

March 6, 1945.

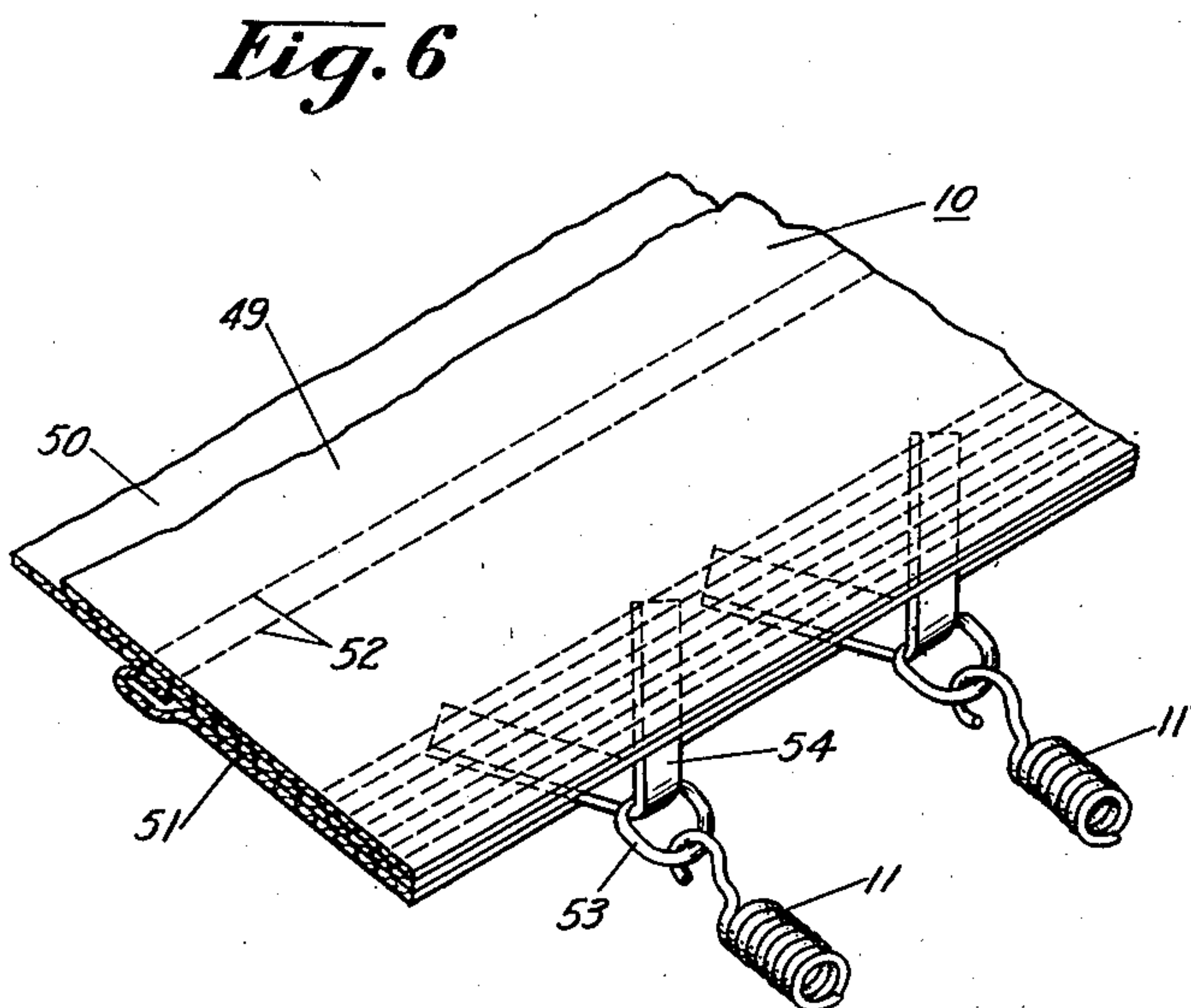
