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(54) **UNIT COMPRISING A FLAGPOLE, A SHEAVE, A HALYARD AND A FLAG RAISING AND LOWERING DEVICE**

EINHEIT ENTHALTEND EINEN FLAGGENMASTEN, EINE SEILSCHEIBE, EIN SEIL UND EINE VORRICHTUNG ZUM HISSEN UND EINZIEHEN EINER FLAGGE

ENSEMBLE COMPRENANT UNE HAMPE DU DRAPEAU, UNE MOLETTE, UN CABLE ET UN DISPOSITIF POUR HISSER ET AMENER UN DRAPEAU

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US-A- 3 418 967 **US-A- 3 675 615**

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Description

[0001] The object of the invention is a unit comprising a flagpole, a sheave, a halyard and a flag raising and lowering device for raising the flag up the flagpole and for lowering the flag, the said flag raising and lowering device comprising a driving motor, whereby

- the flag raising and lowering device is an accessory separate from the flagpole, which device is located on the lower part of the flagpole, on its side,
- the driving motor is located at the lower end of the flagpole, on its side,
- and the halyard is passed at the upper end of the flagpole via the sheave, which is preferably the flagpole's own original sheave.

[0002] Flags are usually raised and lowered manually. Taking care of this task is, however, nowadays often inconvenient, because housing corporations no longer engage persons who would see to it. This is why maintenance companies usually take care of flag raising and lowering. Even for maintenance companies, however, the task is arduous as manual work, because one maintenance person will not have time to manage very many locations. This means that flag raising and lowering are often delayed. This service is, in addition, expensive for housing corporations.

[0003] Due to the foregoing, attempts have been made to automate flag raising and lowering procedures by means of various mechanical devices. Such devices are disclosed, for example, in US patents no. 3,418,967 and 3,675,615, in which the flag is pulled inside the flagpole by means of a motor. An opening has been formed in the flagpole for this purpose. In US patent no. 2,630,779 there is a combination of the pole and housing for the flag. It is obvious that those arrangements are only applicable to new flagpoles. It is not suited for already existing flagpoles. In addition, the openings made in the flagpole reduce the strength of the flagpole substantially.

[0004] US patent no. 3,417,732 also discloses an automatic flag raising and lowering device. In this device, the flag moves inside a tube, which is located outside the flagpole. The flag is fixed to a sleeve-like part, which is towered into a space between the tube located at the bottom of the pole and the pole. This equipment is also unsuitable for use with old flagpoles. Another disadvantage of the construction is that the tube attached around the flagpole is supported only at its lower end. The durability of such a support is poor.

[0005] The aim of the present invention is to eliminate the above-mentioned problems and to achieve a novel flag raising and lowering device, which can also be used with old flagpoles.

[0006] It is characteristic of the device relating to the invention that

- the flag raising and lowering device further comprises a protective tube for the flag,
- at the lower end of the flagpole, the halyard is passed via a sheave of the protective tube and the driving motor,
- by moving the halyard, the flag can be pulled inside and out of the protective tube,
- the protective tube comprises a lead-through fitted at the upper end of the protective tube, the lead-through being suitable to prevent the entry of water and snow inside the protective tube.

[0007] The flag raising and lowering device relating to the invention makes it possible to automate all existing flagpoles. When the flag is towered, it is pulled by means of a driving motor inside the separate protective tube located at the lower end of the flagpole, and when raised, the flag is pulled out of the protective tube.

[0008] The invention is described in the following by way of an example, with reference to the appended drawings in which

- Figure 1 shows the separate flag raising and lowering device located on the flagpole as seen from the side and in partial cross-section.
- Figure 2 shows the accessory of figure 1 with the flag lowered.
- Figure 3 shows the control elements of the device of figure 1 diagrammatically.

[0009] Figure 1 shows a flagpole 10, to which the separate flag raising and lowering device 11 relating to the invention is connected as an accessory. The device 11 incorporates a protective tube 12 and a driving motor 13. The halyard forms a closed loop, which runs via sheaves located at the upper and lower ends of the flagpole 10. At its lower end, the halyard 15 is passed via the protective tube 12 of the accessory 11 to the sheave 14 of the driving motor 13 of the accessory. At the upper end, the halyard 15 is passed in the usual manner via the flagpole's own sheave 17, which is located on the finial 16 of the flagpole 10.

