



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.05.2007 Bulletin 2007/21

(51) Int Cl.:
B25H 1/04 (2006.01)

(21) Application number: **06023683.3**

(22) Date of filing: **14.11.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK YU

(71) Applicant: **Rexon Industrial Corp., Ltd.**
Tali, Taichung Hsien (TW)

(72) Inventor: **Chiu, Cheng-Hung**
Taichung Hsien (TW)

(74) Representative: **Becker Kurig Straus**
Patentanwälte
Bavariastrasse 7
80336 München (DE)

(30) Priority: **22.11.2005 CN 200510124839**

(54) **Collapsible stand for machine**

(57) A collapsible stand (10, 70) includes a platform (20, 73) for supporting a machine, two first legs (30, 71) each having a top end pivotally connected to the platform (20, 73), two second legs (40, 72a) each of which is pivotally connected to each first leg (30, 71) and has a top part slidably inserted through a sleeve (28) of the platform

(20, 73), at least one springy member (42) and a locking device (50, 74). The springy member (42) is sleeved onto one of the second legs (40, 72a). The locking device (50, 74) is connected to the platform (20, 73) for fixing the second legs (40, 72a) after spreading the stand (10, 70) such that the first legs (30, 71) and second legs (40, 72a) support the platform (20, 73) at a predetermined height.

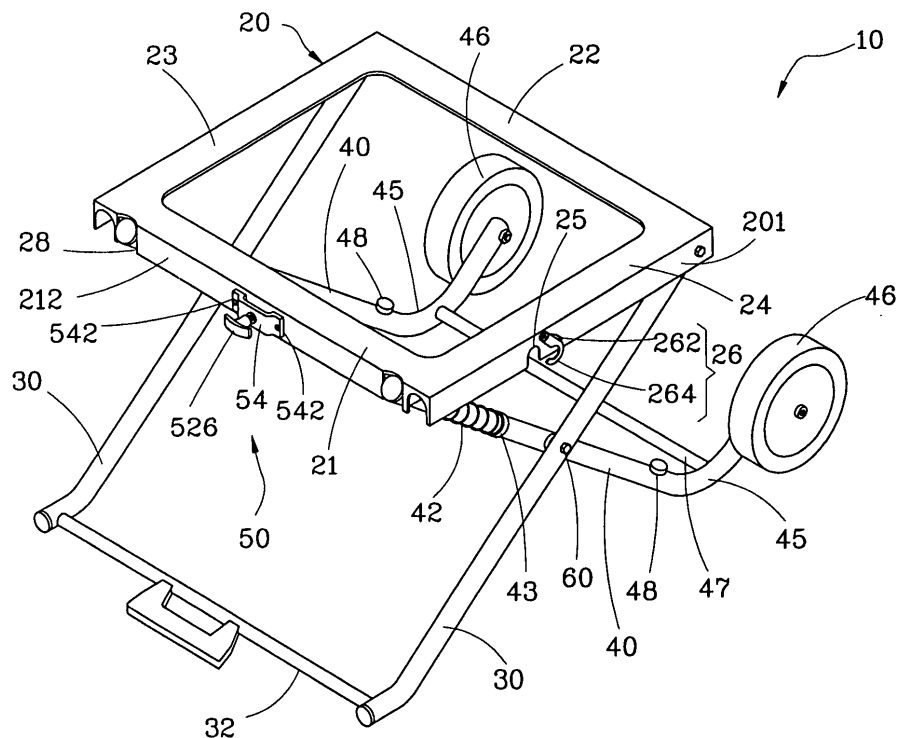


FIG. 1

Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a collapsible stand for supporting a machine, and more particularly the collapsible stand can easily and conveniently be spread for use and folded for carry and/or storage.

2. Description of the Related Art

[0002] An US patent, No. 6,942,229B2, discloses a collapsible stand for a bench-top power tool. In the patent, as shown in FIGS. 10 and 11, the stand **80** includes a platform **81** on which a table saw **82** is mounted, two first legs **83** pivotally connected to the bottom side of the platform **81**, two second legs **84** respectively connected to the two first legs **83** with a crossed manner, and two wheels **85** bilaterally connected to the front part of the platform **81**. When wanting to move the table saw **82**, the user must turn the table saw **82** and the platform **81** from horizontal to vertical to have the front side of the table saw touch the floor, and then fold the first legs **83** and the second legs **84**. After finishing the operation procedure, the user can pull or push the stand **80** to move. This way, turning and then folding stand **80**, is complicated and inconvenient. Moreover, the user is not easy and further in danger to turn the table saw **82** and the platform **81** from horizontal to vertical by himself because of the heavy weight of table saw **82** and the stand **80**.

[0003] FIG 12 shows a foldable stand for a threading machine according to a US patent, No. 5,560,582. In the patent, the foldable stand **90** has a gas spring **91** and a piston rod **92** installed in the gas spring **91**. By means of the relative action between the gas spring **91** and the piston rod **92**, a damping resistance is provided to buffer the weight of the threading machine for preventing an accident when folding up the foldable stand **90**. However, it is expensive to use the gas spring **91** and the piston rod **92** to produce a damping resistance.

[0004] Further, the stand **90** has two wheels **94** respectively pivotally provided at the bottom ends of two legs **93** to make the stand **90** easy to move when collapsed. When the stand **90** is spread, the two wheels **94** form bearing points to support the stand **90** on the floor. However, this pivotal connection with the wheels **94** and the bottom ends of two legs **93** is not stable. The stand **90** may be vibrated easily upon an external force.

SUMMARY OF THE INVENTION

[0005] The present invention has been accomplished under the circumstances in view. It is therefore one objective of the present invention to provide a collapsible stand that can be conveniently and easily spread for use and folded for carry and/or storage.

[0006] To achieve this objective of the present invention, the collapsible stand provided by the present invention comprises a platform for supporting thereon a machine, two first legs, two second legs, at least one first springy member and a locking means. The platform has two sleeves pivotally connected thereon. The two first legs each have a top end pivotally connected to the platform. Each second leg is pivotally connected to each first leg at a pivotal point and has a top part inserted through the sleeve and slidable along the sleeve resulting in relative movement to the platform. The first springy member is sleeved onto one of the second leg, located between the sleeve and the pivotal point, and stopped against the sleeve. The locking means is connected to the platform for fixing the second legs after spreading the stand such that the first legs and second legs support the platform at a predetermined height. The top parts of the second legs are protruded out of the platform and the first springy member is compressed after the locking means releases the second legs and then the stand is folded.

[0007] By means of the locking means, the two second legs can be conveniently locked relative to the platform after the stand is spread and released from the lock when the user wants to fold the stand. By means of the assembly of the locking means, the two sleeves and the two pairs of the first leg and the interconnected second leg, the user can easily spread or fold the collapsible stand without turning over it. Further, when the user folds the stand, the springy member provides a damping resistance to the platform to help the user smoothly and stably lower the platform and the machine supported on the platform. Furthermore, when the stand is spread, the springy member provides a rebound force to the platform, thereby enabling the user to lift the platform and the machine with less effort. In a preferred embodiment of the present invention, the springy member is a spring so as to save the manufacturing cost of the stand. In addition, after the stand is spread, the stand is steady supported on the floor by the stable structure thereof. Thereby, the present invention improves the disadvantages of the prior arts.

BRIEF DESCRIPTION OF THE DRAWING

[0008]

FIG 1 is a perspective view showing a collapsible stand in spreading in accordance with a first preferred embodiment of the present invention.

FIG 2 is a side view of the collapsible stand in spreading according to the first preferred embodiment of the present invention.

FIG 3 is a bottom view showing the structure of a locking device of the collapsible stand in the first preferred embodiment of the present invention.

FIG 4 is a top view showing the collapsible stand in folding in the first preferred embodiment of the present invention.

FIG 5 is a side view showing the collapsible stand in folding in the first preferred embodiment of the present invention.

FIG 6 is a bottom view showing the collapsible stand in folding in the first preferred embodiment of the present invention.

FIG 7 is a perspective view showing a collapsible stand in spreading in accordance with a second preferred embodiment of the present invention.

FIG 8 is an enlarged view of part A of FIG 7.

FIG 9 is a top view showing the collapsible stand in folding in the second preferred embodiment of the present invention.

FIG 10 is a perspective view showing a collapsible stand according to the prior art.

FIG 11 is a schematic drawing showing a used status of the collapsible stand of FIG 10.

FIG 12 is a side view of a collapsible stand according to another prior art.

DETAILED DESCRIPTION OF THE INVENTION

[0009] As shown in FIGS. 1 and 2, a collapsible stand **10** in accordance with a first preferred embodiment of the present invention has a platform **20**, two first legs **30**, two second legs **40**, two first springy members **42**, and a locking device **50**.

