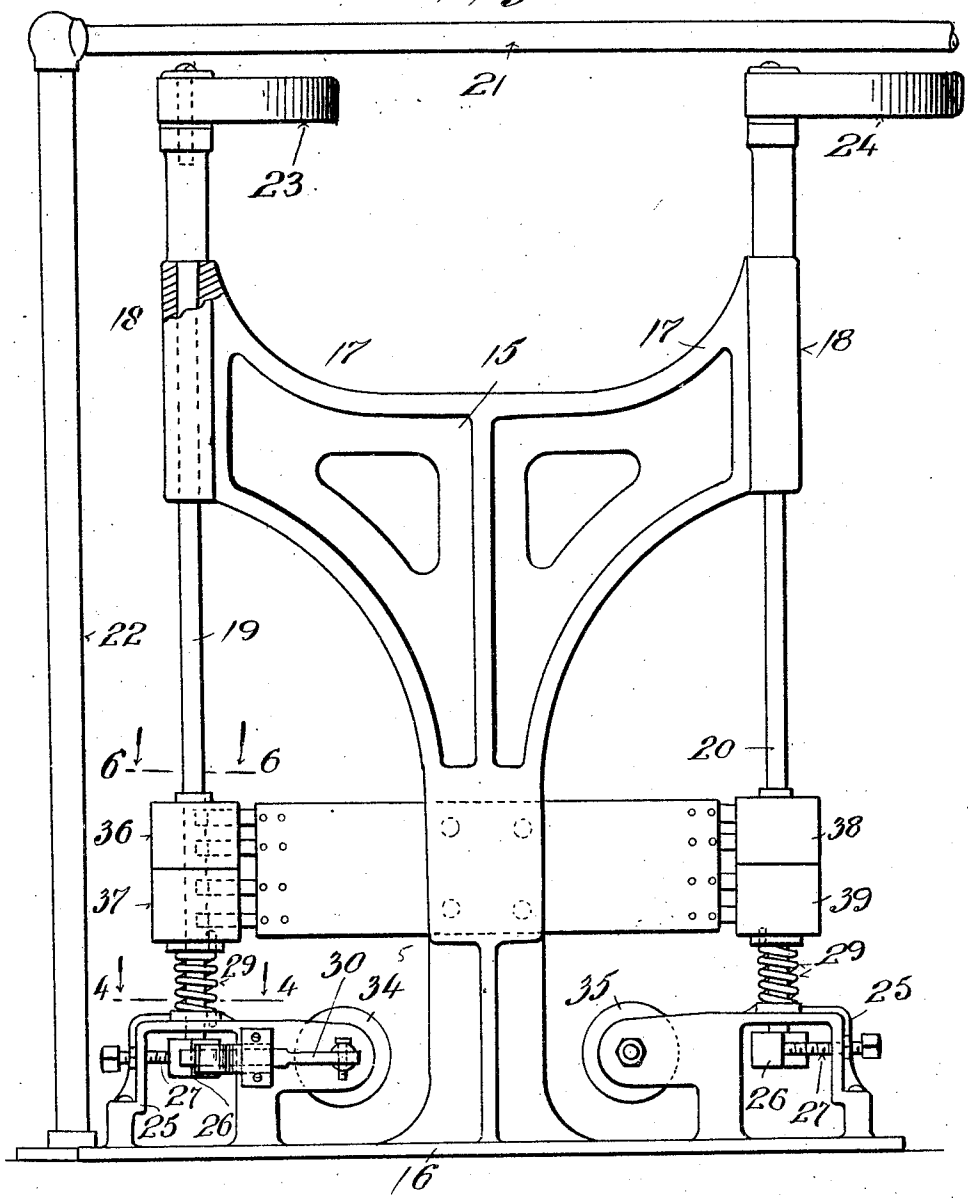
Oct. 23, 1928. 1,688,709

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PASSAGEWAY CONTROL MECHANISM

Filed Dec. 28, 1920 6 Sheets-Sheet 2

Fig. 2.



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PASSAGEWAY CONTROL MECHANISM

Filed Dec. 28, 1920 6 Sheets-Sheet 3

Fig. 3.

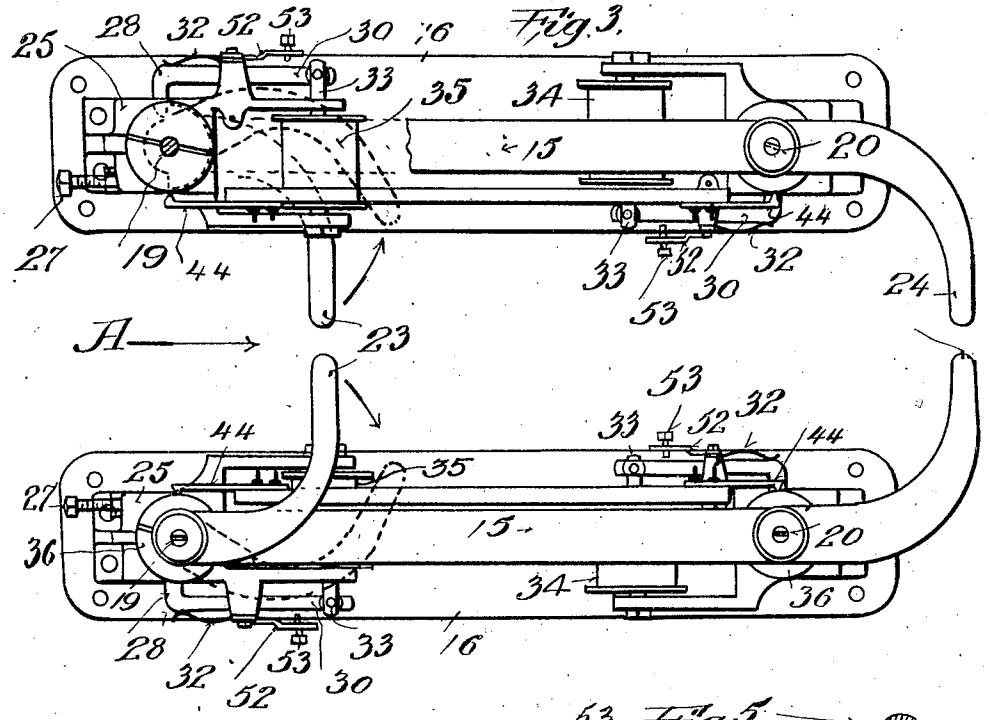


Fig. 4.

