Aug. 25, 1953 R. J. HODGE 2,649,637

ADJUSTABLE STRAP-ATTACHING MEANS FOR BUTTON-LOOPS, BUCKLES, ETC

Filed Nov. 18, 1950 2 Sheets-Sheet 1

Fig. 1.

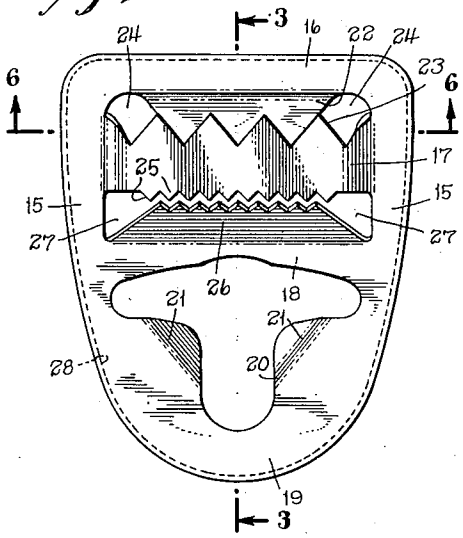


Fig. 2.

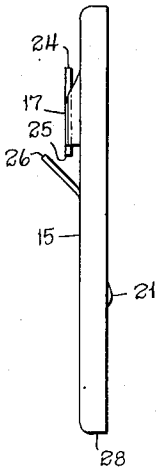


Fig. 3.

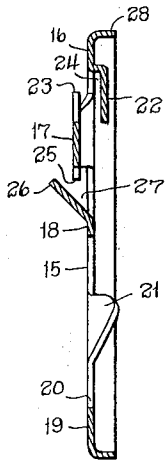


Fig. 4.

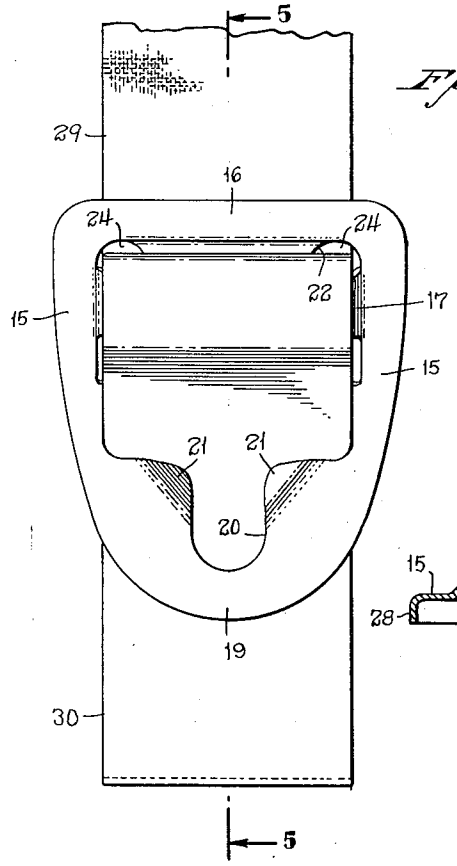


Fig. 5.

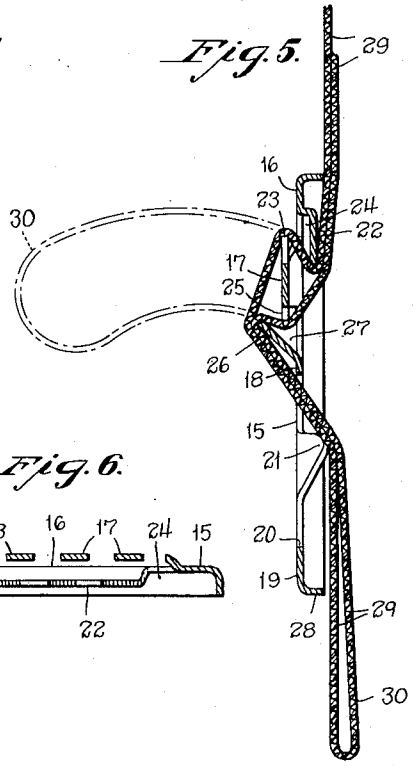


Fig. 6.

