

# CZECHOSLOVAK ACTIVITY TO PREPARE EUROPEAN NORMS FOR CONTAINERS BEFORE THE SECOND WORLD WAR

**Krzysztof Lewandowski**

Wroclaw University of Technology, Wroclaw, Poland, e-mail: krzysztof.lewandowski@pwr.edu.pl

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**Abstract:** In many articles we can read that containers weren't in Europe before 1966, when ship SS Fariland came with 35 feet containers invented by Keith Tantlinger for Sea Land Company owned by Malcom McLean. The focus of this study is on the problem with development norms for European containers. Thus, the main definitions and briefly literature overview in the analysed research area are given. Later, the information about these constructions are developed. Article presents Czechoslovak activity to preparation of three European norms for containers, which were described before Second World War.

## 1 Introduction

Regular connection of luxury passenger train London-Paris, Golden Arrow/Fleche d'Or begun in 1926. For conveyance baggage of passengers was use four containers. These containers was loaded in London or Paris and carried to ports, Dover or Calais, on flat cars in UK and "CIWL Pullman Golden Arrow Fourgon of CIWL" in France [2].

In begging of 30's years railway had feel more and more competition from road transport. First big speaking was under First World Motor Transport Congress in London November 14-17, 1927.

Six main headings for discussion have been agreed. These are as follow [17]:

1. Road construction and improvement in relation to the development, efficiency and economy of road transport.
2. Mechanical road transport as an instrument of development of world resources.
3. The necessity of co-operation between road and rail transport.
4. The development of motor vehicles suitable for service on had roads and for cross-country use.
5. The improvement of facilities for international travel by road.
6. Fuels and fuel supplies for road motor vehicles [17] [10].

On the Second World Motor Transport Congress in Roma September 25-29 1928, There Italian senator Silvio Crespi proposed to create an international organ as the lines of the Sleeping Car Company to advantages of container and railroad systems to use as collaboration not as a competition [16].

After Second World Motor Transport Congress in Roma September 25-29 1928, the then president of the International Chamber of Commerce, Alberto Pirelli, invited the following organizations to form an international committee to conduct a competition with the object of finding the best container system [12]: Advisory and Technical Committee on Communications and Transit of the League of Nations; Bureau International de

Normalisation de l'Automobile; Central Council of International Tourists' Associations; International Federation of Commercial Motor Transport; International Association of Recognized Automobile Clubs; International Permanent Bureau of Motor Manufacturers; International Union of Railways [17].

Early 1929r experts of International Chamber of Commerce prepare conditions for two kinds of containers to European railroads [5]:

- With total mass 2,5 tons, with dimensions: length 2,25m, width 2,10m, high 2,10m,
- With total mass 4 tons, with dimensions: length 4,2m, width 2,10m, high 2,10m.

Very important influence for development of container transport was big economy crash in 1929. This day called Black Thursday, October 24, 1929 In many sources is known as a Stock Market Crash of 1929.

That begins a Big Depression in world economy.

The committee of competition was formed with S. E. Silvio Crespi as its chairman, and on January 24. 1930 drew up the conditions of the competition [17].

This situation was one of important theme in Rail Congress of UIC in Madrid 5-15 May 1930 [10], one of part of discussion was an exploitation of containers.

## 2 Conditions of Competition Established On January 24, 1930

A competition is opened for the best system of containers for use in international traffic. This competition is organized by the following [12]: International Chamber of Commerce; Advisory and Technical Committee on Communications and Transit of the League of Nations; International Railway Union; Bureau Permanent International des Constructeurs d'Automobiles; International Association of Recognized Automobile Clubs; Conseil Central du Tourisme International; Federation Internationale des Transports Commerciaux Automobiles; Bureau International de Normalisation de l'Automobile.

**CZECHOSLOVAK ACTIVITY TO PREPARE EUROPEAN NORMS FOR CONTAINERS BEFORE THE SECOND WORLD WAR**

Krzysztof Lewandowski

The problem is to find the most practical method of through transport of goods by sea, rail, and highway, with a view to suppressing as far as possible costs of packing, storage, and sorting and to enable goods to be carried from the place of production to the place of consumption in the most rapid and economical manner.

