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M. FLAIG

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RESILIENTLY EXPANSIBLE MULTISECTIONAL METALLIC BAND

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Fig. 1.

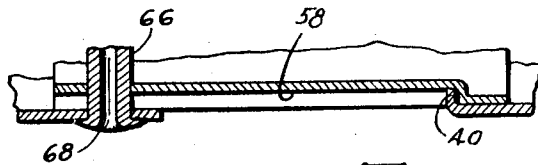
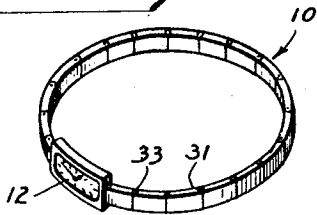


Fig. 5.

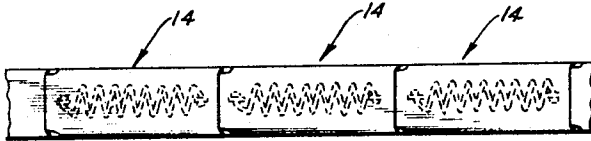


Fig. 2.

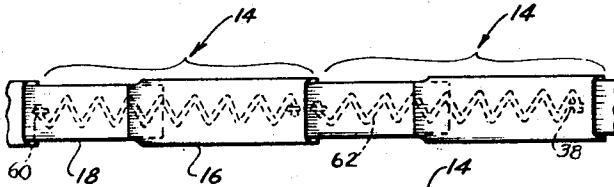


Fig. 3.

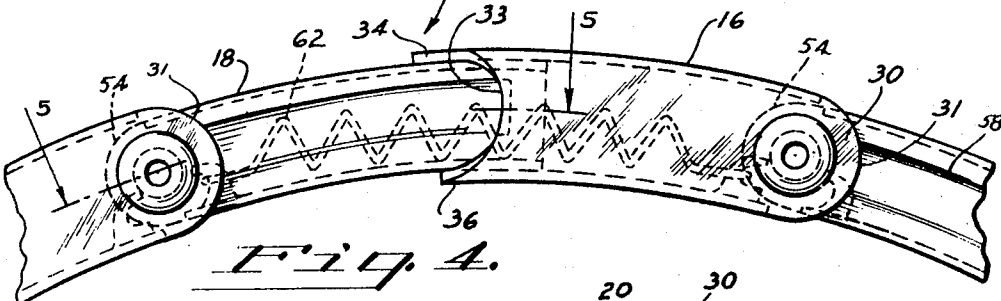


Fig. 4.

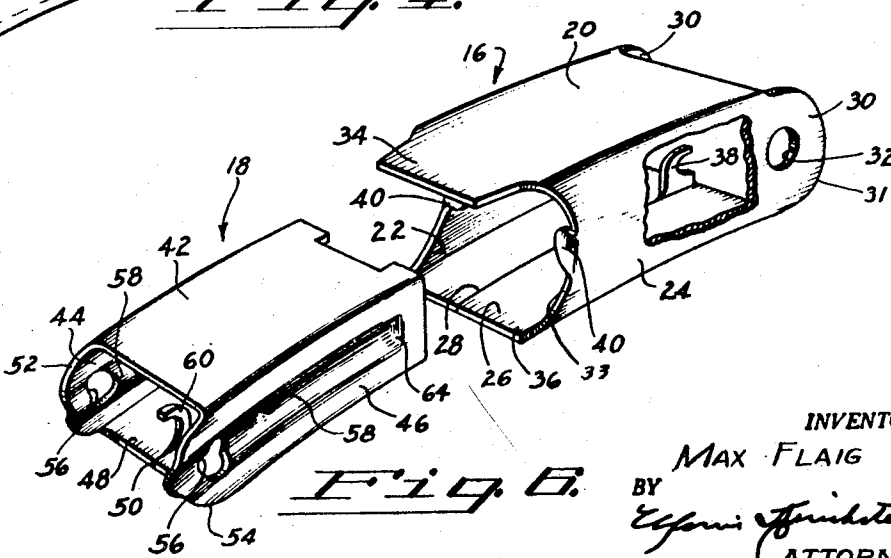


Fig. 6.

