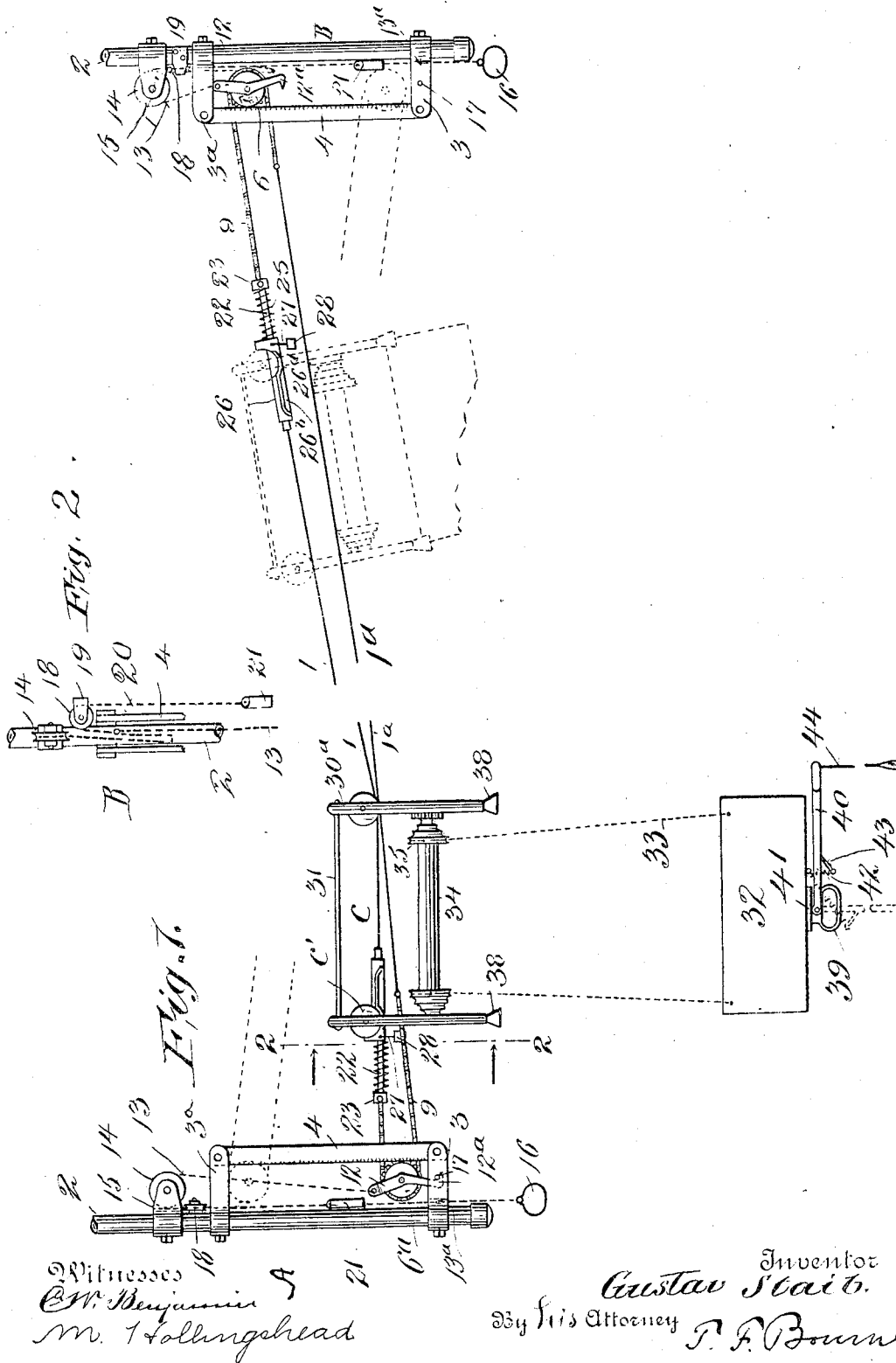


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PATENTED JAN. 16, 1906.

