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Benjamin Franklin Fitch the Forgotten Developer of the Container System in US of America

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Benjamin Franklin Fitch the Forgotten Developer of the Container System in US of America

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I. INTRODUCTION

Contrary to the assertions of contemporary literature in the field of containerization, it should be noted that USA can boast of container production before World War II. In many articles is suggestion that first developer of the container transport systems in USA was Malcolm Mclean in 1956. Research revealed evidences that the development of such structures in USA has been already in 1917. The author of this paper is Benjamin Franklin Fitch, who isn't mentioned in present in the contemporary technical literature in USA.

II. EDUCATION AND EXPERIENCE

Benjamin Franklin Fitch (BFF) was born in Louisville, KY) on day March 2, 1877. In this city he was educated 1895-1908. Later (1908-12), he worked as wholesale hardware bus and then (1912-14) he was vice-president and general manager of axe and tool manufactory plant, In 1914 he started experience as travel sales manager for motor truck Industry [26].

a) *The equipment invented by Benjamin Franklin Fitch for shipping containers*

On 17 May 1917 he inaugurated exploitation of the experimental installation for transfer of the demountable bodies (Figure 2) based on his own design in Cincinnati city, Ohio (Figure 1) [4]. This installation consisted of one 5-ton White motor truck chassis, nine removable truck bodies with a capacity of 5 tons each, 12 sets of lifting chain hoists and five overhead superstructures [12]. In 1919 BFF has been ordered for extended by the United States Railroad Administration to complete co-ordination of Cincinnati railroad terminals for relief of congestion during the war period [4]. In 19 May 1919 Fitch System was extended. 21 railway stations were served by 14 freight trucks with 225 containers. Results help save 15 cent per each reloaded ton [24]. This kind of the terminal was also

proposed to build in New York City. Estimated cost and economic profits can help to save \$45,000,000 in freight costs yearly [2].

In 1920 BFF described in Engineer World newspaper an idea of the motorized terminal (Figure 3a, b and Figure 4) [3]. His motorized terminal was designed to transfer freight between terminals of different transport modes railroad and roads many kinds of "traps", "transfer" or "ferry" cars by the horizontal shifting [17].

Based on his conception of was established a short range container connection between Cincinnati and Aurora on distance 30 miles. This transport system was established in January 10, 1922 (Figure 5, Figure 6). There were used 5 tons containers with 17 ft. 6 in. long, 8 ft. wide and 7 ft. 3 1/2 in dimensions [13].

This similar system of containers were later used by the Cincinnati and Lake Erie Railroad. BFF patronized build cranes to handling containers at terminals in Cincinnati, Dayton and Toledo, with fleet of trucks for carrying the containers into Michigan and Kentucky [12][25].

From 1929 BFF was the President of the Motor Terminals Company, New York City, an engineering and financing organization, and also was the President of The Cincinnati Motor Terminals Company, the operating medium of all railroads at Cincinnati, Ohio [4]. In April of 1929 in Washington three railroads companies spoke about provides for container transport [16]. In 1930 the Cincinnati Motor Terminals Company had 150 containers with capacity 10 tons [17].

In Thursday, October 24, 1929 has been the Wall Street Crash of 1929, which caused economic collapse and reduction in all modes of transport in the whole world (Figure 7, Figure 8). Railroads was sought a possibility to find a cargo, and container was a big chance. Government of USA decided to do public work and start built a network of highways similarly as European countries Germany and Italy [9][10]. The Cincinnati, Lawrenceburg and Aurora that's transport system collapsed in 1930 but in the Cincinnati and Lake Erie it followed into oblivion in 1939 [12][25].

Fitch continued on, developing a container system. He designed the biggest and heaviest containers in this time in the whole world.

