Feb. 13, 1968 E. A. JOERREN 3,368,629

PROTECTIVE CLOSURE FOR FIRE-FIGHTING FOAM GENERATOR

Filed Aug. 12, 1965 2 Sheets-Sheet 1

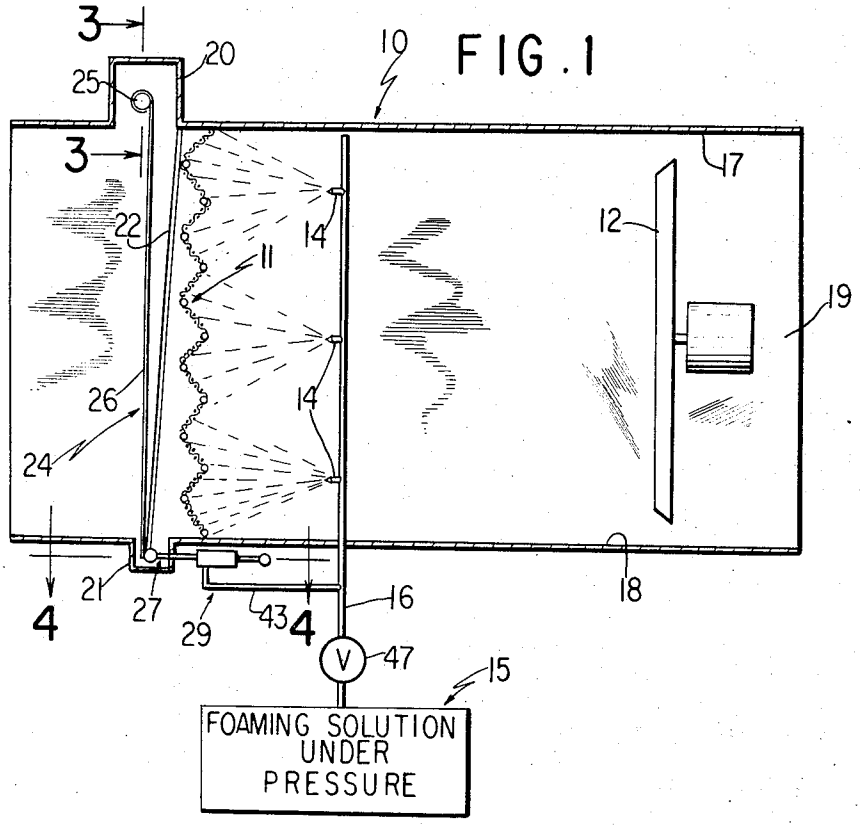


FIG. 1

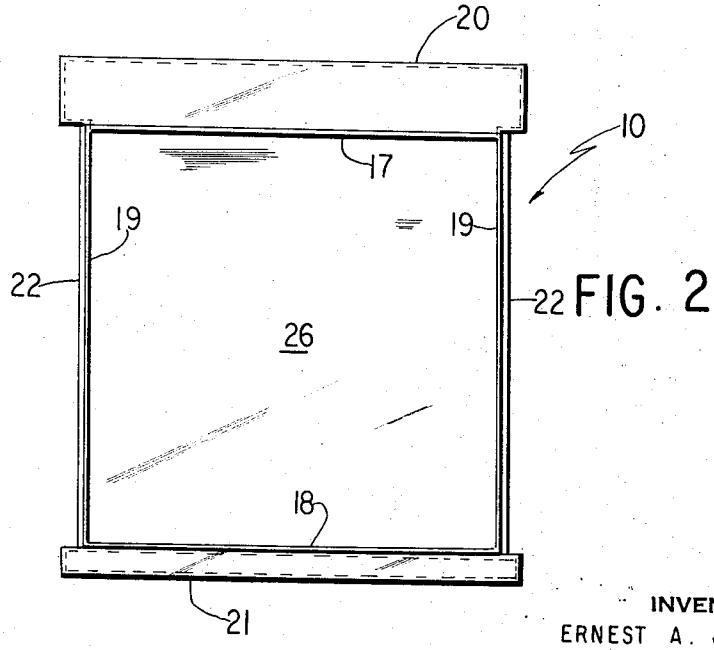


FIG. 2

INVENTOR
ERNEST A. JOERREN
BY
AGENT

Feb. 13, 1968 E. A. JOERREN 3,368,629

PROTECTIVE CLOSURE FOR FIRE-FIGHTING FOAM GENERATOR

Filed Aug. 12, 1965 2 Sheets-Sheet 2

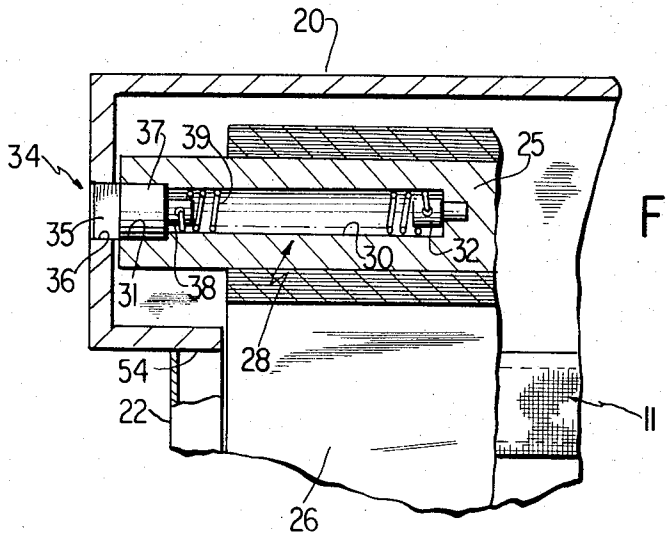


FIG. 3

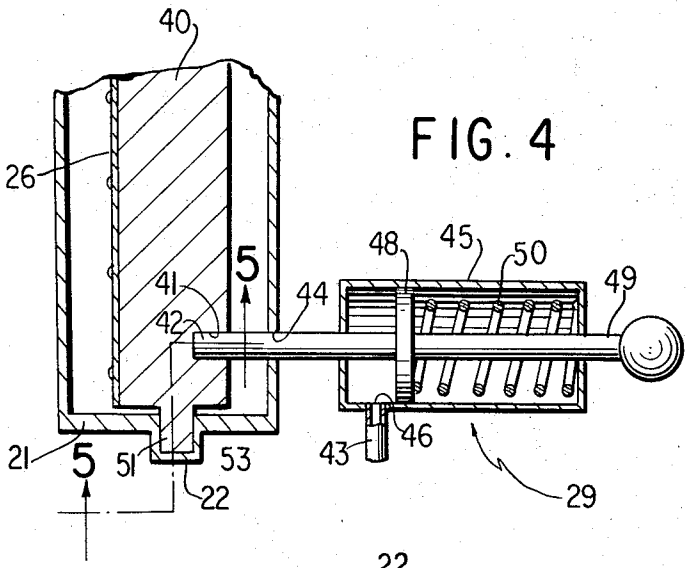


FIG. 4

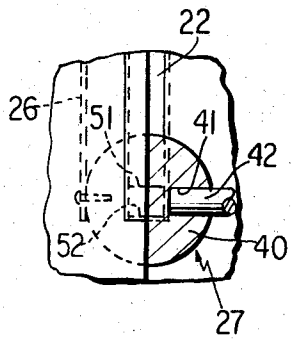


FIG. 5

INVENTOR
ERNEST A. JOERREN
BY
AGENT

United States Patent Office 3,368,629
Patented Feb. 13, 1968

3,368,629

PROTECTIVE CLOSURE FOR FIRE-FIGHTING FOAM GENERATOR

Ernest A. Joerren, Brooklyn, N.Y., assignor to Specialties Development Corporation, Belleville, N.J., a corporation of New Jersey

Filed Aug. 12, 1965, Ser. No. 479,210
12 Claims. (Cl. 169—15)

ABSTRACT OF THE DISCLOSURE

The present invention relates to a fire-fiighting foam generator of the type capable of producing a high expansion foam plug which generally comprises a wind tunnel, an ignitable foam forming net at the front end of the tunnel, a fan at the rear end of the tunnel, spray nozzles for directing a liquid containing a foam forming agent onto the net located between the net and the fan, a closure such as a fire-resisting curtain for protecting the net against flame until the net has been wetted by the solution to produce the foam, and mechanism for rolling up the curtain.

Accordingly, an object of the present invention is to provide an improved protective closure for the foam forming net.

Another object is to provide such a closure which is simple, and economical in construction and is rapid and reliable in operation.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

In accordance with the present invention, the foregoing objects are generally accomplished by providing a protective closure which comprises a roller rotatably mounted on the tunnel, a fire resisting curtain having one end secured to the roller and arranged to be wound up thereon, latch means mounted on the tunnel for releasably engaging the other end of the curtain to position the curtain in front of the net, motor means for rotating the roller to roll up the curtain, and means for rendering the latch means ineffective.

