Feb. 27, 1968 R. G. WOOLWORTH 3,370,766

DEVICE FOR HOLDING SKIS AND SKI POLES

Filed March 1, 1966

FIG. 1

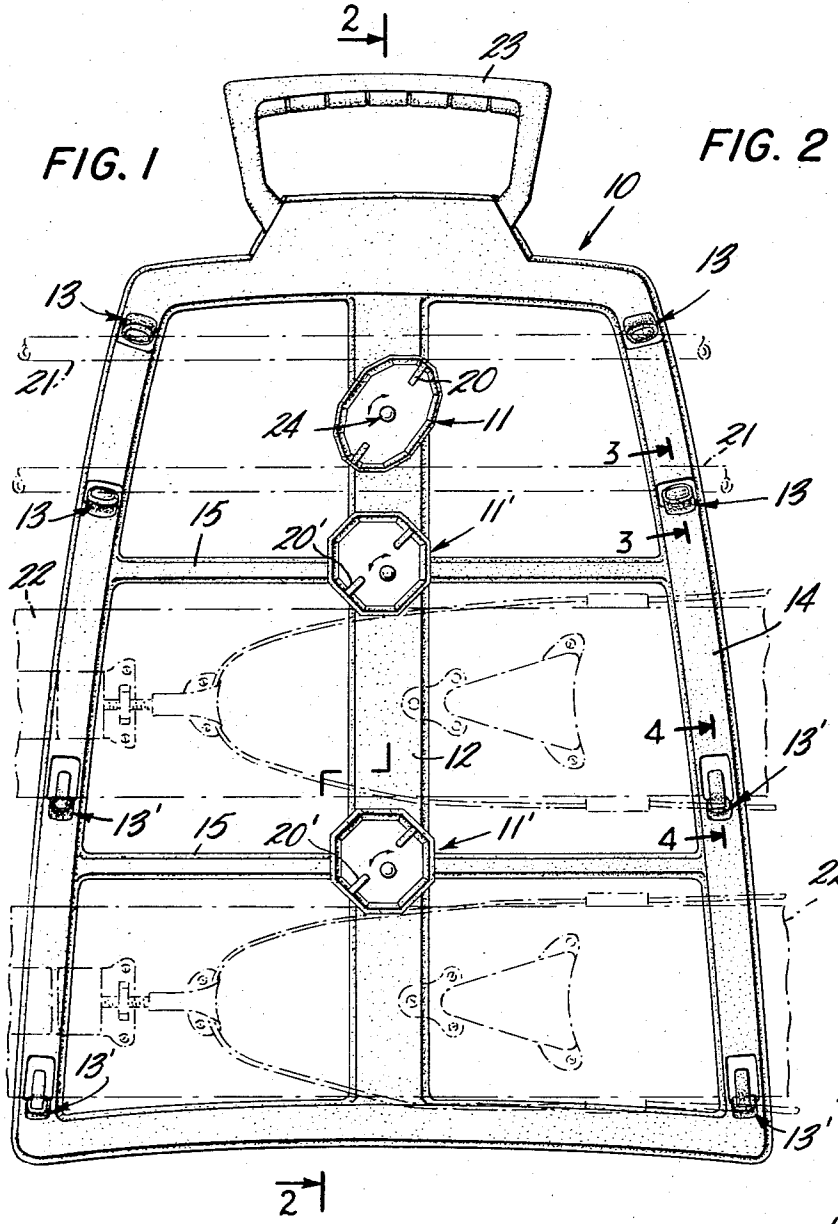
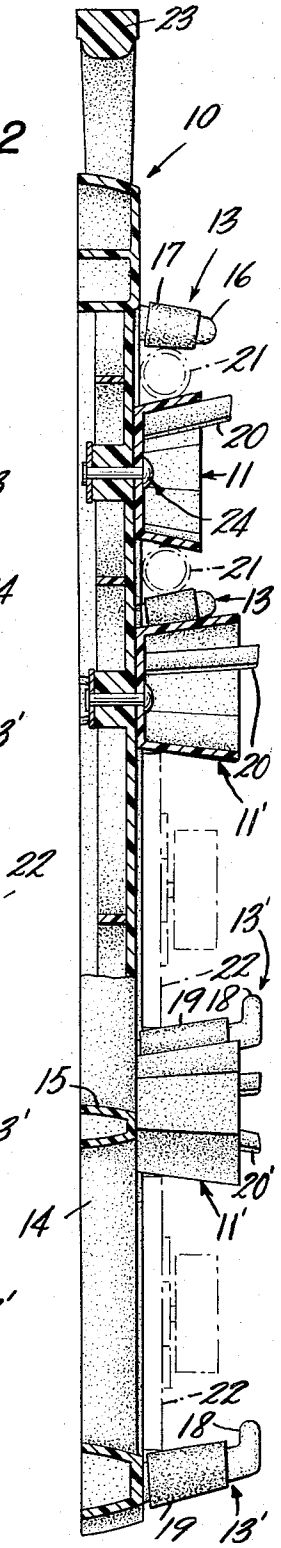