The conditions with which containers must comply and the terms of the competition are set forth below: the following are permitted to compete: Firms manufacturing railway or motor equipment, Transportation undertakings, Organizations of these industries, Technical schools and higher institutes of commercial training, Public institutions dealing with goods traffic and transportation matters.

The competition will take place at the headquarters of the International Chamber of Commerce in Paris, and will be governed by French law. All communications should be addressed to the International Committee for the Container Competition, International Chamber of Commerce, 38 Cours Albertler, Paris [12].

The containers are to be of two models; open and closed. For each model, competitors must submit three containers of different sizes. The outside dimensions of these three containers are to be as follows Table.1. [9]:

*Table 1. Parameters for European containers for competition in September 1931 [9]*

	First class	Second class	Third class
	Meters		
Length	3.95	At option of the competitor on condition however that, as far as possible, these be submultiples of class 1.	
Width	2.15		
Height	2.20 for closed containers. 1.10 for open containers.		

1. All these containers to be so designed as to be able to carry 5 tons less their own weight. Competitors will endeavour to reduce the weight of their containers as far as possible, while specifying for their construction materials capable of with- standing the strain involved by the corresponding weight of contents. All containers must be capable of being carried on motor lorries, railway trucks, of normal gage or narrow gage, and on board ships.

2. Open containers are intended to carry raw materials and semimanufactured goods, that do not call for complete protection against weather conditions; on the contrary, the closed containers must be so constructed as to protect the goods carried against direct or indirect damage caused by weather, and in particular by damage that may be caused by interior condensation or by dampness of the floors of railway trucks or motor lorries. However, they must provide adequate means of ventilation. Competitors must describe in detail the devices used for the opening and closing of containers and these devices must be such as to

enable the container to be quickly opened or closed for loading and unloading. Should doors hung on vertical hinges be used, the bottom of these doors must be at least 50 centimetres from the bottom of the container, so as to allow the doors to swing over the sides of railway trucks and motor lorries. However, the whole lower part of the same side of the container must be capable of being lowered entirely (ISO degrees). The containers, both open and closed, must be so designed as to fit one on top of the other or one side by side the other. The interior of the containers must present no projections, but countersunk rings or other devices must be provided to enable goods to be attached at suitable heights inside the containers.

3. The containers must be very strongly built, as they will be subject to many shocks and various causes of injury, in particular the risk of shocks from the tackle of cranes, and also lateral strain when lifted loaded. Competitors must also take in o account that, especially on board ship, these containers will be piled one on top of the other (at least three of the first class), without losing sight of the fact that the weight of the containers must be as low as possible.

4. The designs presented by competitors must be for rigid containers. Competitors will also have the right to present separate designs for folding containers, presenting the possibility of shipping empties by knocking-down the containers in sections or in parts. In the latter case, competitors must present means of keeping the component parts of the containers together to prevent loss.

5. In designing their containers, competitors must conform to the customs regulations applying to railway trucks (see chapter 2 of the final protocol of the International Conference of Berne, of May 18, 1907).

6. Containers must be provided with the necessary devices to permit their handling and their raising by means of cranes, tackle, lifting trucks, etc. They must also be provided with the necessary devices to permit their removal by sliding (ramp, inclined plane,). In any case, it is advisable to avoid as far as possible the use of any detachable apparatus for the handling of containers by sliding, roiling, etc.

Competitors must indicate in detail what operations are necessary for loading the container from the ground on to the railway truck or motor lorry, its unloading, and its passage from railway truck to motor lorry and vice versa.

7. Competitors must indicate the methods of fastening containers to the railway trucks or motor lorries. If for such fastening the container includes special apparatus, the inventor must also submit drawings of such apparatus and indicate how it is to be used. In any case, the devices for fixing the containers must be such as not to injure the railway truck or motor lorry, and to be easily and quickly adaptable to existing trucks and lorries.

8. For each type of container designed, the competitors must indicate the class of material to be used in its manufacture, and indicate the weight contemplated, the

**CZECHOSLOVAK ACTIVITY TO PREPARE EUROPEAN NORMS FOR CONTAINERS BEFORE THE SECOND WORLD WAR**

Krzysztof Lewandowski

approximate cost of manufacture of the container, of detachable apparatus and devices that maybe suggested to facilitate loading and unloading. Prices must be stated in dollars.

