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2,862,552	12/1958	Franz	160/351X
2,887,983	5/1959	Budd	116/63
3,046,934	7/1962	Swezy	116/173
3,080,139	3/1963	Caprioli	248/46
3,200,786	8/1965	Swezy et al.	116/63
3,256,629	6/1966	Whitman	40/125
3,330,247	7/1967	Gunderson	116/63

FOREIGN PATENTS

166,252	12/1905	Germany	116/132
30,051	1/1933	Netherlands	40/125

[54] **COLLAPSIBLE SIGN**
4 Claims, 4 Drawing Figs.

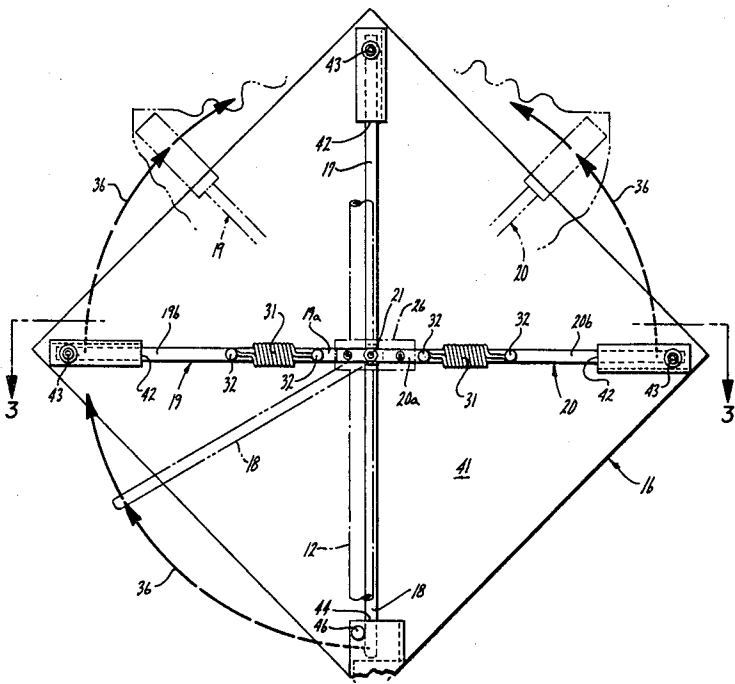
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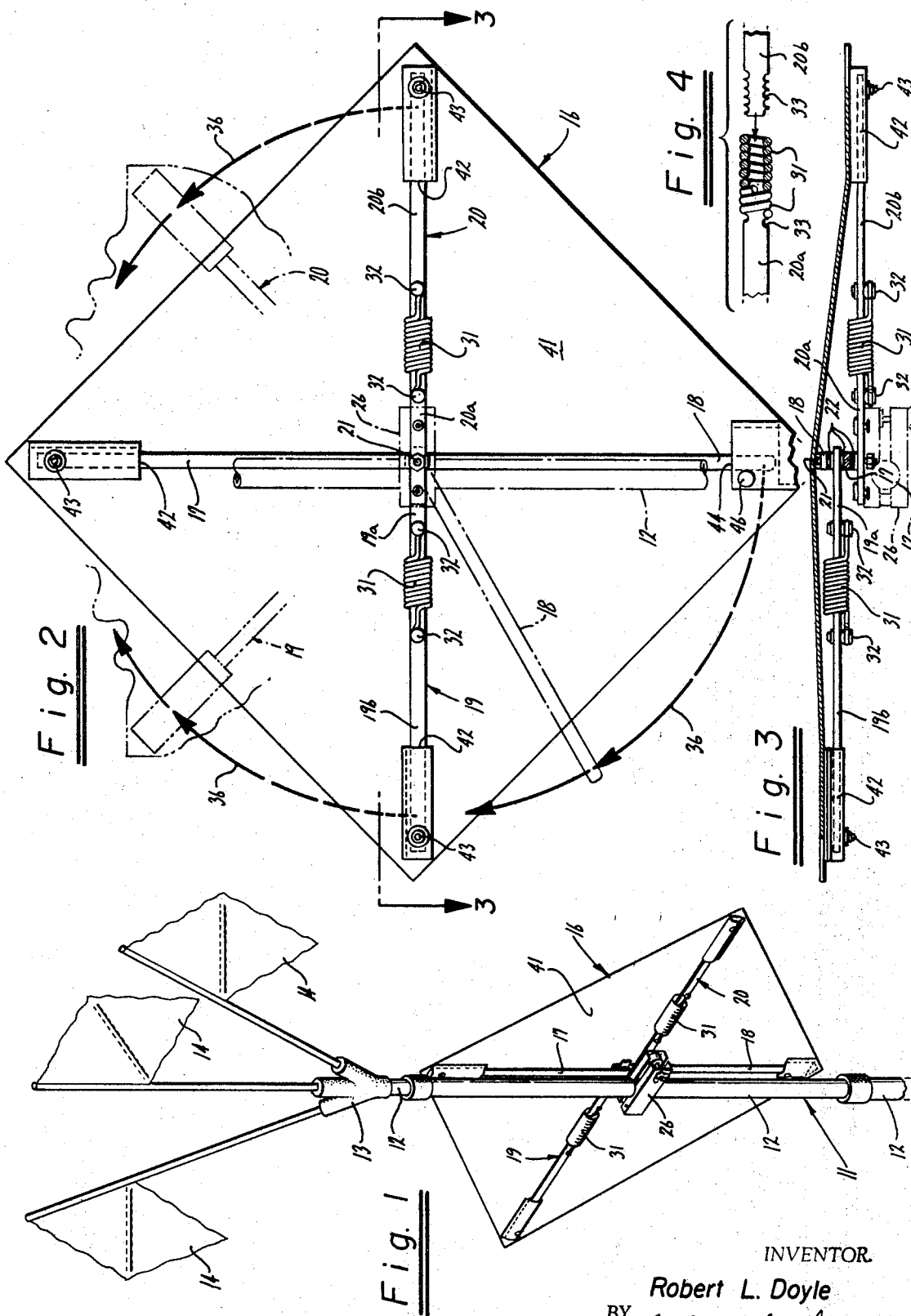
[56] **References Cited**
UNITED STATES PATENTS