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RESILIENTLY EXPANSIBLE MULTI-SECTIONAL METALLIC BAND

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15 Claims. (Cl. 59—79)

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This invention relates to resiliently expansible, multisectional metallic bands which may be used as bracelets, wrist watch straps, and the like.

It is an object of the invention to provide a strap of the character described which is of pleasing appearance, comprises relatively few and simple parts and can be manufactured and assembled inexpensively.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the appended claims.

In the accompanying drawings, in which is shown one of the various possible embodiments of this invention,

Fig. 1 is a perspective view of a band which embodies the invention being used as a wrist watch strap;

Fig. 2 is a top plan view of a few connected links of the band in fully contracted position;

Fig. 3 is a similar view of said links when fully expanded;

Fig. 4 is an enlarged side elevational view of a few fully expanded links;

Fig. 5 is a sectional view taken substantially along the line 5—5 of Fig. 4; and

Fig. 6 is an exploded, partially broken away, perspective view of the two parts which form each link.

Referring now in detail to the drawings, 10 denotes a band embodying the invention with its two ends pivotally secured to a wrist watch 12. It may be mentioned that although the band is well suited for its illustrated use as a wrist watch strap, it may be employed also, with or without suitable surface ornamentation, as a bracelet, or the like.

Said band comprises a plurality of telescopic links 14 which are pivotally interconnected in a manner shortly to be described. Each link includes an outer part 16 within which an inner part 18 is slidably received in such manner that it can be moved freely from a fully contracted position, in which it is almost wholly contained within the outer part, to a fully expanded position, in which a major portion of the inner part projects from the outer part. Each part is fabricated from sheet metal by suitable cutting and forming operations and has, in general, the shape of an open-ended tube of non-circular cross-

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section, a rectangular transverse contour being shown herein.

The outer part 16 comprises a top wall 20, side walls 22, 24, and a bottom wall 26. Said outer part is preferably made with the two side walls 22, 24 integrally connected to the top wall 20, and the bottom wall 26 in two sections integrally connected to the side walls 22, 24 and arranged to act jointly as a single wall. The edges of the two bottom sections abut along a line 28 extending longitudinally and centrally of said bottom wall 26. The top and bottom walls 20, 26 are parallel and substantially plane, but they may be curved slightly, as illustrated, so that the external surface of the top wall 20 is convex and the external surface of the bottom wall 26 concave in order to provide a smooth outline to the band when it is arranged in its normal elliptical shape on display or in use.

One set of ends of the side walls 22, 24 extends beyond the corresponding ends of the top and bottom walls 20, 26 to provide a pair of ears 30 which are pierced to form registered apertures 32, whose function it is to assist in pivotally interconnecting the links 14. Said ears have curved segmental convex end surfaces 31. The other set of ends of the side walls 22, 24 have curved, segmental matching concave end surfaces 33 to permit the links to be relatively angularly moved to a limited extent, when fully contracted, without forming a gap between the side edges of adjacent links.

Said set of end surfaces 33 stop short of the corresponding ends of the top and bottom walls, as clearly seen in Figs. 4 and 6. This causes the said ends of the top and bottom walls to comprise jutting portions 34, 36, which facilitate the interconnection of the several links and the manipulation and appearance of said links after interconnection. For example, the top jutting portion 34 serves to conceal the space between the ears 30 when the links are contracted and are relatively arranged in an arc of not too small a radius of curvature. The free edge of said portion 34 butts against the end edge of the top wall of the outer part of the adjacent link when the links are arranged in a straight line or in an arc reverse to that of normal use. Movement of the links in such reverse direction is only stopped by abutment of the inner part 18 against said end edge of the top wall of the outer part of the adjacent link. Thus a considerable movement of the links in said direction is permitted.

