

Description

BASE EDGE COVER FOR A BUCKET AND APPARATUS FOR RETAINING SAME

5 Technical Field

The present invention relates to a cover for protecting the base edge of a ground engaging implement of a work machine.

10 Background Art

Edge covers for protecting a base edge of a bucket or other ground engaging tool are well known in the art. These base edge covers and apparatus for retaining such covers to the base edge are of various construction. Most, if not all, of the heretofore designs have shortcomings that cause the end product to be less than desirable.

The primary factors desired in constructing an edge cover that has characteristics of long wear and avoids the waste of material, labor and natural resources include sufficient strength to withstand the harsh environment and impacts, long life span, little waste of materials after the cover is worn out, and quick and easy installation.

25 The present invention is directed to overcome one or more of the problems as set forth above.

Disclosure of the Invention

30 In one aspect of the invention, apparatus are provided for protecting a base edge of a ground engaging implement of a work machine. The base edge has an upper face and a lower face and the apparatus includes a base edge cover having a forward ground
35 engaging portion and a rearward mounting portion. The rearward mounting portion has an upper flange element

5 extending along the upper face of the base edge and a lower flange element extending along the lower face of the base edge and defines a throat therebetween for receiving the base edge.

10 A mounting base is carried on the upper face of the base edge and has an opening therein. The upper flange element of the base edge cover has a bar projecting inwardly therefrom toward the upper face of the base edge. The bar is positionable within the opening of the mounting base.

15 A lock is provided for selectively retaining the bar within said opening.

Brief Description of the Drawings

20 Fig. 1 is a diagrammatic top view of one embodiment of the invention;

Fig. 2 is a diagrammatic cross-sectional view taken along line 2-2 of Fig. 1;

25 Fig. 3 is a diagrammatic cross-sectional view similar to Fig. 2, but with the components exploded;

Fig. 4 is a diagrammatic cross-sectional view similar to Fig. 2, but of another embodiment of the invention; and

30 Fig. 5 is a diagrammatic cross-sectional view taken along line 5-5 of Fig. 4.

Best Mode for Carrying Out the Invention

35 Referring to Figs. 1 - 3, apparatus 8 embodying the principles of the present invention is provided for protecting a base (cutting) edge 12 of a ground engaging implement, such as a bucket of a wheel loader, for example (not shown). Apparatus 8 includes a base edge cover 10. The typical base edge 12 is

5 constructed from steel plate and has an upper face 14,
a lower face 16 and a tapered leading edge 18. The
base edge 12, as set forth above, is a portion of an
implement of a work vehicle which is not shown for
purposes of brevity since such base edges implements
10 are well known in the art.

The base edge cover 10 is generally wedge
shaped, with a forward ground engaging portion 20 and
a rearward mounting portion 22. The mounting portion 22
has first and second spaced apart flange elements, an
15 upper flange element 24 and a lower flange element 26,
defining an base edge receiving throat 28
therebetween.

The base edge cover 10 is constructed in
conjunction with and apparatus 30 is provided for
20 detachably retaining the base edge cover on the base
edge 12. Apparatus 30 includes a mounting base 32
that is secured, preferably by welding, to upper face
14 of the base edge, but, without departing from this
invention, can be a unitary portion of the base edge
25 12 or connected thereto by bolts or other means. The
mounting base 32 is provided with an opening 34 that
is adapted to receive a laterally extending bar 36
provided on the upper flange element 24 of the base
edge cover 10. The bar 36 projects downwardly from
30 the upper flange element 24 and has a bottom surface
38 located to contact the upper face 14 of the base
edge 12, an upper surface 40, and a forward side 42.
The forward side 42 is disposed in abutting relation
to a rearward facing side of opening 34 when in the
35 installed position as shown in Fig. 2 to prevent the
cover 10 from coming off the base edge 12 during use.
The mounting base 32 also includes an upright flange
46 at its rearward end. A longitudinally extending

5 opening 48 is provided through the upright flange 46.
Such opening is adapted to receive an elongated lock
50. The lock 50 is adapted to extend through the
opening 48 to a locking position over the top of the
bar 36 for selectively retaining the bar 36 within the
10 opening 48.

Suitable retaining apparatus 52 are provided
for releasably maintaining the lock 50 in its locking
position within the opening 48. Such retaining
apparatus includes a pin 54, which is positionable in
15 a hole 56 provided in the upright flange 46 and a
similar hole 58 through the lock 50. Holes 54 and 56
are alignable when the lock is disposed in its
installed position as shown in Fig. 1. The pin 54, in
turn, is held in place by a snap ring-type retainer
20 60, which resides in a counterbore 62 in hole 56 and
engages a rounded detent groove 64 (Fig. 3) provided
in the pin 54. The pin 54 is driven through the
retainer 60 until the retainer engages the groove 64.
The pin 54 can be removed by driving it in the
25 opposite direction to release the retainer 60 from the
detent groove 64.

