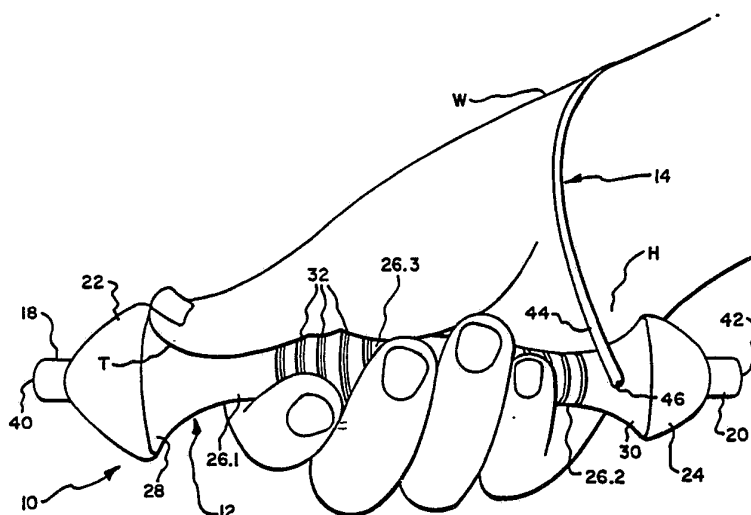




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁴ : A63B 59/00	A1	(11) International Publication Number: WO 90/07959 (43) International Publication Date: 26 July 1990 (26.07.90)
<p>(21) International Application Number: PCT/US89/03107</p> <p>(22) International Filing Date: 14 July 1989 (14.07.89)</p> <p>(30) Priority data: 297,032 17 January 1989 (17.01.89) US</p> <p>(71)(72) Applicant and Inventor: WILKINS, Michael, D. [US/US]; 43 Caesar Boulevard, Amherst, NY 14221 (US).</p> <p>(74) Agents: BEAN, Edwin, T. et al.; Hodgson, Russ, Andrews, Woods & Goodyear, 1800 One M&T Plaza, Buffalo, NY 14203 (US).</p> <p>(81) Designated States: AT (European patent), AU, BE (European patent), BR, CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), JP, KR, LU (European patent), NL (European patent), SE (European patent), US.</p>		<p>Published <i>With international search report.</i></p>

(54) Title: HAND WEAPON



(57) Abstract

A hand weapon which is intended to control combative individuals with minimal injury. The small hand weapon (10) will deliver an opponent a debilitating yet non-lethal blow, thus allowing the user of the hand weapon to gain control and compliance of an opponent without unnecessary or excessive force. The hand weapon includes a cudgel (12) which has a central hand grip portion (16) and striking end portions (18, 20). Thus, the striking end portions are cylindrical projections and they are separated from the hand grip portion by stop surfaces (22, 24). The hand grip portion has a finger grip portion and first and second abutment surfaces (28, 30) which are adapted to be engaged by the tip of the thumb and the heel of the hand when the hand weapon is in use. A thong (14) is adapted to be passed through an aperture (46) in the abutment surface which engages the heel, the thong being adapted to be passed about the user's wrist to prevent accidental loss.

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HAND WEAPON

Technical Field

5 The present invention relates generally to a hand weapon,
and more particularly to a hand weapon of the type which may
deliver a debilitating but non-lethal blow, thus allowing a law
enforcement officer to gain control and compliance of a combative
individual without excessive force and with minimal injury to the
10 individual.

Background of the Invention

 There has been a need over the years for a less than lethal
hand weapon which may be used to control combative individuals
15 while accomplishing an arrest with minimal injury to the
individual. Today a typical police officer only carries a
revolver or piston and a nightstick. In many situations the use
of the revolver is inappropriate and thus the police officer is
required to resort to use of the nightstick. However, in many
20 situations the police officer may use, or may be accused of
using, too much force with the nightstick thus leading to charges
of police brutality. As a general rule though most police
officers merely want to use only that force necessary to control
the individual so that a proper arrest can be made.

25

Objects and Summary of the Invention

 It is a principal object of the present invention to provide
a hand weapon for use by law enforcement personnel and security
professionals which may be utilized to control combative
30 individuals while accomplishing an arrest with minimal injury to
the individual.

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It is another object of the present invention to provide such a hand weapon which is small and which may be concealed in the hand or pocket during use.

It is a further object of the present invention to provide
5 such a small hand weapon which will deliver a debilitating yet non-lethal blow.

