F. C. WEBER.

TRACK SYSTEM.

APPLICATION FILED AUG. 21, 1918.

1,303,835.

Patented May 13, 1919.

2 SHEETS—SHEET 1.

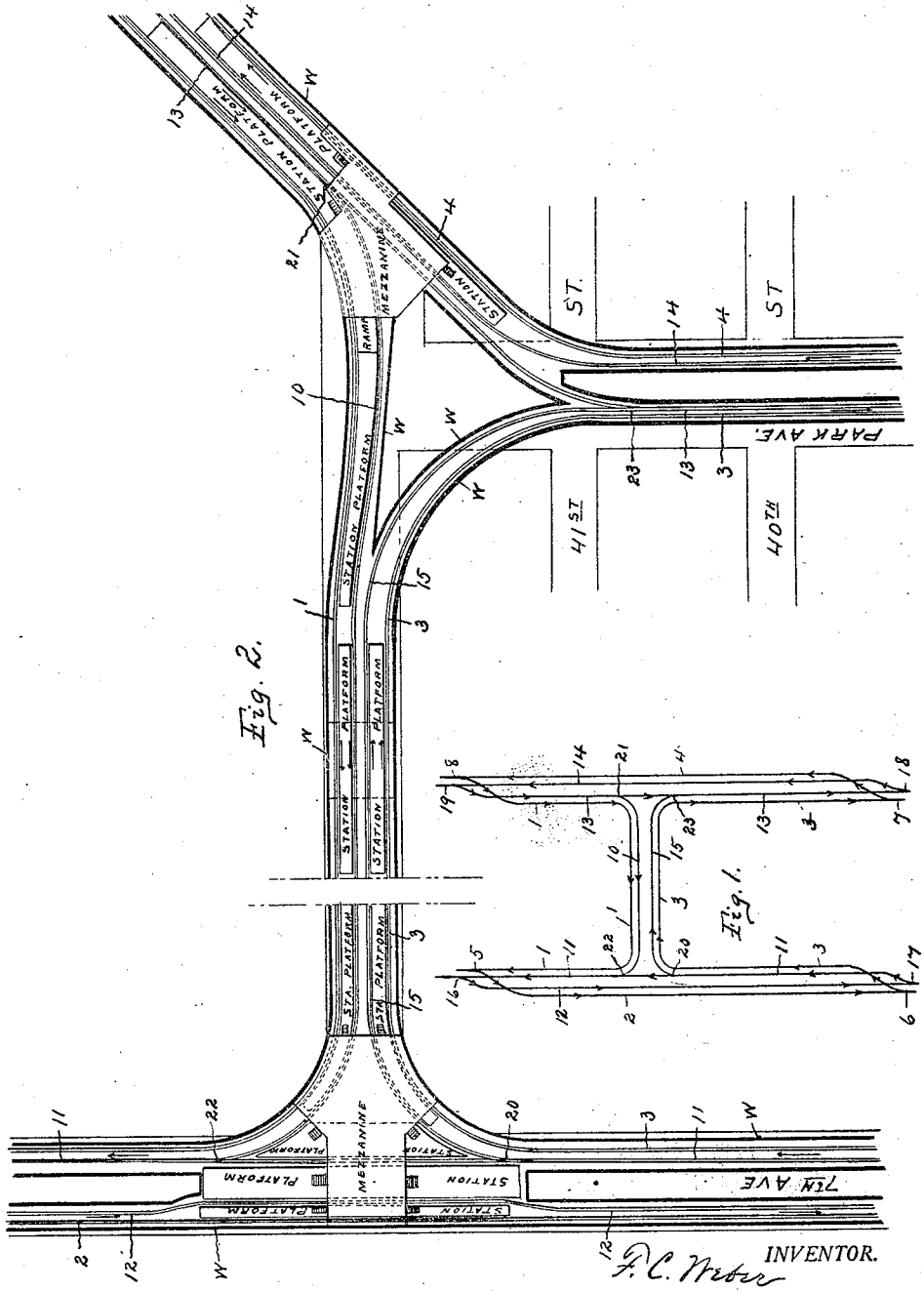


Fig. 2.

Fig. 1.

INVENTOR.