A preferred embodiment of the invention has been chosen for purposes of illustration and description, and is shown in the accompanying drawings, forming a part of the specification, wherein:

FIG. 1 is a schematic longitudinal sectional view of apparatus in accordance with the present invention.

FIG. 2 is a front elevational view of the apparatus shown in FIG. 1.

FIG. 3 is an enlarged sectional view taken along the line 3—3 on FIG. 1, illustrating details of rollers and motor means.

FIG. 4 is an enlarged sectional view taken along the line 4—4 on FIG. 1, illustrating details of the curtain latch means and the means for rendering the latch means ineffective.

FIG. 5 is a sectional view taken along the line 5—5 on FIG. 4.

Referring now to FIG. 1 of the drawings in detail, apparatus is shown which generally comprises a wind tunnel **10**, a foam forming net **11** at the front end of the tunnel, air stream creating means such as a fan **12** at the rear end of the tunnel, spray nozzles **14** for directing a liquid containing a foam forming agent onto the net which are located between the net and the fan, and a source **15** of the liquid under pressure connected by a pipe **16** to the spray nozzles.

As shown in FIGS. 1 and 2, the wind tunnel comprises two pairs of opposite sides, that is, a top wall **17**, a bottom wall **18**, and side walls **19**. The top wall is provided with a housing **20**, the bottom wall is provided with a housing **21**, and each of the side walls is provided with a runway **22** extending between the top and bottom housings. The housings and runways are set outwardly of the walls of the tunnel in front of the net **11** so as not to impede the flow of a foam plug generated and being discharged at the front end of the tunnel; and their purpose will be described hereinafter.

A protective closure **24** for the net in accordance with the present invention generally comprises a roller **25** rotatably mounted in the housing **20**, a fire resisting curtain **26** having one end secured to the roller and arranged to be wound up thereon, a latch arrangement **27** in the housing **21** for releasably engaging the other end of the curtain, motor means **28** for rotating the roller to roll up the curtain, and an arrangement **29** for rendering the latch arrangement ineffective. Preferably, the motor means are constructed and controlled so as to roll up the curtain the moment the latching arrangement is rendered ineffective.

FIG. 3 illustrates one form of such a motor **28** and the curtain roller **25** in detail at one side of the tunnel **10**, and preferably such an arrangement is provided at the other side of the tunnel (not shown). The arrangement shown comprises a central bore **30** at the end of the roller having an enlarged circular section **31** at its outer end, an apertured lug **32** secured in the bore **30** at its inner end, a bearing member **34** having a non-circular outer end portion **35** fitted into a slot **36** formed in the side wall of the housing **20** and having a circular inner end bearing portion **37** inserted into the bore section **31** and formed with an apertured lug **38** at its inner end, and a helical cylindrical torsion spring **39** having its ends anchored on the lugs **32** and **38**, respectively. The spring **39** is arranged so that, when the curtain is unrolled, the spring is wound up and loaded, whereby when the curtain is released it is rolled up.

In FIGS. 4 and 5, a suitable latching and releasing arrangement is shown in detail, at one side of the tunnel **10**, and preferably such an arrangement is provided at the other side of the tunnel (not shown). This arrangement comprises a rod or bar **40** secured to the lower end of the curtain **26** and having a horizontally extending aperture **41** near the end thereof, a horizontal latch member **42** extending through an opening **44** in the rear wall of the housing **21** adapted to extend into the aperture **41** and to be withdrawn therefrom, and the arrangement **29** for operating the latch member to render it ineffective.

Such mechanism as shown in FIG. 4 comprises a cylinder **45** having an inlet **46** connected to the pipe **16** by a branch pipe **43** for entry of fluid under pressure such as the solution released from the source **15** by opening a control valve **47** in the pipe **16**, a piston **48** in the cylinder having the inner end of the latch member **42** secured thereto at one face thereof, a manually operable member **49** secured to the other face of the piston and extending outwardly of the cylinder, and a spring **50** in the cylinder for urging the piston in a direction to cause the latch member **42** to enter the aperture **41** of the bar **40**.

In order to facilitate rolling up and unrolling of the curtain, the bar **40** is formed with a rectangular projection **51** at each end thereof each of which rides in one of the runways **22** between parallel sides **53** so that the bar cannot turn and the aperture **41** is maintained in horizontal alignment with the latch member **42**.

The lower end of the runway **22** terminates at a point **52** so that further downward movement of the projection **51** is stopped when the aperture **41** is aligned with the latch member **42** (FIG. 5). The upper end of the runway

terminates at a point 54 just below the housing 20 so that the bar 40 cannot enter the housing and the bar can be retrieved conveniently for unrolling the curtain (FIG. 3).

