Oct. 29, 1957 E. BELLMANN 2,811,032

TEXTILE TREATING CHAMBERS

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Fig. 1.

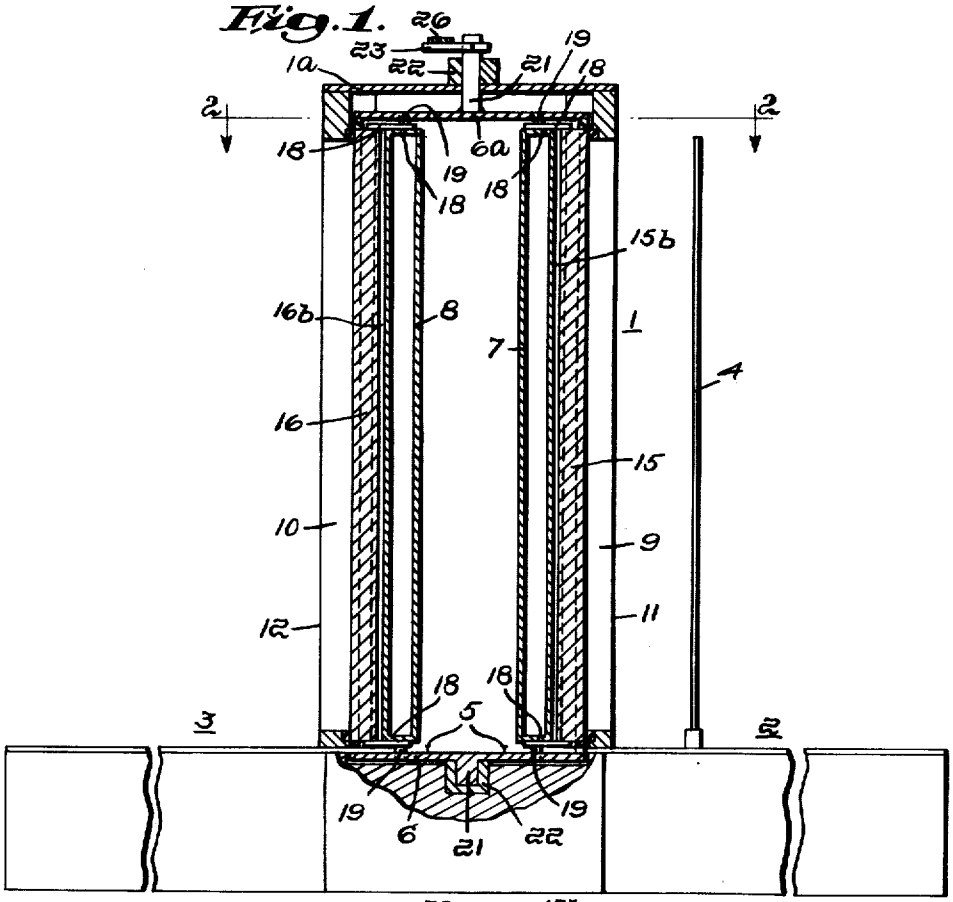


Fig. 2.

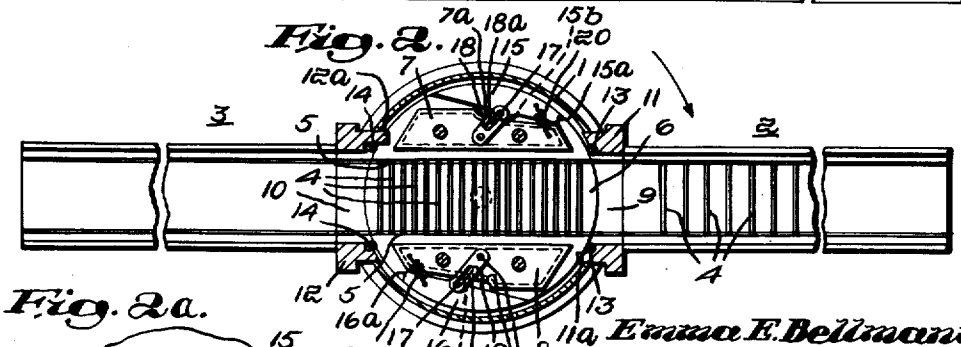
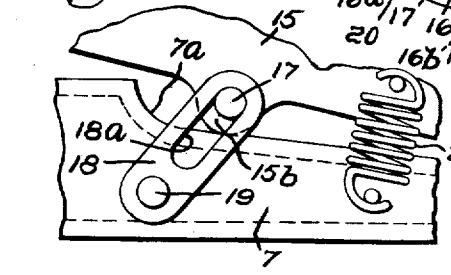


Fig. 2a.