Robert J. Hodge
Inventor
By Seymour Earle Nichols
Attorneys

Aug. 25, 1953 R. J. HODGE 2,649,637

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Filed Nov. 18, 1950 2 Sheets-Sheet 2

Fig. 7.

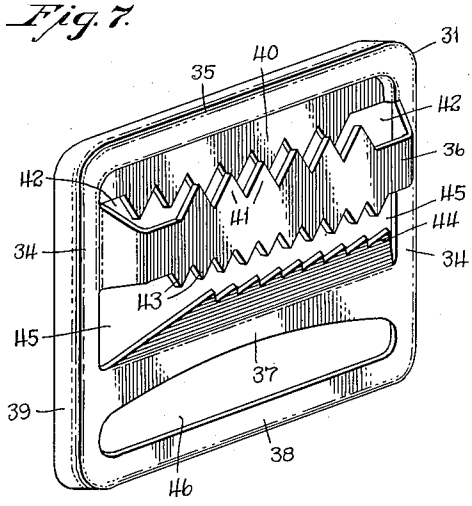


Fig. 8.

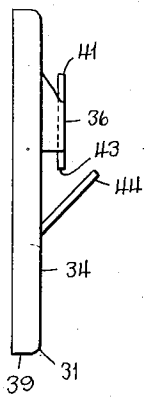
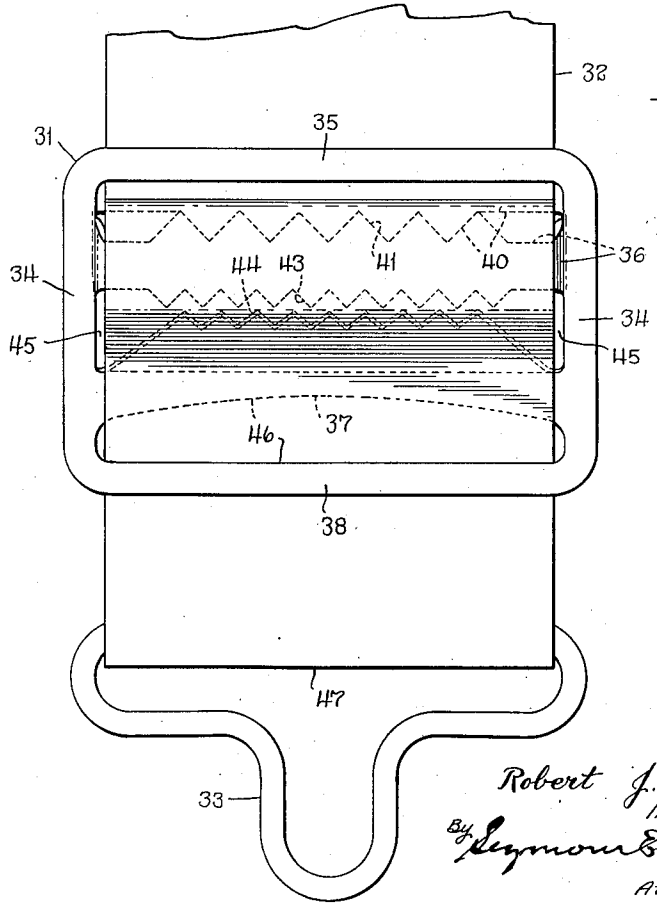


Fig. 9.



Robert J. Hodge
Inventor

By Seymour Bank & Nichols
Attorneys

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ADJUSTABLE STRAP-ATTACHING MEANS FOR BUTTON-LOOPS, BUCKLES, ETC.

Robert J. Hodge, West Haven, Conn.

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2 Claims. (Cl. 24—200)

1

The present invention relates in general to strap-end devices and more particularly to strap-end devices having improved means for adjusting the latter relative to a strap on which they are mounted, the strap-end devices being button-buckles, adjusting-slides and other devices of this type. The invention further resides in an improved method for forming superior adjusting-means on strap-end devices of the type hereinabove mentioned.

An object of the invention is to provide a strap-end device with superior adjusting-means for connecting the strap-end device to a strap for adjustment relative thereto.

A further object of the invention is to provide a strap-end device with superior adjusting-means of simple, durable and economical construction.

A still further object of the invention is to provide a superior method for forming strap-adjusting means on a strap-end device.