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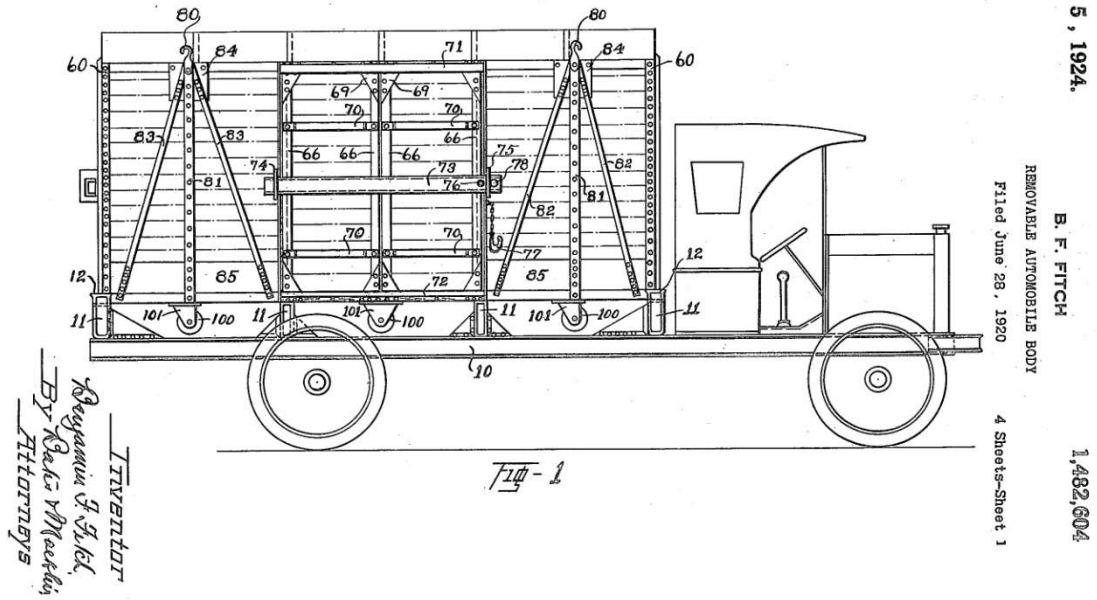


Fig. 1 : Sketch of freight truck with container from BFF patent, 1924 [23]



Fig. 2 : Freight truck with BFF container, 1917 [12]

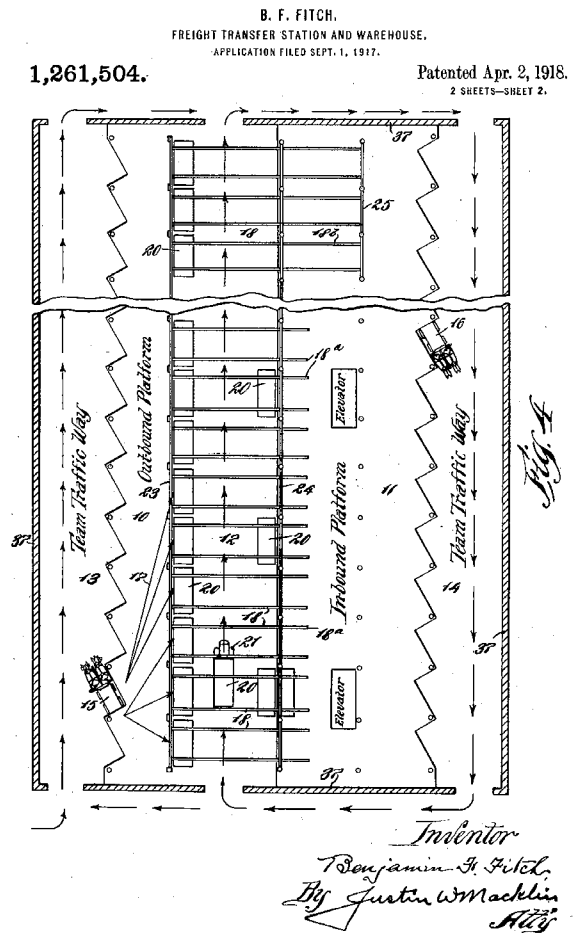
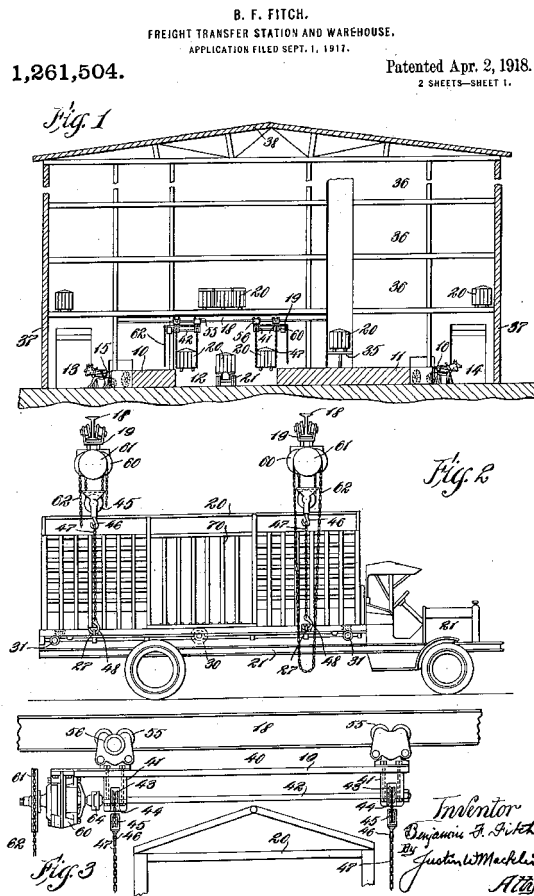