Referring now to Figs. 4 and 5, an alternate
embodiment of the present invention is disclosed,
wherein similar components are referenced by similar
30 reference numerals preceded by a "1". The second
embodiment includes a base edge cover 110 that has a
forward portion 120 and an upper flange element 124
which may be identical to the corresponding forward
portion 20 and upper flange element 24 of the
35 preceding embodiment. Mounting apparatus 130 is also
the same as mounting apparatus 30. The lower flange
portion 126, however, is made shorter than the
corresponding lower flange portion 26 of the preceding

5 embodiment and the embodiment of Figs. 4 and 5
includes a replaceable wear runner 166. Wear runner
166 includes a wear cover 168 and a mounting base 170.
The mounting base 170 is secured to the bottom surface
116 of base edge 112, preferably by welding. The wear
10 cover 168 is constructed so as to be slidably mounted
on the mounting base 170 by means of a mating internal
dove tail construction 172 shown in Fig. 5. The wear
cover 168 is detachable retained on the mounting base
172 by means of a pin 174. The pin 174 is preferably
15 mounting through alienable pin holes provided in the
mounting base 172 and cover 168. Such pin holes are
provided in a forwardly extending ear 176 of mounting
base 170 and in a mating pair of ears 178 (only one
shown) provided on cover 168. Such pin 174 may be
20 installed through the ears 176, 178 before the base
edge cover 110 is installed and are protected by
location within a pocket 180 provided in the lower
flange element 126 of the cover 110.

25 Industrial Applicability

The apparatus 8 of this invention is easily
removed and installed and represents a saving of labor
and machine down time. The base edge cover 10, base
edge 12 and mounting apparatus 30 are dimensioned and
30 are of a construction sufficient for the insertion of
the bar 36 of the upper flange element 24 into the
opening 34 of the mounting base 32 as shown in Fig. 3.
When the base edge cover 10 is in the installed
position as shown in Fig. 2, the lock 50 may be
35 installed through opening 48. The lock is retained by
the insertion of the pin 54 which, in turn, is
retained by the snap ring 60. After the lock 50 is
installed, the bar 36 becomes captured within the

5 opening 34 to retain the cover 10 on the base edge 12
and to prevent its loss during operation.

The primary forces exerted on the base edge
cover 10 during operation of the machine are
transferred directly onto the base edge 12 through
10 engagement of the mating surfaces in the throat 28 of
the cover with the leading edge 18 of the base edge
12. Upward forces exerted on the base edge cover 10
are carried from the lower flange element 26 into the
lower face 16 of the base edge, with moment loads
15 being transferred into the upper surface 14 through
the contacting bottom surface 38 of the bar 36 of the
upper flange element 26 of the cover 10.

The preceding description and operation for
the embodiment shown in Figs. 1 -3 apply as well to
20 the embodiment depicted in Figs. 4 and 5. However,
the second embodiment incorporates the use of a
separately replaceable wear runner 166. The use of
the separate wear runner 166 is advantageous because
it allows the separate replacement of either the edge
25 cover 110 or the wear cover 168, depending on which of
such components needs to be replaced due to wear.
This use reduces the waste of material in that less
iron need be thrown away when only one component needs
replacing.

30 Other aspects, objects and advantages of
this invention can be obtained from a study of the
drawings, the disclosure and the claims.



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Claims

1. Apparatus for protecting a base edge of
a ground engaging implement of a work machine, said
base edge having an upper face and a lower face,
10 comprising:

a base edge cover having a forward ground
engaging portion and a rearward mounting portion, said
rearward mounting portion having an upper flange
element extending along said upper face of the base
15 edge and a lower flange element extending along the
lower face of said base edge and defining a throat
therebetween for receiving said base edge;

a mounting base carried on the upper face of
said base edge, said mounting base having an opening
20 therein;

said upper flange element of said base edge
cover having a bar projecting inwardly therefrom
toward said upper face of the base edge, said bar
being positionable within said opening of said
25 mounting base; and

a lock for selectively retaining said bar
within said opening.

2. The apparatus, as set forth in claim 1,
30 wherein said mounting base includes an upright flange
having a longitudinally extending opening, said
opening being adapted to receive and position said
lock in a locking position over the top of said bar.

3. The apparatus, as set forth in claim 2,
35 including retaining apparatus for releasably
maintaining the lock in its locking position.



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5 4. The apparatus, as set forth in claim 3,
wherein said retaining apparatus includes:
 a hole in said upright flange and an
alignable hole in said lock; and
 a pin insertable through said holes in said
10 upright flange and said lock.

 5. The apparatus, as set forth in claim 1,
including a replaceable wear runner, said wear runner
including a mounting base carried on the lower face of
15 said base edge and a wear cover, said wear cover being
slidably mounted on said mounting base.

 6. The apparatus, as set forth in claim 5,
wherein said mounting base has a forwardly extending
20 ear and said cover has a pair of mating ears, said
ears being provided with alienable pin holes for
receiving a pin for detachably retaining said cover to
said mounting base.

