Jan. 19, 1960 C. C. RIEMENSCHNEIDER 2,921,689

RACK WITH OPTIONAL ROTATABLE SPINDLES OR STATIONARY SPINDLE SUPPORTED SHELVES

Filed May 13, 1955 2 Sheets-Sheet 1

Fig. 2.

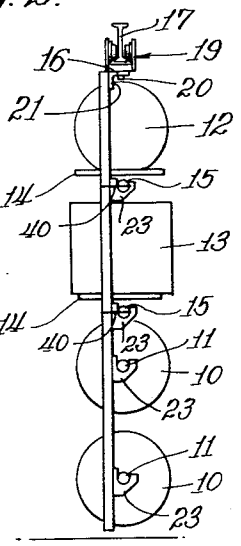
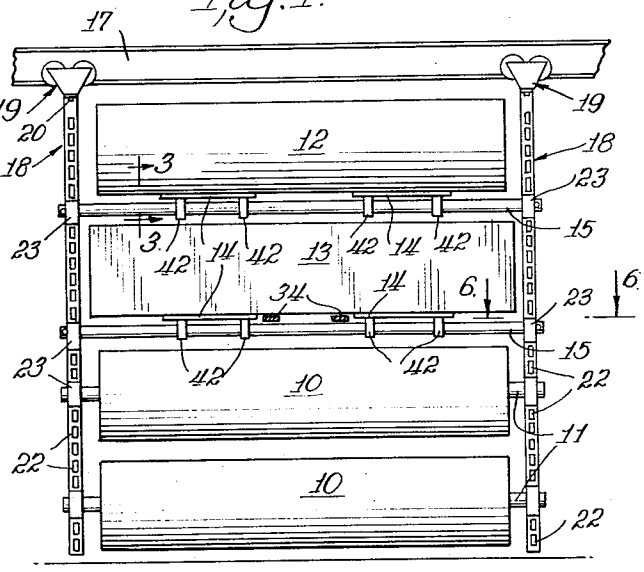


Fig. 1.



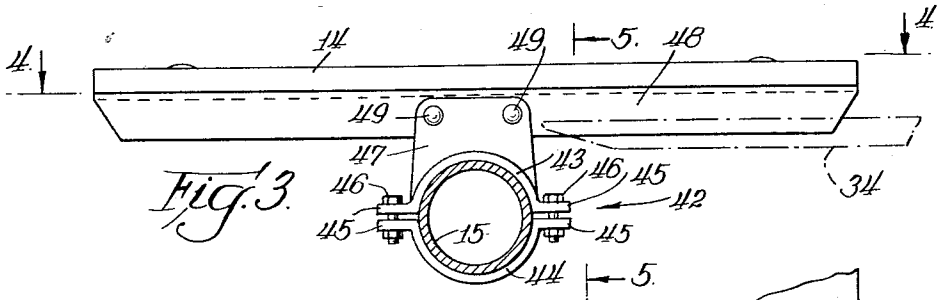
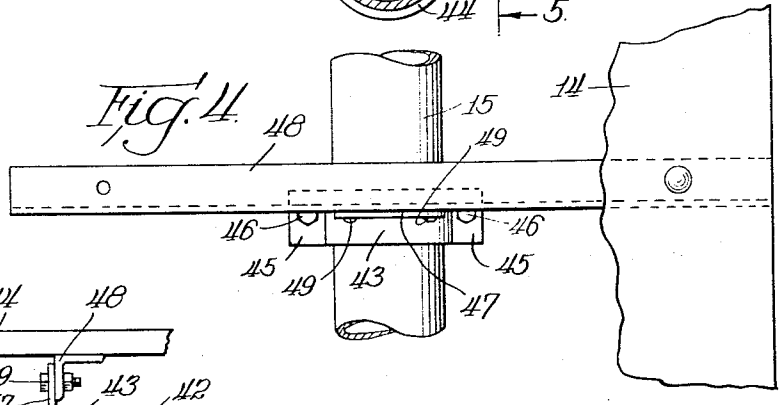


Fig. 3.

Fig. 4.



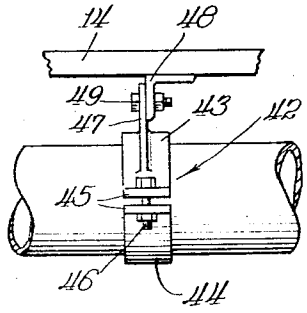


Fig. 5.