Other objects and advantages will appear to those skilled in the art from the following, considered in conjunction with the accompanying drawings.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a front elevation of a strap-end device having the improved adjusting-means of this invention;

Fig. 2 is a side elevation of the strap-end device of Fig. 1;

Fig. 3 is a side elevation in section of the strap-end device on line 3—3 of Fig. 1;

Fig. 4 is a front elevation of the strap-end device including a strap threaded thereon;

Fig. 5 is a side elevation of the strap-end device and strap in section on line 5—5 of Fig. 4;

Fig. 6 is a transverse section of the strap-end device on section line 6—6 of Fig. 1;

Fig. 7 is a perspective view of a strap-end adjusting-slide;

Fig. 8 is a side elevation of the strap-end adjusting-slide of Fig. 7; and

Fig. 9 is a front elevation of the strap-end adjusting-slide of Fig. 7, and a button-loop assembled on the end of a strap.

The showing of Figs. 1 through 6 inclusive

Referring to the drawings, the strap-end device illustrated therein is a button-buckle which is adapted to be adjustably secured to the end of a strap and to engage with a button. To these ends, the buckle comprises, in the main, a

2

substantially-rectangular frame which is formed of a relatively inexpensive material such as, for example, thin sheet metal or a suitable plastic, and embodies two transversely-spaced substantially-parallel side-bars 15—15, between the upper ends of which extend a plurality of transverse crossbars 16, 17 and 18 respectively arranged in substantially-parallel relationship and joined integrally at their opposite ends to the respective side-bars 15—15. The lower ends of the side-bars 15—15 are joined integrally with the bottom portion 19 of the frame which is provided with a substantially T-shaped button-receiving aperture indicated generally at 20, adapted to engage over a button to secure the buckle thereto, the T-shaped button-receiving aperture 20 having ears 21—21 bent backwardly from the plane of the buckle, in the manner shown especially well in Fig. 3, to facilitate engaging the buckle on a button.

The aforementioned crossbars 16, 17 have oppositely-disposed lips 22 and 23 respetcively which, pursuant to the objects of this invention, have toothed edges facing toward each other, each toothed lip comprising a set of teeth which constitutes an element of the strap-end adjusting-means of the buckle. The toothed lip 22 of the upper crossbar 16 is preferably shorter than the toothed lip 23 of the intermediate crossbar 17, so as to provide clearance-apertures 24—24 at opposite ends thereof respectively to facilitate threading a strap-end between the toothed lips 22 and 23. The set of teeth of the lip-portion 22 of the upper crossbar 16 correspond in size and shape to the set of teeth of the lip-portion 23 of the intermediate crossbar 17, while the apices of the set of teeth of the upper toothed lip 22 are substantially directly opposite the notches formed between each successive pair of teeth in the lip-portion 23 of the intermediate crossbar, both the apices of the teeth and the bottoms of the oppositely-disposed notches being coincident with a common plane extending transversely of the buckle and substantially perpendicular to the face thereof, i. e., there is substantially no spacing of the apices of one set of teeth and the bottoms of the oppositely-disposed notches of the second set of teeth longitudinally of the buckle. For purposes of clarification, the phrase "longitudinally of the buckle" or "longitudinally of the slide" shall be understood to mean in the direction of an axis extending from the top side to the bottom side of the buckle or slide. Further, as shown especially well in Fig. 3, the toothed lips 22 and 23 respectively of the upper crossbar

16 and intermediate crossbar 17 are offset from a plane intersecting the side-bars 15—15 of the button-buckle, which plane is hereinafter referred to as the plane of the buckle. In this connection, a preferred construction provides for offsetting the set of teeth of the toothed lip 22 of the upper crossbar rearwardly of the plane of the buckle and offsetting the set of teeth of the toothed lip 23 of the intermediate crossbar 17 forwardly of the plane of the buckle. It is within the purview of the invention, however, to form either toothed lip in the plane of the buckle and to offset the other therefrom.