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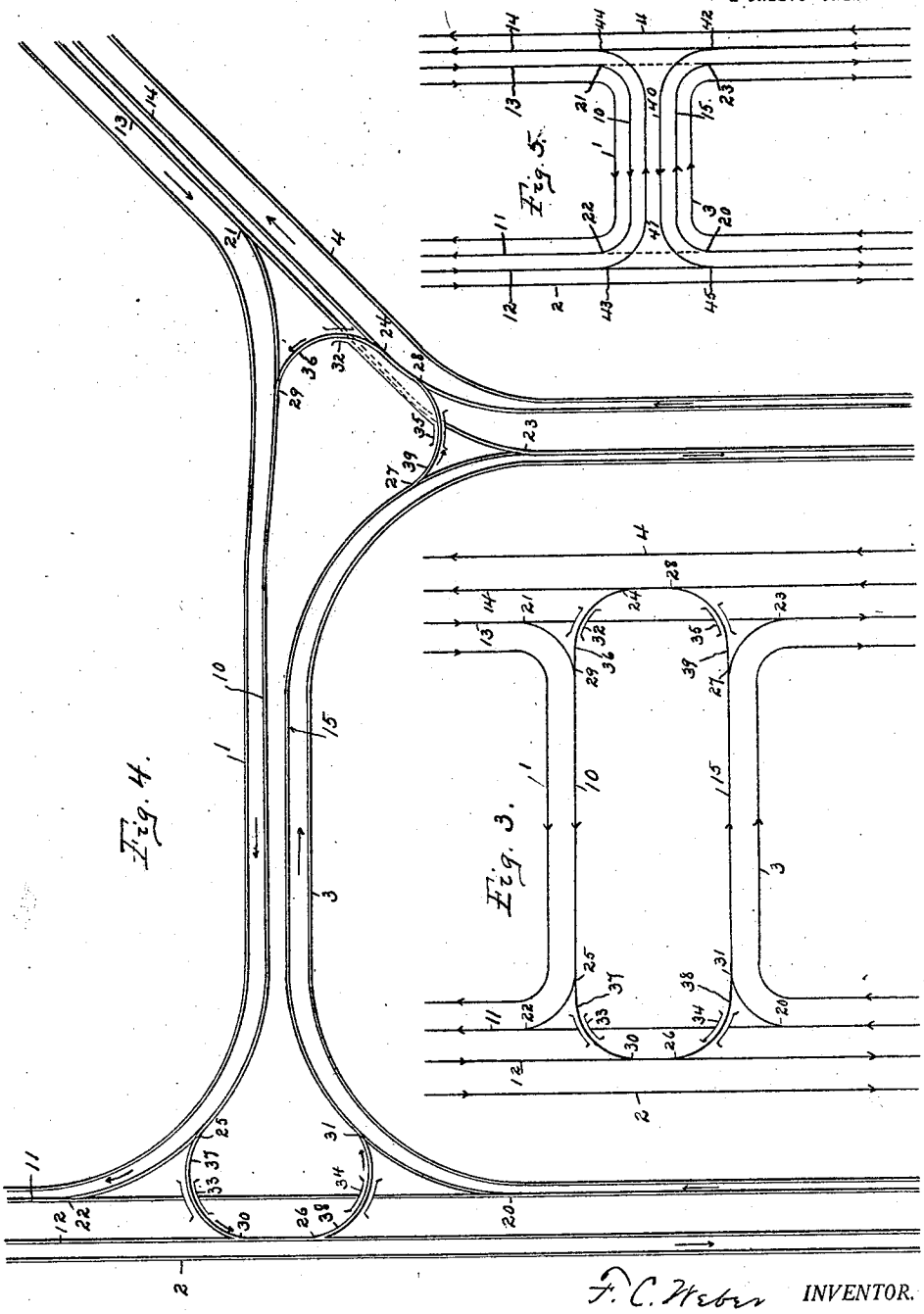


Fig. 4.

Fig. 3.

Fig. 5.

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UNITED STATES PATENT OFFICE.

FREDERICK C. WEBER, OF NEW YORK, N. Y.

TRACK SYSTEM.

1,303,835. Specification of Letters Patent. Patented May 13, 1919.

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To all whom it may concern:

Be it known that I, FREDERICK C. WEBER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Track Systems, of which the following is a specification.

In large cities, and particularly in the congested sections of such cities, the transportation of passengers by surface trolley lines, elevated railway and subway lines, has become such a serious engineering problem, as to entail the expenditure of large amounts of money, in solving the difficulties involved, with the least interference to general traffic, and without inconvenience or confusion to the traveling public. In the solution of such traffic problems, the subway is rapidly becoming an important factor, by reason of the fact that when completed, the subway gives little or no interference to general street traffic, and since the underground lines generally follow street lines, they afford long stretches of continuous trunk lines from the congested sections to suburban districts. It is where such lines are built parallel to each other, with cross connecting lines to afford convenient access from one trunk line to another, that the greatest engineering problem exists, and in solving it, attention must be given to the fact, that grade crossings must be eliminated, and continuous lines must not be interrupted. In order to afford the most convenient service, engineering practice has adopted the four track system for subways, the two outside tracks being given over to local traffic, and the inside tracks to express service.

It is to the solution of the difficulties involved in the provision of means for intercommunication between parallel trunk lines that this specification is directed, and in the following description, I have shown the general application of my improvement, and followed up with a specific application of the principles involved to a subway system in one of the most congested sections in the world—viz; that of New York city at 42nd street.

