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(54) **Parking barrier**

Absperrvorrichtung für Parkplätze

Barrière pour emplacement de stationnement

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EP-A- 0 571 305 **DE-A- 4 030 099**

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Description

[0001] This invention relates to a unit which serves as a barrier or obstruction for parking spaces.

[0002] Various arrangements have been proposed previously for providing a barrier or obstruction for car parking spaces, in order to reserve these spaces for intended users. These arrangements have however suffered from a number of disadvantages, mainly being either difficult to use or of complex construction and requiring electrical power.

[0003] EP-A-0 571 305 discloses an obstruction or barrier unit for protecting a parking space, in which the vehicle wheels come to rest on a depressible member for recharging a primary storage means with hydraulic fluid under pressure. When the driver inserts a magnetic card into the slot of a card-reader of the unit, a change-over valve is operated to allow fluid to flow from the primary storage means to a locking device for unlocking the obstruction member, and then to an actuator for raising the obstruction member to its non-obstructing position. whilst the vehicle remains parked, its weight acts to hold a switch closed and so hold the valve means open for maintaining pressure on the actuator to hold the obstruction member in its obstructing position. When the vehicle leaves the parking space, the valve means changes over so that the pressurised fluid in the primary storage means drives the actuator to lower the obstructing member to its obstructing position.

[0004] DE-A-40 30 099 discloses an obstruction or barrier unit having an air tube over which the vehicle passes, to cause an electric motor to unlock an obstruction member. The obstruction member falls to a non-obstructing position under the bias of a spring or the force of a hydraulic actuator or under gravity. The unit further comprises a ramp which is depressed by the vehicle wheels passing over it to tighten a spring or a hydraulic/pneumatic actuator. After the vehicle has passed the barrier unit, an electric motor unbolts the obstruction member to allow the latter spring or hydraulic/pneumatic actuator to raise the obstruction member.

[0005] I have now devised a barrier or obstruction unit which is straightforward to use and is of relatively simple construction and does not require connection to an external power source.

[0006] In accordance with this invention there is provided an obstruction or barrier unit for protecting a parking space, said unit comprising an obstruction member movable between an obstructing position and a non-obstructing position, an actuator arranged to receive fluid under pressure to move said obstruction member from its non-obstructing position to its obstructing position, primary storage means for storing said fluid under pressure, valve means arranged to be controlled to allow said fluid to flow from said primary storage means to said actuator to move said obstructing member from its non-obstructing position to its obstructing position, and recharging means responsive to depression by the wheels

of a vehicle to recharge said primary storage means with fluid under pressure, characterised in that a bias spring acts on said obstruction member to move said obstruction member from a raised, obstructing position to a lowered, non-obstructing position, said valve means are arranged to be remotely controlled to allow said fluid to flow from said primary storage means to said actuator to raise said obstruction member, said valve means are normally closed to hold said fluid within said actuator against escape and thereby lock said obstruction member in its raised position, and in that said recharging means are responsive to depression by the wheels of said vehicle passing over said recharging means to recharge said primary storage means for driving said actuator to raise said obstruction member.

[0007] Preferably a secondary storage means is provided for receiving fluid expelled from the actuator in response to remote-controlled opening of a valve of the valve means to allow the spring to lower the obstruction member.

[0008] It will be appreciated that the primary storage means operates at substantially higher pressures than the secondary storage means. Preferably each storage means comprises a cylinder having a spring-loaded plunger.

[0009] Preferably the recharging means comprises one or more compressible chambers disposed within the unit under a pad over which the vehicle wheels pass. Under compression of these chambers, the fluid within them is forced into the primary storage means. Once the vehicle has passed over the unit, the compressed chambers are restored by receiving fluid from the secondary storage means.

[0010] It will be appreciated that the barrier or obstruction unit of this invention is of relatively simple construction and is straightforward to operate. In particular it does not require connection to an external power source.

[0011] An embodiment of this invention will now be described by way of example only and with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a unit in accordance with this invention;

FIGURE 2 is a similar view of the unit with parts cut away to show internal components of the unit; and
FIGURE 3 is a section through the unit showing details of a pivoted obstruction member of the unit.