2,033,024 3/1936 Burden 40/125

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ABSTRACT: Collapsible sign having a plurality of arms greater in number than three which are pivotally interconnected at one end of each arm so that the arms can be folded over each other into a compact package and a four-sided flexible sheet-like member having portions thereof releasably secured to said arms to retain said sheet-like member in a relatively taut condition.





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COLLAPSIBLE SIGN

BACKGROUND OF THE INVENTION

In U.S. Pat. No. 3,200,786, there is disclosed a signalling device which includes a collapsible sign which can be folded. However, in this sign, there are provided a pair of members which are pivotally interconnected intermediate their ends which means that the sign, when folded, must have a length at least as long as the longest dimension of the sign. There is a need for a collapsible sign which can be folded into a smaller package.

SUMMARY OF THE INVENTION AND OBJECTS

The collapsible sign consists of a plurality of arms greater in number than three and means pivotally connecting said arms adjacent one end of each of the arms so that said arms can be folded over each other into a compact package. A four-sided flexible sheet-like member is provided. Means is also provided for securing portions of said sheet-like member to said arms to retain said sheet-like member in a relatively taut condition on said arms.

In general, it is an object of the present invention to provide a collapsible sign which can be readily erected and collapsed or folded up.

Another object of the invention is to provide a collapsible sign of the above character which can be folded into a relatively small package.

Additional objects and features of the invention will appear from the following description in which the preferred embodiment is set forth in detail in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a signalling device which includes a collapsible sign incorporating the present invention.

FIG. 2 is an enlarged rear elevational view of the collapsible sign shown in FIG. 1.

FIG. 3 is a cross-sectional view taken along the line 3—3 of FIG. 2.

FIG. 4 is a partial view showing an alternative means for securing arms of the sign to the spring used for spilling of the wind.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The signalling device as shown in FIG. 1 consists of a support stand 11 of a type described in U.S. Pat. No. 3,200,786. As explained therein, such a support stand includes a plurality of telescoping sections 12 which can be extended and retracted. A yoke 13 is mounted on the uppermost section 12 and carries a plurality of warning flags 14. A collapsible sign 16 of the type incorporating the present invention is mounted on an intermediate section 12 and consists of four arms 17, 18, 19 and 20 which have one end of each pivotally interconnected by suitable means such as a bolt 21. Washers 22 are provided between the arms 17, 18, 19 and 20 and the arms are so arranged so that the arm 19 is between the arms 17 and 18 and the arm 18 is between the arms 19 and 20. A clamp 26 of the type described in U.S. Pat. No. 3,200,786 is secured to the member 22 by rivets 27.