A still further object of the present invention is to provide a hand weapon which may be used for self-defense purposes, the weapon being designed to deliver debilitating but
10 non-lethal blows.

The above objects and other objects of this invention are accomplished by providing an integral cudgel having an intermediate hand grip portion and opposed striking end portions which are coaxial with the hand grip portion. The hand grip
15 portion is so contoured that the hand grip portion can be comfortably engaged by the hand. Thus, the grip is engaged with the hand being in a hand-shaking position with the thumb extended so that it is in line with the user's forearm, the thumb engaging an abutment at one end of the hand grip portion and the heel of
20 the hand engaging another abutment at the other end of the hand grip portion. When so engaged the cudgel will be locked in the hand. The striking end portions are generally cylindrical and have a diameter sufficiently wide not to puncture the skin but sufficiently small to effectively transmit impact forces.

25 Adjacent each striking end portion is a radially outwardly extending stop surface which causes the striking portion to have an effective length short enough to prevent damage to internal organs but long enough to damage muscle or bone thus being capable of delivering a debilitating blow.

30 The foregoing will be more completely understood after a consideration of the following detailed description taken in conjunction with the accompanying drawings in which a preferred form of this invention is illustrated.

Brief Description of the Drawings

FIG. 1 is a perspective view of the hand weapon of this invention.

FIG. 2 is a side view to scale of the integral cudgel portion of the hand weapon of this invention.

FIGs. 3 and 4 are end views taken generally along the lines 3-3 and 4-4 in FIG. 2.

FIG. 5 is a further side view of the hand weapon of this invention showing the manner in which it is engaged for use.

Detailed Description

With reference to the various drawings, it can be seen that the hand weapon of this invention, which is indicated generally at 10, consists of two principal components, these being a cudgel or the like, indicated generally at 12, and an optional thong indicated generally at 14. In the preferred embodiment the cudgel is formed of a hardwood such as rock maple, the wood being selected for its high strength to weight ratio, and also because the wood is of the type which is not likely to break or splinter. It is also a wood which may be easily turned in a lathe to produce the desired end product. In actual practice the cudgel is approximately eight inches (20.3 cm) in length from one end to the other and has a diameter at its widest part of 1-3/4 (4.4 cm) to 2 (5 cm) inches.

The cudgel has a number of separate coaxial portions, these being a hand grip portion, that being the portion within the bracket 16, first and second opposed striking end portions 18, 20, respectively and first and second radially outwardly extending stop surfaces 22, 24, respectively.

The hand grip portion includes a finger grip portion 26 and first and second opposed abutment surfaces 28, 30, respectively, for engagement by the tip T of the thumb and the heel H of the hand. As can be seen from the drawings each of these abutment surfaces is in a curved conical form so that it comfortably

conforms to either the tip of the thumb or the heel of the hand when the cudgel is engaged by the fingers of the hand in the manner illustrated. The finger grip portion has first and second reduced diameter portions 26.1 and 26.2, respectively, these
5 being adjacent the first and second opposed abutment surfaces, respectively, and an enlarged diameter center portion 26.3 for engagement with the fingertips, this being best illustrated in FIG. 5. In order to prevent slipping, the enlarged diameter
10 center portion 26.3 of the finger grip portion is provided with a plurality of axially spaced-apart circumferentially extending grooves 32, the grooves being sufficiently deep to provide good resistance to slipping but not so deep as to pinch the flesh of the fingers. The hand grip portion 16 is approximately 5-3/4
15 inches (14.6 cm) in length and, is specifically contoured so that the hand grip can be engaged by a hand in a hand-shaking position with the thumb extended so it is in line with the user's forearm. Thus, when the hand weapon of this invention is engaged in the manner illustrated in FIG. 5 with the thumb locked against the back lip of the larger end of the cudgel, the hand weapon
20 will be correctly held and it will feel locked in the hand. Thus, if the user were to strike forward he would feel the solid strength of his forearm and wrist, not just his hand.

