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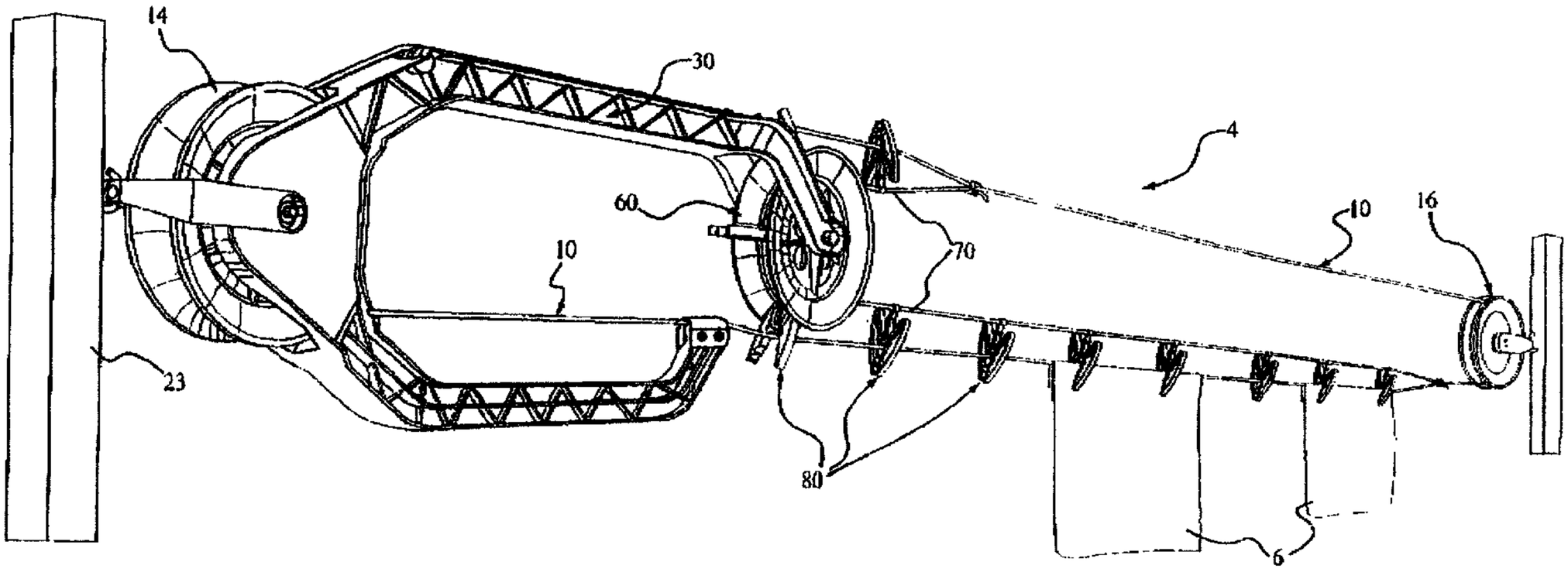
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(54) Titre : SYSTEME DE CORDE A LINGE AVEC SUPPORT ET EPINGLES AMELIOREES
(54) Title: CLOTHES LINE SYSTEM WITH A SUPPORT SYSTEM AND IMPROVED CLOTHES PINS



(57) Abrégé/Abstract:
The invention relates to an improved clothes line system for automatically securing clothes onto a main clothes cable. More specifically, the clothes line system includes a main cable on which clothes are placed and a secondary cable with equally spaced apart clothes pins. Each clothes pin is capable of engaging the main cable at different holding positions. The clothes line system further features a support member to prevent the main cable from sagging under the effect of the weight of clothes beyond an acceptable distance within which the clothes pins can automatically engage the clothes. The invention also provides a clothes line system with a first and second cable where the first cable is continuos with the second cable. A cable connector element for use with the clothes line system enables one section of a continuos cable to form the main cable and a second section of the continuous cable to form the secondary cable.

ABSTRACT OF THE DISCLOSURE

The invention relates to an improved clothes line system for automatically securing clothes onto a main clothes cable. More specifically, the clothes line system includes a main cable on which clothes are placed and a secondary cable with equally spaced apart clothes pins. Each clothes pin is capable of engaging the main cable at different holding positions. The clothes line system further features a support member to prevent the main cable from sagging under the effect of the weight of clothes beyond an acceptable distance within which the clothes pins can automatically engage the clothes. The invention also provides a clothes line system with a first and second cable where the first cable is continuos with the second cable. A cable connector element for use with the clothes line system enables one section of a continuos cable to form the main cable and a second section of the continuous cable to form the secondary cable.

TITLE: CLOTHES LINE SYSTEM WITH A SUPPORT SYSTEM AND IMPROVED CLOTHES PINS

FIELD OF THE INVENTION

The present invention relates to a clothes line system that can automatically secure clothes onto a main clothes cable without having to manually do so with clothes pins. A distinguishing feature of the clothes line system resides in the provision of a support member that prevents the main cable from sagging beyond a predetermined distance from a secondary cable while under the effect of the clothes' weight. The secondary clothes cable comprises improved clothes pins that can be used with the clothes line system to engage the main cable and that feature multiple clothes holding positions. The invention also extends to a cable connector element that allows one section of a continuous cable to form the main cable and a second section of the continuous cable to form the secondary cable. As a result, the main cable is continuous with the secondary cable.

BACKGROUND OF THE INVENTION

Typical clothes line systems provide a support on which wet clothes are placed to dry. The clothes line system includes a continuous cable that extends between two pulleys. The cable provides the support on which to hang the wet clothes and in order to secure clothes onto the cable, clothes pins must be manually

placed thereon. These clothes pins must be manually removed and stored when the clothes are dry and ready to be removed from the clothes line system.

To overcome the cumbersome operation of manually inserting and removing each clothes pin, U.S. patent 4,519,509 issued on May 28, 1985, provides a means for automatically presenting clothes pins onto the clothes cable to secure the clothes and a means for automatically removing the clothes pins from the dry clothes. The clothes line system as disclosed in this reference includes an endless main cable extending between two pulleys. A pin lay wheel located between the two pulleys has a number of V-shaped recesses for receiving a series of clothes pins on a secondary cable that engage the main cable while in a normally closed position. The ends of the secondary cable are attached to the main cable and when the main cable is displaced the secondary cable is moved in unison to bring the pins secured thereon in engagement with the pin lay wheel. The pins are automatically opened thus releasing the main cable which allows them to travel over an arched path defined by the periphery of the lay wheel. Further rotation of the main cable causes the pins to reengage a run of the main cable on which wet articles of clothing are placed. As a result, the articles of clothing are secured on the main cable.

Although the system facilitates securing the clothes onto the clothes line system, it fails to provide a means for preventing the

main cable from sagging beyond an acceptable range within which the pins can engage the cable and secure the clothes that are placed to dry. More specifically, upon placing clothes onto the main cable, the main cable will tend to accordingly pull away from the secondary cable. In some instances however the clothes will pull the main cable under the effect of gravity at an appreciable distance from the secondary cable which will place it beyond a distance within which a pin can engage the main cable. Moreover, the clothes pins described in this reference are designed with only one clothes holding position, thus limiting the range within which the clothes cable may sag away from the secondary cable.

