(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 162 166 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.12.2001 Bulletin 2001/50

(51) Int Cl.[7]: **B66B 13/20**

(21) Application number: **01112758.6**

(22) Date of filing: **26.05.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **07.06.2000 IT VI000122**

(71) Applicant: **Maber costruzioni s.r.l.**
35014 Fontaniva (Padova) (IT)

(72) Inventors:
- **Bertoncello, Luciano**
  36050 Pozzoleone (Vicenza) (IT)
- **Bertoncello, Roberto**
  35014 Fontaniva (Padova) (IT)

(74) Representative: **Bettello, Pietro, Dott. Ing. et al**
Studio Tecnico
Ingg. Luigi e Pietro Bettello
Via Col d'Echele, 25
36100 Vicenza (IT)

(54) Mechanical lock for safety gates of elevators

(57) The finding relates to a lock for safety gates at the floors, to be applied to the above mentioned safety gates, at the landing floors reachable by lifts, elevators and platforms in general, in building sites, as well as in other industrial activities where individuals and materials must be lifted through mobile platforms, such as lifts, elevators and the like, and safety regulations at work provide that access to the floors must be regulated through a safety gate. Said lock is characterised in that it comprises a box-shaped body inside which there is pivoted a suitably shaped bracket which, when subject to the action of a contrast spring and regulated by a release lever integral with the mobile platform, provides to coupling/releasing the tooth of the safety gate at the floors, based on the presence or absence of the same gate.

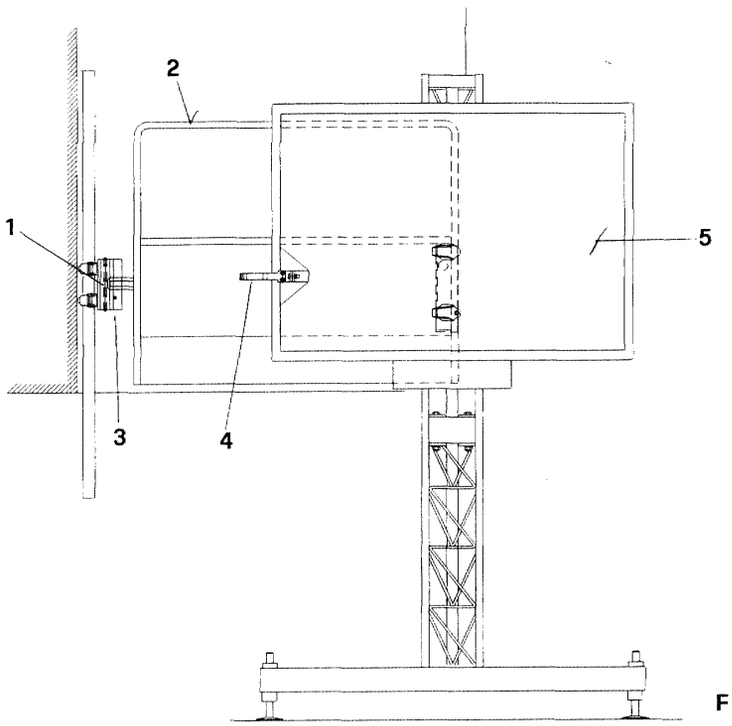

FIG 1

EP 1 162 166 A1

Description

[0001] The present finding has the purpose of realising a lock to be applied to safety gates at the floors, at the landing floors reachable by lifts, elevators and platforms in general.

[0002] As known, safety regulations at work provide that in building sites, as well as in other industrial activities where individuals and materials must be lifted through mobile platforms, such as lifts, elevators and the like, access to the floors must be regulated through a safety gate, which can only be opened after the lift or elevator have stopped at the landing floors; similarly, the same cannot restart if the above gate is not regularly closed.

[0003] Purpose of the present finding is that of realising a device, which in the following description is generically referred to as lock, applied on the building scaffolding or wall, at the landing floors, which should regulate the operation of the safety gate at the floors, and which should comply with all national and international safety regulations, guaranteeing people's safety.

[0004] This is substantially realised through a lock consisting of a box-shaped body inside which there is pivoted a suitably shaped bracket which, when subject to the action of a contrast spring and regulated by a release lever integral with the mobile platform, provides to coupling/releasing the tooth of the safety gate at the floors, based on the presence or absence of the same gate.

[0005] Structurally, the bracket consists of a plate which has such a shape to form at least two surfaces, idly pivoted on the box-shaped body through a pivot welded on the same bracket.

[0006] An end of such bracket exhibits a suitably shaped recess adapted to house the gate tooth, when the same is closed, whereas the other end is provided with a feeler pin, which is in contact with a cam applied on a release lever, applied on the mobile platform.

[0007] Operatively, when the gate is closed, thanks to the thrust action of the contrast spring the bracket is arranged so as to prevent the gate tooth from releasing from the lock.

[0008] When the platform arrives at the landing floor, the gate opens by means of the cam, applied on the release lever which, by introducing into the slit obtained on the box-shaped body of the lock, overcomes the contrast force of the thrust spring, thus causing an angular rotation of the bracket, so that the gate tooth releases.

[0009] Moreover, for the purpose of complying with the safety regulations according to which, when the gate is in open position, it is not possible to move the platform, the finding provides for an automatic coupling between bracket and release lever when the gate is open, so that since the release lever cannot withdraw from the safety lock, it prevents the accidental movement of the same platform.

[0010] Finally, in order to obtain the maximum safety, according to the finding the complete withdrawal of the release lever from the lock in order to let the platform move, is possible only after the introduction of the gate tooth into the lock.