G. STAIB.  
STORE SERVICE APPARATUS.  
APPLICATION FILED FEB. 10, 1905.

2 SHEETS—SHEET 1.



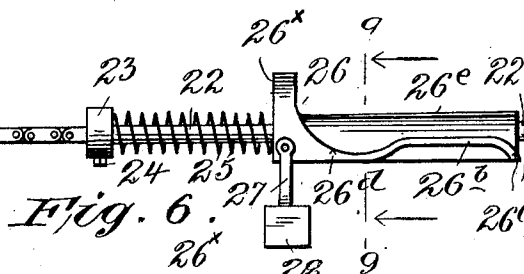
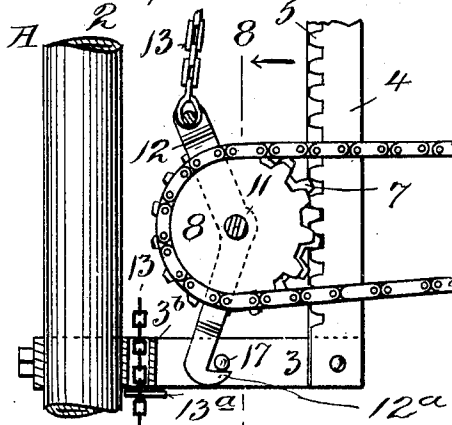
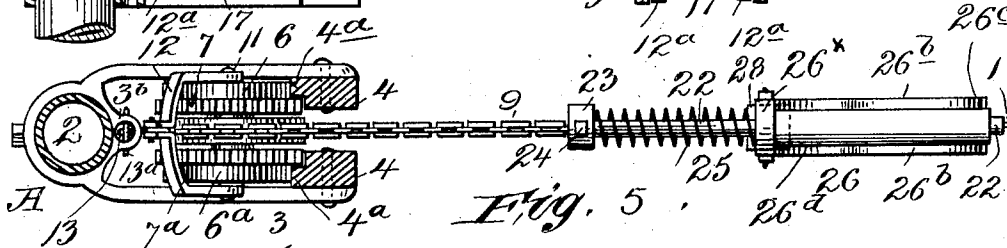
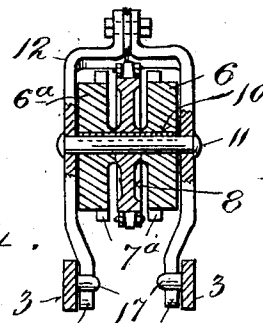
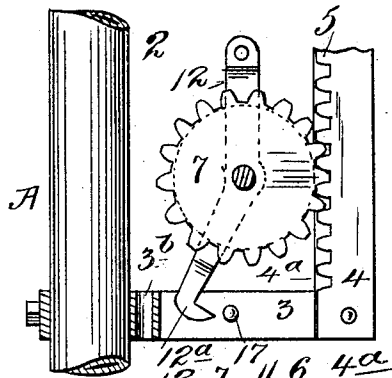
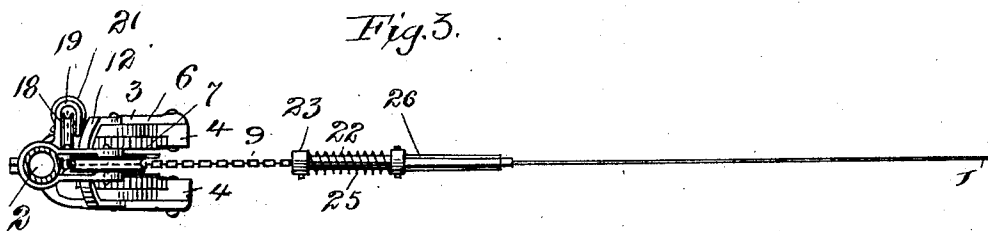
Witnesses  
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W. T. Hollingshead

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APPLICATION FILED FEB. 10, 1905.

2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

GUSTAV STAIB, OF NEW YORK, N. Y.

## STORE-SERVICE APPARATUS.

No. 810,092.

Specification of Letters Patent.

Patented Jan. 16, 1906.

Application filed February 10, 1905. Serial No. 245,005.

*To all whom it may concern:*

Be it known that I, GUSTAV STAIB, a citizen of the United States, residing in New York city, borough of Richmond, New York, have invented certain new and useful Improvements in Store-Service Apparatus, of which the following is a specification.

My invention relates to the class of store-service apparatus wherein a pair of wires or tracks extending between stations are adapted to be elevated at one station and depressed at the opposite station to provide a proper inclination of the wires from one station to another to cause the travel of a carrier on the wire; and one of the objects of my invention is to provide improved means for causing the traveler or wire-shifter at one station to operate the traveler at the other station by means of the interposed wires or tracks, whereby the travelers will move substantially the same distance up and down.

Another object of the invention is to provide improved means for locking the lowered traveler in its lowermost position, whereby through connected gearing and the wires or tracks the other traveler will be held in an elevated position.