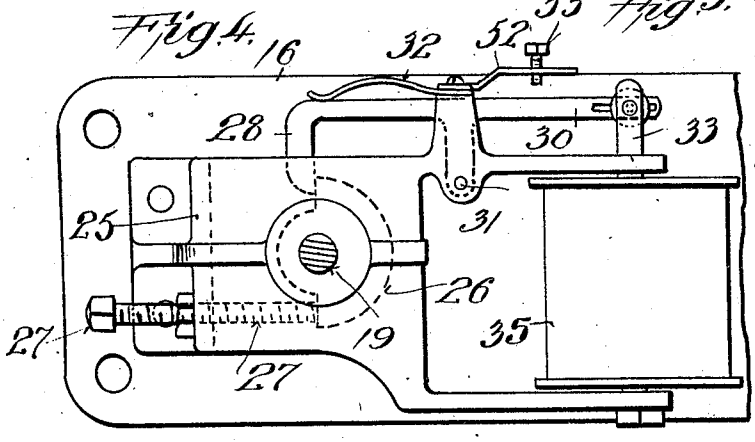


Fig. 5.

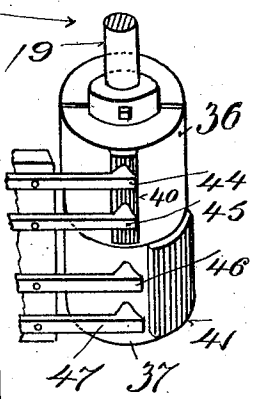
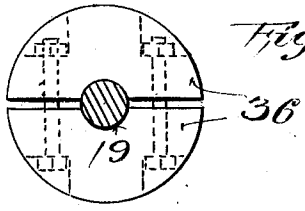


Fig. 6.



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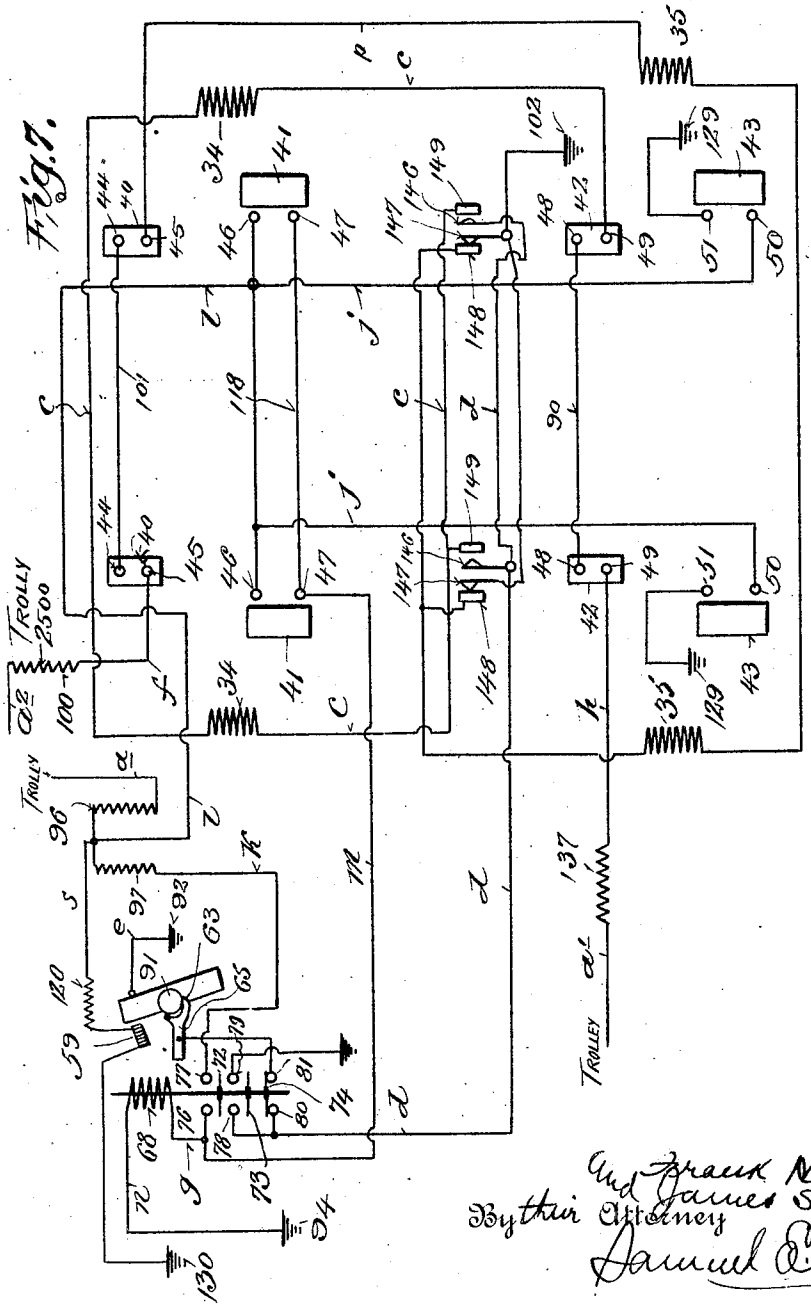
Oct. 23, 1928. 1,688,709

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PASSAGEWAY CONTROL MECHANISM

Filed Dec. 28, 1920 6 Sheets-Sheet 4

Fig. 7.



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Oct. 23, 1928. 1,688,709.

