

989,899.

2 SHEETS—SHEET 1.



H. L. FERRIS.  
OVERHEAD SWITCH.  
APPLICATION FILED MAR. 4, 1910.

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Patented Apr. 18, 1911.

2 SHEETS—SHEET 2.

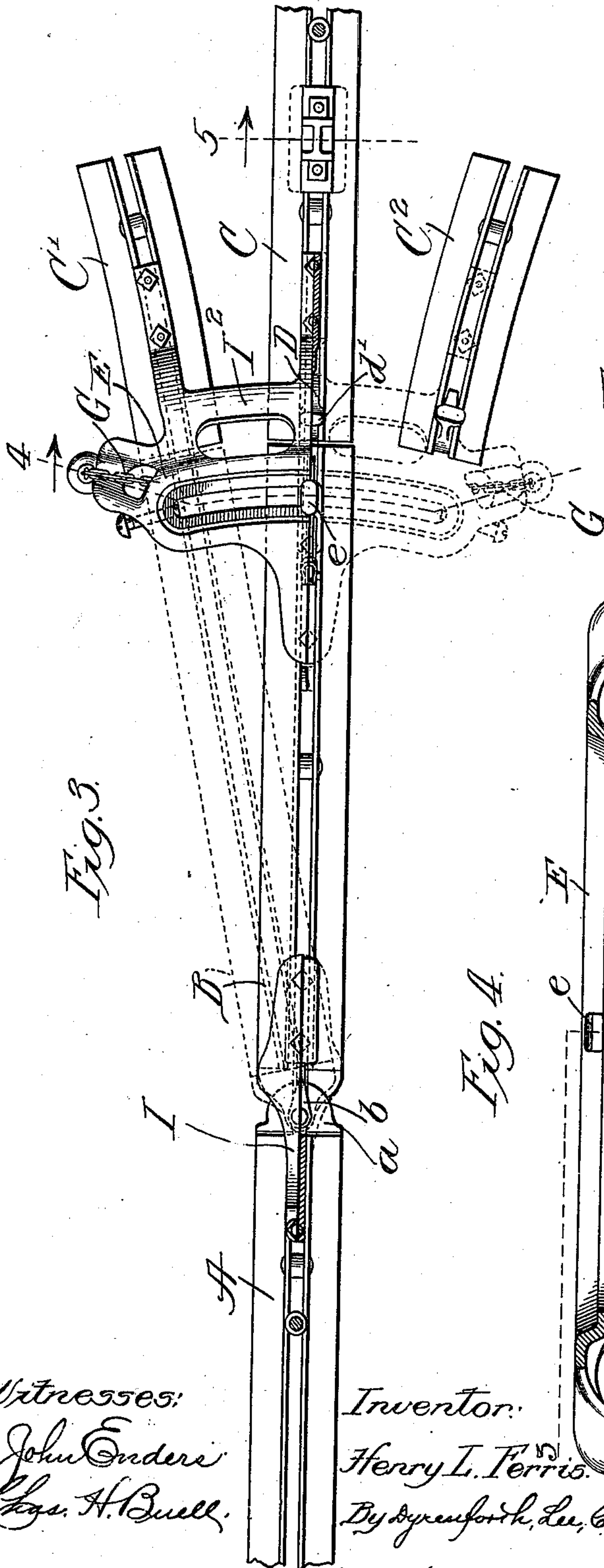


Fig. 3.

Fig. 5.

