June 19, 1923. 1,459,413

H. M. OTTO

CONVEYER FOR TICKET DISTRIBUTING SYSTEMS

Filed Dec. 8, 1920 3 Sheets-Sheet 1

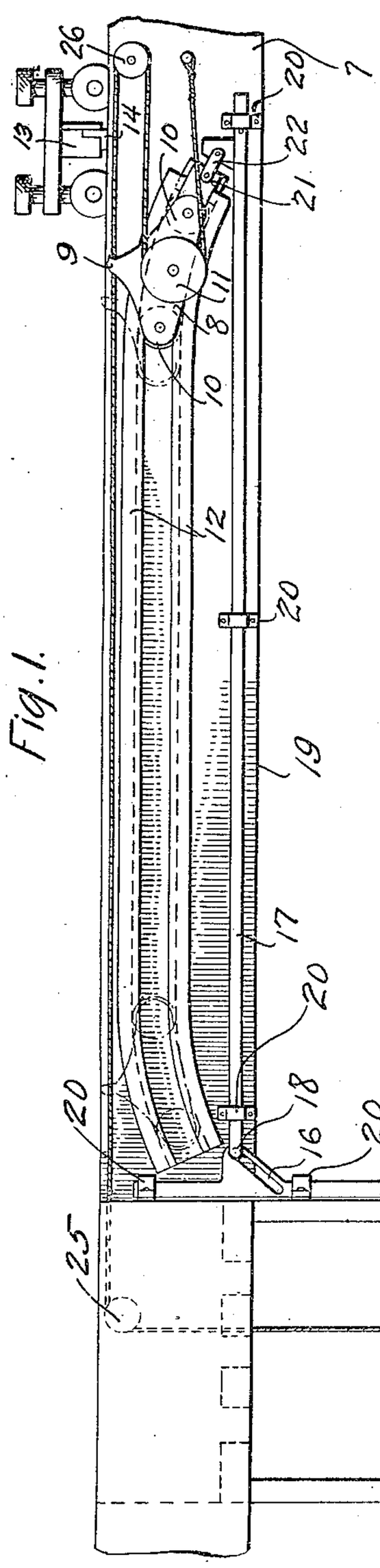

Fig. 1.

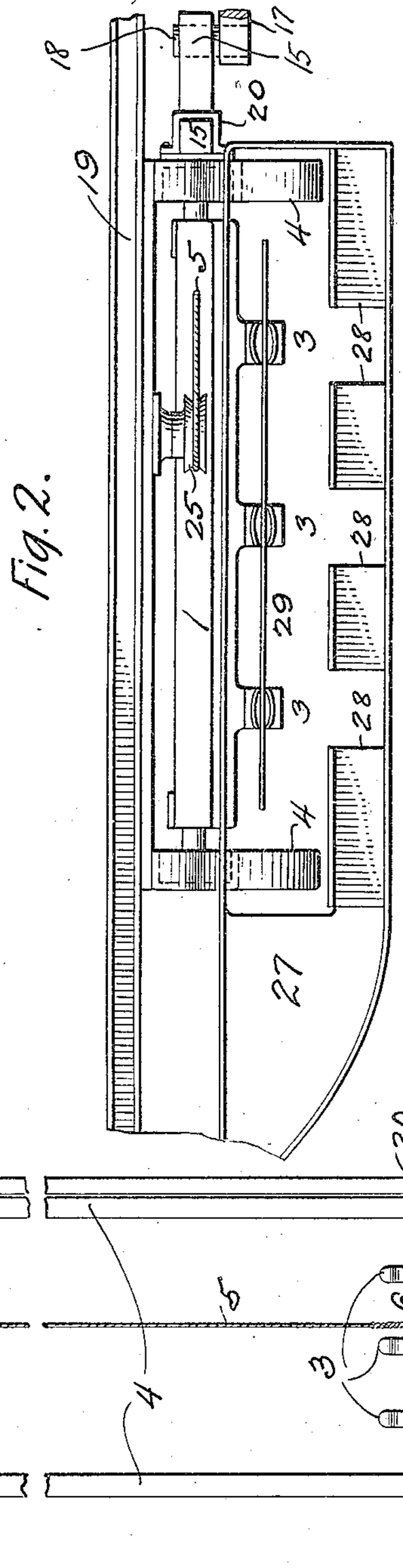

Fig. 2.

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Fig. 3.