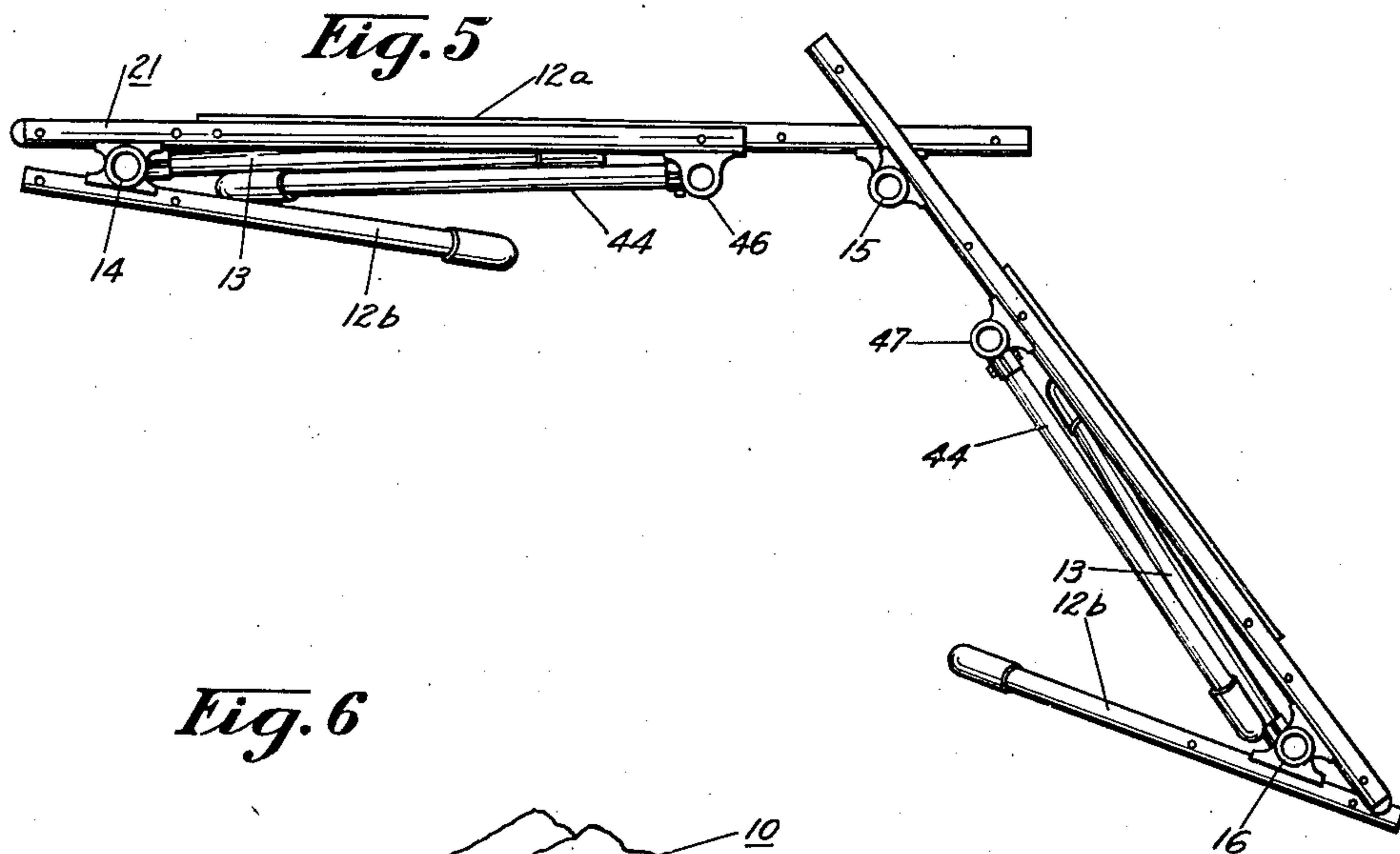