[0011] The finding shall be now described more in detail, in a particular embodiment, made by way of an illustrative and non-limiting example, with reference to the attached drawings. In such drawings:

- Figures 1 and 2 (Table I) show an elevation and plan view of a platform provided with the lock of the finding, in upward and downward position.
- Figures 3 and 4 (Table II) show an elevation and plan view of the platform of figure 1, in coupling position.
- Figures 5 and 6 (Table III) show a plan and elevation view, respectively sectioned according to lines V-V and VI-VI, of the lock of the finding, with closed gate.
- Figures 7 and 8 (Table IV) show a plan and elevation view of the lock during the introduction of the release lever.
- Figures 9 and 10 (Table V) show a plan and elevation view of the lock with open gate.
- Figures 11 and 12 (Table VI) show a plan and elevation view of the lock during the step of release of the lever.
- Figures 13, 14 and 15 (Table VII) show the three orthogonal views of the shaped bracket.

[0012] As it can be seen in figures 1-2, lock 1 of the finding, to which the safety gate 2 couples at the landing floors, consists of a box-shaped body 3 integral with the building scaffolding or wall where the gate is located, and of a release lever 4, integral with the mobile platform 5.

[0013] As it can be seen in figures 2-3, when platform 5 is in position at the floor the release lever 4 introduces into the box-shaped body 3 to allow the opening of gate 2.

[0014] As it can be seen in figures 5 and 6, the box-shaped body 3 contains a bracket 6 that is shaped so as to exhibit at least two walls 7 and 8 and provided with a pivot 9, idly pivoted on the same body.

[0015] A contrast spring 10 acts on bracket 6 upon the rotation of said bracket.

[0016] As it can be seen again in figures 5 and 6, the closing of gate 2 is ensured by the fact that tooth 11 is held into housing 12, obtained on wall 7 of the bracket, thanks to the thrust of spring 10 which keeps said bracket locked against the abutment pipe 13.

[0017] As it can be seen in figures 7 and 8, as platform 5 arrives at the floor, the release lever 4, integral with

said platform, introduces into the box-shaped body 3 and, by means of its cam 14, pulls the feeler pin 15 arranged on wall 8 of bracket 6 and, overcoming the thrust of spring 10, it causes the rotation of the same by such angular quantity as to release tooth 11 from housing 12, thus allowing the opening of gate 3.

[0018] As it can be seen in figures 9 and 10, when gate 2 is open, an automatic coupling between bracket 7 and release lever 4 is realised by providing said lever with a tooth 16 that engages with the feeler pin 15 of the bracket, so as to prevent the possible accidental movement of platform 5.

[0019] Finally, as it can be seen in figures 11 and 12, the lock only opens after the gate has been closed (according to the safety regulations) since tooth 11 must get into contact against edge 17 of wall 7 to cause a rotation of the bracket that disengages tooth 16 from the feeler pin 15, thus allowing the extraction of the release lever 4 from the box-shaped body 3.

Claims

1. LOCK FOR SAFETY GATES AT THE FLOORS, to be applied to safety gates at the floors, at the landing floors reachable by lifts, elevators and platforms in general, in building sites, as well as in other industrial activities where individuals and materials must be lifted through mobile platforms, such as lifts, elevators and the like, and safety regulations at work provide that access to the floors must be regulated through a safety gate, which can only be opened after the lift or elevator have stopped in a well-defined position, and the same cannot restart if the same gate is not regularly closed,
said lock **characterised in that**
it comprises a box-shaped body inside which there is pivoted a suitably shaped bracket which, when subject to the action of a contrast spring and regulated by a release lever integral with the mobile platform, provides to coupling/releasing the tooth of the safety gate at the floors, based on the presence or absence of the same gate.

2. LOCK FOR SAFETY GATES AT THE FLOORS, according to claim 1, **characterised in that** the bracket consists of a plate substantially shaped according to at least two surfaces, and idly pivoted on the box-shaped body through a pivot welded on the same bracket, an end of such bracket exhibiting a recess adapted to house the gate tooth, when the same is closed, whereas the other end is provided with a feeler pin, which is in contact with a cam applied on a release lever, applied on the mobile platform.

3. LOCK FOR SAFETY GATES AT THE FLOORS, according to claim 2, **characterised in that** when the gate is closed, thanks to the thrust action of the contrast spring the bracket is arranged so as to prevent the gate tooth from releasing from the lock; afterwards, when the platform arrives at the height of the floor, the gate opens by means the cam, applied on the release lever which, by automatically introducing into a slit obtained on the box-shaped body of the lock, overcomes the contrast force of the thrusting spring, thus causing an angular rotation of the bracket, so as to allow the same to release from the gate tooth.

4. LOCK FOR SAFETY GATES AT THE FLOORS, according to claim 3, **characterised in that** when the gate is in open position, an automatic coupling is realised between bracket and release lever so that since the latter cannot withdraw from the safety lock, it prevents the accidental movement of the same platform.

5. LOCK FOR SAFETY GATES AT THE FLOORS, according to claim 4, **characterised in that** the complete withdrawal of the release lever from the lock to let the platform move is only possible after the introduction of the gate tooth into the lock.

6. LOCK (1) FOR SAFETY GATES AT THE FLOORS, according to claim 5, **characterised in that** it consists of a fixed box-shaped body (3) integral with the building scaffolding or wall provided with the gate, and of a release lever (4), integral with the mobile platform (5), which introduces into the box-shaped body (3) to allow the opening of the gate, said box-shaped body containing a bracket (6) shaped so as to exhibit at least two walls (7, 8) and provided with a pivot (9), idly pivoted on the same body, on said bracket acting a contrast spring (10) upon the rotation of the same bracket.

7. LOCK FOR SAFETY GATES AT THE FLOORS, according to claim 6, **characterised in that** the closing of the gate (2) is ensured by the tooth (11), held into the housing (12), obtained on the wall (7) of the bracket, thanks to the thrust of the spring (10) which keeps said bracket locked against the abutment pipe (13).

8. LOCK FOR SAFETY GATES AT THE FLOORS, according to claim 7, **characterised in that** the release lever (4), integral with the platform, when introduces into the box-shaped body (3), by means its cam (14) pulls the feeler pin (15) arranged on the wall (8) of the bracket (6) and, overcoming the thrust of the spring (10), it causes the rotation of the same by such angular quantity as to release the tooth (11) from the housing (12), thus allowing the opening of the gate.