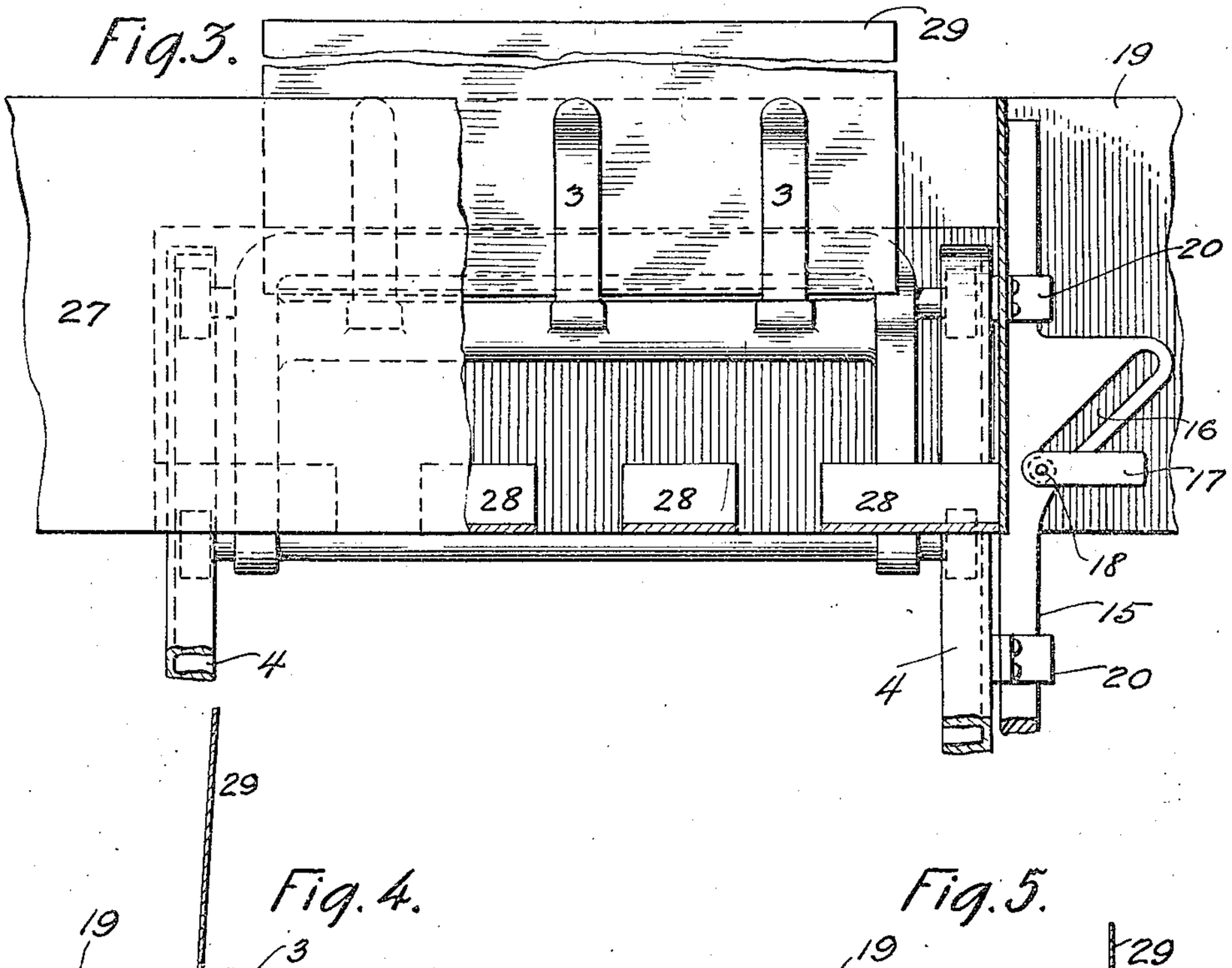


Fig. 4.