[0012] Referring to the drawings, there is shown a unit which serves as a barrier or obstruction to protect a reserved car parking space. The unit comprises a flat, generally rectangular body 10 for bolting in place on the ground, and a triangular obstruction member 12 which is hinged adjacent the front edge of the flat body 10: in use the member 12 pivots between a raised position (shown in Figure 1) and a lowered position, in which it lies flat on the top of the body 10. The top of the body

10 is formed with a rectangular aperture into which a flexible pad 14 is fitted, for a purpose which will be described below. The edges of the body 10 are chamfered as shown.

[0013] A strut 16 is hinged at one end to a mid-point of the obstruction member 12 and at its other end to the piston of an actuator cylinder 18 which is positioned within the body 10, extending from front-to-rear of the latter. A spring 20 acts on the lower end of the strut 16 and urges this end of the strut rearwardly of the unit, so as to bias the member 12 towards its lowered position, flush with the top of the body 10.

[0014] As shown in Figure 2, the interior of actuator cylinder 18 is connected via two solenoid-operated valves 21,22 and respective one-way valves 23,24 to respective storage cylinders 25,26: it will be noted that one-way valves 23,24 are directed oppositely to each other. Two compressible chambers 27 are positioned under the flexible pad 14 of the unit, and are connected together and via oppositely-directed one-way valves 28,29 to the storage cylinders 25 and 26 respectively. The unit further comprises a battery-powered electronic control system 30 for the solenoid valves 21,22: the car driver authorised to use the parking space has a controller for remotely operating the unit. Preferably the unit includes a solar panel arrangement for recharging the batteries of the electronic control system 30.

[0015] In use, suppose the obstruction member 12 is in its raised position: at this time, the actuator cylinder 18 is filled with fluid under pressure so as to hold its piston in its retracted position against the bias of the spring 20, and the solenoid valves 21 and 22 are closed to maintain the fluid pressure within the cylinder 18. When the authorised car wishes to park, the driver remotely operates the control system 30 to open the solenoid valve 21: fluid then flows from within the cylinder 18 via one-way valve 23 and into the storage cylinder 25, as the spring 20 acts to extend the piston of the actuator cylinder 18 and lower the obstruction member 12. The solenoid valve 21 then closes.

[0016] The driver is then able to drive over the unit: in so doing, the car wheels ride over the flexible pad 14 and compress the fluid chambers 27; this expels fluid from the compressed chambers 27, and this fluid passes via the one-way valve 29 into the storage cylinder 26. The latter cylinder comprises a spring-loaded plunger which is depressed as the fluid is forced into the cylinder.

[0017] Once the driver has parked his car, he is able to raise the obstruction member 12 by remote control: this opens solenoid valve 22 and the pressurised fluid within storage cylinder 26 then flows via one-way valve 24 and solenoid valve 22 into the actuator cylinder 18; the fluid from storage cylinder 26 is at such a high pressure that the bias of spring 20 is overcome and the member 12 is raised. The solenoid valve 22 then closes.

[0018] When the obstruction member 12 lowers, fluid from the actuator cylinder 18 flows to the storage cylinder 25 and stored in that cylinder at relatively low pres-

sure. After the chambers 27 have been compressed by the car wheels, the pressure within storage cylinder 25 is however sufficient to replenish the fluid within chambers 27 via the one-way valve 28.

Claims

1. An obstruction or barrier unit for protecting a parking space, said unit comprising an obstruction member (12) movable between an obstructing position and a non-obstructing position, an actuator (18) arranged to receive fluid under pressure to move said obstruction member (12) from its non-obstructing position to its obstructing position, primary storage means (26) for storing said fluid under pressure, valve means (21,22) arranged to be controlled to allow said fluid to flow from said primary storage means (26) to said actuator (18) to move said obstructing member (12) from its non-obstructing position to its obstructing position, and recharging means (27,29) responsive to depression by the wheels of a vehicle to recharge said primary storage means (26) with fluid under pressure, characterised in that a bias spring (20) acts on said obstruction member (12) to move said obstruction member (12) from a raised, obstructing position to a lowered, non-obstructing position, said valve means (21,22) are arranged to be remotely controlled to allow said fluid to flow from said primary storage means (26) to said actuator (18) to raise said obstruction member (12), said valve means (21,22) are normally closed to hold said fluid within said actuator (18) against escape and thereby lock said obstruction member (12) in its raised position, and in that said recharging means (27,29) are responsive to depression by the wheels of said vehicle passing over said recharging means to recharge said primary storage means (26) for driving said actuator (18) to raise said obstruction member (12).
2. An obstruction or barrier unit as claimed in claim 1, characterised in that a secondary storage means (25) is provided for receiving fluid expelled from said actuator (18) in response to remote-controlled opening of a valve (21) of said valve means (21,22) to allow said spring (20) to lower said obstruction member (12).
3. An obstruction or barrier unit as claimed in claim 1 or 2, characterised in that said recharging means (27,29) comprises one or more compressible chambers (27) disposed under a pad (14) and arranged so that a vehicle passing over said pad (14) causes fluid within said chambers (27) to be forced into said primary storage means (26).
4. An obstruction or barrier unit as claimed in claim 3