9. LOCK FOR SAFETY GATES AT THE FLOORS, according to claim 8, **characterised in that** an automatic coupling is realised between the bracket (7) and the release lever (4) by providing said lever with a tooth (16) that engages with the feeler pin (15) of the bracket.

10. LOCK FOR SAFETY GATES AT THE FLOORS, according to claim 9, **characterised in that** the opening of the lock is only possible when the tooth (11) goes into contact with the edge (17) of the wall (7) to cause a rotation of the bracket that disengages the tooth (16) from the feeler pin (15), thus allowing the extraction of the release lever (4) from the box-shaped body (3).

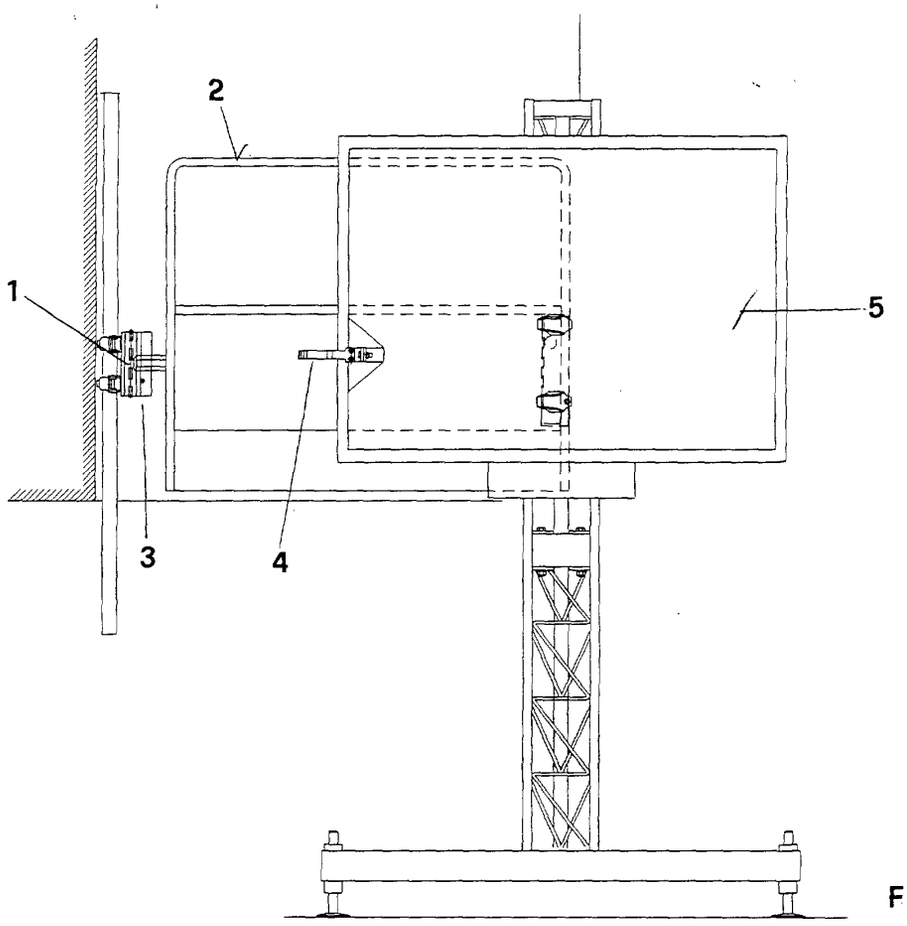