When striking the first striking end 18 will typically be utilized, the striking end being a generally cylindrical
25 projection having a diameter sufficiently wide not to puncture the skin but sufficiently small to effectively transmit impact forces. The length of the striking end portion is such that it is short enough to normally prevent damage to internal organs but long enough to damage muscle and bone near the surface of the
30 skin. In practice the diameter is approximately 3/8 inches (9.5 cm) to 7/16 inches (11.1 mm) and the length being approximately 3/8 inches (9.5 cm). Each striking end portion 18, 20 terminates in a flat surface 34, 36 which is disposed at right angles to the axis 38 of the hand weapon. In order to prevent cutting or

tearing of the skin the projections are provided with a rounded corner between the flat surface and the cylindrical portion, the rounded corner between the first flat surface 34 and the first striking end 18 being indicated at 40, and the other rounded corner being indicated at 42.

In order to control the depth of penetration of the striking end portions 18, 20, the first and second stop surfaces 22, 24 are provided. Each of these stop surfaces is essentially the same although the maximum diameter of the first stop surface, where it intersects the first abutment surface 28 is greater than the maximum diameter of the second stop surface 24 where it intersects the second abutment surface 30. This is clearly illustrated in FIG. 2. Each of the stop surfaces is generally conical in shape and initially extends away from the associated cylindrical striking end portion 18 or 20 at approximately 45° to the axis 38, the angle progressively decreasing to establish a curved conical surface.

As previously indicated the hand weapon also includes an optional thong 14, the thong being a leather strap having an intermediate portion 44 which passes through an aperture 46 in the cudgel, which aperture intersects the diameter 38 at right angles thereto, the aperture extending through the second abutment surface 30. The ends 48 and 50 of the leather strap are tied together so that the thong may be slipped over the wrist W of the user to prevent the inadvertent loss of the hand weapon during use or otherwise.

While a preferred form in which the principles of the present invention have been incorporated is shown and described above, it is to be understood that the principles of this invention are not to be limited to the particular details shown and described above, but that, in fact, widely differing means may be employed in the practice of the broader aspects of this invention.

What is claimed is:

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1. A hand weapon adapted to be used by law enforcement and/or security personnel to control combative individuals with minimal injury; the hand weapon comprising:
 - an integral cudgel (12) of a hard wood or the equivalent,
 - 5 the cudgel including a centrally located cylindrical hand grip portion (16) provided with first and second opposed abutment surfaces (28, 30) for engagement by the thumb and the heel of the hand, respectively, first and second opposed striking end portions (18, 20), and first and second radially outwardly
 - 10 extending stop surfaces (22, 24) between the first and second striking end portions and the first and second opposed abutment surfaces, respectively, each of the striking end portions being in the form of an outwardly extending generally cylindrical
 - 15 portion generally coaxial with the hand grip portion and having a diameter sufficiently wide not to puncture the skin but sufficiently small to effectively transmit impact forces, each striking end portion also having a length short enough to prevent damage to internal organs but long enough to damage muscle or bone, and each of the stop surfaces preventing excessive
 - 20 penetration of an associated striking end portion to prevent undue injury from the associated striking end portion.

2. The hand weapon as set forth in claim 1 wherein each of the generally outwardly extending generally cylindrical portions
- 25 terminates in a terminal surface (34, 36) at substantially right angles to the axis (38) of the hand grip portion (16).

3. The hand weapon as set forth in claim 2 wherein the corner (40, 42) between the terminal surface (34, 36) and the surface of
- 30 the cylindrical striking end portion (18, 20) is rounded to reduce the likelihood of cutting or tearing of flesh.

4. The hand weapon as set forth in claim 1 wherein each of the stop surfaces extends radially outwardly and away from the cylindrical striking end portion.

5. The hand weapon as set forth in claim 4 wherein the radially outwardly extending stop surface initially forms an angle adjacent the cylindrical portion of approximately 45°.

5

6. The hand weapon as set forth in claim 5 wherein the angle of the stop surface with respect to the axis of the hand grip portion progressively decreases to form a curved generally conically shaped surface.