It can be seen that the arms 17 and 18 are one piece. The arms 19 and 20 can also be one piece or, alternatively, in order to facilitate spilling of the wind by the sign as described in U.S. Pat. application Ser. No. 689,514, filed December 11, 1967, the arms 19 and 20 can each be provided in two parts 19a and 19b and 20a and 20b respectively. The additional arm parts 19b and 20b are yieldably mounted upon the arm parts 19a and 20a, respectively, by suitable means such as springs 31. The arm parts 19a and 19b are inserted into one of the springs and the arm parts 20a and 20b are inserted in the other spring 31 and the springs are secured to the arms by rivets 32. Alternatively, as shown in FIG. 4, the ends of the springs can be omitted and the arms extending into the springs can be

threaded with helical threads 33 which correspond to the helix formed by the springs so that the arms can be threaded into the springs and are held in place by the springs.

Even with the use of springs 31 to facilitate spilling of the wind, the arms 17, 18, 19 and 20 can be folded over each other as shown by the arrows 36 so that all four of them overlie each other so that the package has no length greater than the length of the longest arm which is approximately one-half the length of the longest dimension of the sign. When the arms are extended as shown in FIG. 2, the arms 19 and 20 are in alignment, and the arms 17 and 18 also are in alignment and extend at right angles to arms 19 and 20.

A four-sided sheet of flexible material 41 is provided. The sheet-like member can be formed of a suitable material such as a heavy canvas coated with a plastic. The sheet 41 has a desired configuration as, for example, a square or more broadly speaking, a rectangle, a diamond shaped member or a four-sided member. Means is provided for releasably securing portions of the sheet-like member 41 to the arms 17, 18, 19 and 20. Three of the arms are secured to the sheet-like member 41 by pockets 42 of the type described in U.S. Pat. No. 3,200,786 which are sewn to the back of the sheet-like member 41 and retains the arm therein. In addition, as shown, rivets 43 can be provided for retaining the arms within the pockets 42. Means is provided for releasably securing a portion of the sheet-like member to the outer portion of the arm 18 and consists of an additional pocket 44 which is sewn to the back side of the sheet-like member 41 but which is provided with an open side through which the arm 18 can be inserted and removed. This open side is adapted to be closed by a snap fastener 46.

Operation and use of the collapsible sign may now be briefly described as follows. Let it be assumed that the collapsible sign is in the erected position shown in FIGS. 1, 2 and 3 and that it is desired to collapse the same into a small compact package. This is accomplished by first opening the snap 46 and moving the arm 18 out of the pocket 44. The arm 18 is then rotated in a counter-clockwise direction as viewed in FIG. 2 until it overlies the arms 19 and then both arms 18 and 19 are moved so that they overlie the arm 17 while at the same time collapsing the sheet-like member 41 carried by the arm 19. At the same time, and with the other hand, if desired, the other arm 20 is moved in a counter-clockwise direction until it also overlies the arm 17 taking with it the portion of the sheet-like member which is attached thereto. Thereafter, the bottom half of the sheet-like member can be folded over the collapsed arms 17, 18, 19 and 20 and wrapped about the arms to provide a relatively compact package in which the package generally has a length which is only one-half of the largest dimension of the sign.

It can be readily seen that such a sign which can be folded into a relatively compact package has many advantages particularly where storage space is at a premium.

When it is desired to erect the collapsible sign, it is merely necessary to unwrap the sheet-like member 41 and then to extend the arms so they pivot in the opposite directions and then finally inserting the arm 18 into the pocket 44 and snapping the snap 46 into place to hold the arms in a position to retain the sheet-like member 41 in a relatively taut condition on the arms. Thereafter or prior thereto, the clamp 26 secured to the arm 20 can be secured to a support stand as shown as in FIG. 1.

It is apparent from the foregoing that there has been provided a collapsible sign of the character which can be collapsed into a relatively small package and which can be readily erected.

I claim:

1. In a collapsible sign, a plurality of arms greater in number than three, means pivotally interconnecting said arms adjacent one end of each of the arms so that said arms can be shifted in parallel planes about a common axis between an extended position and a folded position, said arms in the folded position overlying each other, a flexible four-sided sheet-like

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member having four corners and securing means for securing portions of said sheet-like member to said arms when in the extended position to maintain said sheet-like member in a relatively taut condition on said arms when said arms are in an extended position, said securing means including means for releasing at least one of said arms.

2. A sign as in claim 1 wherein four of said arms are provided to provide two pairs of arms, each pair of arms being generally aligned when the arms are in the extended position to extend across the sheet-like member to two opposite cor-

ners thereof whereby said pairs of arms support all four corners of said sheet-like member.

3. A sign as in claim 1 wherein at least one of said arms is formed in two parts and means yieldably interconnecting the parts to normally retain said parts in aligned positions to facilitate spilling of the wind from the sign.

4. A sign as in claim 3 wherein said yieldable means is a helical coil spring and wherein said parts are provided with threads engaging the interior of said coil spring to hold the parts in alignment with the spring.

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