9. In order to decide on the relative value of the plans submitted, the jury will take into account:

- (a) The lightest weight;
- (b) The lowest cost of manufacture, taking into account royalties to be paid;
- (c) The lowest maintenance charges and greatest length of life;
- (d) The easiest, most rapid, and cheapest handling feature of the container;
- (e) The least trouble in fixing the container to railway trucks or motor lorries;
- (f) The best method of closing.

10. The competition will be in two parts. For the first part, competitors must present their plans to the International Chamber of Commerce before September 10, 1930, accompanied by:

- (a) General plans of the container on a scale of not less than 1 to 10;
- (b) Detailed plans of the principal features and of the devices for attaching the container to the railway truck or motor lorry on a scale not less than 1 to 5;
- (c) Calculation of the parts and devices subjected to heavy stress, especially lifting devices;
- (d) If necessary, a reference to patents covering the devices submitted in whole or in part, as well as an indication of royalties demanded for the use of each such patent.

The plans and documents submitted therewith must be in French. The jury will then proceed to a selection. The best plan will be retained for the second part of the competition. For the second part of the competition, competitors must undertake the construction of their models that will be submitted to the tests considered necessary by the jury. The jury may call upon several competitors to agree to present a single model, uniting the various features selected as best from their plans. In case of the refusal of the competitors to conform to the instructions of the jury provided in the two above paragraphs, the jury may have the model built and deduct the cost thereof from the prizes to be distributed to no consenting competitors.

11. The jury will be entirely free to award, within the limits of the credits placed at its disposal for this purpose, such prizes as it may consider justified by the importance of the new inventions submitted to it. The above credit is a maximum which the jury is not obliged to award in full if it thinks fit.

12. The prize-winning models will be exhibited. They may be accompanied by a text in the competitor's native tongue [9].

The jury nominated by the committee was constituted as follows [12]: League of Nations.—General de Candolle; International Chamber of Commerce.—Jacques

Lacour-Gayet, A. Maynard, Paul Silverberg.; Dr. Zietzschmann; International Union of Railways.—G. Del Guerra, F. Duchatel, H. W. Philips; International Association of Recognized Automobile Clubs.—Colonel Peron; International Permanent Bureau of Motor Manufacturers.—Dr. Scholz; Bureau International de Normalisation de Automobile.—Maurice Berger; International Federation of Commercial Motor Transport.—A. Kundig; Secretaries—G. Del Guerra, G. Dugeon, Paul Wohl.

The competition was intended not only for transport undertakings and builders of transport material, but also for forwarding agents' organizations, i.e., all those interested in traffic questions.

On September 10, 1930, drawings of competitors from the following countries were submitted: Czechoslovakia, France, Germany, Great Britain, Italy, Rumania, Spain, and Switzerland.

The jury retained the 14 following drawings for the first stage of the competition:

- Butterley Iron Works Derby (England).
- Christoph & Unmack Aktiengesellschaft, Niesky (Germany).
- Ewak A. G., Berne.
- Forges de Strasbourg, Strasbourg.
- Gesellschaft m. b. H. für Oberbauforschung, Berlin 1.
- Gloucester Railway Carriage & Wagon Co., Ltd. Gloucester (England).
- Gothaer Waggonfabrik A. G., Gotha.
- Gottfried Lindner Aktiengesellschaft, Ammendorf (Germany).
- Le Metal Deploye, Paris.
- Maschinenfabrik Augsburg-Nürnberg A. G.
- Officine Mecaniche Italiane, Reggio Emilia (Italy).
- Siegener Eisenbahnbedarf Aktiengesellschaft, Siegen. (Germany).
- Thiercelin Aine et Boisse, Paris.
- Waggonfabrik A. G. Uerdingen (Germany).

These drawings were examined by the jury, the following points being specially taken into consideration: tare or maximum load, unit capacity of loading, resistance to normal strain, impact resistance, protection against condensation, ventilation, protection against rain, weatherproof properties of door joints, protection against risk of damp, arrangement of doors, their number and position, fastening of doors, handling of containers, placing of them side by side and one on the other, securing of containers, projections in the interior of the containers, cost of manufacture, cost of maintenance, and assembling component parts of collapsible containers.