[0010] The platform **20** is adapted to carry a machine (not shown), such as a wood working machine (e.g., table saw, miter saw, scroll saw, band saw, drill press, sander, etc.). The platform **20** can be a plate or frame. According to this embodiment, the platform **20** is a rectangular frame, having a front frame part **21**, a rear frame part **22**, a left frame part **23**, and a right frame part **24**. An outside wall **201** of each of the left frame part **23** and the right frame part **24** has an arched notch **25**. Two swivel hooks **26** are respectively pivotally mounted to the outside walls **201** of the left frame part **23** and the right frame part **24** adjacent to the arched notches **25**. Each of the swivel hooks **26** has a hooked portion **264** pivotally connected to the outside wall **201** over and near the arched notch **25**, and a handle **262** extending outward from the hooked portion **264**. Two sleeves **28** are respectively pivotally connected to a portion of the platform **20** that is adjacent to the junction of the front frame part **21** and the left frame part **23** and another portion of the platform **20** that is adjacent to the junction of the front frame part **21** and the right frame part **24**.

[0011] The top ends of the first legs **30** respectively pivotally connected to the junction of the rear frame part **22** and the left frame part **23** and the junction of the rear frame part **22** and the right frame part **24**, and their bottom ends are bent forward for contacting the floor. Further, a transverse handlebar **32** is connected between the bottom ends of the first legs **30**.

[0012] Each of the second legs **40** is pivotally connected to each of the first legs **30** by a pin **60** as the pivot at a pivotal point in a crossed manner. The pin **60** is inserted

through the first leg **30** and the interconnected second leg **40** at the pivotal point, and has a part protruding from the first leg **30** that is located at an outside relative to the interconnected second leg **40**. The second legs **40** each have a top part slidable through the sleeve **28** relative to the platform **20**, and a bottom part with a bent portion **45** curved upwards and pivotally connected to a wheel **46** near its terminal. When the stand **10** is spread and positioned on the floor, the bottom ends of the first legs **30** and the bent portions **45** of the second legs **40** are respectively served as bearing portions of the stand **10** on the floor, and the wheels **46** are spaced above the floor. Each second leg **40** has a locating hole **44** near its top part through its inner side (see FIG 3), a flange **43** extending around its periphery between the locating hole **44** and the pin **60**, and a buffer **48** disposed above the bent portion **45**. Further, a transverse connecting bar **47** is connected between the bent portions **45** of the second legs **40** for stabilizing the second legs **40** when they stand on the floor.

[0013] In this preferred embodiment, the first springy member **42** is a spring sleeved onto the top part of the second leg **40**, located between the sleeve **28** and the pivotal point, and stopped against the sleeve **28** and the flange **43** of the second leg **40**.

[0014] The locking device **50** is adapted to fix the second legs **40** after the stand **10** is spread as shown in FIG 1. In this preferred embodiment, as shown in FIG 3, the locking device **50** comprises an operating handle **52**, a locating frame **54**, two first links **58**, and two second links **56**. The operating handle **52** has an elongated handle body **524**, and a head **526**. The locating frame **54** is inserted through the front wall **212** of the front frame part **21** of the platform **20**, having two mounting lugs **542** disposed at its two sides and affixed to the front wall **212** of the front frame part **21** of the platform **20**. The elongated handle body **524** is inserted through the front and rear sides of the locating frame **54** and the front wall **212**. A second springy member **528**, for example, a spring is put around the elongated handle body **524**, having one end stopped at the rear side of the locating frame **54** and the other end stopped at the rear end of the elongated handle body **524**. The head **526** is fixedly connected to the front end of the elongated handle body **524** and disposed outside the locating frame **54** and the platform **20** for operation by the user.

[0015] The two second links **56** are respectively made of a metal strip and arranged at two opposite sides of the elongated handle body **524** of the operating handle **52**. Each second link **56** has a front end pivotally connected to the elongated handle body **524** and a rear end pivotally connected to the first links **58**. The first links **58** are respectively made of a round metal rod, and the axial direction of the first link **58** is substantially perpendicular to the axial direction of the handle body **524**. Each first link **58** has a front end inserted through the locating frame **54** and pivotally connected to the rear end of the corresponding second link **56**, and a rear end inserted into the

locating hole **44** of the corresponding second leg **40** to fix the second legs **40** relative to the platform **20**, such that the first legs **30** and the second legs **40** support the platform **20** at a predetermined height above the floor. In other words, the operating handle **52** is movable between a first position, as shown in FIG 3, for moving the first links **58** to a locking position to lock the second legs **40** and a second position, as shown in FIG 6, for moving the first links **58** to an unlocking position to release the second legs **40**. In addition, two third springy members **582**, which are springs in this preferred embodiment, are respectively sleeved onto a front end of the first links **58** and stopped against the locating frame **54** and a protrusion **584** of the first links **58**.

[0016] Referring to FIGS. 4-6, when wanting to fold the stand **10**, pull the head **526** of the operating handle **52** outward with one single hand and make the spring **528** compressed. At this time, the two second links **56** are carried by the elongated handle body **524** toward the front wall **212** of the front frame part **21** of the platform **20** (see FIG 6), and the two first links **58** are pulled by the second links **56** out of the locating holes **44** of the second legs **40**, and the third springy members **582** are compressed. Therefore, the stand **10** is gradually lowered. At this time, the top parts of the second legs **40** are guided by the corresponding sleeves **28** and project outward from the outside of the front wall **212** of the front frame part **21** of the platform **20**, and the first legs **30** are rotated relative to the platform **20** till that the two pairs of the first leg **30** and the interconnected second leg **40** are respectively received in two receiving spaces **29** defined by the inner side of the left frame part **23** and right frame part **24**. After the first legs **30** and the second legs **40** are received in the receiving spaces **29**, the top parts of the second legs **40**, the two wheels **46** at the bottom ends of the second legs **40**, and the bottom ends of the first legs **30** are disposed outside the platform **20**. As a result, the handlebar **32** is disposed outside the platform **20** and spaced away from the front wall **212** of the front frame part **21** of the platform **20** at a predetermined distance.

[0017] When the stand **10** is folded, the two pins **60** that extend through the first legs **30** are respectively received in the arched notches **25** and protrude from the platform **20**. At this time, the user can turn the handles **262** of the swivel hooks **26** to make the corresponding hooked portions **264** hook the protruding parts of the pins **60** respectively to fix two pairs of the first leg **30** and the interconnected second leg **40** relative to the platform **20**. Therefore, the platform **20**, the first legs **30** and the second legs **40** are locked together, not separated from each other due to the first springy members **42**, as shown in FIGS 4-6.

[0018] Further, when folding the stand **10**, the two first springy members **42** that are respectively sleeved onto the top parts of the second legs **40** and stopped between the sleeves **28** and the flanges **43** of the second legs **40** are compressed to provide a damping resistance to the platform **10**, and therefore the platform **10** can be lowered

gradually and smoothly. After the stand **10** has been collapsed, the buffers **48** of the two second legs **40** are disposed between the second legs **40** and the platform **20**, absorbing impact of the platform **20** against the second legs **40**. After the stand **10** has been collapsed and locked, the user can lift the handlebar **32** and move the stand **10** on the floor by means of the wheels **46**.

[0019] When wanting to use the stand **10**, the user can turn the handles **262** of the swivel hooks **26** to make the hooked portions **264** of the swivel hooks **26** release the corresponding pins **60**, step the handlebar **32** to hold down the handlebar **32** on the floor, and then lift the platform **20** with the hands. At this time, the compressed first springy members **42** provide a rebound force to the platform **20**, and therefore the user can lift the platform **20** with less effort. After lifting the platform **20** from the folded status toward the spread status, the top parts of the second legs **40** move backward into the sleeves **28** inside the front frame part **21** of the platform **20**, and the third springs **582** in compressed around the first links **58** and the second springs **582** in compressed around elongated handle body **524** provide an outward force to force the first links **58** to move into the locating holes **44** of the second legs **40**. Thereby, the locking device **50** fixes the second legs **40** relative to the platform **20** so that the stand **10** is supported at a predetermined height.

[0020] According to the aforesaid embodiment, the springy members **582** and **528** are used to return the two first links **58** and the handle **52** so as to force the two first links **58** to lock the two second legs **40**. In another practice, simply using the third springy members **582** or the second spring member **528** can also achieve the same effect.

[0021] By means of the locking device **50**, the two second legs **40** can conveniently be locked relative to the platform **20** after the stand **10** is spread. When wanting to fold the stand **10**, the user can also operate the locking device **50** to release the lock to the second legs **40** from the platform **20**. By the assembly of the locking device **50**, the sleeves **28**, and the two pairs of the first leg **30** and the interconnected second legs **40**, the user can fold and spread the stand **10** conveniently without turning over the stand **10**. Further, when folding the stand **10**, the first springy members **42** provide the damping resistance to the platform **20**, thereby enabling the user to lower the platform **20** and the machine carried on the platform **20** smoothly. When spreading the stand **10**, the first springy members **42** provide the rebound force to the platform **20**, thereby enabling the user to lift the platform **20** and the machine carried on the platform **20** with less effort. Further, after the stand **10** is spread, it is more stable to bear the stand **10** on the floor by the bent portions **45** of the second legs **40** than the wheels **94** in the prior art, and the first springy members **42** of springs is inexpensive in the embodiment.