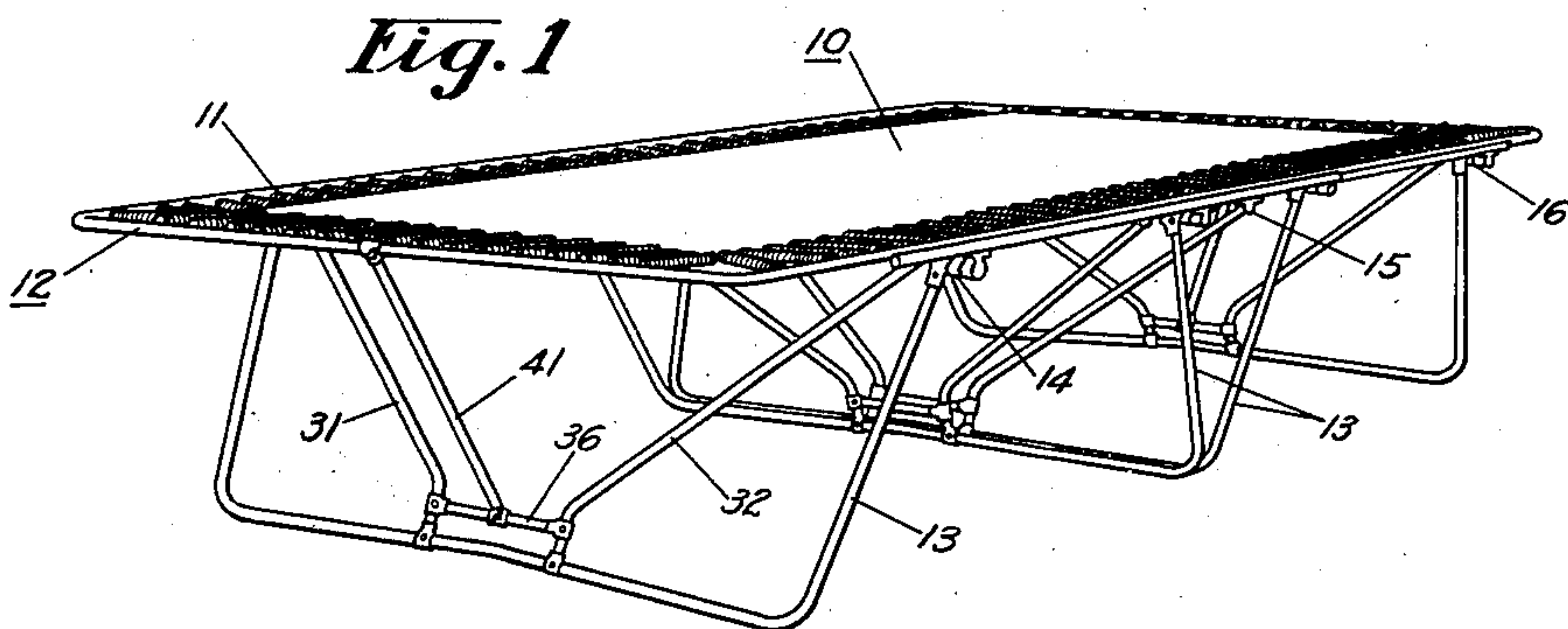
G. P. NISSEN