Emma E. Bellmann,
Ruth Kronsbein,
Friedhelm Bellmann,
heirs of the estate of
Eugen Bellmann,
deceased
By Attorney

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TEXTILE TREATING CHAMBERS

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Fig. 3.

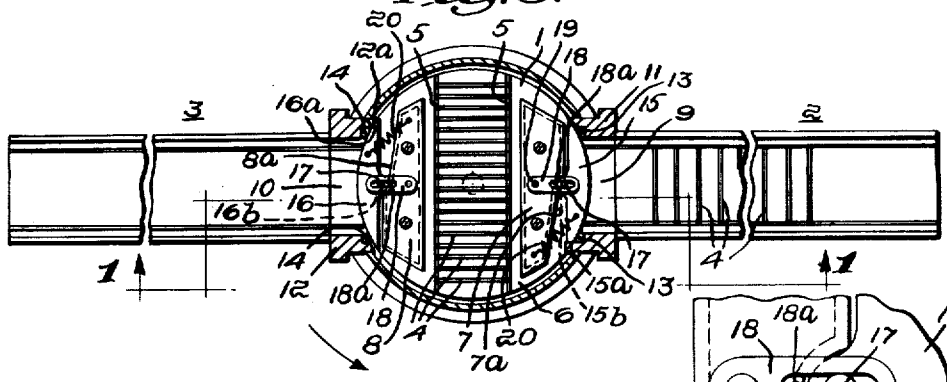


Fig. 4.

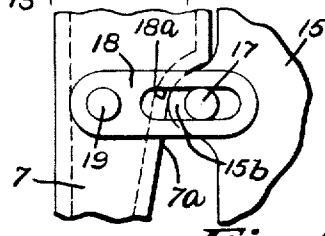
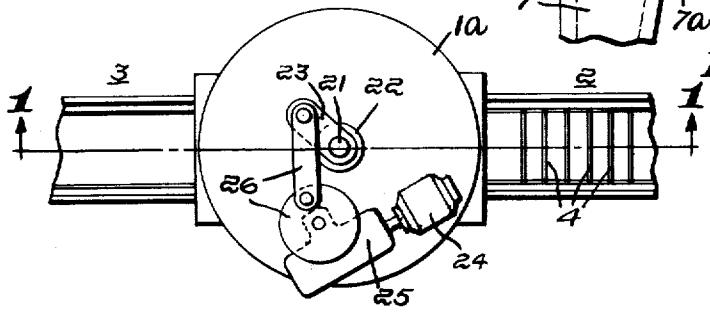


Fig. 5.



Emma E. Bellmann,
Ruth Kronsbein,
Friedhelm Bellmann,
heirs of the estate of
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TEXTILE TREATING CHAMBERS

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Fig. 6A.

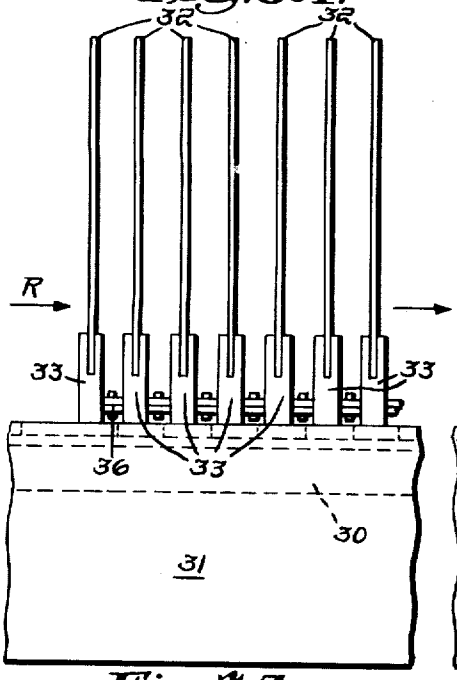


Fig. 6B.