[0022] Furthermore, each the second leg **40** can be opened another locating hole at its inner side. When the stand **10** is folded in the collapsed status, the compressed

third springy members **582** force the first links **58** into the other locating holes at the second legs **40** to lock the second legs **40** at the collapsed status. This design can be used to substitute for the design of the swivel hooks **26** and the arched notches **25**.

[0023] FIGS. 7-9 show a collapsible stand **70** in accordance with a second preferred embodiment of the present invention. This second embodiment is substantially similar to the aforesaid first preferred embodiment with the exceptions outlined hereinafter.

[0024] According to this embodiment, the two first legs **71** are not arranged in parallel. One first leg **71** has a lower half part curved outward at an angle and obliquely extending forward relative to the platform **73**. The two second legs **72a** are not arranged in parallel too. One second leg **72a** has a lower half part curved outward at an angle and obliquely extending backwards relative to the platform **73**. The two outward curved legs **71** and **72a** are preferably set opposite and away from the side to which the user approaches when operating the machine. The arrangement enables the stand **70** to stably stand on the floor when the user pushes the stand **70**. Under the requirement of stability, it can eliminate the aforesaid bent portions **45** of the second legs **72a** and makes the wheels **46** directly contact the floor to support the stand **70** stably on the floor.

[0025] Further, there are some difference between the locking device **74** of this second embodiment and the locking device **50** of the aforesaid first embodiment. According to this second embodiment, the locking device **74** is installed on the front wall **734** of the front frame part **732** of the platform **73**, and the two first links **742** are disposed outside the front frame part **732** to make the rear ends of the two first links **742** visible from the outside of the stand **70**. After the stand **70** is folded, the rear ends of the first links **742** respectively press against the side surfaces of the top parts of the second legs **72a** to hold the stand **70** in the collapsed status. After the stand **70** is spread, the rear ends of the first links **742** respectively press against terminal surfaces of the top parts of the second legs **72a**. The terminal surface of the top part of each second leg **72a** is provided with a locating groove **722** for accommodating the rear end of the corresponding first link **742**. Thereby, the locking device **74** fixes the two second legs **72a** relative to the platform **73** at the spread status to make the first legs **71** and the second legs **72a** support the platform **73** above the floor at a predetermined height. The locking device **74** further comprises an auxiliary frame **76**. The auxiliary frame **76** has a U-shaped profile, which is fixedly connected to the platform **73** and surrounds the operating handle **77**. When wanting to pull the operating handle **77**, the user can stop the palm of the hand against the auxiliary frame **76** and then use the fingers to pull the operating handle **77**.

[0026] Although particular embodiments of the invention have been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the

invention. Accordingly, the invention is not to be limited except as by the appended claims.

5 Claims

1. A collapsible stand (10, 70) having a platform (20, 73) for supporting a machine thereon and two first legs (30, 71) and two second legs (40, 72a) for supporting the platform (20, 73), **characterized in that** the collapsible stand (10, 70) comprises:

the platform (20, 73) having two sleeves (28) pivotally connected thereon;
the two first legs (30, 71) each having a top end pivotally connected to the platform (20, 73);
the two second legs (40, 72a) each of which is pivotally connected to each of the first legs (30, 71) at a pivotal point, and has a top part inserted through the sleeve (28) and slidable along the sleeve (28) resulting in relative movement to the platform (20, 73);
at least one first springy member (42) sleeved onto the second leg (40, 72a), located between the sleeve (28) and the pivotal point, and stopped against the sleeve (28); and
locking means (50, 74) connected to the platform (20, 73) for fixing the second legs (40, 72a) after spreading the stand (10, 70) such that the first legs (30, 71) and second legs (40, 72a) support the platform (20, 73) at a predetermined height,

wherein the top parts of the second legs (40, 72a) are protruded out of the platform (20, 73) and the first springy member (42) is compressed after the locking means (50, 74) releases the second legs (40, 72a) and then the stand (10, 70) is folded.

2. The collapsible stand (10, 70) as claimed in claim 1, wherein each of the second legs (40, 72a) has a bottom part having a bent portion (45) which is served as a bearing point of the stand (10, 70) on a floor after the stand (10, 70) is spread.
3. The collapsible stand (10, 70) as claimed in claim 1, wherein the locking means (50, 74) comprises two first links (58, 742) and an operating handle (52, 77), wherein the axial directions of the first link (58, 742) and the operating handle (52, 77) are substantially perpendicular, the two first links (58, 742) respectively fix the two second legs (40, 72a) after the stand (10, 70) is spread, and the operating handle (52, 77) moves the two first links (58, 742) to release the two second legs (40, 72a) when pulling the operating handle (52, 77).
4. The collapsible stand (10, 70) as claimed in claim 3,

wherein the locking means (50, 74) further comprises two second links (56) each having an end pivotally coupled to the operating handle (52, 77) and the other end pivotally coupled to the first link (58, 742).

5. The collapsible stand (10) as claimed in claim 3, wherein each of the top parts of the second legs (40) has a locating hole (44) for receiving the first link (58) after the stand (10) is spread.

6. The collapsible stand (10, 70) as claimed in claim 3, wherein the locking means (50, 74) further comprises a second springy member (528) mounted on the operating handle (52, 77) and deformed when pulling the operating handle (52, 77).

7. The collapsible stand (10, 70) as claimed in claim 3, wherein the locking means (50, 74) further comprises two third springy members (582) respectively mounted on the first links (58, 742) and deformed when the operating handle (52, 77) moves the first links (58, 742).

8. The collapsible stand (70) as claimed in claim 3, wherein each of the two first links (742) is disposed outside the platform (73) and has one end contacting against a side surface of the top part of the second leg (72a) after the stand (70) is folded.

9. The collapsible stand (70) as claimed in claim 8, wherein the top part of each second leg (72a) has a terminal surface stopped against the end of the first link (742) after the stand (70) is spread.

10. The collapsible stand (70) as claimed in claim 3, wherein the locking means (74) further comprises an auxiliary frame (76) coupled to the platform (73) and surrounding the operating handle (77).

11. The collapsible stand (10, 70) as claimed in claim 1, wherein the platform (20, 73) has two receiving spaces (29), and each pair of the first leg (30, 71) and the interconnected second leg (40, 72a) is received in each of the receiving spaces (29) and protrudes the platform (20, 73) after the stand (10, 70) is folded.

12. The collapsible stand (10, 70) as claimed in claim 11, further comprising a handlebar (32) having two ends each of which is fixed to an end of each first leg (30, 71) protruding the platform (20, 73) after the stand (10, 70) is folded.

13. The collapsible stand (10, 70) as claimed in claim 11, further comprising two pins (60) each of which is connected to one of each pair of the first leg (30, 71) and the interconnected second leg (40, 72a) that is located at an outside relative to the other, and two swivel hooks (26), wherein a side wall of each space

(29) has a notch (25) inserted by the pin (60) after the stand (10, 70) is folded, and each swivel hook (26) is mounted to the side wall near the notch (25) for hooking the pin (60).

14. The collapsible stand (10, 70) as claimed in claim 13, wherein the pin (60) is disposed at the pivotal point to pivot the second leg (40, 72a) to the first leg (30, 71).

15. The collapsible stand (70) as claimed in claim 1, wherein the first legs (71) are not arranged in parallel, and the second legs (72a) are not arranged in parallel.

16. A collapsible stand (70) having a platform (73) for supporting a machine thereon and two first legs (71) and two second legs (72a) for supporting the platform (73), **characterized in that** the collapsible stand (70) comprises:

the platform (73) having two sleeves (28) pivotally connected thereon;

the two first legs (71) each having a top end pivotally connected to the platform (73);

the two second legs (72a) each of which is pivotally connected to each first leg (71), and has a top part inserted through the sleeve (28) and slidable along the sleeve (28) resulting in relative movement to the platform (73); and

a locking device (74) connected to the platform (73) and having an operating handle (77) and two first links (742), wherein the axial directions of the first link (742) and the operating handle (77) are substantially perpendicular, and the two first links (742) are disposed outside the platform (73);

wherein the top parts of the second legs (72a) are protruded out of the platform (73) and one end of each first link (742) contacts against a side surface of the top part of each second leg (72a) after the stand (70) is folded, and the operating handle (77) moves the two first links (742) to release the two second legs (72a) when pulling the operating handle (77).

17. The collapsible stand (70) as claimed in claim 16, wherein the end of each the first link (742) contacts against a terminal surface of the top part of each second leg (72a) after the stand (70) is spread such that the first legs (71) and second legs (72a) support the platform (73) at a predetermined height.