2,370,990

TUMBLING DEVICE

Filed June 4, 1941

2 Sheets-Sheet 1



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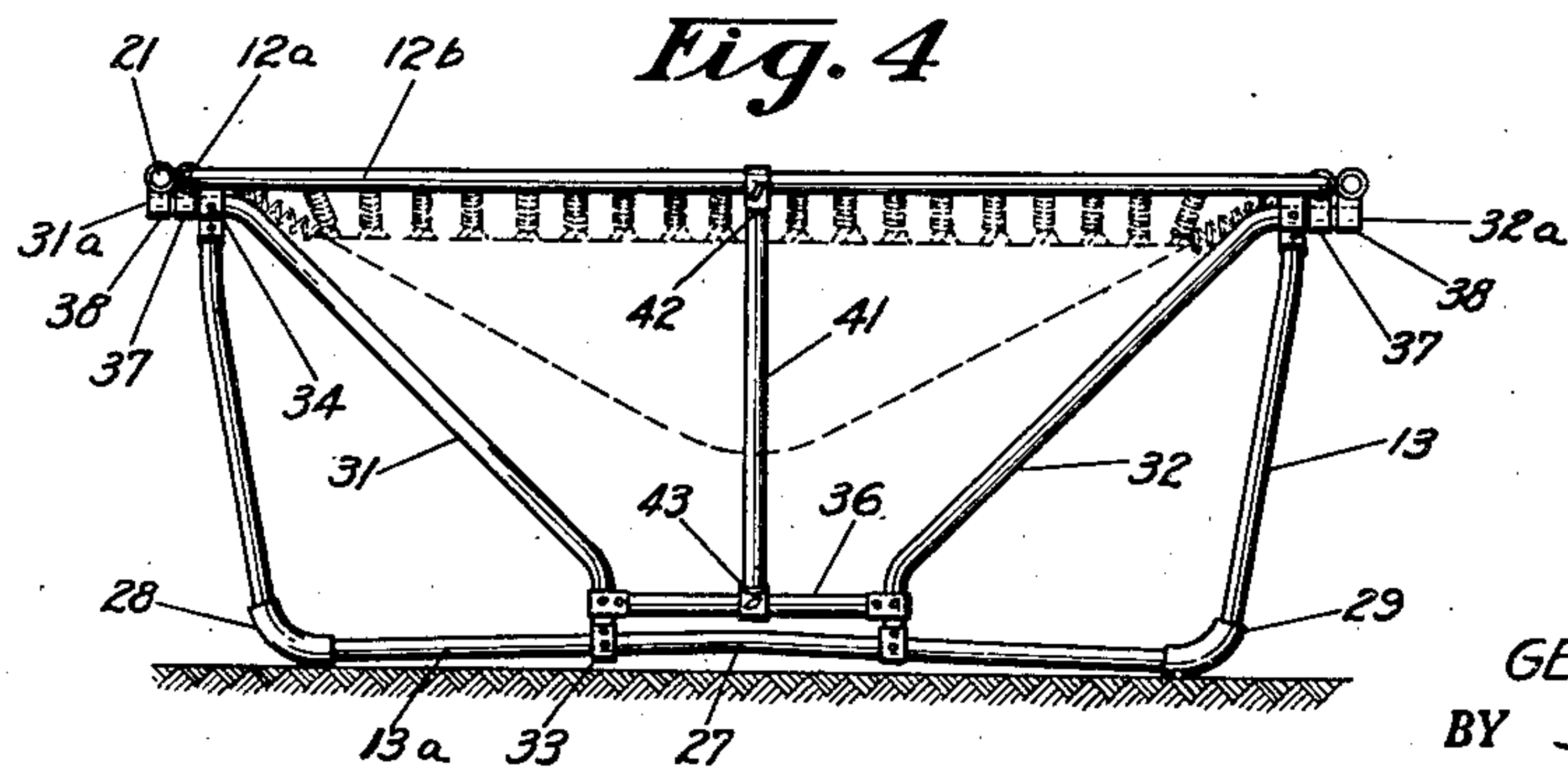
