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Gold

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(54) **MULTI-FUNCTION ACCESSORY FOR
HANDHELD ELECTRONICS**

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Publication Classification

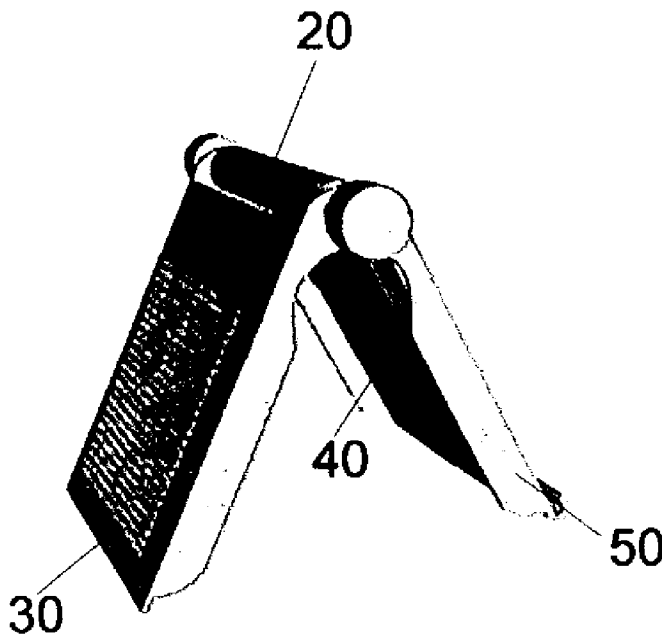
(51) **Int. Cl.⁷** **A47G 1/24**

(52) **U.S. Cl.** **248/454**

(57) **ABSTRACT**

A multi-functional articulated device with an adjustable set of rotationally locking leaves that can provide a PDA, or other handheld device, with a hand-carrying ability that creates a more secure grip on the PDA while still allowing use of the hand for other tasks. The current invention also is

attachable to a pocket, a belt or waistband. The current invention further has a surface stand up ability for multi-person viewing of the handheld device. This is useful in sharing data and making presentations when the invention is attached to a PDA or Pocket PC. The current invention also incorporates a unique paper handling capability for users that require the ability to input data into their handheld device while still holding paper documents. The current invention further allows the user to place a nametag or business card on the device in such a way as to create a breast pocket personal identification methodology for meetings and conventions. The current invention further allows the user to display the screen of their handheld device in such a way as to create an electronic breast pocket personal display methodology for meetings, conventions, marketing and sales purposes. The current invention further allows the user to place their handheld device down on dirty or wet surfaces without affecting the handheld device. The invention further creates multiple configurations that can hold handheld devices above desk level so that additional components like keyboards and power cables can be easily attached. The current invention further allows the user to display a handheld device in a portrait or landscape-viewing mode. The current invention further allows the user mount a handheld device on a vehicle dashboard. The current invention further allows the user to attach additional accessories to the invention to amplify the users ability to see the screen of the handheld device attached to the invention.



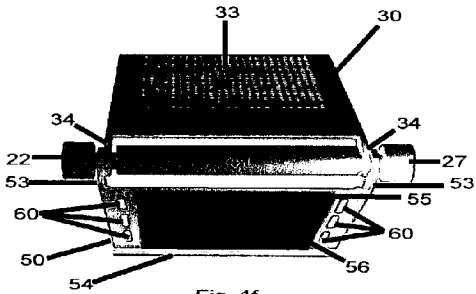


Fig. 1f

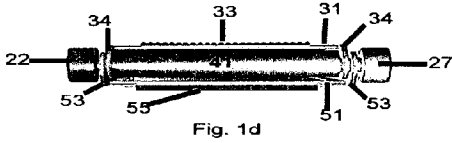


Fig. 1d

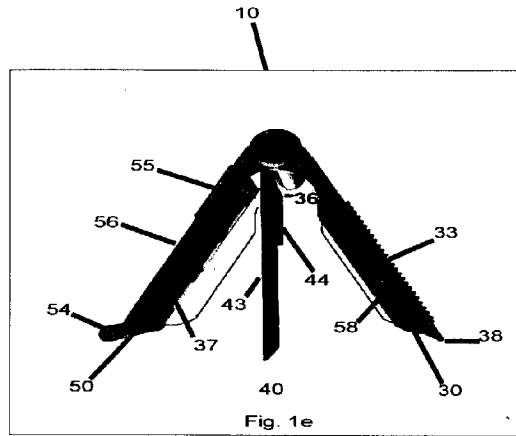


Fig. 1e

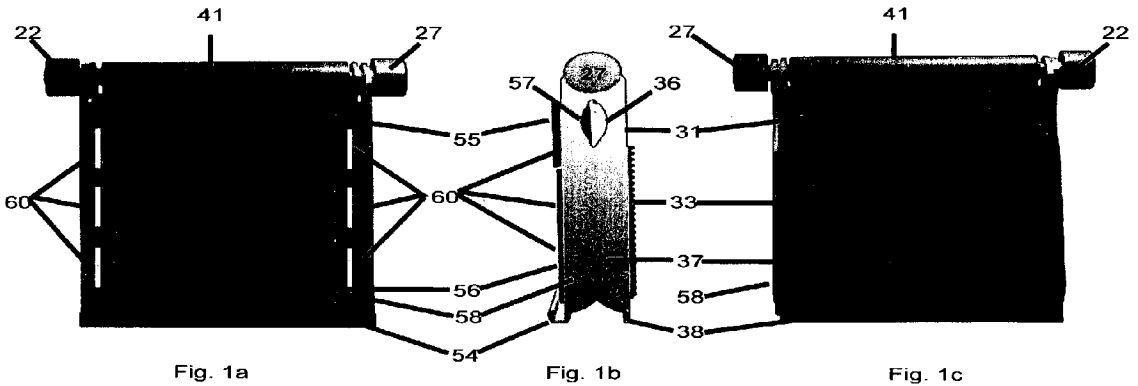


Fig. 1a

Fig. 1b

Fig. 1c

Fig. 1a - 1f

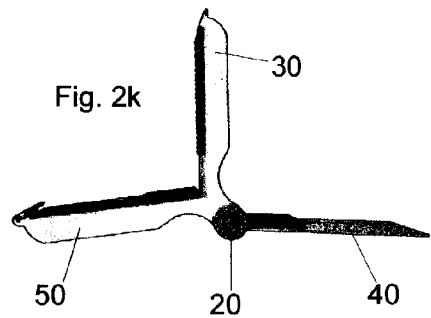
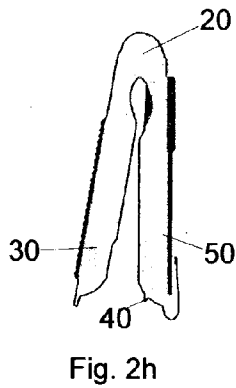
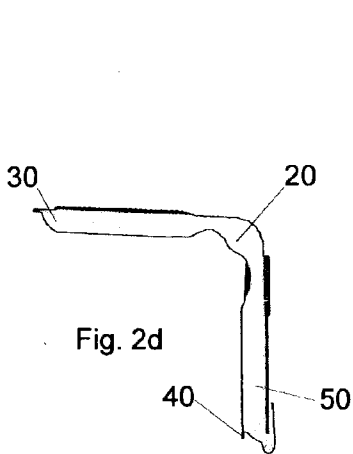
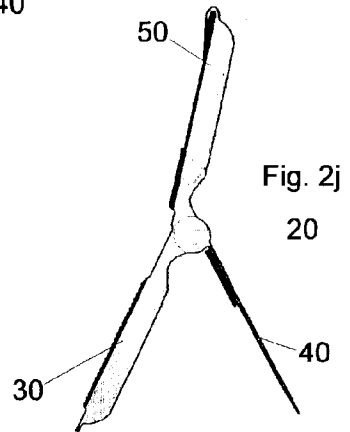
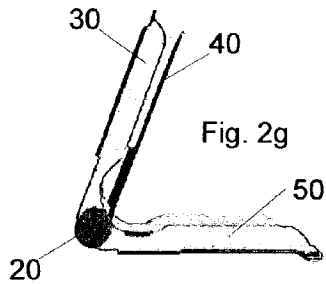
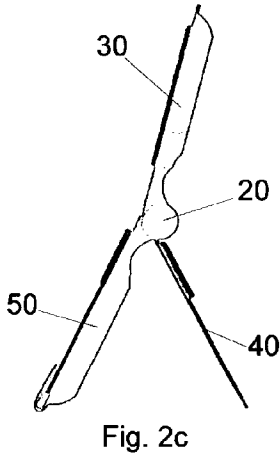
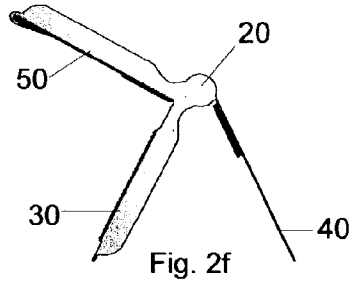
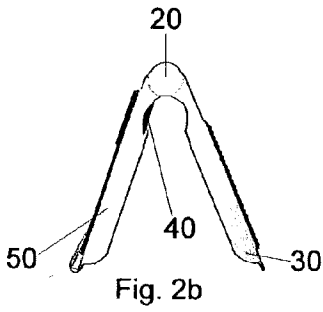
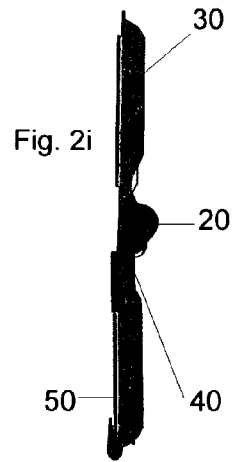
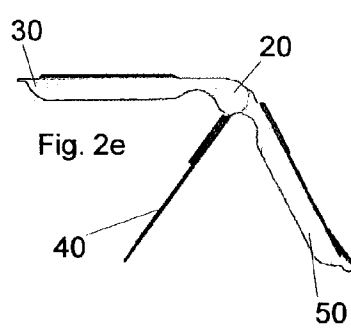
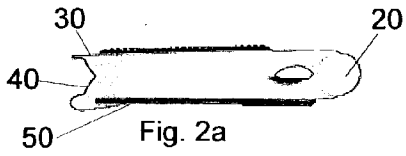
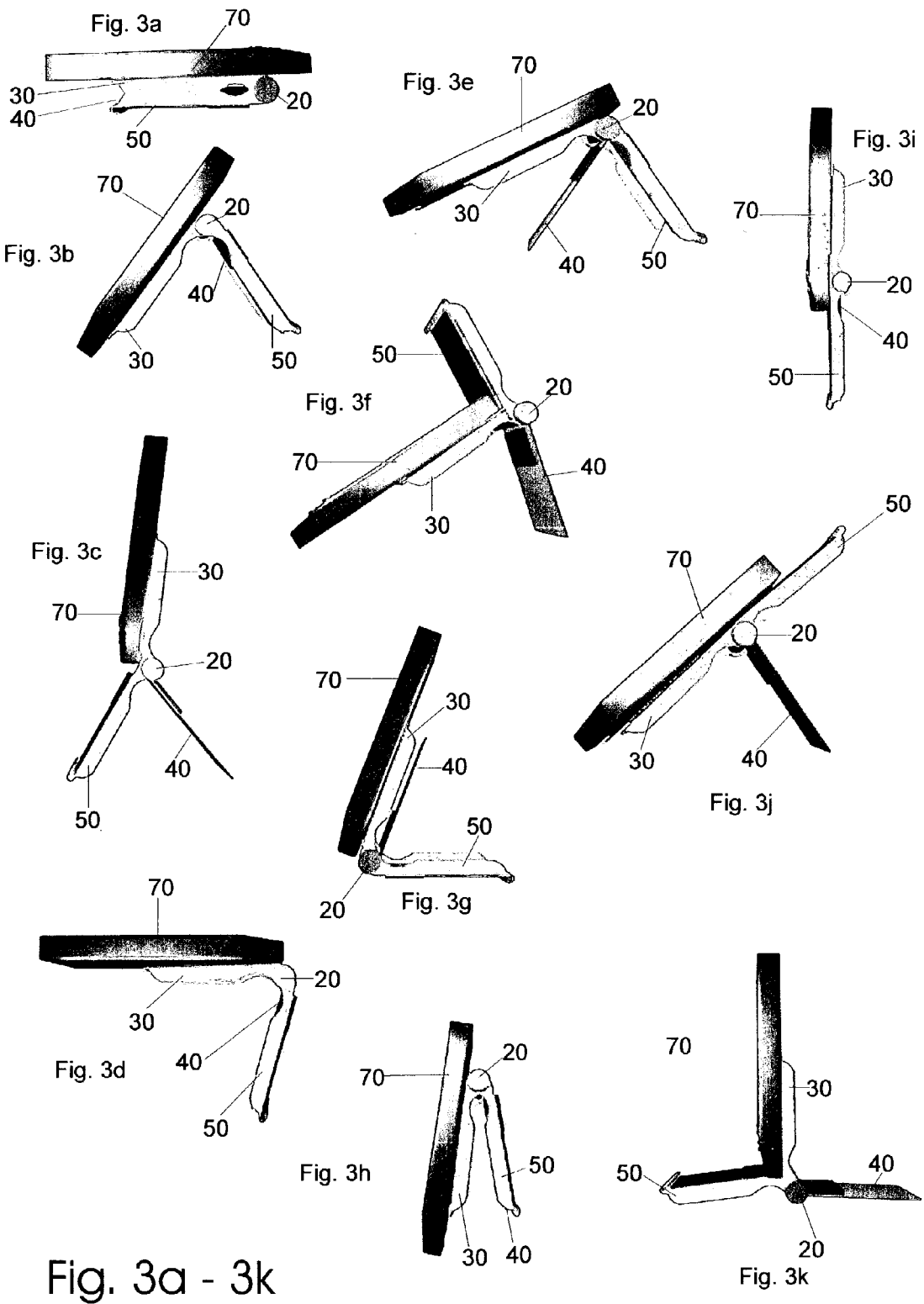


Fig. 2a - 2k



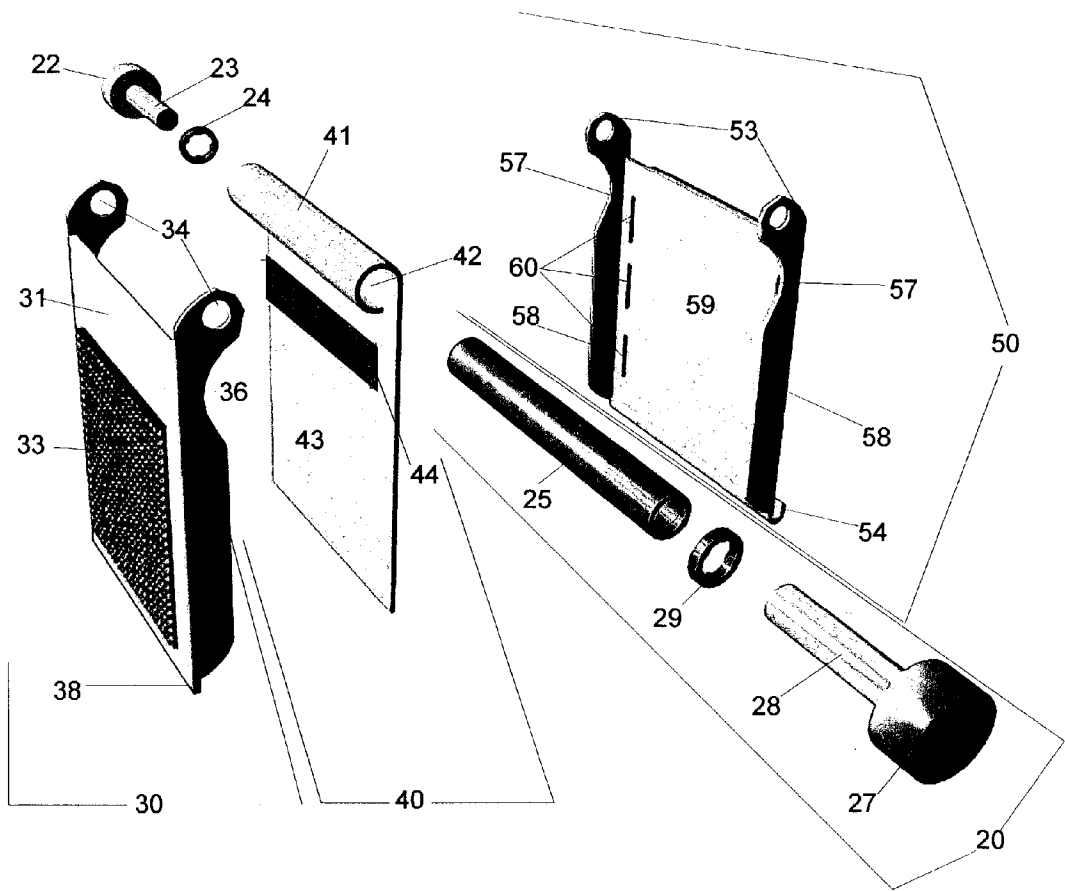


Fig. 4

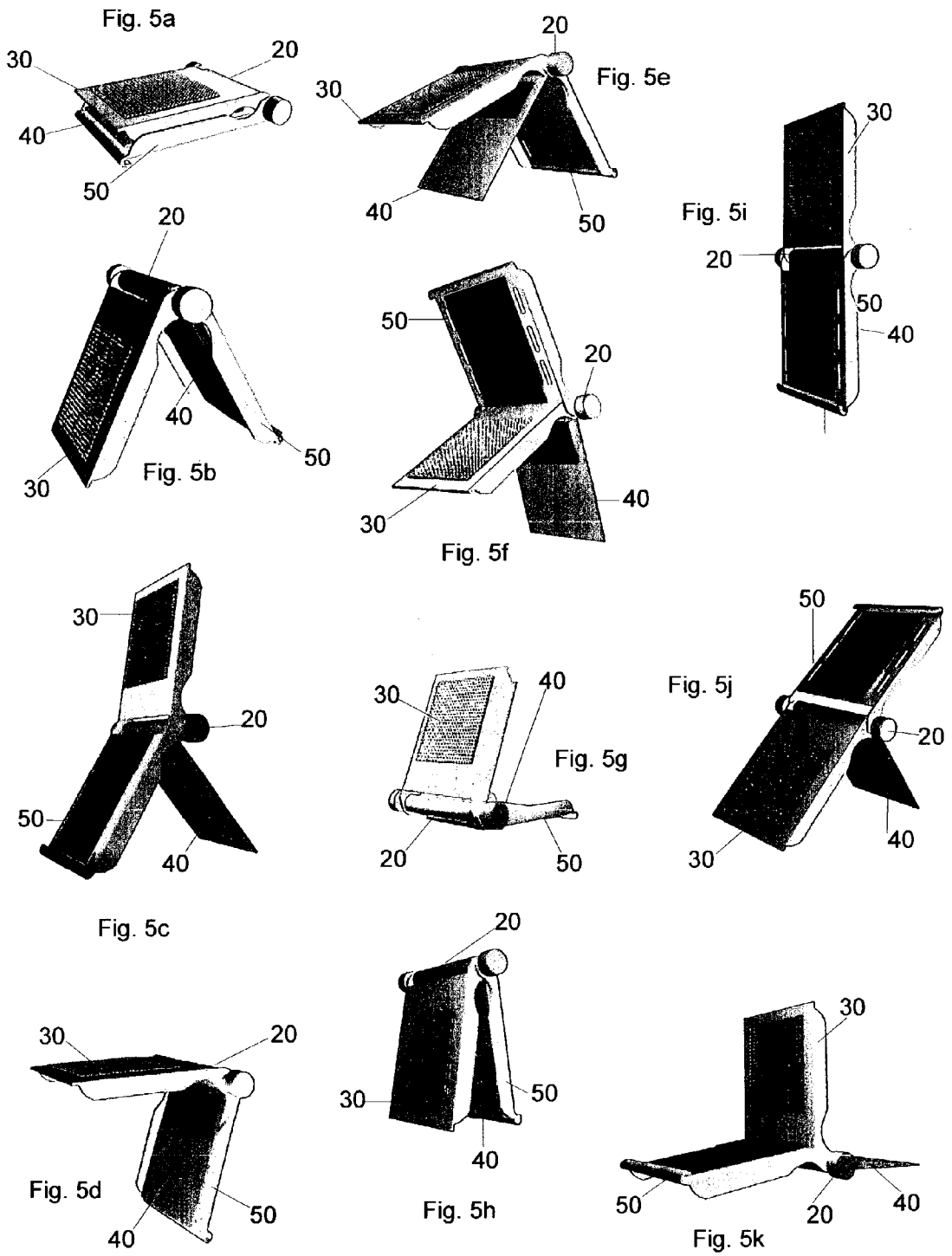
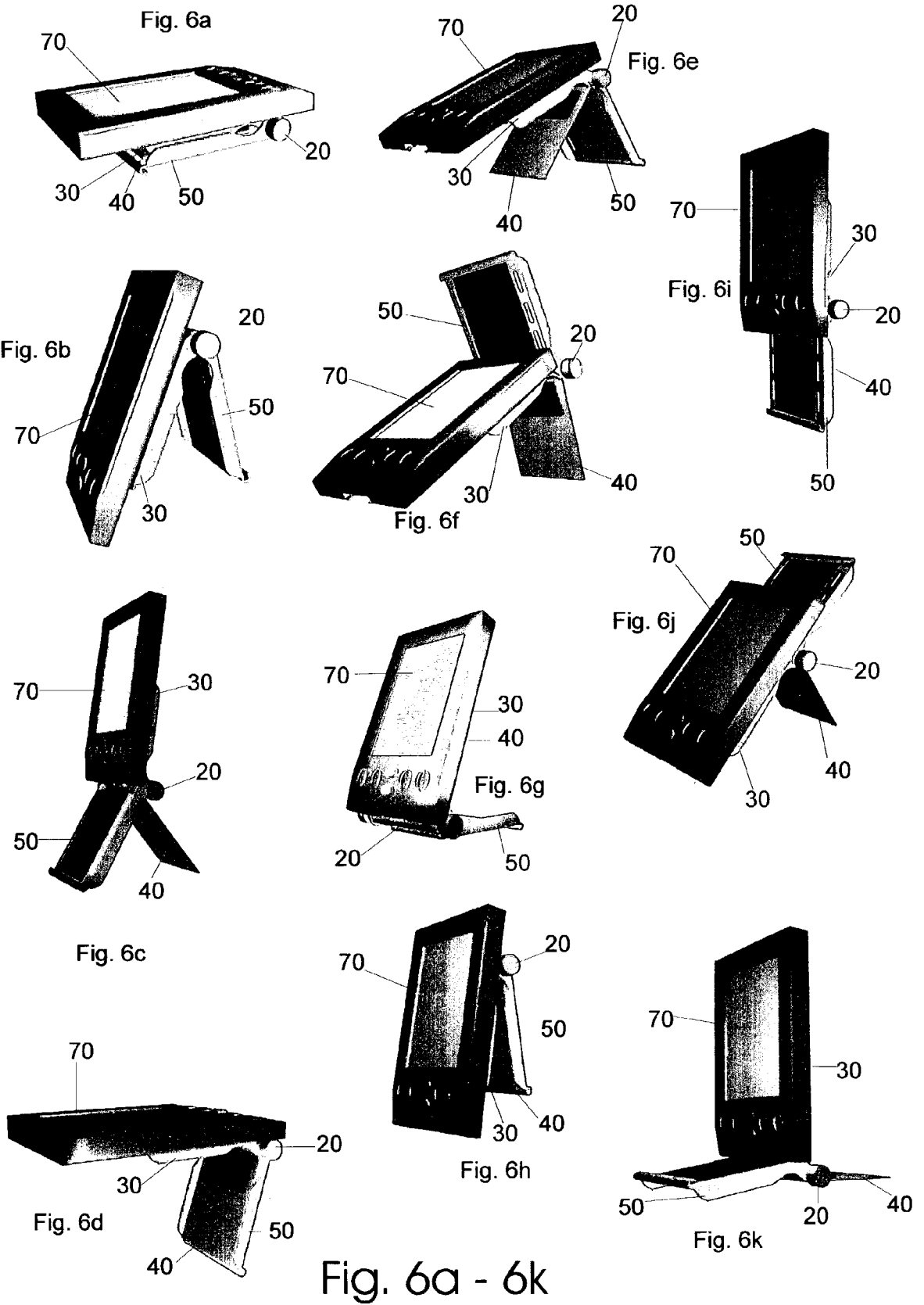