FIG. 2



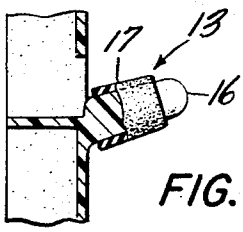


FIG. 3

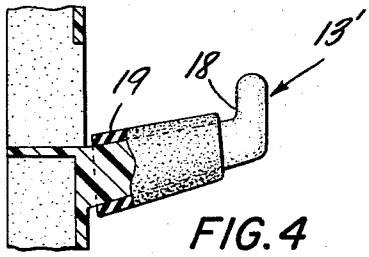


FIG. 4

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DEVICE FOR HOLDING SKIS AND SKI POLES

Richard G. Woolworth, Lancaster, Pa., assignor to Old Pal Inc., Lititz, Pa.

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ABSTRACT OF THE DISCLOSURE

A device for holding and transporting skis and ski poles wherein one edge of each of the skis abuts against the supporting fingers and the other edge of each of the skis is engaged by an adjustable cam means. Similarly, the ski poles are supported between an adjustable cam means and a pair of spaced apart supporting elements.

This invention relates to a device for holding skis and ski poles.

More particularly, the device according to the invention is particularly useful for holding skis and ski poles for transport or for storage. Skis and ski poles because of their considerable length are frequently awkward to transport or to store, especially to transport by hand. The device of the invention is particularly adapted to hold skis and ski poles for hand transport. However, it may be readily adapted for use as an external rack on an automobile.

The carrying of skis and ski poles by hand is particularly awkward, as will be apparent to anyone who has engaged in this activity. The device of the invention permits the skis and ski poles to be readily carried together by the use of only one hand, leaving the other hand free.

Briefly, the device of the invention comprises a frame, cam means rotatably mounted on the frame, and fingers mounted on and projecting outwardly from the frame, the cam means and the fingers being spaced to accommodate a ski or a ski pole between the fingers and the cam means.

It is a particular advantage of the present invention that the cam means makes it possible for the device of the invention to readily accommodate skis and ski poles of varying transverse dimension. This advantage is obtained by providing cam means in the form of polygonal members, each being oblong and/or having an eccentric axis of rotation. Preferably, the polygonal member constituting each of the cams is provided with a pair of wings for facilitating gripping of the cam for rotation thereof.

In operation, a cam is rotated to a position so as to define an adequate space between one of its sides and an adjacent set of the fingers to permit insertion in the space of a particular ski or ski pole. Then, the cam is rotated to a position at which another of its sides bears against the ski or ski pole to urge the ski or ski pole against the set of fingers, whereby the ski or ski pole is locked between the cam and the set of fingers. When it is desired to release the ski or ski pole for removal thereof from the device, the cam is rotated to a position in which a side thereof no longer bears against the ski or ski pole.

In a particularly useful embodiment of the invention, three cams and four sets of fingers, preferably sets of two, are provided. The sets of fingers alternate with the cams. Two of the sets of fingers each define with an adjacent one of the cams a space to accommodate a ski. The other two of the sets of fingers define with a cam adjacent to both of them two spaces to accommodate two ski poles.

