flying away trajectory occurs.

However, the effort applied by the said spokes in accordance with the said known technical solution is deficient for guaranteed shaping of the flying away trajectory of the device for rescuing. In some cases, incomplete shaping of the flying away trajectory is possible, and correspondingly lowering in an abnormal mode is possible.

To increase the effort being applied by the spokes increase in geometric dimensions thereof is required. The increase in geometric dimensions leads to increase in an interior volume of the device for rescuing that means necessity to use the more powerful gas-filling source, increase in a weight of the device for rescuing and increase in its volume in a folded up inactive state. Increase in the said weight and volume is objectionable as the present type of the device for rescuing is supposed for use in stress situations.

Summary of the Invention

Embodiments of t~~T~~he present invention is based on the problem of creating a device for rescuing from a high-rise facility which may provides high reliability level of the device for rescuing from the high-rise facility and high probability of a safe touchdown, in particular a high probability of correct shaping of the flying away trajectory and lowering in a normal mode and high indices of reducing speed of lowering without essential increase in the weight and interior volume of the device and correspondingly the problem to provide a greater distance of moving away from the high-rise facility.

According to a first aspect of the present invention, there is provided~~This problem is accomplished by using~~ a device for rescuing from the high-rise facility comprising several resilient for bending spokes interconnected on one end to form a pyramidal figure, wherein the spokes are located on the edges, an aerodynamic deceleration element fastened to the resilient for bending spokes, connectors located between adjacent resilient for bending spokes, in so doing the connectors are located at some distance from the ends of the resilient for bending spokes, a buffer element fastened in a point of connection of the resilient for bending spokes and a means of fastening an object to be rescued fastened in the point of connection of the resilient for bending spokes on the other side with respect to the buffer element, in so doing each of the resilient for bending spokes is embodied as curved sideways from a central axis of the device.

The resilient for bending spokes interconnected to form the pyramidal figure and

the connectors between the spokes form a carcass wherein the aerodynamic deceleration element is located. Rigidity of a construction is provided by the connectors between the spokes. The said elements together may provide deceleration of the device for rescuing during a flight and may provide the smooth lowering of the device with a determined speed of lowering. The buffer element may provides damping of speed of lowering upon touchdown.

A curved shape of the resilient for bending spokes may provides a greater effort for repulsion of the device for rescuing from the high-rise facility and correspondingly, a greater moving away of the device for rescuing from the high-rise facility, high probability of correct shaping of the flying away trajectory and as a result high reliability level of the device for rescuing from the high-rise facility and high probability of the safe touchdown.

Preferably, the resilient for bending spokes and the connectors represent inflatable elements and the device for rescuing additionally comprises at least one gas-filling means to fill the resilient for bending spokes and the connectors.

Using the inflatable elements provides a small volume of the device for rescuing in the folded up inactive state.

Moreover, the resilient for bending spokes and the connectors can have a single interior volume. This provides a possibility to use the one gas-filling means.

Deceleration shields fastened to the resilient for bending spokes between the adjacent resilient for bending spokes can be used as the aerodynamic deceleration element.

Parachute domes fastened to the resilient for bending spokes between the adjacent resilient for bending spokes can be also used as the aerodynamic deceleration element.

Preferably, the resilient for bending spokes are interconnected through a connection element, representing a toroidal chamber and the buffer element is embodied as several inflatable spokes fastened to the connection element and directed oppositely to the resilient for bending spokes and the ends of the inflatable spokes are interconnected using inextensible or low-extensible connecting elements.

The toroidal chamber serves as a basic connecting and force element and may provides a rigidity of a carcass of the device for rescuing along with the connectors.

The inextensible or low-extensible connecting elements of the spokes of the buffer element do not allow the buffer element to become deformed with a loss of its

buffer properties upon touchdown, i.e. they essentially provide a constant shape of the buffer element at the moment of touchdown, in doing so they may have small weight that means less speed of lowering and correspondingly, improvement of the reliability of the device for rescuing from the high-rise facility and enhancement of the probability of the safe touchdown.

Preferably, inextensible or low-extensible material serving as the inextensible or low-extensible connecting elements is fastened to the ends of the inflatable spokes of the buffer device.

It is also preferable that the connecting element represents an inflatable element, in doing so all the inflatable elements of the device have a single volume and the device additionally comprises at least the one gas-filling means to fill all the inflatable elements of the device for rescuing.