Out of 14 competitors, the following 6 with 13 types of containers were retained for the second stage [6]:

- Butterley Iron Works, Derby (Figure 1). 1 closed and 2 open which 1 was demountable;
- Gesellschaft m.b.H. für Oberbauforschung (Sirius), Berlin. 2 closed;



**CZECHOSLOVAK ACTIVITY TO PREPARE EUROPEAN NORMS FOR CONTAINERS BEFORE THE SECOND WORLD WAR**

Krzysztof Lewandowski

- Gloucester Railway Carriage & Wagon Co. Ltd., Gloucester (Figure 2), 1 closed;
- Gothaer Waggonfabrik A.G., Gotha, 2 closed and 1 open, which was collapsible ;
- O.M.I.- Officine Mecanniche Italiane, Reggio Emilia, 1 closed and 1 open;
- Siegener Eisenbahnbedarf Aktiengesellschaft, Siegen, 2 closed of which 1 was demountable.

These competitors were asked to submit models belonging to the first category laid down in the competition conditions. The practical tests which formed the second stage of the competition took place in Venice on September 30, 1931, on one of the platforms of the Maritime Station (Mole di Ponente), kindly placed at the disposal of the jury by the Italian railway management, who had taken the greatest care to provide all the equipment necessary to conduct the various tests [12].

Tests including [6]: Drenching for 5 minutes by means of the special appliance which delivered water under pressure over all parts of containers, Shock resistance when loaded with 5 ton and shunted against a dead stop buffer at speed of 0 kilometres per hour, Compression under a superimposed load 12,5 tons, Result of a drop or fall from a height of 1 ft. 7 in. (50cm), for this purpose one end only was lifted to the requisite height and then suddenly released, Tests of loading into vessel [6].



Figure 1. Butterley containers under competition in Venice 30 September 1931 [6]

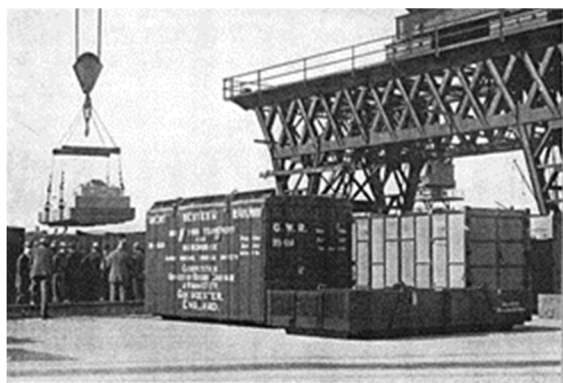


Figure 2. Gloucester containers under competition in Venice 30 September 1931 [6]

**3 Creation an International Container Bureau B.I.C.**

After test competition on Venice in Europe many state railroads had problems with fluently economic. Very important were information from North America. There in 1928 Pennsylvania Railroad (PRR) start with regular container service in east north of United States of America. In April of 1929 in Washington three railroads companies spoke about provides for container transport [1]. After begin a Big Depression in world economy (1929) in many countries all kinds of transport were without cargo (Figure 3, Figure 4). Railroads was sought a possibility to find a cargo, and container was a big chance. In November 1932 in Enola PRR opened first rail container terminal in the world (Figure 5) [13].



Figure 3. Rail wagons without cargo [3]



Figure 4. Sea ships without cargo [19]



Figure 5. Enola rail container terminal, opened by Pennsylvania Railroad in November 1932 [8]

**CZECHOSLOVAK ACTIVITY TO PREPARE EUROPEAN NORMS FOR CONTAINERS BEFORE THE SECOND WORLD WAR**

Krzysztof Lewandowski

That was good conditions to create a container office. Under the auspices of the International Chamber of Commerce on February 22, 1933, in Paris, France, has been taken resolution by the Committee recommending the creation of an International Container Bureau, and was the inaugural meeting of the International Container Bureau (BIC). In addition to the German, French, British, Italian, and Belgian railways, who have already agreed in principle to affiliate, many of the railway administrations belonging to the International Union of Railways, as well as the automobile organizations, shipping companies, associations of forwarding agents, etc., of a number of countries were represented at this meeting. The object of the International Container Bureau is to organize International collaboration on a permanent basis for the best possible exploitation of containers in international traffic [7].