appended to claim 2, characterised in that said chambers (27) are re-charged with fluid from said secondary storage means (25).

5. An obstruction or barrier unit as claimed in any preceding claim, characterised in that the or each storage means (25, 26) comprises a cylinder having a spring-loaded plunger. 5
6. An obstruction or barrier unit as claimed in any preceding claim, characterised in that said valve means (21,22) comprises electrically powered valve means. 10
7. An obstruction or barrier unit as claimed in claim 6, characterised in that one or more batteries for powering said valve means (21,22) are provided. 15
8. An obstruction or barrier unit as claimed in claim 7, characterised in that a solar panel arrangement is provided for recharging said batteries. 20

Patentansprüche

1. Sperr- oder Barriereeinheit zum Schützen eines Parkplatzes, welche Einheit ein Sperrglied (12), das zwischen einer sperrenden Stellung und einer nicht sperrenden Stellung bewegbar ist, ein Betätigungselement (18), das zum Aufnehmen von Fluid unter Druck angeordnet ist, um das Sperrglied (12) von seiner nicht sperrenden Stellung in seine sperrende Stellung zu bewegen, Primärspeichermittel (26) zum Speichern des Fluids unter Druck, Ventilmittel (21, 22), die dazu angeordnet sind, gesteuert zu werden, um es dem Fluid zu ermöglichen, von den Primärspeichermitteln (26) zu dem Betätigungselement (18) zu strömen, um das Sperrglied (12) von seiner nicht sperrenden Stellung in seine sperrende Stellung zu bewegen, und Wiederauflademittel (27, 28) aufweist, die auf Niederdrücken durch die Räder eines Fahrzeugs reagieren, um die Primärspeichermittel (26) mit Fluid unter Druck wieder aufzuladen, dadurch gekennzeichnet, daß eine Vorspannungsfeder (20) auf das Sperrglied (12) wirkt, um das Sperrglied (12) von einer hochgestellten Sperrstellung in eine abgesenkte nichtsperrende Stellung zu bewegen, welche mit Ventilmittel (21, 22) angeordnet sind, ferngesteuert zu werden, um es dem Fluid zu ermöglichen, von den Primärspeichermitteln (26) zu dem Betätigungselement (18) zu strömen, um das Sperrglied (12) hochzustellen, welche Ventilmittel (21, 22) normalerweise geschlossen sind, um das Fluid innerhalb des Betätigungselements (18) am Entweichen zu hindern und dadurch das Sperrglied (12) in seiner hochgestellten Position zu verriegeln, und daß die Wiederauflademittel (27, 28) auf Niederdrücken durch die Räder 25

des Fahrzeugs reagieren, das sich über die Wiederauflademittel bewegt, um die Primärspeichermittel (26) wieder aufzuladen, um das Betätigungselement (18) anzutreiben, das Sperrglied (12) anzuheben.

