

(19) **DANMARK**



Patent- og
Varemærkestyrelsen

(10) **DK/EP 2681377 T3**

(12) Oversættelse af
europæisk patentskrift

-
- (51) Int.Cl.: **E 04 D 13/076 (2006.01)** **E 04 D 13/10 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2016-01-18**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2015-09-30**
- (86) Europæisk ansøgning nr.: **11788023.7**
- (86) Europæisk indleveringsdag: **2011-11-18**
- (87) Den europæiske ansøgnings publiceringsdag: **2014-01-08**
- (86) International ansøgning nr.: **DK2011000135**
- (87) Internationalt publikationsnr.: **WO2012083948**
- (30) Prioritet: **2010-12-20 DK 201000220 P**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
- (73) Patenthaver: **Merle, Jacques, c/o Lingpat, Letlandsgade 3,2. mf, 1723 København V, Danmark**
- (72) Opfinder: **Merle, Jacques, c/o Lingpat, Letlandsgade 3,2. mf, 1723 København V, Danmark**
- (74) Fuldmægtig i Danmark: **LINGPAT V/OLE JAGTBOE, Letlandsgade 3, 1723 København V, Danmark**
- (54) Benævnelse: **Arrangement til fjernelse af istapper**
- (56) Fremdragne publikationer:
WO-A1-2006/070464
WO-A1-2007/016724
WO-A1-2012/125044
RU-C2- 2 169 245
US-A- 2 469 971

This invention relates to an arrangement for removing icicles from a gutter on a building.

Icicles on buildings gutters can look very nice but can be extremely dangerous for people walking in the vicinity of a building having one or
5 more gutters on which icicles are formed.

It is therefore very impotent that such icicles are removed from gutters in order to reduce accidental issues.

Especially in high buildings it is somewhat difficult to remove icicles for obvious reasons.

10 In this connection it is mentioned that owners of buildings are normally responsible for removing icicles according to statute law.

A known arrangement for removing icicles is known from WO 2006070464 A1.

15 In this arrangement two movements of a tool handling system are provided, namely one in the longitudinal direction of a gutter, said first movement is provided for adjusting a tool to be placed near an icicle. The other movement that is perpendicular to the longitudinal direction of the gutter, is for activating a push pull bar like body, which removes
20 the icicle from the gutter.

It is now an object of the invention to simplify the known arrangement in such a way, that fewer components in the arrangement are provided, inter alia leading to reducing the risk of failure in the operation of the arrangement.

25

The object is solved by an arrangement of the kind defined in the introductory part of claim 1 that is characterized in, that it consists of a suspension that accommodates a motor where the motor provides a movement of a knife in the longitudinal direction of the gutter, said
30 knife is adapted to remove icicles from the gutter.

In this way an arrangement is build up with few moveable components having only one movement in one direction.

According to the construction of the gutter, i.e. how it is placed on the
5 roof of a building it is, expedient as claimed in claim 2, that the motor is stationary whereas the knife is moveable, or as stated in claim 3, that the suspension consists of a rail on which the knife or the motor and the knife are displaceable.

As stated in claim 4 that the suspension consists of a rail on which the
10 knife or the motor and the knife are displaceable and easy way to install the arrangement is achieved.

In order to mount the arrangement where a downpipe, a kind of an
"obstacle" is connected to the gutter, this is done as stated in claim 5,
that the rail has one or more foldings.

15 For an automatic or semiautomatic operation of the arrangement it is advantageous as stated in claim 6 that the icicles are detected by a sensor or as stated in claim 7 that the sensor is an IR sensor that is mounted on the motor, or as stated in claim 8 that the motor is
20 controlled from a remote control device.

The invention will now be more fully explained in connection with the accompanying drawing in which

25 Fig. 1 shows a building having the arrangement according to the invention mounted thereon

Fig. 2 shows the building in fig. 1 seen from the left side

30 Fig. 3 shows in a first embodiment parts in the arrangement according to the invention is mounted

Fig. 4 another embodiment of parts in the arrangement according to the invention, whereas

- 5 Fig 5 shows how a moveable motor in the arrangement is provided on a track arrangement.

In fig. 1 and fig. 2 numeral 1 designates a tall building having a roof 2 and a gutter 3.

- 10 A downpipe 4 is connected to the gutter 3. An icicle is denoted 6 and shown placed on the gutter 3.