There were three forms of cooperation with companies and countries. The first group is formed private or public transport and railway lines and groups of visitors, created on the basis of an agreement between the lines and transport and railway companies operating over containers. These were: England, Belgium, China, France, Spain, Italy, the Netherlands, Germany, Morocco and Saar Basin.

The second group, corresponding members, create institutions and individuals producing, exploiting, or interested in the technical progress of containers. These were: England, Belgium, Czechoslovakia, Denmark, France, Spain, Italy, Germany, Poland and the United States of North America .

The third group consisted of members of the founding members of the office BIC, which also organized in the 1930-1931 competition in Venice for most practical container. These were: England, Belgium, France, Germany and Italy [14].

**4 Norms For European Containers**

**4.1 First norm for European containers 1933 year**

In June 1933 'Bureau International des Containers et du Transport Intermodal' (B.I.C.) decided about obligatory parameters for containers uses in international traffic. Containers handled by means of lifting gear, such as cranes, overhead conveyors, etc. for traveling elevators (group I containers), constructed after July 1, 1933 [11]. Obligatory Regulations:

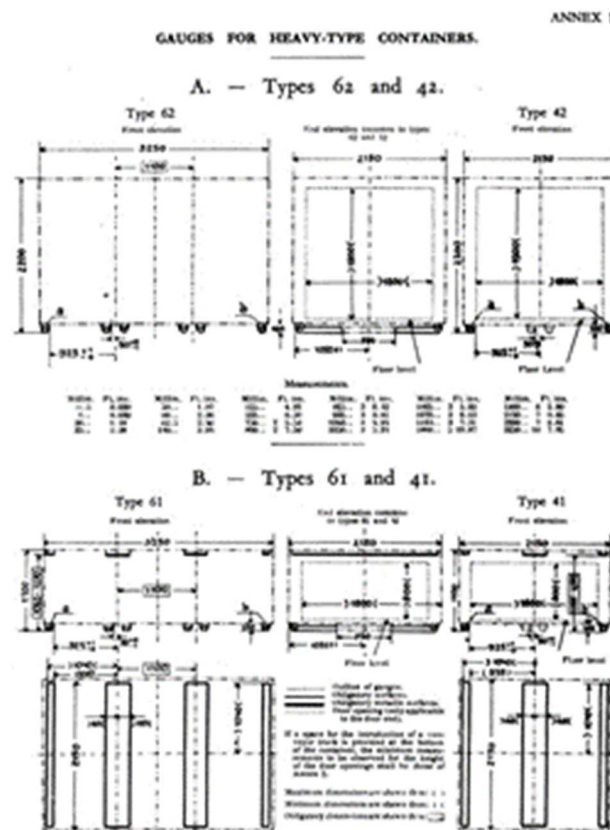
Clause 1.—Containers are, as regards form, either of the closed or the open type, and, as regards capacity, either of the heavy or the light type (Figure 6 and 7).

Clause 2.—The loading capacity of containers must be such that their total weight (load, plus tare) is: 5 metric tons for containers of the heavy type; 2.5 metric tons for containers of the light type; a tolerance of 5 percent excess on the total weight is allowable under the same conditions as for wagon loads (Table 2) [11].

For identification that containers is for international trade BIC definite a sign as a big letter **i** – as international (Figure 8).

*Table 2. Obligatory norms for European containers since 1 July 1933 [ 11]*

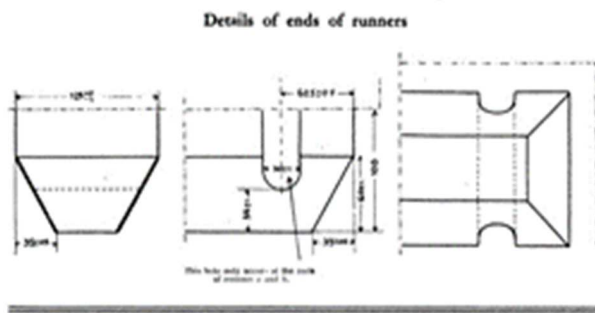
Heavy types	length [m]	width [m]	high [m]	Total mass [tons]
Close type 62	3.25	2.15	2.20	5
Close type 42	2.15	2.15	2.20	5
Open type 61	3.25	2.15	1.10	5
Open type 41	2.15	2.15 <td 1.10	5	
Light Type	length [m]	width [m]	high [m]	
Close type 22	2.15	1.05	2.20	2,5
Close type 201	2.15	1.05	1.10	2,5
Open type 21	2.15	1.05	1.10	2,5



*Figure 6. Gauges for heavy type containers from European norms since 1 July 1933 [12]*

**CZECHOSLOVAK ACTIVITY TO PREPARE EUROPEAN NORMS FOR CONTAINERS BEFORE THE SECOND WORLD WAR**

Krzysztof Lewandowski



ANNEX 2.