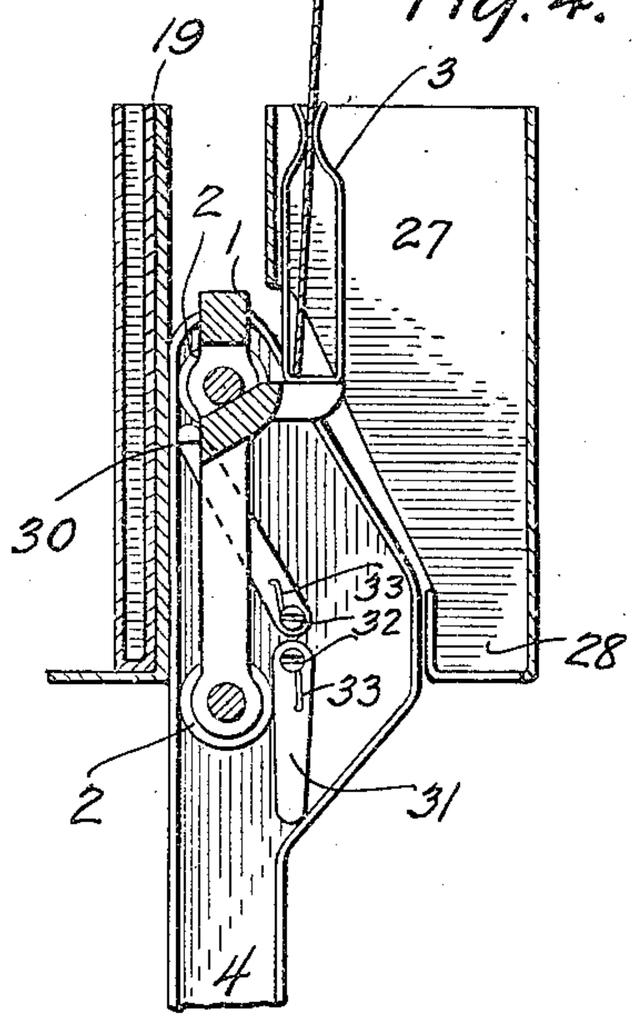
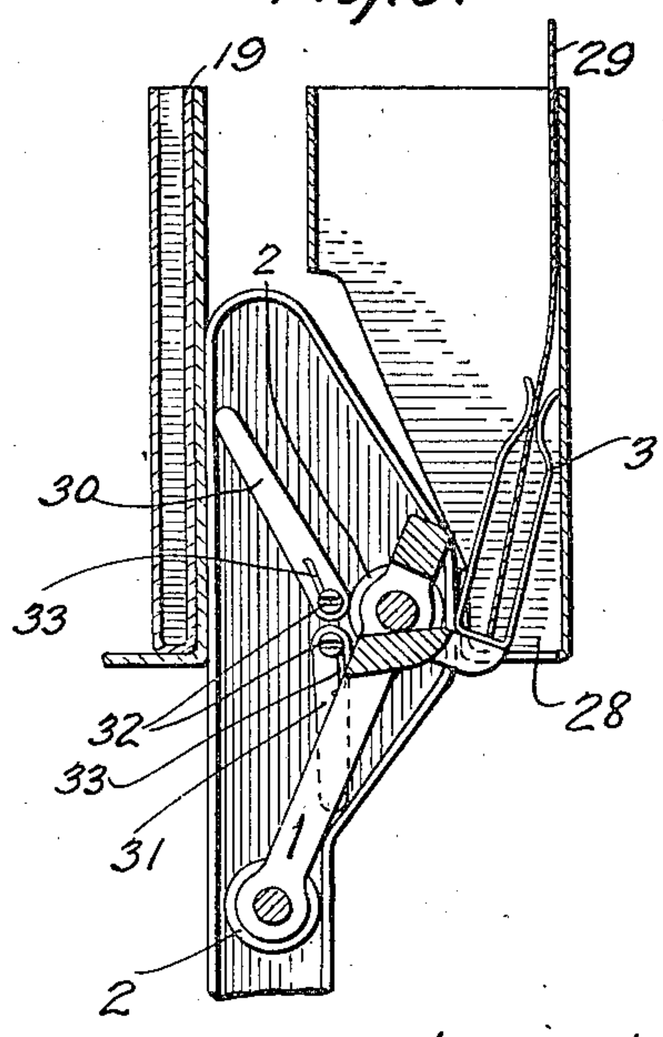


Fig. 5.