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Fig. 6.

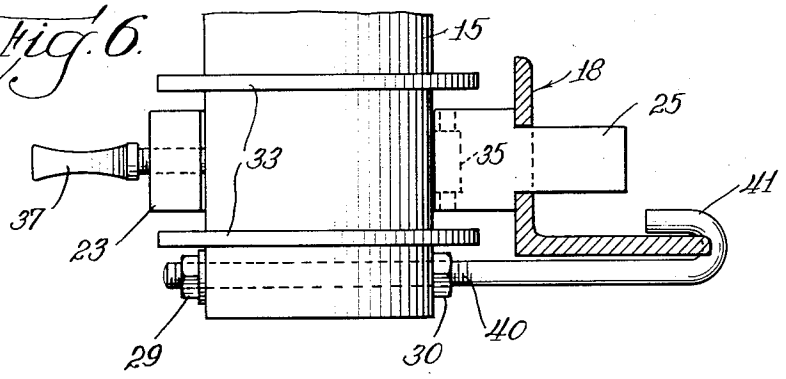
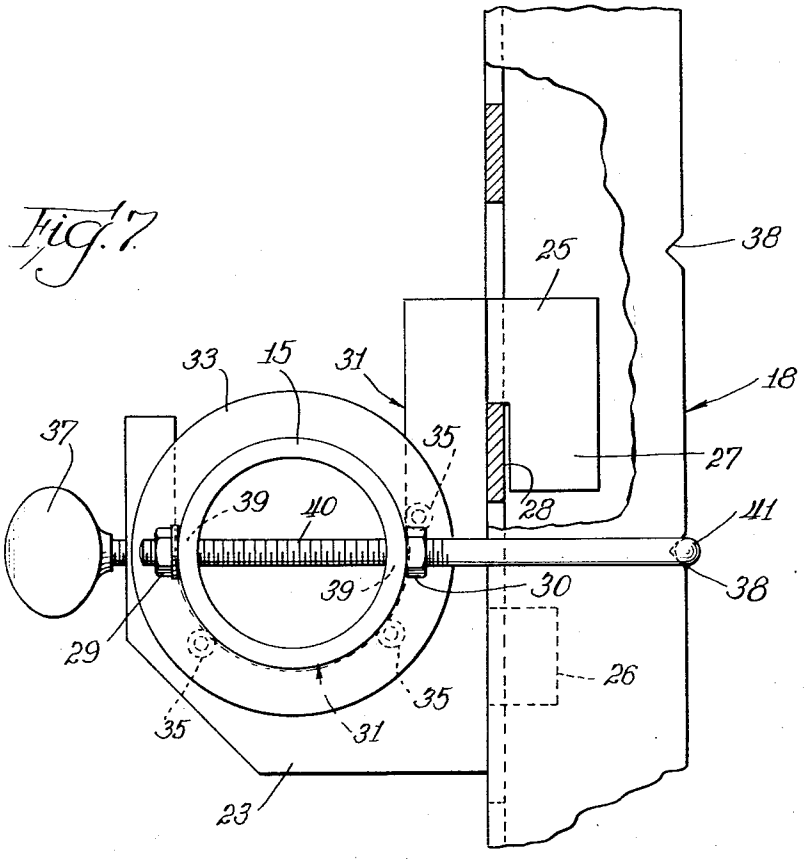


Fig. 7.



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RACK WITH OPTIONAL ROTATABLE SPINDLES OR STATIONARY SPINDLE SUPPORTED SHELVES

Claud C. Riemenschneider, Western Springs, Ill.

Application May 13, 1955, Serial No. 508,072

9 Claims. (Cl. 211—2)

My invention relates to racks of the type adapted to support articles individually in series, one above the other, as for example rolls of carpeting or the like, and has reference more particularly to a rack which is adapted to support such articles rotatably on spindles which are utilizable also to support articles stationarily thereon on pallets or shelf-like supports, the present invention being an improvement on the rack structure disclosed in my copending application Serial No. 508,071, filed May 13, 1955.