The lower jutting portion 36 is shorter than

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the upper jutting portion 34. This permits the links to be bent freely quite far in a normal direction to form an angle therebetween of as little as 135°. Extreme movement of the links in the last named direction only is limited by abutment of the inner part 36 against the end edge of the bottom wall of the outer part of the adjacent link.

This use of jutting portions of two different lengths permits adjacent links to swing freely through a predetermined limited arc of such extent that the band can fit itself easily on a wrist or the like. It will be appreciated that it is during movement through such arc that the matched edges 31, 33 prevent the formation of a lateral gap between the links.

One of the edges of the bottom sections is provided with an integral hook 38 which extends vertically from the bottom wall 26 into the interior of the outer part 16. This hook serves as an anchor for a pull spring, soon to be described, which resiliently biases the inner and outer parts into fully contracted relationship. Said hook is preferably disposed immediately adjacent the end of the bottom wall near the apertured ears 30. The curved pair of edges 33 of the side walls 22, 24 have registered intumed nibs 40 integrally formed at their centers.

The inner part 18 likewise consists of a top wall 42, a pair of integral dependent side walls 44, 46 and a bottom wall 48, which is formed in two coplanar sections integral with the side walls 44, 46 and abutting longitudinally and centrally of the bottom wall 48 along a line 50. The inner part is of such configuration that it can be slidably yet snugly received within the outer part 16. The top and bottom walls 42, 48 of the inner part 18 are, therefore, slightly curved to correspond to the curvature of the top and bottom walls 20, 26 of the outer part 16. The external surfaces of the side walls 44, 46 have grooves 58 formed therein, these grooves having a slight curvature to match that of the top and bottom walls 42, 48. Said grooves are disposed midway between the top and bottom walls and are adapted to slidably receive the nibs 40 on the outer part 16. One set of end edges of the side walls 44, 46 extends slightly beyond the corresponding edges of the top and bottom walls 42, 48 to form ears 52, 54 which are pierced so as to provide registered apertures 56. The grooves 58 extend from the end of the side walls, having the apertures 56 provided therein, almost all the way to the opposite ends of said side walls, but terminate short of said last named ends for a reason which will soon be apparent.

The inner part 18 is provided with a spring-anchoring hook 60 integrally connected to one of the edges of the bottom sections adjacent the ears 52, said hook, like the hook 38, extending perpendicularly to the bottom wall 48 and projecting into the interior of the inner part 18.

Every link also includes a pull spring 62, one end of which is anchored on the hook 38 and the other on the hook 60.

The links 14, due to the foregoing construction, and, particularly, to the provision of a pair of spring-anchoring means, each formed in one piece with a telescopic part and independent of the means for interconnecting the links, are capable of simple independent assembly and may be made in the following manner: The inner part 18 is completely formed so as to have the appearance shown in Fig. 6. The outer part 16 is formed partly to the shape shown in Fig. 6, either the nibs 40 being left unturned or the sections

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forming the bottom wall 26 having been left coplanar with the side walls 22, 24. In either case, the inner part 18 may be fully nested within the outer part 16 with the ears 30, 52 facing in opposite directions. Then, formation of the outer part 16 is completed.

When this has been done and the parts are in fully telescoped relationship, the intumed nibs 40 will lie in the grooves 58 just in back of the registered apertures 56 so that these apertures will be exposed on one end of the link. At the other end of the link, the hook 38 will be located adjacent the end of the bottom wall 48 of the inner part 18 to prevent said inner part from slipping rearwardly out of the outer part. Disengagement of the inner and outer parts in the opposite direction is prevented by abutment of the nibs 40 against the rear ends 64 of the grooves 58.

After the inner and outer parts 16, 18 have been assembled, the two ends of the tension pull spring 62 are anchored on the hooks 38, 60 with the spring under a slight tension. This operation may be performed by hand or with the aid of any suitable fixture.

The band 10 is made by pivotally interconnecting a suitable number of links 14. This operation is performed as follows: Two links are so manipulated that a set of registered apertures 56 of the inner part of one of the links is received between the registered apertures 32 in the outer part of the other link. A pin such, for example, as a hollow rivet 66 is then thrust through the four registered apertures and its ends 68 spun over to prevent axial movement thereof.