**GAUGES FOR LIGHT-TYPE CONTAINERS.**

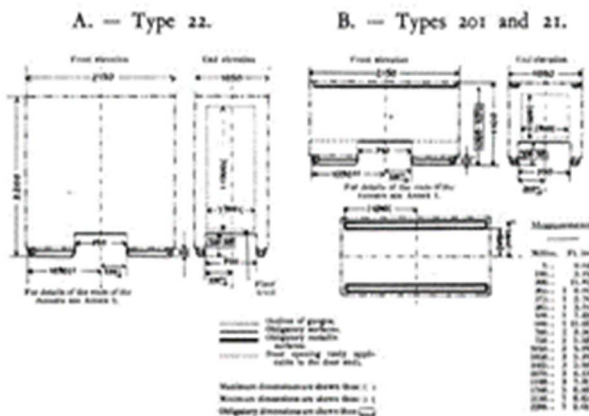


Figure 7. Details and gauges for light type containers from European norms since 1 July 1933 [12]

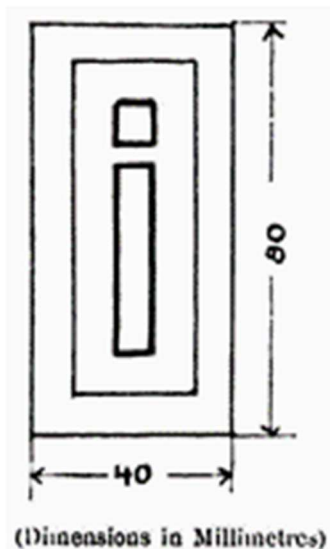


Figure 8. Sign for containers accepted in international traffic and maximal gauges for container type 62 from European norms since 1 July 1933 [12]

Implementation of containers by the office of the BIC resulted in changes in Czechoslovakia.

In July 1933 labour organizations of shippers and railroads made the proposal to organize into cooperatives, whose aim was to cover the entire collection and action steps freight to rail, car sharing, through the common organization of acquisition and installation services for railway Czechoslovakia. That was based on results of exploitation of Deutsche Reichsbahn Schenker Company from 1928. The aim was to create groupage centres of trade and industry [20]. Now, after near 90 years we see that speditor can help railways provide for better economy condition.

**4.2 Second norm for European containers from 1935 year**

From 1 January 1935 in Europe was UIC Convention on the mutual use of the container. It defines word container, low of owner of containers and a customs regulation [18]. Under meeting of UIC in Baden-Baden established parameters for intentional container after 1 April 1935. Obligatory parameters for containers are using in international traffic (Table 3.) [21] [5]:

Table 3. Obligatory norms for European containers since 1 April 1935 [21]

Category	Length [m]	Width [m]	High [m]	Total mass [tons]
1) Heavy types				
Close	62	3,25	2,15	5
	42	2,15	2,15	
Open	61	3,25	2,15	1,125
	41	2,15	2,15	
2) Light Type				
Close	32	1,50	2,15	2,5
	22	1,05	2,15	

In 11-19 April, 1935, in Milano was Second Meeting of B.I.C. There were was presentation and tests of containers [15]. In 16-19 June 1937 was in Paris the Second International Week of Containers. Under this meeting was spoken about developing of container transport in Europe ad was a presentation types of containers [4].

**Conclusion**

Czechoslovakia had participated in creation of standards of norms for European containers before Second World War.

Czechoslovakia was one country from east and middle Europe which was active in first step of standardization of containers before WWII.

Europe had standard for containers before Second World War. In means that Malcolm McLean wasn't pioneer of containers for Europe, and isn't father of containerization.