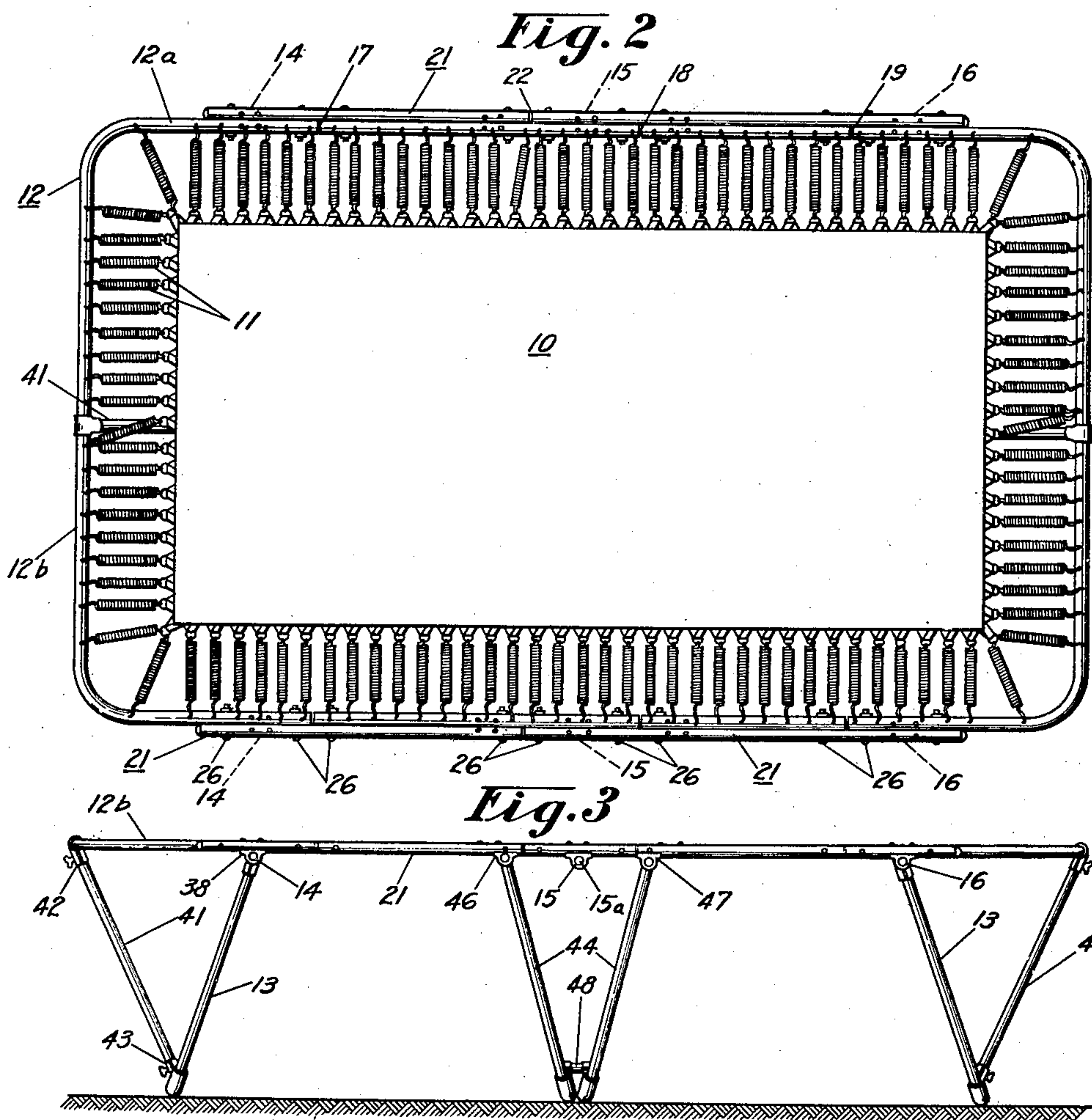
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UNITED STATES PATENT OFFICE