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PASSAGEWAY CONTROL MECHANISM

Filed Dec. 28, 1920 6 Sheets-Sheet 5

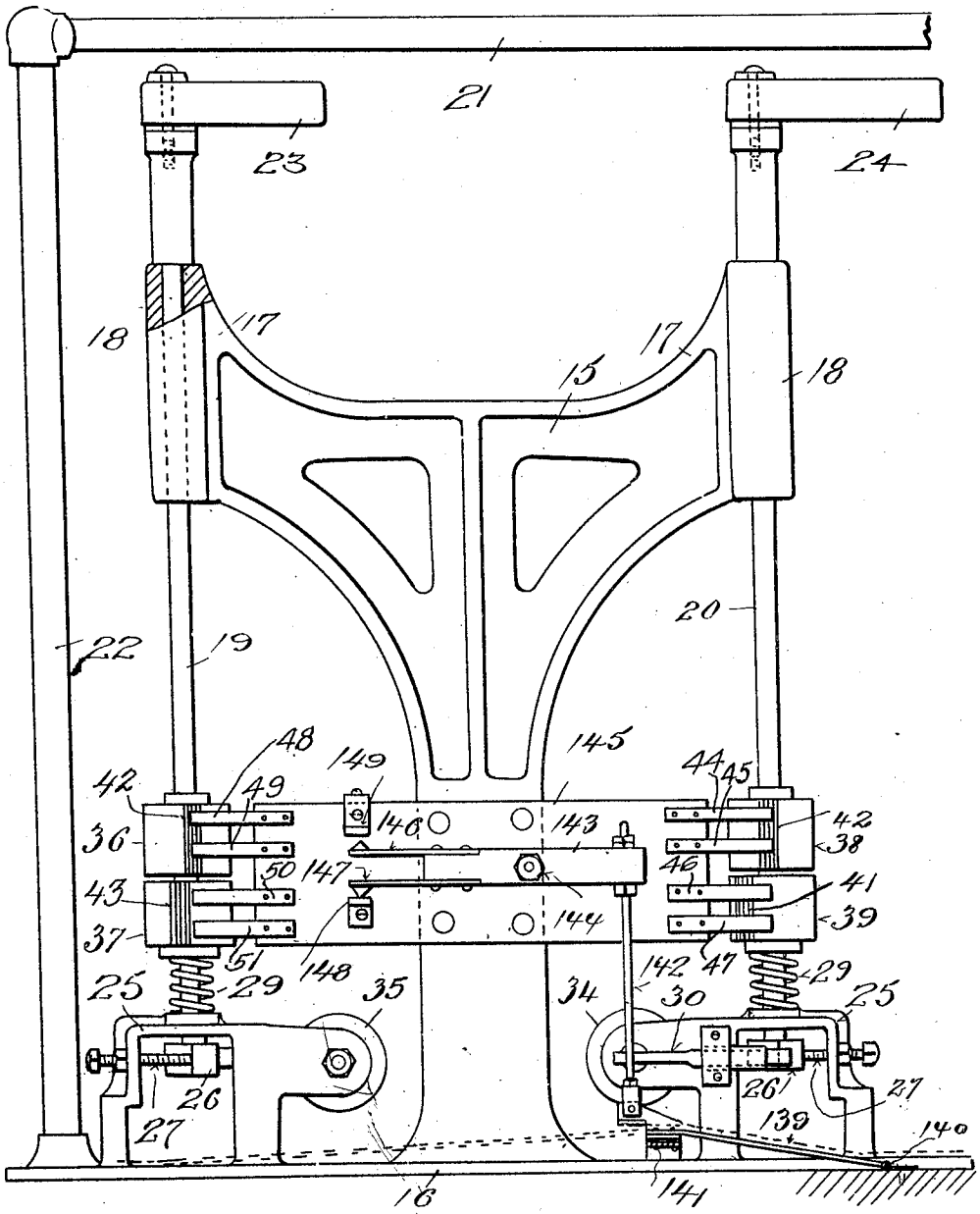


Fig. 8.

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PASSAGEWAY CONTROL MECHANISM

Filed Dec. 28, 1920 6 Sheets-Sheet 6

Fig. 9.

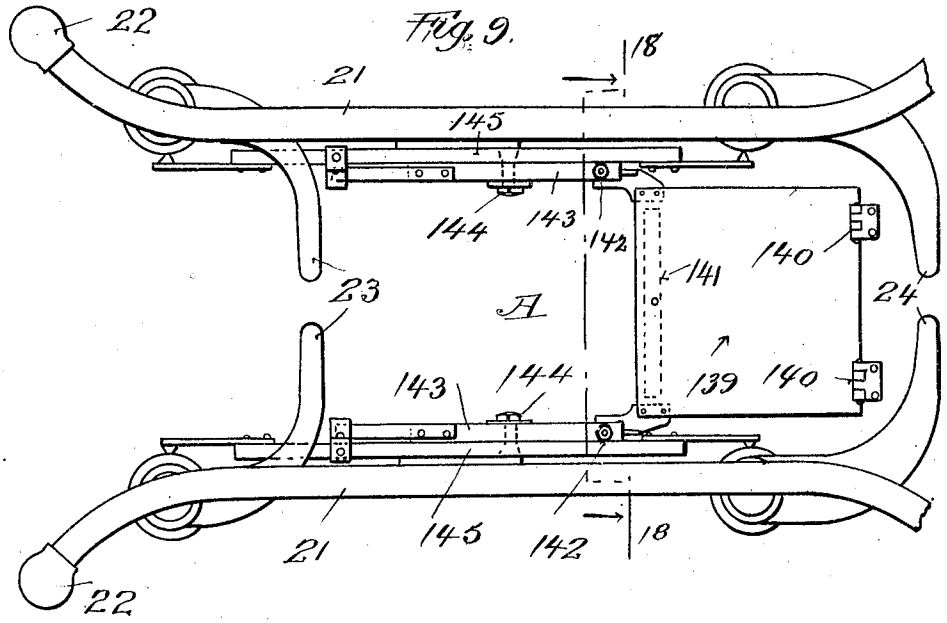
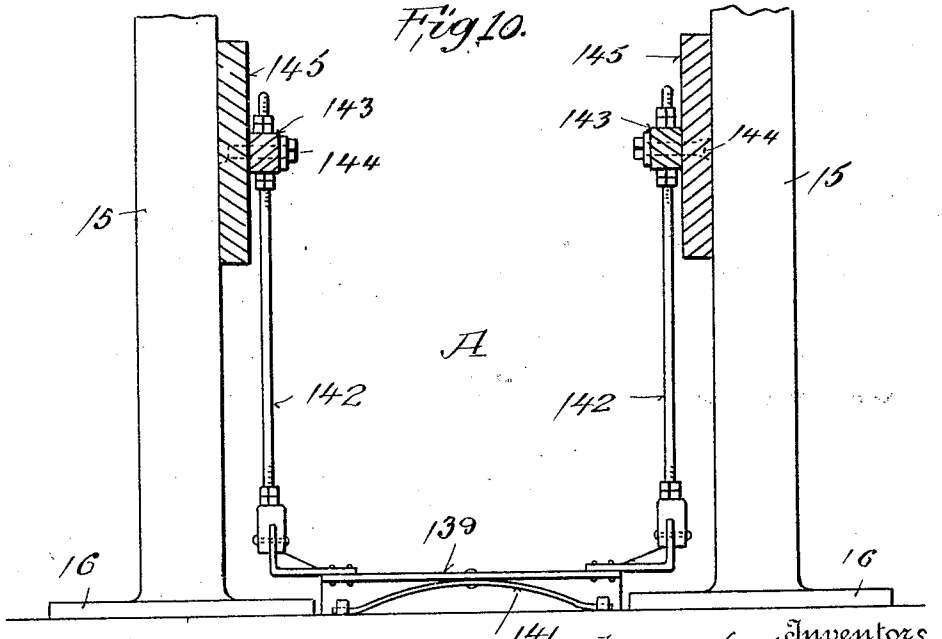