A rack of the type to which the present invention relates is shown in my Patent No. 2,601,560 granted June 24, 1952, wherein a series of spindles which are adapted to support rolls of carpeting thereon are mounted in vertically spaced series and are individually adjustable vertically on a pair of hangers which are supported on an overhead track so that the rack and its load may be moved from place to place.

In my aforesaid patent it is contemplated that the rolls of carpeting be mounted on the spindles so that the carpeting may be wound on or unwound from the spindle as required for displaying the carpeting and cutting off lengths therefrom, and for this purpose the spindle may be provided, as shown in said patent, with clamps for attaching the leading edge of the carpeting thereto for winding the carpeting on the spindle or, if the spindle is removable from the rack, it may be inserted endwise through the central opening of the carpet roll and locked on the spindle to rotate therewith, as shown, for example, in my copending applications Serial Nos. 475,186 and 475,204, now U.S. Patents 2,838,249, dated June 10, 1958 and 2,904,278, dated September 15, 1959, both filed December 14, 1954.

Carpet rolls come from the mills in individual crates or boxes or wrapped in burlap and it is oftentimes desirable to store the rolls in the original crates, boxes, or burlap wrappings in the same storage racks which are used for storage of carpet rolls on spindles, and accordingly it is quite advantageous and important that the racks be adapted to support the rolls of carpeting optionally on the spindles on which the carpeting may be wound and unwound or on shelves or pallets upon which the rolls may be laid in their original crates, boxes or wrappings.

Such adaptability is desirable for economy of equipment and space inasmuch as separate complete racks for rotatably supporting the rolls and other separate complete racks with shelves or pallets for supporting the boxed or wrapped rolls would greatly increase the cost of storage equipment and require considerable extra space, and the adaptability should be applicable to any racks with which the storage space is provided, whether the racks are suspended or floor supported, although it is especially advantageous in track supported installations, such as that of my above mentioned patent, inasmuch as the hangers thereof are rather permanently mounted and other complete racks may not be readily substituted at places in the system where it may be desired to store the carpet rolls in the original packages.

Moreover, adaptability of individual carpet mountings of the racks for either spindle or shelf support of the rolls is desirable as it may be advantageous in some cases to support, on the same rack, rolls which may be wound and unwound and also rolls in the original packages.

In the rack disclosed in my above mentioned copending application Serial No. 508,071, the spindles and their supporting brackets are removed and supporting frames having pallets or platforms thereon are substituted for supporting the articles stationarily on the rack, whereas, in accordance with the present invention, the spindles and their supporting brackets are retained and the spindles rendered non-rotatable and provided with pallets or platforms thereon to support the articles stationarily.

Thus by utilizing the present invention, no dismembering of the spindle type rack is required to convert it to the pallet or shelf type, but instead the spindles are retained and employed as the main frame for the pallets or shelves.

The principal objects of the present invention are, to provide improved facilities by which a rack is adaptable to optionally support articles rotatably or stationarily in vertical series thereon; to permit the individual articles of the series to be optionally supported rotatably or stationarily; to retain the article supporting parts in one form, without dismantling thereof, in the converted form; to utilize as part of the stationary supporting facilities, spindles on which the articles are rotatably supported in the other form; and in general to provide a rack with simple and inexpensive facilities by which it is easily and quickly convertible, and without dismantling from one form, to optionally support articles in vertical series thereon rotatably or stationarily, these and other objects being accomplished as pointed out more particularly hereinafter and as shown in the accompanying drawings in which:

Fig. 1 is a front view of a rack structure with a series of articles supported thereon in vertical series some of which are rotatable on spindles and others of which are stationarily supported on pallets mounted on spindles, and includes a fragmentary portion of the beam from which the rack is suspended;

Fig. 2 is an end view of the rack structure of Fig. 1;

Fig. 3 is a view of one of the pallets and the mounting thereof taken on the line 3—3 of Fig. 1 and shows in dotted lines a lifting fork which may be used to store articles on the pallet and remove articles therefrom;

Fig. 4 is a top view of the pallet mounting of Fig. 3 showing only a fragmentary portion of the pallet;

Fig. 5 is a view of the structure of Fig. 4, looking at the right hand end thereof;

Fig. 6 is a top view, greatly enlarged, taken on the line 6—6 of Fig. 1, showing the manner in which the spindle ends are mounted on the hangers of the Fig. 1 rack; and

Fig. 7 is a view taken from the underside of Fig. 6 and showing a fragmentary portion thereof in section.