The lower edge of the intermediate crossbar 17 is also provided with a toothed lip indicated at 25, the set of teeth of which face toward and correspond in size and configuration to the set of teeth of the toothed lip 26 of the lowermost crossbar 18. The sets of teeth of the lips 25 and 26 respectively are, however, much smaller than the teeth of the aforementioned toothed lips 22 and 23 respectively of the upper crossbar and intermediate crossbar. Like the set of teeth of the toothed lip 23 of the intermediate crossbar 17, the set of teeth of the toothed lip 25 lies in the plane of the intermediate crossbar which, as set forth above, is offset forwardly of the plane of the buckle. The set of teeth of the toothed lip 26 of the lowermost crossbar 18 is preferably bent outwardly from the plane of the frame, in the manner illustrated especially well in Figs. 1, 2 and 3, so that there is vertical spacing between the apices of the set of teeth of the toothed lip 25 and the oppositely-disposed notches of the set of teeth of the toothed lip 26. As in the construction of the upper set of teeth, the lower set of teeth terminates short of the ends of the respective toothed lips 25 and 26 respectively so as to provide strap-end clearance-apertures 27—27 to facilitate inserting a strap-end therebetween.

The preferred method of forming the buckle is by a series of blanking operations wherein the buckle is blanked out of substantially-flat sheet metal and formed initially with a peripheral flange 28 which circumscribes the blank and extends rearwardly from the front face thereof. Following the blanking and flanging operation, the portion of the blank included between the intermediate and lower crossbars 17 and 18 respectively and the side-bars is blanked out to form the pair of opposed sets of teeth on the toothed lips 25 and 26 respectively; and the clearance-apertures 27—27 at opposite ends thereof. Thereupon, the portion of the blank included between the set of teeth of the lower toothed lip 25 of the intermediate crossbar 17, the upper crossbar 16 and the two side-bars is offset rearwardly from the plane of the blank, after which the pair of opposed sets of teeth of the toothed lips 22 and 23 are blanked out substantially simultaneously, each set of teeth being produced by a single serrated shearing cut extending transversely of the blank whereby the teeth of each respective set of teeth are formed without removing any metal from the blank. Simultaneously, the clearance-apertures 24—24 are formed at opposite ends respectively of the pair of sets of teeth. Thereafter, the portion of the blank corresponding to the intermediate crossbar 17 and including the sets of teeth of the toothed lips 23 and 25, is offset forwardly relative to the plane of the blank to effect the relationship between the apices of the set of teeth of the toothed lip 22 and the oppositely-disposed notches of the set of teeth of the toothed lip 23 hereinabove described; the set of teeth of the toothed lip 26 of the lower crossbar 18 being subsequently bent outwardly at an oblique angle with respect to the set of teeth of the toothed lip 25 of the intermediate crossbar 17, as illustrated especially well in Figs. 2 and 3. The T-shaped button-receiving aperture 20 in the lower portion of the blank may be produced simultaneously with the formation of the toothed lips or in a subsequent operation.

Although other sequences of operations may be used to form the buckle, the method for forming the sets of teeth of the toothed lips 22 and 23 is characterized by forming both sets of teeth simultaneously in the same plane by a single serrated cut and then offsetting one set of teeth with respect to the other, in a manner such that there is subsantially no clearance longitudinally of the buckle between the apices of the set of teeth of the toothed lip 22 and the bottoms of the oppositely-disposed notches in the set of teeth of the toothed lip 23.

To attach the buckle to a strap 29, the free end of the latter is inserted up between the sets of teeth of the toothed lips 22 and 23 respectively from the back side of the buckle. The free end of the strap is then turned down and inserted between the set of teeth of the toothed lips 25 and 26 respectively and drawn therethrough to the back side of the buckle. Thus, a loop 30 of fabric is formed on the front side of the buckle and this loop of fabric is made of sufficient length so that its folded end may be inserted into the wide portion of the T-shaped button-receiving aperture 20 and drawn therethrough to the back side of the buckle, as shown especially well in Fig. 5.