18. The collapsible stand (70) as claimed in claim 16, wherein the locking device (74) further comprises an auxiliary frame (76) coupled to the platform (73) and surrounding the operating handle (77).

19. The collapsible stand (70) as claimed in claim 16, wherein the locking device (74) further comprises two second links (56) each having an end pivotally coupled to the operating handle (77) and the other end pivotally coupled to the first link (742). 5
20. The collapsible stand (70) as claimed in claim 16, wherein the locking device (74) further comprises two third springy members (582) respectively mounted on the first links (742) and deformed when the operating handle (77) moves the first links (742). 10

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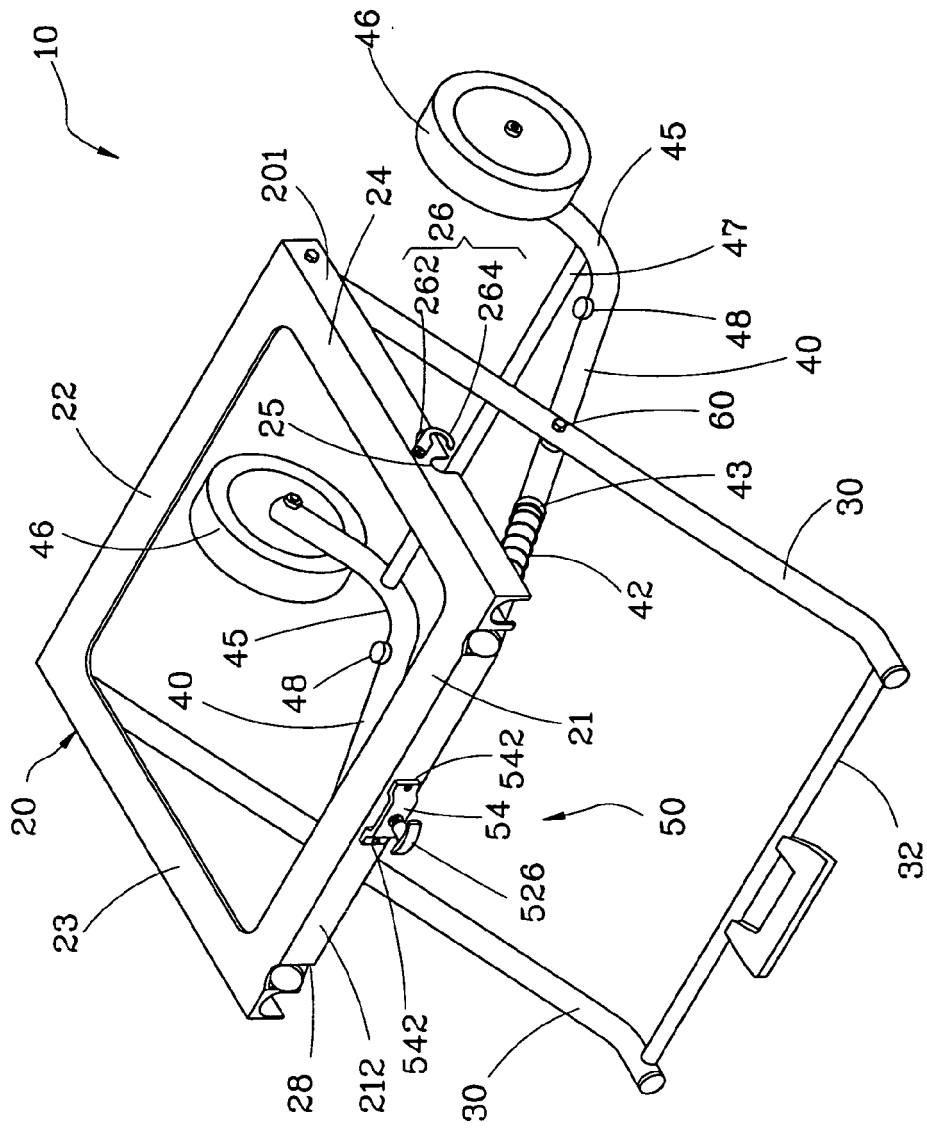


FIG. 1

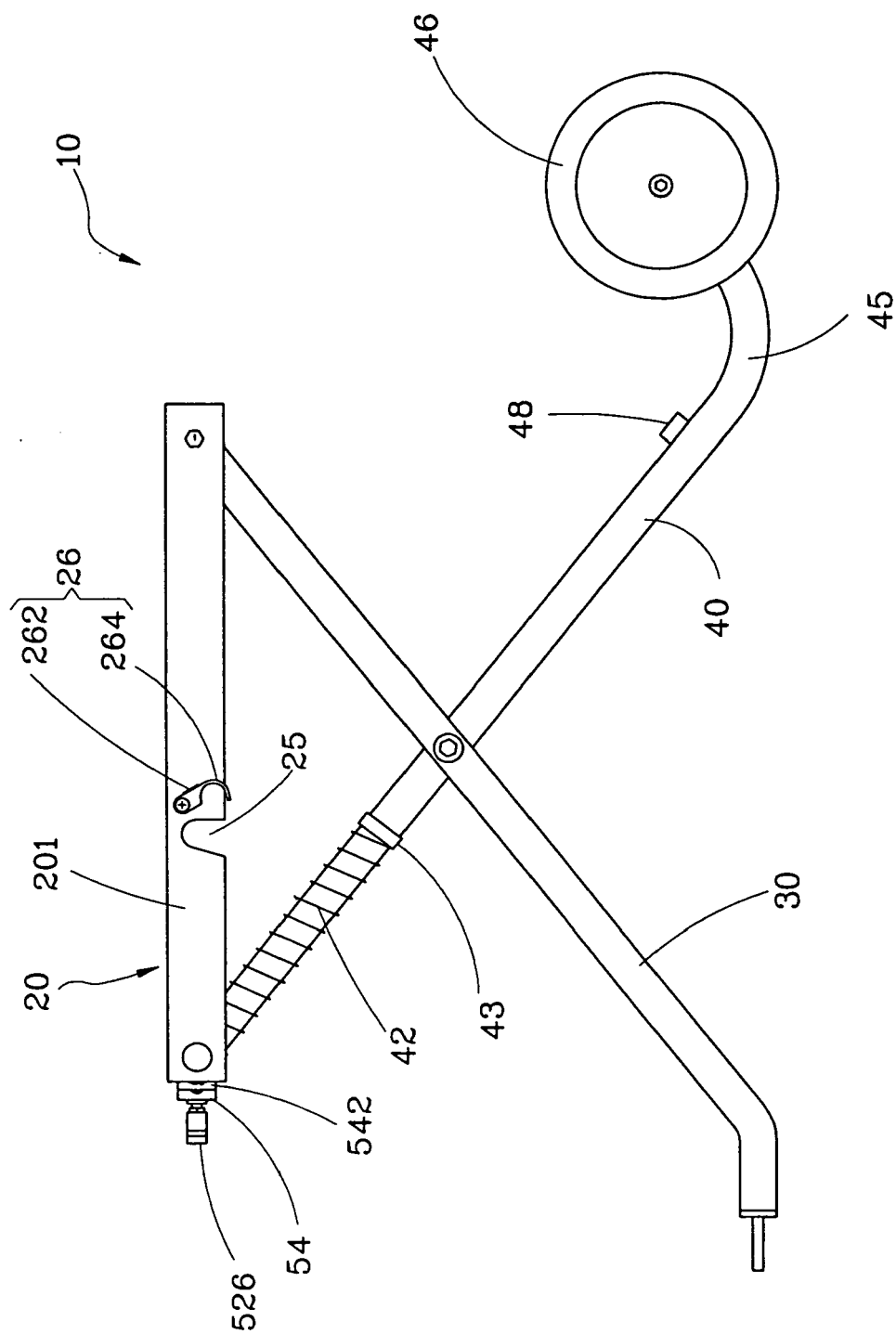
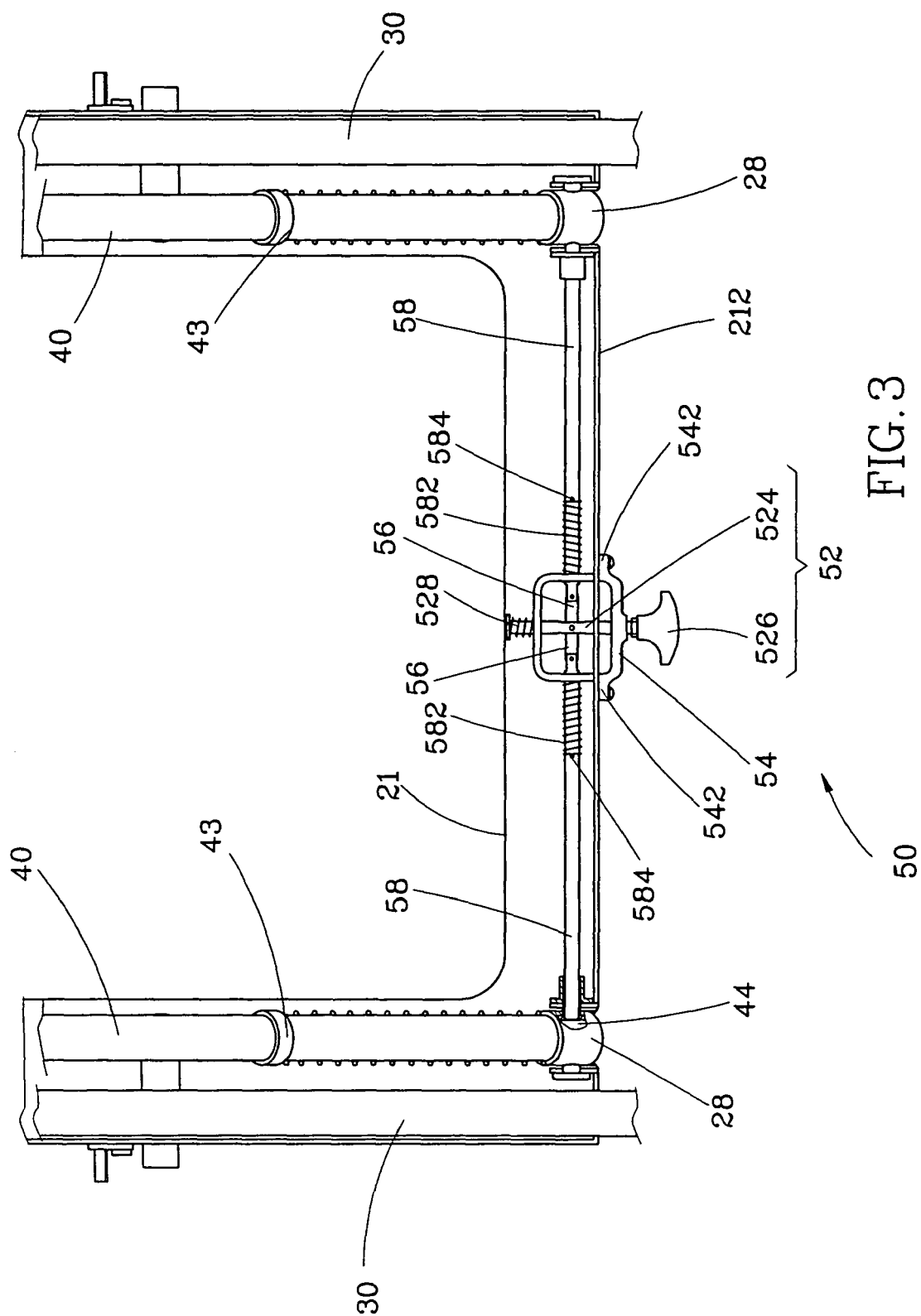


