United States Patent [19]

White

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[54] **CLAMP**

[76] Inventor: **Robert L. White,** 15th Michigan Bldg. B-1 No. 8, Joplin, Mo.

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[51] **Int. Cl.** **A44b 9/10,** A44b 17/00

[58] **Field of Search** .....24/208 A, 16 PB, 24/237, 212, 217, 150 R, 150 FP, 156, 153 R, 153 U, 153.1, 157 R; 40/22, 24, 20, 21

[56] **References Cited**

UNITED STATES PATENTS

2,937,834	5/1960	Orenick	24/216
2,548,104	4/1951	Frison	24/150 R
3,210,820	10/1965	Humiston	24/208 A
3,466,077	9/1969	Moberg	24/16 PB
3,481,528	12/1969	Leiter	229/52
3,600,027	8/1971	Noland	24/16 PB

FOREIGN PATENTS OR APPLICATIONS

546,770	8/1956	Italy	24/208 A
1,264,553	5/1961	France	24/16 PB
1,436,187	12/1968	Germany	24/16 PB
1,024,220	3/1966	Great Britain	24/208 A

Primary Examiner—Bernard A. Gelak
Attorney—J. Q. Martin et al.

[57] **ABSTRACT**

A clamp having discs carried at opposed ends of a foldable connecting strap, one of said discs carrying a projecting pointed penetrating shaft, the other of said discs carrying a shaft receiving sleeve, and interengaging means between the shaft and sleeve to secure the opposed discs in folded clamping position.

7 Claims, 4 Drawing Figures

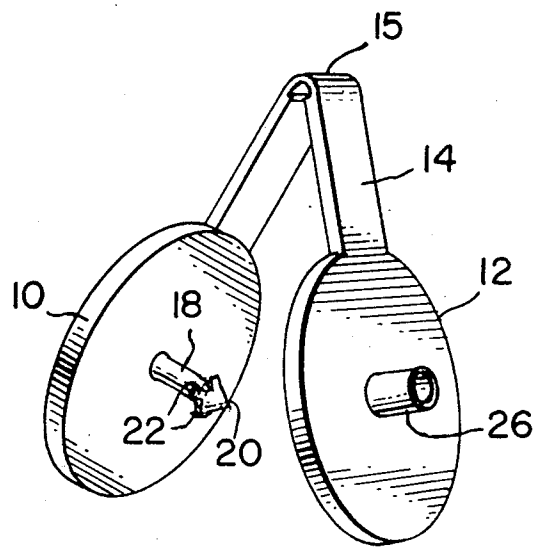


FIG. 1.

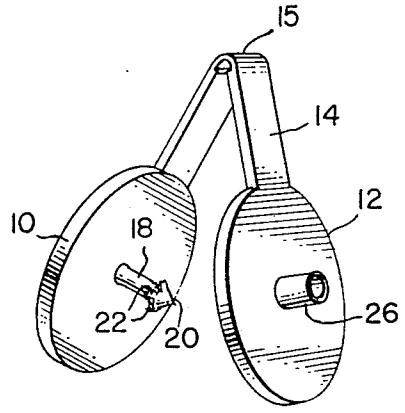


FIG. 2.

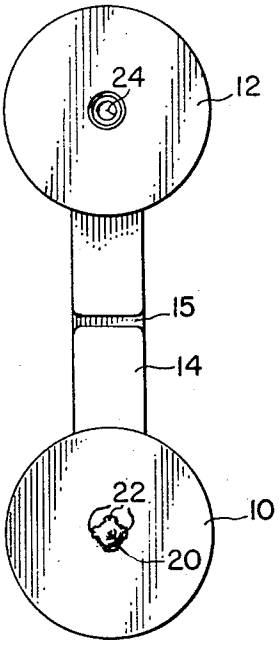


FIG. 3.

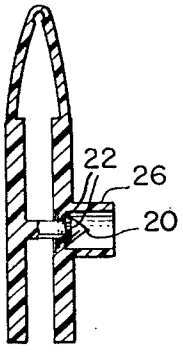
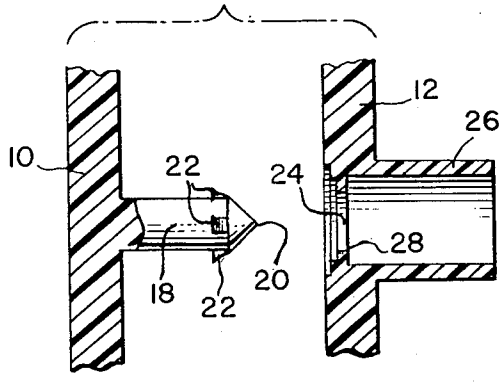


FIG. 4.