Fig. 5a - 5k



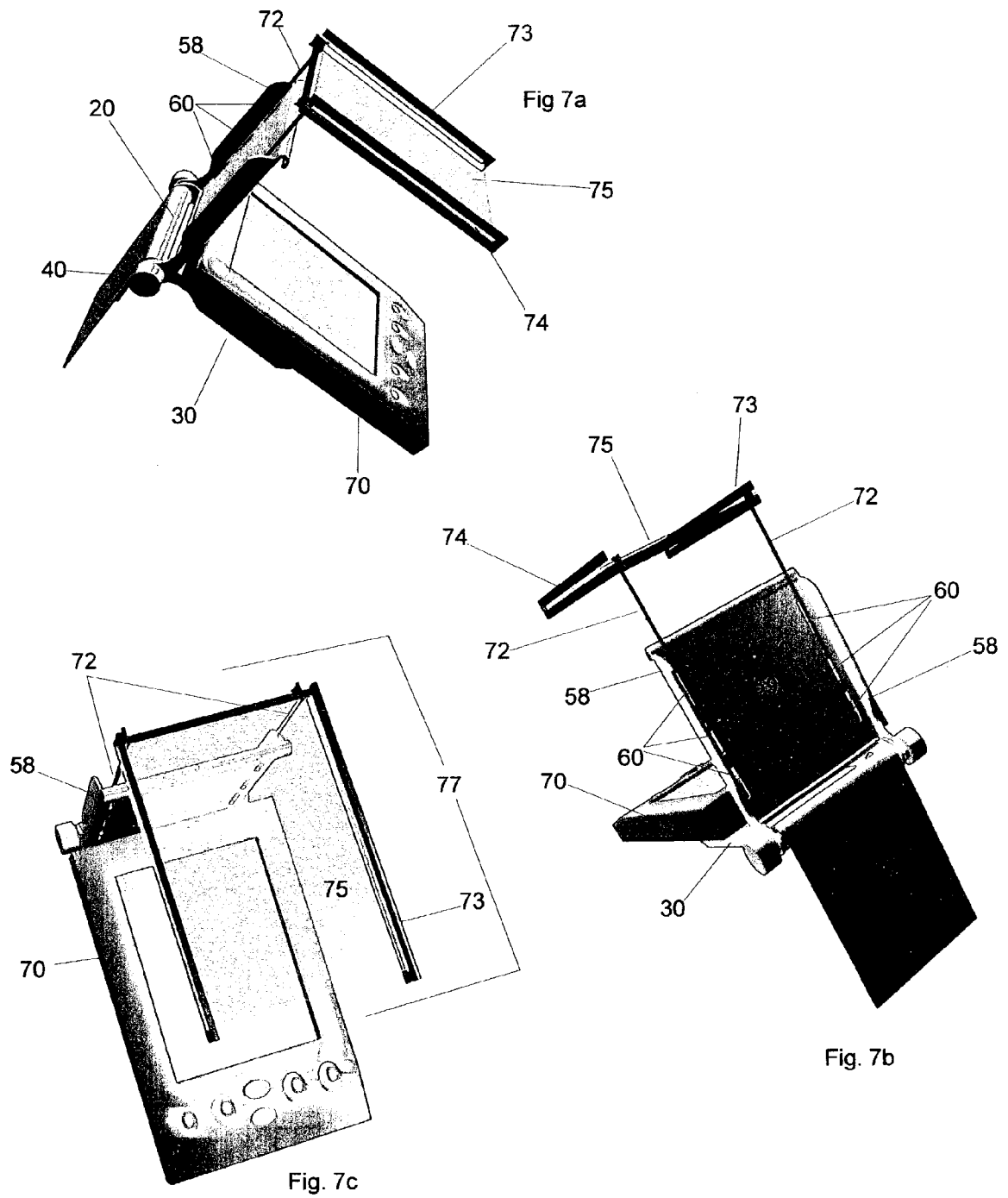


Fig. 7a - 7c

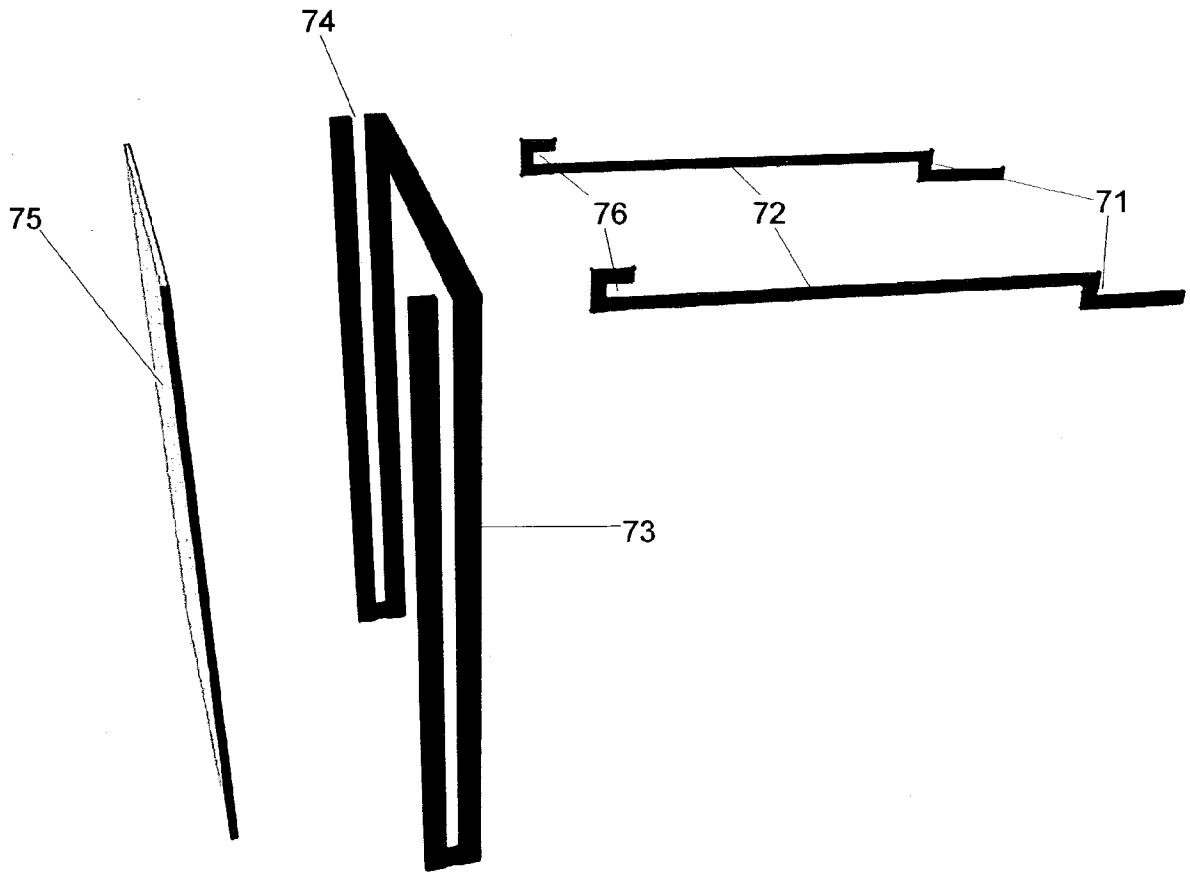
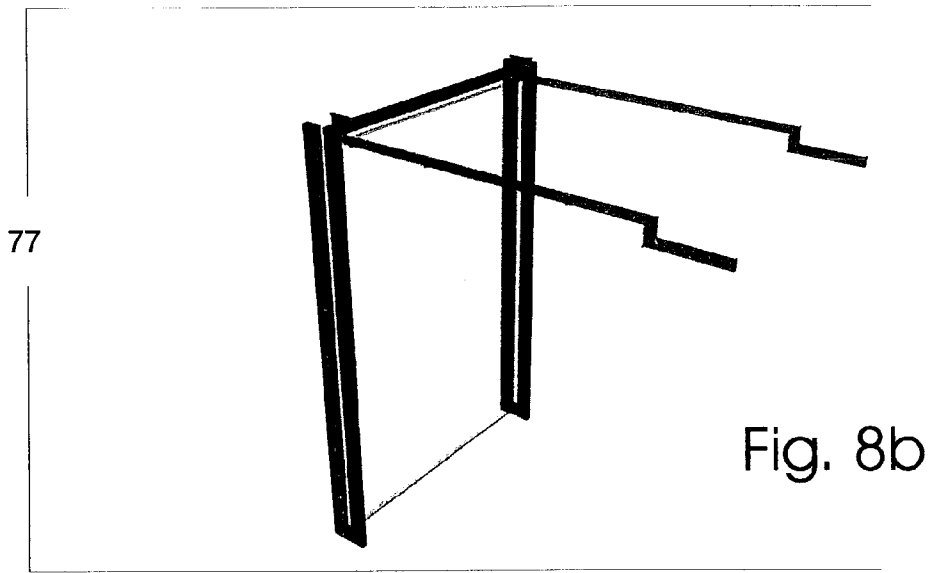


Fig. 8a

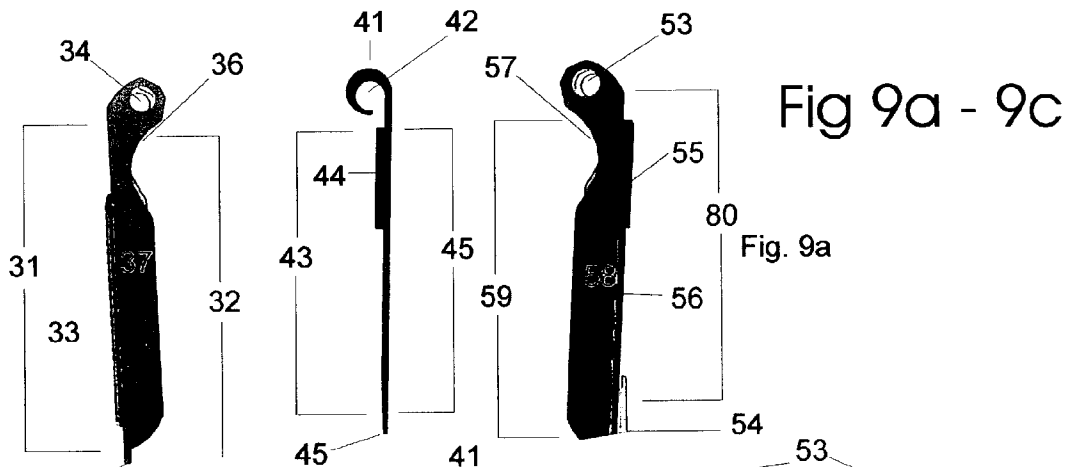


Fig 9a - 9c

Fig. 9a

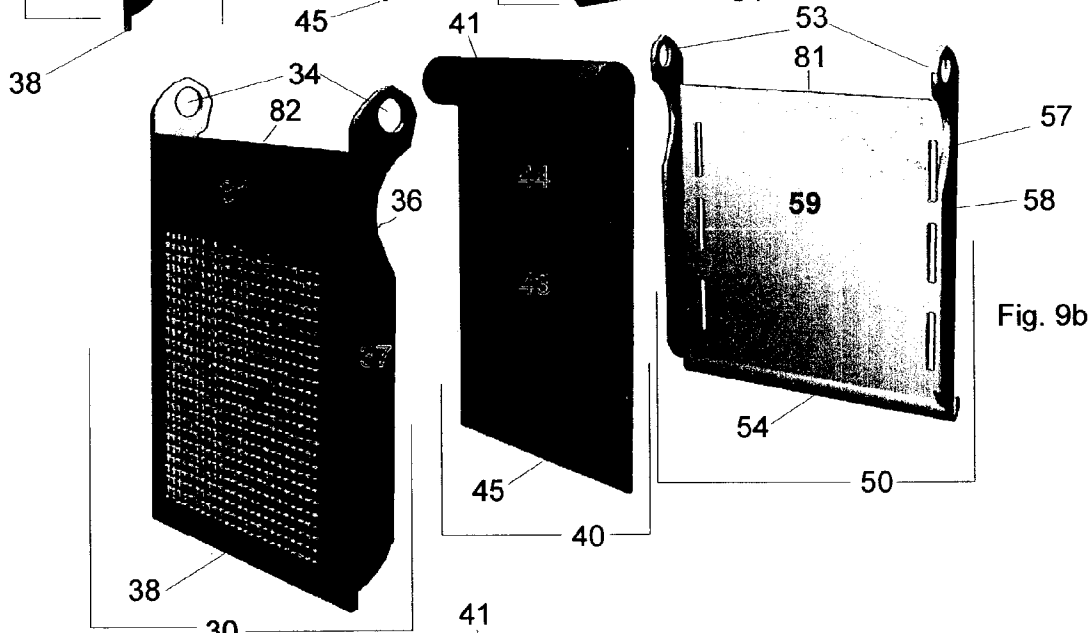


Fig. 9b

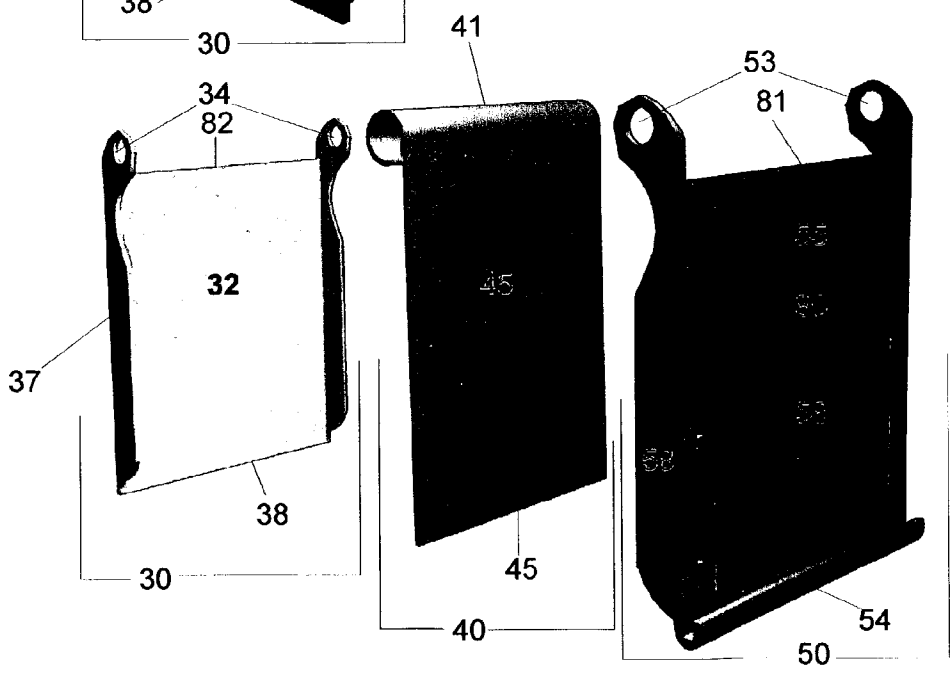


Fig. 9c

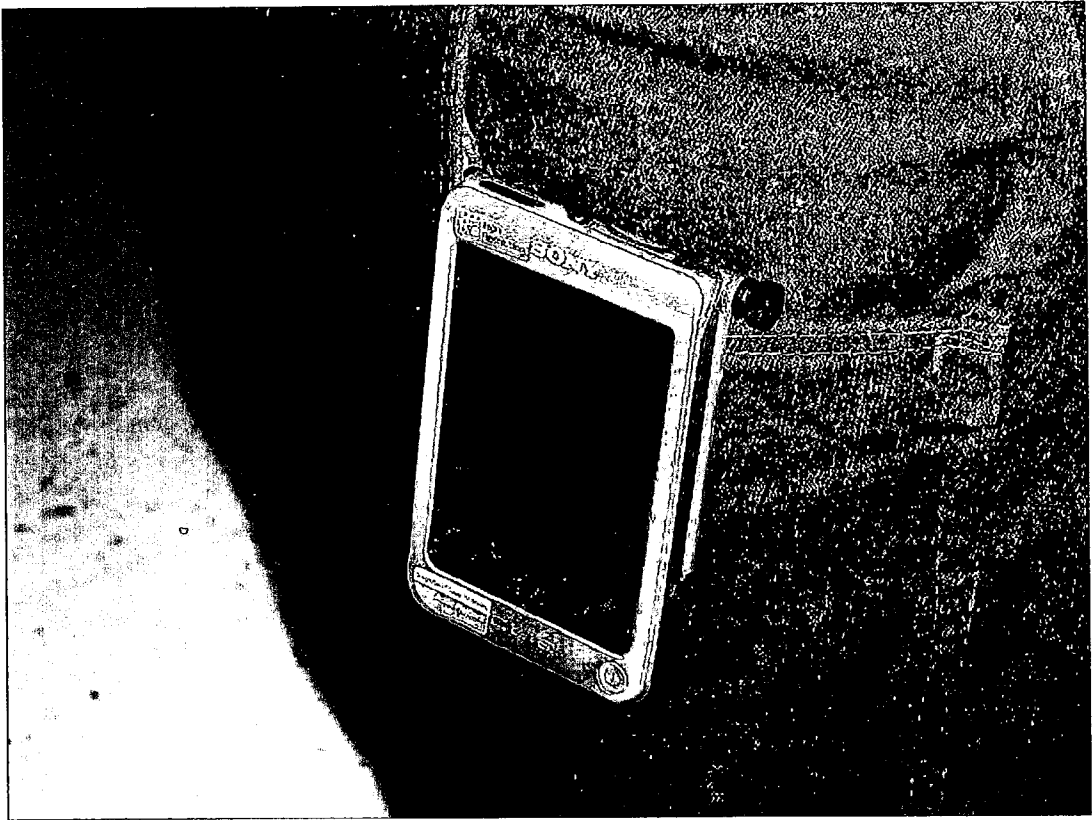
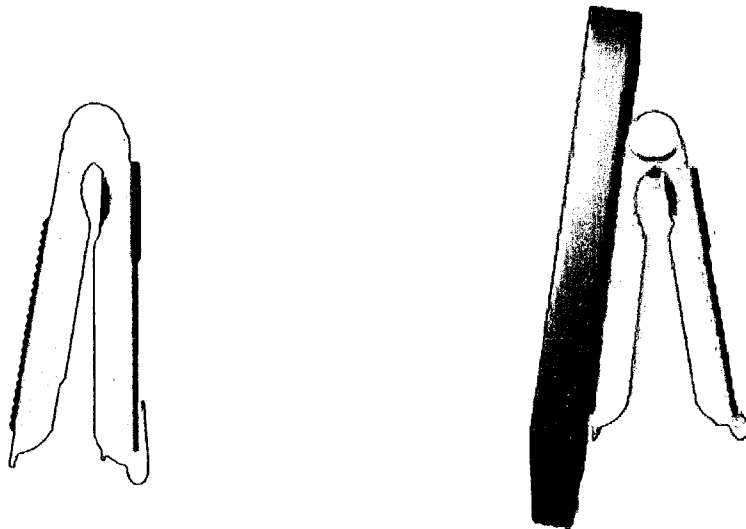