Fig. 10.



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UNITED STATES PATENT OFFICE.

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PASSAGEWAY-CONTROL MECHANISM.

Application filed December 28, 1920. Serial No. 433,692.

This invention relates to control mechanism for passageways.

The object of the invention is to provide a mechanism which is simple in structure and efficient in operation for controlling the passage of persons through a passageway.

A further object is to provide a passageway control mechanism of the nature referred to which interposes a minimum of resistance to the passage of persons through the passageway, and yet will restrain and prevent unauthorized passage therethrough.

A further object is to provide a passageway control mechanism of the nature referred to which affords a maximum capacity for a given period of time to accommodate the requirements for the quick and easy passage of large numbers of persons through the passageway.

A further object of the invention is to provide a passageway control mechanism of the nature referred to which is suitable for use at stations of subway, elevated and other railway systems, on street and other cars, at ferries, amusement places, and elsewhere, where it may be desired to permit persons to enter or leave singly or in single file, and which is simple in structure, economical to install and maintain, and is efficient in operation, and wherein ease and comfort are afforded persons in passing through such passageway.

A further object is to provide a passageway control mechanism of the nature referred to which enables efficient fare collections to be made as the persons pass through, thereby assuring the collection of a fare for each person, and, in addition, if required or desired, the registration of the number of persons passing through the passageway.

A further object is to provide a passageway control mechanism of the nature referred to which embodies locking devices to prevent the passage of persons through the passageway until the locking devices are released, and wherein provision is made for controlling the release of the locking devices by the deposit of a coin or token or the payment of a fare.

A further object is to provide a passage control mechanism of the nature referred to which permits the passage of persons therethrough in only one direction.

A further object of the invention is to provide a passageway barrier mechanism which is electrically controlled by the deposit of a coin or token in a coin box.

In a more restricted embodiment, a further object of our invention is to provide successive sets of barriers for a restricted passageway in which locking devices for the first set of barriers are normally released to permit the passage therepast of a single individual at a time. The operation of the second set of barriers by the passage of the individual therethrough causing the first set of barriers to be locked until the return of the second set of barriers to their initial position, which return releases the locking devices for the first set of barriers. The second set of barriers is released by the conjoint action of a coin or token and the presence of a person between the barriers.

A further object of the invention is to provide an electrically controlled passageway barrier mechanism of the nature referred to wherein the electrical control is effected by the conjoint action of a person passing through the apparatus and the deposit of a coin or other token.

Other and further objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location, and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings,—

Fig. 1 is a view in end elevation of one form of passageway control mechanism embodying the principles of our invention.

Fig. 2 is a view in side elevation of the construction shown in Fig. 1.

Fig. 3 is a top plan view of the same, the railing to define and restrict the passageway being omitted.

Fig. 4 is a view in section on the line 4, 4, Fig. 2, looking in the direction of the arrows, and showing the lock devices and release mechanism therefor.

Fig. 5 is a detail view illustrating circuit control contacts for the electrical control of the locking devices.

Fig. 6 is a detail view in section on the line 6, 6, Fig. 2, looking in the direction of the arrows.

Fig. 7 is a diagram showing a circuit arrangement employed in connection with an

electrical coin controlled system embodying the principles of our invention.

Fig. 8 is a view similar to Fig. 2, showing a form of means by which the passage of a person through the apparatus is utilized to contribute to the control of the apparatus.

Fig. 9 is a top plan view of the same.

Fig. 10 is a view in vertical transverse section on the line 18, 18, Fig. 9, looking in the direction of the arrows.

The same part is designated by the same reference numeral wherever it occurs throughout the several views.

In the following specification we will describe our invention as applied to the collection of fares in the operation of street car systems such as subway, elevated, or surface lines, but it is to be understood that we do not wish to limit or restrict ourselves in this respect as our invention is equally well adapted for use in connection with the collection of fares at ferries, railway stations, or entrance fees at theatres, amusement parks, and the like. Therefore, where we mention stations at which passengers board or alight from cars or trains, such as subway, elevated, surface, or other systems, we wish to include the use of our invention in any situation where the same is applicable.

Experience in the operation of street car systems such as subway, elevated and surface lines has shown that great and serious loss of revenue is sustained, even when the most careful and elaborate methods are employed to prevent it, due to the failure of the operating company to receive a fare for each passenger carried. This loss is especially heavy in rapid transit systems which during certain hours of operation known as "rush hours" must handle abnormally large crowds of passengers, under serious conditions of crowding through the stations and entrance ways to or from the cars or trains in a brief space of time. Under these conditions it becomes impossible to insure the collection of a fare from each individual even with the exercise of the utmost care and precaution.

Again, where it is necessary for passengers to purchase and deposit tickets or to pay fares to station agents, the danger is again incurred of inability to collect from each passenger during the periods of maximum traffic, and under the best conditions of modern practice delays are experienced in handling the crowds.