The foregoing construction has many advantages. For example, the snugly fitting, non-circular and preferably rectangular cross-section of the parts in combination with the oppositely disposed grooves 58 in the side walls of the inner part, in which the nibs are received, gives the band excellent dimensional stability, so that, without using close tolerances, the strap has but little side or torsional play. The jutting portions 34, 36, ears 30, and convex side edges 33 cause gaps formed by relative angular disposition of adjacent links to be substantially concealed and give the band great flexibility. This latter feature is valuable for display and shipping purposes and renders the link less liable to be broken by mishandling.

The independent assembly of the links has enabled the band to be made at a very low cost. This is in contrast with similar bands which, in general, have heretofore had to be assembled piece by piece; that is, each link had to be made from its component parts as its turn came to be added to the band. It will also be noticed that only a single sheet metal blank is required to make either the inner or outer part, but that the pull spring, nevertheless, can be mounted easily, thus keeping the cost of manufacture low.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A resiliently expandable multisectional metallic band comprising a plurality of telescopic links, each of said links including an outer part and an inner part, said outer part being fabricated from sheet metal into the shape of an open-ended tube of certain cross-section, the inner part likewise being fabricated from sheet metal and being in the shape of an open-ended tube of cross-section similar to that of the outer part, the outer cross-sectional dimensions of said inner part being slightly less than the inner cross-sectional dimensions of said outer part so that said inner part is slidable within said outer part, the side walls of each inner part having a groove extending longitudinally thereof from the extensible end of said inner part close but not up to the opposite end of said inner part, the side walls of each of the outer parts having a nib at the end thereof from which the inner part extends, each nib being slidably received in a groove whereby said nibs will aid in guiding relative movement of the two parts, in preventing relative turning of the two parts and in limiting extensible movement of the inner part relative to the outer part, cooperating means on the inner and outer parts to limit relative movement of said parts beyond fully contracted position in a direction from extended position, means to pivotally interconnect the extensible end of the inner part of each link to the end of the outer part of an adjacent link remote from that end of said outer part from which its inner end extends, a tension pull spring to resiliently bias said parts to fully contracted position, and a pair of spring-anchoring means, one on each of said parts, each of said last named means being formed in one piece with its associated part and being independent of the means for pivotally interconnecting adjacent links.

2. A resiliently expandable multisectional metallic band comprising a plurality of telescopic links, each of said links including an outer part and an inner part, said outer part being fabricated from sheet metal into the shape of an open-ended tube of non-circular cross-section, the inner part likewise being fabricated from sheet metal and being in the shape of an open-ended tube of non-circular cross-section similar to that of the outer part, the outer cross-sectional dimensions of said inner part being slightly less than the inner cross-sectional dimensions of said outer part so that said inner part is slidable within said outer part, cooperating means on said inner and outer parts to prevent the said inner part from being slid entirely out of said outer part during expansion of said link, cooperating means on said inner and outer parts to limit relative movement of said parts beyond fully contracted position in a direction from extended position, means to pivotally interconnect the extensible end of the inner part of each link to the end of the outer part of an adjacent link remote from that end of said outer part from which its inner part extends, a tension pull spring to resiliently bias said parts to fully contracted position, and a pair of spring-anchoring means, one on each of said parts, each of said last named means being formed in one piece with its associated part and being independent of the means for pivotally interconnecting adjacent links.