[0010] When the halyard 15 passed through the protective tube 12 of the accessory is moved by means of the driving motor 13 of the accessory and the sheave 14 connected to it, the flag 18 connected to the halyard 15 can be raised or lowered. When the flag 18 is lowered, it is pulled inside the separate protective tube 12 located at the lower end of the flagpole, on the side of the flagpole, and when raised, the flag is pulled out of this protective tube 12. At the upper end of the protective tube 12 a lead-through 23 is fitted, which prevents the entry of water and snow inside the protective tube 12 at least for the most part.

[0011] The flag raising and lowering device 11 is a separate accessory unit, which can be installed even afterwards on an old flagpole 10. In such a case, the lower end of the protective tube 12 and the driving motor 13

housing are connected to the flagpole 10, for example, by means of the same bolts 24 with which the flagpole itself is fixed to its base. At its upper end, the protective tube 12 is fixed to the flagpole 10 by means of a band 25.

[0012] In figure 2, the flag 18 has been lowered by means of the flag raising and lowering device 11 of figure 1. It can be seen in the figure that the flag 18 has been lowered. This has been done by pulling the halyard 15 by means of the sheave 14 rotated by the driving motor 13 so that the flag 18 has been lowered inside the protective tube 12 on the side of the flagpole 10. Similarly, the flag 18 may be raised by rotating the sheave 14 in the other direction.

[0013] Figure 3 shows a diagrammatic view of the halyard 15 control mechanism. To the halyard are connected control elements, which the control mechanism sensor 19 detects. These are, for example, small pieces of metal, which can be detected by a metal detector. In figure 3, the halyard 15 has three control elements.

[0014] The control mechanism operates so that when the control element 20 for the upper position is at the sensor 19, the flag 18 is in its upper position, that is, at normal flag height on the flagpole. When the following control element 21 is at the sensor 19, the flag 18 is at half-mast. Similarly, when the control element 22 for the lower position is at the sensor 19, the flag 19 is lowered, in other words completely inside the protective tube of the device relating to the invention. Thus the equipment is capable of detecting whether the flag is in the upper position, at half-mast or in the lower position, and therefore of controlling the operation of the device.

[0015] Alternatively, for example a step motor can be used to move the halyard, in which case control elements attached to the halyard and sensors to detect them are not necessarily required.

[0016] A timing mechanism, which raises and lowers the flag according to a desired schedule, may also be connected to the driving motor 13. It is furthermore possible to add a hot-air fan to the driving mechanism of the device, which fan dries the flag in the protective tube if wet. At the same time the fan prevents the halyard and flag from freezing in winter. The hot-air fan can be programmed so that it heats the flag, the halyard and other equipment for a desired time subsequent to the flag having been lowered, and similarly also for some time before the flag is raised.

[0017] As the device relating to the invention is an accessory, it can easily be connected to old flagpoles. A unit comprising a protective tube outside the pole and a housing with the driving mechanism and control devices, is connected to the flagpole.

[0018] It is obvious to a person skilled in the art that the different embodiments of the invention may vary within the scope of the claims presented below.

Claims

1. A unit comprising a flagpole (10), a sheave (17), a halyard (15) and a flag raising and lowering device (11) for raising the flag (18) up the flagpole (10) and for lowering the flag, the said flag raising and lowering device comprising a driving motor (13), whereby

- the flag raising and lowering device (11) is an accessory separate from the flagpole (10), which device is located on the lower part of the flagpole, on its side,
- the driving motor (13) is located at the lower end of the flagpole, on its side,
- and the halyard (15) is passed at the upper end of the flagpole via the sheave (17), which is preferably the flagpole's own original sheave,

characterized in that

- the flag raising and lowering device (11) further comprises a protective tube (12) for the flag,
- at the lower end of the flagpole, the halyard is passed via a sheave (14) of the protective tube (12) and the driving motor (13),
- by moving the halyard, the flag (18) can be pulled inside and out of the protective tube (12).
- the protective tube (12) comprises a lead-through (23) fitted at the upper end of the protective tube (12). the lead-through being suitable to prevent the entry of water and snow inside the protective tube.

2. A flag raising and lowering device (11) as claimed in claim 1, **characterized in that** the flag raising and lowering device (11) incorporates a sensor (19) which is suitable to detect the control elements (20, 21, 22) located on the halyard (15) so that the flag (18) can be adjusted to the desired height.