2. Sperr- oder Barriereeinheit nach Anspruch 1, dadurch gekennzeichnet, daß Sekundärspeichermittel (25) zum Aufnehmen von Fluid vorgesehen sind, das aus dem Betätigungselement (18) als Reaktion auf das ferngesteuerte Öffnen eines Ventils (21) der Ventilmittel (21, 22) ausgestoßen ist, um es der Feder (20) zu ermöglichen, das Sperrglied (12) abzusinken.
3. Sperr- oder Barriereeinheit nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Wiederauflademittel (27, 29) eine oder mehrere zusammen-drückbare Kammern (27) aufweisen, die unter einem Kissen oder Wulst (14) angeordnet sind und so ausgebildet sind, daß ein über das Kissen oder den Wulst (14) hinüberfahrendes Fahrzeug bewirkt, daß Fluid innerhalb der Kammern (27) in die Primärspeichermittel (26) gedrückt wird.
4. Sperr- oder Barriereeinheit nach Anspruch 3 in Abhängigkeit von Anspruch 2, dadurch gekennzeichnet, daß die Kammern (27) mit Fluid von den Sekundärspeichermitteln (25) wieder aufgeladen werden.
5. Sperr- oder Barriereeinheit nach einem vorangehenden Anspruch, dadurch gekennzeichnet, daß das oder die Speichermittel (25, 26) einen Zylinder aufweisen, der einen federbelasteten Kolben hat.
6. Sperr- oder Barriereeinheit nach einem vorangehenden Anspruch, dadurch gekennzeichnet, daß die Ventilmittel (21, 22) elektrisch angetriebene Ventilmittel aufweisen.
7. Sperr- oder Barriereeinheit nach Anspruch 6, dadurch gekennzeichnet, daß eine oder mehrere Batterien für die Leistungsversorgung der Ventilmittel (21, 22) vorgesehen sind.
8. Sperr- oder Barriereeinheit nach Anspruch 7, dadurch gekennzeichnet, daß eine Solarplattenanordnung zum Wiederaufladen der Batterien vorgesehen ist.

Revendications

1. Une unité d'obstruction ou de barrière pour protéger un espace de stationnement, ladite unité comprenant un organe d'obstruction (12) mobile entre une position d'obstruction et une position de non-obs-

truction, un actionneur (18) agencé pour recevoir du fluide sous pression pour déplacer ledit organe d'obstruction (12) de sa position de non-obstruction à sa position d'obstruction, des moyens de stockage primaires (26) pour stocker ledit fluide sous pression, des moyens à vannes (21, 22) agencés pour être commandés pour permettre audit fluide de s'écouler desdits moyens de stockage primaires (26) audit actionneur (18) afin de déplacer ledit organe d'obstruction (12) de sa position de non-obstruction à sa position d'obstruction, ainsi que des moyens de rechargement (27, 29) répondant à une dépression par les roues d'un véhicule pour recharger lesdits moyens de stockage primaires (26) en fluide sous pression, caractérisée en ce qu'un ressort de rappel (20) agit sur ledit organe d'obstruction (12) pour déplacer ledit organe d'obstruction (12) d'une position relevée d'obstruction à une position abaissée de non-obstruction, lesdits moyens à vannes (21, 22) sont agencés pour être commandés à distance pour permettre audit fluide de s'écouler desdits moyens de stockage primaires (26) audit actionneur (18) pour lever ledit organe d'obstruction (12), lesdits moyens à vannes (21, 22) sont normalement fermés pour maintenir ledit fluide à l'intérieur dudit actionneur (18) contre un échappement et verrouiller de ce fait l'organe d'obstruction (12) dans sa position levée, et en ce que lesdits moyens de rechargement (27, 29) répondent à une dépression par les roues dudit véhicule passant sur lesdits moyens de recharge pour recharger lesdits moyens de stockage primaires (26) pour entraîner ledit actionneur (18) à lever ledit organe d'obstruction (12).

2. Une unité d'obstruction ou de barrière telle que revendiquée à la revendication 1, caractérisée en ce que des moyens de stockage secondaires (25) sont prévus pour recevoir le fluide expulsé dudit actionneur (18) en réponse à l'ouverture commandée à distance d'une vanne (21) desdits moyens à vannes (21, 22) pour permettre audit ressort (20) d'abaisser ledit organe d'obstruction (12).
3. Une unité d'obstruction ou de barrière telle que revendiquée à la revendication 1 ou 2, caractérisée en ce que lesdits moyens de rechargement (27, 29) comprennent une ou plusieurs chambres compressibles (27) disposées sous un coussin (14) et agencées de telle manière qu'un véhicule passant sur ledit coussin (14) entraîne ledit fluide à l'intérieur desdites chambres (27) à être forcé à l'intérieur desdits moyens de stockage primaires (26).
4. Une unité d'obstruction ou de barrière telle que revendiquée à la revendication 3 jointe à la revendication 2,

caractérisée en ce que lesdites chambres (27) sont rechargées en fluide depuis lesdits moyens de stockage secondaires (25).