The fingers of a set will generally be laterally spaced in opposed directions from the adjacent cam with which the set of fingers cooperates to hold a ski or a ski pole. This arrangement provides the requisite gripping action when the cam is rotated into a locking position, i.e., into a position in which a side of the cam bears against a ski or ski pole to urge the same against the set of fingers.

Preferably, the fingers are each provided with a sheath of rubber or other material having a similarly high coefficient of friction. The purpose of the sheath is to help prevent the ski or ski pole from sliding longitudinally when gripped in the device of the invention, though generally the gripping itself is adequately firm to prevent such slipping.

The device of the invention may be constructed of any hard durable material such as a plastic or a metal. It is found particularly convenient to construct the entire device of a plastic with the exception of the pivot pins for the cams, which are made of a metal, and the sheaths for the fingers, which are made of rubber.

A handle is preferably provided at one end of the frame for carrying the device with or without skis and ski poles mounted on the device.

The invention will now be further described by reference to the drawings, in which:

FIG. 1 is an elevation view of a device according to the invention;

FIG. 2 is an elevation view of the device of FIG. 1, in section through section line 2—2;

FIG. 3 is an elevation view of a finger of the device of FIG. 1, in section through section line 3—3;

FIG. 4 is an elevation view of another finger of the device of FIG. 1, in section through section line 4—4.

The device consists essentially of a frame **10**, cams **11** and **11'**, and fingers **13** and **13'**.

Cams **11** and **11'** are rotatably mounted on a center member **12** of the frame **10** by means of pivot pins **24**. Pivot pins **24** hold the cams **11** and **11'** firmly against the center member **12**, whereby the cams **11** and **11'** will remain in any position to which they are turned by virtue of the friction between the underside of the cam and the face of the center member **12**.

The cams **11** and **11'** are each provided with a pair of wings **20** and **20'** which may conveniently be gripped when it is desired to rotate the cam.

Each of the cams **11** and **11'** is a polygonal member. The cam **11** is oblong and, as illustrated, its sides vary in length. The cams **11'** each have an eccentric axis of rotation and, as illustrated, their sides vary in length. As indicated by the arrows (FIG. 1) the cams **11** and **11'** are rotatable in either direction. Viewing the invention in retrospect, it should be apparent that the provision of oblong shape and/or sides of different length and/or eccentric mounting of the cams renders the device adjustable to accommodate skis and ski poles of varying transverse dimension.

The fingers **13** and **13'** project outwardly from the peripheral member **14** of the frame **10**. The peripheral member **14** is generally quadrilateral, having some curvature as illustrated. Brace members **15** of the frame **10** interconnect the peripheral member **14** with the center member **12** and thereby provide added rigidity to the structure of the frame **10**. At one end of the frame **10** there is provided a handle **23** to facilitate carrying of the device, particularly when ski poles **21** and skis **22** are mounted thereon.

The lower set of fingers **13** and the two sets of fingers **13'** are inclined slightly upwardly and the upper set of fingers **13** is inclined slightly downwardly (FIG. 2).

Fingers **13** are each constituted of a straight finger member **16** provided with a rubber sheath **17** (FIG. 3). Finger members **13'** are each constituted of a hooked finger member **18** provided with a rubber sheath **19** (FIG. 4).

Each ski **22** is placed in the space between a pair of the fingers **13'** and one of the cams **11'**, each cam **11'**

having been pre-rotated to a position whereby an adequate space is defined between the cam **11'** and the pair of fingers **13'**. The fingers **13'** support the lower edge of the ski **22** as viewed in FIG. 1 and FIG. 2. The hooked end of each of the finger members **18** prevents the ski **22** from being displaced outwardly away from the frame **10**. The cam **11'** is then rotated in either direction until one of its sides bears firmly against the upper edge of the ski **22**. By this operation, the ski **22** is firmly locked between a pair of the fingers **13'** and one of the cams **11'**. There is a cam and a pair of fingers for each of the two skis and each is locked in position in the very same manner. To release the skis, each of the cams **11'** is rotated in either direction until each of the cams **11'** no longer bears against the upper edge of a respective one of the skis **22**. Each of the skis **22** may then simply be lifted from the frame **10**.