Thus there is a need in the industry to provide a clothes line system with a support system that maintains the distance between the main cable and the secondary cable within an acceptable range. In addition, there is a need to provide clothes pins with multiple clothes holding positions for successfully engaging articles of clothing placed over the main cable.

OBJECTIVES AND STATEMENT OF THE INVENTION

It is an object of the invention to provide a clothes line system with a support member capable of maintaining the main cable within an acceptable range from the secondary cable.

It is a further object of the invention to provide clothes pins for use with a clothes line system that are capable of

multiple clothes holding positions.

It is another object of the invention to provide a clothes line system wherein the main cable is continuous with the secondary cable.

It is another object of the invention to provide a novel cable connector element capable of establishing one section of a continuous cable as the main cable and a second section of the same continuous cable as the secondary cable.

It is another object of the invention to provide a clothesline system suitable for supporting articles to be dried. The clothesline system comprises a first pulley, a second pulley, a main cable portion and a secondary cable portion. The first pulley is positioned in a spaced apart relationship from the second pulley. The main cable portion forms a loop between the first pulley and the second pulley. The loop defines an upper run and a lower run. The secondary cable portion has a first ending portion and a second ending portion. The first ending portion extends from the upper run and the second end portion extends from the lower run. The clothesline system further comprises a plurality of clothespins on the secondary cable portion. The clothespins can be operated between an opened position and a closed position, wherein in the opened position the clothespins are capable to accept articles to be dried and wherein in the closed position the clothespins are capable to secure the articles to be dried to the main cable portion. The clothesline system further comprises a clothespin dispensing device for placing clothespins around the main cable portion and a support system that has an upper support arm and a lower support arm. The upper support arm extends along the upper run between the first pulley and the clothespin dispensing device. The lower support arm extends along the lower run from the first pulley toward the clothespin dispensing device and engaging the lower run in close

proximity to the clothespin dispensing device, thereby preventing the main cable portion from sagging beyond a distance within which the clothespin dispensing device can place clothespins around the main cable portion.

In a preferred embodiment, the clothes line system comprises a main clothes cable that extends between two spaced apart pulleys. The cable has an upper run and a lower run. A support member being located between the two runs includes an upper support arm and a lower support arm. A clothes pin lay wheel is mounted at the extremity of the upper support arm so that it is in the plane of the two runs. The lay wheel has a V-shaped recess to receive a secondary cable on which is attached a series of clothes pins. The clothes pins engage the main cable in a normally closed position. The ends of the secondary cable are attached to the main cable so as to move in unison with the main cable. Upon rotation of the main cable, the closed pins register with the recess of the sprocket wheel and automatically open. Thus, the clothes pins release the main cable and travel along an arched path defined by the periphery of the lay wheel. Further rotation of the main cable causes the

clothes pin to re-engage the run of the main cable on which articles of clothing are placed. Advantageously, the support member will prevent the main cable from deflecting beyond the distance within which the clothes pins can successfully engage the main cable at different holding positions.

In the realization described above, the secondary cable is a separate cable attached to the main cable. In a variant, the main cable and the secondary cable are continuous with one another. A cable connector element establishes one section of a continuous cable to form the main cable and a second section of the same continuous cable to form the secondary cable.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the clothes line system in accordance with the present invention;

Figure 2 is a side elevational view of the clothes line system, some elements being removed for clarity;

Figure 3 is a perspective view of a clothes pin in accordance with the invention;

Figure 4 is a side elevational view of the clothes pin;

Figure 5 is a cross section taken along line 5-5 in figure 2 showing two clothes pins engaged in the pin lay wheel;

Figure 6 is a side view of the clothes line system showing the placement of an article of clothing onto the main clothes cable;

Figure 7 is a cross-section taken along line 7-7 in figure 6;

Figure 8 is a side view of a clothes line system constructed in accordance with a variant that incorporates cable connecting elements;

Figure 9 is an exploded perspective view of the cable connecting element;

Figure 10 is an enlarged vertical cross sectional view of the clothes line system shown in figure 8;

Figure 10A is a view of the inside of the connecting element shown in figure 9, with a continuous cable placed therein.

DESCRIPTON OF A PREFERRED EMBODIMENT

Referring now to the drawings, figure 1 illustrates a clothes line system 4 on which articles of clothing 6 are placed to dry. Broadly stated, the clothes line includes a main cable 10 supported between two spaced apart pulleys 14 and 16 and a support member 30 to which pulley 14 is mounted. A pin lay wheel 60, also mounted to

the support member 30, is provided to deposit clothes pins 80, which are attached to a secondary cable 70, onto articles of clothing 6 that may be placed on the main cable 10.

The main cable 10 is a continuous cable whose ends are attached to establish two continuous runs between pulleys 14 and 16, namely a lower run 12′ and an upper run 12″. Pulley 14 is rotatably mounted to support member 30 which in turn is attached to a bracket 17 that is pivotly attached to a support structure 23. Pulley 16 is rotatably mounted to bracket 18 that is pivotly attached to support structure 24 that is at a spaced apart distance from support structure 23.

As best seen in figure 2, the support member 30 comprises apertures 32 through both of its side walls to receive a pin which establishes the pivotal axis for pulley 14 and serves to secure bracket 17 that provides a connection point with support structure 23. A recess (not shown) provided between the walls on which apertures 32 are formed, receives pulley 14 and allows it to rotate freely therein.

The support member 30 includes two distinct reinforced arms that originate at the side walls between which pulley 14 is mounted, namely, a lower support arm 36 and an upper support arm 48. The lower support arm 36 includes three continuous segments: a first oblique segment which extends beyond pulley 14 and run 12′,

a second horizontal intermediate segment which extends parallel to the cable's tangential axis with pulley 14 and a final segment that extends upward tangential to pin lay wheel 60 to be described later. A guide 38 is provided at the extreme end of the third segment to receive cable 10 and support it along an axis that is tangent to that of pulley 14. The guide 38 includes two mating components that when fastened with screws 40 and 42 provide a channel through which cable 10 can slide freely. In effect, the lower support arm 36 provides support along a span 11 of run 12' on which clothes 6 may be freely placed. This span 11 extends closely to the pin lay wheel 60.

The upper support arm 48 also includes three continuous segments; a first extending beyond pulley 14 and run 12", a second extending along run 12" and a final segment extending between runs 12' and 12", past the extremity of guide 38. A guide member 51 projects beyond the surface of the second segment and includes an aperture through which cable 10 extends and can slide freely. The guide member 51 maintains the cable 10 along the outer surface of the second segment of support arm 48 so as to direct it onto a bearing 50 that provides a rolling contact surface guiding cable 10 toward the pulley 14. The third segment of the upper support arm 48 is a fork 52 that supports pin lay wheel 60. The fork 52 includes two parallel spaced apart members, each with respective apertures 54 through which a pin 56 is inserted to rotatably support the pin lay wheel 60 which is preferably the same diameter

as pulleys 14 and 16. The fork 52 orients pin lay wheel 60 in the plane defined by pulleys 14 and 16 at a distance relatively close to run 12'.

