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(54) Cargo space door locking device.

(57) Assembly for securing swing doors (16, 17) of a cargo space like a loading space of a truck or a container, comprising a door locking means (1) which is designed to extend during use within the swinging range of the door means and which comprises a locking body (2) provided with at least a first securing means (25, 26), also comprising for each first securing means a fixed second securing means (12, 8, 9) like a corner fitting (12) of a container, which is located out of the swinging range of the doors and is suitable to be in securing engagement with the related first securing means during use. The locking body (2) is formed and supported by the securing means such as to extend freely from the doors during use. The locking body may be formed as a two-part brace, wherein the two brace members (4, 5) may be interlocked after the first and second securing means have been brought into securing arrangement with one another.

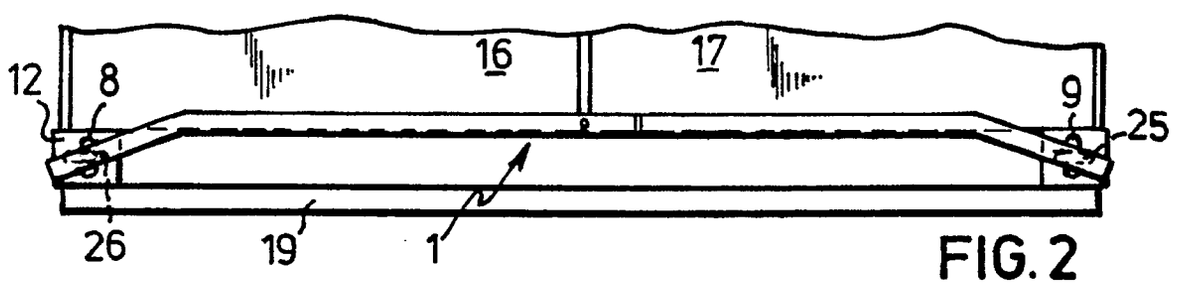

FIG. 2

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The invention relates to an apparatus for securing doors of trucks, in particular an assembly for securing a door means, formed by one or more swing doors, of a cargo space like a loading space of a truck or a container, comprising a door means locking means which is designed to extend during use within the swinging range of the door means and which comprises a locking body provided with at least a first securing means, also comprising for each first securing means a mating second securing means which has a fixed position and is located out of the swinging range of the door means and which is designed to be in securing engagement with the related first securing means during use, and comprising at least one third securing means for ensuring a securing arrangement of the first and the second securing means.

Such a door securing apparatus is known from US patent specification 3,544,145. The truck door securing device as described therein comprises two vertical bars for each swing door, said bars being rotatably guided by bows mounted on the door and being provided with a pawl means at both ends. Above and below the swing doors, on the framework of the loading space or container, hookshaped means have been provided. Both vertical bars are connected to a swing rod being swingable in the horizontal, by which the vertical bars can rotate around their axes, so as to bring the pawl means in or out of securing engagement with the related hookshaped means. The afore-mentioned securing engagement is secured by swinging the swing rod against the door as well as by lowering it into the hook provided on the door, if necessary with the aid from a padlock.

The known door securing apparatus has the demerit of comprising a considerable number of moving members, adding a lot of weight to the related door and thus to the related loading space/container as well. Apart from that, the way in which the known door securing apparatus and the related doors are connected requires one securing apparatus for each door of each loading space/container, which is rather expensive. The many parts of the known securing apparatus make it susceptible to deliberate destruction. This is caused, inter alia, by the mounting and guiding of different parts on the related doors, as a result of which these parts cannot be made sufficiently strong.

The purpose of the invention is to provide a door securing apparatus as mentioned in the preamble, which provides an improvement with respect to the afore-mentioned deficiencies. In this respect the invention is characterized in that the locking body is formed and supported by the locking means such as to extend freely from the door means during use.

Since the locking body as stated by the invention can be positioned independently from the door or doors, no provisions need to be applied to the door or doors for guiding or retaining the locking body. As a result the self-weight of the door or doors and thus that of the loading space/container will not be increased. Furthermore, the dimensions of the locking body are not bounded by the dimensions of guiding means et cetera on the door or doors. Therefore the locking body can have a robust embodiment. Another merit of the invention is that the door means locking means does not have to be applied to a loading space/container until it is really necessary, namely in case said loading space/ container is loaded. Thus, it will not be necessary anymore to provide every loading space/container with a door means locking means, which results in a saving of expenses.