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CONVEYER FOR TICKET DISTRIBUTING SYSTEMS

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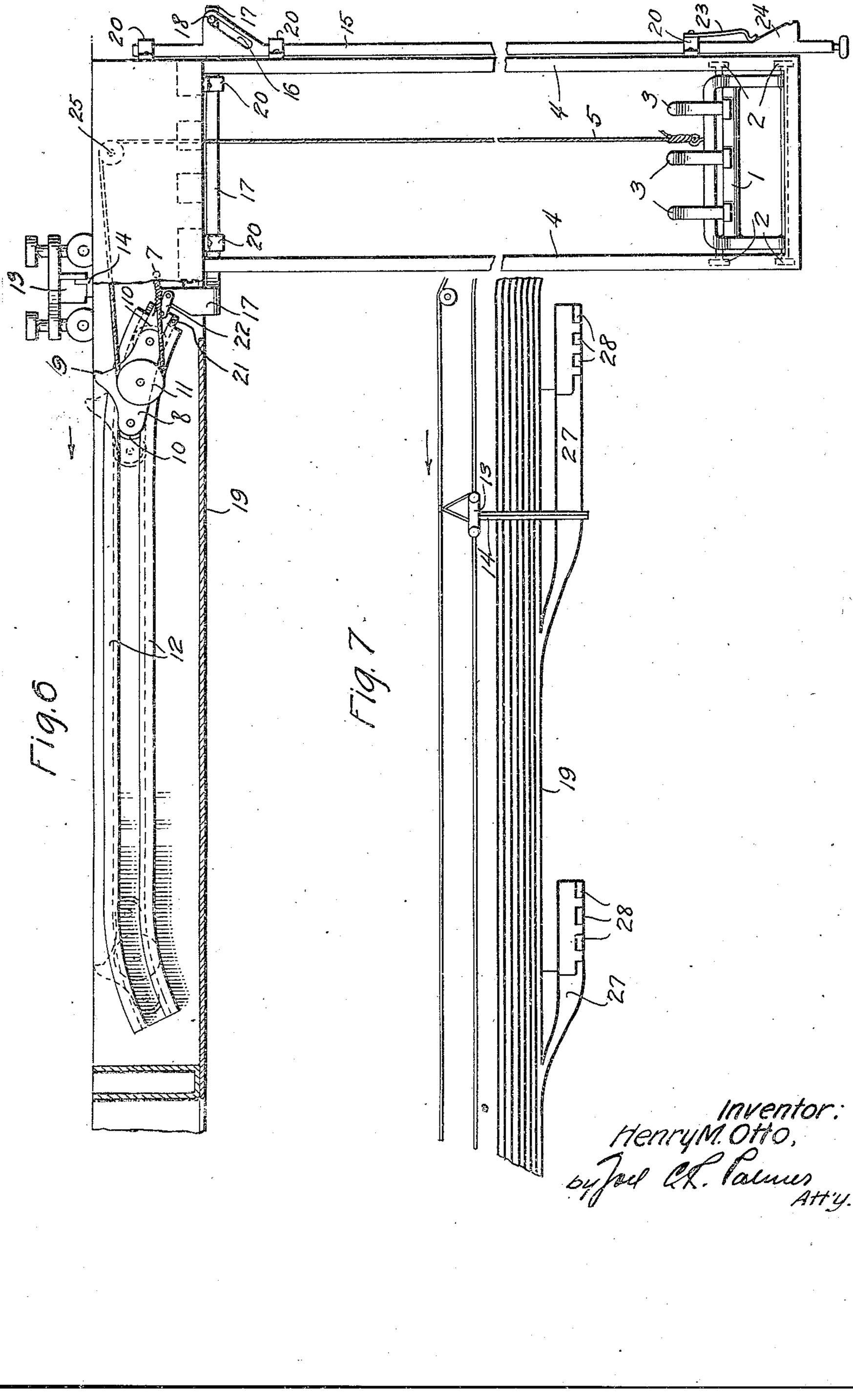

Fig. 6

Fig. 7

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UNITED STATES PATENT OFFICE.

HENRY M. OTTO, OF CHICAGO, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CONVEYER FOR TICKET-DISTRIBUTING SYSTEMS.

Application filed December 8, 1920. Serial No. 429,256.

To all whom it may concern:

Be it known that I, HENRY M. OTTO, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Conveyers for Ticket-Distributing Systems, of which the following is a full, clear, concise, and exact description.

This invention relates to mechanical ticket distributing systems, and particularly to ticket conveyers therefor.

The object of this invention is to employ motive means independent of the operator to move a ticket conveyer from a ticket receiving position to a ticket depositing position, to disengage a ticket from the conveyer and deposit it in the distributing system.

The ticket conveyer or hoist of this invention is particularly applicable to mechanical toll ticket distributing systems, employed in telephone exchanges for the routing of tickets, on which information concerning telephone connections desired has been entered, to the proper switchboard attendants for their action. In systems of the type mentioned it is customary to operate a trolley with a ticket propelling arm on an endless belt, said propelling arm conveying tickets from a recording and distributing desk, where they have been inserted in properly identified guides, to the operators in charge of the class of connections called for on said tickets and, coincident with the above action, propelling any tickets, on which instructions may have been complied with and time notes on the call entered by the switchboard operators, to the filing desk for use of the clerical staff. Heretofore means provided for the deposit of these complete tickets in a return guide by the operators has been actuated manually by the operators.