Many of these icicles are normally present along the gutter.

Near the gutter 3 a rail arrangement is fixed to the wall of the building.

The numeral 20 shows a curve 20 on the rail 7.

- 15 This curve is used for leading the rail round the downpipe.

With 5 is denoted a knife the function of which will be explained below.

In fig. 3, 8 denote a moveable motor to which the knife 5 is connected through a shaft 12. Another shaft 11 connects the motor to a rail 7, said shaft is connected to a gliding-part that is surrounded by the rail.

- 20 A coulomb 10 is fixed at 21 to the wall of the building.

The arrangement shown on fig. 1 – 3 function as follows:

When an icicle is present, a movement of the motor with knife will be initiated such that the knife will cut all icicles along the gutter 3.

In this situation, the motor and the knife are moved together.

25

In fig. 4 an arrangement is shown, where only the knife is moveable, whereas the motor is stationary. In this figure the motor is fixed to a surface under a gable 2 of a building.

- The motor is supplied with voltage through wires 15 and maybe provide
30 control signals 18 that are transferred to the moveable knife.

The movement of the knife can be provided by not shown chains that are driving by the motor 8.

In fig 5 is illustrated another way of transferring movement of a motor
5 with knife

Here two shafts 17, 18 are provided for carrying the motor with the knife.

Between the shafts is provided a threaded shaft 19 that is connected to a not shown toothed wheel, below the motor.

10 The operation of the arrangement described above will now be explained by way of two examples:

Example 1:

In order to detect an icicle in a first embodiment of the arrangement
15 where the motor is stationary, and an IR sensor can be placed on the motor.

This sensor can activate the motor if a light source that is placed in the opposite end of the motor is interrupted due to the presence of an icicle.

20

Example 2:

If the motor in the arrangement is moveable together with the knife, then a remote control, as it is known in connection with TV set, can be a feasible way to activate the motor.

P A T E N T K R A V

1. Arrangement til fjernelse af istapper (6) fra en tagrende (3) på en bygning (1), **kendetegnet ved**, at det består af en ophængning
5 som huser en motor (8), hvor motoren tilvejebringer en bevægelse af en kniv (5) i den langsgående retning af tagrenden, og hvor kniven er indrettet til at fjerne istapper fra tagrenden.
2. Arrangement ifølge krav 1, **kendetegnet ved**, at motoren er
10 bevægelig og har kniven (5) monteret på den.
3. Arrangement ifølge krav 1, **kendetegnet ved**, at motoren er stationær medens at kniven (5) er bevægelig.
- 15 4. Arrangement ifølge krav 1 - 3, **kendetegnet ved**, at ophængningen består af en skinne (7) på hvilken kniven (5) eller motoren og kniven er forskydelige.
5. Arrangement ifølge krav 1 - 3, **kendetegnet ved**, at skinnen har
20 en eller flere bugtninger (20).
6. Arrangement ifølge krav 1 - 4, **kendetegnet ved**, at istapperne er detekteret af en sensor.
- 25 7. Arrangement ifølge krav 1 - 5, **kendetegnet ved**, at sensoren er en IR sensor der er monteret på motoren.
8. Arrangement ifølge krav 1 - 5, **kendetegnet ved**, at motoren er styret fra en fjernbetjeningsenhed.