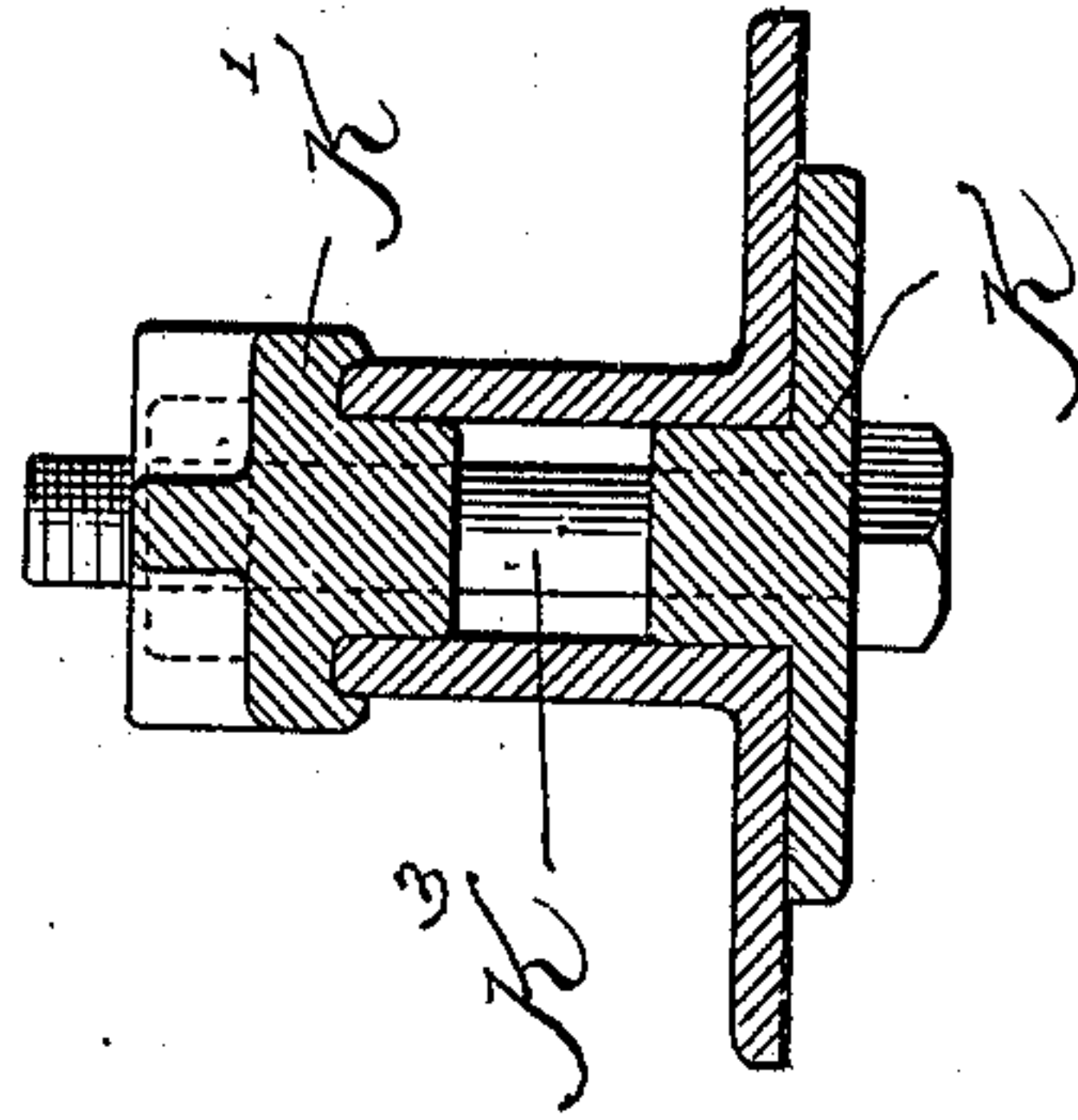
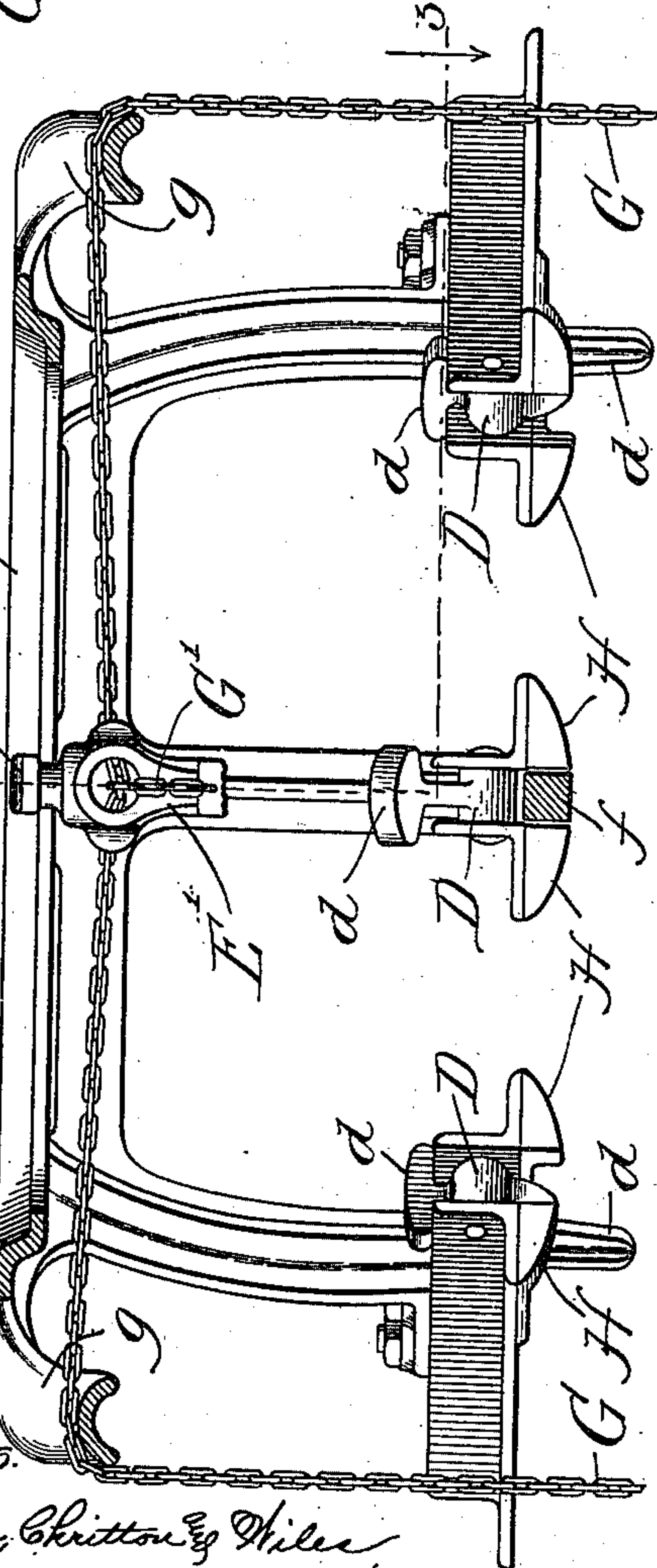