Various expedients have been resorted to or proposed to overcome these and other difficulties, and various forms of turnstile arrangements are in use. Such expedients, however, are open to many practical and serious objections and have failed to give entire satisfaction. In addition to the fact that the systems at present in general use involve the payment of fares to station agents, which introduces opportunity through dishonesty or inattention to incur loss in fare collections, the turnstile and other mechanically operating arrangements now employed are costly to install and maintain, and, from the standpoint of the public comfort and convenience, the resistance offered by turnstiles, the time required, the difficulty of controlling them, and the physical defects and limitations of such devices, render them unsuited to the requirements of severe rush hour traffic conditions. Moreover, such apparatus usually requires the attendance of employees at each turnstile, ticket booth or fare receiving box, and this greatly adds to the cost of operation besides failing to avoid the serious objection from the standpoint of the road management of missed fares.

In the ideal system for collecting fares a fare should be received by the management direct from each passenger carried, without having to pass through the hands of station agents, gatemen, conductors, or the like, and the payment or deposit of a single fare should remove all substantial resistance or barrier to the free and easy passage of a passenger, and only one, to the car or train, whether the passenger moves at a normal walking speed or faster. The means employed to secure this ideal result must be capable of accommodating a maximum of passengers passing through in a minimum space of time, in order to avoid congestion during the hours of heaviest traffic. There should be no delay, no congestion, no blocking of easy, rapid and comfortable passage, with a minimum of resistance.

It is among the special purposes of our present invention to provide a passageway-control mechanism which attains the advantages and avoids the objections above noted, and which is simple and rugged in structure, which offers a minimum of resistance to the passage through of individuals, which is efficient and permits a high speed of operation while affording an easy, free and comfortable passage of individuals, one at a time, therethrough, in one direction, but preventing the passage through in the reverse direction which assures the deposit of a fare coin or other token for each individual and which enables a person upon payment of the required fare coin or token to pass through without substantial resistance or interference.

In carrying out our invention in one practical embodiment thereof, we provide a restricted passageway for individuals to pass through singly or in single file. Extending partially across this restricted passageway, and preferably from opposite sides thereof, are barrier arms, which, in the form shown,

are arranged in sets of cooperating pairs, the members of each pair or set yielding easily and readily to the pressure thereagainst imposed by an individual proceeding along the passageway. This yielding movement is permitted in one direction only, and such movement, if desired, is controlled by the deposit of a fare coin or token, and may be utilized whenever required or desired to effect a registration of the number of persons passing through the apparatus, and a signal for each operation. We also propose to employ locking devices for each set of barrier arms and to control such locking devices in such manner that when the locking devices of the first set of said barriers are released and said barriers are shifted or moved to permit the passage of an individual therepast, the second set of arms are locked and remain locked until the first set of arms return to their normal or initial position, which action releases the locking devices of the second set of arms, and while the second set of arms are displaced to permit the passage of an individual therethrough, the first set of arms are locked and remain locked against displacement until the second set of arms return to initial or normal position, which action releases the first set of arms. The release of the second set of arms may be effected in various ways. In one form shown as a practical embodiment of our invention, this release is effected by the deposit of a fare coin or token in a fare box, such coin or token operating to control suitable electric circuits which control the locking devices. In another form shown, this release is effected by the conjoint action of the deposit of a coin and of a person passing through the apparatus.

Referring particularly to the arrangement shown, a restricted passageway A, see Figs. 1, 3, 9 and 10, is formed between oppositely disposed frames 15, which may be of any suitable or convenient construction and arrangement. A simple construction of frames is shown wherein they are formed of metal stampings or castings formed with or secured to base plates 16, and having arm portions 17 extending in the direction of length of the passageway A. The arms 17 carry vertically disposed bearings 18, for vertical shafts 19, 20. If desired, and in order to still further define the restricted passageway A, the frames 15 and their associated parts may have associated therewith longitudinal bars or railings 21 supported by rods 22, each bar or railing being disposed slightly above the upper ends of the shafts 19, 20, and extending parallel with and at opposite sides of the passageway A. This auxiliary railing, while desirable is not essential. The vertical shafts 19, 20, are arranged in cooperating pairs, the members of each pair being respectively disposed at opposite sides of the passageway A. Mounted upon the upper ends of shafts 19, 20, which extend above the bearings 18, are the arms 23, 24. These arms are preferably light metal arms and they are curved in the direction of their length and extend in cooperating pairs from opposite sides of and partially across the passageway A. This form and arrangement of the barrier arms presents to the users of the apparatus an inviting entrance way in one direction through the passageway and avoids the deterring effect of a turnstile arrangement of the nature heretofore commonly employed. The width of the passageway is such as to comfortably and easily accommodate individuals singly or in single file, and the space or distance between the pairs or sets of barrier arms 23, 24, should be such as to comfortably accommodate a single person when both sets of arms are in their closed or barrier relation with respect to the passageway A.

At their lower ends the shafts 19, 20, are extended through brackets 25, bolted to the base plates 16, and carry the stop blocks 26, with which cooperate the stop screws 27, and the locking dogs 28.

In order to yieldingly resist the rocking movements of the shafts 19, 20, from an initial position such as to hold the arms 23, 24, in barrier relation across the passageway, we employ springs 29, which, in this case are shown as coiled upon said shafts and which are suitably secured at one end to the shaft and at the other end to the bracket 25, thereby serving as torsion springs, the tension of which is exerted to normally hold the shafts in position for the stop blocks 26 to bear against the stop screws 27.

The locking dogs 28 are carried by yoke levers 30 each of which is pivotally supported, as at 31, upon an extension of the bracket 25, the pivot axis 31, being disposed in line with the engaging portion of the locking dog 28. (See Fig. 4). A spring 32 bears upon the yoke lever 30 and normally presses the locking dog towards position to engage the locking block 26. One arm of the yoke lever is pivotally connected to the stem 33 of the core of a magnet coil 34, 35, mounted upon extensions of the brackets 25.