Referring to the drawings and particularly to Figs. 1 and 2 thereof, there is illustrated a rack structure for optionally storing rolls of material **10** on rotatable spindles **11** or for storing wrapped or boxed rolls of material, designated, respectively, **12** and **13**, on pallets **14** that are rigidly secured to fixedly mounted spindles **15**. Generally the spindles **15** are the same as the spindles **11** and it is an important feature of the invention that the same spindles **11** which are employed for rotatably supporting the rolls **10** may be utilized as the spindles **15** by merely locking selected spindles **11** against rotation and mounting pallets thereon.

This structure offers the advantage that rolls furnished in burlap or in boxes may be individually stored away as furnished or may be mounted on rotatable spindles for display and ready accessibility, depending upon the

needs of the situation. In addition, any particular section of the structure may be converted from one such storing use to the other with but a minimum of change, and this is important since it is frequently desirable to maintain more than one roll of a given type of material in stock, and in such cases it is convenient to be able to store the unused material in its original wrapping.

The rack structure shown in Figs. 1 and 2, which is similar to the rack of my aforesaid patent except for the addition of the pallets and spindle locking facilities thereto, represents only a portion of a storage and display installation such as shown in my aforesaid patent, and in such installations it has been found convenient to be able, alternatively, to store material in its original wrapping or to display it on rotatable spindles. The number of rolls for storage and the number for display may change from day to day, and it is important to be able to convert any particular storage rack or portion thereof from one such use to the other without disturbing the remaining rolls of material.

The rack structure consists of a track **17** from which a pair of hangers or uprights **18** are suspended for supporting a plurality of spindles therebetween. The track **17** may be a standard I-beam of a size suitable for the contemplated loads and may be supported in an overhead position in any convenient manner which will leave the space thereunder free for storage and movement of the racks along the track and will also permit free access to the racks at any place where access is required. The hangers **18**, which are preferably of angle iron, are of suitable length to accommodate the desired vertical storage capacity, and each is attached at its upper end to an individual trolley **19** which rolls along the opposed lower flanges of the I-beam track **17**. The hangers are suspended so as to be retained in upright position, as for example by a bracket **21**, which is secured to the upper end of the hanger and has a horizontal flange portion, as shown at **16** in Fig. 2, which bears flatwise against the horizontal bottom face of the frame of the trolley **19** and is thus secured thereto by a pin or bolt **20** which preferably permits turning of the hanger **18** about the vertical axis of the pin or bolt **20**.

One flange of each of the angle iron hangers, hereinafter referred to as the front flange, is provided with a vertical series of spaced openings **22** and the angle irons are oriented so that the thus apertured flanges are in coplanar relationship with one another and have the other flanges thereof, hereinafter referred to as the side flanges, extending rearwardly at right angles to the plane of the apertured flanges. A series of pairs of roll supporting brackets **23** are detachably engaged in corresponding openings in each of the hangers and are adapted to support the spindles **11** and **15**. Since the brackets are readily removable, their location on the angle irons may be adjusted to provide appropriate vertical spacing in accordance with the diameters of the rolls to be mounted thereon.

The brackets **23** as shown herein are adapted to fit against the slotted flanges of the angle iron hangers and are provided with two lugs **25** and **26** projecting from the back thereof and adapted to engage, respectively, any pair of adjoining slots of the angle iron. The upper lug is formed with a depending portion **27** which, when the lugs **25** and **26** are inserted in the adjacent slots **22** and the bracket slid downwardly until the lugs engage the lower ends of the respective slots, will contact the rear portion **28** of the flange between the engaged slots in a hook-like manner and thereby lock the bracket onto the angle iron. Thus the brackets may be readily removed and located at any adjoining pair of openings throughout the length of the angle iron.

The brackets **23** may be of any appropriate construction with bearing openings or seats therein to support the opposite ends of the spindles rotatably therein, and preferably, although not necessarily, are of open top bearing type so that the spindles may be deposited sidewise therein and lifted sidewise therefrom, the brackets **23** shown herein being of the open top type with a U-shaped recess **31** of sufficient depth to safely retain the spindle end therein and permit rotation thereof. Roll bearings **35** may be provided to insure ease of rotation of the spindle and a set screw **37** may also be provided for adjustment sidewise against the spindle end to provide a braking effect when desired.