Fig. 4.



Witnesses:  
John Ender  
Chas. H. Buell.

Inventor:  
Henry L. Ferris.  
By Seymour H. Lee, Chittenden & Miles  
Attys.



# UNITED STATES PATENT OFFICE.

HENRY L. FERRIS, OF HARVARD, ILLINOIS, ASSIGNOR TO HUNT, HELM, FERRIS & COMPANY, OF HARVARD, ILLINOIS, A CORPORATION OF ILLINOIS.

## OVERHEAD SWITCH.

989,899.

Specification of Letters Patent.

Patented Apr. 18, 1911.

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*To all whom it may concern:*

Be it known that I, HENRY L. FERRIS, a citizen of the United States, residing at Harvard, in the county of McHenry and State of Illinois, have invented a new and useful Improvement in Overhead Switches, of which the following is a specification.

My invention relates to certain new and useful improvements in overhead switches, and is fully described and explained in the specification and shown in the accompanying drawings, in which:

Figure 1 is a side elevation of my improved device; Fig. 2 is a central-longitudinal section through the free-end of the switch-track, and adjacent parts; Fig. 3 is a view in the broken line 3 of Fig. 4, that is the upper portion of the figure is a top plan of the device, and the lower portion of the figure is a horizontal section; Fig. 4 is a section in the line 4 of Fig. 3, and Fig. 5 is a section of the line 5 of Fig. 3.

Referring to the drawings:—A is the end of a section of main-track. This track is of a form largely used in connection with feed and litter carriers and it is composed, as illustrated in the drawings, of two angle-irons so placed that their angles are spaced apart a short distance, two of the flanges, one on each angle-iron, extending outward in a horizontal plane to form the track-surface and the remaining two flanges extending upward vertically at a sufficient distance apart to allow for the passage of supporting mechanism. The remaining sections of track of the switch-mechanism here described are constructed in a similar manner and this form of track has a peculiar advantages in such a construction as will hereinafter appear.

B is a switch-track which is pivotally secured to the end of the main-track A by means of a hinge-construction comprising hinge castings *a*, *b*, respectively, which are clamped to the main-track and switch-track, which are respectively clamped to the main-track and the switch-track and pivoted together.

C, C<sup>1</sup>, C<sup>2</sup>, are three terminal tracks, to which the device running upon the main-track and switch-track can be deflected at will, the track C being in line for the main-track and the track C<sup>1</sup> to the left and the track C<sup>2</sup> to the right, as illustrated. The ends of the terminal tracks are so placed

that the switch-track B will, when swung about its pivot as a radius, approach within a suitable working distance of the ends of the said three tracks, in the manner illustrated. Each of the terminal tracks has pivoted between its two angle-iron members a stop-dog D comprising a portion *d* which normally projects downward to a sufficient depth below the track to engage with any hanger which may be moving thereon, a T-head *d*<sup>1</sup>, which normally engages with the upper edges of the central flanges of the track to limit the downward movement of the stop-dog on its pivot and a cam-portion *d*<sup>2</sup> adapted to be engaged in the manner hereafter set forth to raise the stop-dog.