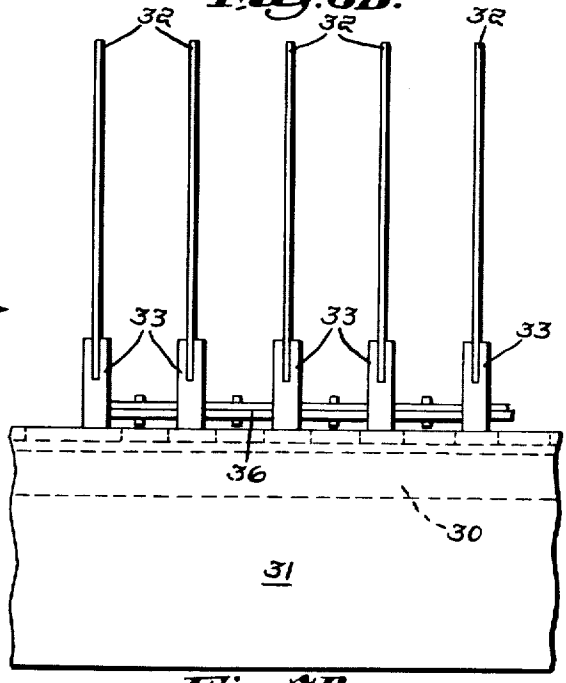


Fig. 7A.

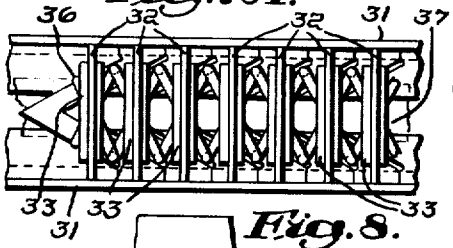


Fig. 7B.

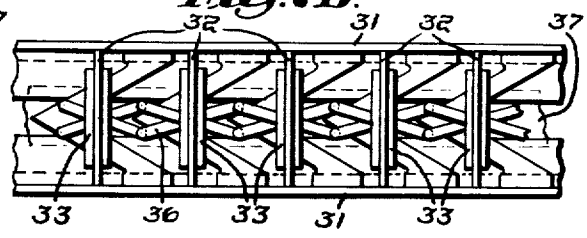
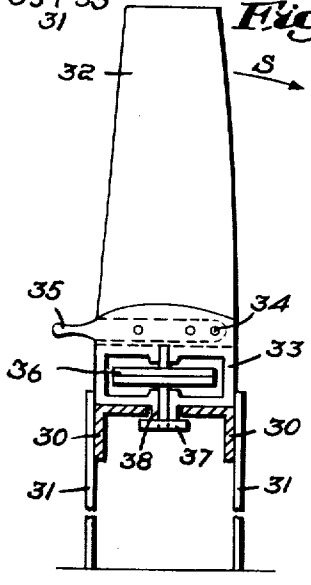


Fig. 8.



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by Irwin Lahn Attorney

United States Patent Office 2,811,032 Patented Oct. 29, 1957

2,811,032

TEXTILE TREATING CHAMBERS

Eugen Bellmann, deceased, late of Hagen, Germany, by Emma Elfriede Bellmann, geb. Vogelsang, Ruth Kronsbein, née Bellmann, and Friedhelm Bellmann, Hagen, Germany, heirs

Application March 23, 1955, Serial No. 496,242

Claims priority, application Germany March 25, 1954

6 Claims. (Cl. 68—5)

This invention relates to chambers for treating textiles, and more particularly to chambers for steam treating hosiery.

In some processes involving the semi-continuous batch treatment of textiles the same must be introduced into a chamber where they are treated for a predetermined period of time as, for instance, by the application of steam. A treating chamber for such a process should, therefore, be adapted to be quickly charged with the goods intended to be steam treated, quickly closed, quickly filled with steam, and enable a quick removal of the goods upon steam treatment thereof.

It is, therefore, an object of this invention to provide a treatment-chamber for textile materials complying with these requirements.