Fig. 3a,b : Sketches of the warehouse with transfer station for containers, from BFF patent 1918 [18]

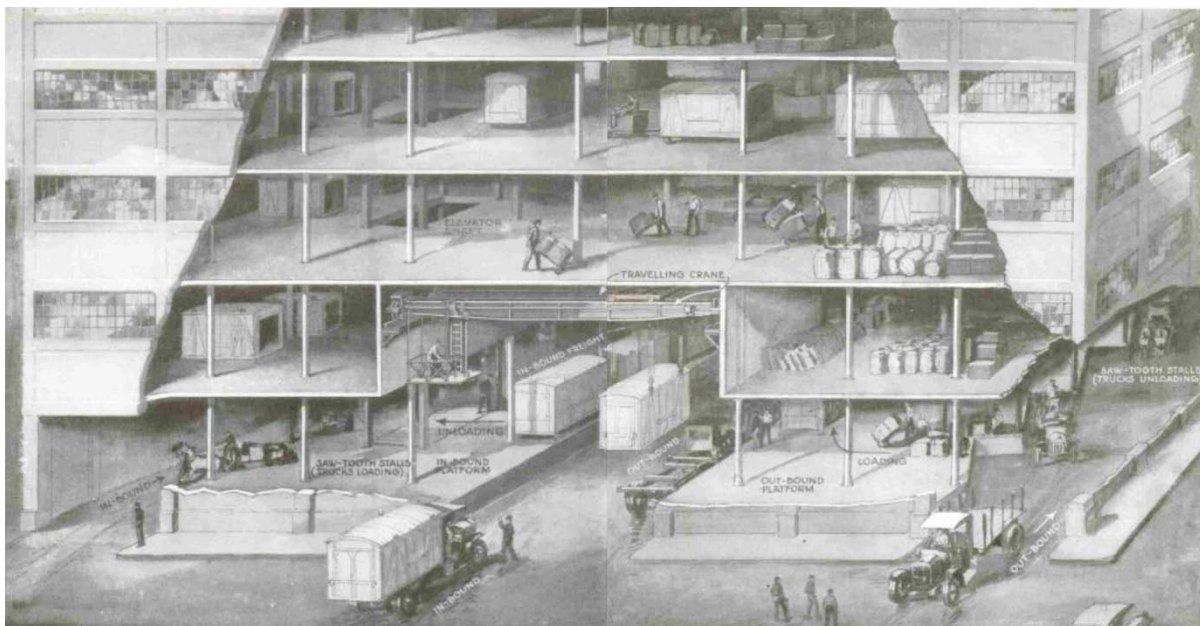


Fig. 4 : Sketch of motorized terminal of Benjamin Franklin Fitch, 1920 [27]