Another object of the invention is to provide improved means for checking the momentum of the carrier when it reaches a station.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a side elevation of a store-service apparatus embodying my invention. Fig. 2 is a detail view illustrating means for providing slack in certain of the chains for the purpose of raising the operating-handles of the chains when they are not being used and providing slack in chains to permit the lock of the traveler to operate. Fig. 3 is a plan view of the apparatus at one station, part being in section. Fig. 4 is an enlarged detail view, partly in section through the lower portion of the operating devices at a station. Fig. 5 is a horizontal sectional view, enlarged, showing the carrier-brake. Fig. 6 is a side view of Fig. 5, partly in section. Fig. 7 is a sectional view on the line 8 8 in Fig. 6 looking in the direction of the arrows, and Fig. 8 is a sectional view on the line 9 9 in Fig. 6.

Similar numerals and letters of reference indicate corresponding parts in the several views.

The letters A and B indicate generally stations at the ends of a track or way in a store-

service apparatus, and 1 1<sup>a</sup> indicate the upper and lower members of a wire or track extending between the stations, a carrier (indicated generally at C) being arranged to travel upon the wire 1. At 2 are supports, which may be in the form of tubes or rods depending from a ceiling or otherwise supported and which may be braced in any well-known manner. To the supports 2 are attached brackets 3 3<sup>a</sup>, (shown in bifurcated form,) having vertically-disposed guide-rails 4 attached to the forward ends of the brackets, racks 5, made integral with or otherwise attached to the guides 4, facing the respective supports 2. (See Figs. 4, 5, 6.)

The travelers I have shown that connect with the wires 1 1<sup>a</sup> comprise rollers 6 6<sup>a</sup>, gear-wheels 7 7<sup>a</sup>, and a sprocket-wheel 8, said rollers being adapted to ride on the smooth inner faces 4<sup>a</sup> of the guides 4, the gears 7 7<sup>a</sup> meshing with racks 5, the sprocket 8 being interposed between the gear-wheels 7 and receiving a suitable chain 9. The arrangements so far described are the same at both stations, and the respective chains 9 are attached at their ends to the wires 1 1<sup>a</sup>. The rollers 6 6<sup>a</sup>, gears 7 7<sup>a</sup>, and sprocket 8 of each traveler are secured to rotate together, as by a key 10, and are mounted upon a shaft 11, carried by a yoke or frame 12, which yokes are connected with operating-chains 13, that pass over pulleys 14, shown carried by brackets 15, connected with the supports 2, said chains hanging downwardly and being provided with handles 16. The brackets 3 are shown provided with the guide or eye 3<sup>b</sup>, through which the chain 13 passes, and the chain is shown provided with a pin 13<sup>a</sup> to engage the bracket to limit the upward movement of handle 16. The arrangement so far described is such that as one of the travelers is elevated—say at station A in Fig. 1 (by pulling down upon handle 16 of chain 13)—its gears 7 7<sup>a</sup> rotating in mesh with the racks 5 will cause its chain 9 to travel, thereby pulling the wire 1<sup>a</sup> and rending off the wire 1, and at the opposite station B the chain 9 will cause the gears 7 7<sup>a</sup> of the traveler to rotate in the direction of the arrow, thereby causing the corresponding traveler to descend, whereby the tracks are elevated at station A and simultaneously depressed at station B, the rollers 6 6<sup>a</sup> by riding upon the guiding surfaces 4<sup>a</sup> serving to keep the travelers in proper alinement. Likewise, when the traveler at station B is raised the correspond-

ing chain 9 will pull on the wire 1<sup>a</sup> and rend off the wire 1, and thereby the traveler at station A will descend. By having the gears 7 7<sup>a</sup> project into racks 5 beyond the surfaces 4<sup>a</sup> of the guides 4 the projecting gears in conjunction with the guides 4 prevent lateral movement of the traveler, the tension of the chains 9 upon the travelers maintaining the gears in mesh with the racks 5, and as the gears at the two stations move up and down simultaneously and equally the normal tension in the wires 1 1<sup>a</sup> and chains 9 will be equalized and maintained.

In order to hold the raised traveler in its elevated position while the carrier C is traveling from the corresponding station to the other station, I provide means for locking the travelers in their lowered positions. To this end I provide the yokes 12 with hooks 12<sup>a</sup> on the lower extensions of the yokes, adapted to engage pins 17 on the fork 3 when the traveler is lowered. (See Fig. 6.) The yoke 12 and hook 12<sup>a</sup> are so located with respect to shaft 11 and pins 17 that when the traveler is lowered and the chain 13 is slack above the yoke the hooks will be caused to swing by gravity under the pins 17 to keep the traveler lowered; but when the chain 13 is drawn upon the yoke will swing forwardly, and thereby withdraw the hooks from the pins 17 to release the traveler.