According to a second aspect of the present invention, there is provided a~~This problem is also accomplished by using the~~ device for rescuing from the high-rise facility comprising several resilient for bending spokes, the connecting element, in doing so the resilient for bending spokes are adjoined on one side to the connecting element, the aerodynamic deceleration element fastened to the resilient for bending spokes, ~~the~~ connectors located between the adjacent resilient for bending spokes, in doing so the connectors are located at some distance from the ends of the resilient for bending spokes, a~~the~~ means of fastening the object to be rescued fastened to the connecting element and the buffer element adjoined to the connecting element on the other side with respect to the resilient for bending spokes, in so doing each of the resilient for bending spokes is embodied as curved sideways from the central axis of the device.

The resilient for bending spokes, the connecting element and the connectors between the spokes form a carcass wherein the aerodynamic deceleration element is located. Rigidity of a construction is provided by the connectors between the spokes and the connecting element. The said elements together may provide deceleration of the device for rescuing during a flight and provide the smooth lowering of the device with a determined speed of lowering. The buffer element may provides damping of speed of lowering upon touchdown.

The curved shape of the resilient for bending spokes may provides a greater effort for repulsion of the device for rescuing from the high-rise facility and correspondingly, a

greater moving away of the device for rescuing from the high-rise facility, high probability of correct shaping of the flight trajectory and as a result high reliability level of the device for rescuing from the high-rise facility and high probability of the safe touchdown.

Preferably, the resilient for bending spokes, the connectors and the connecting element represent inflatable elements and the device for rescuing additionally comprises at least the one gas-filling means to fill the resilient for bending spokes and the connectors.

Using the inflatable elements provides small volume of the device for rescuing in the folded up inactive state.

Moreover, the resilient for bending spokes and the connectors can have single interior volume. This provides the possibility to use the one gas-filling means.

The deceleration shields fastened to the resilient for bending spokes between the adjacent resilient for bending spokes can be used as the aerodynamic deceleration element.

The parachute domes fastened to the resilient for bending spokes between the adjacent resilient for bending spokes can be also used as the aerodynamic deceleration element.

Preferably, the connecting element is made as a toroidal chamber and the buffer element is embodied as several inflatable spokes fastened to the connection element and directed oppositely to the resilient for bending spokes and the ends of the inflatable spokes of the buffer element are interconnected using inextensible or low-extensible connecting elements.

The inextensible or low-extensible connecting elements of the spokes of the buffer element do not allow the buffer element to become deformed with a loss of its buffer properties upon touchdown, i.e. they essentially provide a constant shape of the buffer element at the moment of touchdown, in doing so they may have a small weight that means less speed of lowering and correspondingly, improvement of the reliability of the device for rescuing from a high-rise facility and enhancement of the probability of the safe touchdown.

Preferably, the inextensible or low-extensible material serving as the inextensible or low-extensible connecting elements is fastened to the ends of the inflatable spokes of

the buffer device.

It is also preferable that the connecting element represents an inflatable element, in doing so all the inflatable elements of the device have single volume and the device additionally comprises at least the one gas-filling means to fill all the inflatable elements of the device for rescuing.

According to a third aspect of the present invention, there is provided a~~This problem is also accomplished by using the~~ device for rescuing from the high-rise facility comprising several resilient for bending spokes, the toroidal chamber, in doing so the resilient for bending spokes are adjoined on one side to the toroidal chamber, an~~the~~ aerodynamic deceleration element fastened to the resilient for bending spokes,~~the~~ connectors located between the adjacent resilient for bending spokes, in doing so the connectors are located at some distance from the ends of the resilient for bending spokes, a~~the~~ means of fastening an~~the~~ object to be rescued fastened to the toroidal chamber and a~~the~~ buffer element representing the spokes adjoined to the toroidal chamber on the other side with respect to the resilient for bending spokes, in so doing each of the resilient for bending spokes has at least one bend sideways from a~~the~~ central axis of the device and the connectors are located near the present bend and the inextensible or low-extensible material is fastened to the ends of the spokes of the buffer device.

The resilient for bending spokes, the toroidal chamber and the connectors between the spokes form a carcass wherein the aerodynamic deceleration element is located. Rigidity of a construction is provided by the connectors between the spokes and the toroidal chamber. The said elements together may provide deceleration of the device for rescuing during a flight and may provide the smooth lowering of the device with a determined speed of lowering. The buffer element may provides damping of speed of lowering upon touchdown.

The curved shape of the resilient for bending spokes may provide~~s~~ a greater effort for repulsion of the device for rescuing from the high-rise facility and correspondingly, a greater moving away of the device for rescuing from the high-rise facility, high probability of correct shaping of the flying away trajectory and as a result high reliability level of the device for rescuing from the high-rise facility and high probability of the safe touchdown.