The spindles **11** and **15** for supporting rolls of carpeting are usually tubular lengths of pipe and the ends thereof may be plain, or when employed with open top brackets **23**, such as described above, the spindles may have a pair of annular flanges **33** welded thereon in spaced apart relation to accommodate the bracket **23** therebetween.

If the spindle supporting brackets are of the closed bearing type in which the spindles are inserted endwise into the bearing opening thereof, an annular flange like that of the flanges **33** but of loose washer type may be slipped on each end of the spindle at the outer sides respectively of each bracket **23** and retained thereon by a pin or bolt engaged through the end of the spindle at the outer side of the loose washer as is explained more particularly hereinafter.

In accordance with my present invention, the spindles may be rotatable in the brackets **23**, as in the case of the spindles **11**, or may be locked against rotation in the brackets as in the case of the spindles **15**, and in the latter case the spindles have one or more pallets or platform elements **14** secured thereon, preferably in an elevated position thereabove for supporting articles such as the boxed or wrapped rolls, indicated respectively at **13** and **12**, thereon.

To hold the spindle against rotation it is preferably locked at one or both ends to the hanger **18** at that end, and a particularly simple and convenient form of lock is a hook bolt such as indicated at **40** which is inserted through and secured in diametrically opposed openings **39** in the end of the spindle and provided with a hook at one end thereof remote from the spindle as indicated at **41** which is engaged in a notch **38** provided therefor at an appropriate place in the rear edge of the side flange of the hanger **18** at that end of the spindle, the bolt **40** being threaded as indicated and having front and rear nuts **29** and **30** thereon, the former of which serves to clamp and hook end **41** of the bolt securely in the notch **38** and the latter serves as a lock nut to retain the bolt securely against displacement from the locking position.

In such racks it is customary to provide the spindles thereof with facilities at the ends for attachment of a crank or some other means thereto by which the spindle is rotatable, as shown and explained in my above mentioned Patent 2,601,560, and it is also desirable, in some cases as explained above, to provide at the outer side of each bracket **23** a loose washer, similar to the above mentioned flanges **33** and to retain such loose washer on the spindle end by a pin or bolt, and as diametrical holes **39** are oftentimes provided in the spindle ends to accommodate a pin or bolt which is engageable by the crank or other means for rotating the spindle and also utilized for retaining such loose washer on the spindle, the above described hook bolt **40** for locking the spindle against rotation is particularly convenient as it may be secured to the spindle ends in the same holes **39** that are provided for the pin or bolt by which the crank is attached and by which the washer is retained on the spindle end.

The notch **38** in which the hook bolt **40** engages is preferably at the level of the axis of the spindle in the brackets **23** in which the spindle is to be locked so that the bolt **40** extends horizontally sidewise from the spindle end as shown in Fig. 7, and a series of such notches **38** is provided throughout the length of each hanger **18** with the notches of each series arranged respectively at successive levels corresponding to the vari-

ous different levels of adjustability of the brackets 23 along the hangers, so that at any position of adjustment of the brackets 23 on the hangers, the spindle in the thus adjusted bracket may be locked against rotation and in the same manner shown in Figs. 6 and 7.

With the spindle fixedly mounted in the manner above explained at any selected elevation along the hangers 18, one or more pallets 14 are secured on the thus fixedly mounted spindle, as shown particularly in Figs. 3, 4 and 5, each by a pair of clamping brackets of pipe clamp type which are indicated as a whole by the reference numerals 42.

Each said bracket 42 comprises an upper half clamp 43 and a mating lower half clamp 44 each of which has ears 45 at the ends through which bolts 46 are engageable to clamp said parts 43 and 44 on the spindle 15, and each upper clamp part 43 has a plate-like riser 47 integral therewith and extending upwardly therefrom for attachment of the pallet 14 thereto and to support the pallet at an elevation above the spindle 15.

The pallet 14 has a pair of laterally spaced cleats 48 on the underside located respectively near the opposite ends thereof and each cleat 48 is a short length of angle iron with one flange thereof secured to the underside of the pallet and the other flange extending downwardly, as shown in Fig. 5, and each downwardly extending flange is secured midway of its length, by rivets or bolts 49 or in any other convenient manner, to the upper end of a plate-like riser 47.