In order to keep the handles 16 of chains 13 normally elevated, so as not to be in the way of persons below the stations, I provide a pulley 18, shown mounted upon bracket 19, secured to support 2, in proximity to roller 14, over which pulley a chain 20 passes and at one end carries a weight 21 and at the other end is attached to chain 13, (see Fig. 2,) the length of chain 20 and its point of connection with chain 13 being such that when handle 16 is not being pulled down weight 21 by pulling on chain 20 will raise chain 13 until its pin 13<sup>a</sup> engages fork 3, holding the handle 16 elevated substantially as in Fig. 1, slack thereby being provided in chain 13. (See Fig. 2.) Such slack in chain 13 permits yoke 12 to swing rearwardly to cause engagement of its hooks 12<sup>a</sup> with pins 17. The main slack in chain 13 will be caused when the traveler is elevated, as in Fig. 1 and as illustrated diagrammatically in Fig. 2.

At each end of wire 1 I provide a braking device to retard and stop the travel of carriage C toward the station, and the arrangements I have shown for this purpose are as follows: At 22 is a tube placed upon wire 1 and abutting against a stop or block 23, secured over the connection between chain 9 and wire 1, as by a screw 24, and at 25 is a spiral spring surrounding tube 22 and abutting against stop 23. At 26 is a brake-shoe shown in the form of a block having a lower recess 26<sup>a</sup> mounted upon tube 22, (see Fig. 8,) the shoe resting against spring 25 and adapted to

slide upon tube 22, said tube 22 thereby taking wear from the wire 1 by reason of movement of shoe 26. The shoe 26 has an upward extension or abutment 26<sup>x</sup> at the inner end, against which the traveling wheel C' of carrier C may abut, and on its opposite sides the shoe 26 has ledges or flanges 26<sup>b</sup>, which are inclined downwardly at their forward ends at 26<sup>c</sup> and are depressed in the form of recesses 26<sup>d</sup> adjacent to the abutment or stop 26<sup>x</sup>, (see Fig. 6,) into which recesses the wheel C' of carrier C drops or rests. When the carrier-wheel reaches the braking-shoe, its flanges ride upon the ledges 26<sup>b</sup>, drop into the recesses 26<sup>d</sup>, and rest against the abutment 26<sup>x</sup>, the friction of the shoe on tube 22 checking the carrier, and the force of the impact is taken up by spring 25, which is resisted by block 23. The carrier will remain in this position until the track is elevated, whereupon the carrier will travel down the incline, impetus being given to the carrier by the sudden stoppage of the traveler in rising when the extreme limit of pull upon the chain 13 is reached, the forward travel of the chain further assisting the carrier. The spring 25 then pushes the shoe forwardly. By preference the annular grooves in the wheels C' of the carrier are deeper than the distance from the ledges 26<sup>b</sup> to the surface 26<sup>c</sup> of the braking-shoe, so that the central hub portion of the wheel C' will not ride upon the surface 26<sup>c</sup>, but the flanges of the wheel will ride upon the ledges 26<sup>b</sup>, so as to overcome the tendency of the wheel C' to slip sideways or fall off the brake-shoe. To keep the brake-shoe from falling off the wire 1 or its tube 22, I provide arms 27 depending from the shoe 26 and connect the weight 28 to said arms, whereby the brake-shoe is maintained upon wire 1 in proper operative position and prevented from falling to the floor.

My invention is not limited to the details of construction shown and described, as they may be varied without departing from the spirit thereof.

In this application I do not claim the carrier or its parts illustrated in the drawings, but I have filed a divisional application for patent on the same on December 6, 1905, Serial No. 290,514.

Having now described my invention, what I claim is—

1. A store-service apparatus comprising upwardly-disposed guides located at opposed stations, travelers guided by said guides, an endless connection between said travelers, wheels comprised in and connecting said travelers with said endless connection, and means for causing said wheels to rotate during the operation of the travelers for operating said endless connection by the vertical movement of one traveler to cause the other traveler to descend, substantially as described.

2. A store-service apparatus comprising a plurality of racks located at opposed stations, travelers having gears meshing with said racks, a conveyer-track extending between said stations, and means for causing the rotation of said gears to impart longitudinal movement to the track to operate the corresponding traveler, substantially as described.

3. A store-service apparatus comprising upwardly-disposed racks located at opposed stations, travelers having gears meshing with said racks, sprockets connected with said gears, and an endless track between said stations provided with chains meshing with said sprockets, whereby as one traveler is raised it will operate the track and chains to cause the opposite traveler to descend, substantially as described.

4. A store-service apparatus comprising upwardly-disposed racks located at opposed stations, travelers having gears meshing with said racks, sprockets connected with said gears, chains passing over said sprockets, wires connecting the corresponding ends of opposed chains, and means for elevating the travelers, whereby as one traveler rises the chains and wires will operate the gear of the other traveler to cause the latter to descend, substantially as described.