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TUMBLING DEVICE

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2 Claims. (Cl. 5—111)

This invention relates to gymnastic equipment and has particular relation to "Trampolins" or equipment for use in tumbling.

Tumbling is becoming a more and more widely recognized form of sport. However, the equipment available for promoting this sport has been very poor and generally comprises plain mats or pads. The major objection to the use of mats in tumbling gymnastics is that a relatively large degree of skill is required. This skill may be attained only through long and arduous practice. Thus the ordinary individual, who might be interested in tumbling merely for the sport or for the exercise, quickly loses interest.

Equipment available in the past, and somewhat of the nature of the device to be hereinafter disclosed, that is—, a resilient tumbling mat,—has been used in vaudeville, circuses and other exhibitions, but this equipment is usually extremely cumbersome and very expensive and, so far as is known, is more or less permanent in nature. It is usually mounted on relatively permanent posts and secured in position by means of a complex system of guy wires and the like. Thus such devices are ordinarily beyond the reach of the individual or even the ordinary gymnasium. Space is usually at a premium in gymnasiums, and it is entirely impractical to assemble and then tear down such relatively permanent types of tumbling equipment each time it is to be used.

It is, therefore, a primary object of my invention to provide a unit of equipment for tumbling or like gymnastics which may be readily moved from place to place and which may be quickly and easily folded up for storage or readily moved about, as from room to room, through even the smallest doorway.

A further object of my invention is the provision of a relatively inexpensive device of this nature.

A further object of my invention is the provision of a self-contained or unit tumbling device which is easy to set up or tear down and which requires neither guy wires nor auxiliary bracing equipment.

A still further object of my invention is the provision of improved means for preventing distortion of the frame of such a tumbling device.

A still further object of my invention is the provision of improved means for securing attachment members such as rings or hooks or the like to a fabric tumbling surface or, in fact, to any piece of fabric along the edges thereof in such a manner as to distribute, over a wide area

of such fabric, any strain applied to such a ring or hook.

Other and further features and objects of the invention will be more apparent to those skilled in the art upon a consideration of the accompanying drawings and following specifications, wherein is disclosed a single exemplary embodiment of the invention, with the understanding, however, that such changes may be made therein as fall within the scope of the appended claims, without departing from the spirit of the invention.

In said drawings:

Figure 1 is a view in perspective of a tumbling mat or "Trampoline" constructed in accordance with a preferred embodiment of my invention.

Figure 2 is a plan view of the device illustrated in Figure 1.

Figure 3 is a view in side elevation of the device illustrated in Figures 1 and 2.

Figure 4 is a view in end elevation of the device shown in Figures 1, 2 and 3.

Figure 5 is a view in side elevation of the framework of the device shown in the other figures as it appears when partly folded, and

Figure 6 is a fragmentary view in perspective of the fabric tumbling mat, illustrating, in particular, the improved means for securing the edge of the canvas to the supporting frame and for distributing the strain on the canvas over a wide area.

Referring now to the drawings, and particularly to Figures 1 to 4 inclusive thereof; I have illustrated generally at 10 a tumbling surface or mat, preferably of heavy canvas or the like, resiliently supported along its outer edges by a plurality of coil springs 11, which springs are supported at their outer ends from a more or less rectangular frame 12 of tubular steel or the like. Shock cord or other resilient members may be used instead of coil springs. This framework is adapted to be hinged at the points 14, 15 and 16 to permit the main frame to be folded into a compact unit.

The longitudinal or side members 12a of the frame 12 are made in section or are broken, as at 17, 18 and 19 (Figure 2), at one side of each of the points 14, 15 and 16 at which the frame is to be hinged. Longitudinally extending rails 21 are disposed along the outer sides of the longitudinal members 12a of the main frame, and each of these rails is broken, as at 22 on the side of the central hinge member 15 opposite to the break 18 in the longitudinal frame member 12a. Transversely extending holes are provided in the

longitudinal frame members 12a and in the side rails 21 to permit bolts 26 to be inserted through both of those members on opposite sides of the hinge members 14, 15 and 16 as well as on opposite sides of the joints or breaks in these longitudinal members. It may be readily understood that these bolts 26, when installed and secured in place in the holes provided for them, will make the longitudinal members of the main frame substantially as strong as though they were of unbroken lengths of material.