In the use of overhead-switches of the general type herein illustrated, it is possible when a carrier is upon one of the terminal tracks for the switch to be shifted so as to send another carrier onto another terminal track or, for some other purpose, in which case the carrier on the first-mentioned terminal-track will, if not returned, run off the track at the end, the switch-track not being in position to receive it and guide it on to the main-track. The stop-dogs illustrated normally project downward beneath the track in such manner as to prevent such reverse movement of the carriage excepting when the switch is in place, and therefore under the circumstances thus outlined, if a carrier is returned along a terminal track it will be stopped by the stop-dog before it can run off the track. The manner in which the stop-dogs are raised will be set forth in connection with the switch-shifting mechanism.

Above the end of the switch-track is a plate F having an arc-shaped slot, whose center is a point over the pivot of the switch-track on the main-track, and the slot in said plate supports a head *e* upon a strut E<sup>1</sup>, which is rigidly secured between the ends of center is a point over the pivot of the switch-track B. It will be noted that this strut is connected a short distance back of the end of the switch-track, and between the members of the switch-track in front of the strut is pivoted a pawl F, the form of which is best shown in Fig. 2. The pawl F is provided with a rearwardly extending arm *f* which extends through a slot provided in the strut E<sup>1</sup> for its passage, and it is provided with a forwardly extending tooth, which when moved down will clear the terminal track,



but when moved up will lie between the members thereof to prevent relative movement between the switch-track and terminal-tracks. When the tooth of the pawl is in this position, it will engage the cam-surface  $d^2$  on the stop-dog D to elevate the same to the position shown in solid lines in Fig. 2, thereby removing the same from the path of the hanger upon the terminal track. The pawl F is normally held with its tooth up by means of a spring  $f^3$  connecting a portion thereof in front of the pivot with a portion of the strut  $E^1$  in the manner illustrated. For the purpose of moving the switch-track, a main-chain G extends transversely of the terminal-tracks substantially above their ends, the same being let downward through eyes  $g$  and provided with operating handles in the usual manner. The center of the main-chain G is connected by a shorter chain  $G^1$  passing through an opening in the top of the strut  $E^1$  with the rear end of the pawl F and when tension is exerted upon either end of the main-chain the pawl will first be drawn up and the track then shifted in the desired direction. For the purpose of making the engagement of the pawl with the tracks certain and easy, cams H are provided on the lower surfaces of the terminal tracks at their ends which operate in an obvious manner.

For the purpose of making it simple and easy to assemble the constructions which incorporate my improved overhead switch all the parts heretofore described, with exception of the end of a main-track, are built into one unitary structure in the following way. A curved-supporting casting I extends upward from a point immediately over the end of the main-track, the same being bolted to the hinge-casting  $a$ , so that the lower end of said supporting-casting and said hinge-casting embrace the end of a main-track between them. The construction is such that when the bolts which secure said parts together are loosened up the parts can be slipped over the end of the main-track in a longitudinal direction without difficulty, the bolts then being tightened up to lock the parts in position. From the upper end of the curved-supporting casting I a bar  $I^1$  extends toward the terminal track immediately above and parallel with the line which the switch-track occupies when in its central position. The bar  $I^1$  is bolted to the plate E in the manner illustrated. It will be seen from the drawings that while the bar  $I^1$  is in effect a single piece and might be constructed out of one piece of material; it is in fact a composite bar of two angle-irons spaced slightly apart after the manner of the track-section.

The plate E is provided with integral legs  $I^2$  which extend downward in the curved direction illustrated in the drawing, and are

bolted to the terminal tracks to hold the same in fixed and rigid positions with respect thereto. It will be seen, therefore, that all of the parts of the switch are secured in one rigid device capable of bodily movement in one piece by means of a yoke-shaped extension which consists of the supporting-casting I, the composite-bar  $I^1$ , the plate E and the three legs  $I^2$  thereon.

J (Fig. 1) represents one of the stub-tracks which are adapted to be used in connection with the switch, the stub-tracks corresponding in number to the terminal-tracks being alined therewith and being rigidly coupled thereto by means of couplings, the form of which is illustrated in Figs. 3 and 5, where it will be seen that each coupling consists of two parts K and  $K^1$  below and above the tracks respectively, the said parts being held together by bolts  $K^3$ .