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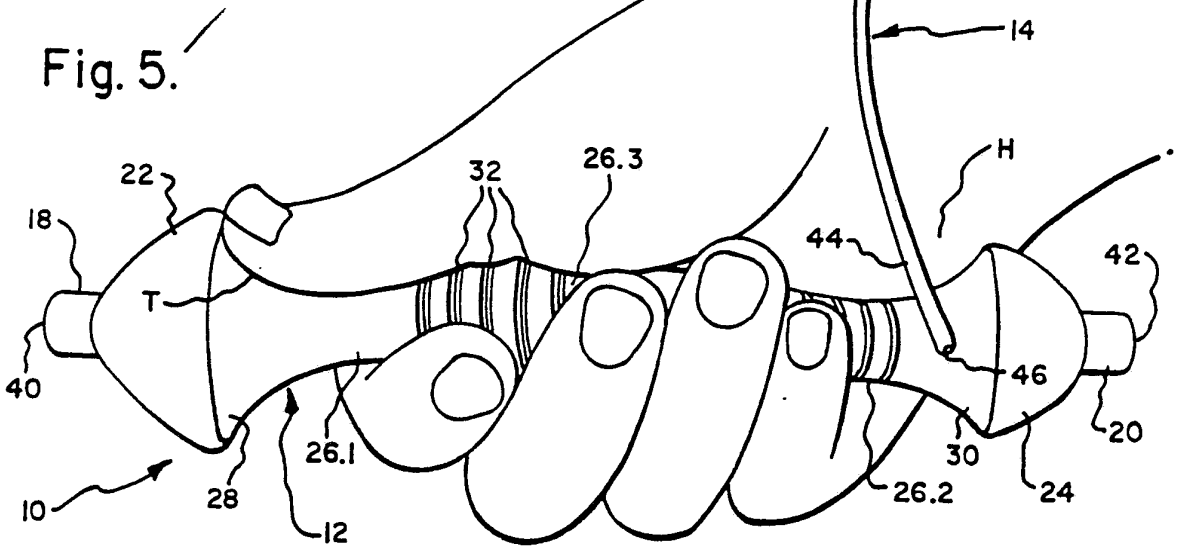
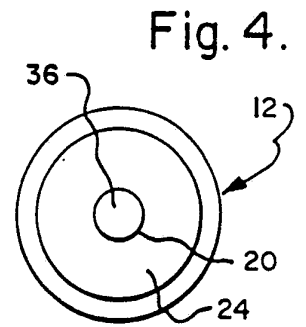
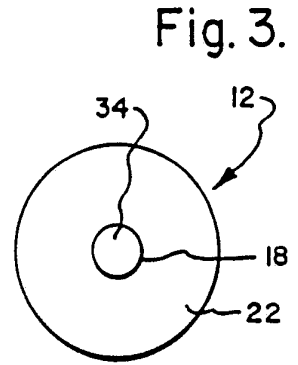
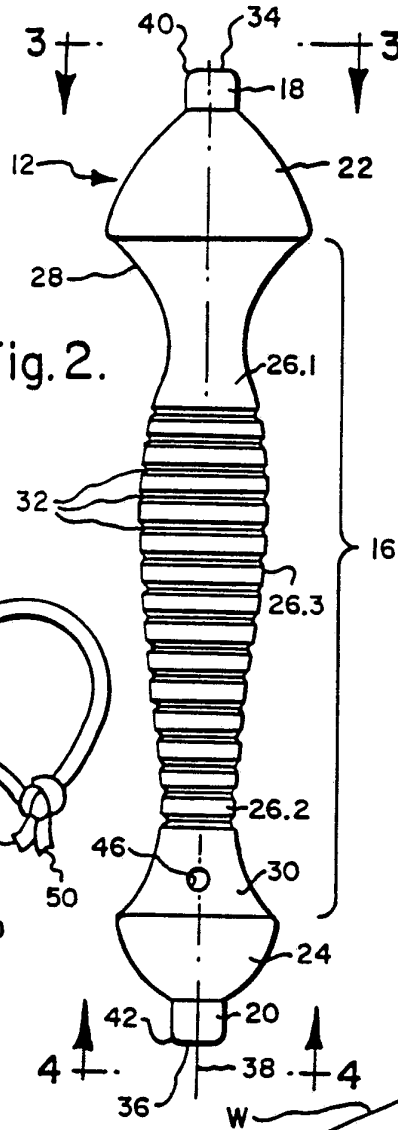
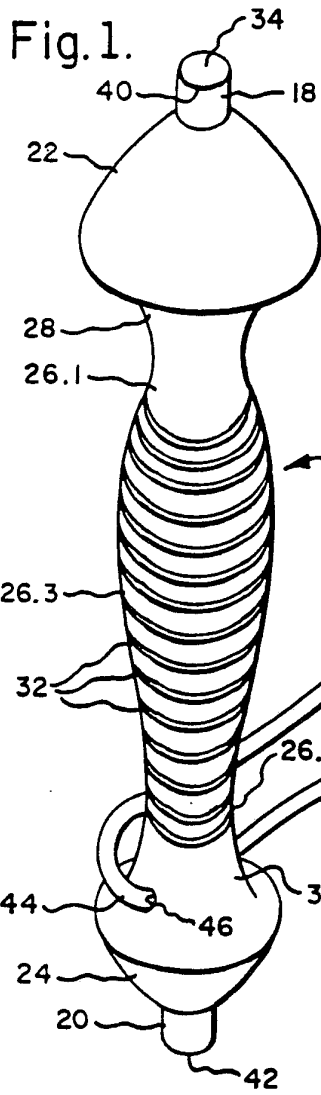
7. The hand weapon as set forth in claim 1 wherein the cylindrical hand grip portion is contoured so that the hand grip can be comfortably engaged by a hand with the hand being in a handshaking position with the thumb extended so that it is in line with the user's forearm.