To place the ski poles **21** in position preliminary to locking them, the cam **11** is rotated to a position permitting insertion of one of the ski poles **21** between the cam **11** and the upper pair of fingers **13** and of the other ski pole **21** between the cam **11** and the lower pair of fingers **13**. Then, to lock the ski poles, the cam **11** is rotated in either direction to a position at which one of the sides of the cam **11** bears firmly against one of the ski poles **21** and another side of the cam **11** bears firmly against the other of the ski poles **21**. Thus, the ski poles **21** are now locked between the cam **11** and the respective pairs of fingers **13**. The downward inclination outwardly from the frame **10** of the upper pair of fingers **13** and the upward inclination outwardly from the frame **10** of the lower pair of fingers **13** each prevent a respective one of the ski poles **21** from being displaced outwardly away from the frame **10**. To unlock the ski poles **21**, the cam **11** is rotated to a position at which sides thereof no longer bear against the ski poles **21**, thus permitting lifting of the ski poles **21** from the frame **10**.

This invention is not to be construed as limited to the particular form disclosed herein, since this is to be regarded as illustrative rather than restrictive.

What I claim and desire to secure by Letters Patent is:

1. In a ski holding and transporting device, the improvement comprising:

a frame means having a handle means and having generally planar surface portions against which the generally planar base surface of a ski can abut;

a first set of spaced apart ski supporting fingers projecting from said surface portions in axially aligned relationship longitudinally of a ski to be held and transported to thereby enable a side edge of such ski to abut against said fingers;

a second set of spaced apart ski supporting fingers projecting from said surface portions in axially aligned relationship parallel to but spaced from the alignment axis of said first set of fingers;

first and second rotatable cam means respectively cooperative with said first and second sets of fingers to clamp skis firmly therebetween;

said first cam means being disposed intermediately in the space between said first set of finger and said second cam means being disposed intermediately in the space between said second set of fingers;

each of said cam means including an edge surface adapted to bear against a side edge of a ski and further including a mounting means which provides a rotational axis for the cam means;

each of said cam means having its rotational axis disposed substantially perpendicular to the plane of said frame means surface portions and hence disposed substantially perpendicular to the plane of the base surface of a ski abutting against said surface portions;

said first cam means being positioned with its rotational axis located between the alignment axis for said first and second sets of fingers, whereby, when one ski of a pair is positioned with one of its side edges abutting against said first set of fingers, and said first cam means is rotated about its rotational axis, said first cam means edge surface will be moved into engagement of the other side edge of such ski to thereby firmly clamp said ski against said first set of fingers;

said second cam means being positioned with its rotational axis spaced beyond the alignment axis of said second set of fingers by a distance exceeding the transverse width of the skis to be held and transported, whereby, when the other of the skis of a pair is positioned with one of its side edges abutting against said second set of fingers, and said second cam means is rotated about its rotational axis, said second cam means edge surface will be moved into engagement with the other side edge of such ski to thereby firmly clamp said ski against said second set of fingers.

2. The improvement defined in claim **1** wherein the rotational axis of each of said cam means is located eccentrically thereof.

3. The improvement defined in claim **2** wherein each of said cam means edge surfaces is formed by a plurality of interconnected linear portions.

4. The improvement defined in claim **1** further including spaced apart ski pole supporting projections extending from said frame means along two parallel axes which are also parallel to said finger alignment axes, and a rotatable polygonal cam member positioned between said two parallel axes and operative to clamp ski poles against said projections.

5. The improvement defined in claim **4** wherein two parallel edges of said polygonal cam member are longer than any other edges thereof, thereby making said polygonal cam member of oblong configuration.

References Cited

UNITED STATES PATENTS

1,045,594	11/1912	Nyberg.	
2,776,856	1/1957	Ingram	294—101 X
2,956,812	10/1960	Lundquist.	
2,956,813	10/1960	Madden.	
3,225,987	12/1965	Bonner	224—45
3,248,027	4/1966	Pfleider	224—45

GERALD M. FORLENZA, *Primary Examiner.*

F. E. WERNER, *Assistant Examiner.*