This invention provides in a mechanical ticket distributing system, a means whereby the switchboard operators may conveniently and reliably hoist completed information tickets from the switchboard shelf level to a return guide of a mechanical ticket distributing system, located at the top of the switchboard and engage said ticket in a spur guide, communicating with said return guide, in proper condition for collection. The power required to operate the hoist mechanism is obtained from the main driving belt of the distributing system and is applied by means of a power connector manually placed in position for power engagement and automatically released therefrom.

Referring to the accompanying drawings, Fig. 1 discloses a side view of the ticket hoisting mechanism and main ticket guide with movable trolley and ticket propelling arm attached thereto in position for operating the hoisting mechanism and collecting the ticket deposited in position for collection. Fig. 2 discloses a top view of the main guide, the ticket hoisting carriage and the spur guide, in which the ticket is placed by said ticket carriage in position for collection into the main ticket guide. Fig. 3 discloses an enlarged side view of the ticket hoisting carriage in position for placing the ticket held therein in the spur guide in condition for collection. A portion of the wall of the spur guide is cut away to more clearly show the construction. Fig. 4 discloses an endwise sectional view of the main ticket guide, the spur guide having a serrated U-shaped channel therein and the power hoisting carriage at the extreme upper limit of its travel with the ticket projecting into the spur guide, but not in its final position for collection. This figure also discloses the means whereby the ticket is brought from its initial position in the spur guide to its final position for collection. Fig. 5 discloses the same view and apparatus as Fig. 4, but with the ticket hoisting carriage in its descending position, and the ticket placed in its final position for collection and about to be released from the holding fingers of the ticket hoisting carriage. Fig. 6 discloses the same view and apparatus as Fig. 1, except that the mechanism for connecting the power is shown at the left side of the ticket hoist. Fig. 7 discloses a top view of straight main ticket guides just after passing a curved section thereof, shown at the right hand side of the figure, two spur guides and hoisting space therein. The spur guide at the left would have its power connecting mechanism arranged as disclosed in Fig. 1. The spur guide at the right would have its power connecting mechanism arranged as disclosed in Fig. 6, a source of power, a trolley track, a

trolley thereon and ticket propelling arm connected thereto and cooperating with said guides are shown.

The operation of the mechanism is as follows:

Referring to Fig. 1, after complying with the instructions indicated on the information ticket, the operator places said ticket in a ticket carriage 1, having guide rollers 2, and ticket holding fingers 3, and operable in substantially vertical guides 4 from the switchboard shelf level to a location adjacent the ticket distributing system guides mounted on top of the switchboard structure. A cable 5 is attached to said carriage frame 1 by cable eye 6, extending therefrom and over a series of pulleys and connecting fixedly with point 7 on the framework of the main ticket guide 19. To raise the ticket carriage a power connector is employed, consisting of a framework 8 having a power engaging finger 9 integral therewith, guide rollers 10 and cable pulley 11 attached thereto, said power connector operable in a guide track 12 curved at the ends in such a way as to leave the power connector normally out of engagement with a source of power, and to release the power connection, when engagement has been effected, at a predetermined point in the upward travel of the ticket carriage. The power is obtained from the main driving belt of the system to which is permanently attached the trolley 13, having a ticket propelling arm 14 engageable with the finger 9 of the power connector, when said power connector is moved up the curve of its guide track a sufficient amount. The cooperation between the power connector and the ticket hoisting carriage is effected by looping the cable 5 over the cable pulley 11 on the power connector frame at a point adjacent the fixed cable connection 7. The cable connection mentioned will give the mechanism a mechanical advantage of substantially one-half, whether the power connector is located at the right side of the carriage guides 4, or at the left side thereof. However, if located on the right side, guide pulleys 25 and 26 are considered desirable, and, if located on the left side, pulley 26 may be dispensed with and 25 retained. A power connector adjusting means is employed consisting of a substantially vertical member 15, having a diagonal slot or cam 16 cut in its upper portion, a lateral member 17 with a pin 18 cooperating with said cam slot 16 and said lateral member 17 slidably attached to the main ticket guide 19 by retaining pieces 20. The above mentioned vertical member is also slidably mounted on the vertical carriage guide 4 by retaining pieces 20. At the opposite end of said lateral member 17 from the pin 18 is attached a block 21 by means of a link 22, said block constituting a stop for the power connector frame 8 when the carriage is in its lowest position. The adjustment of the power connector is effected by manually raising the vertical member 15 which imparts a lateral motion to member 17 by means of the slot and pin before mentioned, and moves block 21 and the power connector frame with which it is in contact at that time from the curved portion of the connector guide track to such a position that the power connector finger 9 is projected upward in the path of an oncoming ticket propeller finger 14. Upon engagement therewith, the power connector is moved through the length of its guide track, pulling the ticket carriage 1 to the top of its guides 4. Upon reaching this position, the power connector runs into a second curved portion thereof which depresses the power finger 9 to such a position as to lose its engagement with the source of power. Upon release of its connection with the source of power, the ticket carriage falls through its guides by force of gravity and returns the power connector to its original end of the guide track, at which location it comes in contact with the block 21 and by this impact moves the block and its connected members into the original position and ready for a repetition of the above complete operation. To retain the power connector adjusting means in its operated position until the ticket carriage is raised, a clip spring 23 attached to the carriage guide 4 is arranged to cooperate with a cam 24 mounted on the vertical member 15. Impact with the stop block 21 serves to disengage said spring 23 from cam 24 and return the apparatus to original condition as before mentioned.