8. The hand weapon as set forth in claim 1 wherein the first opposed abutment surface (28) is curved so that it comfortably conform to the tip (T) of the thumb when the hand grip is engaged by the fingers of the hand.

9. The hand weapon as set forth in claim 1 wherein the second opposed abutment surface (30) is curved in such a manner that it may be comfortably engaged by the heel (H) of the hand when the fingers of the hand are engaging the hand grip portion.

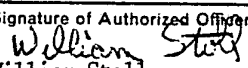
10. The hand weapon as set forth in claim 1 wherein the hand grip portion (16) between the first and second opposed abutment surfaces (28, 30) is provided with a finger grip portion (26), the finger grip portion having reduced diameters (26.1, 26.2) adjacent the first and second opposed abutment surfaces and an enlarged diameter (26.3) which may be engaged by the middle finger of the hand.

11. The hand weapon as set forth in claim 10 wherein the finger engaging portion (26) is provided with a plurality of axially spaced apart circumferentially extending grooves (32) to provide
5 resistance to slipping of the hand.
12. The hand weapon as set forth in claim 11 wherein the grooves are sufficiently deep to provide good resistance to slipping but not so deep as to pinch the flesh of the fingers.
10
13. The hand weapon as set forth in claim 1 wherein the first abutment surface (28) and first stop surface (22) intersect each other in a circular diameter greater than the intersection diameter of the second abutment surface (30) and the second stop
15 surface (24).
14. The hand weapon as set forth in claim 1 further characterized by the provision of a thong (14) which may be disposed about the wrist of the user, the thong being
20 interconnected with the cudgel.
15. The hand weapon as set forth in claim 14 wherein the thong passes through an aperture (46) extending through the cudgel.
- 25 16. The hand weapon as set forth in claim 15 wherein the aperture (46) is disposed in the second abutment surface (30).



INTERNATIONAL SEARCH REPORT

International Application No. PCT/US89/03107

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC (4) A63B 59/00		
US 273/84R		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
US	273/67R, 81R, 84R, 84ES 272/122, 124 D22/117	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category [*]	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	US,A, 4,522,398 (SWARTZ ET AL), 11 JUNE 1985.	1-16
A	US,A, 3,106,398 (GOWDEY), 08 OCTOBER 1963.	1-16
A	US,A 2,099,447 (MATSUYAMA), 16 NOVEMBER 1937.	1-16
A	US,A, 442,470 (WILLWFORD) 09 DECEMBER 1890.	1-16
A	US,A, 2,757,002 (RYDEN) 31 JULY 1956.	1-16
A	US,A 291,242 (TOWER), 01 JANUARY 1884.	1-16
<p>[*] Special categories of cited documents: ¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
30 October 1989		21 NOV 1989
International Searching Authority		Signature of Authorized Officer
ISA/US		 William Stoll

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

A	US,A, D,301,513 (WRIGHT) 06 JUNE 1989.	I-16
A	US,A, D,205,456 (COMBS) 09 AUGUST 1966.	I-16
A	GB,A, 2,180,044 (FINN) 18 MARCH 1987.	I-16

V. OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. Claim numbers _____, because they relate to subject matter ¹² not required to be searched by this Authority, namely:

2. Claim numbers _____, because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out ¹³, specifically:

3. Claim numbers _____, because they are dependent claims not drafted in accordance with the second and third sentences of PCT Rule 6.4(a).

VI. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ²

This International Searching Authority found multiple inventions in this international application as follows:

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.
2. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:
3. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:
4. As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

- The additional search fees were accompanied by applicant's protest.
- No protest accompanied the payment of additional search fees.