DRAWINGS

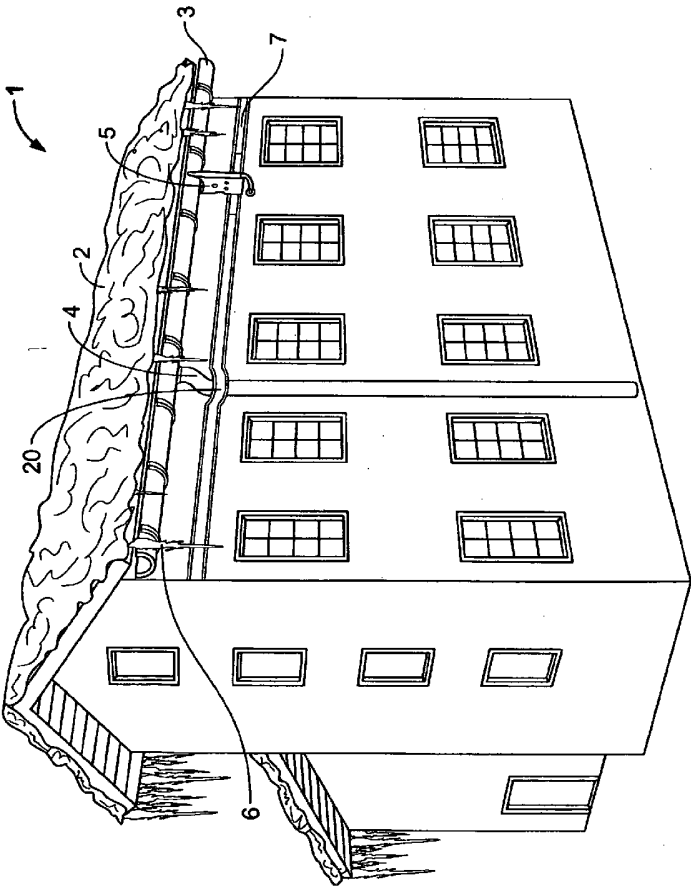


FIG. 1

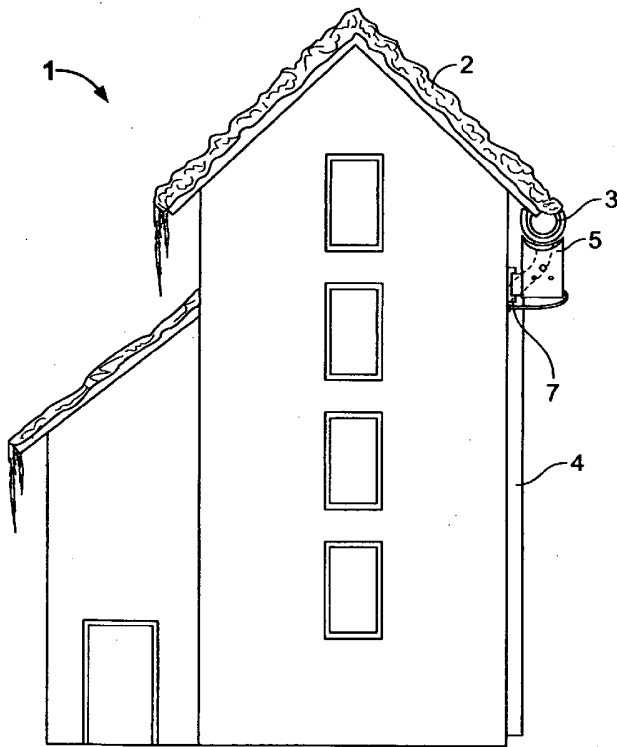


FIG. 2

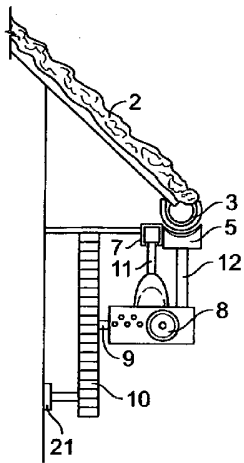


FIG. 3

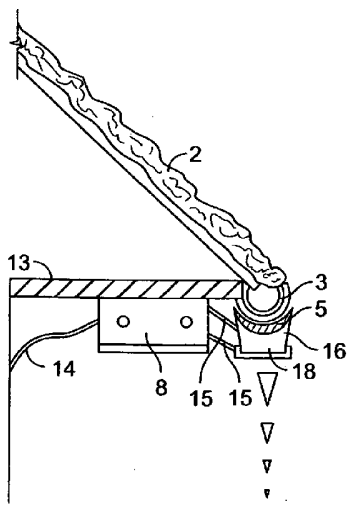


FIG. 4

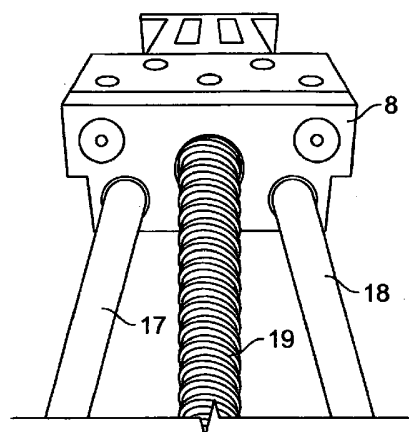


FIG. 5