3. A flag raising and lowering device (11) as claimed in claim 2, **characterized in that** the control elements (20, 21, 22) located on the halyard (15) are small pieces of metal which are detectable by a metal detector sensor (19) included in the flag raising and lowering device.

4. A flag raising and lowering device (11) as claimed in claim 1, **characterized in that** the driving motor (13) of the flag raising and lowering device (11) is a step motor.

5. A flag raising and lowering device (11) as claimed in any of the claims 1 to 4, **characterized in that** the lower end of the protective tube (12) and the driving motor (13) housing are fixed to the flagpole (10) by means of the same bolts (24) as those with

which the flagpole itself is fixable to its base.

Patentansprüche

1. Eine Einheit, die einen Flaggenmast (10), eine Scheibe (17), eine Flaggenleine (15) und eine Vorrichtung (11) zum Hissen einer Flagge (18) den Flaggenmast (10) hinauf und zum Einholen der Flagge umfaßt, welche Vorrichtung zum Hissen und Einholen der Flagge einen Antriebsmotor (13) umfaßt, wobei

- die Vorrichtung (11) zum Hissen und Einholen der Flagge ein vom Flaggenmast (10) gesondertes Ausrüstungsgerät ist, welche Vorrichtung an der Seite des Unterteiles des Flaggenmastes angeordnet ist,
- sich der Antriebsmotor (13) an der Seite des unteren Endes des Flaggenmastes befindet,
- und die Flaggenleine (15) am oberen Ende des Flaggenmastes über die Scheibe (17) läuft, die vorzugsweise die ursprüngliche Scheibe des Flaggenmastes ist,

dadurch gekennzeichnet, daß

- die Vorrichtung (11) zum Hissen und Einholen der Flagge weiterhin ein Hüllrohr (12) für die Flagge umfaßt,
- am unteren Ende des Flaggenmastes die Flaggenleine (15) über eine Scheibe (14) des Hüllrohres und des Antriebsmotors (13) läuft,
- die Flagge (18) durch Bewegen der Flaggenleine in das und aus dem Hüllrohr (12) gezogen werden kann,
- das Hüllrohr (12) eine am oberen Ende des Hüllrohres (12) angepasste Durchführung (23) aufweist, die zum Behindern vom Zugang von Wasser und Schnee in das Hüllrohr geeignet ist.

2. Eine Vorrichtung (11) zum Hissen und Einholen einer Flagge wie sie in Patentanspruch 1 definiert wird, **dadurch gekennzeichnet, daß** die Vorrichtung (11) zum Hissen und Einholen der Flagge einen Detektor (19) umfaßt, der geeignet ist, die an der Flaggenleine (15) befestigten Regelglieder (20, 21, 22) zu detektieren, so daß die Flagge (18) auf die gewünschte Höhe verstellt werden kann.

3. Eine Vorrichtung (11) zum Hissen und Einholen einer Flagge wie sie in Patentanspruch 2 definiert wird, **dadurch gekennzeichnet, daß** die an der Flaggenleine (15) befestigten Regelglieder (20, 21, 22) kleine Metallstücke sind, die von einem in der Vorrichtung zum Hissen und Einholen der Flagge vorgesehenen Metallfühler (19) detektierbar sind.

4. Eine Vorrichtung (11) zum Hissen und Einholen einer Flagge wie sie in Patentanspruch 1 definiert wird, **dadurch gekennzeichnet, daß** der Antriebsmotor (13) der Vorrichtung (11) zum Hissen und Einholen der Flagge ein Schrittmotor ist.

5. Eine Vorrichtung (11) zum Hissen und Einholen einer Flagge wie sie in einem der Patentansprüche 1 bis 4 definiert wird, **dadurch gekennzeichnet, daß** das untere Ende des Hüllrohres (12) und das Motorgehäuse des Antriebsmotors (13) am Flaggenmast (10) durch dieselben Bolzen (24) befestigt sind, mit denen der Flaggenmast selbst an seinem Untergestell befestigbar ist.