Pin lay wheel 60 includes a circumferential groove 63 with two radially projecting side walls 64. The side walls 64 progressively widen radially outward to receive there between and progressively open a series of normally closed pins 80 that are carried by a secondary cable 70 and whose ends 65 are attached to the main cable 10 by means well known to those skilled in the art. In this embodiment, the secondary cable 70 is a separate cable from the main cable 10.

As best illustrated in figures 3 and 4, each clothes pin 80 comprises three parts, namely, a head 82, a neck 84 and a body 86. Head 82 is a hook configured member that can be frictionally attached onto the secondary cable 70. The head is resilient so it can be readily detached from the secondary cable 70 if desired. The ability to readily remove and install the head is convenient because the clothes pins 80 may be installed after the clothes line system has been assembled. This also allows to place a desired number of clothes pins 80 anywhere along the secondary cable, contrary to the system disclosed in the previously referred patent where the pins are not removable. The neck 84 is a linear member that connects head 82 with body 86 so as to support the latter on the secondary cable 70. The body 86 is a flat jaw like member

having two legs 88 and 90 that are pivotly connected by a hinge area 91. The hinge area defines a cavity 92 around neck 84 that extends from one leg to the other. A C-shaped spring biasing member 94 urges legs 88 and 90 to close, such that tips 96 of each leg abut one another. The inner surfaces of the legs that face one another below the hinge area 91 and above tips 96 provide a channel 99 within which multiple holding positions of cable 10 (including articles of clothing thereon) are possible relative the hinge area 91. The channel 99 includes a plurality of recesses 98 for selectively receiving the main cable 10 at different holding positions. In a variant, the channel 99 can be substantially of uniform width while still providing multiple holding positions for cable 10. The channel establishes the acceptable distance within which the main cable 10 can sag while being engageable by the clothes pin 80. Upon engaging the cable 10 and closing channel 99, the cable is held in one of different holding positions from the hinge area 91. A support 100 provides a top wall against which the main cable 10 or clothes 6 can abut upon entering channel 99. Accordingly, the top wall support 100 maintains a minimum clearance between the main cable 10 and the secondary cable 70.

As the main cable 10 is manually pulled, secondary cable 70 attached to the main cable 10 is caused to move in the same direction. As best seen in figure 5, the head 82 of each clothes pin 80 subsequently registers in groove 63 of pin lay wheel 60 and

draws body 86 radially inward along the side walls 64 of the wheel. As pins 80 enter between the side walls 64 of pin lay wheel 60, pressure is progressively applied on the upper extremity 95 of legs 88 and 90 which causes them to pivot on the hinge area 91 and accordingly pivot abutting tips 96 apart, thus opening channel 99. As best illustrated in figure 1, the opened clothes pins 80 disengage themselves from the main cable 10 and move along the arched path defined by the pin lay wheel 60. Upon further rotation of the main cable 10, the pin is brought toward run 12' such that cable 10 enters the opened cavity 99 while tips 96 are still apart. In accordance with the invention, support arm 30 will prevent the main cable 10 from sagging beyond the acceptable distance within which the clothes pins 80 can successfully engage the main cable 10 at different holding positions along channel 99. The clothes pins 80 and support member 30 are preferably manufactured by injection moulding and are reinforced by fibres.

In operation, to dry clothes on clothes line system 4, articles of clothing 6 are respectively placed over the supported span 11 of run 12'. As illustrated in figure 6, the main clothes cable 10 is then pulled in a direction shown by the arrow which respectively causes secondary cable 70 to carry clothes pins 80 along the arched path defined by the pin lay wheel 60. Accordingly, the clothes pins automatically open to release cable 10 of run 12" and re-engage cable 10 of run 12'. Upon exiting the pin lay wheel 60 the clothes pins 80 are automatically closed over

cable 10 and secure respective articles of clothing 6 placed on run 12' at one of several possible holding positions provided along channel 99 as seen in figure 7.

When the clothes are dry, the main cable 10 is pulled in the opposite direction so as to release clothes pins 80 that secure the articles of clothing 6 along run 12'. More specifically, secondary cable 70 which moves in unison with the main cable 10, carries the clothes pin 80 along the path defined by pin lay wheel 60 which causes the pins to automatically open, thus disengaging from the article of clothing 6 on run 12' and thus engaging main cable 10 of run 12".

In the above description, the secondary cable 70 is a separate cable that is attached to the main cable 10 to form a synchronized structure. In a variant, the main cable 10 and the secondary cable 70 are continuous with one another. Two cable connector elements 110' and 110" allow one section of a continuous cable 8 to form the main cable 10 and a second section of the continuous cable 8 to form the secondary cable 70.

The clothes line system 4 as illustrated in figure 8 comprises all the structural and functional elements as described above with the addition of two novel cable connector elements 110' and 110". As best illustrated in figure 9 each cable connector 110 include two mating plates 112 and 116. Generally stated, plate 112

comprises, outer walls 122, partition walls 124, support posts 126 and apertures 128a, 128b, and 128c. The outer walls 122 define the shape of the plate which in this particular case is a square body with a pointed extension at one of its sides. The partition walls 124 are provided within the boundary established by walls 122 to define a cavity 130 for receiving one end of the continuous cable 8 and a channel 132 for engaging a segment of the continuous cable 8. The partition walls provide a number of projections 133 for pricking the continuous cable 8 at various locations along channel 132 and at the entrance to cavity 130 to secure the cable therein. Apertures are provided on walls 122 to allow cable 8 to enter cavity 130 and channel 132 while the two plates 112 and 116 are secured thereon. More specifically, aperture 128a communicates with cavity 130 while 128b and 128c communicate with channel 132. Plate 116 is a flat member that is identical in shape to plate 112. It includes three apertures 118 that align with support posts 126 of plate 112 that provide an aperture through which screws 114 are threadedly engaged to fasten the two plates 112 and 116 together. Accordingly, the end of the continuous cable 8 that extends through aperture 128a is secured into cavity 130 while the segment of the continuous cable that extends between apertures 128b and 128c are secured within channel 132.

As best illustrated in figure 10, the two cable connector elements 110′ and 110″ create two cable runs from one continuous cable 8, namely the main cable 10 and the secondary cable 70. More

specifically, the main cable 10 is defined as the section of the continuous cable 8 whose end is secured within cavity 130 of connector element 110" and extends out through aperture 128a, along pulley 14, passes through channel 132 of connector element 110', passes over pulley 16 and extends into aperture 128b of connector element 110". The remaining portion of the continuous cable 8 defines the secondary cable 70. More particularly, the secondary cable 70 is the section of the continuous cable 8 extending from aperture 128c, travelling along the periphery of pin lay wheel 60 and whose end is secured into cavity 130 of cable connector element 110'.

The above description of the preferred embodiment should not be interpreted in any limiting manner since variations and refinements are possible which are within the spirit and scope of the present invention. The scope of the invention is defined in the appended claims and their equivalents.