FIG. 2



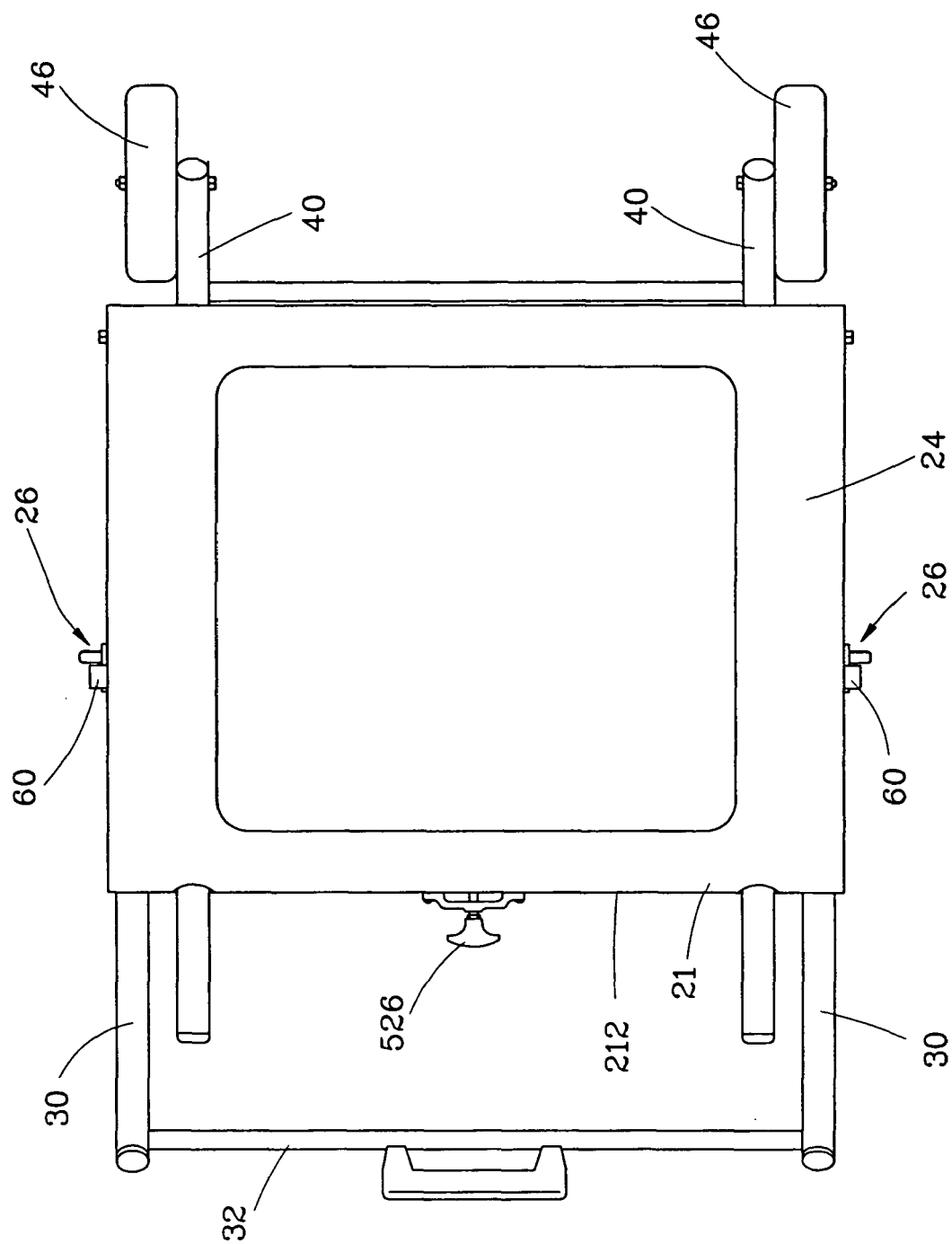


FIG. 4

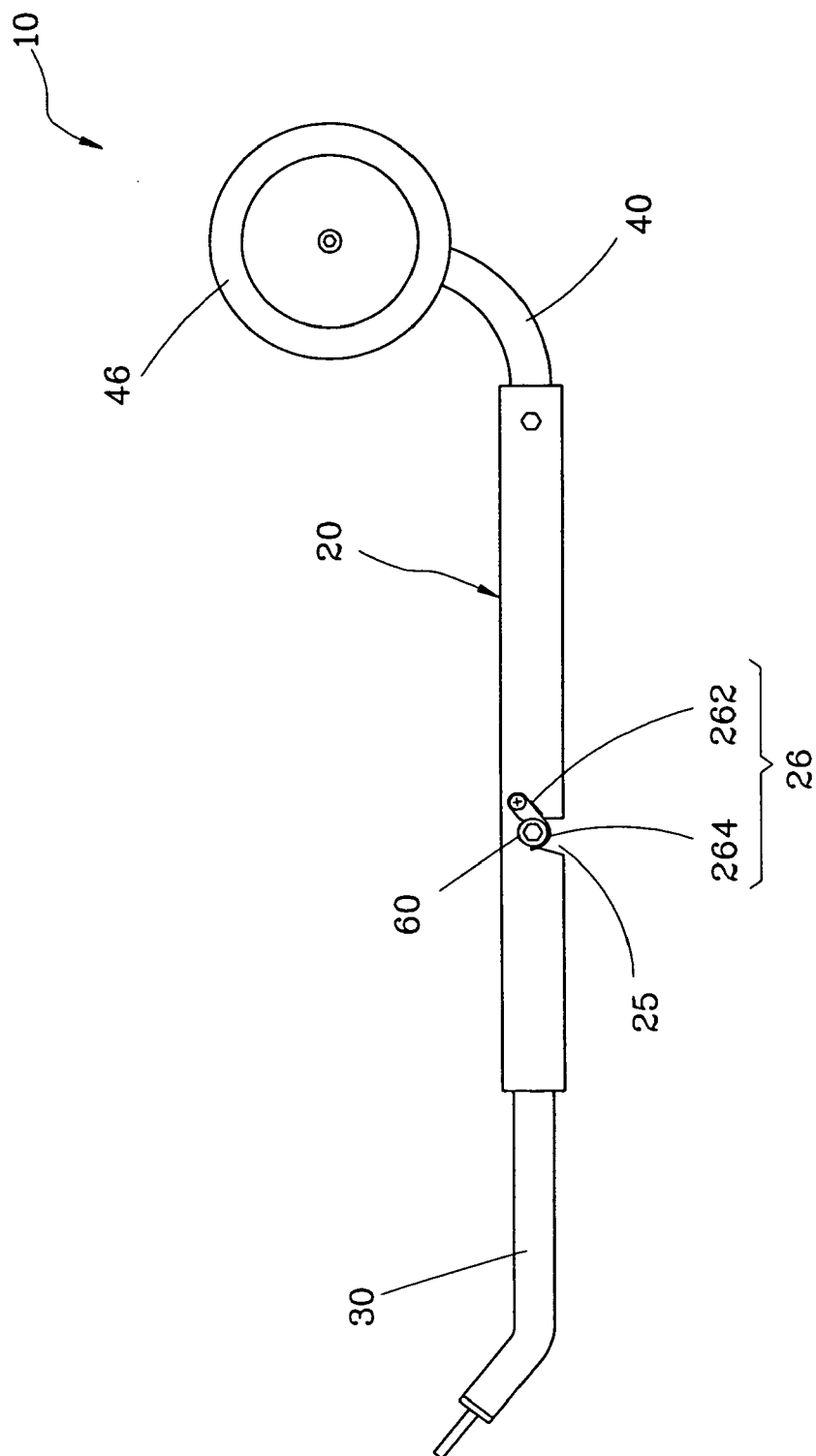


FIG. 5