Revendications

1. Unité comportant un mât (10), une poulie (17), une drisse (15) et un dispositif à hisser et baisser un drapeau (11) pour hisser le drapeau (18) vers le haut le long du mât (10) et pour baisser le drapeau, ledit dispositif à hisser et baisser le drapeau comportant un moteur d'entraînement (13),

- le dispositif à hisser et baisser le drapeau (11) étant un accessoire séparé du mât (10), dispositif se situant dans la partie inférieure du mât, sur le côté de celui-ci,
- le moteur d'entraînement (13) étant situé à l'extrémité inférieure du mât, sur le côté de celui-ci,
- et la drisse (15) étant passée à l'extrémité supérieure du mât via la poulie (17), qui est, de préférence, la poulie originale du mât,

caractérisée en ce

- **que** le dispositif à hisser et baisser le drapeau (11) comporte également un tube protecteur (12) pour le drapeau,
- **qu'**à l'extrémité inférieure du mât, la drisse est passée via une poulie (14) du tube protecteur (12) et du moteur d'entraînement (13),
- **qu'**en mouvant la drisse, le drapeau (18) peut être introduit à l'intérieur et extrait du tube protecteur (12),
- **que** le tube protecteur (12) comporte une traversée (23) montée à l'extrémité supérieure du tube protecteur (12), la traversée étant appropriée pour empêcher l'entrée de l'eau et de la neige dans le tube protecteur.

2. Dispositif à hisser et baisser un drapeau (11) selon la revendication 1,

caractérisée en ce que le dispositif à hisser et baisser un drapeau (11) incorpore un capteur (19) approprié pour détecter les éléments de commande (20, 21, 22) situés sur la drisse (15) de façon à ce

que le drapeau (18) puisse être réglé à la hauteur désirée.

3. Dispositif à hisser et baisser un drapeau (11) selon la revendication 2, 5
caractérisée en ce que les éléments de commande (20, 21, 22) situés sur la drisse (15) sont de petites pièces en métal pouvant être détectées par un capteur détecteur de métal (19) inclus dans le dispositif à hisser et baisser un drapeau. 10
4. Dispositif à hisser et baisser un drapeau (11) selon la revendication 1, 15
caractérisée en ce que le moteur d'entraînement (13) du dispositif à hisser et baisser un drapeau (11) est un moteur pas-à-pas.
5. Dispositif à hisser et baisser un drapeau (11) selon l'une quelconque des revendications 1 à 4, **caractérisée en ce que** l'extrémité inférieure du tube protecteur (12) et le bâti du moteur d'entraînement (13) sont fixés sur le mât (10) au moyen des mêmes boulons (24) que ceux au moyen desquels le mât lui-même peut être fixé sur sa base. 20

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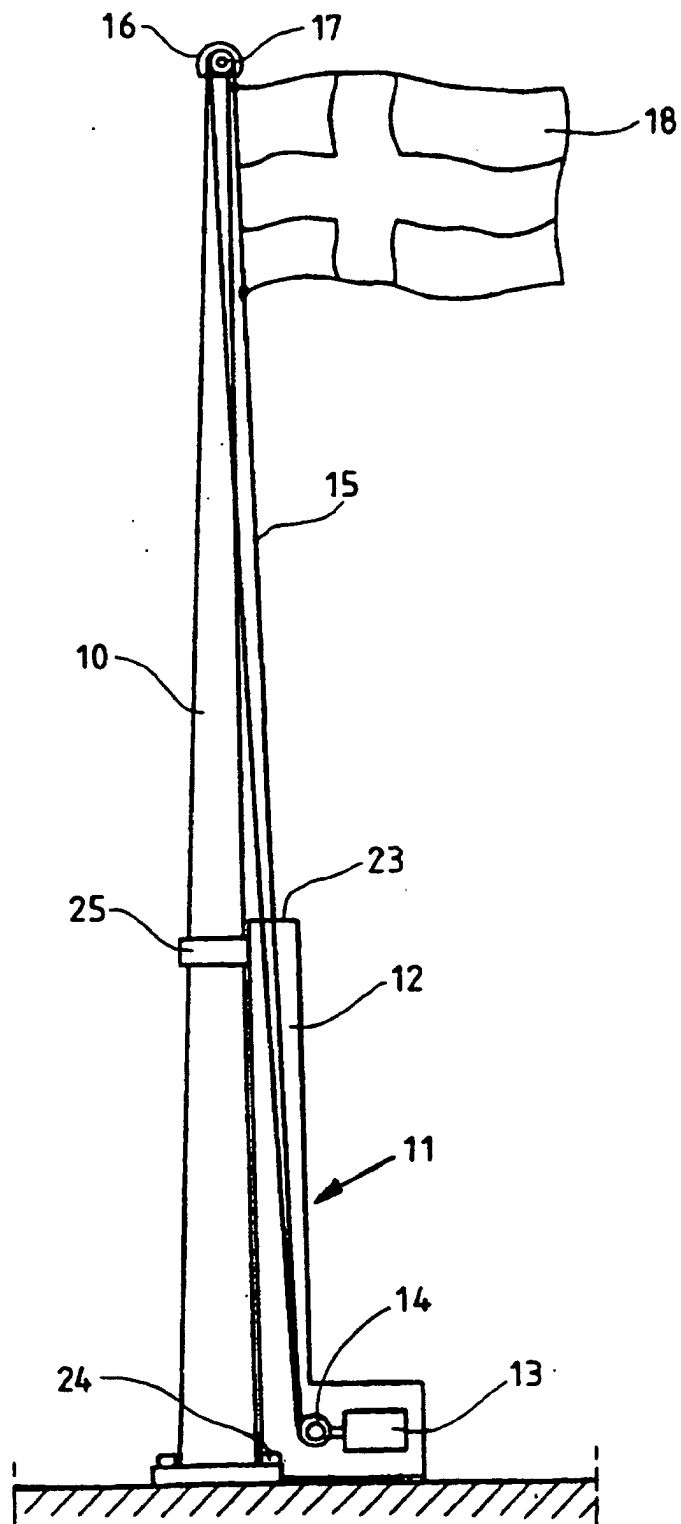