Referring to Fig. 2, there is disclosed a top view of the ticket carriage 1, and ticket retaining fingers 3, the top of carriage guides 4 and the spur guide 27, composed substantially of two side walls and a floor cut away in such fashion as to freely admit the ticket 29 held in the said fingers 3, and bent up so as to form a short discontinuous channel 28 intermediate the said side walls for disengaging said ticket 29 and retaining it in a position for collection.

Referring to Figs. 4 and 5 there is disclosed a main ticket guide 19, a spur guide 27 with guide channel 28, said spur guide having a portion cut away in such manner as to admit the enlarged heads of the carriage guides 4 intermediate said main guide and said spur guide. A ticket carriage 1 is shown in its position of extreme upward travel in said carriage guides 4, carriage fingers 3 mounted on the carriage framework at the side of and in a plane parallel thereto, the ticket 29 flexibly held in said fingers and projecting into the spur guide 27 in a substantially vertical position. In the enlarged heads of said carriage guides are mounted cams 30 and 31 retained by

screws 32 and springs 33 in such a position that the ticket carriage upon its ascent will push cam 30 to one side until the first guide wheel 2 has passed, whereupon cam 30 returns to its normal position by action of spring 33. Upon its descent ticket carriage 1 must now pass over a different route than that traversed upon ascent due to the guiding action of cam 30, which forces the ticket carriage toward the side of the spur guide 27 and the fingers of said ticket carriage through the openings between the before mentioned discontinuous portions of guide channel 28, the portions of said guide channel 28, hooking the lower edge of the ticket 29, and disengaging it from the ticket holding fingers 3, whereupon the ticket carriage continues in its descent pushing cam 31 to one side until the upper guide wheel of the carriage moves beyond said cam 31, whereupon it returns to its normal position as shown in Fig. 4 by action of its spring 33. From this point the empty ticket carriage descends the substantially vertical carriage guides, until arrested by block 21 shown in Fig. 1 as before mentioned.

What is claimed is:

1. In a ticket distributing system, in combination, a ticket hoisting carriage, means for holding a ticket therein, a continuously operating source of power, means for connecting said carriage with said source of power, means for automatically disengaging said carriage from said power and means for automatically disengaging said ticket in a condition for collection.

2. In a mechanical ticket distributing system, a ticket hoisting carriage to travel in substantially vertical guides, means for holding a ticket flexibly in said carriage, a continuously operating source of power, means for connecting said carriage with said source of power, means for automatically disengaging said carriage from said power and means for automatically disengaging a ticket from said carriage in a position for collection.

3. In a mechanical ticket distributing system, a ticket hoisting carriage to travel in substantially vertical guides, fingers on said carriage adapted to hold a ticket by friction, a continuously operating source of power, means for connecting said carriage with said source of power, means for automatically disengaging said carriage from said power and means for automatically disengaging a ticket in a position for collection.

4. In a mechanical ticket conveying system, a ticket hoisting carriage, means for holding a ticket therein, a source of power comprising a continuously moving belt and a power connector engageable therewith and connected to said carriage by a cable and pulley system.

5. In a mechanical ticket conveying system, a ticket hoisting carriage, means for holding a ticket therein, a source of power comprising a driving belt and a power connector engageable therewith and connected to said carriage by a cable and pulley system arranged to lift the ticket carriage at a greater speed than that of the driving belt from which power is derived.