FIG 1

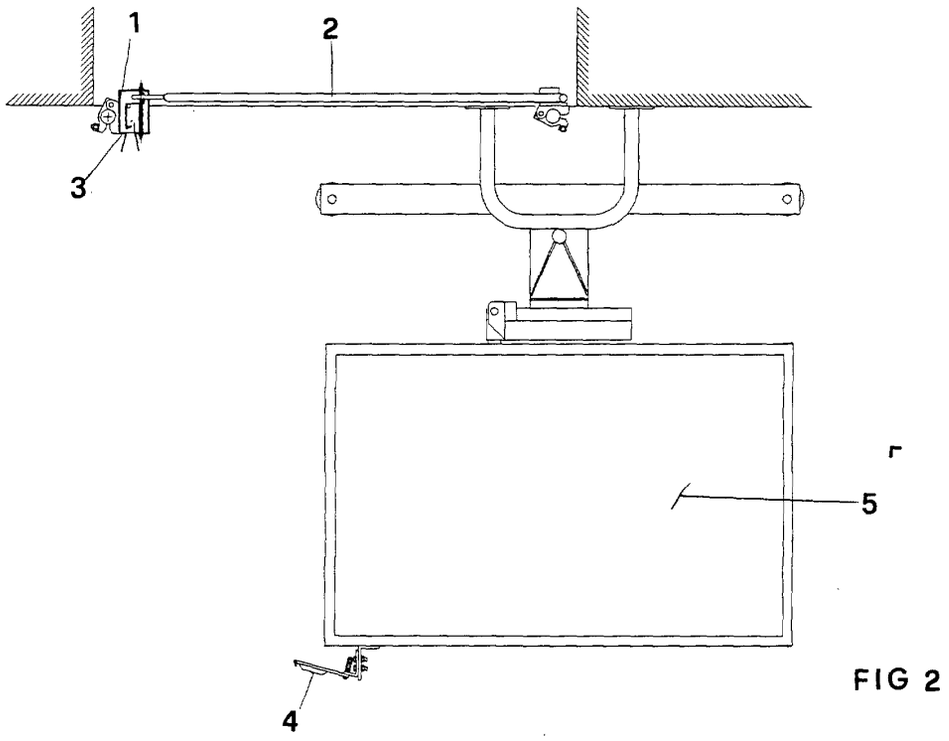

FIG 2

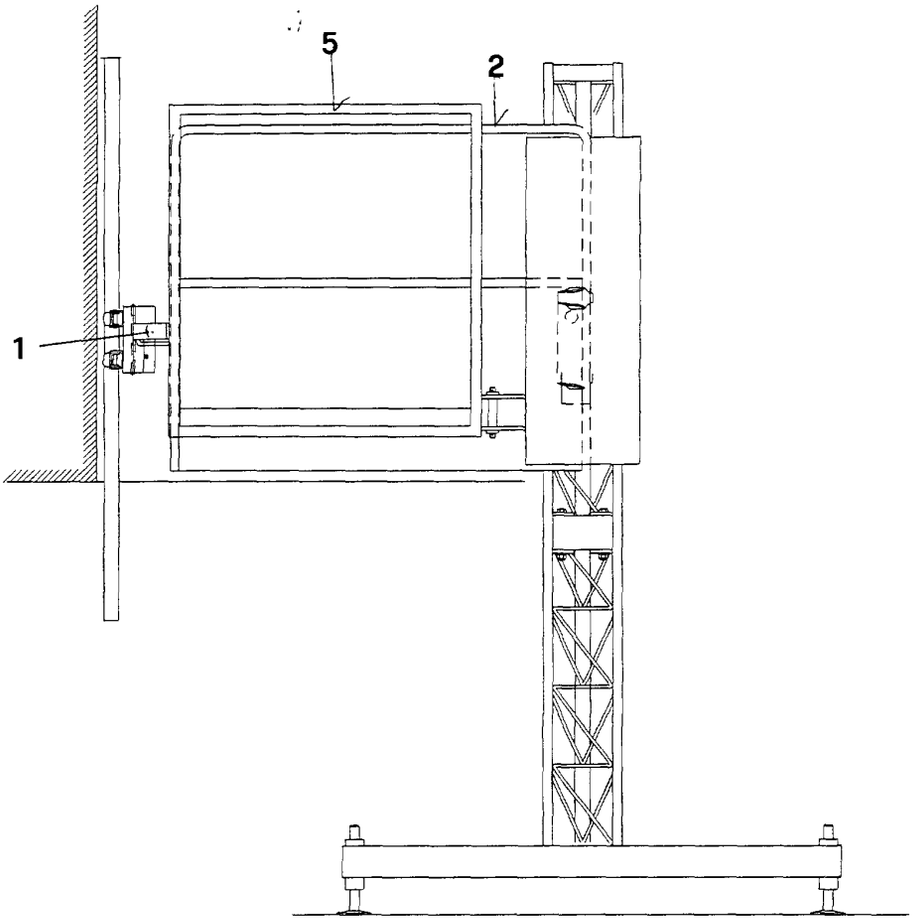

FIG 3

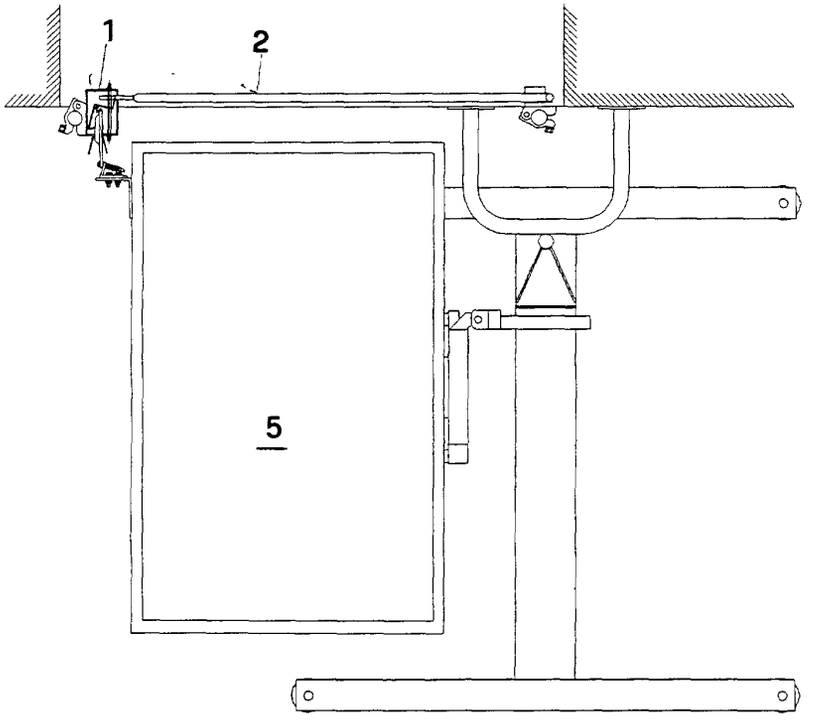

FIG 4

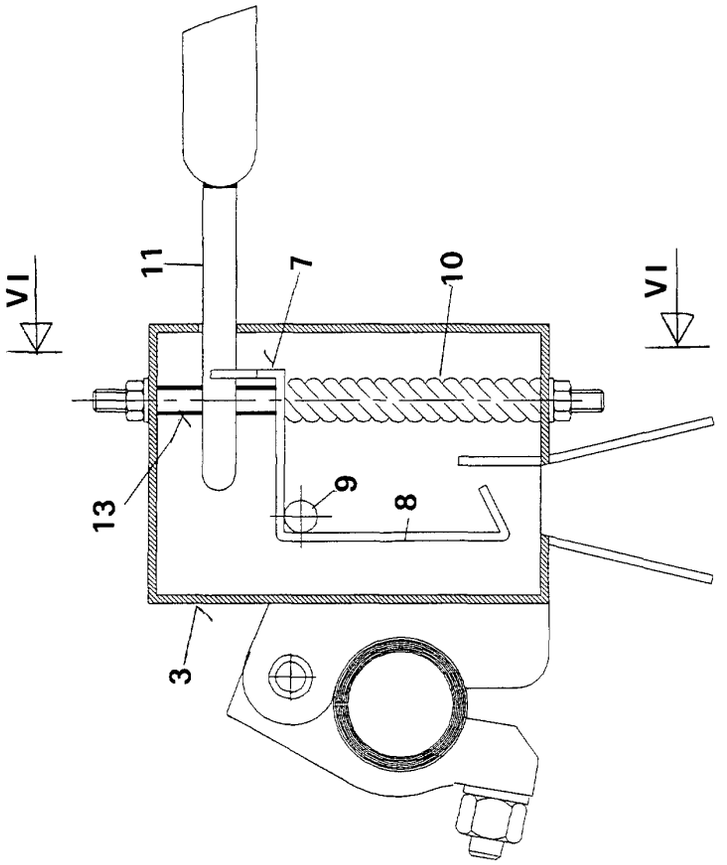

FIG 5

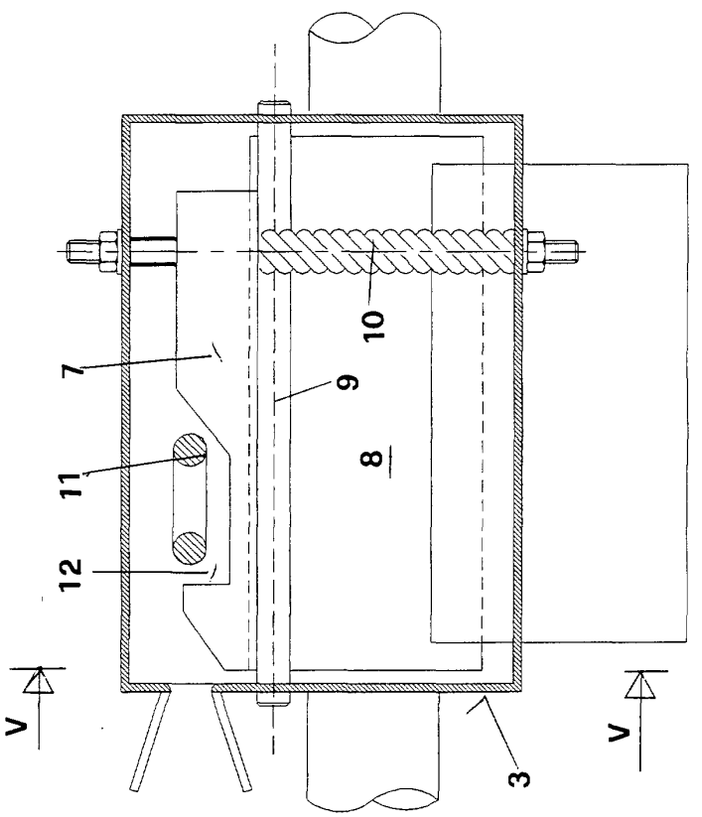

FIG 6

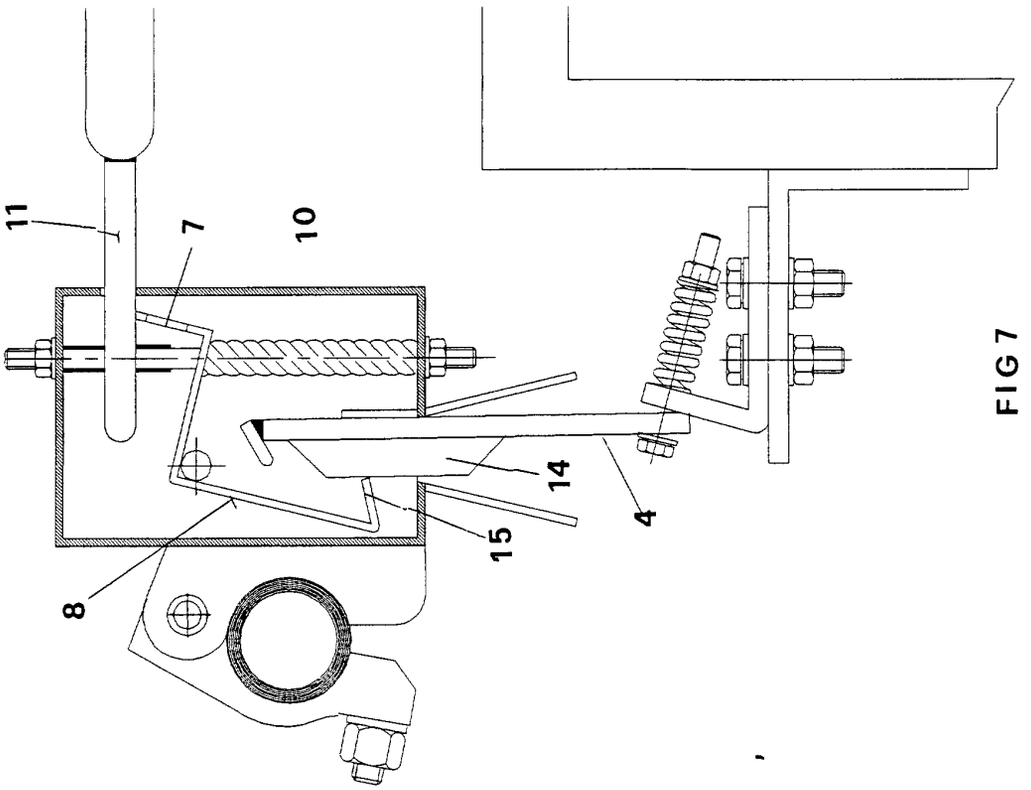

FIG 7