The inextensible or low-extensible material fastened to the spokes of the buffer element does not allow the buffer element to become deformed with a loss of its buffer

properties upon touchdown, i.e. it essentially provides a constant shape of the buffer element at the moment of touchdown, in doing so it may have~~has~~ a small weight that means less speed of lowering and correspondingly, improvement of the reliability of the device for rescuing from the high-rise facility and enhancement of the probability of the safe touchdown.

Preferably, the resilient for bending spokes, the connectors, the toroidal chamber and the spokes of the buffer element represent inflatable elements and the device for rescuing additionally comprises at least the one gas-filling means to fill the resilient for bending spokes and the connectors.

Using the inflatable elements provides small volume of the device for rescuing in the folded up inactive state.

Moreover, the resilient for bending spokes, the connectors, the toroidal chamber and the spokes of the buffer device can have single interior volume. This provides the possibility to use the one gas-filling means.

The deceleration shields fastened to the resilient for bending spokes between the adjacent resilient for bending spokes can be used as the aerodynamic deceleration element.

The parachute domes fastened to the resilient for bending spokes between the adjacent resilient for bending spokes can be also used as the aerodynamic deceleration element.

Additionally, each of the resilient for bending spokes can have two bends sideways from the central axis of the device and the connectors are located near the nearest bond to the toroidal chamber.

There is also disclosed~~This problem is also accomplished by~~ using the buffer device representing a part of the device for rescuing from the high-rise facility comprising several inflatable spokes fastened to the connecting element and directed to one side from the connecting element, in doing so the ends of the inflatable spokes of the buffer device are interconnected using the inextensible or low-extensible connecting elements.

The inextensible or low-extensible connecting elements of the spokes of the buffer element do not allow the buffer element to become deformed with a loss of its buffer properties upon touchdown, i.e. they essentially provide a constant shape of the buffer element at the moment of touchdown, in doing so they may have small weight that

means less speed of lowering and correspondingly, improvement of the reliability of the device for rescuing from the high-rise facility and enhancement of the probability of the safe touchdown.

Preferably, the inextensible or low-extensible material serving as the inextensible or low-extensible connecting elements is fastened to the ends of the inflatable spokes of the buffer device.

The inflatable spokes can also be embodied as curved. The buffer device with curved spokes may retains better its shape upon touchdown.

Moreover, it is preferable that the connecting element has a toroidal shape and embodied as inflatable.

There is also disclosed~~This problem is also accomplished by~~ a method for lowering from the high-rise facility using the device for rescuing to be filled with gas, comprising an arrangement of the object to be lowered with the device for rescuing fastened to it at the edge of the high-rise facility, in doing so the device for rescuing is located from outer side of the high-rise facility and fixation of a position of the object to be rescued and means of rescuing in relation to the high-rise facility using a means of fixation; initialization at least of one source to fill the device for rescuing with gas, opening of a knapsack of a container and stretching of elements of the device for rescuing; disconnection of the means of fixation with subsequent catapulting of the object to be rescued from the high-rise facility upon achievement of a determined degree of filling the device for rescuing with gas; filling with gas and stretching of the device for rescuing to an active position and further lowering; damping of speed of lowering by the buffer element upon touchdown.

Fixation of the position of the object to be rescued and the means of rescuing in relation to the high-rise facility and subsequent disconnection of the means of fixation upon achievement of the determined degree of filling the device for rescuing with gas makes it possible to form an effort for repulsion of the device for rescuing from the high-rise facility and thereby to impart a much greater momentum to the device for rescuing together with the object to be rescued.

This makes it possible to provide a greater distance of moving away from the high-rise facility that means shaping of more safe flying away trajectory and correspondingly, enhancement of the probability of the safe touchdown and the

reliability of the device.

There is also disclosed~~This problem is also accomplished by using~~ the device for rescuing from the high-rise facility comprising a carcass to be filled with gas to which the aerodynamic deceleration element is fastened, at least one source to fill the carcass with gas and the means of fixation of the device for rescuing in relation to the high-rise facility, in doing so the device for rescuing is embodied with a possibility to disconnect the means of fixation upon achievement of the determined degree of filling the carcass with gas.

The means of fixation of the position of the object to be rescued and the means of rescuing in relation to the high-rise facility and the possibility of its subsequent disconnecting upon achievement of the determined degree of filling the device for rescuing with gas makes it possible to form an effort for repulsion of the device for rescuing from the high-rise facility and thereby to impart a much greater momentum to the device for rescuing together with the object to be rescued.

This makes it possible to provide a greater distance of moving away from the high-rise facility that means shaping of more safe flying away trajectory and correspondingly, enhancement of the probability of the safe touchdown and the reliability of the device.