5. Une unité d'obstruction ou de barrière telle que revendiquée à une quelconque revendication précédente, caractérisée en ce que les ou chacun des moyens de stockage (25, 26) comprend un vérin ayant un plongeur chargé par ressort.
6. Une unité d'obstruction ou de barrière telle que revendiquée à une quelconque revendication précédente, caractérisée en ce que lesdits moyens à vannes (21, 22) comprennent des moyens à vannes à alimentation électrique.
7. Une unité d'obstruction ou de barrière telle que revendiquée à la revendication 6, caractérisée en ce qu'une ou plusieurs batteries sont prévues pour alimenter lesdits moyens à vannes (21, 22).
8. Une unité d'obstruction ou de barrière telle que revendiquée à la revendication 7, caractérisée en ce qu'un dispositif à panneau solaire est prévu pour recharger lesdites batteries.

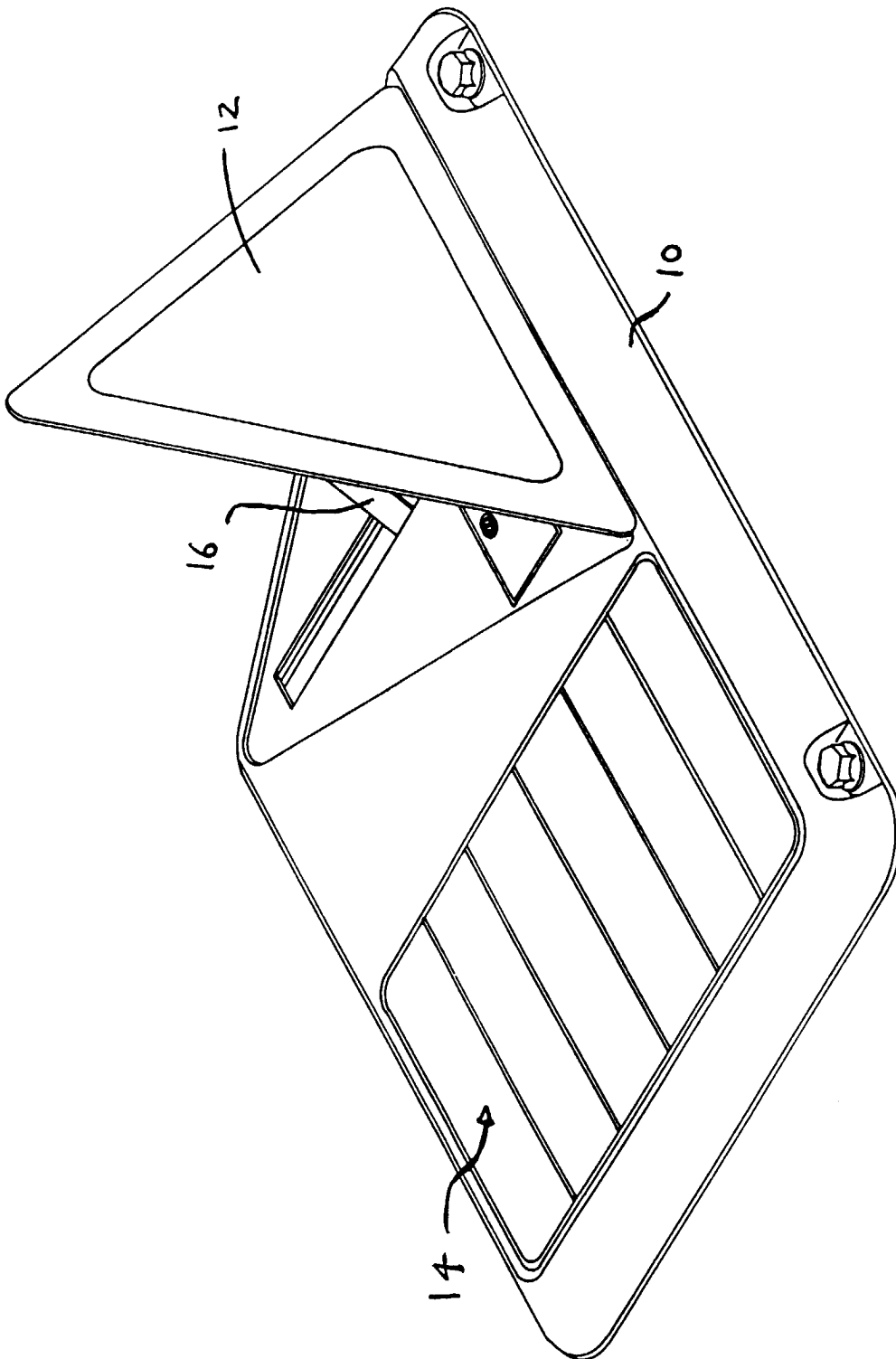


Figure 1

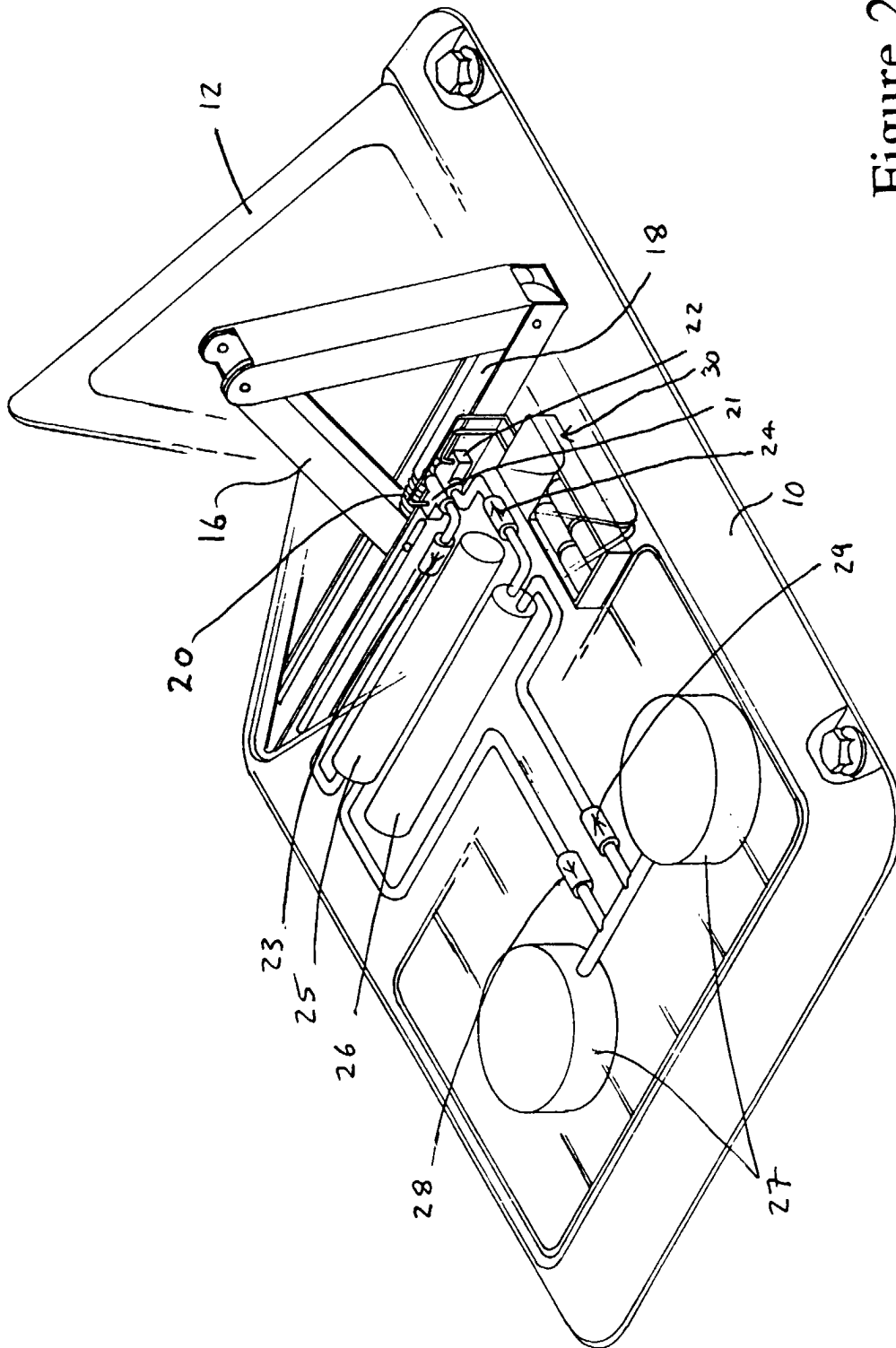


Figure 2

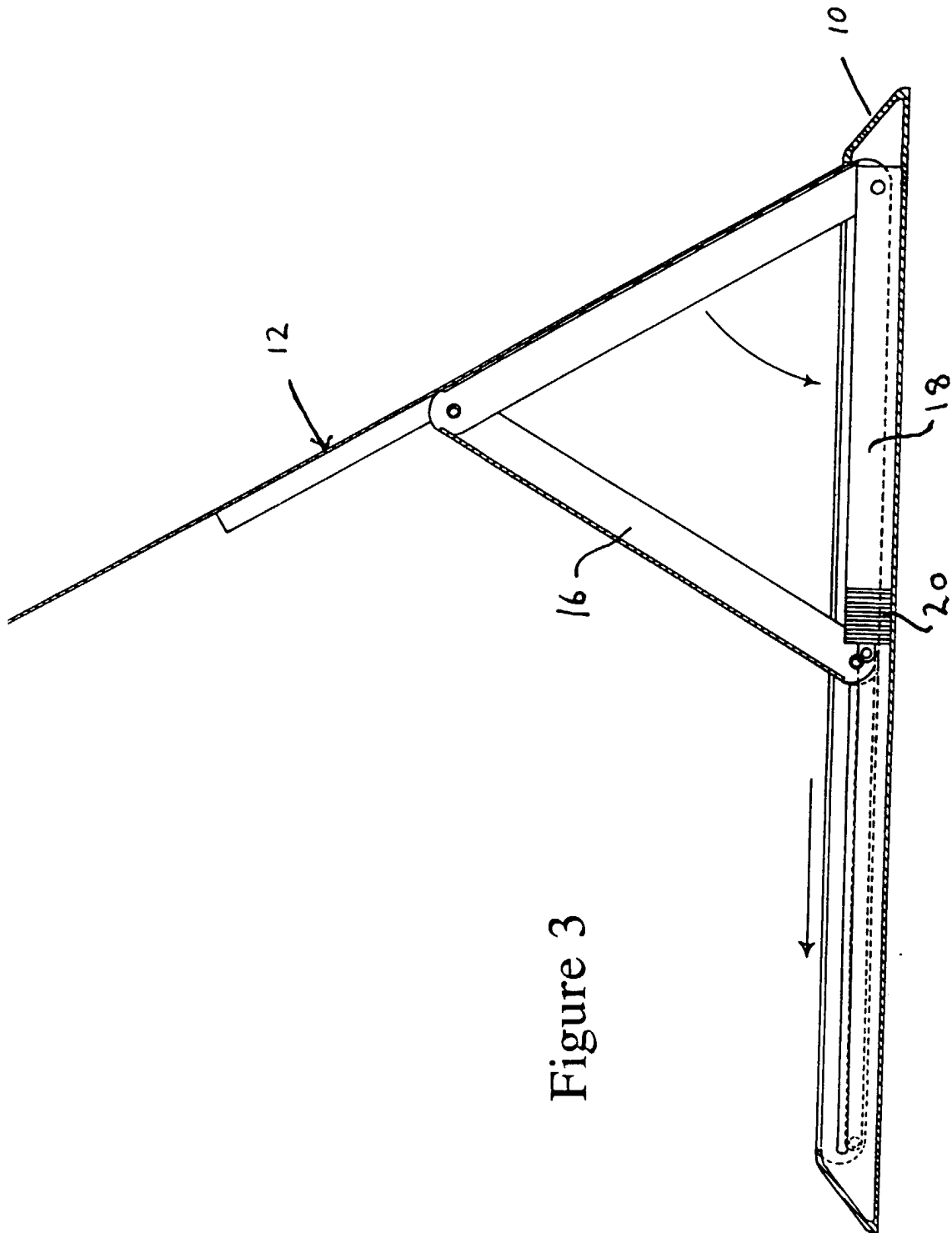


Figure 3