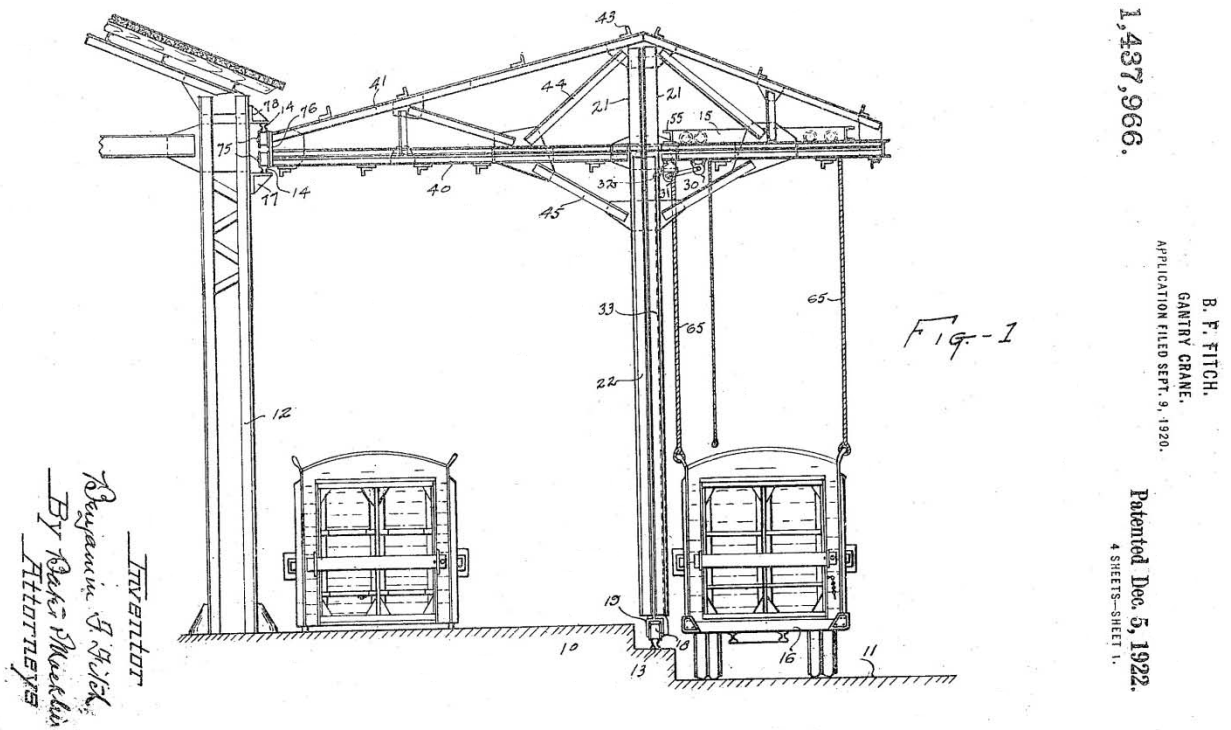


Fig. 5 : Sketch of gantry crane for container terminal from BFF patent, 1922 [22]