6. In a mechanical ticket conveying system, a ticket hoisting carriage, means for holding a ticket therein, a source of power comprising a driving belt and a power connector engageable therewith, and connected to said carriage by a cable and pulley system arranged to lift the ticket carriage at a speed substantially equal to twice that of the driving belt from which power is derived.

7. In a ticket hoisting mechanism, a retaining frame therefor, a ticket hoisting carriage, a source of power, a power connector arranged to travel in a guide track, a cable pulley on said power connector, a cable having one end attached to said hoisting carriage, thence passing over said power connector pulley and having its other end fixedly attached to some point on said retaining frame; in such a manner as to give the hoisting mechanism a mechanical advantage of one half.

8. In a mechanical ticket conveyer system, a ticket hoisting carriage, means for holding a ticket therein, a source of power, a power connector engageable therewith, consisting of a frame work having a power engaging finger integral therewith, guide wheels attached to the frame, a pulley wheel attached thereon serving as a connecting medium between said hoisting carriage and said power connector, and a track in which said power connector guide wheels may travel.

9. In a ticket hoisting mechanism, a ticket hoisting carriage and a power connector adapted to occupy two positions horizontally, said carriage and connector arranged when in motion to approach a common point at one time, and to recede from said point at another time dependent on the location of said power connector.

10. In a ticket hoisting mechanism, a source of power, a ticket hoisting carriage to travel in a substantially vertical direction, a power connector attached thereto to travel in a substantially horizontal direction, and a track therefor, straight in the midportion to keep said power connector in engagement with said source of power and curved at both ends to disengage said power connector from said source of power.

11. In a mechanical ticket distributing system, a source of power residing in a moving belt, a ticket collector trolley mechanism attached thereto, a trolley track therefor, a ticket hoisting carriage, a movable power connector therefor located obliquely beneath

said power belt of trolley track, a power connector guide track parallel to the trolley track throughout its midportion, but so curved at both ends as to leave said power connector free of engagement with said trolley mechanism.

12. In a ticket hoisting mechanism, a retaining frame therefor, a source of power, a trolley attached thereto, a power connector, a guide track therefor so bent at both ends as to normally maintain said power connector out of engagement with said source of power at both ends of the travel of said power connector, and means for moving said power connector into position for engaging said trolley.

13. In a ticket hoisting mechanism, a retaining frame therefor, a source of power, a trolley attached thereto, a power connector, a guide track therefor so bent at both ends as to normally maintain said power connector out of engagement with said source of power at both ends of the travel of said power connector, and manually operated means for moving said power connector into position for engaging said trolley.

14. In a ticket hoisting mechanism, a retaining frame therefor, a source of power, a trolley attached thereto, a power connector, a guide track therefor so bent at both ends as to normally maintain said power connector out of engagement with said source of power at both ends of the travel of said power connector, and manually operated means consisting of two main members substantially at right angles to each other and slidably attached to said frame for moving said power connector into position for engaging said trolley.

15. In a ticket hoisting mechanism, a retaining frame therefor, a source of power, a trolley attached thereto, a power connector, a guide track therefor so bent at both ends as to normally maintain said power connector out of engagement with said source of power at both ends of the travel of said power connector, and manually operated means consisting of two main members slidably connected in such manner that an upward motion of one member imparts a lateral motion to the other member, said members being slidably attached to said frame for moving said power connector into position for engaging said trolley.

16. In a ticket hoisting mechanism, a frame-work therefor, a source of power, a ticket hoisting carriage, a power connector, a guide track therefor, a cable fixedly attached at one end to said frame-work, passing around a pulley on said power connector, and attached at its other end to said ticket hoisting carriage, and a manually operated means, consisting of a vertical member, a lateral member slidably connected thereto, a block connected with one end of said lateral member, said power connector normally resting against said block, all collectively so arranged that an upward motion of said vertical member will move said power connector into proper position for engagement with said source of power.

17. In a ticket hoisting mechanism, a framework therefor, a source of power, a power connector, a means consisting mainly of a vertical member, and a lateral member with block attached thereto for adjusting said power connector in a position engageable with said source of power, a cam on one of said adjusting members, and a spring clip attached to said frame-work and engageable with said cam to retain said adjustment means in its operated position until subsequently released.

18. In a ticket hoisting mechanism, a framework therefor, a source of power, a power connector, a means consisting mainly of a vertical member, and a lateral member with block attached thereto for adjusting said power connector in a position engageable with said source of power, a cam on one of said adjusting members, and a spring clip attached to said frame-work and engageable with said cam to retain said adjustment means in its operated position until subsequently released by impact of said power connector on said block.