Fig 10



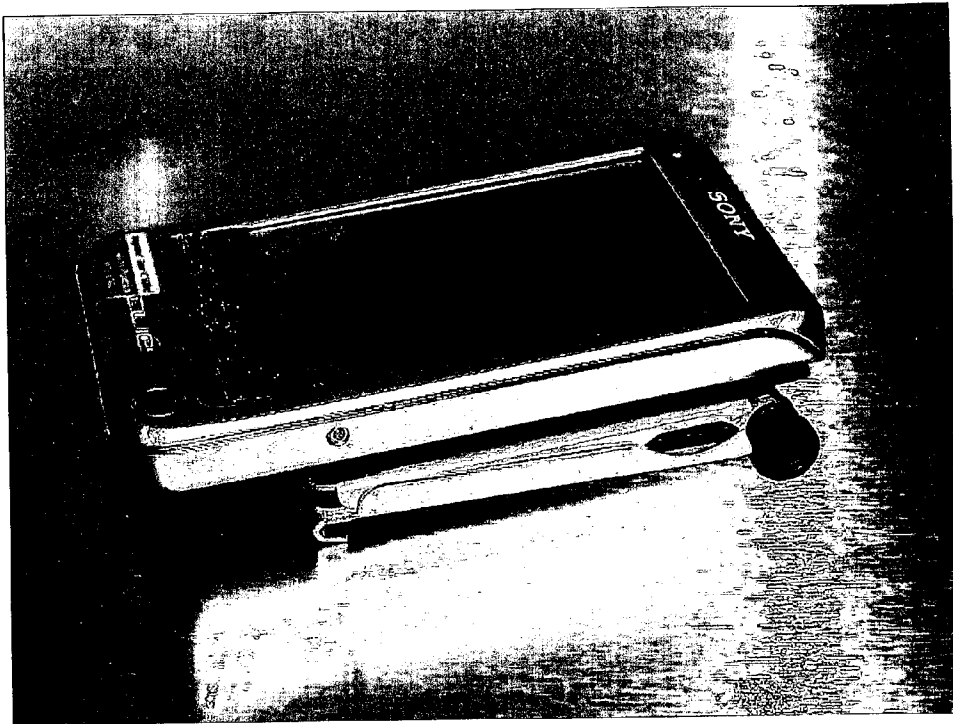


Fig 11

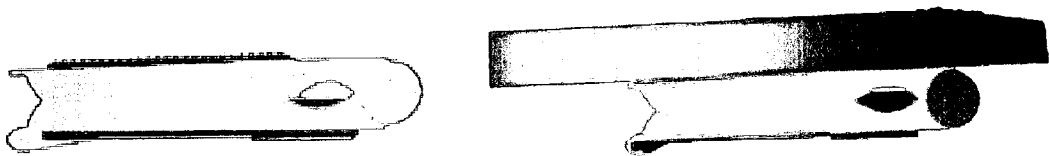




Fig 12a

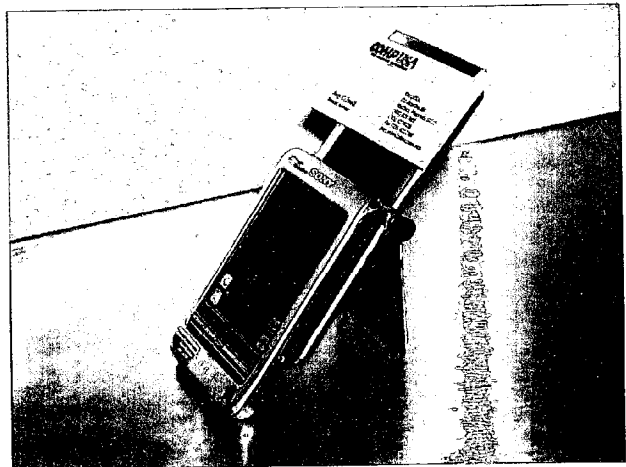
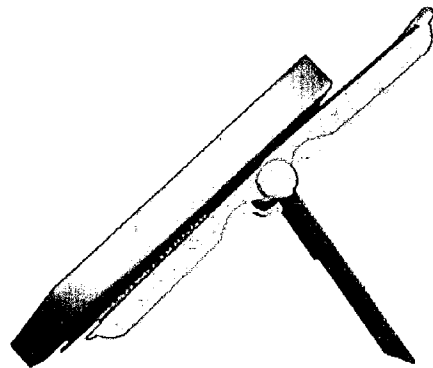
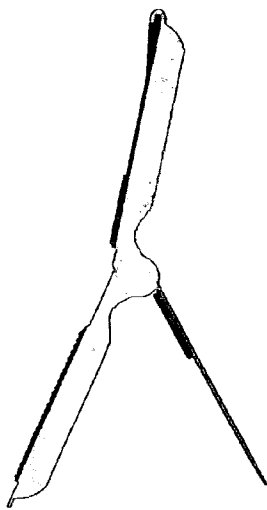


Fig 12b



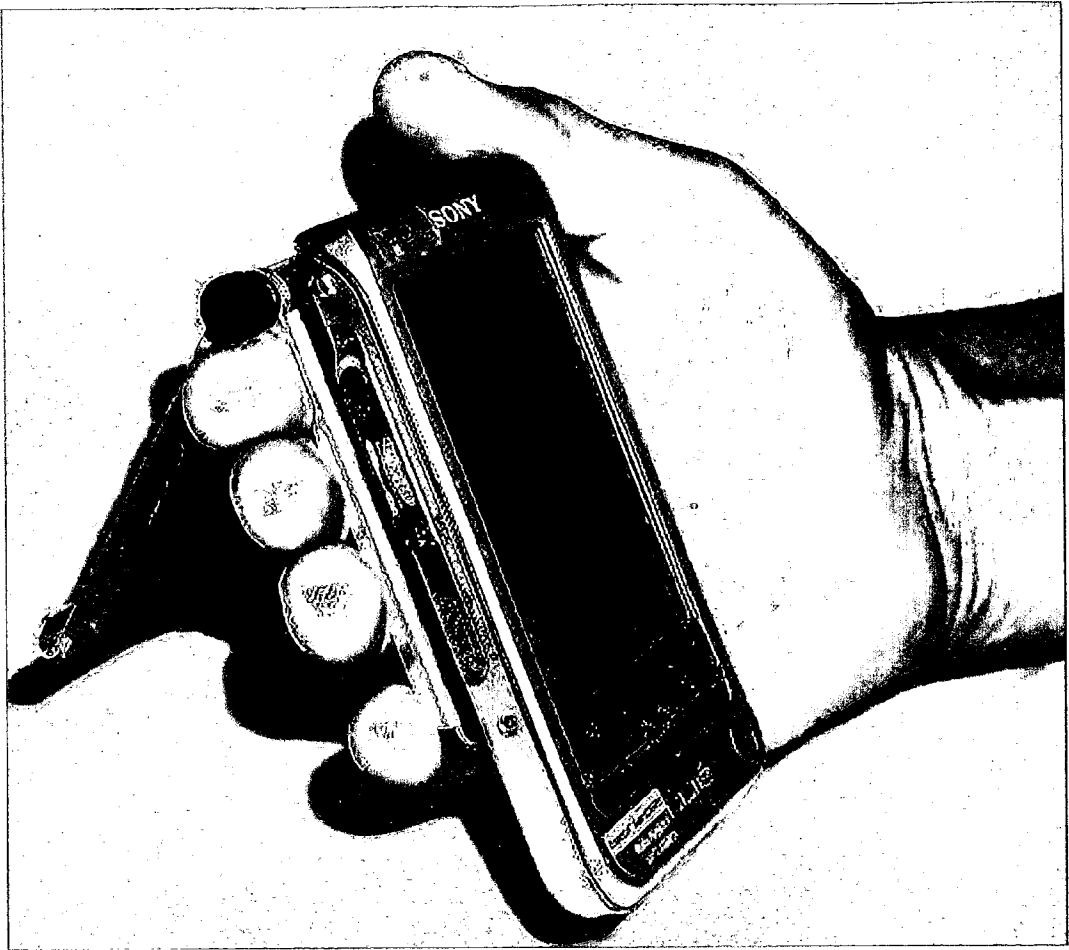


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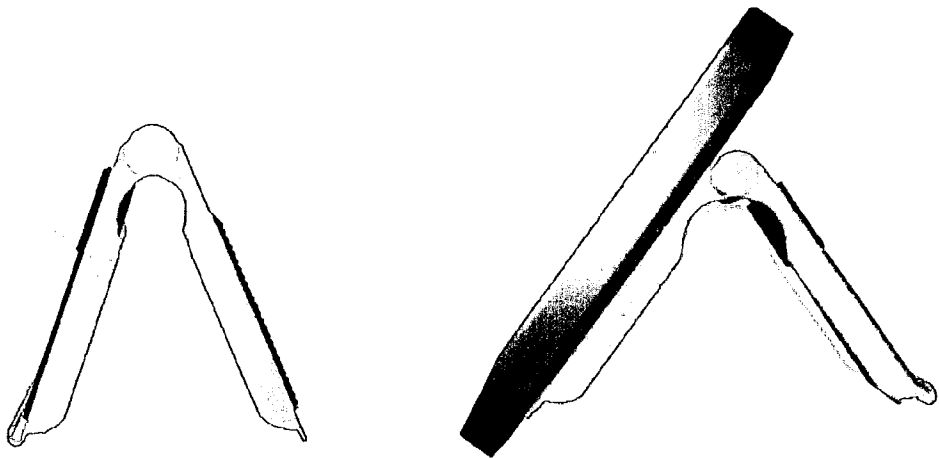




Fig 14

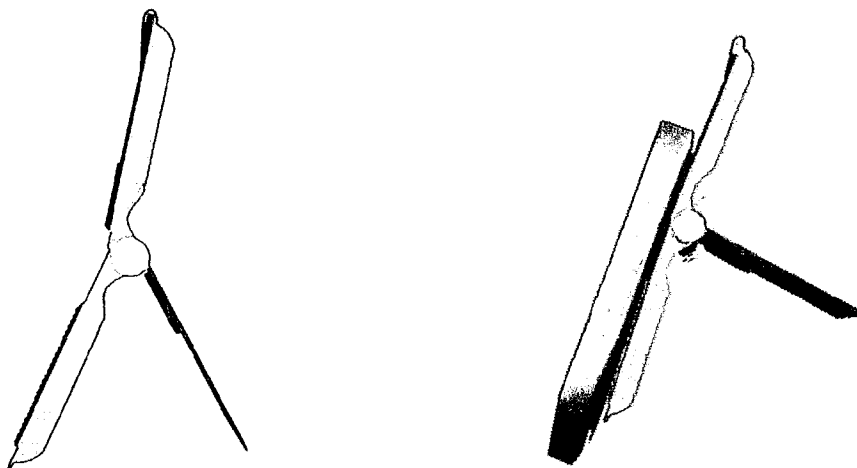
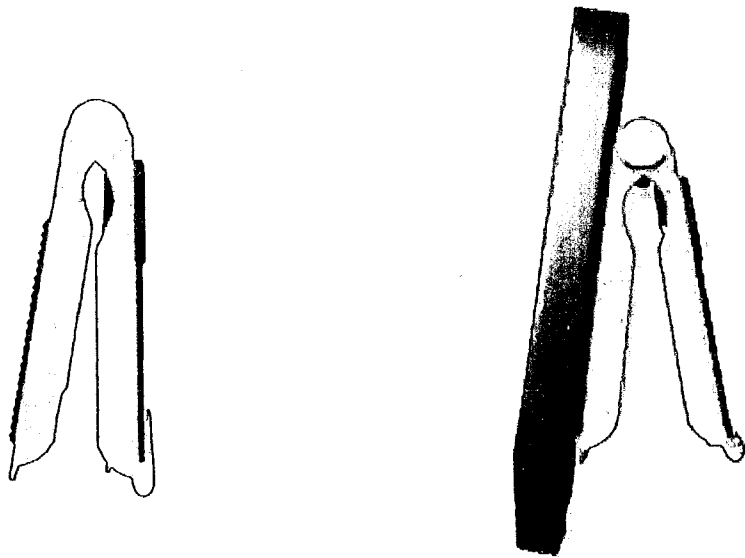




Fig 15



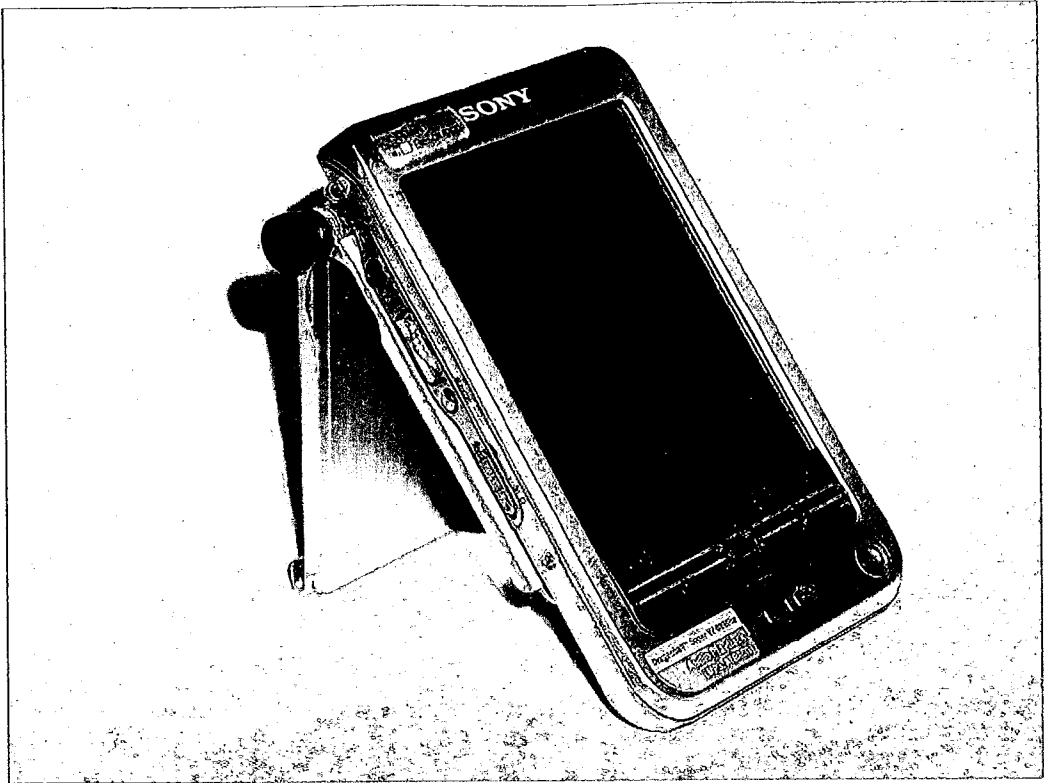
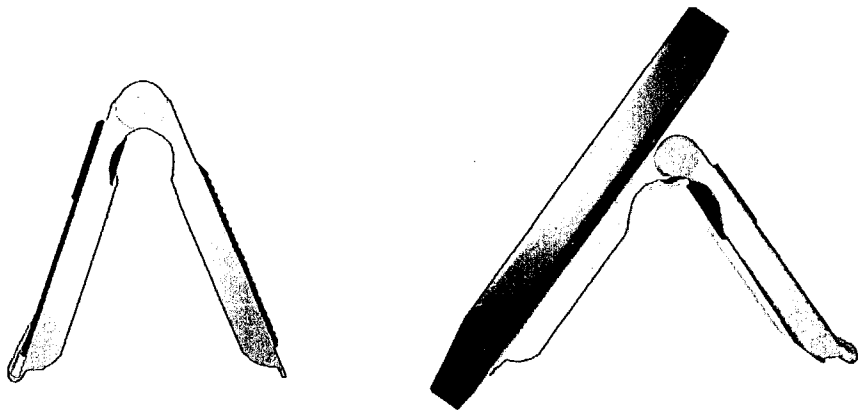


Fig 16



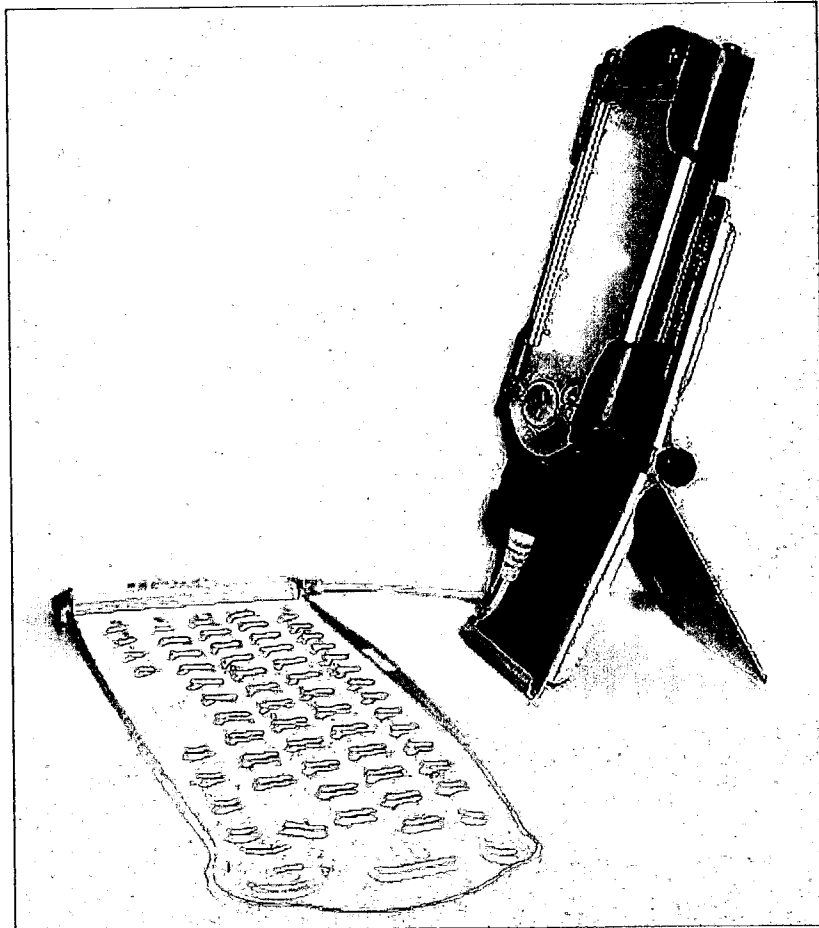
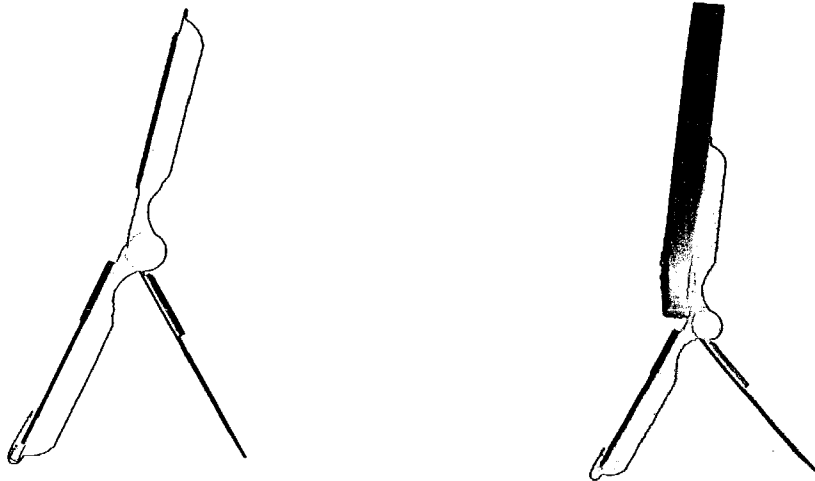