I claim:

1. A clothesline system suitable for supporting articles to be dried, said clothesline system comprising:

a first pulley and a second pulley, said first pulley being positioned in a spaced apart relationship from said second pulley;

a main cable portion and a secondary cable portion:

a) said main cable portion forming a loop between said first pulley and said second pulley, said loop defining an upper run and a lower run;

b) said secondary cable portion having a first ending portion and a second ending portion, said first ending portion extending from said upper run and said second ending portion extending from said lower run;

a plurality of clothespins on said secondary cable portion, said clothespins can be operated between an opened position and a closed position, wherein in the opened position said clothespins being capable to accept articles to be dried, and wherein in the closed position said clothespins being capable to secure the articles to be dried to said main cable portion;

a clothespin dispensing device for placing clothespins around said main cable portion;

a support system having an upper support arm and a lower

support arm, said upper support arm extending along said upper run between said first pulley and said clothespin dispensing device, said lower support arm extending along said lower run from said first pulley toward said clothespin dispensing device and engaging said lower run in close proximity to said clothespin dispensing device, thereby preventing said main cable portion from sagging beyond a distance within which said clothespin dispensing device can place clothespins around said main cable portion.

2. A clothesline system as defined in claim 1, wherein each clothespin has an attachment portion and a gripping portion, said attachment portion adapted to be removably secured to said secondary cable portion, said gripping portion having a first leg and a second leg adapted to be moved one with relation to the other to change the condition of the clothespin between the opened position and the closed position, in the opened position said first and second legs are spaced apart to accept articles to be dried, and in the closed position said first and second legs clamp articles to be dried onto said main cable portion.

3. A clothesline system as defined in claim 2, wherein said clothespin dispensing device comprises a clothespin lay wheel having a periphery, said clothespin lay wheel having a groove along said periphery to engage said clothespins and bring the clothespins to the opened position.

4. A clothesline system as defined in claim 2, wherein said clothespin lay wheel is mounted to said support system and is located between said upper and lower runs of said main cable

portion.

5. A clothesline system as defined in claim 4, wherein said support system is located in the vicinity of said first pulley so as to support said main cable portion along the portion of said upper and lower runs adjacent said first pulley.

6. A clothesline system as defined in claim 5, wherein said upper support arm and said lower support arm of said support system have mutually parallel and rectilinear segments that extend along said upper run and said lower run, said clothespin lay wheel being mounted at one end of said upper support arm and said first pulley being mounted adjacent an extremity of said upper support arm and said lower support arm at a spaced apart distance from said clothespin lay wheel.

7. A clothesline system as defined in claim 6, wherein said upper support arm and said lower support arm support said upper and lower runs of said main cable portion at a predetermined distance from said clothespin lay wheel.

8. A clothesline system as defined in claim 1, wherein said main cable portion and said secondary cable portion are formed from one continuous cable having a first end, a second end and a length of cable in between.

9. A clothesline system as defined in claim 8, having connector means for forming from said continuous cable said main cable portion and said secondary cable portion.

10. A clothesline system as defined in claim 9, wherein said

connector means comprises two cable connector elements, namely a first connector element and a second connector element, each of said cable connector elements providing a cavity for receiving and securing one end of said cable and a channel through which a section of said cable is traveled through.

11. A clothesline system as defined in claim 10, wherein said first end of said cable is secured in said cavity of said first cable connector element, and said second end of said cable extends through said channel of said second connector element, then extends through said channel of said first connector element, and finally said second end of said cable is secured in said cavity of said second connector element.