Thus each pallet 14 has a pair of clamps 42 thereon by which it is fixedly secured on the spindle 15 and these pallets may be adjusted lengthwise of the spindle to any desired location thereon.

Fork lifts are usually employed to load the rolls on the racks and to remove the rolls therefrom and two pallets 14 are preferably employed on each spindle 15 and spaced apart to accommodate the fork 34 of a fork lift therebetween at a place central of the length of the roll and the risers 47 are of such vertical extent to hold the pallets 14 at a sufficient elevation above the spindle to accommodate the fork 34 of the fork lift between the spindle and a roll on the pallets 14 as shown in Figs. 1 and 3.

Thus a spindle type rack, such for example as that of my aforesaid Patent 2,601,560, may be converted at any storage location thereon to support an article, such as a roll of carpeting in its shipping box or wrapping, stationarily and without any dismantling of the spindle type rack by merely locking the spindle at that location against rotation and utilizing the thus locked spindle as the supporting frame member for one or more pallets which are conveniently and securely mountable on the locked spindle.

While I have shown and described my invention in a preferred form, I am aware that various changes and modifications may be made therein without departing from the principles of the invention, the scope of which is to be determined by the appended claims.

What is claimed is:

1. Storage facilities of the class described comprising a pair of laterally spaced uprights each having a series of vertically spaced bearings thereon, vertically spaced rotatable spindles which extend between and are journaled at their opposite ends in bearings of the respective uprights, and locking means by which the spindles are fixedly held against rotation in the bearings, said spindles being underneath and having platforms rigidly mounted respectively thereon and facing upwardly therefrom to support loads thereon, the said platforms being removable from the spindles to leave the spindles free to accommodate rolls of material thereon with the spindles extending therethrough, and the locking means being releasable to permit rotation of the spindles with the rolls thereon.

2. Storage facilities as defined in claim 1 wherein the bearings are open at the top and the spindles are removable therefrom by lifting the spindles.

3. Storage facilities as defined in claim 1 wherein the bearings are individually positionable at selectable elevations on the uprights.

4. Storage facilities as defined in claim 1 wherein the locking means thereof is connected directly to the upright to hold the spindle against rotation.

5. Storage facilities as defined in claim 1 wherein the bearings are mounted on the uprights in a quick detachable manner and the spindle locking means conjointly engages the spindle and the upright and locks the bearing onto the upright.

6. Storage facilities as defined in claim 1 wherein the bearings are mounted on the uprights in a quick detachable manner and the locking means extends through the spindle and is engaged with the upright to hold the spindle against rotation.

7. Storage facilities as defined in claim 1 wherein means is provided by which the spindle is securable to the upright to prevent rotation thereof and other means is provided by which the spindle is independently securable to the bearing to prevent rotation thereof.

8. Storage facilities as defined in claim 1 wherein the bearing is provided with a member which is adjustable to prevent rotation of the spindle therein and the upright has a member extending therefrom through the spindle to prevent rotation thereof.

9. Storage facilities of the class described comprising a pair of laterally spaced uprights each having a series of vertically spaced bearings thereon, vertically spaced spindles which extend between and are journaled at their opposite ends in bearings of the respective uprights, and locking means by which the spindles are fixedly held against rotation in the bearings, said spindles having platforms mounted respectively thereon and facing upwardly therefrom to support loads thereon, the said platforms being removable from the spindles to leave the spindles free to accommodate rolls of material thereon with the spindles extending therethrough, and the locking means being releasable to permit rotation of the spindles with the rolls thereon, said locking means being a hook bolt extending through openings in one end of the spindle and secured thereto and having a hook on the inner end engaged in a notch in the upright and clamping the spindle and the bearing to the upright.

References Cited in the file of this patent

UNITED STATES PATENTS

697,008	Palmer	Apr. 8, 1902
800,090	Enander	Sept. 19, 1905
818,595	Wilcox	Apr. 24, 1906
1,462,434	Wendel	July 17, 1927
2,507,641	Matter	May 16, 1950
2,534,952	Comer	Dec. 19, 1950
2,551,190	Walker	May 1, 1951
2,601,560	Riemenschneider	June 24, 1952