In a preferred embodiment the first securing means is provided with a projection and the related second securing means is provided with an accomodating space for said projection, wherein the cross-sections of the opening of the accomodating space and the projections are so out-of-round that the projection can be inserted into the accomodating space in one or more angular positions and can be secured by twisting the projection in relation to the accomodating space to prevent its removal from said accomodating space. This facilitates the application of the door means locking means. In addition to this, it is advantageous that the second securing means, as compared to the known door securing apparatus, do not form any projecting parts.

The door means locking means can extend freely from one supporting point as formed by the interconnection between the first and second securing means. Preference is given, though, to a second point of support of this kind, in order to increase the resistance of the door securing apparatus against destruction. In a preferred embodiment of the invention the locking body is elongated for that purpose and is composed of two elongated members, both of them being provided at one end with a first securing means and at the other end with complementary mating connecting means. The locking body is preferably formed such as to extend mainly within the swinging range of the door means. Thus, both of the two securing means of a conventional door means, which consists of two opposite opening swing doors, may be positioned at the level of the lower angular points of the frame work of the loading space/container, wherein the locking body extends across approximately the whole width of the loading space/container. The second securing means can be formed by corner fittings already located on a container or semitrailer or applied to it later.

It will be clear that the door means locking means as described above is also within the scope of the invention. The door means locking means as such is a releasable and separately removable part of the assembly according to the invention.

Now the invention will be discussed in view of a preferred embodiment as illustrated in the drawing.

Figure 1 shows the assembly according to the preferred embodiment in a detached state, before being mounted on a container;

figure 2 shows the assembly according to figure 1 as mounted on the container, and

figure 3 shows details of the door means locking means, with a cylinder lock.

In fig.1 a part of a container 18 located on a loading platform 19 of a truck is shown. The container 18 is of a standard type and is provided with corner fittings 12 and 13 at its vertices. These corner fittings 12 and 13 are characterized by a hollow, cubical construction, the outwardly facing surfaces of which are provided with openings for the accomodation and accessibility of fastening devices. These openings are out-of-round and elongated. Figure 1 shows two of such openings, indicated by 8 and 9. Apart from that, the container 18 is provided with two conventional swing doors 16 and 17, which are hinged onto the framework 22 of the container 18 by means of hinges 20 and 21.

Figures 1 and 3 show a locking means 1 which comprises a brace 2 being composed of two members 2a and 2b, both of which comprise a straight portion 3a and 3b as well as portions obliquely positioned on it 4 and 5. Each of the portions 4 and 5 is provided with a projection 6 and 7, respectively, projecting transversely to it and comprising an end plate 25 and 26, respectively, as well as an intermediate portion 23, 24 located between said end plate and the related end portion 4 and 5, respectively. The elongated end plates 25 and 26 have such dimensions that they can be inserted in one position into the corner fittings 12 and 13 through the related elongated openings 8 and 9, yet they cannot be removed from it anymore after having been turned through an angle of 90 degrees. The end section 27 of portion 3a is reduced in diameter in relation to the remaining portion of brace member 2a. The end section 28 of portion 3b is shaped like a reversed U-profile which fits over the reduced section 27. Both the end sections are provided with holes 30 and 31 which are in alignment in an assembled state and are used for accomodating a cylinder lock 10.

In applying the brace 2 the members 2a and 2b are held upright in such a manner that their projections 6 and 7, particularly the elongated end plates 25 and 26, can be inserted into the openings 8, 9 of the corner fittings 12 and 13. When the elongated end plates 25 and 26 are positioned within the corner fittings 12 and 13 and the intermediate sections 23 and 24 extend through the openings 8 and 9, the brace members 2a and 2b are tilted toward one another and into a substantially horizontal position, wherein during the bringing together of the end sections 27 and 28 the U-profile is caused to fit over the reduced section 27 and the portions 3a and 3b will be brought into alignment. As a matter of fact the holes 30 and 31 are in alignment as well and they form a passage which fits the cylinder lock 10. After the cylinder lock 10 has been applied into this passage and after its locking part 11 has been twisted, the end sections 27 and 28 and as a result also the portions 3a and 3b are secured in relation to one another. The use of a cylinder lock has the additional benefit that it does not need to project from the brace, and thus it will be more difficult to destruct. The brace 2 is fixed now in relation to the corner fittings 12 and 13 and consequently in relation to the container 18. Under these conditions the length of the intermediate sections 23 and 24 is such that the central part 3 of the brace 2 extends just in front and within the swinging range of the doors 16 and 17. The final state is illustrated in figure 2, which shows that the brace 2 does not need any points of support on the doors and that its cross-sectional dimensions will only be limited in the direction towards the doors.