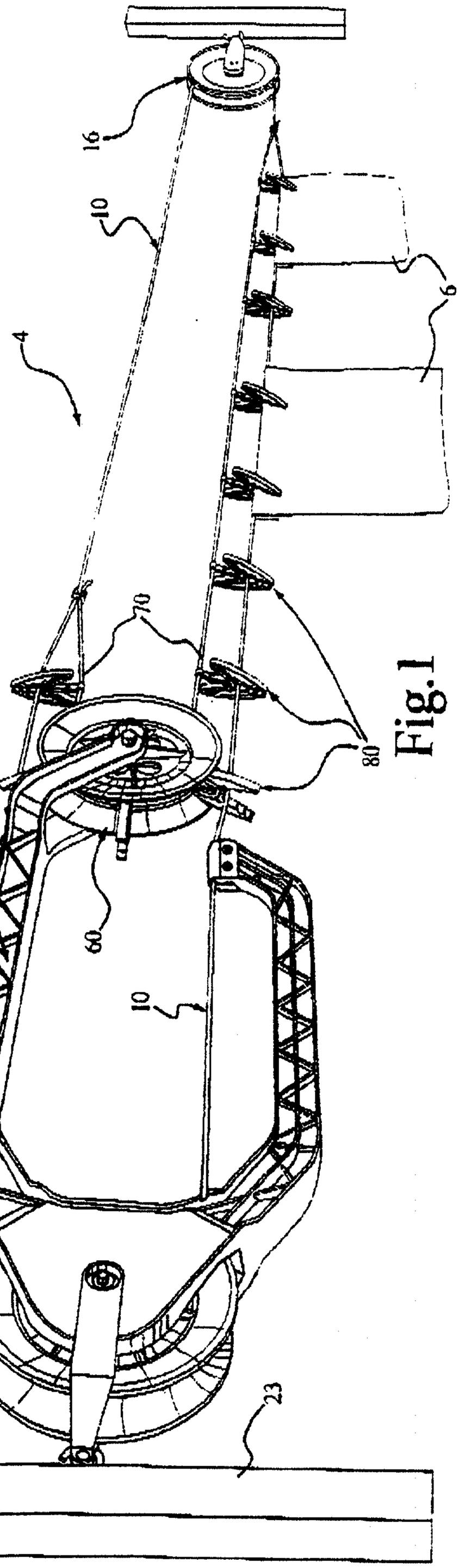

16
10
6
4
70
80
30
60
14
23

Fig.1

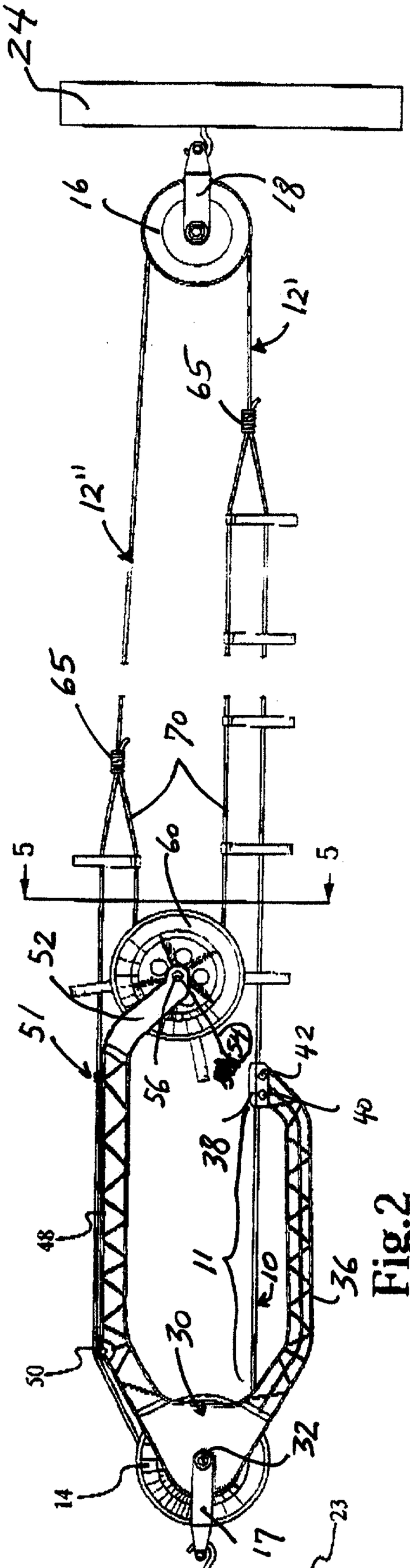

24
16'
18
12'
65
12"
65
70
60
52
51'
56
42
40
38
48
11
10
36
30
50
32
14
17
23

Fig.2

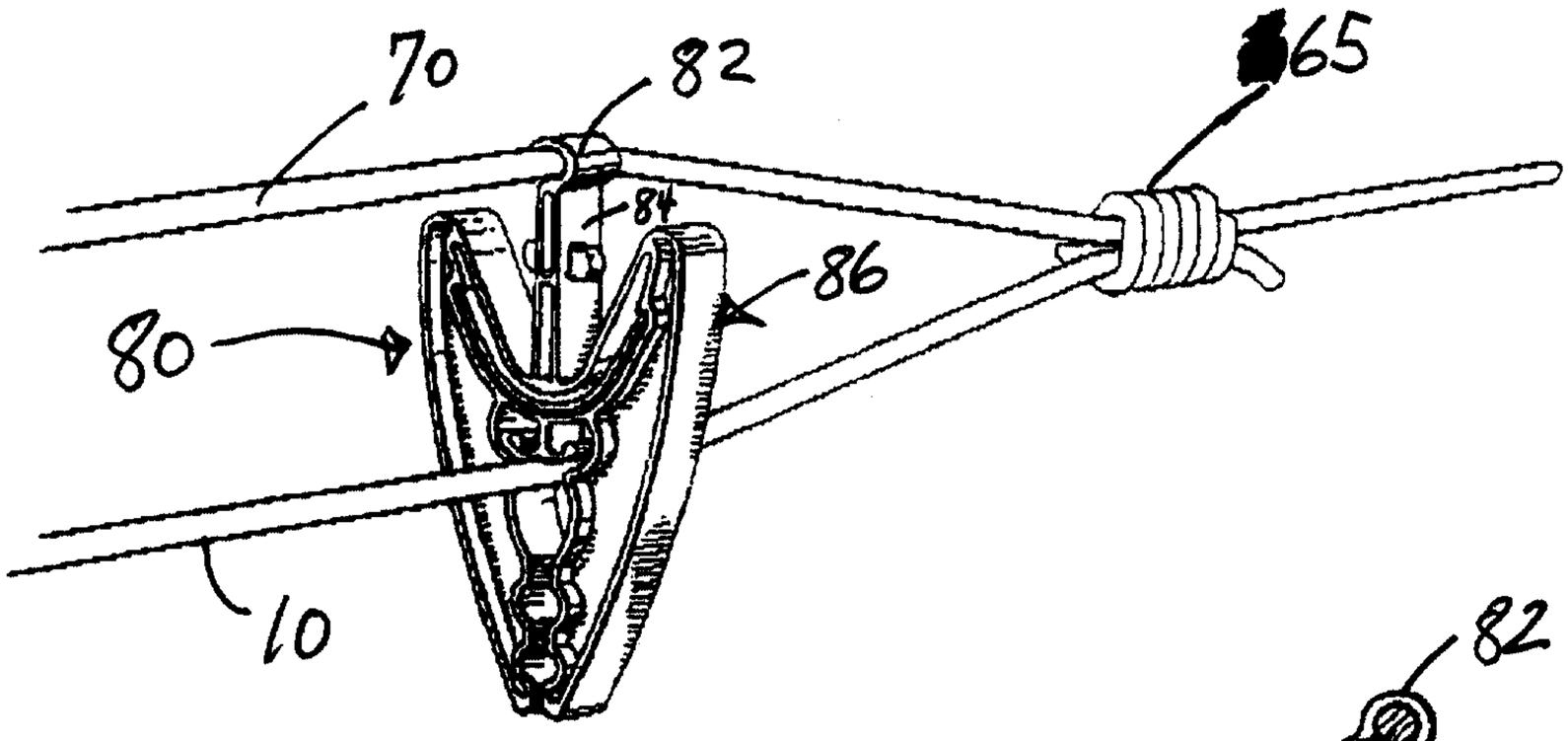