Another object of the invention is to provide a treatment chamber of the aforementioned character wherein the ratio of the space occupied by the goods to be treated to the volume of steam required to fill the chamber is as large as possible, thus minimizing the amount of steam needed to treat each batch.

Another object of the invention is to provide a treatment chamber having substantially fluid-tight doors operated and firmly held tightly closed by positive means rather than by the difference between inside pressure and outside pressure.

Another object of the invention is to provide chambers for the treatment of textiles which are adapted to be used jointly with like chambers forming jointly compact groups of chambers suitable for performing sequential operations or steps in carrying out flow type batch processes.

The novel features that are considered characteristic of the invention are set forth in particular in the appended claims. The invention itself, however, both as to structure and operation with additional objects and advantages thereof will best be understood from the following detailed description of a preferred embodiment thereof when read in connection with the accompanying drawing in which,

Fig. 1 is in part a diagrammatic front view and in part a vertical section along 1—1 of Fig. 3 of a treatment chamber embodying the invention associated with two aprons or conveyor belts, the doors of the chamber being shown in the closed position thereof;

Fig. 2 is a cross-section through the structure shown in Fig. 1 along 2—2 of Fig. 1 with the doors of the structure in open position to be able to charge the chamber with textile materials; Fig. 2*a* is a top-plan view on a larger scale of a detail of Fig. 2.

Fig. 3 is a cross-section similar to that shown in Fig. 2 with the doors thereof in closed position in which position steam is permitted to be introduced into the chamber;

Fig. 4 is a top-plan view of a motor drive for opening and closing the doors of the chamber;

Fig. 5 is a top plan view of the same detail as shown

in Fig. 2*a*, the constituent parts thereof being shown in another position than in Fig. 2*a*, comprising a plurality of chambers of the type shown in Figs. 1 to 4, inclusive.

Referring now to the drawing, and more particularly to Fig. 1 thereof, reference numeral **1** has been applied to generally indicate a treating chamber which is substantially cylindrical. Reference numerals **2** and **3** have been applied to generally indicate conveyor belts or aprons for conveying the goods to be treated to the treating-chamber **1**, and for conveying the goods away from chamber **1** upon treatment of the goods in that chamber. The goods may be carried in carriages supported by aprons **2** and **3**. Each such carriage carries one batch of goods to be heat or steam treated. When one of such carriages arrives at the treating chamber **1**, it is moved from apron **2** into chamber **1** and remains therein for a predetermined period of time. During that period of time the treating chamber must remain tightly closed while steam, hot air or another treating fluid may be introduced into it. When the treatment of the textile charge of chamber **1** is completed, the carriage with the goods on it is moved out of chamber **1** upon apron **3**, and chamber **1** is then ready to be charged with another batch of goods. If it is intended to treat hosiery such as, for instance, ladies stockings, a number of individual supports are provided on the carriage, one for each stocking. Reference numeral **4** has been applied in Fig. 1 to indicate one of a plurality of such supports.

Referring now to Figs. 2 and 3, numeral **5** has been applied to indicate a track on a circular platform arranged within treating chamber **1**. Platform **6** is adapted to be turned about a vertical axis extending across the center of platform **6**. Platform **6** may be turned at will either in clockwise direction or counterclockwise direction. This rocking movement of platform **6** may be effected by any suitable motor drive. No such motor drive has been shown in Figs. 2 and 3, but a preferred form of such a motor drive for platform **6** has been illustrated in Fig. 4 which will be considered below in detail. Figs. 2 and 3 show a number of hosiery supports **4** which are arranged on a cart or carriage within chamber **1**. Tanks **7** and **8** which may contain hot water, steam, or any other suitable source of heat or treating fluid are arranged on both sides of track **5**. Tanks **7** and **8** are relatively bulky and thus reduce the amount of steam, or other treating fluid required to fill treating chamber **1**. Door openings **9** and **10** on diametrically opposite sides of treating chamber **1** serve the purpose of introducing goods into, and removing goods from, treatment chamber **1**. Door opening **9** is surrounded by a door frame **11** and door opening **10** by a door frame **12**. Door frames **11** and **12** support flexible gaskets or seals **13**, **14**, intended to cooperate with doors **15**, **16** to effect a substantially gas-tight closure of treating chamber **1** during treating periods. The doors **15**, **16** for closing openings **9**, **10** are substantially in the shape of cylinder segments having substantially the same outside radius as the inside radius of chamber **1**. Door **15** has an abutment **15***a* intended to cooperate with an abutment **11***a* on door frame **11**. Similarly door **16** has an abutment **16***a* intended to cooperate with an abutment **12***a* on door frame **12**. The radially inner surfaces of doors **15**, **16** each have a semi-cylindrical projection **15***b*, **16***b* in cooperative engagement with cam surfaces **7***a*, **8***a* provided on the sides of tanks **7**, **8** remote from track **5**. Each projection **15***b*, **16***b* is provided with a pin **17** in the center thereof engaging an oblong hole **18***a* of a link **18** pivoted at **19**. Cam surfaces **7***a*, **8***a* are supported by platform **6** and form preferably integral parts of tanks **7** and **8** on which they are mounted. Pins **17** and **19** and links **18** are preferably arranged both on the lower