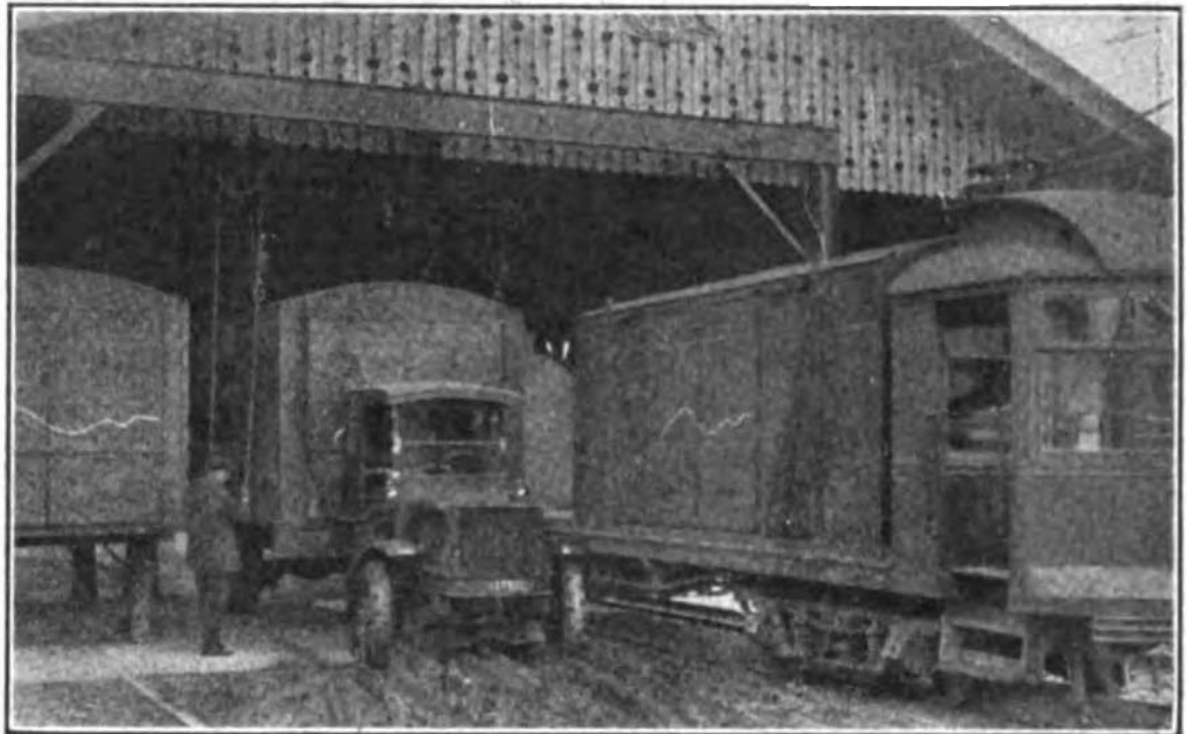


Fig. 6 : View of part the Fitch System between Cincinnati and Aurora, 1922 [15]

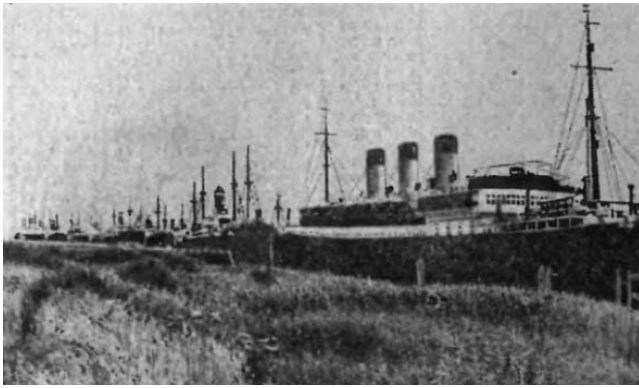


Fig. 7 : Seaships without cargo [5]



Fig. 8 : Rail wagons without cargo [6]

As first, in 1929-30, the Fitch System were used by Cincinnati & Lake Erie, between Cincinnati, Dayton, Toledo, Cleveland and Detroit. For this were designed 30 all-steel 15-ton containers. Later, in 1931, the Fitch System has been applied on the Pennsylvania Railroad. In 1931 he established container transport system based on construction of 40 all steel construction big containers with sizes (17'6" X 8'0" X 8'0", Capacity: 30,000 pounds — 890 cubic feet) for the Pennsylvania Railroad between New York, Philadelphia, Baltimore and

Richmond, similarly to use on the Lake Shore Electric, the Eastern Michigan Lines and the Cincinnati and Lake Erie Railroad earlier. Also in 1931 another kind of 28 all steel construction big containers with sizes (20'0" X 8'0" X 8'0", Capacity: 50,000 pounds — 1,000 cubic feet.) were used by Pennsylvania Railroad which carried them between New York, Philadelphia, Baltimore and Richmond, Va. (Figure 9) These railroad companies also have used 2 other kinds container in total number of 10 summary. The Pennsylvania Railroad used similarly aluminum containers type TD and TD1. 51 Containers TD has the same weight as Fitch containers, but have different sizes (19'0" X 7'0" X 7'4", capacity 30,000 pounds - 795 cubic feet) (Figure 10) [17].

The distances of transport of the containers The Fitch Systems were: from Cincinnati on the Ohio River through Dayton and Toledo to Detroit on the Great Lakes, and through Columbus to Cleveland, on Lake Erie, distances was of about 250 miles; and from the New York City metropolitan district through Philadelphia, Baltimore and Washington to Richmond, was nearly 300 miles [1].

In November 1932 in Enola PRR opened first rail container terminal in the world (Figure 11) [18]. This terminal used for reloading containers two overhead cranes with an automatic lifting coupler quite present spreader called in this time as spreaders [17].

For handling containers in Enola terminal was used two overhead cranes with spreaders. Interesting is that hooking has been taken from Fitch solution but was adopted for PRR container. Originally Fitch container had the hooks on the bodies for engagement to the spreader are spaced longitudinally at 12 ft., which is in uniformity with Fitch bodies, and though only 7 ft. wide, permit overhead handling by the same spreader used to handle the Fitch bodies, by applying lifting links with double eyes spaced at 7 ft. and 8 ft. respectively [17].