**CZECHOSLOVAK ACTIVITY TO PREPARE EUROPEAN NORMS FOR CONTAINERS BEFORE THE SECOND WORLD WAR**

Krzysztof Lewandowski

**References**

- [1] Container service hearings close, *The Railway Age*, April 16, p. 901-905, 1929.
- [2] De Luxe travel on the Nord Railway of France. *Railway Gazette*, no 12, sep. 17 1916, p. 328-331, 1926.
- [3] Dworce towarowe ośrodków przemysłowych. *Gazeta Bydgoska*, nr. 11/1932, p.8, 15.01.1932.
- [4] II Międzynarodowy Tydzień Kontenerów W Paryżu 16 - 19 Czerwca 1937, *Codzienna Gazeta Handlowa / [Ajencja Wschodnia ; red. Adam Brzeg]*. R. 12 (1937) No. 127, wtorek 8 czerwca 1937.
- [5] Informations, Les Transports Combinés Parauto, Rait Et Bateau, *Le Temps* (Paris. 1861) 1929/03/25 (Numéro 97). P.4., 1929.
- [6] International competition for the best type of container, *Railway Gazette* No 16 1931, oct 16, p. 499-501, 1931.
- [7] International Container Bureau. *The Sydney Morning Herald* (NSW : 1842 - 1954) (NSW: National Library of Australia), 18 April 1933. p. 13, 1933.
- [8] KURĄŁOW Teodor: Dzisiejsze koleje amerykańskie, Ładowanie stalowych skrzyń na wagony, *Życie Techniczne*, No. 4, p. 67-71, 1937.
- [9] Le condizioni del concorso internazionale per casse mobili, *Rivista Tecnica delle Ferrovie Italiane* 15 aprile 1930, p. 158-159, 1930.
- [10] LE XIe CONGRÈS INTERNATIONAL DES CHEMINS DE FER (Madrid, 5-15 mai 1930). „Le Génie civil » : revue générale des industries françaises et étrangères, 1930/06/24 (A50,N25,T96). Tomx XCVI - N- 25, p. 602, 1930.
- [11] Les transports es containers (cadres), *Revue Generale des Chemin de Fer*, No. 5 1933 II p. 301-304, 1933.
- [12] LONG RODNEY W.: *Railway And Highway Transportation Abroad A Study 1935 Of Existing Relationships Recent Competitive Measures And Coordination Policies 1935 155*, Trade Promotion Series—No. 155 Transportation Division, U.S. DEPARTMENT OF COMMERCE 1935.
- [13] L'organisation du service par containers sur le Pennsylvania Railroad, *Revue Generale des Chemin de Fer* nr 6 1936, p. 455-456, 1936.
- [14] Międzynarodowe Biuro Dla Kontenerów, (Bureau International Des Containers), „*Codzienna Gazeta Handlowa*” / [Ajencja Wschodnia ; red. Adam Brzeg]. R. 10 (1935) nr 108, 1935.
- [15] Próby Techniczne Kontenerów Dla Przewozu Drobnicy, *Codzienna Gazeta Handlowa / [Ajencja Wschodnia ; red. Adam Brzeg]*. R. 10 (1935) nr 76 niedziela 31 marca-poniedziałek 1 kwietnia 1935.
- [16] The World Motor Congress at Rome, *Railway Gazette*, Oct. 26, p. 520-523, 1928.
- [17] Transport Matters For Discussion. *Commercial Motor*, 14th June 1927, p. 64, 1927.  
<http://archive.commercialmotor.com/article/14th-june-1927/64/transport-matters-for-discussion>.
- [18] Übereinkommen über die gegenseitige Benutzung der Behälter (Container) im Bereiche des Vereins Mitteleuropäischer Eisenbahnverwaltungen. Gültig vom 1. Januar 1935 an. [1934.] 19 s. 4 taf.
- [19] Wielki zastój w porcie hamburskim, *Gazeta Bydgoska*, nr. 174/1931, 31.07.1931, p.6, 1931.
- [20] Współpraca spedytorów z koleją w Czechosłowacji (c) *Codzienna Gazeta Handlowa / [Ajencja Wschodnia ; red. Adam Brzeg]*. R. 8 (1933) nr 195, niedziela 27 — poniedziałek 28 sierpnia 1933, p. 5, 1933.
- [21] WSZEWŁAD Nikolajew: Przewóz w kontenerach, *Inżynier Kolejowy* 5/1935, 1935.

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