INVENTOR
ROBERT L. WHITE

CLAMP

This invention relates to improvements in clamps and is concerned more particularly with clamps of the flexible or folding type.

The general object of the invention is to provide a clamp of simplified construction which is adaptable for a great variety of uses as either a permanent attachment or a temporary fastener capable of multiple reuse.

A more particular object is to provide a clamp comprising hinged discs, one of which carries a pointed shaft for penetrating material to be engaged and the other of which carries a hollow sleeve for protectively receiving the protruded end portion of the shaft. The invention also contemplates the provision of interengaging means between the shaft and the sleeve to secure the opposed discs in clamping position.

Other and further objects and advantages will be apparent from the following detailed description taken in conjunction with the accompanying drawings wherein a preferred embodiment of the principles of the invention has been selected for exemplification.

In the drawings:

FIG. 1 is a perspective view of a clamp constructed and arranged in accordance with the invention and shown in folded open position;

FIG. 2 is a plan view of the clamp prior to folding;

FIG. 3 is a fragmentary sectional view showing the clamp engaged in locked position; and

FIG. 4 is an enlarged fragmentary sectional view showing the clamp disengaged or in unlocked position.

Referring more particularly to the drawings, wherein like numerals refer to like parts, plates or discs **10** and **12** are carried at opposite ends of a strap **14** having a central portion **15** of reduced thickness to form a fold line whereby to bring the discs **10** and **12** in opposed clamping position.

An inwardly projecting shaft **18** is carried by or integrally formed with the disc **10**, preferably at the central portion thereof, and terminates in a material penetrating pointed free end portion **20**. The shaft **18**, including its pointed end, is preferably substantially rigid. A plurality of outwardly extended wedge-like projections **22** or the like are integrally formed or otherwise provided adjacent to but short of the free end portion **20** for a purpose as hereinafter explained.

The opposed plate or disc **12** is centrally apertured as at **24** and carries an outwardly extending hollow tubular sleeve **26** for receiving the projecting free end portion **20** of the shaft **18** when the discs **10** and **12** are pressed together in clamping position. While the shaft **18** and sleeve **26** are illustrated in axial alignment, relative tilting of these members may be necessary to facilitate passage of the projections through the aperture **24**. The shaft **18** and protective sleeve **26** may be of any desired length and diameter.

An annular, inwardly extending square cornered flange **28** is provided at the junction of the aperture **24** and the sleeve **26** for receiving the lateral faces of the projections **22** after the end portion **20** of the shaft **18** is thrust through the aperture **24** into the hollow sleeve **26**. Such interengaging bearing surfaces **22** and **28** tend to secure the discs **10** and **12** in closed clamping position.

The projections **22** may be relatively rigid yet capable of being forced through the aperture **24** for locking engagement with the flange **28** to provide a substantially permanent attachment such as when the clamp is employed as an identifying tag attached to the ear of an animal for example, or as a seal tag for freight carriers or the like. However, when desired, the projections **22** may be relatively resilient for disengagement with the flange **28** when the discs **10** and **12** are pulled apart for reuse, such as when the clamp is temporarily used for fastening sheet material such as fabrics or the like, for securing diapers for example, or for attaching other articles such as buttons.

The clamp of the present invention may be integrally formed such as by molding. The material forming the clamp may be of any suitable plastic composition, nylon for example, or metal sheet material, and may be of any strength, rigidity, size or other characteristic suitable for the selected function of its structure.

It is to be understood, accordingly, that the present invention is not confined to the particular device herein illustrated and described but embraces all such modifications thereof as may come within the scope of the following claims.

I claim:

1. A clamp which comprises:
   a. opposed clamping members;
   b. a shaft having a constant diameter formed integrally with one of said clamping members, said shaft having a pointed portion at one end and a plurality of projections adjacent said pointed portion; and
   c. a hollow protective sleeve formed integrally with and projecting outwardly of the other of said clamping members, said hollow sleeve being adjacent an aperture in the other of said clamping members to permit insertion of said shaft into said hollow sleeve, said aperture having an abrupt shoulder forming an opening, the diameter of said opening being substantially the diameter of said shaft whereby said shoulder engages said projections to secure said opposed clamping members in clamping position.

2. The clamp of claim 2 wherein the shaft, the sleeve and the interengaging means are substantially rigid.

3. The clamp of claim 2 wherein the opposed clamping members are substantially rigid discs.

4. The clamp of claim 2 wherein the clamping members are carried at opposite end portions of a foldable strap.

5. The clamp of claim 3 wherein the discs are carried at opposite end portions of a foldable strap.

6. The clamp of claim 2 wherein the shaft and the sleeve are substantially rigid.

7. The clamp of claim 2 wherein the clamping members are substantially rigid discs and wherein the discs and their respective shaft and sleeve and interengaging means are integrally formed.

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