3. A resiliently expandable multisectional metallic band comprising a plurality of telescopic links, each of said links including an outer part and an inner part, said outer part being fabricated from sheet metal into the shape of an open-ended tube of rectangular configuration, the

inner part likewise being fabricated from sheet metal and being in the shape of an open-ended tube of generally rectangular configuration similar to that of the outer part, the outer cross-sectional dimensions of said inner part being slightly less than the inner cross-sectional dimensions of said outer part so that said inner part is slidable within said outer part, the side walls of the inner part at one of the ends thereof having registered apertures, the side walls of the opposite end of the outer part likewise having registered apertures, the registered apertures of each inner part being aligned with the registered apertures of an outer part of an adjacent link, a pin extending through said registered apertures and capively secured therein, whereby adjacent links are pivotally interconnected, the side walls of each inner part each having a groove extending longitudinally thereof, the side walls of each of the outer parts each having a nib at an end thereof opposite from that having the apertures therein, said nibs each being slidably received in one of said grooves, said grooves terminating short of the end of the inner part remote from the end having the apertures therein, whereby said nibs will both aid in guiding relative movement of the two parts and in limiting extensible movement of the inner part relative to the outer part, a tension pull spring to resiliently bias said parts to fully telescoped position, and a pair of spring-anchoring hooks, one on each of said parts, each of said hooks being formed in one piece with its associated part and being independent of the pivotal interconnection of adjacent links, the hook in each part being adjacent that end thereof at which the registered apertures are disposed, whereby the hook on the outer part will limit the movement of said inner part during telescopic movement into said outer part.

4. A resiliently expandable multisectional metallic band comprising a plurality of telescopic links, each of said links including an outer part and an inner part, said outer part being fabricated from sheet metal into the shape of an open-ended tube of rectangular configuration, the inner part likewise being fabricated from sheet metal and being in the shape of an open-ended tube of generally rectangular configuration similar to that of the outer part, the outer cross-sectional dimensions of said inner part being slightly less than the inner cross-sectional dimensions of said outer part so that said inner part is slidable within said outer part, the side walls of the inner part at one of the ends thereof having extending ears which are apertured in registration, the side walls of the opposite end of the outer part likewise having extending ears which are apertured in registration, the ears of the inner part extending beyond the outer part and the ears of the outer part extending beyond the inner part when said parts are in full contracted relationship, the registered apertures of each inner part being aligned with the registered apertures of an outer part of an adjacent link, a pin extending through said registered apertures and capively secured therein, whereby adjacent links are pivotally interconnected, the side walls of each inner part each having a groove extending longitudinally thereof, the side walls of each of the outer parts each having a nib at an end thereof opposite from that having the apertures therein, said nibs each being slidably received in one of said grooves, said grooves terminating short of the end of the inner part remote from the end having the apertures therein, where-

by said nibs will both aid in guiding relative movement of the two parts and in limiting extensible movement of the inner part relative to the outer part, a tension pull spring to resiliently bias said parts to fully telescoped position, and a pair of spring-anchoring hooks, one on each of said parts, each of said hooks being formed in one piece with its associated part and being independent of the pivotal interconnection of adjacent links, the hook in each part being adjacent that end thereof at which the registered apertures are disposed, whereby the hook on the outer part will limit the movement of said inner part during telescopic movement into said outer part.

5. A resiliently expansible multisectional metallic band comprising a plurality of telescopic links, each of said links including an outer part and an inner part, said outer part being fabricated from sheet metal into the shape of an open-ended tube of rectangular configuration, the inner part likewise being fabricated from sheet metal and being in the shape of an open-ended tube of generally rectangular configuration similar to that of the outer part, the outer cross-sectional dimensions of said inner part being slightly less than the inner cross-sectional dimensions of said outer part so that said inner part is slidable within said outer part, the side walls of the inner part at one of the ends thereof having registered apertures, the side walls of the opposite end of the outer part likewise having extending ears which are apertured in registration, the ears of the outer part extending beyond the inner part when said parts are in full contracted relationship, the registered apertures of each inner part being aligned with the registered apertures of an outer part of an adjacent link, a pin extending through said registered apertures and captively secured therein, whereby adjacent links are pivotally interconnected, the top and bottom walls of the outer part at the end thereof from which the inner part extends having projecting ledges, the side walls of each inner part each having a groove extending longitudinally thereof, the side walls of each of the outer parts each having a nib at an end thereof opposite from that having the apertures therein, said nibs each being slidably received in one of said grooves, said grooves terminating short of the end of the inner part remote from the end having the apertures therein, whereby said nibs will both aid in guiding relative movement of the two parts and in limiting extensible movement of the inner part relative to the outer part, a tension pull spring to resiliently bias said parts to fully telescoped position, and a pair of spring-anchoring hooks, one on each of said parts, each of said hooks being formed in one piece with its associated part and being independent of the pivotal interconnection of adjacent links, the hook in each part being adjacent that end thereof at which the registered apertures are disposed, whereby the hook on the outer part will limit the movement of said inner part during telescopic movement into said outer part.