Finally it is noted that, if necessary, the securing apparatus according to the invention may be applied as an additional fastening to the containers provided with the known securing device, wherein the locking body can prevent the removal of the pawl means from the hook-shaped means.

Claims

1. Assembly for securing door means formed by one ore more swing doors of a cargo space like a loading space of a truck or a container, comprising a door means locking means which is designed to extend within the swinging range of the door means and which comprises a locking body provided with at least one first securing means, further comprising a second securing means for each first securing means, wherein said second securing means has a fixed position and is located outside the swinging range of the door means and is designed to be in securing engagement with the related first securing means during use, **characterized in that** the locking body (2) is formed and supported by the securing means (6, 7; 8, 9) such as to extend freely from the door means during use.

2. Assembly according to claim 1, **characterized in that** the first securing means (6, 7) comprises a projection and the related second securing means (8; 9) is provided with an accomodating space for said projection, wherein the cross-sections of the opening of the accomodating space and the projection are so out-of round that the projection can be inserted into the accomodating space in one or more angular positions and that it is secured by twisting the projection in relation to the accomodating space to prevent its removal from said accomodating space.

3. Assembly according to claims 1 or 2, **characterized in that** the locking body (2) is elongated and is composed of two elongated members (2a; 2b), both being provided at one end with a first securing means (6; 7) and at the other end with complementary mating connecting means (27, 28).

4. Assembly according to claim 2 or 3, **characterized by** a third securing means for securing the position of the first (6, 7) and the second (8, 9) securing means in relation to one another.

5. Assembly according to claim 4, **characterized in that** the third securing means is a cylinder lock (10) which can be inserted into suitable openings (29, 30) arranged in the mating connecting means (27, 28) for securing the connetion of said connecting means.

6. Assembly according to any of the claims 1-5, **characterized in that** the cargo space is a container (18) provided with corner fittings (8, 9), forming second securing means.