Fig 17



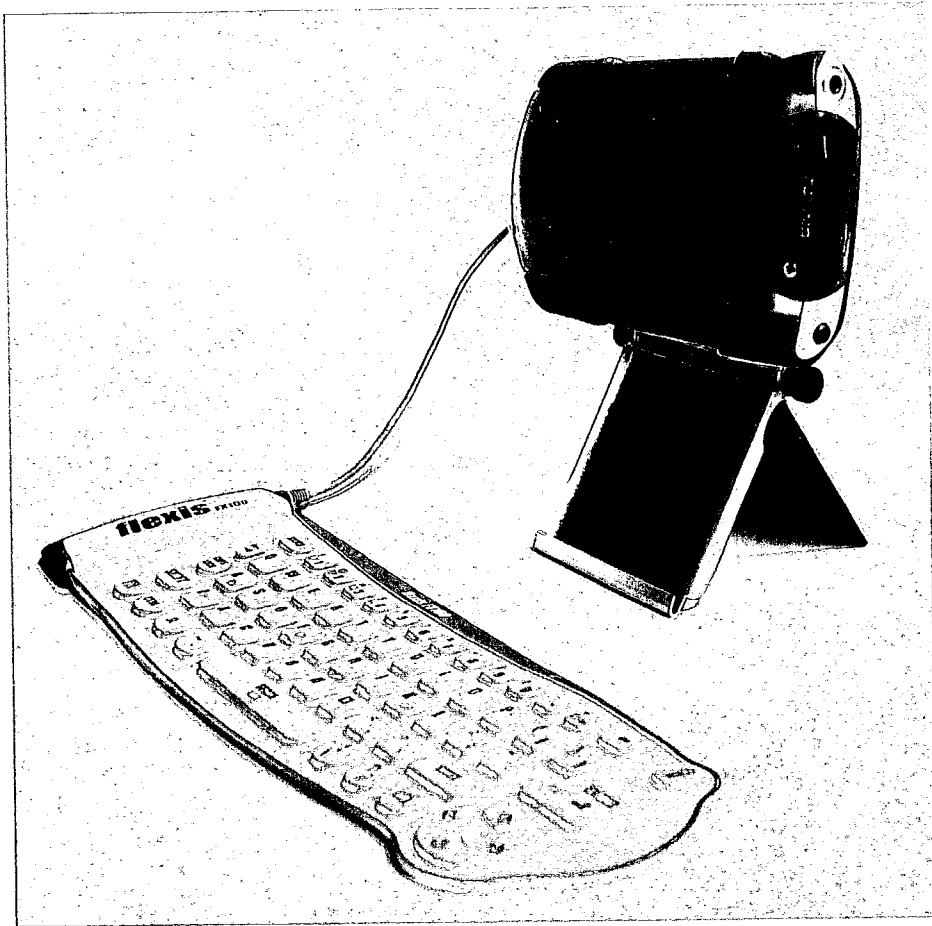
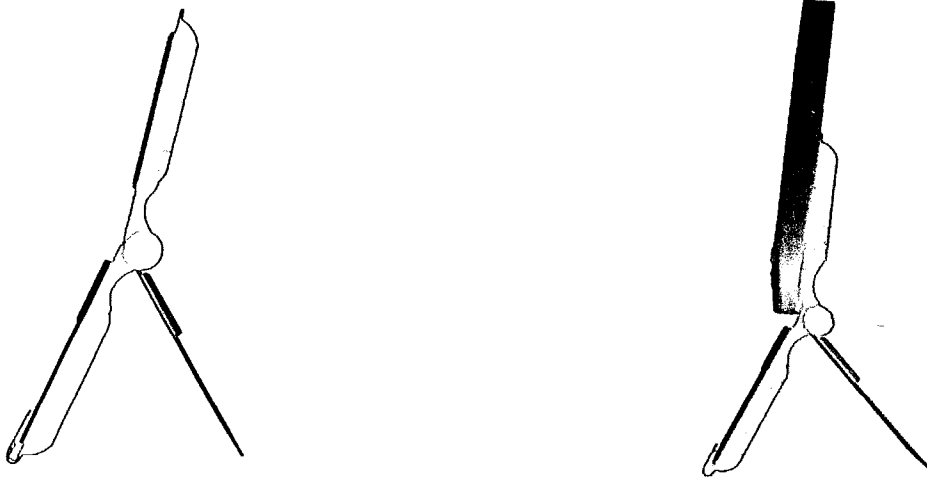


Fig 18



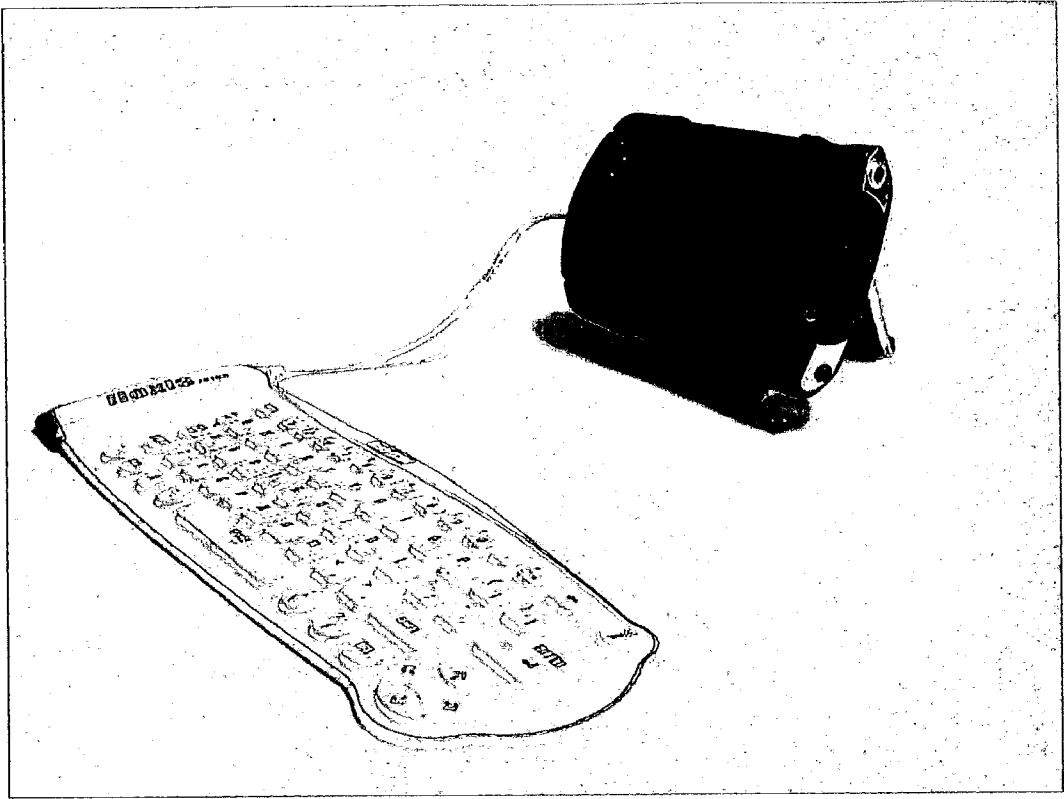


Fig 19



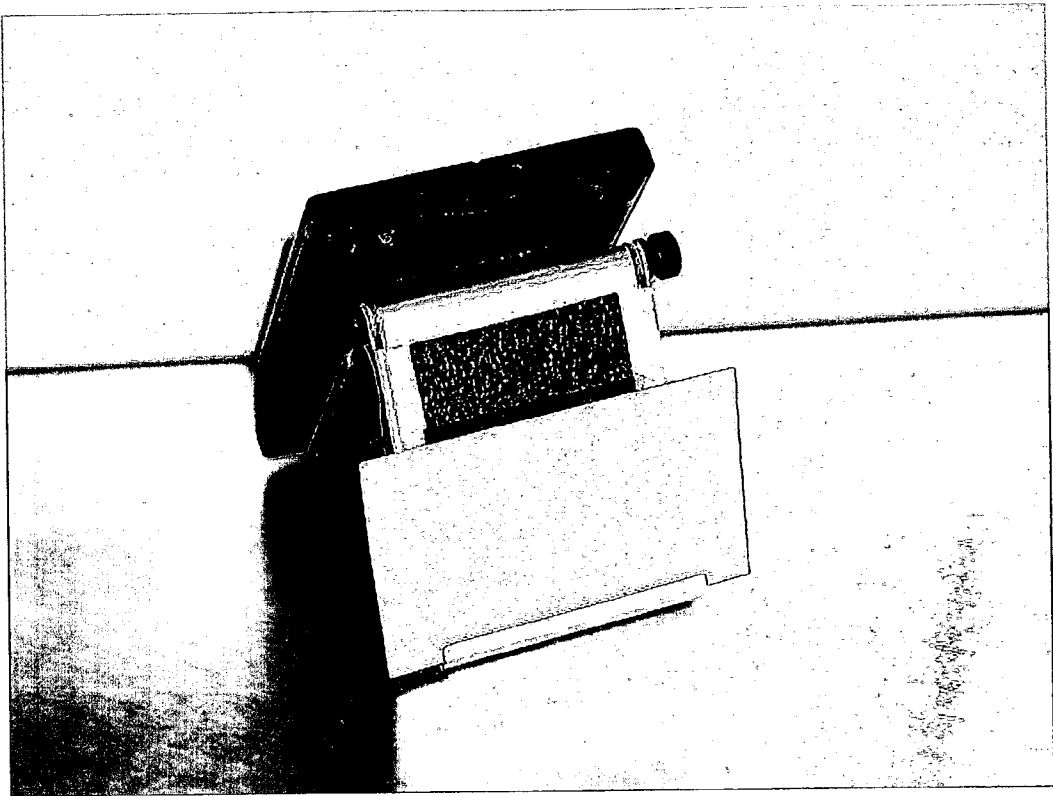
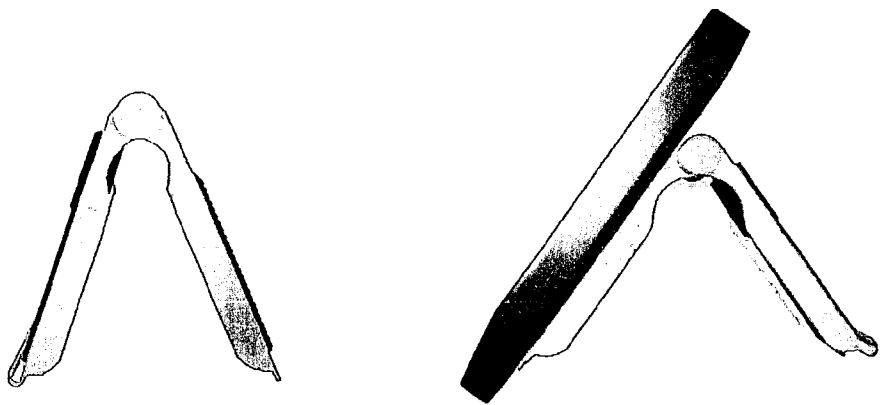


Fig 20



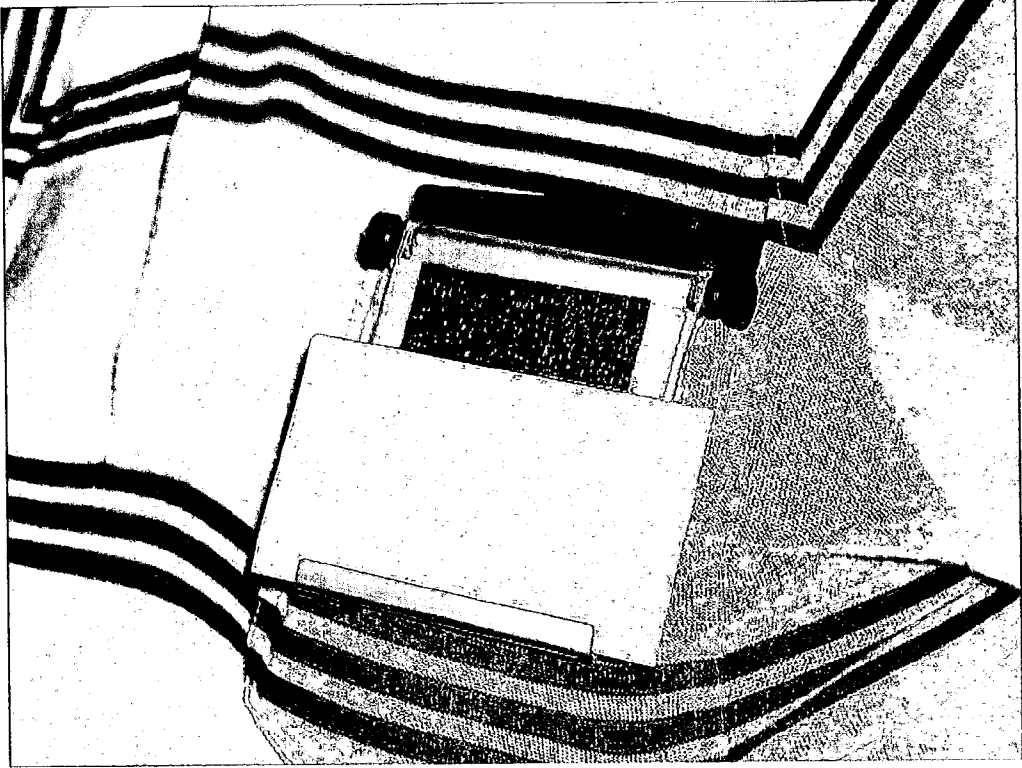
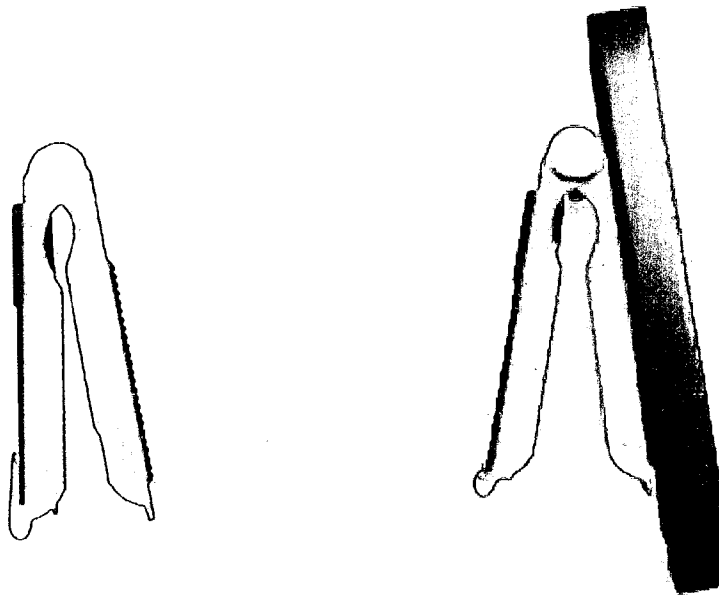


Fig 21



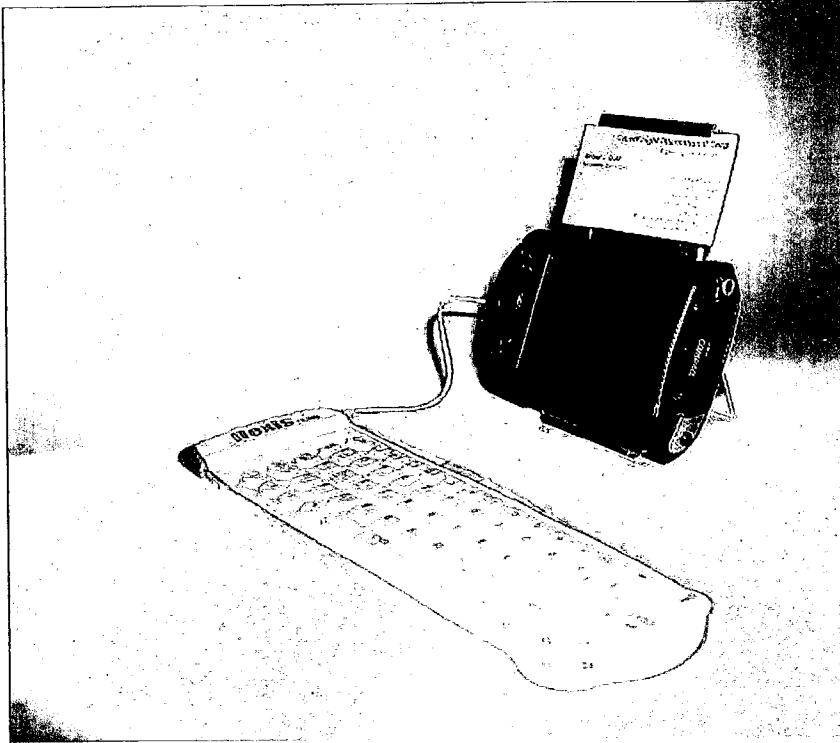


Fig 22

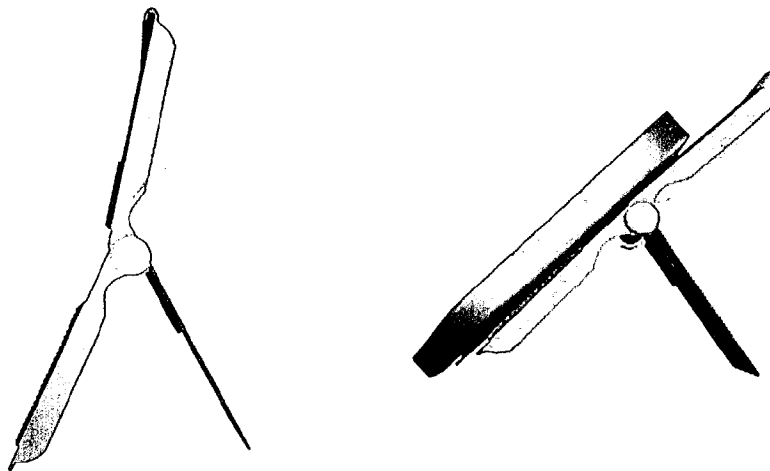




Fig 23a

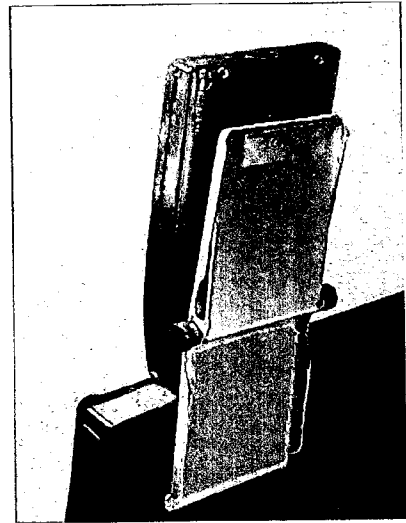
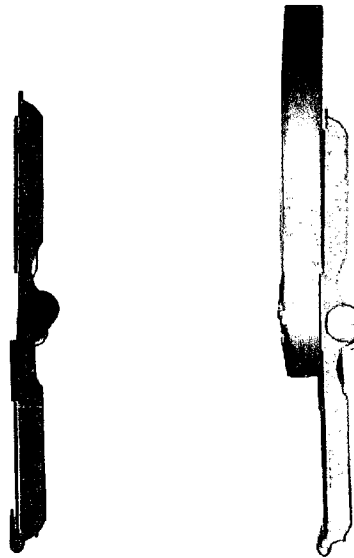


