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the freight cars, where they are loaded up with merchandise and then wheeled out to the centre of the platform. The telpher carrier comes along overhead, picks up the load and carries it to the outbound cars, where it is lowered down opposite to the car into which the load is to be deposited. It is then wheeled into the car and unloaded from the truck.

The cost of handling in this manner had been figured at 5 cents per ton, exclusive of the labor cost of trucking the load from the car to its position below the telpher.

The Missouri, Kansas and Texas Terminal Company has erected at St. Louis a double deck freight terminal with the object of reducing the terminal costs, congestion and loss of time in handling L.C.L. freight.

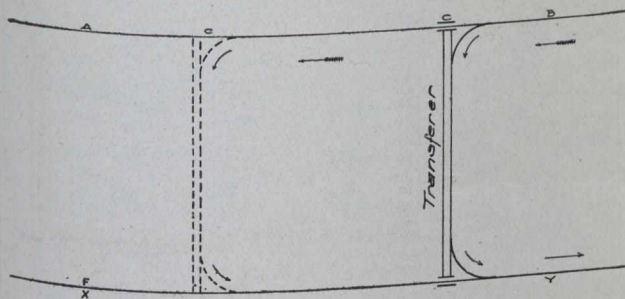


Fig. 12.—Transfer System.

The ground floor of this terminal is occupied by the tracks and cars, and the upper floor is kept entirely for the receipt, delivery and storage of freight. The freight is all transferred from the cars to the upper floor and vice versa by means of an overhead telpherage system, the runways of which are located over the second story. These runways run across the house at right angles to the tracks and in the same direction as the teamways and platforms. At each side of the house is a track connecting all the cross tracks so as to make complete circuits for the telfers. The switches at these end tracks are automatically operated by electricity. A general plan of the building arrangement is shown in Fig. 10, and a view of the team floor, telpher tracks and hatchways in Fig. 11.

The building itself is a structural steel building with brick walls and reinforced concrete floors. In plan its dimensions are 403 ft. by 232½ ft., and accompanying the freight house proper are team, switching and storage tracks and an automobile shed, the whole occupying two and a half city blocks. The shed and mechanical handling plant is designed to handle 100 tons per hour and 75 per cent. of the freight handled is outbound; the capacity of the shed is at present 77 cars, but provision has been made for future expansion. On the ground floor of the building twelve tracks enter from the open north end by ladder tracks with four branches. Each track has a maximum capacity of nine cars. The tracks are spaced in pairs opposite island platforms between the columns supporting the building. With this arrangement trucking through the cars is eliminated and a fixed uniform column spacing is obtained. The platforms are made wide enough to allow two trucks to pass each other.

Immediately east of the building are four team tracks with a capacity of 60 cars, 20 of which are served by a 12-ton gantry crane.

In the upper floor of the building there are four driveways 38 feet wide extending across the width of the building. Alongside the driveways are four platforms, two 82 feet wide and 230 feet long which provide storage space for inbound freight and two narrow platforms 42 feet wide and 217 feet long for receiving outbound freight. All the package freight

is loaded up into small platforms or trucks on wheels, which in turn are picked up bodily by the telpher.

The telpher runways are located longitudinally above the wagon platforms, i.e., in a direction at right angles to the tracks on the lower floor. Two runways are provided for each of the 42-foot platforms and for one of the 82-foot platforms, the other 82-foot platform is supplied with four runways. The wheeled platforms and all the loads are transferred from the cars to the teams and vice versa, through a number of hatchways in the floor to the upper level. These hatchways are placed over the low level platforms and below the telpher runways, and so spaced that there is one hatchway for every two cars. Practically no trucking is done on the lower level because all the transferring of freight is handled by the telfers which pick up the load at one hatchway and take it to any other hatchway over the car to which the load is to be taken, here the load is lowered to the cars. At present there are 18 telfers, 16 of which are of 2-ton capacity and the remaining 2 are of 6 tons capacity.

There are 100 wheeled platforms or trucks each 4 feet wide and 6½ feet long, supported on two 10-inch side wheels. Small castor wheels at each end. An arrangement of ratchet lever is fitted to enable one man to move a full loaded truck even up an incline. The telpher machine can hoist these trucks at a speed of 60 feet per minute and travel with them at 500 feet per minute.

In addition to the telpher system there are 17 jib cranes attached to the building columns for loading and unloading the freight from and to the wagons. Fourteen of these are of 1 ton and three of 5 tons capacity.

Transferage.—These two systems of telpherage described have the disadvantage that the carriers must travel over fixed routes and therefore cannot cover areas. A system has been devised by Mr. McL. Harding which will overcome this difficulty by enabling the telfers to cover areas instead of lines. He gives this system the name of "Transferage System."



Fig. 13.—Electric Trucks Ready for Use in Freight Sheds.

A diagrammatic sketch illustrating this system is shown in Fig. 12. It is in effect a combination of overhead travelling cranes and travelling trolley or telpher hoists. The following paragraph is taken from Mr. Harding's brief description:

In Fig. 12 let the line A B correspond to the telpher track. A transfer or electric carrier can run in either direction. The transfer travelling in the direction of the arrow at the points C can pass upon the moving switch S and then upon the transferer, which is movable similar to a travelling crane. The transferer is not supposed to move with the telpher and load but can do so if necessary. The load can, therefore, be deposited anywhere in the space between the two lines A B and X Y. The dotted cross lines show the transferer after it has been moved to the left. There may be