Upon each shaft 19, 20, are mounted insulating blocks carrying contact strips with which cooperate contact fingers for controlling the circuits of the locking magnets 35, 34. The structure of the blocks is the same for all the shafts, and therefore a description of the blocks for one shaft will suffice. These blocks 36, 37, 38, 39, may be of wood, or other suitable insulating material, and each of them, in the form shown, to which, however, our invention is not to be limited, is made in cooperating halves to facilitate their application to the shafts, said halves being bolted together to clamp them upon

the shaft, as indicated in Figs. 5 and 6. Upon the blocks are mounted strips 40, 41, 42, 43, of conducting material with which cooperates the contact fingers 44, 45, 46, 47, 48, 49, 50, 51.

It may sometimes be desirable to adjustably limit the travel of the locking dog 28 into locking engagement with the locking block 26. A simple arrangement for accomplishing this result is shown wherein an arm 52 carried by the extension of bracket 25 upon which the yoke lever 30 is mounted, is disposed adjacent each rock lever. An adjustable set screw 53, mounted on arm 52 limits the extent of rocking movement of the yoke lever, thereby limiting the extent of the pull necessary to be exerted by the lock release magnet 34, 35, to effect a release of the lock. We have found it convenient to employ the arm 52 also as a washer or clamp to secure the yoke lever spring 32 in place.

The lock devices for the barrier arms may be controlled in any suitable or convenient manner. In one embodiment of our invention which we have selected to illustrate the principles thereof, and which, in actual use, we have found suitable and satisfactory we propose to control the locking devices of said arms by the deposit of fare coins or tokens in a conveniently arranged fare receiving box or receptacle, and we employ the deposited fare coin or token to control the circuits of the lock releasing magnets 34, 35, as well as odometer or register actuating devices, a signal device, or the like.

If desired, any suitable or desired counter device, signal or other mechanism, may be actuated by the plunger stem or core of magnet 68, so that a signal, registration, or the like, may be effected with each energization of magnet 68.

Also connected to and actuated by the plunger stem or core of magnet 68, are contact disks 72, 73, 74, which are yieldingly mounted on said plunger stem or core by means of coil springs, and which respectively cooperate with the pairs of contacts 76, 77; 78, 79; 80, 81; to bridge the space between them.

The contacts 76, 77, 78, 79, 80, 81, are preferably in the form of screws and extend in a direction parallel to the planes of the contact disks 72, 73, 74. By screw threading these contact pins efficient circuit contact is insured between them and the disks, which is not liable to be impaired by accumulation of dust, dirt, and the like.

In some cases we prefer to interpose an additional switch or contact device in the coin controlled circuit, which is actuated by the person or individual passing through the apparatus so that the deposit of a coin and the passage of a person through the apparatus jointly control the circuit of the lock magnets and one pair or set of barrier arms. This auxiliary or additional switch or contact may be arranged for operation by the passage of a person through the apparatus in many different ways. We have shown one arrangement which we have found to be practical and efficient, but to which our invention is not to be restricted or limited, wherein the flooring of the apparatus is provided with a depressible portion 139, which is hinged at one end, as indicated at 140, see Figs. 8 and 9, and is maintained yieldingly elevated at its opposite end by means of a spring 141. As a person steps upon this yielding floor section in passing through the apparatus said section yields or is depressed and this movement is utilized to open and close contacts in the desired circuits. In the form shown, the yielding floor section 139 is connected to rods 142, the upper ends of which are connected to rock levers 143, pivotally mounted as at 144, upon the insulating member 145 which carries the contacts 44, 45, 46, 47, 48, 49, 50, and 51. The rock levers 143 carry insulated contact fingers 146, 147, so disposed with reference to each other and to cooperating contacts 148, 149, that when the floor section 139 is depressed, the levers 143 are rocked to carry the fingers 146 into contact with the contacts 149, and when said section is relieved of the depressing pressure and returns to normal position, said levers 143 are returned to initial position and cause contact fingers 147 to contact with the contacts 148. The contacts 148, 147, control the circuits of the lock magnets 35 of the first pair of barrier arms while the contacts 149, 146, together with the coin contacts, control the circuits of the lock magnets 34 of the second pair of barrier arms.

The operation of the electrical part of the apparatus will be made clear by reference to the circuit diagram of Fig. 7.

Current is derived from any suitable source, as from trolley, through wires a, a^1, a^2. When the apparatus is in the position shown in Fig. 8, the first set of barrier arms 23 is free to be moved by a person. In this position, current passes from the trolley a^2, through resistance 100, f, 45, 40, 44, 101, 44, 40, 45, p, 35, 35, both set of contacts 148 and 147 to ground at 102. Thus the magnets 35 are energized leaving the shafts 19 free for the passage of a person between the barriers. The operations follow as described. Upon the deposit of coin 91 from the wire a^1 one circuit is completed through resistance 137, wire h, contact 49, strips 42, contact 48, and jumper 90, these parts being controlled by the first pair of barrier arms, thence through wire c, the coils of the magnets 34 which release the locks for the second pair of barrier arms, contacts 149, fingers 146, when the latter are closed upon each other by a person passing through the