Additionally, the source to fill with gas can continue filling of the carcass of the device for rescuing after breaking of the means of fixation to achieve active stretched state of the device for rescuing.

The carcass of the device can comprise several resilient for bending spokes, the connecting element, in doing so the resilient for bending spokes are adjoined on one side to the connecting element, the connectors located between the adjacent resilient for bending spokes, in doing so the connectors are located at some distance from the ends of the resilient for bending spokes, the means of fastening the object to be rescued fastened to the connecting element and the buffer element adjoined to the connecting element on the other side with respect to the resilient for bending spokes, in doing so the aerodynamic deceleration element fastened to the resilient for bending spokes.

Preferably, each of the resilient for bending spokes is embodied as curved sideways from the central axis of the device.

The curved shape of the resilient for bending spokes may provides a greater effort for repulsion of the device for rescuing from the high-rise facility and correspondingly, a

greater moving away of the device for rescuing from the high-rise facility, high probability of correct shaping of the flying away trajectory and as a result high reliability level of the device for rescuing from the high-rise facility and high probability of the safe touchdown.

Preferably, the buffer element is embodied as several inflatable spokes fastened to the connection element and directed oppositely to the resilient for bending spokes and the inextensible or low-extensible material is fastened to the ends of the spokes of the buffer device.

The inextensible or low-extensible material fastened to the spokes of the buffer element do not allow the buffer element to become deformed with a loss of its buffer properties upon touchdown, i.e. it essentially provides a constant shape of the buffer element at the moment of touchdown, in doing so it may have~~has~~ small weight that means less speed of lowering and correspondingly, enhancement of the reliability of the device for rescuing and the probability of the safe touchdown.

There is also disclosed~~This problem is also accomplished by~~ a method for actuation of the device for rescuing from the high-rise facility comprising the carcass to be filled with gas to which the aerodynamic deceleration element is fastened, at least one source to fill the carcass with gas and the means of fixation of the device for rescuing in relation to the high-rise facility consisting in blocking of the means of fixation of the device for rescuing in relation to the high-rise facility and filling the carcass with gas using at least the one source to fill the carcass with gas; disconnecting of the means of fixation upon achievement of the determined degree of filling the carcass with gas.

Blocking of the means of fixation of the position of the object to be rescued and the means of rescuing in relation to the high-rise facility and its subsequent breaking upon achievement of the determined degree of filling the device for rescuing with gas makes it possible to form an effort for repulsion of the device for rescuing from the high-rise facility and thereby to impart a much greater momentum to the device for rescuing together with the object to be rescued.

This makes it possible to provide a greater distance of moving away from the high-rise facility that means shaping of more safe flying away trajectory and correspondingly, enhancement of the probability of the safe touchdown and the reliability of the device.

bending spokes, the connectors, the toroidal chamber and the spokes of the buffer element represent inflatable elements and additionally comprises at least one gas-filling means to fill the inflatable elements with gas.

19. The device as claimed in claim 18 characterized in that the resilient for bending spokes, the connectors, the toroidal chamber and the spokes of the buffer device have a single interior volume.

20. The device as claimed in any one of the claims 17, 18 and 19 characterized in that the aerodynamic deceleration element represents the deceleration shields fastened to the resilient for bending spokes between the adjacent resilient for bending spokes.

21. The device as claimed in any one of the claims 17, 18 and 19 characterized in that the aerodynamic deceleration element represents the parachute domes fastened to the resilient for bending spokes between the adjacent resilient for bending spokes.

22. The device as claimed in any one of the claims 17, 18 and 19 characterized in that each of the resilient for bending spokes has two bends sideways from a central axis of the device and the connectors are located near the nearest bond to the toroidal chamber.

~~23. The buffer device comprising several inflatable spokes fastened to the connection element and directed to one side from the connecting element, characterized in that the ends of the inflatable spokes of the buffer device are interconnected using inextensible or low-extensible connecting elements.~~

~~24. The buffer device as claimed in claim 23 characterized in that inextensible or low-extensible material serving as the inextensible or low-extensible connecting elements is fastened to the ends of the inflatable spokes of the buffer device.~~

~~25. The buffer device as claimed in any one of the claims 23 and 24 characterized in that the inflatable spokes are embodied as curved.~~

~~26. The buffer device as claimed in any one of the claims 23 and 24 characterized in that the connecting element has a toroidal shape and embodied as inflatable.~~

~~27. The buffer device as claimed in claim 25 characterized in that the connecting element has a toroidal shape and embodied as inflatable.~~