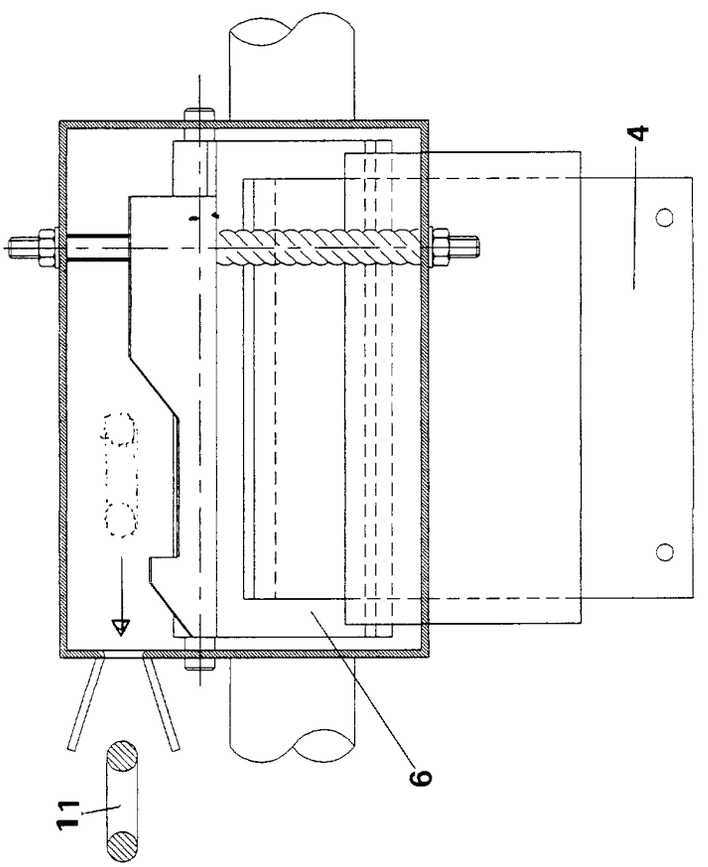

FIG 8

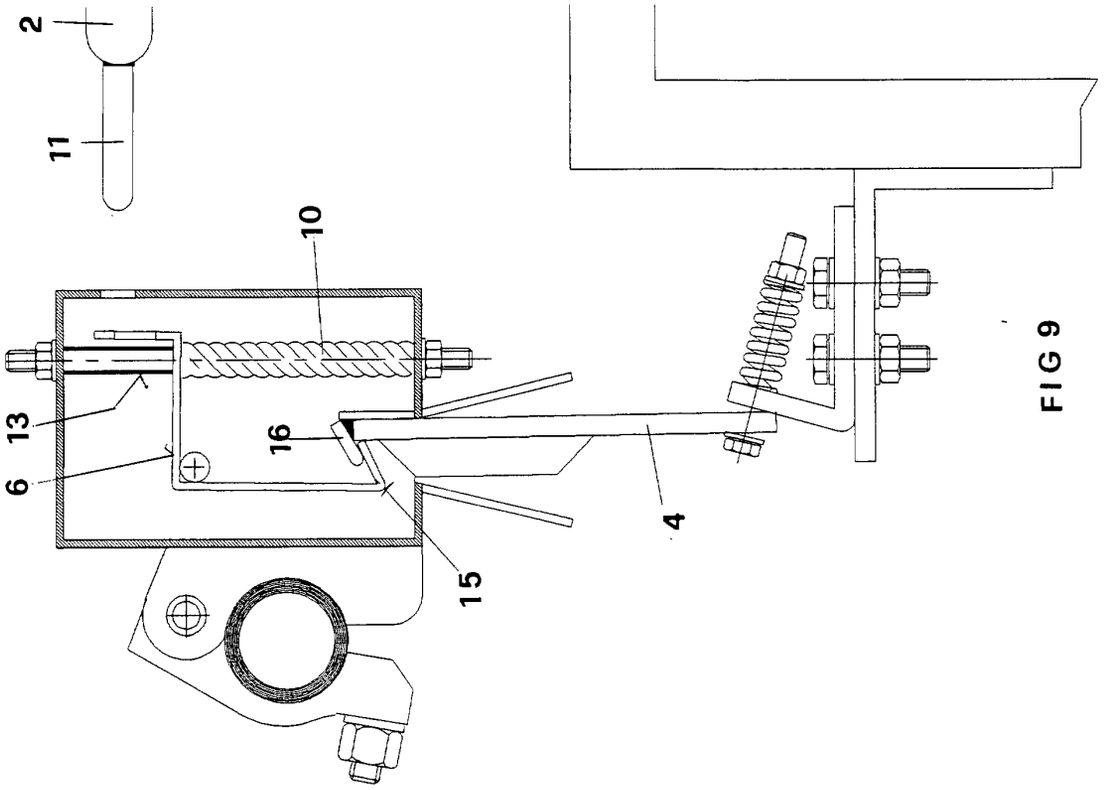

FIG 9

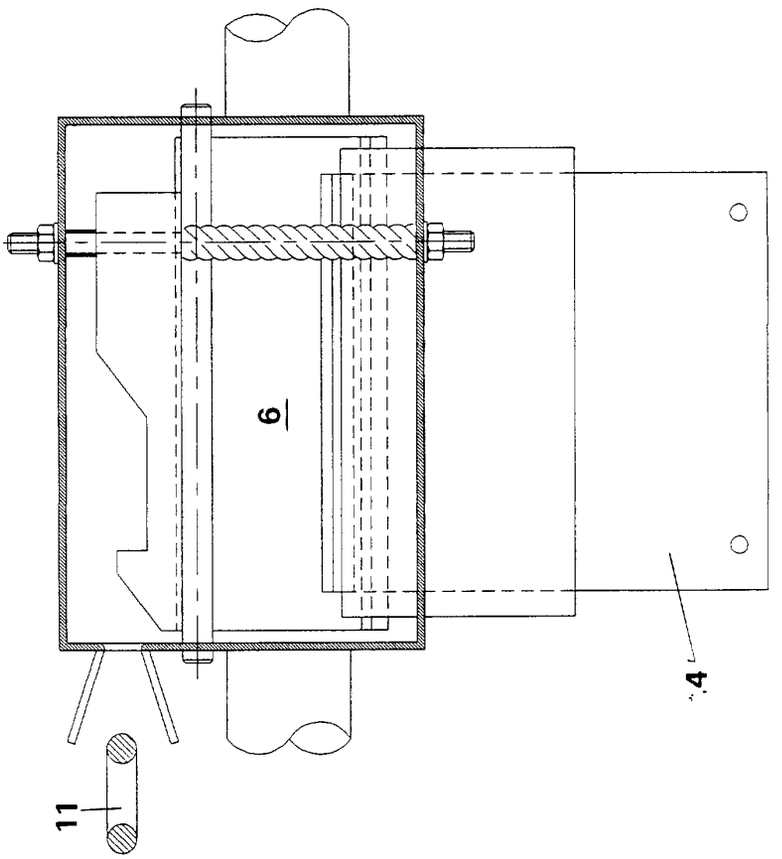

FIG 10

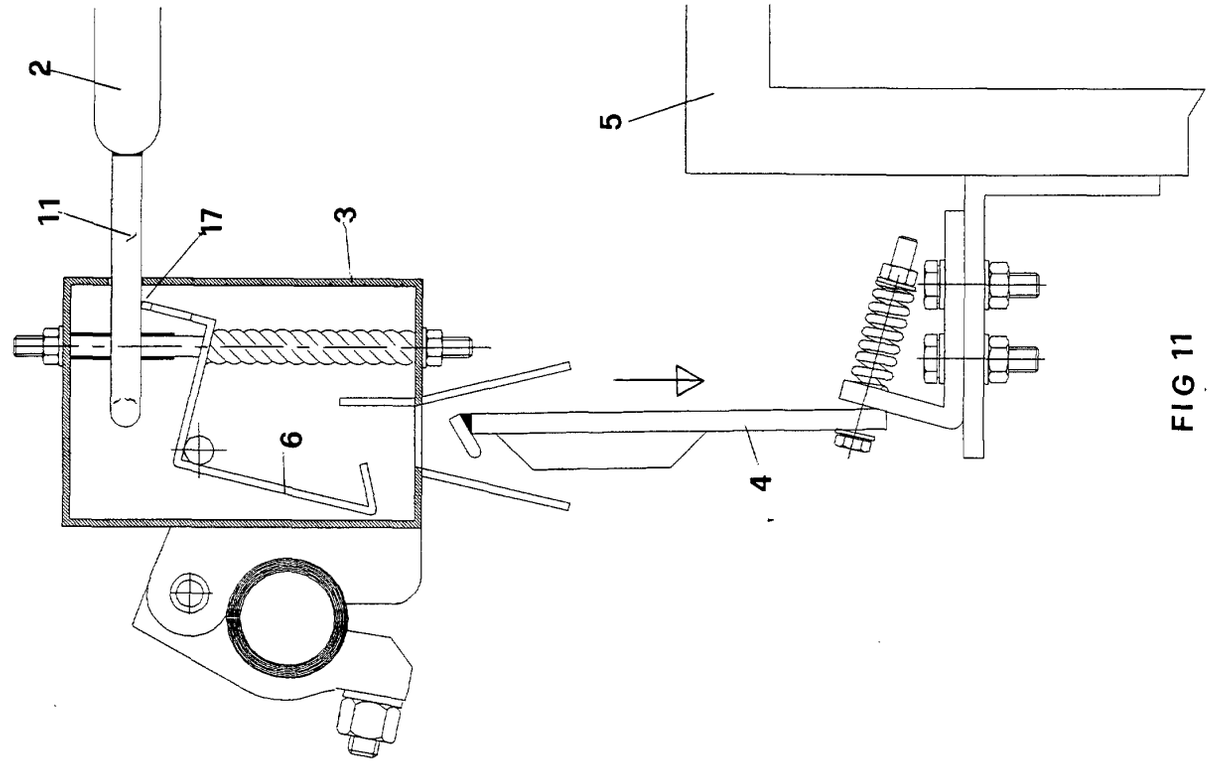

FIG 11

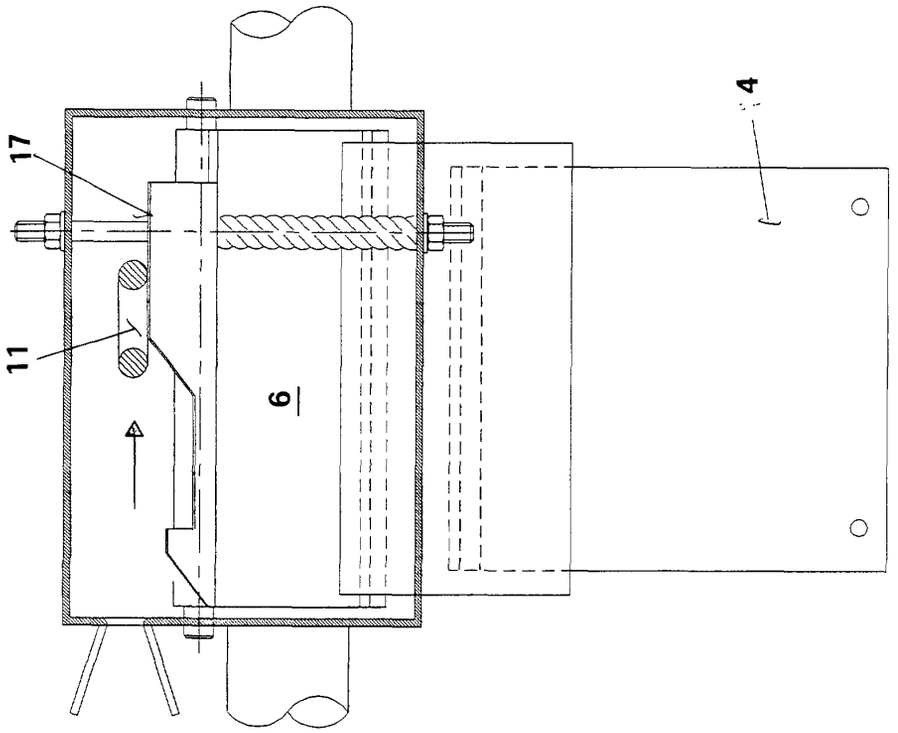

FIG 12

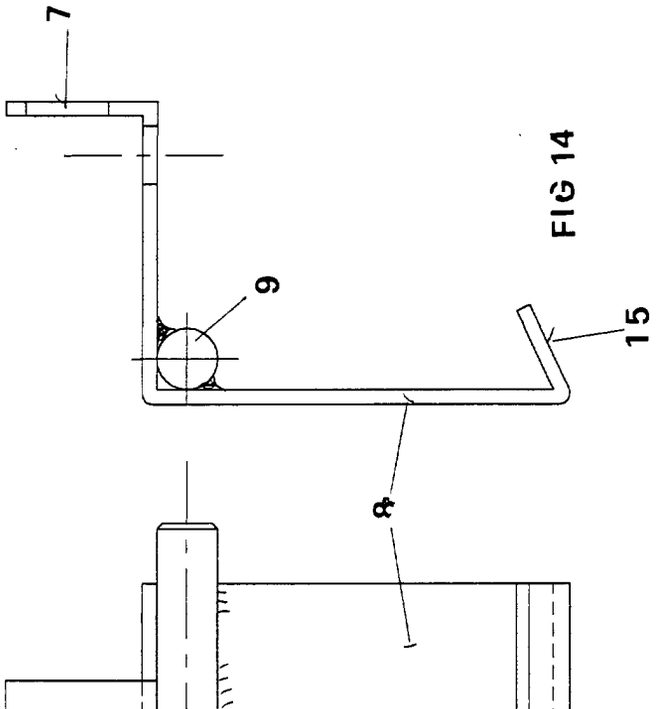

FIG 14

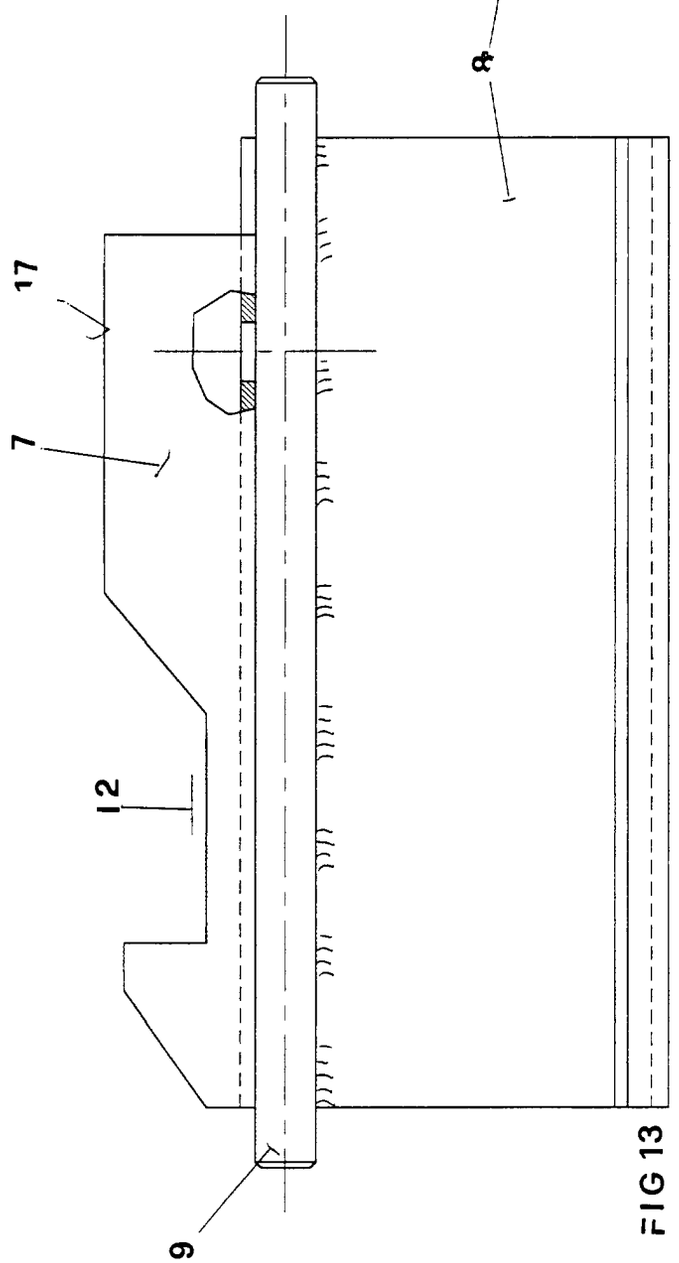

FIG 13