FIG. 1

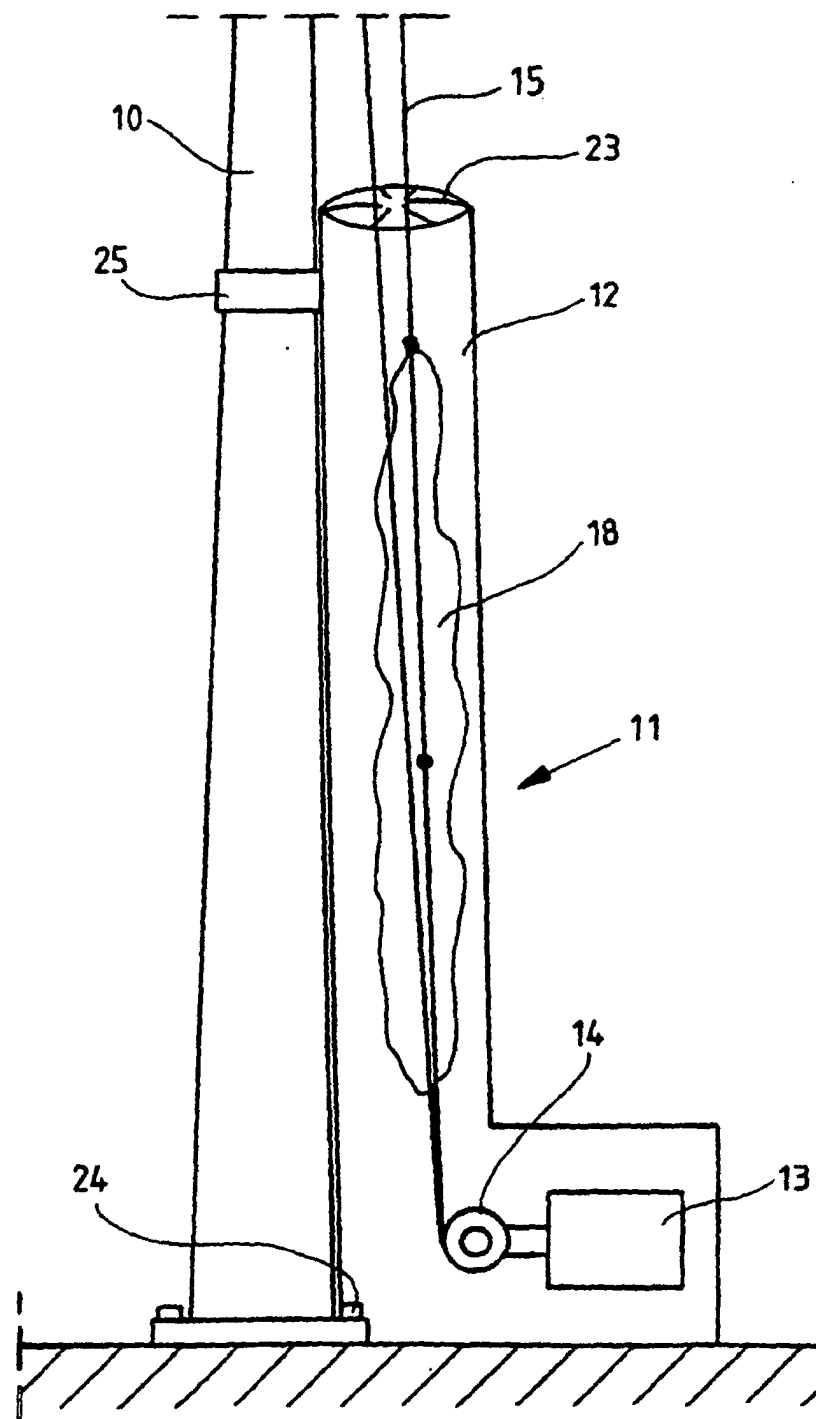