apparatus, wire *d*, contact 80, contact disk 74, contact 81 to lever 65 and the conducting finger 63 thereof, through a coin 91, wire *e*, to ground at 92. The completion of this circuit, it will be seen, is dependent upon the first pair of barrier arms being in their normal position to form a barrier across the passageway A; also upon the auxiliary contacts 146, 149 being closed; and also upon a coin having been deposited in the chute, and completing the circuit between the conductor finger 63, and a grounded circuit connection. In other words, when a proper coin has been deposited, the floor section 139 has been depressed and the first pair of barrier arms are in their closed position the magnets which control the locking devices for the second pair of arms are energized, and the said second pair of arms are released. This permits a passenger after the above operation to pass through the second pair of barrier arms thereby displacing them. This action brings contact strips 41 into bridging relation with respect to contacts 46, 47. Thereupon another circuit is completed from trolley wire *a*, through resistance 96, wire 1, contacts 46, strips 41, contacts 47, wire *m*, the coils of magnet 68, wire *n*, to ground at 94. This energization of the magnet 68 causes the contact finger 63 to be withdrawn from arresting relation with respect to the coin, permitting the coin to continue down through the raceway. The energization of magnet 68 also opens the circuit through the coin lever 65 and its contact finger 63 by breaking the circuit between contacts 81, 80. At the same time circuit is completed between contacts 79, 78, through disk 73, and between contacts 77 and 76, through disk 72. The completion of circuit between contacts 79, 78, maintains the circuit through the release magnets 34 closed as long as the first pair of barrier arms remain in their normal closed position, that is, as long as contact strips 42 remain in bridging relation with respect to contacts 48, 49, and as long as the contacts 146 and 149 are closed upon each other, that is, as long as the yielding floor section remains in its depressed position. Initially with the second pair of barrier arms in their closed position and the contacts 148, 147 closed, a circuit is established from trolley, through wire a^2, resistance 100, wire *f*, contacts 45, 44, strips 40, and jumper 101, wire *p*, the coils of release magnets 35 for the first pair of arms, contacts 148, 147, to ground at 102, so that when the second pair of arms are in their normal closed positions the lock devices of the first pair of arms are released. When, however, the second pair of arms are displaced the circuit through the coils of magnet 35 is broken by the strips 40 being moved away from bridging relation with respect to contacts 44, 45, thereby causing the first pair of arms to be locked and to remain locked as long as the second pair of arms are displaced from their closed positions. The closing of disk 72 upon contact 76, 77, closes a circuit from trolley through wire *a*, resistance 96, resistance 97, wire *k*, through 77, 72, 76, and connection *g*, the coils of magnet 68, wire *n*, to ground at 94, thus constituting an interlock. This condition continues as long as the first pair of arms remain in their normal closed position. When these arms are displaced the strips 43 bridge the contacts 50, 51, thereby completing a circuit from trolley through wire *a*, resistance 96, wire 1, wire *j*, contacts 50, strip 43, contacts 51, to ground at 129. The resistances 96, 97, are so chosen that the one is of less resistance value than the other. For example the resistance 96 may be 1250 ohms while 97 may be 2500 ohms. Therefore, upon completion of the last named circuit the magnet coil 68 is short circuited and the contact disks 72, 73, 74, are restored to their normal positions. When the first pair of arms is displaced into their open positions the circuit of release magnets 34 of the second pair of arms is opened through contact strips 42, leaving the contacts 48, 49, and consequently the second pair of arms become locked.

From the foregoing description it will be seen that the second pair of arms must be in their closed position, which means that they must be locked and the floor section in its raised position before the circuit can be completed of the release magnets for the first pair of arms. It will also be seen that the first pair of arms must be closed, which means that they must also be locked, before the second pair of arms can be released. It will also be seen that a coin must be deposited and the floor section depressed before the lock devices for the second pair of arms can be released. It will also be seen that the second pair of arms must be displaced before the circuit is completed of the coin releasing magnet, and that when the second pair of arms are restored to their closed position the circuit of the releasing magnet is opened permitting the deposit of the coin.

From the foregoing description it will be seen that we provide an exceedingly simple, effective and reliable passageway controlling apparatus. We have found in the practical test of this apparatus that the percentage of loss in collected fares is almost inappreciable. We have found that the apparatus is capable of accommodating without interference or interruption the conditions of rapid transit even under the most trying necessities of the rush hour where traffic is exceptionally heavy, thus attaining a maximum of capacity with a minimum of resistance, affording a comfortable, rapid passage of passengers by merely the deposit of the required fare

coin or token, which accommodates the traveling public by avoiding delays incident to congestion, crowding and blockading in attempting to pass through restricted passageways. In practice we propose to employ banks of passageway controlling devices embodying our invention so as to offer the greatest possible convenience and accommodation to the necessities and requirements of heavy passenger traffic.

It is to be understood that many changes in the details of construction and arrangement will readily occur to persons skilled in the art and still fall within the spirit and scope of our invention. We do not desire therefore to be limited or restricted to the exact details shown and described.

But having now set forth the objects and nature of our invention, and a construction of apparatus embodying the same, what we claim as new and useful and of our own invention and desire to secure by Letters Patent is—

1. In a passageway controlling mechanism, means including vertical shafts arranged to form a restricted passageway between them, in combination with barrier arms grouped in pairs and extending transversely into said passageway, and having connection with said shafts to rotatively actuate the same, locking devices for said shafts, and means to release said locking devices.

2. In a passageway controlling mechanism, means including vertical shafts arranged to form a restricted passageway between them, in combination with barrier arms grouped in pairs and extending transversely into said passageway, and having connection with said shafts to rotatively actuate the same, locking devices for said shafts, and coin controlled means to release said locking devices.

3. In a passageway controlling mechanism, means to form a restricted passage, pairs of barrier arms extending transversely partway across said passage from opposite sides thereof, rotatively mounted members, means for connecting each of said arms to an associated rotative member to actuate the same, and releasable locking devices for said rotative members.

4. In a passageway controlling mechanism, means to form a restricted passage, pairs of barrier arms extending transversely partway across said passage from opposite sides thereof, rotatively mounted members, means for connecting each of said arms to an associated rotative member to actuate the same, and coin controlled releasable locking devices for said rotative members.

5. In a passageway controlling mechanism, means to form a restricted passage, barrier arms arranged in pairs and extending transversely partway across said passage from opposite sides thereof, rotatively mounted members, means for connecting each of said arms to an associated rotative member to actuate the same, means to yieldingly resist the rotative displacement of said members, and releasable lock devices for said members to maintain said arms in barrier relation across said passageway.

6. In a passageway controlling mechanism, means to form a restricted passage, barrier arms arranged in pairs and extending transversely partway across said passage from opposite sides thereof, rotatively mounted members, means for connecting each of said arms to an associated rotative member to actuate the same, means to yieldingly resist the rotative displacement of said members, and releasable lock devices for said members to maintain said arms in barrier relation across said passageway, said lock devices being coin controlled.

7. In a passageway controlling mechanism, means arranged to form a restricted passageway, in combination with barrier arms extending transversely into said passageway, said arms being arranged in successive cooperating pairs to normally extend into said passageway, locking devices for said arms, and coin or token controlled devices for releasing said locking devices.

8. In a passageway controlling mechanism, means arranged to form a restricted passageway, in combination with barrier arms extending transversely into said passageway, said arms being arranged in successive cooperating pairs, locking devices for said arms, means to release the locking devices of one set of arms, and means actuated by the operation of the released set of arms to release the locking devices of the other set.