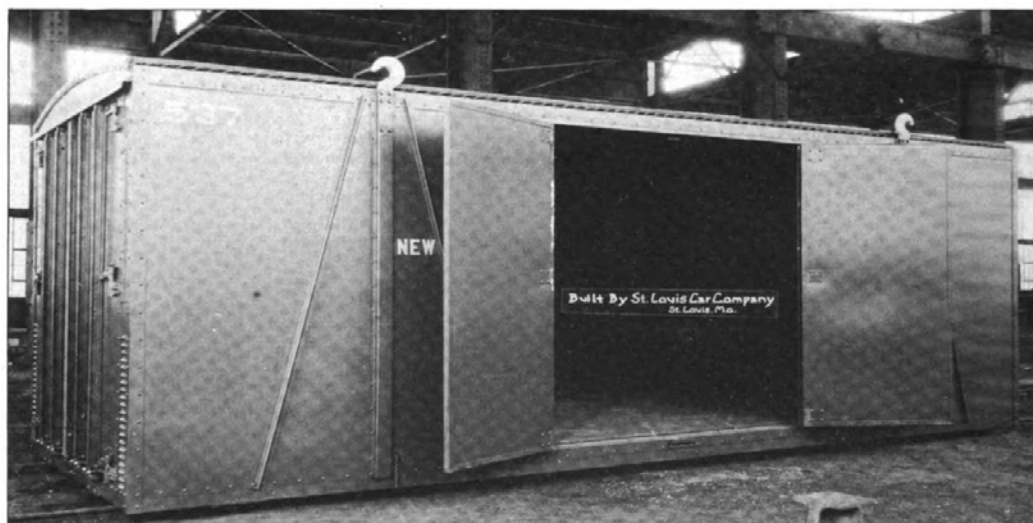


Fig. 9 : The 20 feet full steel container of Benjamin Franklin Fitch, 1931 [17]

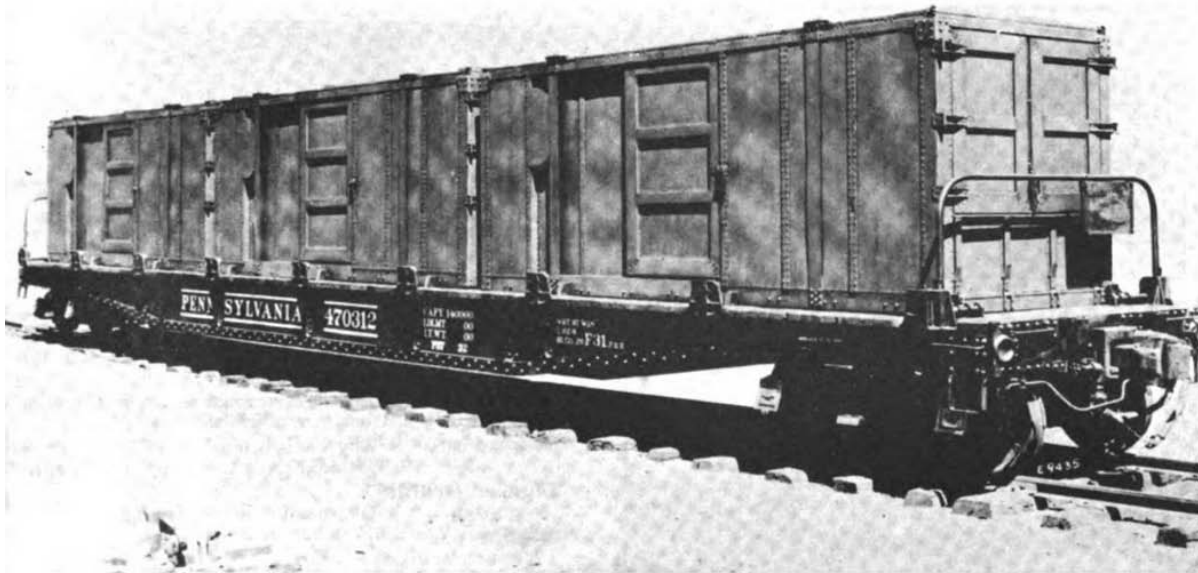


Fig. 10 : The 19 feet aluminum container The Pennsylvania Railroad,1931 [17]

In 1935 family of Malcolm McLean bought for him first secondhand freight truck for 120\$ [29].