With the strap threaded onto the buckle in this manner, the strap is drawn tautly over the set of teeth of the toothed lips 22 and 23 of the upper and intermediate crossbars respectively, the relationship between the apices of the teeth of the toothed lip 22 and the notches between successive teeth of the toothed lip 23 being such that the strap is bent thereover in an extremely sharp substantially S-shaped curve, whereby the buckle is positively held in its adjusted position on the strap against longitudinal movement relative thereto. Moreover, by threading the free end of the strap through the toothed lips 25 and 26 and the resulting loop 30 through the T-shaped button-aperture, the portion of the strap which is threaded between teeth of the upper set of toothed lips is held taut, thereby preventing disengagement therefrom. It is also noteworthy that should the free end of the strap be extremely long, then this length is successfully taken up by threading it through the lower set of teeth of the buckle and threading the resulting loop through the T-shaped button-receiving aperture. Moreover, the outwardly-bent toothed lip 26 of the lower set of teeth may be bent inwardly to grip the strap-end more or less permanently.

The showing of Figs. 7 through 9 inclusive

In Figs. 7, 8 and 9 is shown a strap-adjusting slide which is indicated generally at 31, and embodies the improved adjusting-means of this invention, the slide being shown on a strap 32 which is provided at its lower end with a button-engaging loop 33.

Referring especially to Figs. 7 and 9, the strap-adjusting slide 31 comprises a substantially-rectangular sheet-metal member having oppositely-disposed sides 34—34 connected by a plurality of

crossbars 35, 36, 37 and 38. Extending entirely around the outer edges of the slide and projecting rearwardly from the front face thereof is a peripheral flange 39. The upper crossbar 35 and the crossbar 36 immediately therebelow are provided with sets of teeth on the toothed lips 40 and 41 which face toward each other respectively, the set of teeth of the toothed lip 40 being offset rearwardly of the front face of the slide, while the crossbar 36 and the set of teeth of the toothed lip 41 are offset forwardly thereof. The over-all length of the toothed lip 40 corresponds substantially to the over-all length of the toothed lip 41, both toothed lips being shorter than the transverse lengths of the corresponding crossbars so as to provide clearance-apertures 42—42 at opposite ends thereof respectively to facilitate threading a strap-end therebetween.

The apices of the set of teeth of the toothed lip 40 are substantially opposite the bottoms of the notches between successive teeth of the toothed lip, both the apices of the teeth of the toothed lip 40 and the bottoms of the notches of the toothed lip 41 being coincident with a plane extending transversely of the slide and substantially perpendicular to the front face thereof, that is to say, there is substantially no spacing of the apices of the teeth of the toothed lip 40 and the bottoms of the oppositely-disposed notches of the toothed lip 41 longitudinally of the slide.

The bottom edge of the crossbar 36 is also provided with a set of teeth on a toothed lip indicated at 43, the teeth of which face toward and correspond in size and configuration to the set of teeth of a toothed lip 44 provided on the upper edge of the crossbar 37. The sets of teeth of the toothed lips 43 and 44 are, however, much smaller than the teeth of the aforementioned toothed lips 40 and 41. Like the set of teeth of the toothed lip 41 of the crossbar 36, the set of teeth of the toothed lip 44 lies in the plane of the crossbar 36, which, as set forth above, is offset forwardly of the plane of the slide. However, the toothed lip 44 of the crossbar 37 is preferably bent forwardly of the plane thereof in the manner shown in Fig. 7, so that, in effect, there is vertical spacing between the apices of the teeth of the toothed lip 43 and the bottoms of the oppositely-disposed notches of the set of teeth of the toothed lip 44. Moreover, the toothed lips 43 and 44 are shorter than the corresponding crossbars 36 and 37 so as to provide clearance-apertures 45—45 at opposite ends thereof respectively to facilitate threading a strap-end therein. Formed between the crossbar 37 and the lowermost crossbar 38 is an elongated aperture 46 through which a strap-loop is adapted to be threaded as hereinafter described.

The strap-adjusting slide 31 is formed substantially in the manner by which the aforementioned button-buckles are made, the characteristic steps of the successive blanking operations being the initial step of blanking out the portion of the frame between the two central crossbars 36 and 37 and the side-bars 34—34 to form the pair of opposed sets of teeth of the toothed lips 43 and 44 respectively and the clearance-apertures 45—45 at opposite ends thereof. Thereupon, the portion of the blank included between the lower set of teeth of the toothed lip 43 of the central crossbar 36 and the upper crossbar 35 is offset rearwardly of the front face of the slide and thereupon the toothed lip-portion 40—41 is blanked out by producing a serrated cut across the corresponding part of the blank, after which the crossbar 36 is offset forwardly of the front face of the slide. Thus, the apices of the teeth of the toothed lip 40 are substantially opposite the bottoms of the notches between successive teeth of the toothed lip 41 of the crossbar 33, both the apices of the upper teeth and the notches of the oppositely-disposed teeth being coincident with a transverse plane substantially perpendicular to the front face of the slide, that is to say, there is substantially no spacing between the apices of the teeth of the toothed lip 40 and the bottoms of the notches between successive teeth of the toothed lip 41 longitudinally of the slide. After the central crossbar 36 including the set of teeth of its toothed lip 43 has been offset forwardly, the lower set of teeth of the toothed lip 44 is bent forwardly and outwardly, in the manner shown especially well in Fig. 8.