The legs 13, preferably of structural steel tubing, are bent in approximately U-shape, as best shown in Figure 4, with the upper ends of the U spread apart so that, as they extend upwardly, they will also extend outwardly a slight amount to aid in bracing the main frame, as will be hereinafter described. The central portion of the cross member 13a of each U-shaped leg is arched upwardly, as indicated at 27, so as to permit only the ends of the cross member to contact the supporting surface. The foot portions thus provided are covered with short sections of rubber hose or the like, as at 28 and 29, so that the structure may rest on a polished surface without marring or scratching it.

Tubular bracing members 31 and 32 are secured between the upper free ends of the U-shaped legs and the lower cross member 13a of the leg at points spaced from the center thereof and as shown at 33. Connection between the bracing member and the leg, at both the upper and lower ends of the bracing member, is made by means of conventional split clamping members of wrought iron or the like. These fittings on the lower ends of the bracing members are preferably bolted directly to the portions 13a of the U-shaped legs, but it is also advisable that the lower ends of these bracing members be spaced apart by a tie member 36.

The upper ends of the bracing members 31 and 32 are bent outwardly before they pass through the split clamping members 34 in such manner that the said upper ends are in co-axial alignment as indicated at 31a and 32a, and it is this portion of each leg which is used for the hinge pin of the hinge means previously referred to at the points 14 or 16. The remainder of each hinge structure may include bearing blocks 37 and 38 rotatably received on the ends of these hinge pin portions 31a and 32a of the bracing members and bolted to the under side of the longitudinal frame members 12a and the longitudinal rails 21 respectively.

The legs 13 adjacent the ends of the frame 12 are preferably disposed at an angle relative to the frame by means of the brace members indicated at 41, which brace members are detachably secured, by means of split clamps 42 and 43, to the end or cross members of the main frame 12 at the center thereof and to the center of the brace tie members 36.

The legs 44, supporting the main frame intermediate the end legs 13, may be of the same construction as the legs 13 and hingedly secured to the under side of the longitudinal frame members 12a and the longitudinal rails 21 by means of bearing blocks 46 and 47 bolted to the underside of the frame at spaced distances from the central hinge members 15 of the main frame. The central leg members 44 may be secured together at their lower ends by the tie member 48, which tie member may include split clamps for attachment to the leg brace tie members. Thus the central leg members provide bracing for each

other to prevent accidental folding of the frame of the device when in use.

The central hinge member 15 on each side of the main frame may include bearing brackets, such as previously described, hingedly connected together by means of a short length of pipe or shafting 15a.

The main frame 12 is provided around its upper surface with a plurality of spaced holes for the reception of the hooked ends of the springs 11. The manner in which the springs 11 are secured to the canvas mat 10 is best shown in Figure 6. This mat may, of course, comprise a single heavy thickness of fabric, but I prefer to make it of two thicknesses of canvas as shown at 49 and 50, having a third reinforcing strip 51 extending along the underside of each edge and stitched to the mat proper as indicated at 52.

Iron rings 53 are secured along the edges of the canvas mat by means of short lengths of heavy webbing 54. These lengths of webbing, with the rings 53 placed thereon, are looped in V form and the ends thereof inserted between the edges of the canvas mat and the reinforcing strip 51. The ends of these web members are temporarily tacked into position until all of such members have been positioned along one side of the mat, after which a number of parallel rows of stitching are run along the edge of the mat through both layers thereof, through the reinforcing strip 51, and through the webbing. It may be readily understood that any strain placed on the edge of the mat is distributed over a wide area of the marginal portion of the mat so as to practically eliminate the tearing out of rings or ripping of the mat at the point of attachment of the springs to the mat.