Structure of Enola terminal is very similarly to conception of BFF from patent from 1924. In Enola container terminal we see two cranes with hooking systems - early construction of spreaders (Figure 11).

In patent of BFF the crane is astride the railway sidings with a narrow maneuvering yard. (Figure 12).

Before the forklift trucks and reach stackers was created the cranes, gantry or overhead, were the basics equipment for reloading containers in container terminals.



Figure 11 : Enola rail container terminal, opened by Pennsylvania Railroad in November 1932 [8]

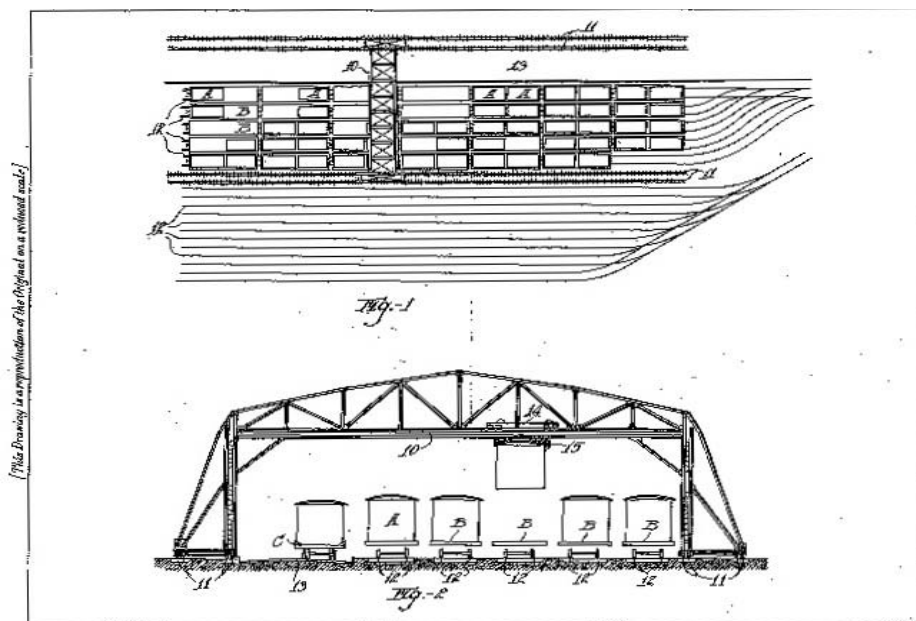


Fig. 12 : Sketch of container terminal by Benjamin Franklin Fitch patent, 1924 [7]

In 1935 the Cincinnati Motor Terminals Company, employed 21 five-ton motor trucks, had 250 containers, and 66 electric cranes, and 13 sets of hand hoists [17].

In 1939 Benjamin Franklin Fitch (BFF) has designed new transfer system for big containers. The body of 25 ton milk container moved on cross channels on the trailer frame and on the floor of the flatcar. Upright stops or anchorages on the car at the sides of the body then prevented lateral displacement. With the trailer driven closed alongside the rail car, the body, which has a gross weight with load of 25 tons, was pushed from trailer to car by means of a push-pull bar and two cross chains that moved in channels on the trailer. These chains had lugs that engage with stops under the body and are driven by a longitudinal shaft and gears on the trailer (Figure 13). In this year BFF had over 20 years' experience and over 160 patents covering equipment developed for use in the container system [1].

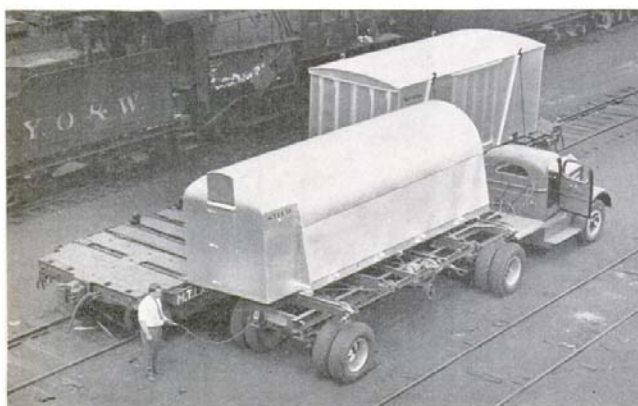


Fig. 13 : View of new reloading system of by Benjamin Franklin Fitch, 1939 [13]