side and the upper side of each door **15**. **16**. Springs **20** attached to doors **15**, **16** and to tanks **7**, **8** or to another suitable spring anchor on platform **6** tend to turn doors **15**, **16** about projections **15***b*, **16***b* and coaxial pins **17** to the positions shown in Fig. 2.

In the position of the parts of treating chamber **1** shown in Fig. 2 the forms **4** supporting hosiery to be treated can be introduced into chamber **1** through either door openings **9** or **10**, say door opening **9**. Thereupon platform **6** is caused to turn about its vertical axis. Initially the doors **15**, **16** are carried along, i. e. move simultaneously with platform **6**. Upon a predetermined joint travel of doors **15**, **16** and platform **6** the former are stopped by engagement of abutments **11***a*, **15***a* and **12***a*, **16***a*. This results in a movement of doors **15**, **16** relative to platform **6** radially outwardly against the flexible gaskets or seals **13**, **14**. The shape of cam surfaces **7***a*, **8***a* is such as to reduce the distance between door openings **9**, **10** and the respective points of cam surfaces **7***a*, **8***a* situated in the median plane of door openings **9**, **10** as platform **6** continues to revolve in clockwise direction as seen in Figs. 2 and 3. When the semi-cylindrical projections **15***b*, **16***b* on doors **15**, **16** are being engaged by the upper steep shoulder portions of cams **7***a*, **8***a*, the maximum closing pressure is applied to doors **15**, **16** by cams **7***a*, **8***a*. Thus the closing pressure for the doors **15**, **16** is being derived from any clockwise torque imparted to platform **6**. The cooperating abutments **11***a*, **15***a* and **12***a*, **16***a* are arranged in such a way that the rotary motion of doors **15**, **16** about the axis of rotation of platform **6** is stopped when the doors register with door openings **9**, **10**.

Referring now to Figs. 1 and 4, it will be apparent from these figures that tanks **7**, **8** are tied together by a circular ceiling plate **6***a* having the same dimensions as platform **6**. Platform **6** and ceiling plate **6***a* are provided with axles **21** arranged in suitable bearings **22**. The upper bearing **22** is provided on the top **1***a* of the housing defining the treatment chamber. Lever **23** keyed to upper axle **21** is adapted to be rocked by an electric motor **24** by the intermediary of a reducing gear **25** and crank mechanism **26**. To close doors **15**, **16** motor **24** is operated in one direction, and to open doors **15**, **16** the direction of rotation of motor **24** is reversed.

While the invention has been disclosed in accordance with the provisions of the patent statutes, it is to be understood that various changes and modifications may be made without departing from the spirit and scope of the invention.

It is claimed:

1. An arrangement for treating textiles comprising a platform pivoted about a vertical axis, means for pivoting said platform to either of two limit positions, means defining a treatment chamber surrounding said platform, a pair of door openings each on opposite sides of said treatment chamber defining means, a pair of doors supported by said platform each shaped to cooperate with one of said pair of door openings to close said treatment chamber when said platform is in one of said limit positions thereof, automatic operating means for said pair of doors to cause closing of said pair of door openings when said platform is in said one of said limit positions thereof, a pair of spaced relatively bulky structures supported by said platform reducing the internal volume of said treatment chamber, each of said pair of structures having a surface operatively related to said operating means to receive the force of reaction of the closing pressure of one of said pair of doors against said treatment chamber defining means.