Fig 23b



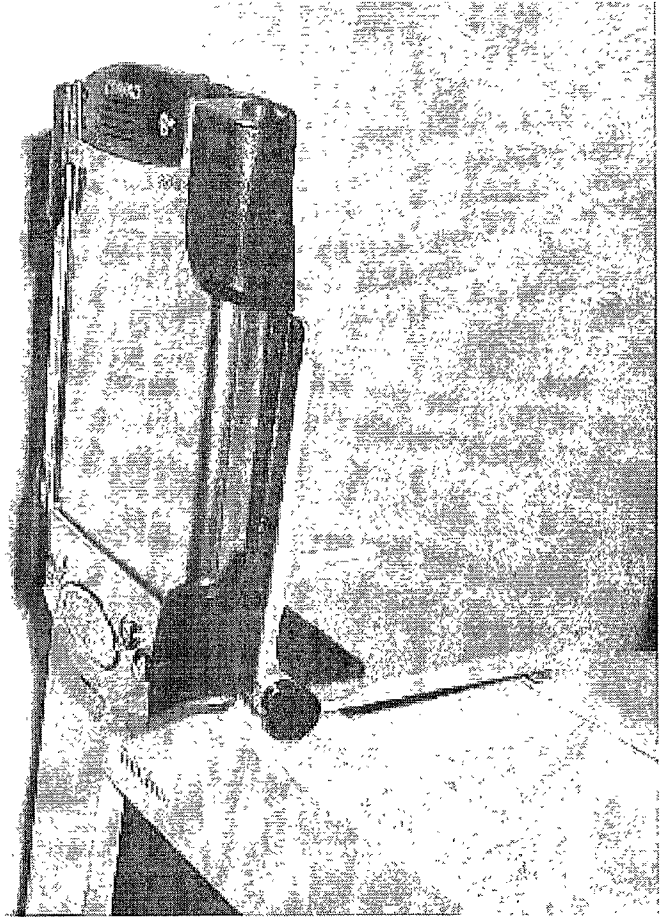
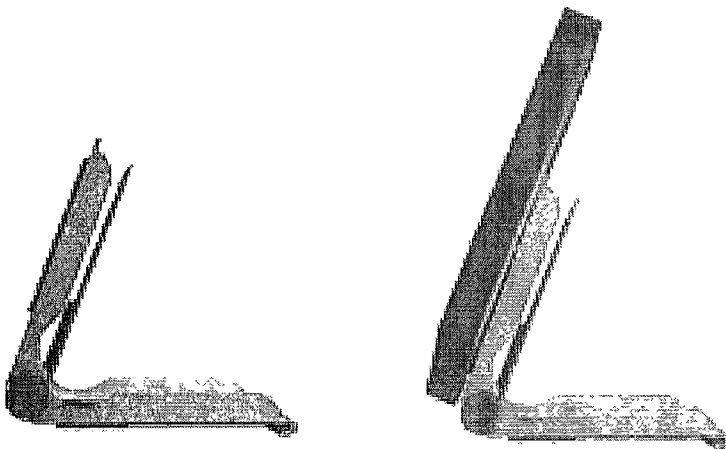


Fig 24



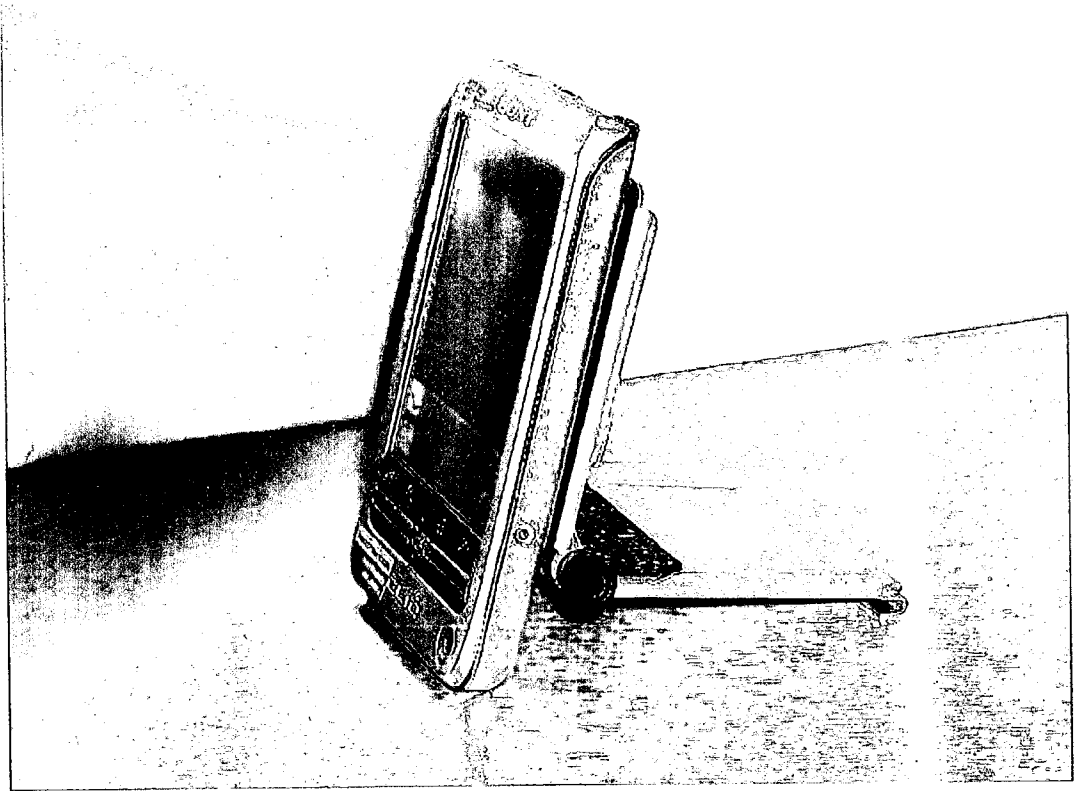
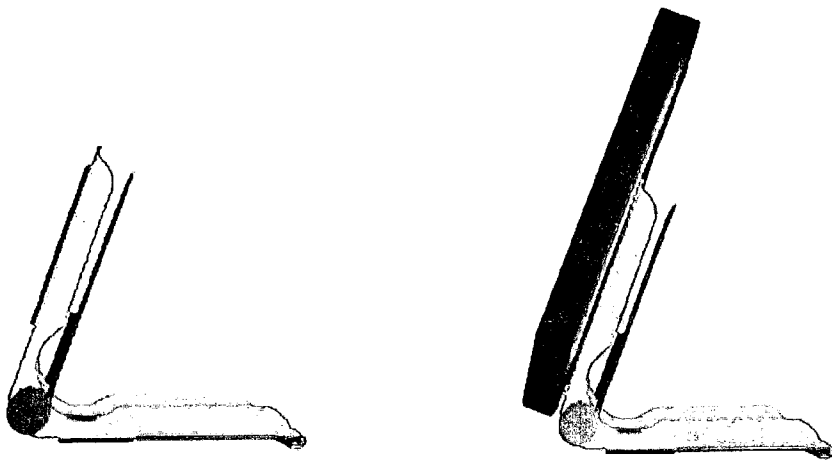


Fig 25



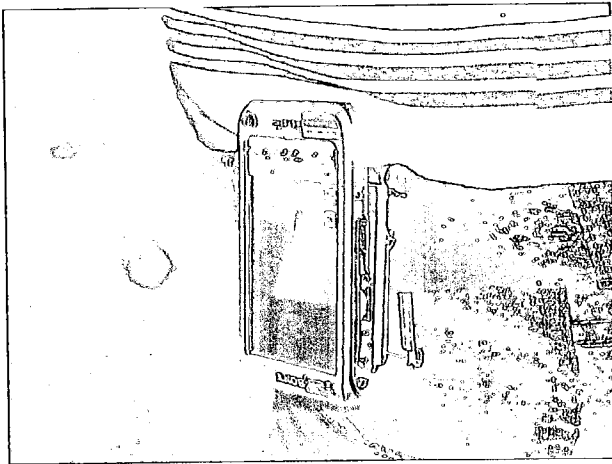


Fig 26a

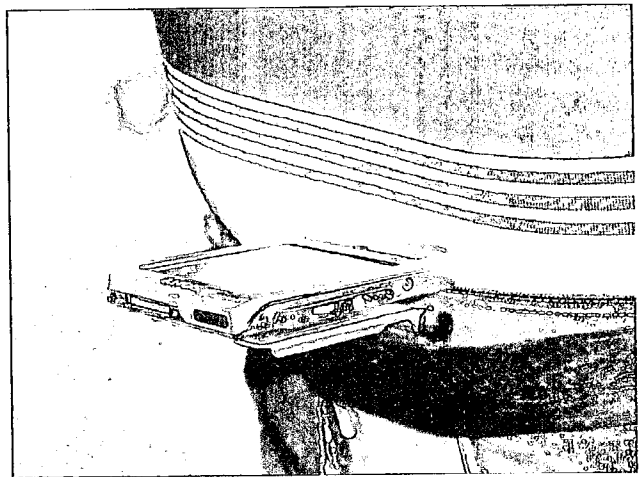
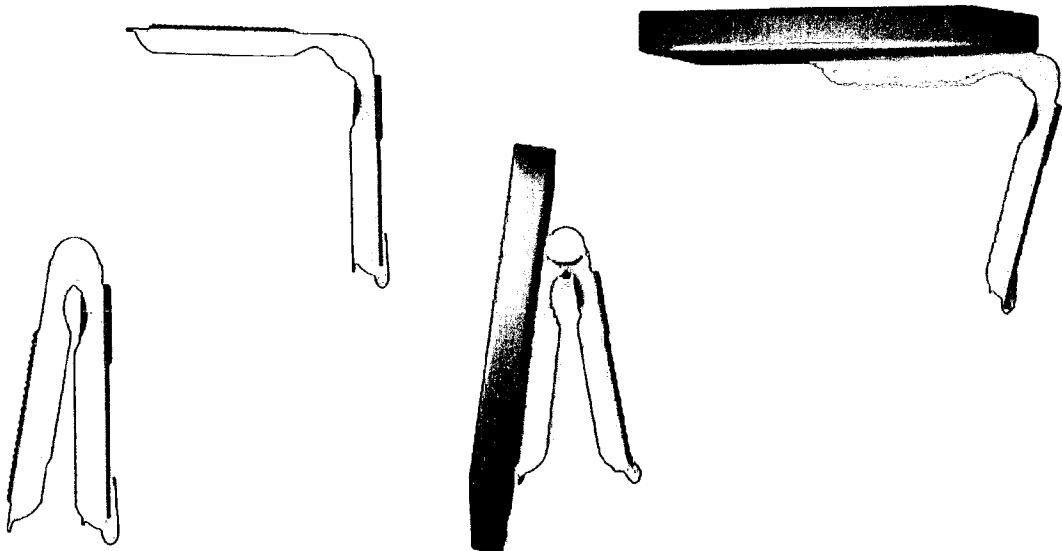


Fig 26b



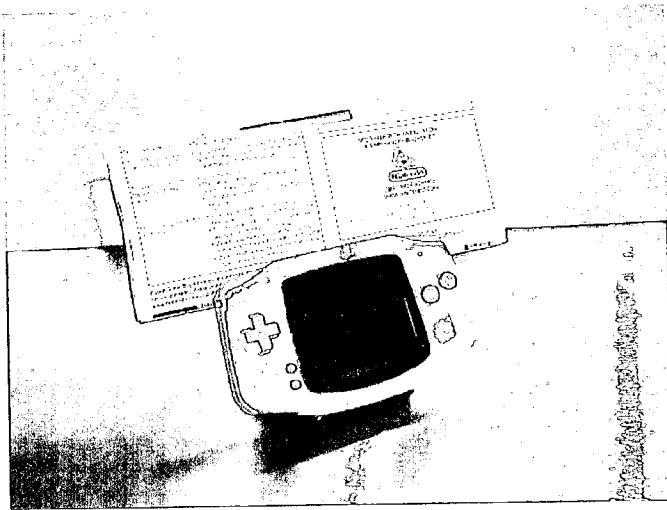


Fig 27a

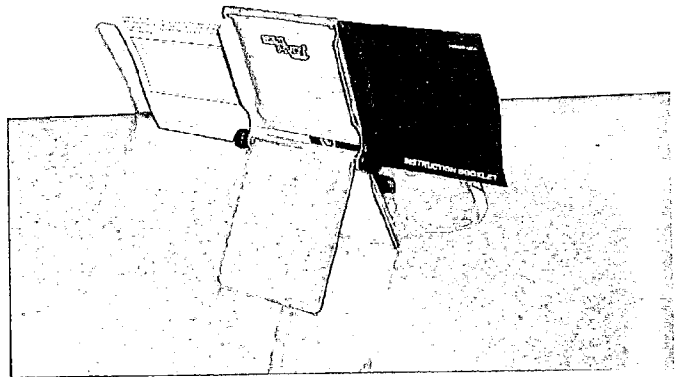
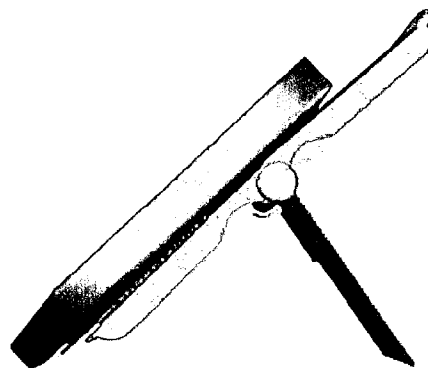
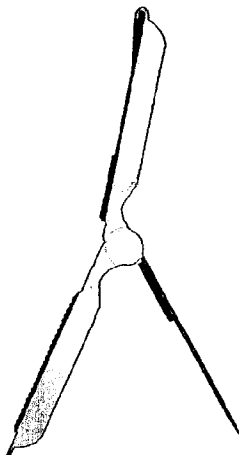


Fig 27 B



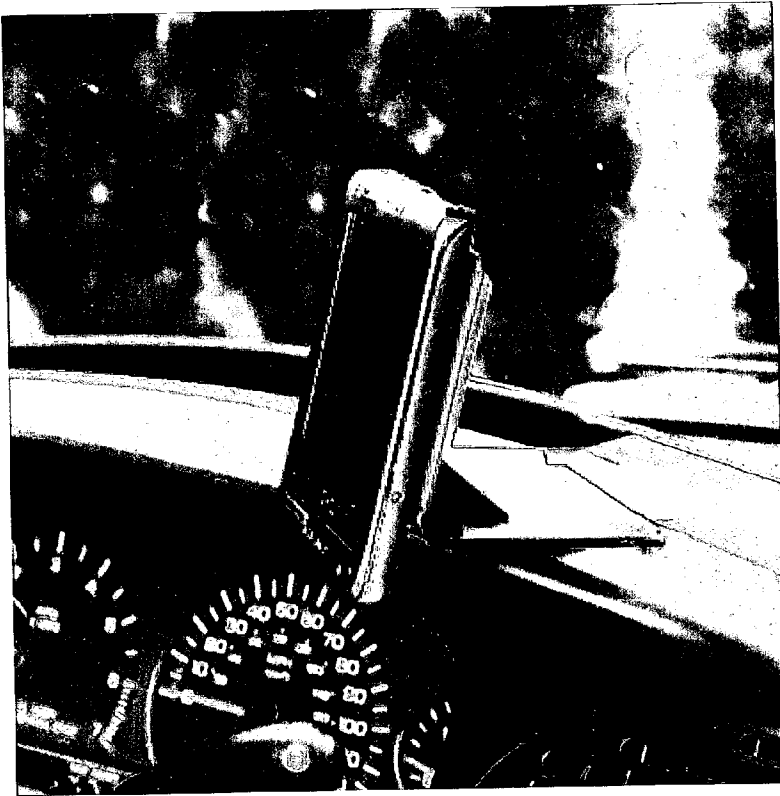


Fig 28a

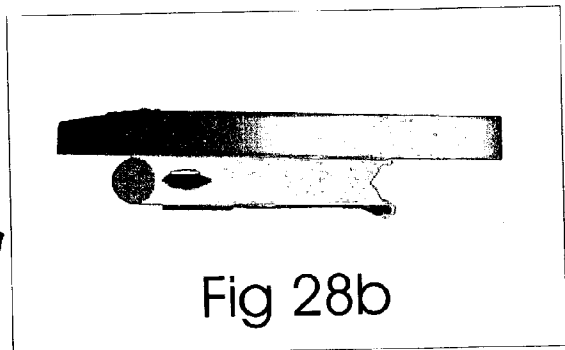
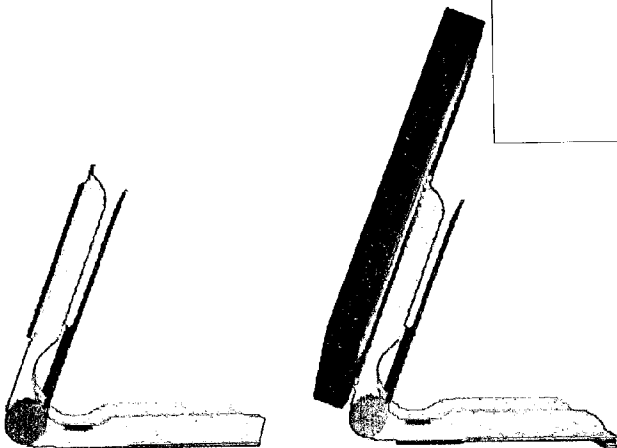


Fig 28b



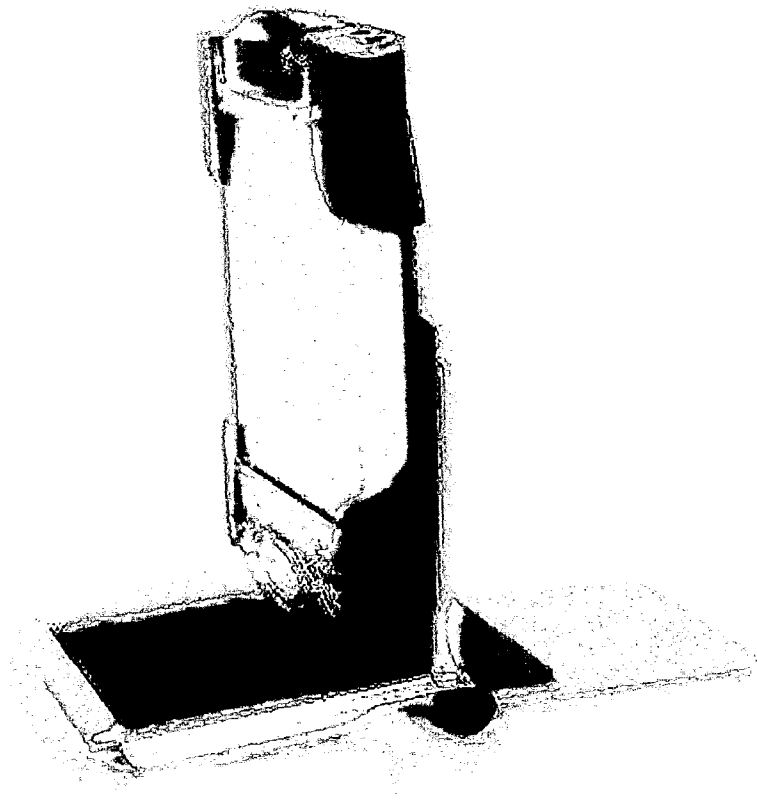
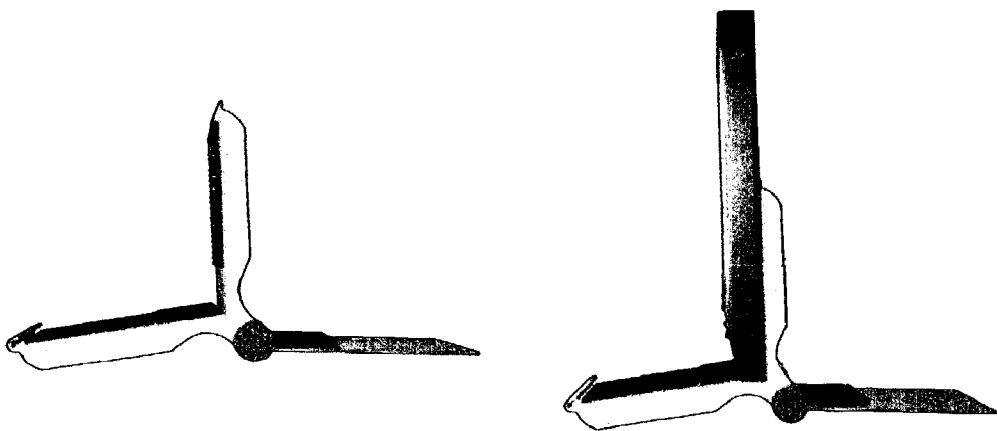


Fig 29



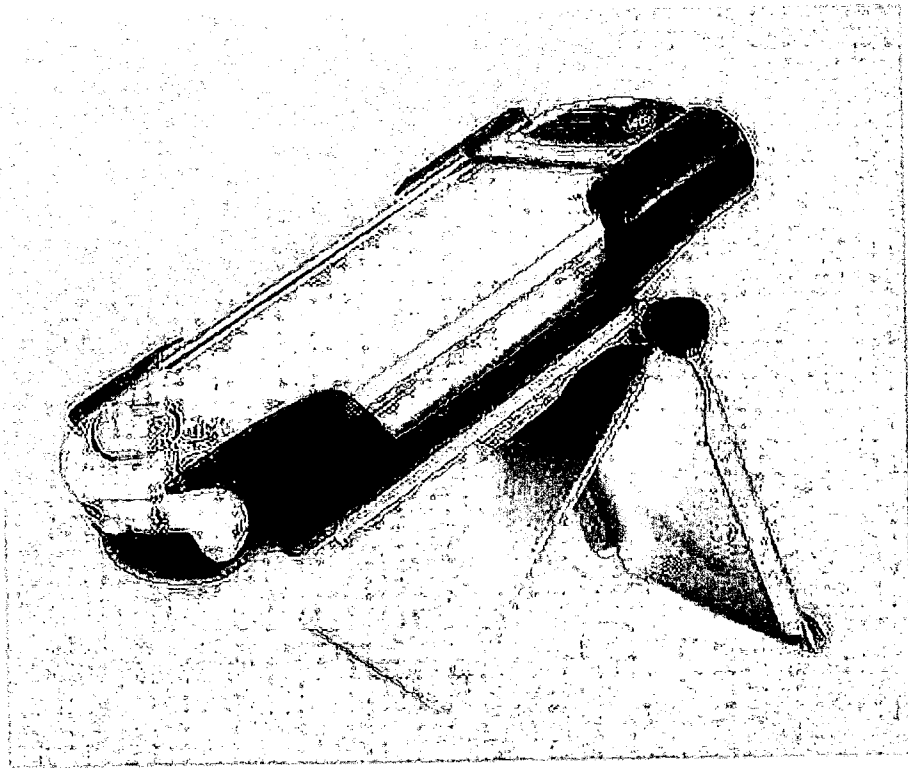
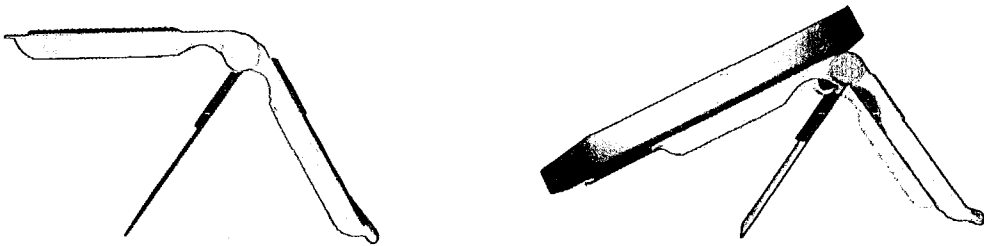


Fig 30



New for PDAs and Pocket PCs

MULTI PIVOT™

Today an Accessory—Tomorrow a Necessity!