In the accompanying drawings forming a part of this specification:

Figure 1, is a track diagram of two parallel trunk lines with interconnecting cross line, all tracks upon the same level.

Fig. 2, is a specific application of the diagram to the conditions found at 42nd St., New York city.

Fig. 3, is a similar track diagram, but showing the left hand up express track and the right hand down express track as depressed beneath the crosstown express tracks, and affording both upper and lower local and express loops.

Fig. 4, shows the application of this plan to the conditions found at 42nd St., New York city.

Fig. 5, is a track diagram similar to Fig. 3, but showing independent upper and lower express loops.

Referring now to Fig. 1, the upper local loop track 1, extends from the terminal switch 8 to terminal switch 5, where connection is made with local down track 2; thence by way of terminal switch 6 to lower loop track 3, and thence by way of switch 7 to local up track 4 and terminal switch 8, thus making a complete circuit of the entire system. The left hand express line is made up of the up track 11 and down track 12, with their terminal switches 16 and 17. Similarly, the right hand express line is made up of the up track 14, and down track 13 with their terminal switches 18 and 19.

In order to afford express service between the two trunk lines I connect track 13 with track 11, by way of switch 21, and Y 22, to form the upper express loop; and similarly, with the cross line 15 by way of the switch 20 and Y 23, to form the lower express loop, thereby affording a continuous express service throughout the entire system in addition to the direct express service upon each of the trunk lines.

In the specific application of the system to the east side and west side trunk lines at 42nd St. New York city, the station platforms are located as clearly indicated at the junction of the trunk lines with the cross town line, with mezzanine platforms, over all tracks and with stairs leading therefrom to the several station platforms as shown. Access to the mezzanine platforms is had directly from the street and they serve as main distributing points for passengers in the several directions.

Downtown passengers either from trains on local track 2 or express track 12, transfer by way of express track 15 or local track 3, to downtown on the east side. Similarly down town passengers from local track 1

or express track 13, may transfer to either track 2 or 12 upon the west side.

Uptown local loop service is afforded upon track 1, and downtown local loop service is afforded upon track 3. Similarly up town express loop service is by way of tracks 13, 10 and 11, and down town express loop service is by way of tracks 11, 15, and 13, switches 20 and 21, being provided as shown to shunt trains from one side to the other as the case may be. Since all trains run in the direction of the arrows it is only necessary to provide the usual Y at the points 22 and 23. The walls W border the tracks system as shown.

A comparison of Figs. 1 and 3, will show that tracks 1, 2, 3, 4, 10, 11, 12, 13, 14, and 15, with their switches 20 and 21 and Y's 22 and 23, are similar in all respects, with the exception that in Fig. 3, tracks 11 and 13, are depressed between switch 20 and Y 22, and between switch 21 and Y 23 respectively. These depressions are for the purpose of permitting the installation of the short loop tracks 36 between tracks 13 and 10; 37 between tracks 10 and 12; 38 between tracks 12 and 15; and 39 between tracks 15 and 14, respectively. These several loop tracks are carried over the depressed sections of tracks 12 and 13 upon the several bridges 32, 33, 34, and 35. Switches are located at 24, 25, 26 and 27, and Y's are located at 28, 29, 30 and 31. By this arrangement, the following express services are afforded:

Through east side and west side, north and south.

From north on west side to south on east side.

From north on east side to south on west side.

From south on east side to north on west side.

From south on west side to north on east side.

From north on east side to north on west side.

From north on west side to north on east side.

From south on east side to south on west side.

From south on west side to south on east side.

At the same time a continuous loop service may be afforded in the direction of the arrow heads upon tracks 10, 37, 12, 38, 15, 39, 14, and 36. The local service upon tracks 1, 2, 3 and 4, in the diagram shown in Fig. 3 is the same as in Fig. 1.

The specific application of the plan shown in Fig. 3, to the conditions found at 42nd St. New York city, is shown in Fig. 4, and since no change in the general lay out has been necessary, the same reference numerals have been applied to the corresponding tracks, switches and Y's.

An alternative express service is also provided as follows:

Via tracks 13, 10, 37, 12, 38, 15, continuing on track 13.

Via tracks 14, 36, 10, 37, 12, 38, 15, 39 continuing on track 14.

Via tracks 11, 15, 39, 14, 36, 10 continuing on track 11.

Via tracks 12, 38, 15, 39, 14, 36, 10, 37 continuing on track 12.

In the plan illustrated in Fig. 5, the tracks 1, 2, 3, 4, 10, 11, 12, 13 and 14, with their switches 20 and 21, and Y's 22 and 23, are the same in all respects as in Figs. 3 and 4. Additional up town and down town loop express service giving a crosstown transfer service to either east or west side trunk lines, north and south is afforded by the additional crosstown lines 40 and 41, with their switches 42 and 43, and Y's 44 and 45.