~~28. The method for lowering from a high-rise facility using a device for rescuing to be filled with gas, consisting in:~~

~~arrangement of an object to be lowered with the device for rescuing fastened to~~

the object at the edge of a high-rise facility, in doing so the device for rescuing is located from outer side of the high-rise facility;

fixation of a position of the object to be rescued in relation to the high-rise facility using a means of fixation;

initialization at least of one source to fill the device for rescuing with gas, opening of a knapsack-container and stretching of elements of the device for rescuing;

disconnection of a means of fixation with subsequent catapulting of the object to be rescued from the high-rise facility upon achievement of a determined degree of filling the device for rescuing with gas;

filling with gas and stretching of the device for rescuing to an active position and further lowering;

damping of speed of lowering by the buffer element upon touchdown.

29. The device for rescuing from the high-rise facility comprising:

a carcass to be filled with gas to which the aerodynamic deceleration element is fastened, at least one source to fill the carcass with gas and the means of fixation of the device for rescuing in relation to the high-rise facility characterized in that

the device for rescuing is embodied with a possibility to disconnect the means of fixation upon achievement of the determined degree of filling the carcass with gas.

30. The device as claimed in claim 29 characterized in that the gas-filling source continues filling of the carcass of the device for rescuing after disconnecting of the means of fixation.

31. The device as claimed in claim 30 characterized in that the carcass of the device comprises several resilient for bending spokes, the connecting element, in doing so the resilient for bending spokes are adjoined on one side to the connecting element, the connectors located between the adjacent resilient for bending spokes, in doing so the connectors are located at some distance from the ends of the resilient for bending spokes, the means of fastening of the object to be rescued fastened to the connecting element and the buffer element adjoined to the connecting element on the other side with respect to the resilient for bending spokes, in doing so the aerodynamic deceleration element fastened to the resilient for bending spokes.

32. The device as claimed in claim 31 characterized in that each of the resilient for bending spokes is embodied as curved sideways from the central axis of the device.

33. The device as claimed in any one of the claims 29 and 30 characterized in that the aerodynamic deceleration element represents the deceleration shields.

34. The device as claimed in any one of the claims 29 and 30 characterized in that the aerodynamic deceleration element represents the parachute domes.

35. The device as claimed in any one of the claims 31 and 32 characterized in that the aerodynamic deceleration element represents deceleration shields fastened to the resilient for bending spokes between the adjacent resilient for bending spokes.

36. The device as claimed in any one of the claims 31 and 32 characterized in that the aerodynamic deceleration element represents parachute domes fastened to the resilient for bending spokes between the adjacent resilient for bending spokes.

37. The device as claimed in any one of the claims 31 and 32 characterized in that the buffer element is embodied as several inflatable spokes fastened to the connection element and directed oppositely to the resilient for bending spokes and the inextensible or low-extensible material is fastened to the ends of the inflatable spokes of the buffer device.

38. The device as claimed in claim 36 characterized in that the buffer element is embodied as several inflatable spokes fastened to the connection element and directed oppositely to the resilient for bending spokes and the inextensible or low-extensible material is fastened to the ends of the inflatable spokes of the buffer device.

39. The device as claimed in claim 37 characterized in that the buffer element is embodied as several inflatable spokes fastened to the connection element and directed oppositely to the resilient for bending spokes and the inextensible or low-extensible material is fastened to the ends of the inflatable spokes of the buffer device.

40. The method for actuation of the device for rescuing from the high-rise facility comprising the carcass to be filled with gas to which the aerodynamic deceleration element is fastened, at least one source to fill the carcass with gas and the means of fixation of the device for rescuing in relation to the high-rise facility consisting in:

blocking of the means of fixation of the device for rescuing in relation to the high-rise facility and filling the carcass with gas using at least one source to fill the carcass with gas;

disconnection of the means of fixation upon achievement of the determined degree of filling the carcass with gas.

41. The method as claimed in claim 40 characterized in that filling of the carcass with gas continues after disconnection of the means of fixation.

42. The method as claimed in claim 41 characterized in that the carcass comprises several resilient for bending spokes, the connecting element, in doing so the resilient for bending spokes are adjoined on one side to the connecting element, the connectors located between the adjacent resilient for bending spokes, in doing so the connectors are located at some distance from the ends of the resilient for bending spokes and at the step prior to disconnection of the means of fixation the resilient for bending spokes rest against the wall of the high-rise facility from outer side and the connectors form a perimeter which does not allow the resilient for bending spokes to stretch into the active position.

43. The method as claimed in claim 42 characterized in that upon filling the carcass with gas after disconnection of the means of fixation the device for rescuing assumes its final active shape.