7. Door means locking means as described as a part of the assembly according to any of the claims 1-6.

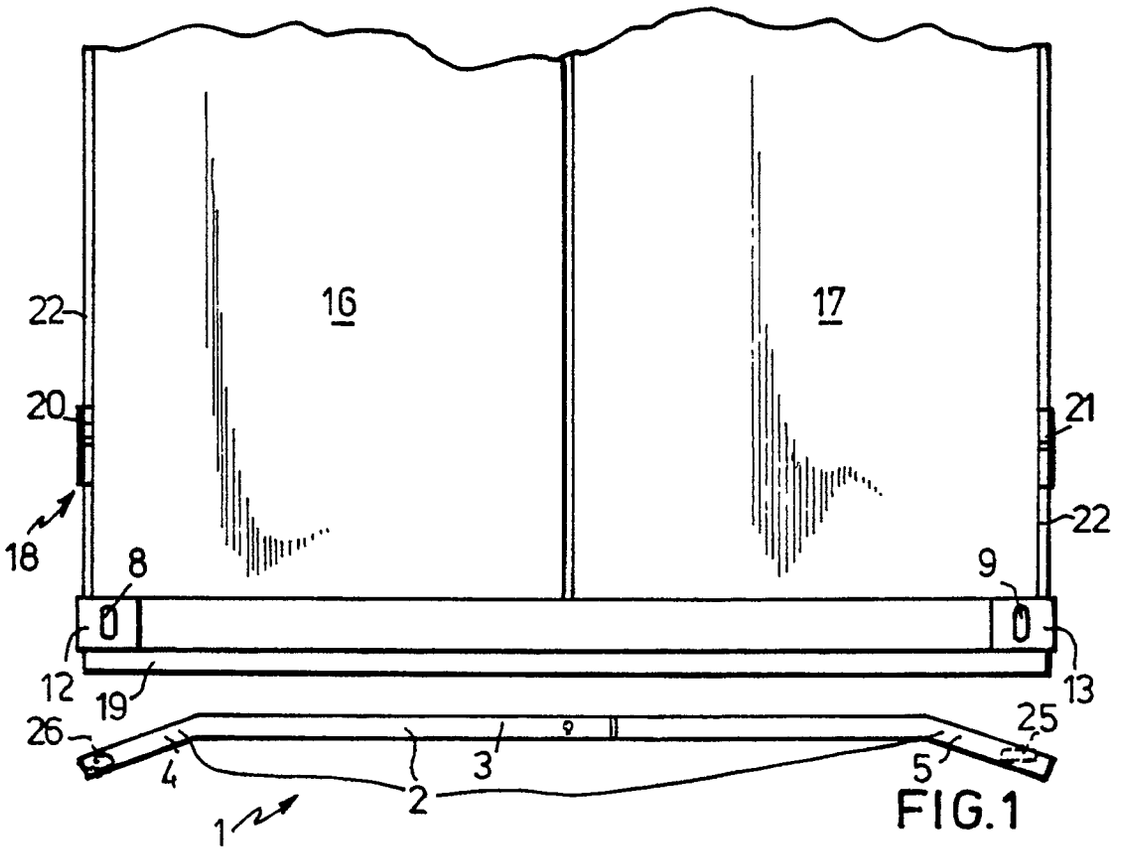

FIG.1

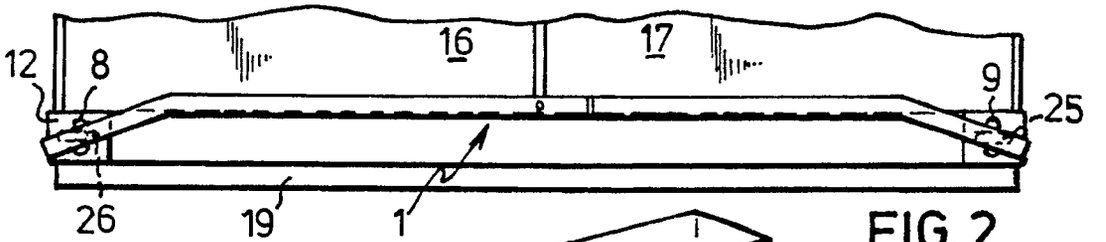

FIG. 2

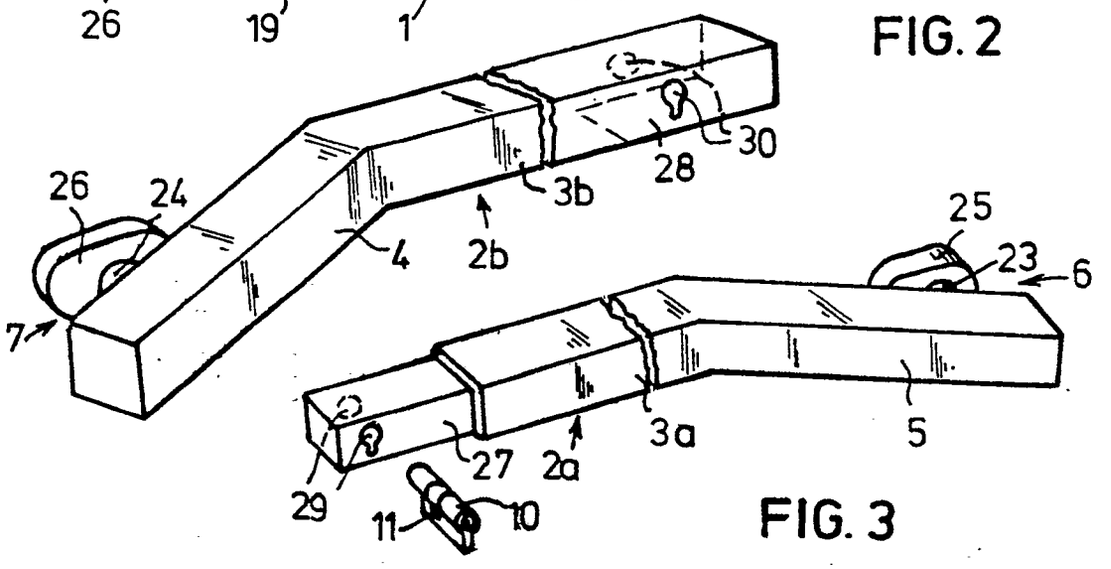

FIG. 3