The NEW MultiPivot™ is the easiest way to use, carry, stand and display a PDA or Pocket PC. With over 16 different uses, the MultiPivot™ is the most versatile accessory for any handheld device.

"An indispensable PDA accessory!"
Computer Shopper
UK Magazine

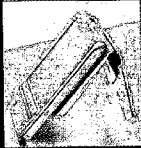
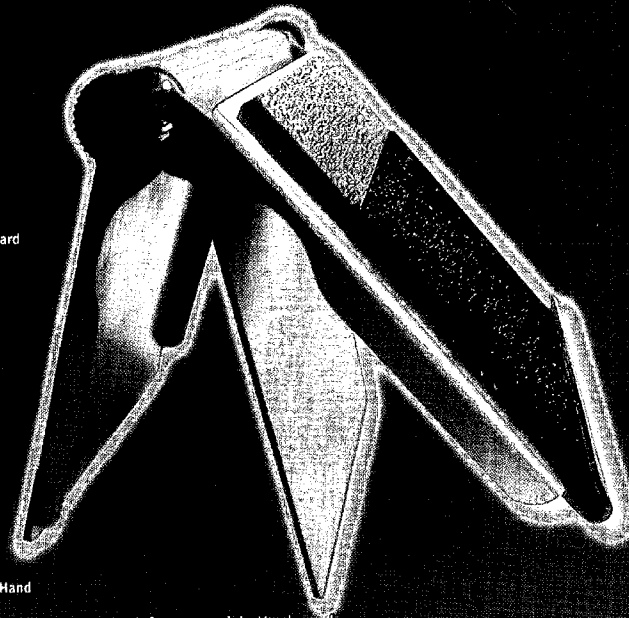
"I use my Pivot everyday!"
Tracy Romine
Reviewer, CNET Radio

"A 5-star idea, and 5-star thought has gone into the design and making of it!"
FOXPOP.COM

"It's hard to go wrong with the Pivot!"
GAME-OVER.NET

"The Swiss Army Knife of PDA Accessories"

Winner of the 2001 Excellence Award
VISORGUIDE.COM



Basic Desk Stand



Dashboard Mount



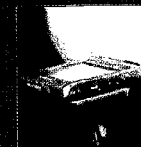
Landscape with Keyboard



Pocket or Belt Carry



Secure Grip with 3rd Hand



"Hands Free" Belt Use



Mobile Marketing

- Ideal for use with Keyboards
- Works with all handheld devices: GPS, GameBoy, MP3, CD Players, Radar Detectors, etc.
- The ONLY ACCESSORY that gives you: Landscape Mode Viewing, plus Belt Carry, Desk Stand, Car Mount and 12 other different functions
- Can be attached to hard and soft cases
- Comes in your choice of anodized colors: Silver (Brushed Aluminum), Black, and Gold



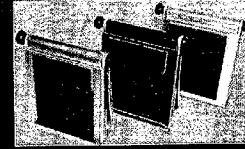
Camera Mount



Meeting ID



Infinitely Adjustable



Available in 3 Colors

MULTI PIVOT™

Full product details and web purchase at:

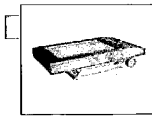
www.multipivot.com

E-mail: info@pdapivot.com

or call: 608-848-3005

Distributor Inquiries Invited/ Patent Pending/ Cyberknight © 2002 Made in the USA

**9+ Adjustable Positions
Creates 16+ Awesome Functions**



Flat & Closed:
Use as a Surface Stand-off and for most compact storage.



Mini-Gap:
Hang on pocket, belt or bag with Handheld device inside or out. Create Mobile Marketing, ID display and simple, but secure carry formats.



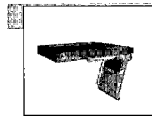
"A" Frame Gap (variable angles):
Desk stand at multiple viewing angles with and without ID Display, as well as the "Secure Grip" hand carry function.



"Floating" Frame: (variable angle)
Desk stand without handheld device touching surface - creates a cradle for cable attachment or use with keyboard.



"L" Frame 1: (variable angle)
Desk stand with slip-proof base, mounts to vehicle dashboard, desktop monitor, etc.



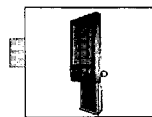
"L" Frame 2: (variable angle)
Creates "Belt Use" functionality. Hang on belt and flip up and lock for hands-free access to hand-held device.



Inverted "Y" Frame 1: (variable angle)
Hold handheld device above desktop in Portrait or Landscape viewing modes for use with keyboard, or making presentations.



Inverted "Y" Frame 2: (variable angle)
Hold handheld device with "Secure Grip" or as desk stand for Portrait or Landscape viewing for use with keyboard, or making presentations. Hand and desk use both have access to "3rd Hand" Document Holder functionality.

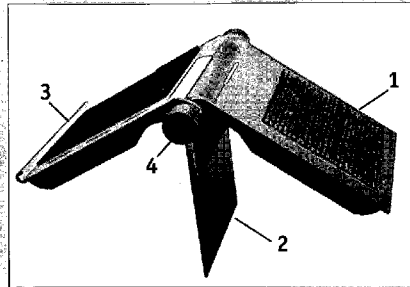


"I" Frame:
Hold handheld device upright on laptops or other vertical mount locations.

See
Our Website
at
www.multipivot.com

Other Configurations:
The MultiPivot has additional uses and configurations.

**Simple, Ergonomic Construction
Creates Rugged Reliability**



- 1- The "Attachment-Leg"** - attaches to your handheld device with an Industrial-Strength Velcro system provided with the MultiPivot. Extra Velcro pieces (provided) allow attachment to a PDA and a vehicle dashboard.
- 2- The "Center-Leg"** provides multiple handling options and unique positioning flexibility for the MultiPivot.
- 3- The "Utility-Leg"** creates multiple functions with its different integral connectors, design elements, and creates the unique "3rd Hand" document holder.
- 4- The "Locking Knobs"** - vary the tension on the integral rotational adjustment system so the three legs of the MultiPivot can be set and locked in any position you desire.

- Works with most PDAs and Pocket PCs including: Palm - Sony - Handspring Visor - Ipaq - Casio HP Jornada - Toshiba - Acer & others!
- Can be attached to Hard and Soft Cases
- Works with handheld devices including: GPS units, Game Boy Advance, MP3 Players Calculators, TV Remote's, Electronic Testers
- Available in 3 Colors
- Limited Lifetime Warranty
- Rugged Aluminum Construction

*Private
Labeling and
Custom Logos
Available*

- Single Accessory has 16+ Functions:
Desk Stand - Belt Clip - Monitor Mount - Laptop Mount - Landscape & Portrait Mode Viewing - Hands Free Belt Use - Vehicle Dashboard Mount - Auxiliary Cradle - ID Display Mobile Marketing - Secure Hand Grip - & Many More!

MULTI Today an Accessory—
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MULTI-FUNCTION ACCESSORY FOR HANDHELD ELECTRONICS

[0001] This application is claiming benefit of my Provisional Patent Application Serial No. 60/335,913 filed on Nov. 2, 2001.

FIELD OF THE INVENTION

[0002] This invention relates to a mechanical device that facilitates the handling and use of handheld electronics. More specifically, to an invention composed of an articulated structure that attaches to a personal electronic device, like a personal digital assistant (PDA), and the methodology of the multiple articulation configurations of the invention which create multiple functionalities in the wearing, handling and user interaction with the personal electronic device.

BACKGROUND

[0003] Handheld devices that can utilize an attachable sub-structure to increase their functionality are well known and include items like carrying straps and tripods for cameras, belt clips for personal music electronics, and various magnetic, clip-on and holster units for cell phones, pagers and PDA's. The increasing number of personal electronics that people are carrying creates a market demand for new and increasingly multi-tasking attachment accessories that allow the handheld devices to be utilized to their fullest potential. The majority of current accessory technology that are available for personal electronic devices, and specifically for PDA'S, do not allow for multiple functionalities from the same accessory. All current products are either belt holster units, carry bags or fixed location attachments. Even newly designed belt holsters that can swivel a PDA into a belt mounted input position are limited in their ability to perform any other multi-tasking functions.

[0004] Since their inception, PDA's have always lacked proper attachments to improve their ability to be easily manipulated, carried, and used for presentations. The PDA's ubiquitous slim box shape is easily dropped when trying to use the device while handling paperwork and it, by itself, cannot be set on a surface for easy viewing by the user or for people watching a presentation on the PDA.

[0005] Personal electronics are often needed to sit on a desk, go along in a car, be carried on clothing, and/or carried securely in the hand. The current trend in mobile electronics makes it important that personal electronic devices have the ability to make themselves useful regardless of the physical location where they are used, venue of operation, motion of their location or available surface on which they may be placed.

THE CURRENT INVENTION

[0006] The current invention is a multi-functional articulated device that can provide a PDA, or other handheld electronic device, with [1] a hand-carrying ability that creates a more secure grip on the PDA while still allowing use of the hand for other tasks. [2] The current invention also is attachable to a pocket, a belt and waistband providing a secure placement on various types of clothing, bags and attachment points. [3] The current invention also has several surface stand-up configurations that provide the ability for

single or multi-person viewing of the PDA screen. This is useful in working with the device on a desk, as well as sharing data and making presentations to others. [4] Several of these surface stand capabilities also facilitate the holding of personal electronics while attached to recharging cords and other cables as may be used to connect the device to other electronics or a keyboard. [5] The current invention also incorporates multiple unique paper handling capabilities for personal electronics device users that require the ability to see documents and simultaneously input data into their device while holding the documents. [6] The current invention further allows the user to place a name-tag, business card or other identity/logo document on the device in such a way as to create a breast pocket or desktop personal identification methodology for meetings and conventions. [7] The current invention further allows the user to display the screen of their electronic device in such a way as to create an electronic breast pocket personal display methodology for meetings or conventions as a personal mobile marketing and sales system. [8] The current invention further allows the user, to place their personal electronics device down on a surface without the device touching the surface, whereby the device is kept clean by being held above liquids and/or dirt that may be on a supporting surface. [9] The current invention further allows the user to attach their personal electronic device onto the structure of another device, or piece of furniture, in such a manner as to allow the user access to their personal electronic device while using other attached devices such as a desktop or laptop computer. [10] The current invention further allows the user to attach their personal electronic device onto the dashboard of a car or other vehicle in such a manner as to allow the user access to their personal electronic device while operating the vehicle. The current invention can be manipulated in such a fashion as to allow their personal electronic device to be rotated out of the line of view while not in use as to facilitate safe driving conditions. [11] The current invention further allows the user to attach additional accessory parts to the invention to increase its usefulness to the user of the personal electronic device. Among the add-on functionality, but not limited to the items mentioned, are a clip-on magnifier that utilizes the physical design of the invention to provide a stable platform from which the user can see a magnified view of the screen on the personal electronic device. This magnifier is adjustable by utilizing integral features of the invention that allow the magnifier to be positioned at various focal lengths from the screen. Another add-on functionality is the addition of one or more light blocking side panels that are held in position by the physical design of the invention to provide a stable platform from which to shield the screen. This shielding serves a dual purpose as a light shield to keep unwanted glare from interfering with the optimal viewing of the device's screen, and also as a privacy device keeping the information on the screen from being seen by others persons who may be near the device user's location. Still another add-on functionality is a clip-on screen filter that utilizes the physical design of the invention to provide a stable platform from which the user can look through the filter and see a view of the screen on the personal electronic device. This filter, can among other uses, be positioned to allow the user to see images in 3D in front of the screen based upon special screen images shown on the screen by integral 3D image software.

BACKGROUND—DESCRIPTION OF PRIOR ART

[0007] Several patents address add-on attachment capabilities for various types of equipment. But no other patent or combination of patents address the combined elements that give the current invention its unique and novel abilities and characteristics.

SUMMARY

[0008] In accordance with the present invention the preferred embodiment of the invention comprises three planar surfaces sitting in a position and adjacent to each other, and each connected to each other at one end by an integral central hinge that spans the width of the three surfaces. Each planar surface has one or more contiguous hinge elements that are spaced to interlock with the other hinge elements of the other planar surfaces. One of the three planar surfaces, called the Attachment leg, is an outer leg of the three and contains one half of a secure attachment means capable of being attached, then removed, and reconnected, at the discretion of the user (i.e. “hard hooks” Velcro, two-part clip, etc.). The other half of the attachment means is secured to an open area on the rear of a PDA or other personal electronics device. The second hinged surface, known as the Mid-leg, is the middle leg of the three hinged planar surfaces and is a planar surface that can rotate on the hinge in the space between the outer two planar hinged surfaces. The Mid-leg has a soft compressible material, a foam area, on the surface that faces the Attachment leg. This foam acts as a cushioning means when a hand or other surface is placed between the Attachment leg and the Mid-leg. The third hinged planar surface, called the Utility leg, is the other outer leg of the three legs and has several operational features. The Utility leg has a dual series of slots that run lengthwise and flank the sides of the other components attached to the outer surface of leg. These slots are composed of three sets of identically formed and spaced small elliptical holes. These holes act as attachment points for a variety of add-on equipment that provide additional functionality to the invention. The lower lip of the Utility leg, farthest from the hinge means, is curled to form a small “U” shaped cusp with its edge facing parallel to the outer planar surface of the Utility leg. This feature acts as a paper holding means capable of attaching to a thin planar surface (i.e. Business Card, sheet of paper, etc.) on the Utility leg. The space between the dual series of slots that run lengthwise down the outer surface Utility leg is filled with two components that are adhered to that surface. The lower component is the soft loop half of a hook and loop fastener (i.e. Velcro, or its equivalent) and resides on the surface starting at the cusp groove and filling distance up the Utility leg surface approximately two-thirds of the way up the space between the slots. The loop fastener section is utilized as half of an attachment system for connecting the invention to other surfaces while it holds the personal electronic device. The second add-on component on the Utility leg is a compressible foam section that is equal in width to the soft loop fastener and occupies the remaining third of the space between the slots on the exterior of the Utility leg. This foam is utilized in several capacities such as, but not limited to, paper retention and anti-slip capabilities of the invention in several configurations.

[0009] The hinge assembly is capable of changing the angle of the three attached hinged surfaces to each other.

Said change of angle between the attached surfaces creates eleven independent shapes that in-turn create over one fifteen unique stand-up, carry and storage capabilities for the attached personal electronics device. Motion of the Attachment leg’s surface from a position parallel to the Utility leg’s planar surface to a 45 degree to 90 degree angle, in relation to the two surfaces, creates a stand-up, tilted back viewing and presentation mode for an attached device. Motion of the Utility leg’s surface to a 180+degree angle to the Attachment leg’s surface creates a document retention mode that allows papers up to normal page sized sheets to be retained in a readable position while the user inputs data into a PDA using both hands (to hold the PDA and input data simultaneously). The rotation of the Mid-leg to a 45 degree angle while the two other legs are as described above provides both a desk stand capable of holding a document, and a secure hand grip system for retention of the PDA while inputting data with a document attached. The rotation of the Mid-leg or Utility leg to an angle that allows the insertion of the hand between the planar surfaces and the Attachment leg creates a secure grip and device retention system for handling the PDA without a document grip ability. Additionally, The placement of the Utility leg and the Attachment leg (with the Mid-leg recessed within the body of the Utility leg) in an adjacent but slightly non-parallel position, creates a “U” shaped cavity between the surfaces that can act as a belt or pocket clip for retention of, and/or display of, a PDA or other personal electronics device. Manipulation of the three legs can create over fifteen different uses of the invention.

OBJECTS AND ADVANTAGES

[0010] Accordingly, the objects and advantages of the invention are:

[0011] (a) To provide the user with a method and means to enhance the ability to hold a handheld device (i.e. a PDA or other personal electronics).

[0012] (b) To provide the user with a method and means to securely stand-up a handheld device (i.e. a PDA or other personal electronics) on a surface (i.e. a desk or other surface), thus providing a better viewing angle for seeing and using the device’s integral display.

[0013] (c) To provide the user with a method and means to attach a handheld device (i.e. a PDA or other personal electronics) to various points on the user’s clothing such as, but not limited to, the belt, pants pockets and shirt pockets.

[0014] (d) To provide the user with a method and means to hold, or stand, a handheld device (i.e. a PDA or other personal electronics) while securely holding secondary items (i.e. printed documents) so that the user can view the documents while still either securely holding the electronic device and using the other hand to input data or operate controls, or standing the device up with a document so that it can be viewed at the same time as the device on a desk or other surface.

[0015] (e) To provide the user with a method and means to carry the handheld device (i.e. a PDA or other personal electronics) in a pocket while using the invention to display an ID tag or business card.