The strap-adjusting slide 31 is assembled on the end of the strap 32 by passing the free end of the strap up through the juxtaposed toothed lips 40 and 41 of the slide from the back side thereof, whereupon the end of the strap is passed through the button-loop 33 and then bent down and threaded between the sets of teeth of the toothed lips 43 and 44 to the back side of the slide, thus forming a loop 47 on the front side of the slide in the lower end of which the button-loop 33 is suspended. Thereafter, the button-loop 33 and the corresponding end of the strap-loop 47 are inserted into the elongated aperture 46 of the slide and drawn therethrough to the back side thereof, in the manner shown in Fig. 9. The button-loop 33 is thus suspended securely from the lower end of the strap-loop 47, the toothed lips 40 and 41 of the slide serving not only to make adjustments in the length of the strap-loop but also to positively hold the free end of the strap from sliding out of the button-loop.

Although the toothed lips 43 and 44 are shown in spaced relationship so that the strap-end may be readily threaded therethrough, it is within the purview of the invention to bend in the lower toothed lip 44 to grip the strap and hence form a permanent hold thereon.

The salient features which characterize the adjustable strap-attaching means of the strap-end devices shown and described herein are the toothed lips which are offset with respect to the plane of the strap-end device, but with substantially no spacing between the apices of the teeth of one lip and the bottoms of the notches of the opposite toothed lip longitudinally of the strap-end device; and the method whereby the toothed lips are blanked and formed without the removal of the material of the blank, thus providing a superior form of strap-end device of durable and economical construction.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A fastening device for straps comprising a frame having a pair of side bars interconnected by a top member and a bottom member and by a pair of transverse crossbars, the crossbar adjacent said top member being offset forwardly to adjustably receive a strap therearound, the strap being inserted from the rear between the top member and said offset crossbar with the

free end of the strap inserted rearwardly between the offset crossbar and the other crossbar and with the looped portion thus defined being inserted rearwardly between said other crossbar and said bottom member, and means for retaining the strap in adjusted positions comprising opposed rows of teeth on the adjacent edges of said top member and said offset crossbar and opposed rows of teeth on the adjacent edges of said crossbars, the teeth apices and notches in the opposed rows on said top member and said offset crossbar being oppositely disposed and arranged in planes extending generally transversely of the frame and substantially perpendicular to the plane thereof, and said other crossbar being bent forwardly adjacent its row of teeth to position said row forwardly of said offset crossbar.

2. A fastening device for straps comprising a frame having a pair of side bars interconnected by a top member and a bottom member and by a pair of transverse crossbars, the crossbar adjacent said top member being offset forwardly to adjustably receive a strap therearound, the strap being inserted from the rear between the top member and said offset crossbar with the free end

of the strap inserted rearwardly between the offset crossbar and the other crossbar and with the looped portion thus defined being inserted rearwardly between said other crossbar and said bottom member, and means for retaining the strap in adjusted positions comprising opposed rows of teeth on the adjacent edges of said top member and said offset crossbar and opposed rows of teeth on the adjacent edges of said crossbars, said other crossbar being bent forwardly adjacent its row of teeth to position said row forwardly of said offset crossbar.

ROBERT J. HODGE.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
D. 31,004	Gathright	June 13, 1899
662,671	Gathright	Nov. 27, 1900
677,086	Jones	June 25, 1901
871,981	Blum	Nov. 26, 1907
1,276,806	Pfannenmuller	Aug. 27, 1918
1,908,209	Adams	May 9, 1933
2,292,899	Sanford	Aug. 11, 1942