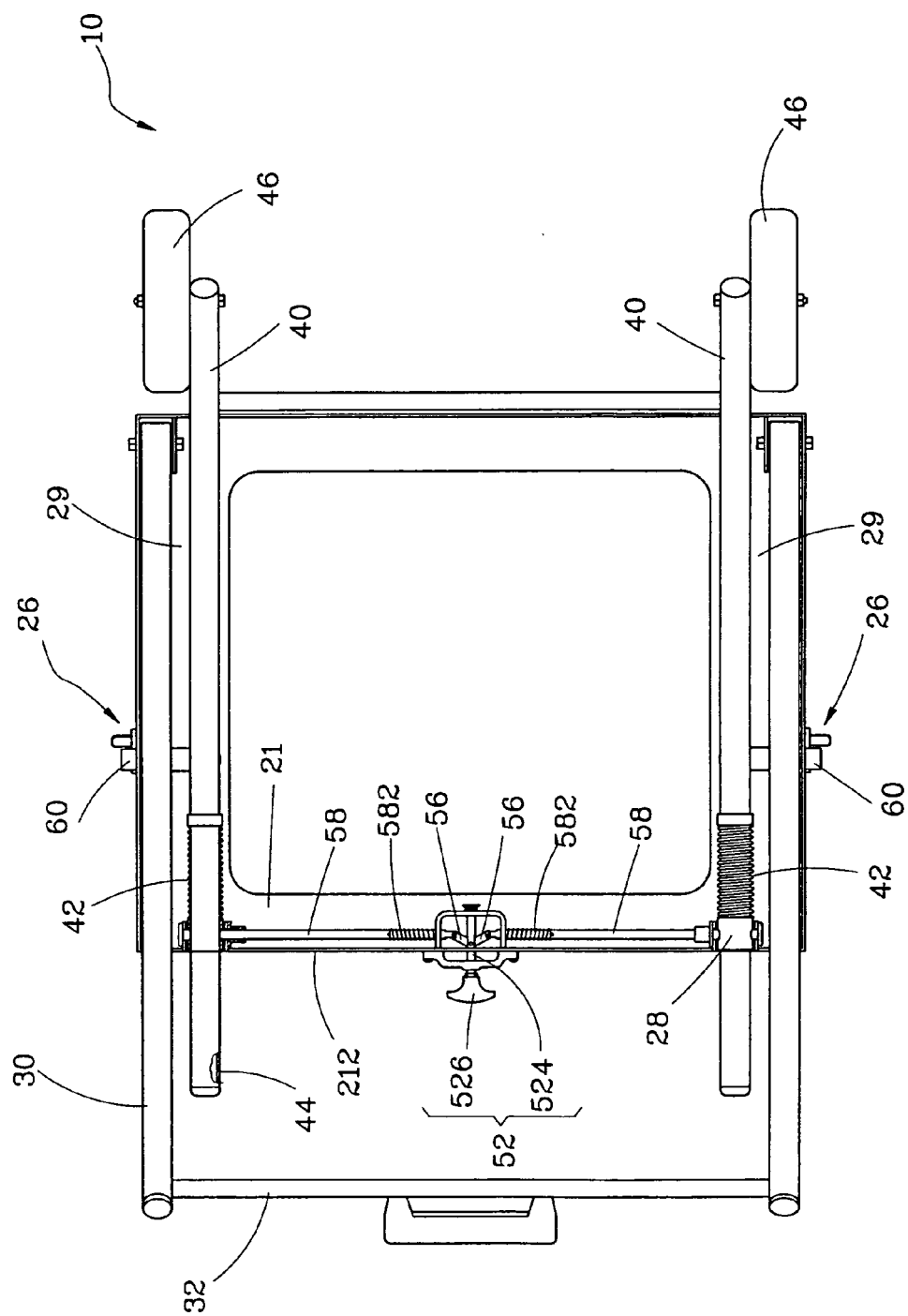


FIG. 6

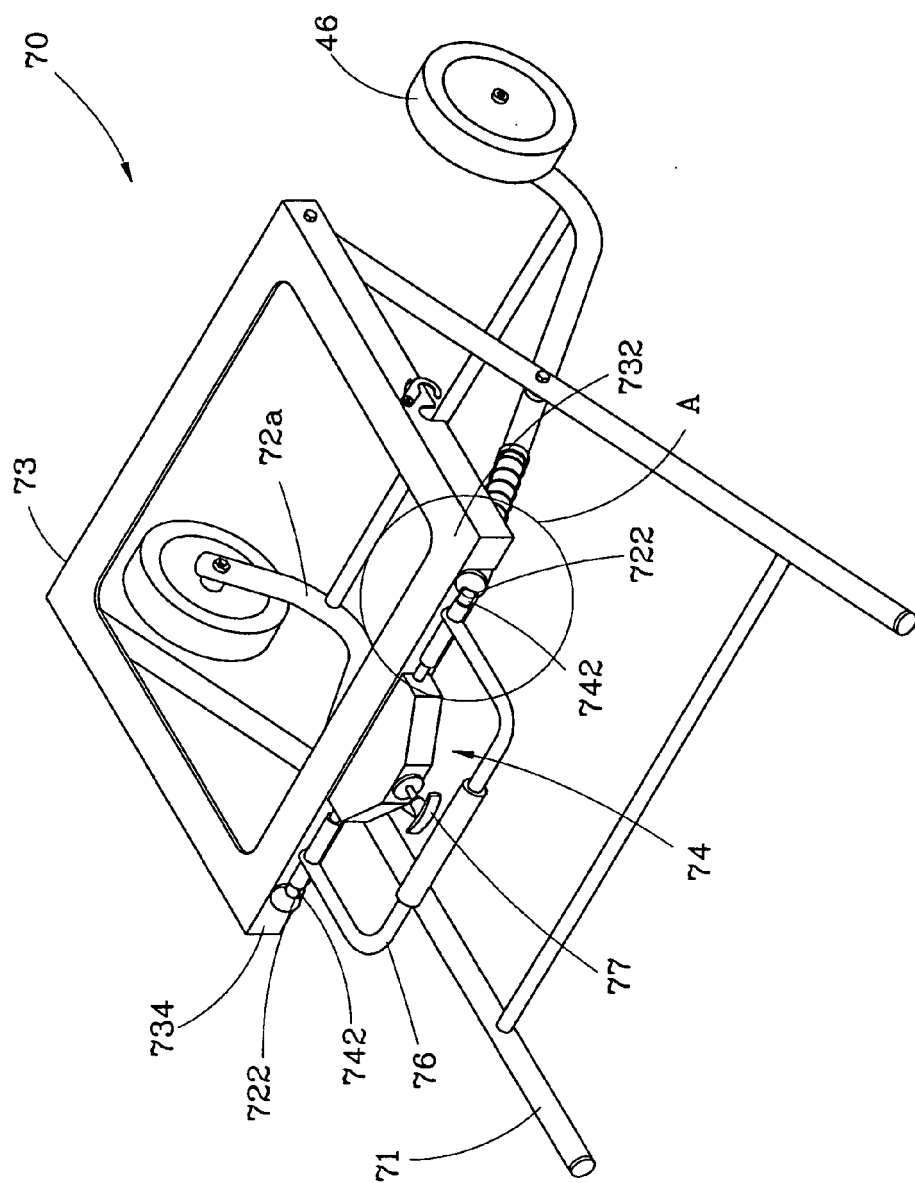


FIG. 7