- [0016] (f) To provide the user with a method and means to carry a handheld device (i.e. a PDA) attached to a pocket or belt while using the invention to display the screen area of the PDA in a way that creates an electronic visual marketing methodology.
- [0017] (g) To provide the user with a method and means to position a handheld device (i.e. a PDA) with an auxiliary digital camera so that the invention can act as a stand so that a self-timer of the PDA-camera combination can be used, allowing the user to leave the PDA in a pre-determined position and get in the photo.
- [0018] (h) To provide the user with a method and means to position a handheld device (i.e. a PDA) with an auxiliary add-on magnifier so that an amplified view of the screen is possible.
- [0019] (i) To provide the user with a method and means to position a handheld device (i.e. a PDA) with an auxiliary privacy/sun shield so that the screen of the device is both shielded from glare and from casual observation by nearby persons.
- [0020] (j) To provide the user with a method and means to hold and position a handheld device (i.e. a PDA) with an auxiliary add-on digital camera so that user has maximum control over the handling of the PDA-camera.
- [0021] (k) To provide the user with a method and means to place a handheld device (i.e. a PDA) so that the handheld electronic device is protected from liquids and dirt that may be on the surface it is placed upon.
- [0022] (l) To provide the user with a method and means to place a handheld device (i.e. a PDA) so that the handheld electronic device is attached to a vehicle dashboard or other interior location so that the device can be both used and stored when not in use in the vehicle.
- [0023] (m) To provide the user with a method and means to place a handheld device (i.e. a PDA) so that the handheld electronic device can be attached to another device (i.e. a laptop computer or desktop monitor) so that the device can be used and seen while using the secondary device.
- [0030] FIGS. 7a-7a Perspective views of articulated invention with PDA and accessory device
- [0031] FIGS. 8a-8b Perspective views of Accessory
- [0032] FIG. 9 Exploded perspective view of main leaf components of invention
- [0033] FIG. 10 Photo of invention with PDA as a belt/pocket attached unit.
- [0034] FIG. 11 Photo of invention with PDA as a surface stand-off unit
- [0035] FIGS. 12a-12b Photo of invention with PDA as a surface stand with a document in 3rd hand
- [0036] FIG. 13 Photo of invention with PDA in a handgrip use
- [0037] FIG. 14 Photo of invention with PDA in a handgrip holding a document with 3rd hand
- [0038] FIG. 15 Photo of invention with PDA in a mobile marketing use with image on screen
- [0039] FIG. 16 Photo of invention with PDA in an alternate surface stand configuration
- [0040] FIG. 17 Photo of invention with PDA and a keyboard in a "high portrait" position
- [0041] FIG. 18 Photo of invention with PDA and a keyboard in a "high landscape" position
- [0042] FIG. 19 Photo of invention with PDA and a keyboard in a "low landscape" position
- [0043] FIG. 20 Photo of invention with PDA as a surface stand with an ID card display
- [0044] FIG. 21 Photo of invention with PDA as a mobile ID card display
- [0045] FIG. 22 Photo of invention with PDA and a keyboard in low landscape with 3rd hand
- [0046] FIGS. 23a-23b Photo of invention with PDA attached to a laptop computer
- [0047] FIG. 24 Photo of invention with PDA as an attachment stand on a computer monitor
- [0048] FIG. 25 Photo of invention with PDA as a "L" stand
- [0049] FIG. 26 Photo of invention with PDA in up and down "Belt Use" function
- [0050] FIG. 27 Photo of invention with PDA as a stand for a handheld game with 3rd hand
- [0051] FIGS. 28a-28b Photo of invention as a vehicle dashboard carrier
- [0052] FIG. 29 Photo of invention with PDA as a flat desk stand
- [0053] FIG. 30 Photo of invention with PDA as a floating angle" desk stand

DRAWINGS-FIGURES

- [0024] FIGS. 1a-1f. orthographic views of invention
- [0025] FIGS. 2a-2k Side orthographic views of 11 configurations of the invention
- [0026] FIGS. 3a-3k Side orthographic views of 11 configurations of the invention attached to a PDA
- [0027] FIG. 4 Exploded perspective view of invention components
- [0028] FIGS. 5a-5k Perspective views of articulated invention
- [0029] FIGS. 6a-6k Perspective views of articulated invention attached to a PDA
- [0054] 10 Entire Invention Assembly
- [0055] 20 Multiple Part Hinge Assembly

REFERENCE NUMERALS IN DRAWINGS

[0056] 21 Hinge Tensioning Assembly
 [0057] 22 Knob (left tensioning part)
 [0058] 23 Shaft (eft tensioning part)
 [0059] 24 O-locking Ring (left tensioning)
 [0060] 25 Spacer (Middle tensioning)
 [0061] 26 Spacer Thread (Mid tensioning)
 [0062] 27 Knob (right tensioning)
 [0063] 28 Shaft (right tensioning)
 [0064] 29 O-Ring (right tensioning)
 [0065] 30 1st Leg—"Attachment Leg"
 [0066] 31 (1st Leg) Attachment Side
 [0067] 32 (1st Leg) Interior Recess Side
 [0068] 33 (1st Leg) "Hooks" attachment
 [0069] 34 (1st Leg) Hinge Loops
 [0070] 35 (1st Leg) Attachment Side
 [0071] 36 (1st Leg) Grip Recess
 [0072] 37 (1st Leg) Side Walls
 [0073] 38 (1st Leg) Extension Lip
 [0074] 40 2nd Leg—"Mid-Leg"
 [0075] 41 (2nd Leg) Spacer Curl
 [0076] 42 (2nd Leg) Interior of Spacer Curl
 [0077] 43 (2nd Leg) Interior Surface
 [0078] 44 (2nd Leg) Foam Pad
 [0079] 45 (2nd Leg) Base Lip
 [0080] 50 3rd Leg—Utility Leg
 [0081] 51 (3rd Leg) Components Side
 [0082] 52 (3rd Leg) Interior Side
 [0083] 53 (3rd Leg) Hinge Loops
 [0084] 54 (3rd Leg) "U" Channel Clip
 [0085] 55 (3rd Leg) Compressible material
 [0086] 56 (3rd Leg) "Loops" attachment
 [0087] 57 (3rd Leg) Grip Recess
 [0088] 58 (3rd Leg) Side Walls
 [0089] 59 (3rd Leg) Interior Recess Area
 [0090] 60 (3rd Leg) Accessory Slots
 [0091] 61 PDA side Attachment component
 [0092] 62 Vehicle side attachment component
 [0093] 63 Large document
 [0094] 64 Small business card
 [0095] 65 Desk surface
 [0096] 66 Laptop Surface
 [0097] 67 Belt material
 [0098] 68 Keyboard

[0099] 69 Vehicle Dashboard
 [0100] 70 Hand Held Device/PDA
 [0101] 71 Accessory Rod "Dog Leg" bend
 [0102] 72 Accessory Attachment Rod
 [0103] 73 Lens frame
 [0104] 74 Lens Frame Channel
 [0105] 75 Magnifying Lens
 [0106] 76 Accessory Rod "Hood" bend
 [0107] 77 Full Accessory Assembly
 [0108] 80 Utility Side Planar surface
 [0109] 81 (3rd Leg) Connection End Lip
 [0110] 82 (1st Leg) Connection End Lip

PREFERRED EMBODIMENT OF INVENTION

Description of the Invention

[0111] The preferred embodiment of the present invention **10**, shown in an exploded view in orthographic views in drawing **FIG. 1a-1f**, in an exploded view in **FIG. 4**, and in perspective views in **FIG. 9** is a set of three shaped components joined by a common axis at one end. The three shaped components are 1st leg (attachment leg) **30**, 2nd leg (Mid-leg) **40** and 3rd leg (Utility leg) **50**. 1st leg **30** is a channel whose parallel side walls **37** each are perpendicular to, and extend past, the connection end lip **82** of the planar recess panel **39** and terminate in hinge loops **39**. 2nd leg **40** is a planar surface **43** that terminates across its entire connection end in a tubular spacer curl **41** that creates a tubular opening **42** that is the interior of the spacer curl **41**. 3rd leg **50** is a channel whose parallel side walls **38** each are perpendicular to, and extend past, the connection end lip **81** of the planar recess panel **59** and terminate in hinge loops **53**. The interior dimensions of 3rd leg **50** are large enough so that the exterior dimension of the 1st leg **30** can fit within the confines of the planar recess panel **59**. The exterior dimension of 2nd leg **40** is small enough so that maximum width of the planar surface **43** can fit within the confines of the planar interior recess panel **39** of 1st leg **30**. In this way the three components, 1st leg **30**, 2nd leg **40** and 3rd leg **50** can be placed into a layered sandwich. In this layered sandwich, shown in a side view in **FIG. 1b** (closed), 3rd leg **50** accepts the 1st leg **30** between its side walls **58** with the exterior of 1st leg **30** side walls **37** fitting snugly inside its confines. In this closed and snug configuration 2nd leg **40** is flat against the interior recess area **59** of the 3rd leg **50** inside the interior of the side walls **58** of 3rd leg **50**. The fillet edges of side walls **37** of 1st leg **30** occupy the space between the side edges of 2nd leg **40** and the side walls **58** of 3rd leg **50** in this closed position.

[0112] To keep the three legs **30**, **40** & **50** in position and allow their rotation around a common axis, a threaded spacer **25** is inserted into the interior **42** of the spacer curl **41** at the top of 2nd leg **40**. The exterior diameter of the spacer **25** is an interference friction fit with the interior **42** of spacer curl **41** of 2nd leg **40**. Upon insertion of the spacer **25** in the curl opening **42** the spacer remains firmly attached to the 2nd leg **40**. 1st leg **30** is placed so that hinge loops **34** on the end of side walls **37** are disposed adjacent to the holes in spacer **25**.

This places 1st leg 30 so that its interior recess area 32 is facing the interior surface panel 43 of 2nd leg 40. This also places the hinge loops 34 immediately adjacent to and axially concentric with the threaded spacer holes 26 in both ends of spacer 25 that is inserted in the spacer curl 42 of 2nd leg 40. 3rd leg 50 is then placed so that both hinge loops 53 are disposed adjacent and axially concentric with the holes in 1st leg hinge loops 34 so that the interior recess area 59 faces the panel 45 of 2nd leg 40 and the interior recess area 32 of 1st leg 30. When these parts are lined up so that all three hinge elements (3rd leg 50 hinge loops 53, 2nd leg 40 spacer curl 41 with insert spacer 25 and 1st leg 30 hinge loops 34) are sandwiched together the left and right locking “O” rings 24 & 29 are placed, one on each side, adjacent and axially concentric with the holes of the exterior hinge loops 53 of 3rd leg 50. Knobs 22 & 27 with threaded shafts 23 & 28 are inserted into the concentric hole pathway on both sides of the composite structure (described above) so that the shafts 23 & 28 pass through the locking “O” rings 24 & 29, 3rd leg 50 hinge loops 53, 1st leg 30 hinge loops 34, and into the 2nd leg 40 spacer curl 41 where the shafts engage the threads in insert spacer 25. When the knob 27 & 22 are rotated the threads 23 & 28 are tightened causing motion to create pressure on their knob heads 27 & 22 that force the layered hinge loops 34 & 53 and the locking “O” rings 24 & 29 to create a linear pressure axially through the hinge curl 41 and spacer 25. This pressure is used to lock the three legs into any desired position. Loosening knobs 27 & 22 releases the pressure and allows all three legs 30, 40 & 50 to rotate freely around their common axis that passes through the 3rd leg 50 hinge loops 53, 1st leg 30 hinge loops 34, and into the 2nd leg 40 spacer curl 41.

[0113] The invention 10, as shown in FIG. 9a-9c, has wide planar surface areas on the three major surfaces of 1st leg 30, 2nd leg 40, and 3rd leg 50. Each of the planar surface areas has specific functional purposes. There are a total of six different wide planar areas on the three legs, as well as four side walls 37 & 58 on the 1st and 3rd legs. These six surface areas are [1] the attachment side 31 of 1st leg 30; [2] the interior recess “hand” side 32 of 1st leg 30; [3] the hand contact side 43 of 2nd leg 40; [4] the flush side 45 of 2nd leg 40; [5] the interior recess side 59 of 3rd leg 50 and [6] the utility side 80 of 3rd leg 50. The side walls 37 of 1st leg 30 and side walls 58 of 3rd leg 50 provide structural integrity to the invention as well as provide important gripping and positioning functionality via the grip recess area 36 on 1st leg 30 and grip recess area 57 on 3rd leg 50.

[0114] As shown in FIGS. 1b, 1c, 1d, 1f, and 9b the planar surface 31 has one add-on functional element, the attachment component 33 that is integrally attached to the attachment surface 31 of 1st leg 30. The attachment component 33 can be molded into, attached by adhesive or otherwise affixed to the planar surface 31 by an attachment means. The attachment component 33 is itself part of a two part attachment means (31 and 61 not shown) for securing the invention to a handheld device or other useful location. The attachment component 33 of 1st leg 30, as shown in this embodiment, is one half of a “hook and loop” attachment system commonly known as Velcro fasteners. The other half of the attachment system, the device side attachment component 61 is the corresponding attachment means to the attachment component 33 of 1st leg 30. A number of other attachment means such as plastic snap fasteners, rotational fasteners, permanent adhesive or a tongue and groove fas-

tener could be used to accomplish the goal desired in the functionality of the invention.

[0115] FIG. 1a, if and FIG. 9c shows the 3rd leg 50 with two separate sub-components attached to its flat surface 80. Also shown are two integral features, the “U” channel 54 at the lower end of surface 80 and the accessory slots 60 that run vertically on surface 80 parallel to the edges of loops attachment material 56 and compressible material 55. The utility side 80 of planar surface 50 has two add-on components of that are arranged in a vertical stack. The top component, having a parallel border with top edge 81 and extending approximately one third the distance down the planar surface 80 is compressible material 55 that acts as part of a paper-handling system that utilizes the pivoting function of the integral hinge assembly 20 to trap and compress paper into a steady (as shown in FIG. 12a). The lower add-on component of the utility side 80 is a loop attachment component 56 that is integral to the invention’s secondary vehicle mounting system (as shown in FIG. 28a); The loop material 56 is mated parallel to, and as wide as, the compressible material 55 and occupies the lower two thirds of the space in the middle of the planar surface 80 between the accessory slots 60. The loop material (soft velcro) creates a contiguous surface from the compressible material 55 to the interior of the integral “U” channel 54 on the bottom of the 3rd leg 50 utility side 80. The “U” channel 54 is a clip mechanism by virtue of its shape and is used as part of the accessory capability of the invention and is also part of the paper handling functionality of the invention (as shown in FIGS. 14 and 20).

[0116] Although the two components (55 & 56) of the utility side 80 of 3rd leg 50 are notated as add-on components, each one, or both of these components can be integrally molded or fabricated into the planar surface 80 and only are shown in this embodiment as individual components for ease of identification. The individual components can be adhered to the planar surface 80 of 3rd leg 50 with a variety of attachment means including adhesives.

[0117] FIGS. 1e and 1f show an assembled orthographic view of the invention 10 in a partially rotated view from the side (1e) and the top (1f). The FIG. 1f view show two of the three legs 30 & 50 placed so that the hinge spacer curl 41 forms a tubular section on which the components of the hinge assembly 20 fit axially from knob 27 to knob 22 as a unit down the center of the ferrule interposed hinge loops 34 & 53. FIG. 1e shows a side view of how the assembled components of the hinge assembly 20 form a solid structure that attaches all three legs 30, 40 and 50 at a central axis 41 that links the two sets of hinge loops 53 & 34 (as can be seen in top views 1d and 1f).

[0118] FIG. 1b shows grip recess 57 of 3rd leg 50 and grip recess 36 of 1st leg 30 in a closed position forming a pass through aperture that can allow a rod, wire or other material to pass through the closed invention. The placement of these recess grip areas also helps prevent pinching of the hand when the hand is inserted in between any two of the three legs (as shown in FIG. 13). As shown in FIG. 1e the legs 30, 40 and 50 are separated allowing the grip recess’s 57 & 36 to create a wide opening near the coaxial junction of the legs.

Operational Methodology and Physical Operation
of the Preferred Embodiment of the Invention

[0119] FIGS. 2a-2k, FIGS. 3a-3k, FIGS. 5a-5k and FIGS. 6a-6k each show the invention 10 in the same eleven different positions that relate to the invention's functionality when attached to a handheld device. FIGS. 2a-2k show side orthographic views of the invention 10 in the eleven positions. FIGS. 3a-3k show side orthographic views of the invention 10 attached to a PDA handheld electronics device 70 in the eleven positions. FIGS. 5a-5k show perspective views of the invention 10 in the eleven positions. FIGS. 6a-6k show side perspective views of the invention 10 attached to a PDA handheld electronics device 70 in the eleven positions. Numeral "call-outs" in these above-mentioned figures are limited to the main three legs (30, 40 & 50) plus the multiple part hinge assembly 20 and the PDA handheld electronics device 70 in FIGS. 3a-3k and 6a-6k. The purpose of these Figures is to illustrate the operational methodology that allows the simple construction of the invention 10 to have a multiplicity of operational characteristics that create a unique and novel functionality not seen in other devices.

[0120] The operation of the preferred embodiment of the invention can be broken down many basic functions. They are [1] using the invention as a support for keeping a PDA off of a surface with dirt or liquid contamination (as shown in FIG. 11); and [2] using the invention as a stand (as shown in FIGS. 12, 16, 17, 19, 20, 22, 24 and 30); [3] using the invention only in a handheld grip function (as shown in FIG. 13); [4] using the invention as a pocket clip or desk stand to display a business card or other ID (as shown in FIGS. 21 and 20); [5] using the invention as a reverse belt clip or pocket clip to utilize the display functionality of the PDA as a mobile marketing system (as shown in FIG. 15); [6] using the invention as directional stand for use with accessories like an add-on PDA-digital camera; [7] using the invention as a document holder so that the user can stand up the invention on a desk or hold a PDA and a document in one hand while having the other hand free to input data into the PDA (as shown in FIGS. 12a and 12b); [8] using the invention as a belt clip (as shown in FIG. 10); [9] using the invention as a miniature podium so that the user can have a presentation piece held up in front of their location while still being able to read off the hidden PDA, which can act as a portable; [10] using the invention as a carrier stand in a vehicle (as shown in FIG. 28a); [11] using the invention as a hands free "belt use" carrier that allows the PDA to be carried and used without the need to actually hold the PDA in the hand (as shown in FIGS. 26a & 26b); and [12] using the invention as support device for attachment of a PDA to a laptop computer or other vertical surface (as shown in FIGS. 23a and 23b). Each of the twenty functions (described in the Figures noted above) utilize the structure of the invention in different physical arrangements to create novel and unique methodologies of use.

[0121] FIGS. 2a, and 5a show the invention 10 in a closed position where 1st leg 30, 2nd leg 40 & 3rd leg 50 are interlaced and rotated on hinge assembly 20 to be parallel to each other forming a flattened format. FIGS. 3a and 6a show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIG. 11 and is a surface stand-off

methodology that allows the placement of the electronic handheld device 70 on invention 10 to be set down on a dirty surface without the dirt or liquids on the surface affecting the electronic handheld device 70 due to it being kept off the surface by the component thickness of the invention 10.

[0122] FIGS. 2b, and 5b show the invention 10 in a position where 1st leg 30 is rotated up to 170 degrees (approximately 90 degrees is shown) from the placement of legs 2nd leg 40 & 3rd leg 50 that are sandwiched together and rotated on hinge assembly 20. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs (30, 40 & 50) locked in the position desired by the user. The legs (30 and 40/50) form an "A" frame format. FIGS. 3b and 6b show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIG. 16 and is a basic surface stand methodology that allows the placement of the electronic handheld device 70 on invention 10 to be set down on a desk or other surface allowing a view of electronic handheld device 70 at the best angle for the user,

[0123] FIG. 2c, and 5c show the invention 10 in a position where 1st leg 30 is rotated up to 200 degrees (approximately 190 degrees is shown) from the placement of 3rd leg 50 that has been rotated on hinge assembly 20. 2nd leg 40 is rotated approximately 45 degrees from 3rd leg 50 to form an "A" frame stand. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs locked in the position desired by the user. The legs (30, 40 & 50) form an "primary Inverted Y" frame format. FIGS. 3c and 6c show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIG. 17 and FIG. 18 and is a elevated surface stand methodology that allows the placement of the electronic handheld device 70 on invention 10 to be set down on a desk or other surface in an elevated viewing position. The electronic handheld device 70 can be placed in either a "portrait" (vertical as shown) position or can be rotated 90 degrees and placed in a "landscape" viewing position. The rotational position of 1st leg 30 can be adjusted for the best angle for the user. Changing the angle of 1st leg 30 by loosening rotational tightening hinge 20 for a varied viewing angle of electronic handheld device 70 can change the stability of the stand base created from 2nd leg 40 and 3rd leg 50. In this case, 2nd leg 40 and 3rd leg 50 should also be repositioned to alter the center of gravity of the stand to best suit the viewing position.

[0124] FIGS. 2d and 5d show the invention 10 in a position where 1st leg 30 is rotated up to 110 degrees (approximately 80 degrees is shown) from the placement of 2nd leg 40 & 3rd leg 50 that are sandwiched together and rotated on hinge assembly 20. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs (30, 40 & 50) locked in the position desired by the user. The legs (30 and 40/50) form an "L" bracket format. FIGS. 3d and 6d show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIGS. 26a and 26b and is a "belt use" methodology that allows the placement of the electronic handheld device 70 on invention 10 hooked over a belt, via a retention of 2nd leg 40 and 3rd leg 50 inside the belt

with 1st leg 30 protruding outside the belt in a position allowing a view of electronic handheld device 70 by a user who is looking downward. This methodology further allows the electronic handheld device 70 to stay suspended on the belt without the user holding the unit allowing a “hands free” use of the electronic handheld device 70. The user has the further option to loosen the rotational hinge tensioning assembly 20 so that 1st leg 30 can be rotated down to a position where the electronic handheld device 70 is carried on the belt and is out of the users way.

[0125] FIGS. 2e and 5e show the invention 10 in a position where 1st leg 30 is rotated up to 90 degrees (approximately 70 degrees is shown with electronic handheld device 70 in FIGS. 3e and 6e) from the placement of 3rd leg 50 that has been rotated on hinge assembly 20. 2nd leg 40 is rotated approximately 45 degrees from 3rd leg 50 to form an “A” frame stand. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs locked in the position desired by the user. The legs (30, 40 & 50) form a “Floating Leg” stand format. FIGS. 3e and 6e show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIG. 30 and is a shallow elevated surface stand methodology that allows the placement of the electronic handheld device 70 on invention 10 to be set down on a desk or other surface in an slightly elevated position where cables or other attachments to the electronic handheld device 70 can be connected without the electronic handheld device 70 touching the desk surface. The electronic handheld device 70 can be placed in either a “portrait” (vertical as shown) position or can be rotated 90 degrees and placed in a “landscape” viewing position. The rotational position of 1st leg 30 can be adjusted for the best angle for the user. Changing the angle of 1st leg 30 by loosening rotational tightening hinge 20 for a varied viewing angle of electronic handheld device 70 can change the stability of the stand base created from 2nd leg 40 and 3rd leg 50. In this case, 2nd leg 40 and 3rd leg 50 should also be repositioned to alter the center of gravity of the stand to best suit the viewing position.