2. An arrangement for treating textiles comprising a platform pivoted about a vertical axis, a power drive selectively imparting torque in different directions to said platform to cause pivotal motion thereof to one of two limit positions, a track extending diametrically across said platform, means defining a treatment chamber surrounding said platform, a pair of door openings each on opposite sides of said treatment chamber defining means, a pair of doors supported by said platform each shaped to cooperate with one of said pair of door openings to close said treatment chamber when said platform is in one of said limit positions thereof, a pair of spaced relatively bulky structures supported by said platform to substantially reduce the internal volume of said treatment chamber arranged radially outwardly from said track each on an opposite side thereof, abutments on said treatment chamber defining means cooperating with said pair of doors limiting said pivotal motion of said platform upon registry of said pair of doors with said pair of door openings, and cooperating wedge action means on said pair of doors and on said pair of structures for causing engagement under pressure of said treatment chamber defining means by said pair of doors by virtue of said torque imparted to said platform by said power drive.

3. An arrangement according to claim 2 wherein said pair of spaced relatively bulky structures consists of a pair of fluid storage tanks.

4. In an arrangement for treating textiles the combination of a platform adapted to be pivoted about the vertical axis thereof in a door closing direction and a door opening direction, motor means selectively imparting torque to said platform in different directions to cause pivotal motion thereof in said door closing direction, a track extending across said platform, means defining a treatment chamber surrounding said platform, a pair of door openings each on opposite sides of said treatment chamber defining means, a pair of doors shaped to cooperate with said pair of door openings to close said treatment chamber, a pair of door supports supported by said platform arranged radially outwardly from said track each on an opposite side thereof, each of said pair of door supports supporting one of said pair of doors, abutments on said treatment chamber defining means adjacent said door openings thereof limiting the rocking motion of said pair of doors about said vertical axis in said door closing direction of said platform, cooperating guide means on said pair of doors and on said pair of door supports permitting pivotal movement and limited radial movement of said pair of doors relative to said platform, and cam means on said pair of door supports cooperating with said pair of doors exerting closing pressure for said pair of doors derived from said torque imparted to said platform in said door closing direction thereof.

5. In an arrangement for treating textiles the combination of means defining a treating chamber; a pair of door openings each on opposite sides of said chamber; a platform pivotally mounted inside said chamber; a motor drive imparting a torque to said platform for pivoting said platform; a pair of spaced tanks supported by said platform defining a passage therebetween; a pair of doors supported by said platform for joint pivotal movement with said platform, each of said pair of doors being arranged at one of the ends of said passage and each being shaped to cooperate with one of said pair of door openings to close said chamber; guide means on said platform for said pair of doors permitting a limited radial movement of each of said pair of doors relative to said platform; abutments on said chamber adapted to engage said pair of doors for limiting said joint pivotal movement of said pair of doors and said platform in door closing direction of said platform; and cam means on the sides of said pair of tanks remote from said passage adapted to cooperatively engage surfaces of said pair of doors to transmit a component of said torque imparted by said motor drive to said platform upon said pair of doors to exert a closing pressure upon said pair of doors.

6. In an arrangement for treating textiles the combination of means defining a substantially cylindrical treat-

ing chamber, a pair of door openings each on opposite sides of said chamber; a substantially circular platform pivotally mounted inside of said chamber; a motor drive for rocking said platform; a pair of doors each substantially in the shape of a cylinder segment having substantially the same outside radius as the inside radius of said chamber and each adapted to engage one of said pair of door openings to close said chamber, said pair of doors being supported by said platform for joint pivotal movement therewith; vertical pin means on each of said pair of doors; guide means fixedly mounted on said platform cooperatively engaging said pin means, said guide means

being adapted to allow a limited radial motion of said pin means and of said pair of doors relative to said platform; abutments on said chamber adjacent said door openings thereof adapted to engage said pair of doors to limit said joint pivotal movement of said platform and said pair of doors in door closing direction of said platform; and cam means fixedly mounted on said platform cooperating with said pair of doors to push said pair of doors radially outwardly upon engagement of said pair of doors by said abutments.

No references cited.