9. In a passageway controlling mechanism, means to form a restricted passage, barrier arms extending transversely partway across said passage from opposite sides thereof, rotatively mounted members, each of said arms being connected to an associated rotative member to rotatively actuate the same, locking devices for said rotative members, coin or token controlled devices for releasing said locking devices, and means operated by the rotative movements of said members for controlling said coin controlled devices.

10. In a passageway controlling mechanism, means to form a restricted passage, barrier arms extending transversely partway across said passage from opposite sides thereof, and arranged in sets of pairs, rotatively mounted members, means for connecting each of said arms to an associated rotative member to actuate the same in one direction only, locking devices for said members, and means actuated by the rotative movement of one set of said members for controlling the locking devices of the other set.

11. In a passageway controlling mechanism, means to form a restricted passage, barrier arms extending transversely partway across said passage from opposite sides thereof and arranged in sets of pairs, rotatively mounted members, means for connecting each of said arms to an associated rotative member to actuate the same in one direction only, locking devices for said members, coin or token controlled means controlled by the rotative movement of one set for controlling the locking devices of the other set.

12. In a passageway controlling mechanism, means to form a restricted passage, barrier arms extending transversely partway across said passage from opposite sides thereof and arranged in sets of pairs, rotatively mounted members, means for connecting each of said arms to an associated rotative member to actuate the same, locking devices for said members, and means actuated by the rotative movement of one set of said members for locking the other set against rotative movement.

13. In a passageway controlling mechanism, means to form a restricted passage, barrier arms extending transversely partway across said passage from opposite sides thereof and arranged in sets of pairs, rotatively mounted members, means for connecting each of said arms to an associated rotative member to actuate the same, locking devices for said members, and means actuated by the rotative movement of one set of said members for releasing the locking devices of the other set.

14. In a passageway controlling mechanism, means to form a restricted passage, barrier arms extending transversely partway across said passage from opposite sides thereof and arranged in sets, shafts upon which said arms are mounted, means to yieldingly maintain said shafts against rotative movement in one direction, locking devices for said shafts, coin or token controlled mechanism for releasing said locking devices, and means actuated by the rocking movement of one set of said arms for controlling said locking devices.

15. In a passageway controlling mechanism, means to form a restricted passageway, barrier arms arranged in successive pairs and extending transversely partway across said passageway from opposite sides thereof, locking devices for said arms, means operated by the rocking movement of the first pair of arms for controlling the locking devices of the second pair of arms, and means controlled by the rocking movement of the second pair of barrier arms for controlling the locking devices of the first pair.

16. In a passageway controlling mechanism, means to form a restricted passage, displaceable barrier arms extending transversely part way across said passage from opposite sides thereof, and arranged in successive pairs, locking devices for one set of said arms, a magnet for operating the same, a circuit for the magnet, coin or token controlled contacts for closing said circuit, and means for opening said circuit when the other set of said arms is displaced.

17. In a passageway controlling mechanism, means to form a restricted passage, displaceable barrier arms extending transversely part way across said passage from opposite sides thereof, and arranged in successive pairs, locking devices for one set of said arms, a magnet for operating the same, a circuit for the magnet, contacts arranged in said circuit and controlled by the other set of arms, and coin controlled contacts also arranged in said circuit.

18. In a passageway controlling mechanism, means to form a restricted passage, barrier arms arranged in successive pairs, said arms extending transversely part way across said passage from opposite sides thereof, locking devices for said arms, magnets for releasing said locking devices, circuits for said magnets, coin or token controlled contacts, and arm controlled contacts, said coin controlled contacts, and the contacts controlled by the second pair of arms cooperating to complete the circuit of the lock releasing magnet for the first pair of arms.

19. In a passageway controlling mechanism, means to form a restricted passage, barrier arms arranged in successive pairs, said arms extending transversely part way across said passage from opposite sides thereof, locking devices for said arms, magnets for releasing said locking devices, circuits for said magnets, and contacts controlled by the first pair of arms for controlling the circuit of the lock releasing magnet of the second pair of arms.

20. In a passageway controlling mechanism, means to form a restricted passage, barrier arms arranged in successive pairs, said arms extending transversely part way across said passage from opposite sides thereof, locking devices for said arms, magnets for releasing said locking devices, circuits for said magnets, coin or token controlled contacts, and arm controlled contacts, said coin or token controlled contacts, cooperating with the contacts controlled by the first pair of arms to control the circuit of the lock releasing magnets of the second pair of arms.

21. In a passageway controlling mechanism, means to form a restricted passage, barrier arms extending transversely part way across said passage, locking devices for said arms, magnets for releasing said locking devices, circuits for said magnets, coin or token controlled means to control the circuit of the lock releasing magnet for the first

pair of said arms and devices associated with the second pair of said arms for controlling the circuit of the lock releasing magnet of the other of said arms.

22. In a passageway control mechanism, means to form a restricted passageway, successively arranged arms extending transversely part way across said passageway, a rotatively mounted member to which each of said arms is connected, a lock device to lock one of said rotative members against rotative movement, a release magnet for said lock, a circuit for said magnet, coin or token controlled contacts and contacts controlled by the other of said members for controlling said circuit jointly.

23. In a station register mechanism, means to form a restricted passageway, an arm extending transversely part way across said passageway, a rotatively mounted member to which said arm is connected, a lock device to lock said member against rotative movement, a magnet for said lock, a circuit for said magnet, and means to control said circuit.

24. In a passageway controlling mechanism, means to form a restricted passageway, barrier means for the restricted passageway, means for locking said barrier means, and means controlled conjointly by the passage of a person through the passageway and a deposited coin or token for releasing said locking means.

25. In a passageway controlling mechanism, means to form a restricted passageway, barrier means for the restricted passageway, means for locking said barrier means, electrically controlled devices for releasing said locking means, coin or token controlled contacts arranged in the circuit of said devices, and auxiliary contacts controlled by a passage of a person through said passageway, and arranged in said circuit.

In testimony whereof we have hereunto set our hands on this 23d day of December, A. D., 1920.

FRANK HEDLEY.
JAMES S. DOYLE.