5. A store-service apparatus comprising a pair of upwardly-disposed guides located at opposed stations, racks associated with said guides, travelers at each station having rollers and gears for coacting with the associated guides and racks, said travelers having sprocket-wheels, an endless connection between the travelers provided with chains passing over said sprockets, and means for elevating the travelers, whereby when one traveler is elevated the chains and connection will be moved to cause the other traveler to descend, substantially as described.

6. A store-service apparatus comprising upwardly-disposed guides located at opposed stations, travelers guided by said guides, a track between said travelers, flexible connections for operating each traveler, pulleys over which such connections pass, a weight connected with the free portion of each connection, and pulleys over which said weights pass, whereby the lower free ends of the flexible connections are kept raised, substantially as described.

7. A store-service apparatus comprising guides located at opposed stations, travelers guided by said guides, a track connected with said travelers, locks connected with the travelers for holding them in a lowered position, means for raising said travelers and for simultaneously releasing said locks, substantially as described.

8. A store-service apparatus comprising upwardly-disposed guides located at opposed stations, travelers guided by said guides, a

track connected with said travelers, hooks movably connected with said travelers, projections to receive said hooks, flexible connections connected with said hooks, and pulleys for said flexible connections, whereby when said connections are pulled the travelers will be unlocked and elevated, substantially as described.

9. A store-service apparatus comprising racks located at opposed stations, travelers provided with gears meshing with said racks, yokes connected with said travelers and provided with hooks, projections to be engaged by said hooks, flexible connections connected with said yokes, and pulleys receiving said connections, said hooks being supported in position to engage the projections when the travelers are lowered, the flexible connections when pulled serving to release the hook from the projections and elevate the travelers, substantially as described.

10. A store-service apparatus comprising pairs of upwardly-disposed guides located at opposed stations, means for supporting said guides to have a space between them, racks associated with said guides, travelers provided with rollers engaging the guides and also having gears engaging the racks, yokes movably connected with the travelers, hooks connected with the yokes, projections to be engaged by the hooks, flexible connections extending from the yokes, and pulleys receiving said connections, substantially as described.

11. A store-service apparatus comprising pairs of upwardly-disposed guides located at opposed stations, means for supporting said guides to have a space between them, racks associated with said guides, travelers provided with rollers engaging the guides and also having gears engaging the racks, yokes movably connected with the travelers, hooks connected with the yokes, projections to be engaged by the hooks, flexible connections extending from the yokes, pulleys receiving said connections, a weight associated with each traveler, a flexible connection extending from each weight and connected with the flexible connection of the corresponding traveler, and pulleys receiving the connections of the weights, whereby said weights keep the free part of the first-named connections elevated when not in use, substantially as described.

12. In a store-service apparatus the combination of a track, with a brake-shoe movably carried thereby and having an abutment at one end, means to suspend the brake-shoe upon the track, a spiral spring surrounding the track, and an abutment on the track, the spring being located between the abutment and the brake-shoe, substantially as described.

13. In a store-service apparatus the combination of a track, with a tube thereon, an

abutment on the track adjacent to the tube, a spiral spring surrounding the tube and bearing against the abutment, and a brake-shoe mounted upon the tube and having an abutment, said shoe bearing against said spring, substantially as described.

14. In a store-service apparatus the combination of a track, with a tube thereon, an abutment on the track adjacent to the tube, a spiral spring surrounding the tube and bearing against the abutment, a brake-shoe mounted on the tube and having an abutment, said shoe bearing against the spring, and means to support the brake-shoe slidably upon the tube, substantially as described.

15. In a store-service apparatus the combination of a track, with a shoe mounted thereon, and a resilient stop for the shoe, said shoe having ledges on opposite sides and an abutment at one end, said ledges being depressed adjacent to the abutment to receive the wheel of the carrier, substantially as described.

16. In a store-service apparatus the combination of a track, with a tube mounted thereon, a brake-shoe having a recess on its under surface mounted upon said tube, a spring to resist the thrust of the shoe, said shoe having an abutment adjacent to the spring, and ledges on the shoe on the side of the abutment opposite the spring, substantially as described.

17. In a store-service apparatus the combination of a track, with a tube mounted thereon, a brake-shoe having a recess on its under surface mounted upon said tube, a spring to resist the thrust of the shoe, said shoe having an abutment adjacent to the spring, ledges on the shoe on the side of the abutment opposite the spring, and arms depending from the shoe to maintain the shoe upon the tube, substantially as described.

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