FIG. 2

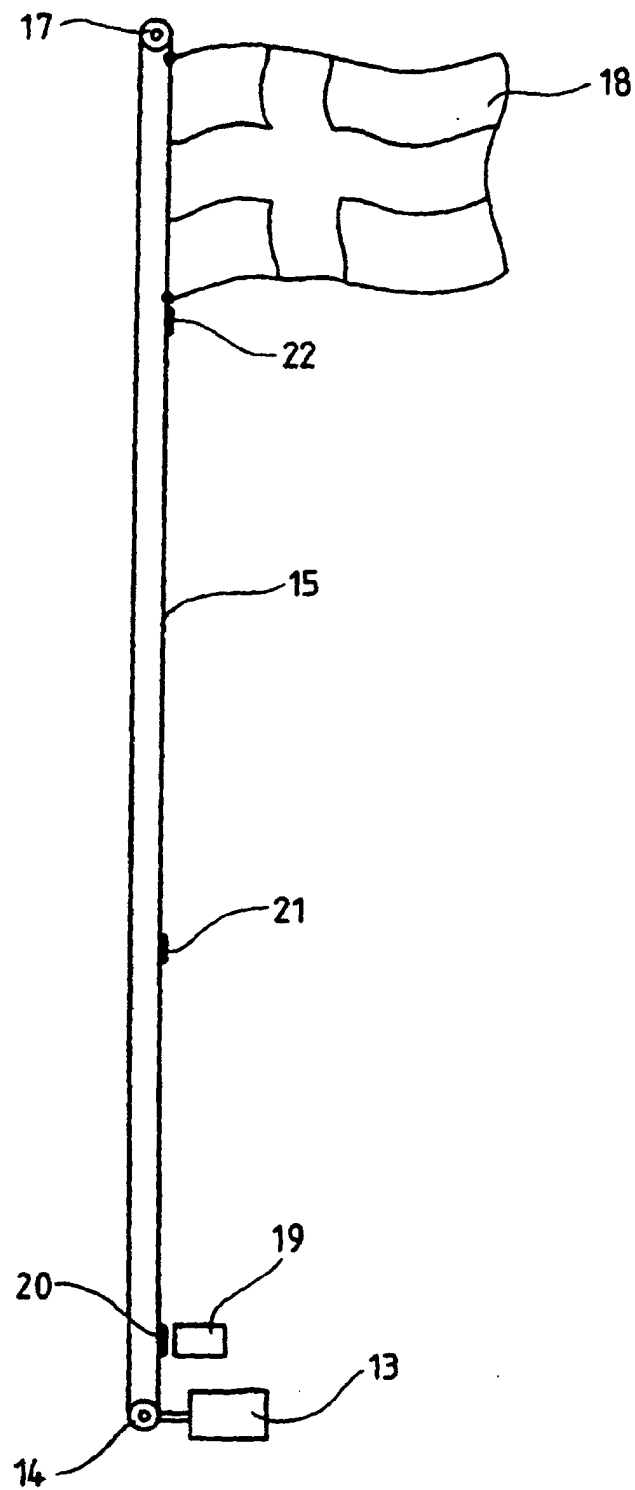


FIG. 3