Fig.3

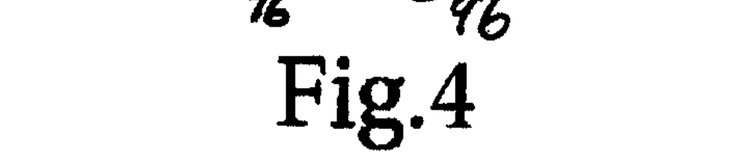


Fig.4

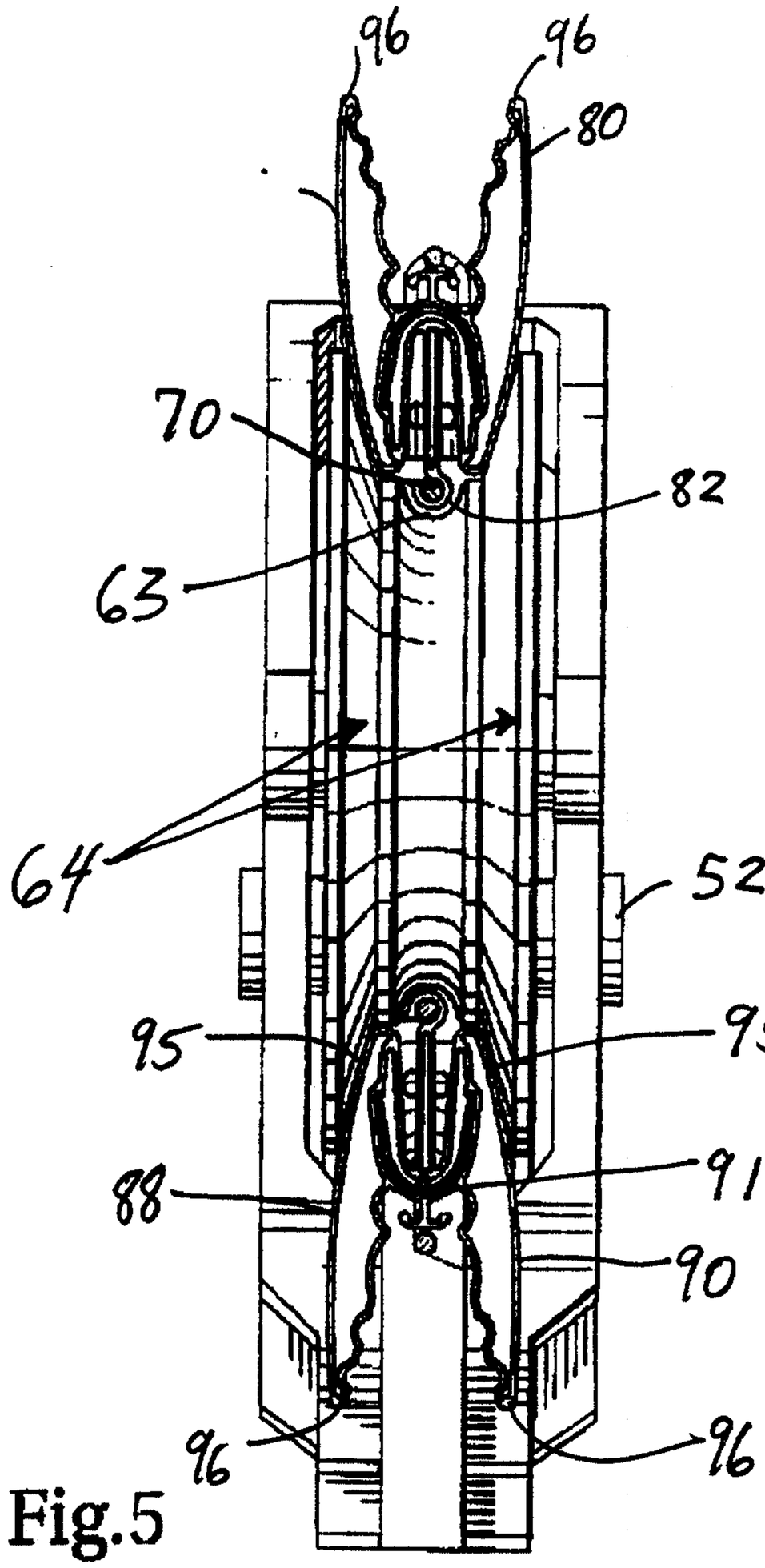


Fig.5

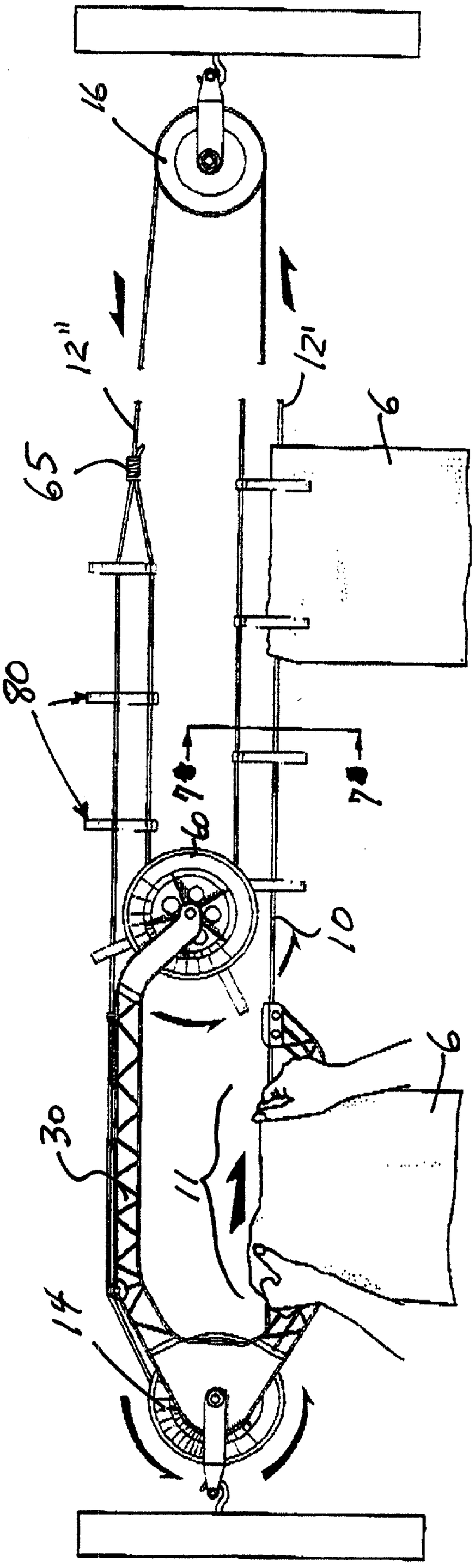


Fig.6

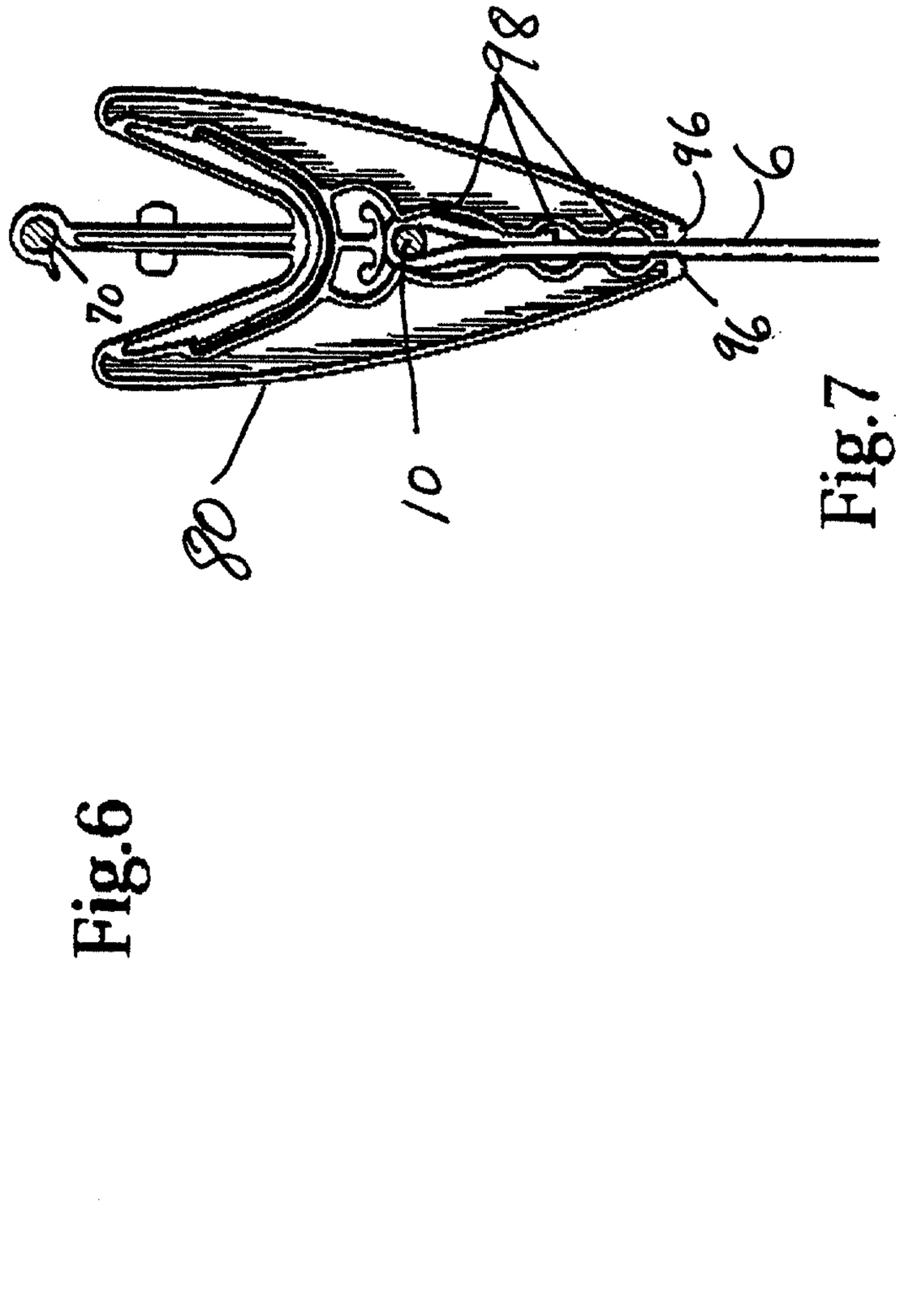


Fig.7

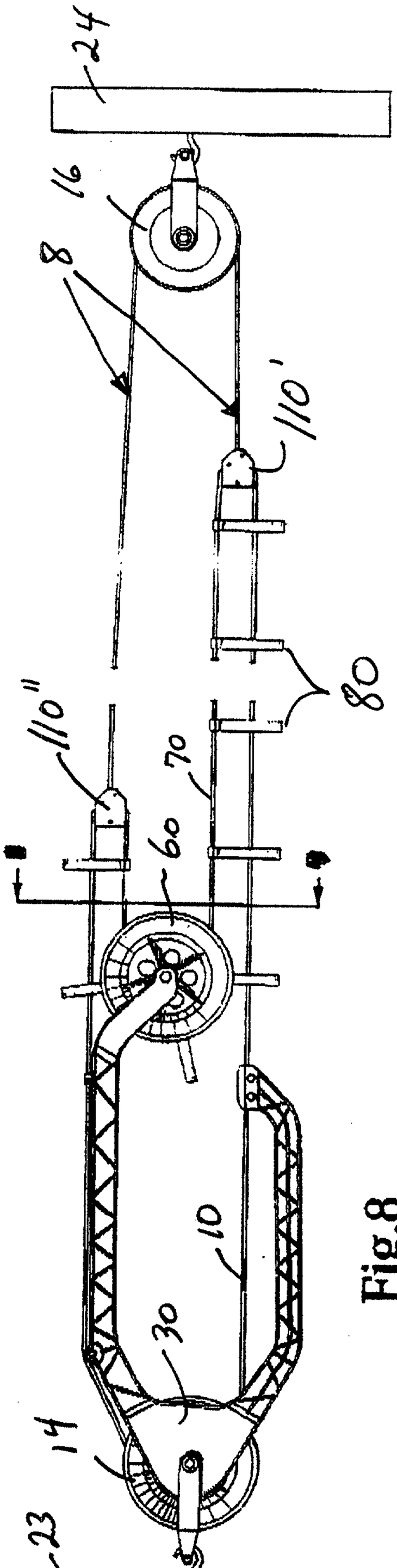