In laying out a track-installation, which is to incorporate my improved switch the main-track and the stub-tracks are placed in the proper position, their ends being spaced apart a predetermined distance and the tracks being properly supported by means of the usual brackets or hangers. When these tracks are all firmly positioned the left-hand end of the switch is engaged with the main-track and the three terminal-tracks are coupled to the stub-tracks and the job is completed. This method of assembling is very much simpler than that which has heretofore been used, because the switch is handled as a unit, requiring no accurate positioning or separate hangers, but being entirely supported by the tracks which it connects and which can themselves be readily positioned in proper relations to receive it.

The construction herein shown and described is particularly simple and efficient in its operation. Automatic means are provided for preventing the carrier from running off the track under any possible circumstances, the switch-track is provided with means whereby it can be firmly locked to any of the terminal tracks at will and automatically disengaged therefrom by the same shifting action which is in any event necessary to move the track. This locking-mechanism is very simply turned to account in the operation of the carrier-arresting mechanism so that the various desired and desirable results are secured with the minimum number of parts and complications.

It will be understood, of course, that the number of terminal tracks can be varied from two to a comparatively large number. Switches with three terminal tracks are very common and this number has been chosen for purpose of illustration, but it will be understood that any number of such tracks can be used and in the claims hereto appended, where the terminal tracks are spoken of as arranged in series, I mean in a



series of two or more. Further, it will be evident that the unitary construction of the switch whereby it can be bodily removed from place can be utilized without necessarily embodying all of the other features of invention herein illustrated and therefore, as to those other features, which can also be used separately it is the intent to secure protection when the unitary switch feature is not used. Thus, as far as many claims herein set forth are concerned the terminal tracks might be made of considerable length, so that the terminal tracks and stub tracks would be built into one series of tracks.

I realize that considerable variation is possible in the details of construction of my improved device, without departing from the spirit of my invention, and I do not intend, therefore, to limit myself to the specific form herein shown and described.

What I claim as new and desire to secure by Letters Patent, is:—

1. In an overhead-switch, a movable switch-track, a plurality of terminal tracks, composed of separated angle-irons with horizontal flanges outwardly turned and adjacent vertical-flanges and a member carried by the switch-track and adapted to enter the space between the vertical flanges of said angle-irons to lock the track in line.

2. In an overhead-switch, a switch-track provided with a pivoted locking pawl, and a series of terminal tracks the ends of which are provided with openings therein adapted to receive and engage with said pawl to aline the tracks.

3. In combination, a switch-track, a pawl pivoted thereto, a plurality of terminal tracks having openings at their ends, means for holding the pawl in position normally to engage said openings, and means for disengaging said pawl and shifting the switch-track.

4. In combination, a switch-track, a pawl pivoted thereto, a plurality of terminal tracks having openings at their ends, means for holding the pawl normally in position to engage with said openings, and a flexible operating device extending transversely of the switch-track to move the same laterally, and having connection with said pawl to move the same out of engagement with the openings in said terminal tracks in the shifting of the switch-track.

5. In combination, a switch-track, a series of terminal tracks provided with openings at their ends and adjacent cam-surfaces, a pawl pivoted to the switch-track and adapted to swing vertically, means for holding the pawl up in position to engage the openings in said switch-track, and means for depressing the pawl and shifting the track.

6. In combination, a switch-track, a series of terminal tracks provided with openings

in their ends, a sector guide above the switch-track to which the same is connected, and a pawl carried by the end of the switch-track and adapted to engage the openings in the ends of the terminal-tracks.

7. In combination, a main-track, a switch-track, a plurality of terminal-tracks with each of which the switch track may be alined and arresting-means carried by the terminal tracks and arranged to prevent the passage of carriers therealong.

8. In combination, a main-track, a switch-track and a series of terminal tracks with which the switch-track may be alined, a plurality of arresting-devices mounted on the terminal-tracks and adapted to project therefrom to prevent the passage of carriers therealong.

9. In combination, a main-track, a switch-track and a series of terminal tracks with which the switch-track is adapted to be alined, of a series of pivoted arresting devices supported on the terminal-tracks in position normally to prevent the passage of carriers therealong, and arranged to be moved to position where such passage is possible.

10. In combination, a main-track, a switch-track and a series of terminal-tracks with which the switch-track can be at will alined, of a series of arresting-devices movably supported when in one position to prevent the passage of articles along the terminal-tracks, and when in another position to permit such passage.