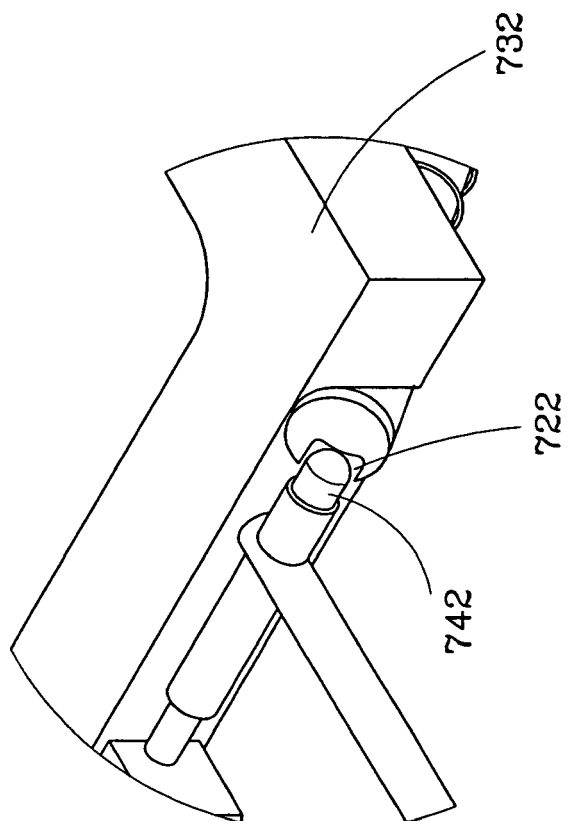


FIG. 8

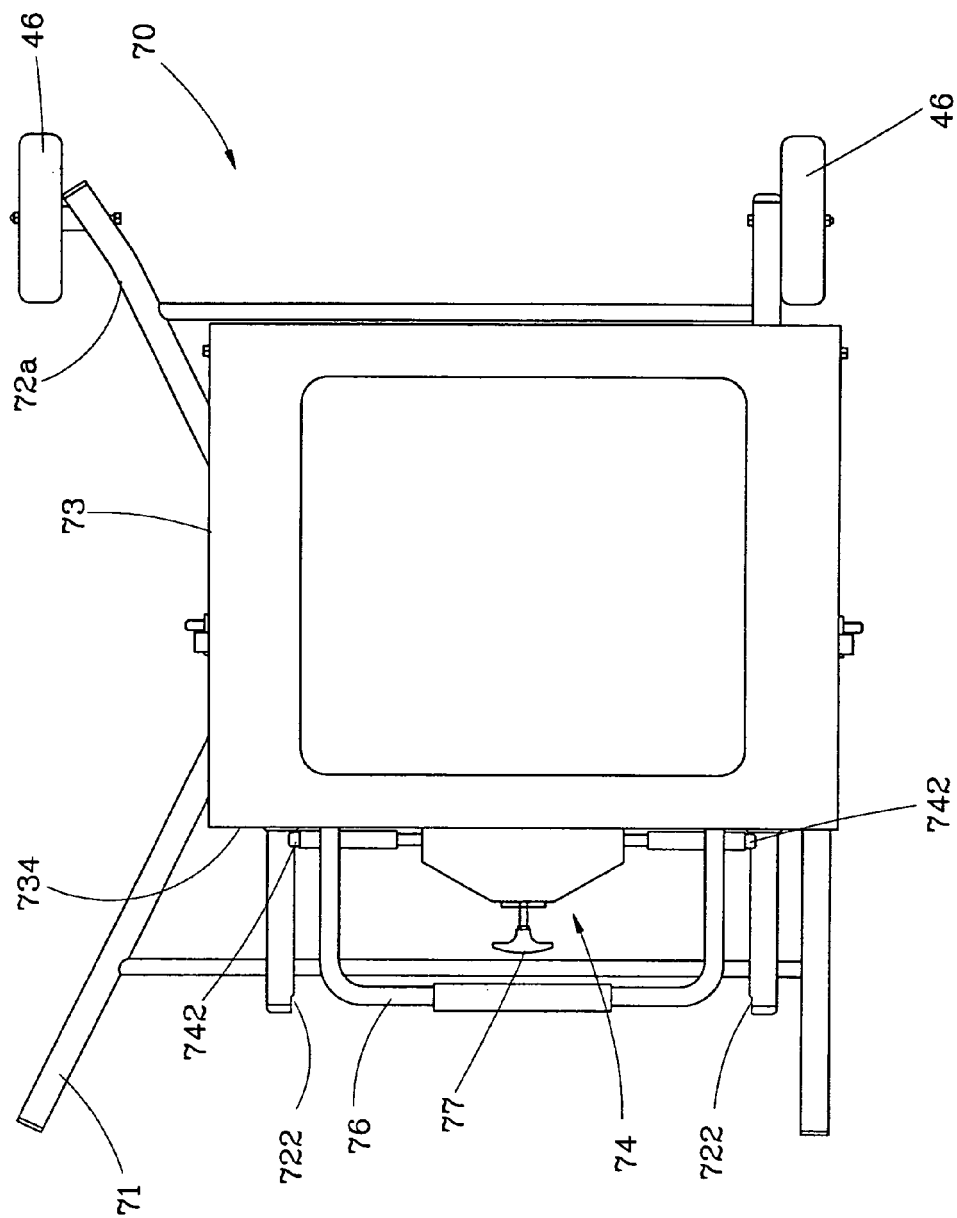
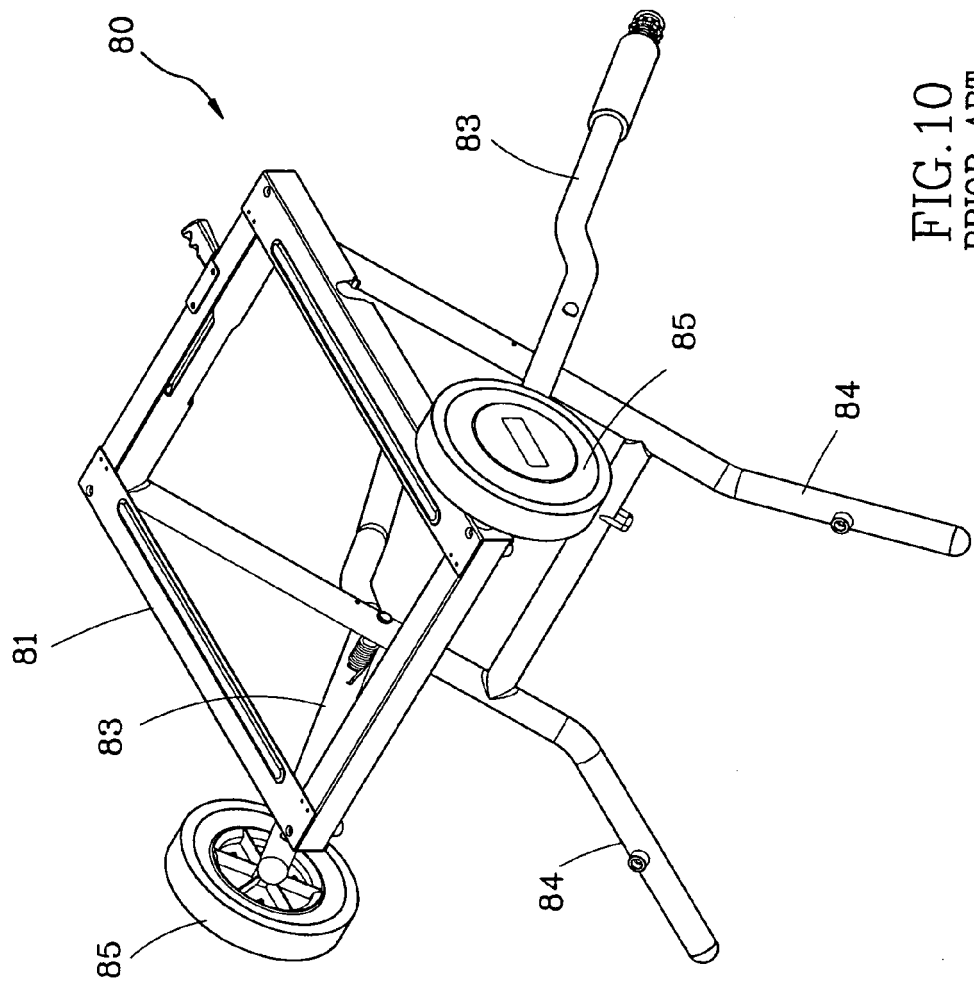