24
16
8
110'
110"
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14
23

Fig.8

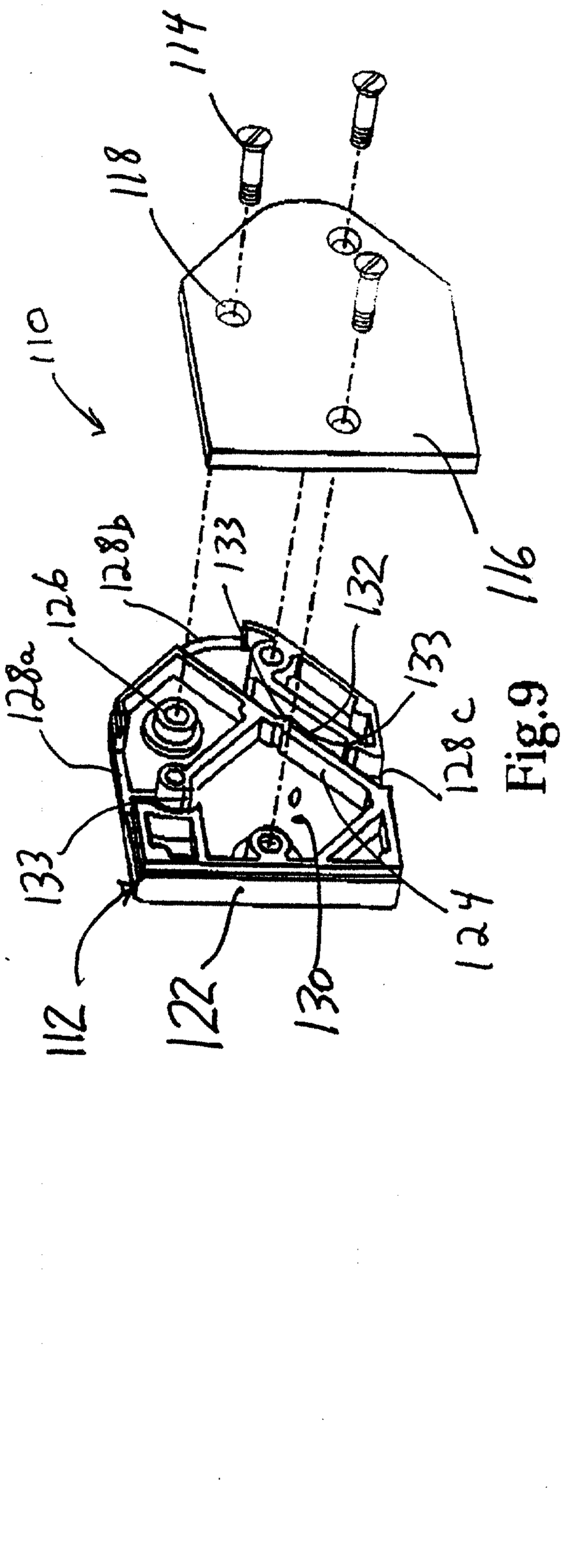

114
118
110
128b
126
128a
133
132
116
128c
124
112
122
130

Fig.9

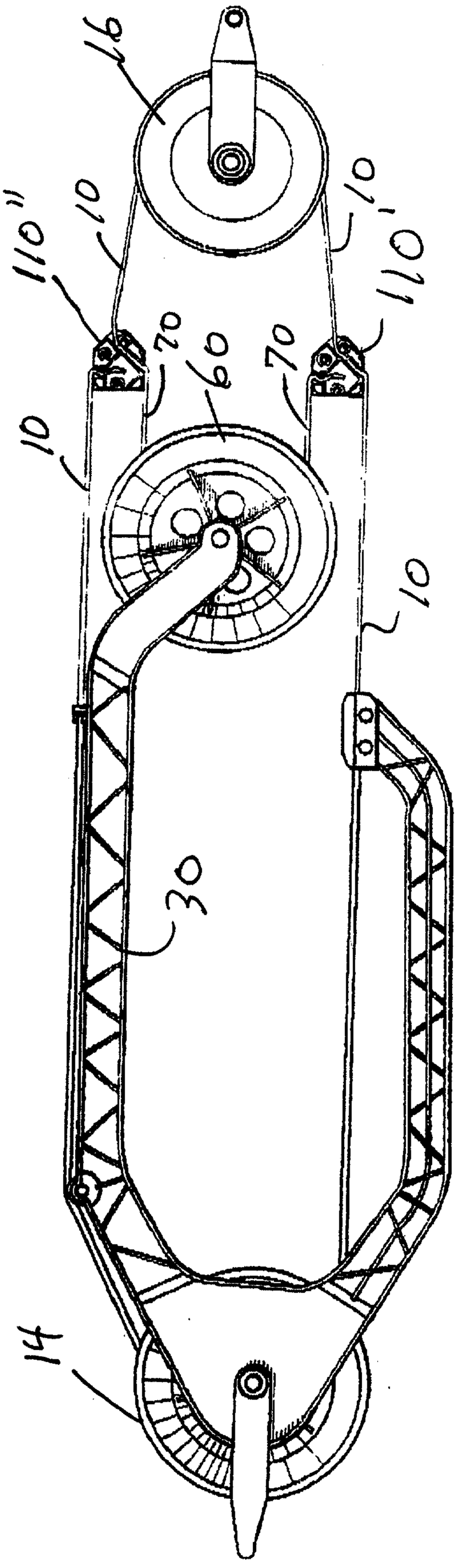