11. In combination, a main-track, a switch-track and a plurality of terminal tracks, of arresting means arranged normally to prevent the passage of carriers on the terminal tracks, and to be moved to position to permit such passage when the switch-track is alined with any given terminal track.

12. In combination, a main-track, a switch-track, and a plurality of terminal tracks with which the switch-track can be at will alined, of arresting-devices on the terminal-tracks and actuating means therefor on the switch-track.

13. In combination, a main-track, a switch-track, and a plurality of terminal tracks with which the switch-track can be alined at will, pivoted stop-dogs on the terminal tracks and means on the switch-track for operating the stop-dogs.

14. In combination, a main-track, a switch-track, and a plurality of terminal tracks, of stop-dogs on the terminal tracks, an alining pawl on the switch-track adapted to engage openings in the terminal track, and when in such engagement to operate the stop-dogs.

15. The combination with a main-track, a switch-track and a plurality of terminal tracks with which the switch-track can be



alined at will, of stop-dogs on the switch-track, mutually engaging alining means on the switch-track, and terminal tracks constructed and arranged when in engagement  
5 to operate the stop-dogs on the corresponding terminal-track.

16. In combination, a main-track, a switch-track and a plurality of terminal tracks, each having an opening in its end  
10 and stop-dogs pivoted in said openings, of an alining pawl on the switch-track normally spring-pressed in a direction to engage said opening and arranged when in such engagement to operate the stop-dog,  
15 and flexible means for operating the alining pawl to move the same into and out of engagement with such openings and to swing the switch-track from one terminal track to another.

20 17. The combination with a main-track and stub-tracks, of a switch-track and terminal tracks, a switch-track pivot, means for rigidly connecting the terminal-tracks and the switch-track pivot whereby a unitary structure is formed, and means for connecting the terminal-tracks to the stub-tracks and the switch-track pivot to the main-track, whereby the entire switch-structure receives its support from said main-track and stub-tracks.  
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18. The combination with a main-track and stub-tracks, of a switch-track pivot adapted to be secured to the main-track, a switch-track, a series of terminal-tracks with  
35 which the switch-track may aline, means for connecting the switch-track pivot with the terminal-tracks and means for connecting the terminal-tracks to the stub-tracks.

19. The combination with a main-track  
40 and a series of stub-tracks, of a switch-track pivot and a series of terminal tracks rigidly secured in a fixed relation to each other, a switch-track secured to the switch-track pivot and adapted to aline with the terminal-tracks and means for securing the terminal-tracks to the stub-tracks, the switch receiving its entire support from the main-track and stub-tracks.  
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20. The combination with a main-track  
50 and a series of stub-tracks, of a series of terminal-tracks supported wholly by the

stub-tracks and a switch-track pivot wholly supported by the main-track, connections between the switch-track pivot and the terminal-tracks to hold the same in rigid and  
55 fixed relation to each other, and a switch-track connected with the switch-track pivot and adapted to aline with the terminal-tracks.

21. The combination with a main-track  
60 and stub-tracks of a unitary overhead-switch adapted to be inserted between said tracks and to be wholly supported thereby, the said switch comprising a switch-track pivot, which is immediately connected to the  
65 main-track, terminal-tracks which are immediately connected to the stub-tracks, a switch-track swinging upon the switch-track pivot to aline with the terminal-tracks and supporting-means for the free-end of the  
70 switch-track.

22. The combination with a main-track and a series of stub-tracks, of a switch-track pivot carried by the main-track, and a series of terminal-tracks carried by the stub-tracks,  
75 a switch-track pivotally connecting the switch-track pivot with the terminal-tracks, supporting-means for the free-end of the switch-track, and means for rigidly connecting the terminal-tracks, switch-track pivot  
80 and said supporting means with fixed and rigid relation to each other.

23. The combination with a main-track and a series of stub-tracks of terminal-tracks carried by the stub-tracks and a switch-track  
85 pivot carried by the main-track and wholly supported thereby, a pivoted switch-track adapted to aline with the terminal-tracks at will, a plate above the free-end of the switch-track affording a guide and support for the  
90 end thereof, and connections between said plate and the switch-track pivot on the one side and the terminal-tracks on the other, whereby said plate, terminal-track and switch-track pivot are held in one unitary  
95 whole to the end that the entire switch may be bodily inserted in and removed from place at will.

HENRY L. FERRIS.

In presence of—

R. A. SCHAEFER,  
E. B. HUNT.