[0126] FIGS. 2f and 5f show the invention 10 in a position where 3rd leg 50 is rotated 270 degrees from the location of 1st leg 30 on hinge assembly 20. This 270 degree rotation places 3rd leg 50 in a position where the 3rd leg connection end lip 81 bottoms out the rotation swing against the planar surface of attachment side 31 of 1st leg 30. 2nd leg 40 is rotated approximately 45 degrees from 1st leg 30 to form an “A” frame stand. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs locked in the position desired by the user. The legs (30, 40 & 50) form an “accessory” frame format. FIGS. 3f and 6f show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIGS. 7a-7a and is a surface stand methodology that allows the placement of various accessories in accessory slots 60 as well as attached to “U” channel 54. The placement of an accessory, such as the Magnifier Accessory Assembly 77, in this configuration allows the accessory to be placed on 3rd leg 50 in such a manner as to interact with the screen of electronic handheld device 70, and/or at various angles around the body of the invention 10. The attachment of the electronic handheld device 70 on invention 10 provides the extended base that makes a surface stand methodology to be

set down on a desk or other surface in a viewing position. The electronic handheld device 70 can be placed in either a “portrait” (vertical as shown) position or can be rotated 90 degrees and placed in a “landscape” viewing position. The rotational position of 2nd leg 40 can be adjusted for the best angle for the user. Changing the angle of 2nd leg 40 is accomplished by loosening rotational hinge assembly 20. This position allows the attachment of accessories like the magnifier assembly 77 (FIG. 7a) or a 3D lens system for the creation of 3D images on the screen (with the proper software) of the electronic handheld device 70. The magnifier accessory assembly is, in this design, composed of three elements—the magnifier lens 75, the lens frame 73 and the accessory attachment rods 72. The magnifier lens 75 is inserted in the lens frame channel 74 that is formed by the wire structure of the lens frame 73. The wire accessory attachment rods 72 are attached to the lens frame 73 by the “hook bend” 76 on one end of the attachment rods 72. This locks the magnifier lens 75 into the lens frame channel 74 by securely blocking the top exit path of the lens frame channel 74 with the bottom edge of the hook bend 76 of the attachment rods 72. The entire assembly is placed so that the two ends of accessory rod’s 72 “dog leg” bend end 71 (the ends that are not attached to the lens frame 73) can be inserted into accessory slots 60 in the interior recess area 59 of 3rd leg 50 so that the “dog leg” bend 71 passes through the accessory slots 60 and hooks onto the rear section of the interior recess area 59 which is the utility side planar surface 80. This allows the legs 72 to hold the frame 74 with the magnifier lens 75 out in front of the screen of the electronic handheld device 70 in a cantilever fashion that suspends the lens 75 in a manner to magnify the screen of the electronic handheld device 70 as shown in FIGS. 7a-7a.

[0127] FIGS. 2g, and 5g show the invention 10 in a position where 1st leg 30 is rotated up to 90 degrees (approximately 75 degrees is shown) from the placement of 3rd leg 50. 2nd leg 40 can be rotated on hinge assembly 20 either down with 3rd leg 50 or (as shown) be rotated to sit parallel with the rear surface 32 of 1st leg 30. In this position the 2nd leg 40 acts as a vertical document holding accessory that holds a document behind the 1st leg 30. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs (30, 40 & 50) locked in the position desired by the user. The legs (30 and 40/50) form an “L” frame format. FIGS. 3g and 6g show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIG. 25 and is a basic surface stand methodology that allows the placement of the electronic handheld device 70 on invention 10 to be set down on a desk or other surface allowing a view of electronic handheld device 70 at the best angle for the user. This format is a multipurpose holder and stand that allows the electronic handheld device 70 to be placed in either a “portrait” (vertical as shown) position or rotated 90 degrees and placed in a “landscape” viewing position. In this position the electronic handheld device 70 can be placed so that no part of the electronic handheld device 70 is touching the surface and thus creates a cradle methodology whereby cables and other attachments can be connected to the “free floating” electronic handheld device 70. This format further provides the most stable stand for use on slanted or vibrating surfaces due to the fact that the “U” channel 54 on 3rd leg 50 forces the balance of the entire electronic handheld device 70 on

the invention to rest its main weight on the compressible foam material 55 on planar surface 31 of 3rd leg 50. This foam material 55 is a non-slip surface and maintains the location of the entire invention 10 with the electronic handheld device 70 in a non-sliding position. Further, the rotational angle at which the electronic handheld device 70 is held on the invention can be changed by adjusting the hinge assembly position 20 to keep the best viewing angle and center of gravity for any specific location on an angled surface. This use format is additionally used for location of the invention with the electronic handheld device 70 on a vehicle dashboard (as shown in FIG. 28a) via the use of the Velcro "loops" attachment area 56 that is located between the compressible foam material 55 and the "U" channel 54 on planar surface 31 of 3rd leg 50. When the loops Velcro 56 is mated with a hard "hooks" Velcro vehicle side attachment component 62 the invention 10 and the electronic handheld device 70 can ride in an upright position in full view of the driver or passenger. When not needed, the rotational adjustment on the hinge assembly 20 can be loosened and the 1st leg 30 and 2nd leg 40 can rotate down and become flat with the dashboard as shown in FIGS. 3a, 6a and 28b). This same methodology can be used to locate the invention 10 with electronic handheld device 70 on top of a computer monitor as shown in FIG. 24.

[0128] FIGS. 2h and 5h show the invention 10 in a position where 1st leg 30 is rotated slightly up to 30 degrees (approximately 15 degrees is shown) from the placement of legs 2nd leg 40 & 3rd leg 50 that are sandwiched together and rotated on hinge assembly 20. This creates a small "U" shaped opening or "gap" between the 1st leg 30 and the 3rd leg 50 (with 2nd leg 40 remaining stowed in the interior recess area 59 of 3rd leg 50). The "gap" can be placed over a belt, pant belt-line edge, bag strap or pocket so that 1st leg 30 and the electronic handheld device 70 are on the exterior of the items that is being used to locate the invention and the 3rd leg 50 with hidden 2nd leg 40 are placed over the belt, pant line, strap or pocket so that the material of the securing element (i.e the belt 67) is captured in the gap between the legs. The Hinge assembly 20 can then be tightened to provide rotational stability and keep the three legs (30, 40 & 50) locked in the position desired by the user, thus providing a secure lock on the carry location material. This is shown in FIGS. 3h and 6h where invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30 is shown positioned with the gap ready to be placed over belt material 67. This position is shown in FIG. 10 and is a basic carry methodology that allows the placement of the electronic handheld device 70 on invention 10 to be locked on a belt, pocket or other relatively thin and flexible material, thus allowing the electronic handheld device 70 to be carried by the user. An additional use of this configuration is the "secure grip" function of the invention 10. When handling or hand carrying an electronic handheld device 70 its shape tends to make it easy to let it slip and fall if a firm grip is not constantly provided on the electronic handheld device 70. The invention 10 has the ability, in the above-described configuration, to be slipped over the palm of the hand (as shown in FIG. 13). With the electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30, the electronic handheld device 70 sits comfortably in the palm of the hand with 3rd leg 50 and the 2nd

leg 40 hanging over the rear of the hand. The grip recess area 36 on 1st leg 30 and the grip recess area 57 on 3rd leg 50 provide a comfortable space that allows the legs to be tightened by hinge assembly 20 without pinching the hand. This allows the user to open the hand without the electronic handheld device 70 falling even with no actual grip on the electronic handheld device 70.

[0129] FIGS. 2i and 5i show the invention 10 in a position where 1st leg 30 is rotated up to 180 degrees from the placement of 3rd leg 50 that has been rotated on hinge assembly 20. 2nd leg 40 is rotated to be parallel to and inserted within interior recess area 59 of 3rd leg 50. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs locked in the position desired by the user. The legs (30, 40 & 50) form an "I beam" frame format that is flat as seen in the side views in FIG. 2i and FIG. 3i. FIG. 3i and 6i show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIG. 23a (a front view) and FIG. 23b (a rear view). and is an attachment methodology that allows the placement of the electronic handheld device 70 on invention 10 to be attached to a planar surface, such as the back/top area of a laptop, in an elevated viewing position on top of or to the side of the laptop screen. The electronic handheld device 70 can be placed in either a "portrait" (vertical as shown) position or can be rotated 90 degrees and placed in a "landscape" viewing position. The position of 1st leg 30 will be at the same angle as the angle of the laptop screen for the user. The attachment to the laptop is via the use of the Velcro "loops" attachment area 56 that is located between the compressible foam material 55 and the "U" channel 54 on planar surface 31 of 3rd leg 50. When the Velcro loops 56 are mated with a pad of the hard "hooks" Velcro (identical to the vehicle side attachment component 62) attached to the rear of the laptop screen, the invention 10 and the electronic handheld device 70 can ride in an upright position on the back of the laptop in full view by the user operating the laptop.

[0130] FIGS. 2j, and 5j show the invention 10 in a position where 3rd leg 50 is rotated up to 180 degrees from the placement of 1st leg 30 both of which have been rotated on hinge assembly 20. 2nd leg 40 is rotated approximately 45 degrees from 1st leg 30 to form an "A" frame stand. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs locked in the position desired by the user. The legs (30, 40 & 50) form an "secondary Inverted Y" frame format. FIGS. 3j and 6j show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30. This position is shown in FIG. 22 and is a low surface stand methodology that allows the placement of the electronic handheld device 70 on invention 10 to be set down on a desk or other surface in a desk level viewing position. The electronic handheld device 70 can be placed in either a "portrait" (vertical as shown) position or can be rotated 90 degrees and placed in a "landscape" viewing position. The rotational position of 1st leg 30 can be adjusted for the best angle for the user. Changing the angle of 1st leg 30 by loosening rotational tightening hinge 20 for a varied viewing angle of electronic handheld device 70 can change the stability of the stand base created from 2nd leg 40 and 1st leg 30. In this case, 2nd leg 40 should also be repositioned to alter the center of gravity of the stand to best

suit the viewing position. The unique purpose of this configuration is twofold, as a stand and as a secure handgrip both with a paper holding capability known as the “3rd hand” feature. A sheet size, or even larger, document 63 can be placed on the planar surface 80 of 3rd leg 50 so that the bottom of the document is inserted between the rear surface of the electronic handheld device 70 and the compressible foam pad 55 on planar surface 80 of 3rd leg 50. When the document 63 is in place on planar surface 80 of 3rd leg 50 the position of the 3rd leg 50 can be adjusted by rotation of the 3rd leg 50 on the hinge assembly 20. By rotating the 3rd leg 50 towards the electronic handheld device 70 the document 63 is compressed between the electronic handheld device 70 and the compressible foam pad 55 on the planar surface 80 of 3rd leg 50. This causes the document 63 to be securely held and will continue to be securely held if the hinge assembly 20 is tightened to a locked position. Alternately, a small document like a business card 64 can be placed in the “U” Channel clip 54 at the leading edge of planar surface 80 of 3rd leg 50. The card is held in place by the friction between the inner surface of the “U” Channel clip 54 pressing on the front of the card 64 and the soft Velcro loops component 56 pressing on the rear of the card 64. The invention 10 as shown in FIG. 12b shows a card held in place and FIG. 12a shows a large document held in place, both while the invention 10 is used as a desk stand. The invention 10 as shown in FIG. 14 shows a card held in place and a large document can also be held in place, both uses are available while the invention 10 is used as a secure hand grip stand. The secure hand grip function with the 3rd hand function described above is accomplished via the application of rotational pressure using hinge assembly 20 to rotate 2nd leg 40 to capture a users hand between 2nd leg 40 and 1st leg 30 and then tightening hinge assembly 20 to the point where there is a comfortable pressure on the hand to maintain a secure grip on the invention 10.

[0131] FIGS. 2k and 5k show the invention 10 in a position where 1st leg 30 is rotated 270 degrees from the location of 3rd leg 50 on hinge assembly 20. This 270 degree rotation places 3rd leg 50 in a position where the 3rd leg connection end lip 81 bottoms out the rotation swing against the planar surface of attachment side 31 of 1st leg 30. With the 1st leg 30 placed in a vertical position so that 3rd leg 50 is parallel to a desk or other surface, the 2nd leg 40 is rotated approximately 180 degrees from 3rd leg 50 to form an “T” frame stand. Hinge assembly 20 is tightened to provide rotational stability and keep the three legs locked in the position desired by the user. The legs (30, 40 & 50) form a “primary Inverted T” frame format. FIGS. 3k and 6k show invention 10 with electronic handheld device 70 attached by PDA side attachment component 61 to attachment hooks 33 on the planar surface 31 of 1st leg 30 with the bottom of the electronic handheld device 70 sitting on the compressible foam pad 55. This position is shown in FIG. 29 and is a surface stand methodology that allows the placement of the electronic handheld device 70 on invention 10 to be set down on a desk or other surface in the lowest viewing position possible with the invention 10 and still maintain full stability and upright positioning of the electronic handheld device 70. The electronic handheld device 70 can be placed in either a “portrait” (vertical as shown) position or can be rotated 90 degrees and placed in a “landscape” viewing position. Several of the positions that the invention can be configured into allow for the attachment of a digital camera

or other imaging device. These configurations act as a stand for steady use of the imaging equipment or to facilitate the user getting into the photos by acting as a stationary stable bipod. These configurations include FIGS. b,c,g,I and k in the views 3 and 6 with the camera taking the place of the electronic handheld device 70.

Conclusions, Ramifications and Scope of the Invention

[0132] By reviewing the above embodiment the reader can see that the combination of features in the invention provides a highly advantageous system for the manipulation, carrying and presentation of personal hand-held devices like PDA's. The invention's physical operation is simple to use and easy to understand. While the above description contains much specificity, these should not be construed as limitations on the scope of the invention, but rather as an exemplification of one preferred embodiment thereof. Many other variations are possible and can be envisioned by anyone skilled in the art without leaving the scope of the intent of the invention. Accordingly, the scope of the invention should not be determined only by the embodiment illustrated, but by the appended claims and their legal equivalents.

What is claimed:

1. A jointed hinge support apparatus for use with detachable handheld devices wherein said apparatus is configured with a plurality of hinge leaves superimposed on a common axial length for swinging movement about an axis independently of one another, comprising in combination;

- a. a plurality of hinge leaves, each said hinge leaf being configured with at least one knuckle portion for receiving hinge pin means therethrough,
- b. each said knuckle portion of said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
- c. one or more components of hinge pin means being disposed through said knuckle portions of said hinge leaves thereby supporting all said knuckle portions aligned on said hinge pin means.
- d. Means providing and maintaining the radial position of each said hinge leaf about said hinge pin means against the operation of gravity and until manually re-set.

2. The jointed hinge support apparatus of claim 1 further includes a methodology for manipulating, hand-held personal electronics, comprising:

- a. An attachment means for connecting one of the said leaf surfaces to a hand-held device so that said attachment has the ability for temporary attachment, detachment, and re-attachment of the invention to a hand-held device.

3. The jointed hinge support apparatus of claim 1 further includes a methodology for standing and or displaying a hand-held device on a desk or other surface, comprising:

- a. said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
- b. said attachment means for connecting one of the said leaf surfaces to a hand-held device,

- c. whereby a user could axially rotate one of the said surfaces attached to said leaves to an angle capable of creating an support structure composed of two or more of the leaves so that a personal electronic device can be placed on the desk or other surface area so that its display screen or controls is visible to one or more users.
- 4.** The jointed hinge support apparatus of claim 1 further includes a methodology for displaying the, control screen of a hand-held device on a belt or from a pant or shirt pocket, comprising:
- said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
 - said attachment means for connecting one of the said leaf surfaces to a hand-held device,
 - whereby a user could axially rotate one of the said surfaces attached to said leaves to an angle where the two leaves are adjacent and parallel to each other, thus forming a large clip structure attached to the personal electronic device so that it can hang by the clip structure from a belt or pocket.
- 5.** The jointed hinge support apparatus of claim 1 further includes a document retention system allowing control over, and use of, an attached hand-held device while holding a paper document, comprising:
- said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
 - said attachment means for connecting one of the said leaf surfaces to a hand-held device,
 - whereby a user could axially rotate one of the said leaves to an angle whereby said hinged leaf can capture a document by physical pressure between a compressible material located on the said leaf and the body surface of said hand-held device.
- 6.** The jointed hinge support apparatus of claim 1 can further include a clip for holding and retaining business cards or other printed materials so that they can be displayed to the user while the hand-held device attached to the invention is in the hand of the user, comprising:
- said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
 - said attachment means for connecting one of the said leaf surfaces to a hand-held device,
 - whereby a user could axially rotate one of the said leaves to an angle whereby said hinged leaf can incorporate a "U" shaped channel to act as a clip that can retain a small document, like a business card, that can be viewed by the user when the axially rotated leaf is positioned linearly with and parallel to the attached leaf that is said leaf surfaces attached to a hand-held device.
- 7.** The jointed hinge support apparatus of claim 1 further includes a clip for holding and retaining business cards or other printed materials so that they can be displayed to others while the hand-held device attached to the invention is in a stationary, standing position, comprising:
- said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
 - said attachment means for connecting one of the said leaf surfaces to a hand-held device,
 - whereby a user could axially rotate one of the said leaves to an angle whereby said hinged leaf can incorporate a "U" shaped channel to act as a clip that can retain a small document, like a business card, that can be viewed by the persons opposite the user when the axially rotated leaf is placed in a position at an angle perpendicular to the hinge leaf attached to the handheld device thus forming a support stand with the "U" channel at its base visible on the opposite side of the invention from the screen area of the handheld device.
- 8.** The jointed hinge support apparatus of claim 1 further includes a clip for holding and retaining business cards or other printed materials so that they can be displayed to others while the handheld device attached to the invention resides in a shirt or coat pocket, comprising:
- said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
 - said attachment means for connecting one of the said leaf surfaces to a hand-held device,
 - whereby a user could axially rotate one of the said leaves to an angle whereby said hinged leaf can incorporate a "U" shaped channel to act as a clip that can retain a small document, like a business card, that can be viewed by the persons opposite the user when the axially rotated leaf is placed in a position at an angle parallel to the hinge leaf attached to the handheld device thus forming a channel between the leaves that can be placed over pocket edge material so that the "U" channel at the base of the leaf on the exterior of the material is visible on the opposite side of the invention from the screen area of the handheld device.
 - Said handheld device with the invention is placed in a shirt or coat breast pocket with said leaf on the exterior of the pocket and the attached leaf with the handheld device is inside the pocket, whereby the retaining clip with the business cards or other printed materials is displayed outside the pocket of the user.
- 9.** The jointed hinge support apparatus of claim 1 further includes an attachment system capable of holding, displaying and axially rotating the handheld device on a vehicle dashboard or other area within a vehicle, comprising:
- said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
 - said attachment means for connecting one of the said leaf surfaces to a hand-held device,
 - A complementary attachment means that can be adhered, either temporarily or permanently to a vehicle dashboard or other vehicle interior area.
 - A secondary complementary attachment means that can be adhered to a leaf of the invention that can be axially

rotated to form an “L” configuration with said secondary attachment means adhered on the base of the “L” leaf that is positioned parallel to the attachment means on the dashboard and;

- e. the handheld device is axially rotated to a position on the vertical portion of the “L” and held perpendicular to the dashboard and;
- f. the rotation means can be re-set to allow the vertical perpendicular leaf with the handheld device to be rotated axially into a position where it is parallel to the leaf attached to the dashboard.

10. The jointed hinge support apparatus of claim 1 further includes a methodology so that the screen of a handheld device can be displayed to others while the hand-held device is attached to the invention and the invention resides in a shirt or coat pocket, comprising::

- a. said hinge leaves being disposed in non-interfering axial alignment with any other knuckle portion of a hinge leaf;
- b. said attachment means for connecting one of the said leaf surfaces to a hand-held device,

c. whereby a user could axially rotate one of the said leaves to an angle whereby said hinged leaf can form “U” shaped channel to act as a clip that the invention on a coat or jacket pocket so that the screen of the handheld device can be viewed by the persons opposite the user;

d. a leaf of the invention is axially rotated and is placed in a position at an angle parallel to the hinge leaf attached to the handheld device thus forming a channel between the leaves that can be placed over pocket edge material so that the screen area of the handheld device is visible on the exterior of the garment;.

11. The jointed hinge support apparatus of claim 1 further includes a methodology so that utilizes one or more leaves to support and display accessory items that interact with the handheld device attached to the invention

12. The jointed hinge support apparatus of claim 1 further includes a variety of overlapping configuration methodologies that utilize one or more leaves to support, display and carry handheld device attached to the invention.

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