6. A band as set forth in claim 5 wherein each part is formed from a single piece of sheet metal, the side walls of the link extending from the top wall and the bottom wall being formed in two sections, each extending from one of the side walls, said two sections abutting approximately centrally and longitudinally of the part.

7. A band as set forth in claim 5 wherein each part is formed from a single piece of sheet metal, the side walls of the link extending from the top

wall and the bottom wall being formed in two sections, each extending from one of the side walls, said two sections abutting approximately centrally and longitudinally of the part and the hook extending integrally from one of said abutting edges.

8. A band as set forth in claim 5 wherein the projecting ears at one end of each of the side walls of the outer part are convexly curved and the opposite end of each of said side walls is concavely curved to approximately match the curvature of said ears, whereby the links may be relatively angularly moved when in fully contracted position without forming a gap between the side edges of adjacent links.

9. A link assembly for an expansible band comprising a pair of tubular members disposed in telescopic relation, a hook member integral with the inner side wall of each of said members, and a tension spring having its ends anchored to said hook members to hold the tubular members in contracted relation.

10. A link assembly for an expansible band comprising a pair of sheet metal tubular members disposed in telescopic relation, each of said members having a longitudinal seam along a side wall thereof, a hook member extending from the edge of each of said tubular members at the seam end and formed integrally with said member, and a tensioned spring having its ends anchored to said hook members to hold the tubular members in contracted telescopic relation.

11. A link assembly for an expansible band comprising an outer tubular member and an inner tubular member, said inner tubular member slidably fitting said outer member, each of said members having an integral projection extending from the inner side wall thereof, and a tension spring disposed between said projections, one end of said tension spring being anchored to a projection on one tubular member and the other anchored to a projection on the other tubular member to hold the members in contracted relation.

12. A link assembly for an expansible band comprising a pair of tubular members disposed in telescopic relation, each of said members being formed from a sheet metal blank, having a hook member in one piece therewith extending from an edge thereof and projecting inwardly when said blanks are shaped to constitute said tubular members, and a tension spring having its ends anchored to said hook members.

13. A link assembly for an expansible band comprising a pair of tubular members disposed in telescopic relation, each of said members formed from a sheet metal blank having a reduced portion in one piece with and extending from an edge of said blank and bent inwardly to extend from a longitudinal seam when said blank is shaped to constitute a tubular member, and a tension spring having its ends anchored to a reduced portion on each member to hold the members in contracted relation.

14. A link assembly for an expansible band comprising a pair of tubular members disposed in telescopic relation, each of said members formed from a sheet metal blank having a reduced portion in one piece with and extending from an edge and at one end of said blank, said portion being bent inwardly to extend from a longitudinal seam when said blank is shaped to constitute a tubular member, and a tension spring having its ends anchored to said reduced portions to hold the members in contracted relation.

15. A link assembly for an expansible band comprising a pair of tubular sections disposed in

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telescopic relation, each section being formed from a sheet metal blank shaped to provide a longitudinal seam along the bottom wall of each section, said seams being located in a common plane, an anchor member in each section extending inwardly from the edge of said member at said seam and in one piece with said blank, and a tension spring having the ends thereof connected to said anchor members to hold the sections in normal contracted relation.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

	Number	Name	Date
5	1,056,528	Foster	Mar. 18, 1913
	1,629,976	Smith	May 24, 1927
	2,302,426	Domler	Nov. 17, 1942
10	2,388,554	Kreisler et al.	Nov. 6, 1945