Fig. 10

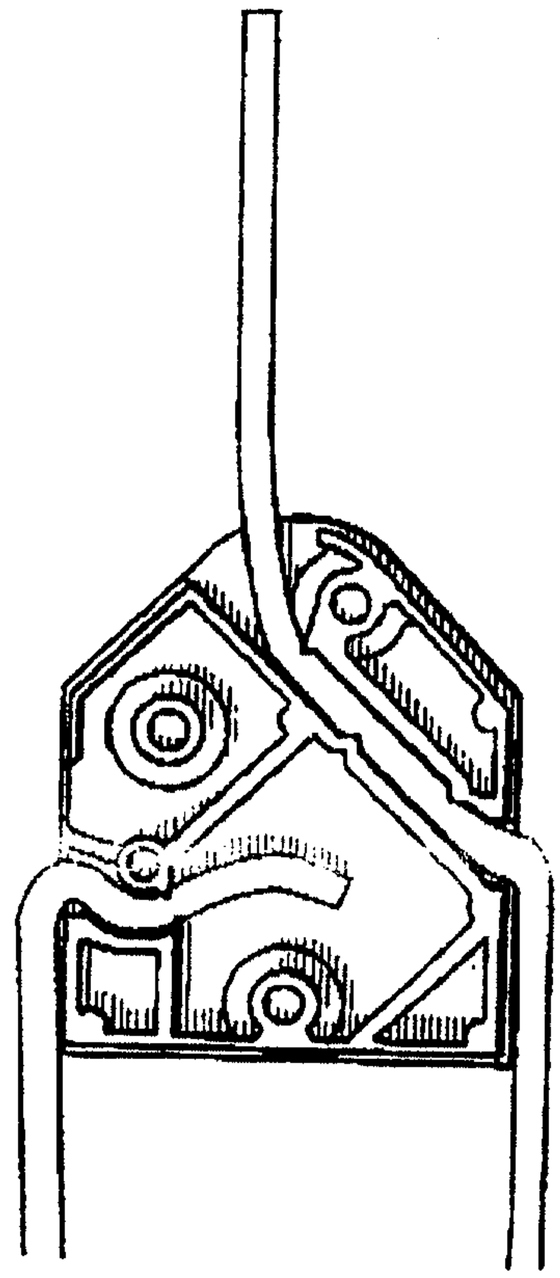
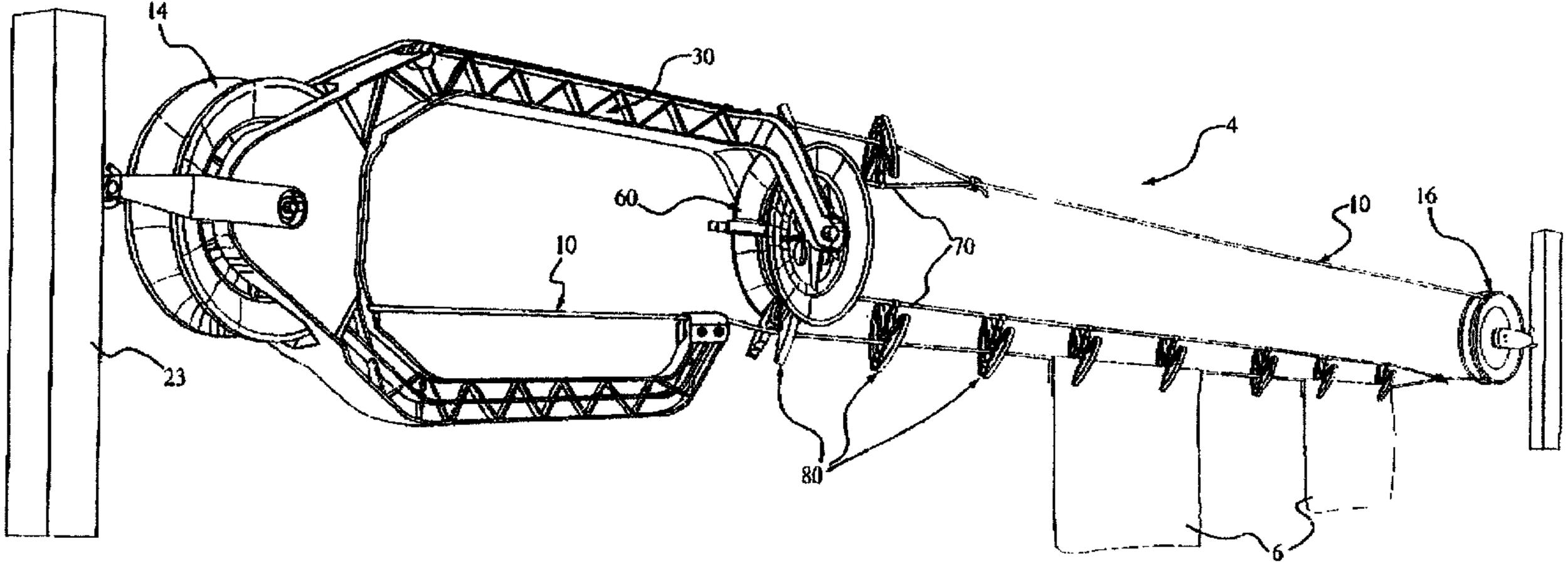


Fig. 10A


14
30
4
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23
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6