Figure 5 indicates how the entire framework, after the removal of the bolts 26 along the longitudinal edges thereof, the removal of the end leg braces 41 and the central leg tie member 48, may be folded up into approximately one-third of its normal length. The adjacent pairs of legs 13 and 44 are folded upwardly toward each other and against the under side of the frame, after which the U-shaped end members 12b of the main frame 12 are folded downwardly about their pivots 14 and 16 and then upwardly against the under side of the previously folded legs. The entire frame is then folded at the middle about the hinge members 15. This folding may take place either with or without the mat and supporting springs in place.

Normally, however, when the space occupied by such a mat is needed for other purposes, it is necessary only to lean the entire structure up against a wall and fold the legs inwardly against the bottom of the frame, in which position the device will occupy very little space.

It may now be readily understood, upon further reference to Figures 3 and 4 of the drawings, that the leg members and related framework are shaped and disposed in such a manner as to resist or substantially prevent distortion of the main frame, and particularly any permanent distortion of the frame and legs.

The position of the mat, when under considerable strain—that is, when in its lowermost extended position, is indicated in dotted lines in Figure 4 and it should be noted that, when in this extended position and thus when the greatest strain is placed on the side and end rails of the main frame 12, the greatest strain is substantially parallel to the axes of the bracing members 31

and 32. Furthermore, it should be noted that the triangular elements, including the brace members 31 or 32 and the adjacent side and bottom portions of the U-shaped legs, are practically rigid and thus prevent any substantial distortion of the members forming the triangle. Resiliency is afforded the legs by the upwardly curved or arched portion 27 of the U-shaped leg elements. Thus, inward or outward distortion of the side rails of the frame will normally result in a springing inwardly, downwardly, or straightening out of this lower member 27 of the U-shaped leg element. This upwardly curved or arched portion of the leg permits the deformation of this element without interfering with the two-point contact of each leg with its supporting surface.

It should be noted, also, that the end leg braces 41 connected to each transverse member of the main frame, offer increased resistance to inward movement or deformation of the frame members to which they are attached as the load or downward thrust on the mat itself is increased.

Although I have described a specific embodiment of my invention, it is apparent that modifications thereof may be made by those skilled in the art. Such modifications may be made without departing from the spirit and scope of my invention as set forth in the appended claims.

I claim as my invention:

1. In a tumbling device, a frame including side frame members, a mat disposed within the frame, means for resiliently securing the edges of the mat to the frame, reinforcing members adapted to extend parallel with said side frame members, means hingedly connecting the side members and reinforcing members adjacent the longitudinal midpoints thereof, the said side members and reinforcing members each being jointed at a spaced

distance on opposite sides of the said hinge connecting means, the side members also being dis-jointed at spaced distances from the ends of the reinforcing members, leg mounting brackets secured to the underside of the side frame and reinforcing members adjacent said joints, means for bolting the side frame and reinforcing members together on both sides of each of said joints, legs for supporting the frame, said legs having axially aligned projections at the ends thereof received in openings in the leg mounting brackets, whereby the legs may be folded about the said projections, as hinge pins, flat against the frame and whereby, upon removal of the bolting means, the frame may be folded upon itself about the projections of the legs adjacent the ends of the frame and about the hinge means first mentioned, and means for normally bracing said legs in erected position relative to the frame.

2. In a tumbling device, a frame including side members, mounting brackets secured to said side members, a plurality of supporting members each comprising a U shaped member having the cross bar portion thereof arched upwardly near its center and the side portions thereof slanting outwardly and upwardly, the upper ends of the supporting members having axially aligned cylindrical projections, tubular bracing members extending from substantially the center of the cross-bar portions upwardly through the cylindrical projections, the mounting brackets being disposed in pairs, with the brackets of each pair mounted transversely opposite one another and having axially aligned holes therein for receiving the outer ends of the bracing members, and bracing means for securing the supporting members in erected position relative to the frame.

GEORGE P. NISSEN.