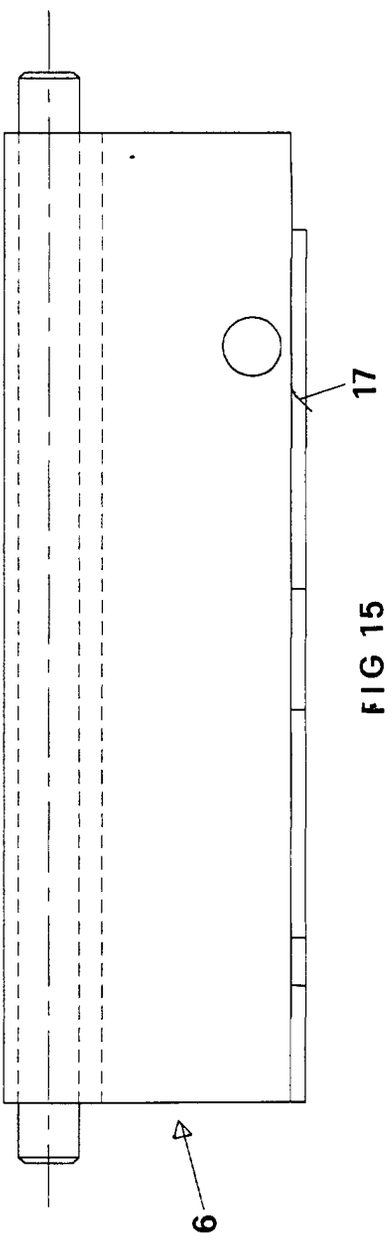

FIG 15

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 11 2758

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X A	US 4 483 420 A (BYRNE FRANCIS J) 20 November 1984 (1984-11-20) * abstract; figures 1,2 * -----	1-3 4	B66B13/20

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B66B
E04G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	13 September 2001	Nelis, Y

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 11 2758

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-09-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4483420 A	20-11-1984	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82