19. In a mechanical ticket conveying system, a main ticket guide, a spur guide communicable with said main guide, a ticket hoisting carrage, means for holding a ticket therein, means for hoisting said carriage, substantially vertical guides for said carriage, and means at the top of said carriage guides for causing said carriage to descend over a different route than that used for ascending.

20. In a mechanical ticket conveying system, a main ticket guide, a spur guide communicable with said main guide, a ticket hoisting carriage, means for holding a ticket therein, means for hoisting said carriage, substantially vertical guides for said carriage, and means at the top of said carriage guides for automatically causing said carriage to descend over a different route than that used for ascending.

21. In a mechanical ticket conveying system, a main U-shaped ticket guide, a spur guide having three walls, one continuous, a second partially cut away, and a third wall intermediate the before mentioned walls shorter in height and discontinuous in its length, and a base for said spur guide extending from and connecting said first wall to said third wall except at such locations as said third wall becomes discontinuous.

22. In a mechanical ticket conveying system, a ticket carriage, fingers for holding a ticket in said carriage, a main ticket guide, a spur guide comprising two main side walls,

a base joining said side walls, except at the side corner which is cut away adjoining said main ticket guide for admission of a ticket therethrough and a plurality of slots in the remaining portion of said base extending from said cut-away corner to the other main side wall for admission of said ticket fingers therethrough, and a bent-up edge on the remaining portions of said base intermediate said main side walls to form a temporary resting place communicating with said main ticket guide for a ticket.

23. In a ticket conveying system, the combination of a main ticket guide, a spur guide communicating therewith, a ticket hoisting carriage, means for holding a ticket therein, and said carriage cooperable with said spur guide to place a ticket therein in position for propulsion into said main ticket guide.

24. In a ticket conveying system, a main ticket guide, a spur guide communicating therewith, a ticket hoisting carriage, means for holding a ticket therein, guides for said carriage arranged in their main portions to maintain said carriage in a substantially vertical plane during both ascent and descent, and arranged in their upper portions to maintain said carriage in a substantially vertical plane during ascent and in a varying oblique plane during descent.

25. In a mechanical ticket conveying system, a main ticket guide, a spur guide communicating therewith, a ticket hoisting carriage, means for holding a ticket therein, guides for said carriage having an enlarged portion at their upper ends, and a plurality of cams in said enlarged carriage guide ends for causing said ticket carriage to follow a different route in descent from that used in ascent.

26. In a mechanical ticket conveying system, a main ticket guide, a spur guide communicating therewith, a ticket hoisting carriage, means for holding a ticket therein, said spur guide having a cornerwise opening to freely admit said ticket, said spur guide having a serrated U-shaped channel so located as to allow said carriage on its ascent to move said ticket into said spur guide in a substantially vertical position, and on the descent of said carriage to allow it to move through the cornerwise opening of said spur guide, said serrated U-shaped channel engageable with a ticket for disengaging it from said carriage and retaining a ticket in position for collection.

27. In a mechanical ticket conveying system in combination, a main ticket guide, a spur guide with a cornerwise opening and serrated U-shaped channel adajacent to said opening, a ticket hoisting carriage, means for holding a ticket therein, and a pair of guides for said carriage with enlarged heads and spring actuated carriage guiding cams therein, said enlarged carriage guide heads being adapted to fit in said cornerwise opening for effecting the transfer of said ticket from said carriage to said serrated U-shaped channel of said spur guide.

28. In a mechanical ticket hoisting mechanism in combination, a ticket hoisting carriage, comprising a substantially rectangular frame-work, guide wheels rotatably attached at the four corners and outside thereof, ticket holding fingers attached near the top and in a parallel plane at one side of said frame-work, a cable connection on top of said frame-work, a pair of channel shaped carriage guides with enlarged heads, and spring actuated cams in said heads engageable with said guide wheels for automatically routing the travel of said carriage.

29. In a ticket conveying system, a carriage, a continuously driven belt, means intermittently engageable therewith, and means interconnecting said means and said carriage for moving said carriage.

30. In a ticket conveying system, a ticket hoisting carriage adapted to travel in a vertical plane, means for holding a ticket therein, a trolley adapted to travel in a horizontal plane, a propeller finger attached to said trolley, a power connector engageable with said propeller finger, and means to impart the horizontal movement of said trolley to the hoisting carriage upon engagement of said propeller finger and said power connector, the speed of the hoisting carriage to be twice the speed of said trolley.

In witness whereof, I hereunto subscribe my name this 30th day of November, A. D., 1920.

HENRY M. OTTO.