Where the local conditions are such as to make it impractical to locate all of the cross town tracks 1, 10, 15 and 3 beneath the surface of one street as indicated in Figs. 2 and 4, parallel streets may be utilized, by locating tracks 1 and 10 under one street and 15 and 3 under the other; this, however, is an engineering detail depending upon local conditions.

While each of the track systems, serves to relieve congestion and avoid confusion, and affords traffic service in any direction, and accomplishes the general purpose, without grade crossing at any point, yet I prefer the plan illustrated generally in Fig. 3, and its specific application in Fig. 4, inasmuch as a universal express service, that is to say an express service from any point on either trunk line to any point on the other trunk line, is afforded, without transfer, if only the proper train is selected at the beginning of a trip.

From the foregoing it will seen that I accomplish the result sought by a very simple arrangement of tracks, and without grade crossings.

I claim:

1. In a track system, the combination of two pairs of parallel trunk lines of tracks, the lines of each pair designed for trains in opposite directions respectively, with a pair of cross lines mutually connecting corresponding tracks of each pair of the trunk lines.

2. In a track system, the combination of two pairs of parallel trunk lines of tracks, each pair of said trunk lines designed for trains running in opposite directions respectively, and a pair of cross line tracks designed for trains running in opposite directions, each of said cross line tracks having terminal connection with each of said trunk lines of track.

3. In a track system, the combination of two parallel trunk lines, each of said lines consisting of a pair of tracks designed for

trains running in opposite directions respectively, two parallel cross line tracks, each of which is connected at its terminals with each of the tracks respectively of said trunk lines.

4. In a track system, the combination of two parallel trunk lines, each consisting of parallel express lines for trains in opposite directions respectively, and a pair of cross line tracks, each having terminal connection with each of said trunk line tracks.

5. In a track system, the combination of two parallel trunk lines, each consisting of two tracks designed for trains running in opposite directions respectively, and two cross lines of tracks, each of said cross lines having a terminal switch connection with each of said trunk lines of track.

6. In a track system, the combination of two parallel trunk lines, each line consisting of an up town and a down town track, and two cross town tracks and switch connections for each of said trunk line tracks with each of said cross town tracks, whereby trains from either direction on one of said trunk lines may be transferred to the other trunk line to travel in either direction thereon.

7. In a track system, the combination of two parallel trunk lines, each consisting of a north bound track and a south bound track, the north bound west side track and the south bound east side track each having a depressed section therein, east and west bound cross line tracks, bridged over said depressed track sections, and having terminal switch connections with both of said trunk lines, whereby trains from either direction upon either trunk line may be transferred to travel in either direction upon the other trunk line.

8. In a track system, the combination of a plurality of pairs of parallel trunk lines of tracks, with cross line tracks, mutually connecting corresponding tracks of said parallel trunk lines, and a continuous local track paralleling each of said trunk line tracks and said cross line tracks.

9. In a track system, the combination of two pairs of parallel trunk lines of tracks, the lines of each pair designed for trains in opposite directions respectively, with a pair of cross lines mutually connecting corresponding tracks of each pair of the trunk lines, and a continuous local track paralleling each of said trunk line tracks and said cross line tracks.

10. In a track system, the combination of two parallel trunk lines, each of said lines consisting of a pair of tracks designed for trains running in opposite directions respectively, two parallel cross line tracks, each of which is connected at its terminals with the tracks respectively of said trunk lines, and a continuous local track paralleling each of said trunk line tracks and said cross line tracks.

11. In a track system, the combination of two parallel trunk lines, each consisting of two tracks designed for trains running in opposite directions respectively, and two cross lines of tracks, each of said cross lines having a terminal switch connection with each of said trunk lines of track, and a continuous local track paralleling each of said trunk line tracks and said cross line tracks.

12. In a track system, the combination of two parallel trunk lines, each line consisting of an up town and a down town track, and two cross town tracks and switch connections for each of said trunk line tracks with each of said cross town tracks, whereby trains from either direction on one of said trunk lines may be transferred to the other trunk line of travel in either direction thereon, and a continuous local track running parallel to each of said trunk line tracks and to each of said cross town tracks.

13. In a track system, the combination of two parallel trunk lines, each consisting of a north bound track and a south bound track, the north bound west side track and the south bound east side track each having a depressed section therein, east and west bound cross line tracks, bridged over said depressed track sections, and having terminal switch connections with both of said trunk lines, whereby trains from either direction upon either trunk line may be transferred to travel in either direction upon the other trunk line, and a continuous local track running outside of and parallel to each of said trunk line and cross line tracks.

FREDERICK C. WEBER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."