FIG. 9



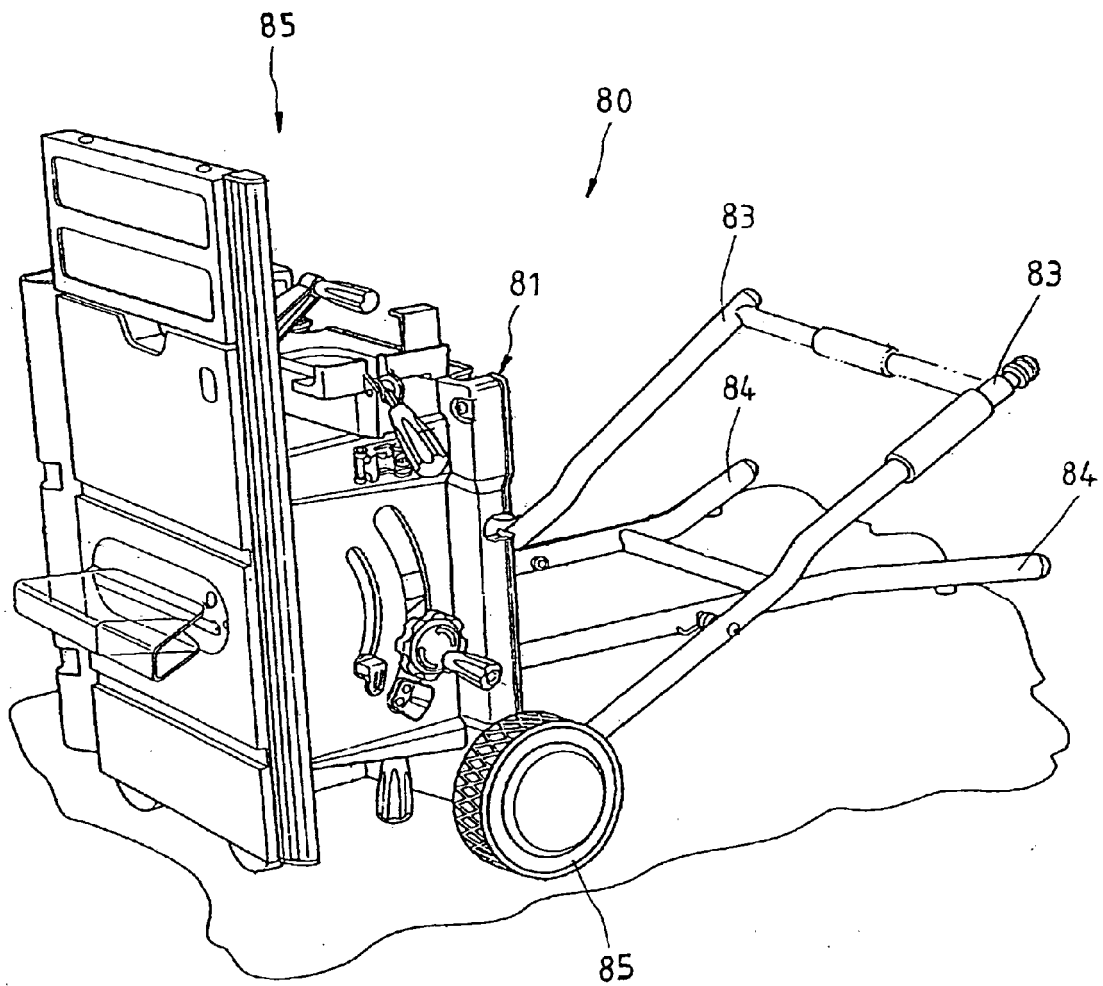
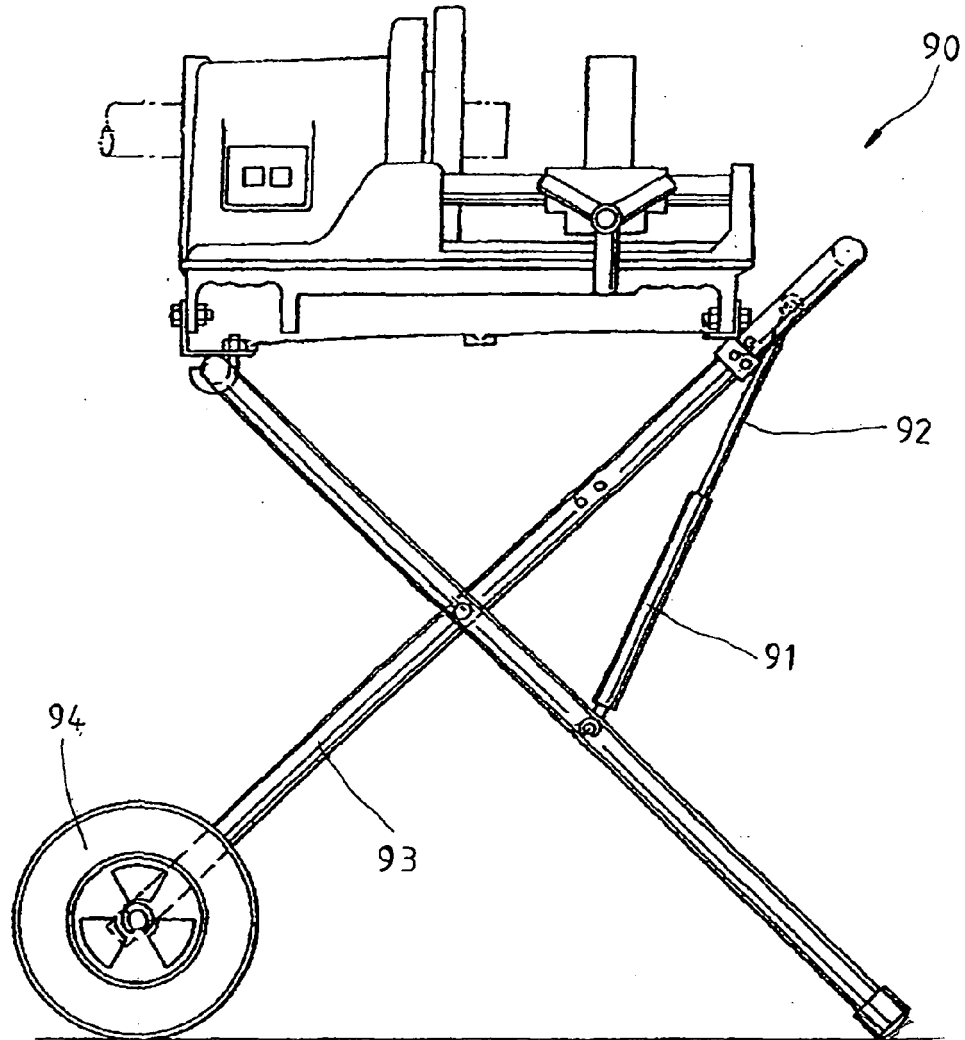


FIG. 11
PRIOR ART



F1 G.12
PRIOR ART



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EUROPEAN SEARCH REPORT

Application Number
EP 06 02 3683

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 4 967 672 A1 (LEATHER DOUGLAS E [US]) 6 November 1990 (1990-11-06) * column 1, lines 39-54 * * column 2, line 17 - column 3, line 12; figures *	1-20	INV. B25H1/04
Y	DE 26 45 773 A1 (PEDDINGHAUS CARL ULLRICH DR) 13 April 1978 (1978-04-13) * pages 4,7,8; figures *	1-20	
Y	US 4 728 118 A1 (HAAS JOHN L [US]) 1 March 1988 (1988-03-01) * column 3, line 5 - column 4, line 45; figures *	2,13,14	
Y	US 2005/133682 A1 (HUANG PETER [TW]) 23 June 2005 (2005-06-23) * paragraphs [0025], [0031]; figures 1,2 *	15	
A	GB 2 363 366 A (BLACKFORD JOHN LESLIE [GB]) 19 December 2001 (2001-12-19) * pages 1,3; figures *	1-20	TECHNICAL FIELDS SEARCHED (IPC)
A	EP 0 532 132 A2 (EMERSON ELECTRIC CO [US]) 17 March 1993 (1993-03-17) * figures *	1-20	B25H B23D B60G F16F
A	WO 03/064115 A (WOLFCRAFT GMBH [DE]; RADERMACHER UWE [DE]) 7 August 2003 (2003-08-07) * pages 7-10; figures *	1-20	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 15 March 2007	Examiner David, Radu
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15-03-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4967672	A1	NONE	
DE 2645773	A1	13-04-1978	NONE
US 4728118	A1	NONE	
US 2005133682	A1	23-06-2005	TW 248546 Y 01-11-2004
GB 2363366	A	19-12-2001	NONE
EP 0532132	A2	17-03-1993	NONE
WO 03064115	A	07-08-2003	CA 2474087 A1 07-08-2003 DE 10303115 A1 21-08-2003 US 2005194215 A1 08-09-2005

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 6942229 B2 [0002]
- US 5560582 A [0003]