As shown in FIG. 1, the runways 22 slant rearwardly from one housing to the other so that adequate space is provided by the housing 20 to accommodate the built-up roll of curtain on the roller 25.

In operation, with the apparatus in the condition shown in the drawings, the curtain 26 is latched in its net protecting position and the motor springs 39 are loaded. When the apparatus is put into operation to produce foam for discharge through the net, the piston 48 is operated (preferably after a slight delay) to withdraw the latch member 42 and release the bar, whereupon the motor springs 39 roll up the curtain and foam can now be discharged from the front end opening of the tunnel 10.

In order to reset the curtain 26, the bar 40 is grasped manually and is drawn down and the bar, if cylindrical as shown or having an equivalent cam face thereon, pushes back the latch members 42 as the bar approaches its lowermost position. When the bar reaches its lowermost position with the apertures 41 in alignment with the latch members, the latch members under the influence of the spring 50 are caused to enter the apertures 41 and latch down the curtain again.

While the curtain is shown herein as being rolled up when the bar 40 moves from bottom to top, this operation could be reversed or the curtain could travel from one side to the other as it is rolled up.

From the foregoing description, it will be seen that the present invention provides an improved foam forming net protecting closure and operating mechanism for such a closure.

As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense.

I claim:

1. In apparatus for generating a fire-fighting foam which includes a wind tunnel, a foam forming net at the front end of the tunnel, air stream creating means at the rear end of the tunnel and spray nozzles for directing a liquid containing a foam forming agent onto the net located between the net and the air stream creating means, a protective closure for the net which comprises a roller rotatably mounted on the tunnel, a fire-resisting curtain having one end secured to said roller and arranged to be rolled up thereon, latch means mounted on the tunnel outwardly thereof and including a movable element for releasably engaging an element on the other end of said curtain to position said curtain in front of the net, motor means for rotating said roller to roll up said curtain, and mechanism mounted on said tunnel for rendering said latch means ineffective.

2. In apparatus according to claim 1, wherein said motor means is a spring motor arranged to be wound up when said curtain is unrolled and is energized when said latch means is effective whereby said motor means operates said roller to roll up said curtain entirely to solely completely open the front end when said latch means is rendered ineffective.

3. In apparatus according to claim 2, wherein a said spring motor is provided at each end of said roller.

4. In apparatus according to claim 1, wherein said second mentioned element is a rigid elongated member at the latch means end of said curtain and has an aperture for receiving said latch means element, and runway means on the tunnel for guiding the ends of said member.

5. In apparatus according to claim 1, wherein said means for rendering said latch means ineffective are controlled by means for initiating the operation of the apparatus to produce foam.

6. In apparatus for generating a fire-fighting foam, the combination of a wind tunnel having a front end and a rear end and having two opposite sides, a foam forming net at the front end of said tunnel, air stream creating means at the rear end of said tunnel, spray nozzles for directing a liquid containing a foam forming agent onto said net located between said net and said air stream creating means, a roller rotatably mounted in said tunnel at one side thereof, a fire resisting curtain having one end secured to said roller and arranged to be rolled up thereon, a bar secured to the other end of said curtain having aperture means therein, latch means in said tunnel at the other side thereof for extending into said aperture means to position said curtain between said tunnel sides in front of said net, spring motor means for rotating said roller to roll up said curtain, means for rendering said latch means ineffective, and a housing for said roller and a housing for said bar, said latch means being located outwardly of said tunnel.

7. In apparatus according to claim 6, including means between said tunnel sides for guiding the ends of said bar and located outwardly of said tunnel.

8. In apparatus according to claim 7, wherein said runway means have a stop engaged by said bar to stop rolling up of said curtain.

9. In apparatus according to claim 7, wherein said runway means have a stop engaged by said bar to align said aperture means and said latch means.

10. In apparatus according to claim 9, wherein said bar has a cam formation adjacent said aperture means for displacing said latch means, and a spring is provided causing said latch means to enter said aperture means.

11. In apparatus according to claim 10, wherein said bar and said runway means are constructed and arranged to prevent turning of said bar so that said aperture means is maintained in position for entry of said latch means.

12. In apparatus according to claim 11, wherein a spring motor is provided at each end of said roller, and latch means is provided adjacent each end of said bar.

References Cited

UNITED STATES PATENTS

2,543,118	2/1951	Maffei et al.	160—23
3,142,340	7/1964	Jamison	169—15

M. HENSON WOOD, JR., *Primary Examiner.*

M. MAR, *Assistant Examiner.*