To 1947 Benjamin Franklin Fitch (BFF) was president and camembert of Motor Terminals, Inc. also he was president of the Natl. Fitch Corp. and Term. Motor-Rail Corp., New York. Member of the N. Y. Railroad Club. N. Y. He was author of numerous articles In technology and trade publications on coordinated transport Episcopalian. Independent. Club»: Kentuckians, Metropolitan (New York); N. Y. Southern Soc.; Pendennis (Louisville. Ky.) with Home address: Ocean Lawn, Newport, R. I. [26].

In 26 April 1956 Malcolm McLean's Ideal -X ship carried fifty-eight trailer vans from Port Newark, NJ, to Huston, TX, as the new concept in shipping [28].

Benjamin Franklin Fitch dead May 2 1956 in New York City. After his death newspaper The New York Times mentioned about him as an inventor of equipment for shipping and handling freight. His age was 79 [11].

In report from 1958 were noticed that BFF also developed two big size containers. First type with sizes: 22'9 3/4" x 8', with internal diameter 5'4", with capacity 3000 gallons, i.e. liters, made from stainless steel wit stains doors. Second type with sizes 16'4" x 8', with capacity 2500 gallons, i.e. liters, with 18 numbers in use [19].

III. DISCUSSION

When we compare the whole life activity of Benjamin Franklin Fitch with the Malcolm Mclean' we see a the big influence of the outsides factors for their activity.

Benjamin Franklin Fitch wasn't a first who had used containers in USA. The first transport of containers through the Atlantic Ocean were in 1902. It was linked the Great Emigration from Europe to USA at the end of XIX and beginning the XX century [10]. Benjamin

Franklin Fitch started his work with container system in time of First World War, called in this time as Great War. After this event in many countries were the economic depressions, 1921-1922. In Europe this evoked creation a fascism, first in Italy. In US in this time the railways companies had a big problems with the robbers. That was source to wide exploitation of the containers by railways companies in USA, but that is subject for the another analysis. Second economic depression is known as Dig Depression in 1929. It had strongly influence for economy in whole world. The USA in this time didn't the big influence for world policy. In USA this event was source for a big competition between modes of transport, road and railways. Many countries in Europe did the protectionist of their country economy that was source of trade wars also with USA which stopped the free trade across Atlantic Ocean. Only things of emigrants were free without restrictions for transport in sea containers called in this time as the lift-vans [5][6].

Different prices of own activity from these two modes of transport changed the social point of view about economy in USA. Road transport had seemed as the cheaper and faster. This changed a policy of the technicians. They concentrated on road transport. Another case to this change was developing of the highways' system on territory of USA. It changed availability of the territory of USA. Before the Second World War, the US Government didn't promoted the use of container system in the country and the world. In the time of Second World War the road transport stayed game ruler of the modes of the land transport.

Malcolm McLean started this activity in 1934 when economy of USA was growth. He also used as first freight truck on roads, but without containers. His patent was created after World War II, when European countries and Japan are still rebuilding for 10 years and Korea after the Korean War ended needed of everything and a lot of companies shipping cargo transported them [19]. It was filed in US Patent Office in 1954 and patented in 1958. Malcolm McLean was an author only the one patent.

Benjamin Franklin Fitch had over 100 patents in the year of his death, 1956.

After the Second World War USA stayed w big ruler in world policy. The big policy tensions in 1950' and 1960' changed conditions for the development of loading units in transport. The container system of Malcolm Mclean's has been established on 1960' as fundamental technical system for support system of the USA Army [9].



Fig. 14 : Benjamin Franklin Fitch [4]

IV. CONCLUSION

The Forgotten Developer of the Container System in US of America, inventor of many equipment's for reloading of containers - Benjamin Franklin Fitch, (Figure 14),

b. March 2, 1877 (Louisville, KY) – d. May 2, 1956 (New York City, NY), worked in harder conditions than Malcolm McLean.

His wide experience and knowledge was fundamental for developing the container system in USA before the Second World War.

The name of Benjamin Franklin Fitch should be entered in books on containerization in USA in order to organize knowledge about the development of this process before the Second World War.

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