25 7. The apparatus, as set forth in claim 6,
wherein said lower flange element of said base edge
cover is provided with a pocket, and wherein said ears
and pin are located within said pocket when the edge
cover is installed.

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Abstract of the Disclosure

BASE EDGE COVER FOR A BUCKET AND APPARATUS FOR
RETAINING SAME

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Apparatus is provided for protecting a base edge of a ground engaging implement of a work machine from wear. The apparatus includes a base edge cover and retaining apparatus of a construction adapted for time saving removal and installation. A mounting

15 base is carried on the upper face of the base edge and has an opening therein. An upper flange element of the base edge cover has a bar projecting inwardly therefrom toward the upper face of the base edge. The bar is positionable within the opening of the mounting

20 base and is captured in such opening by a detachable lock. The construction results in a reduction of waste of materials that must be discarded after the base edge cover is worn out.

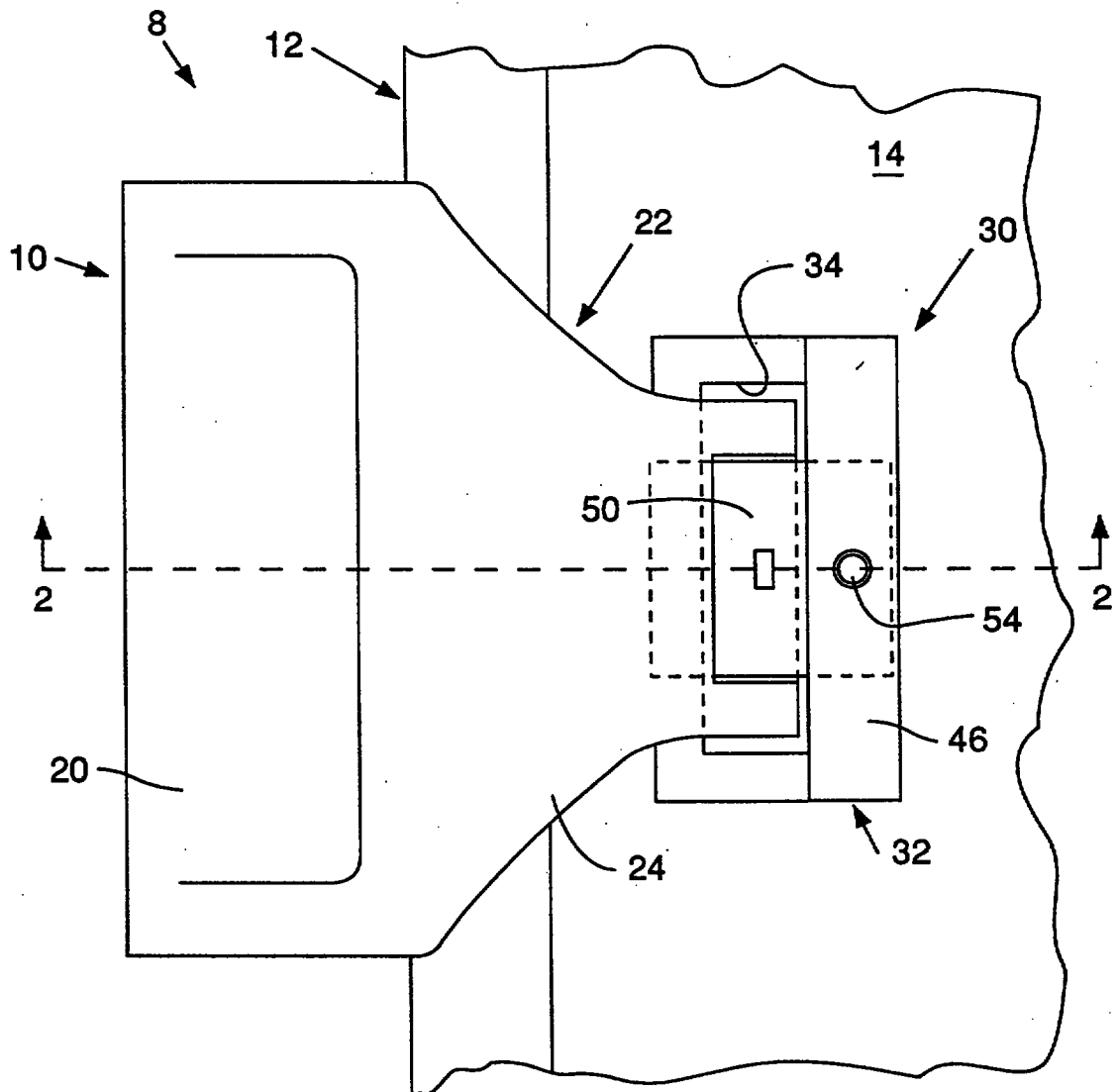
FIG. 1.

Fig. 2-

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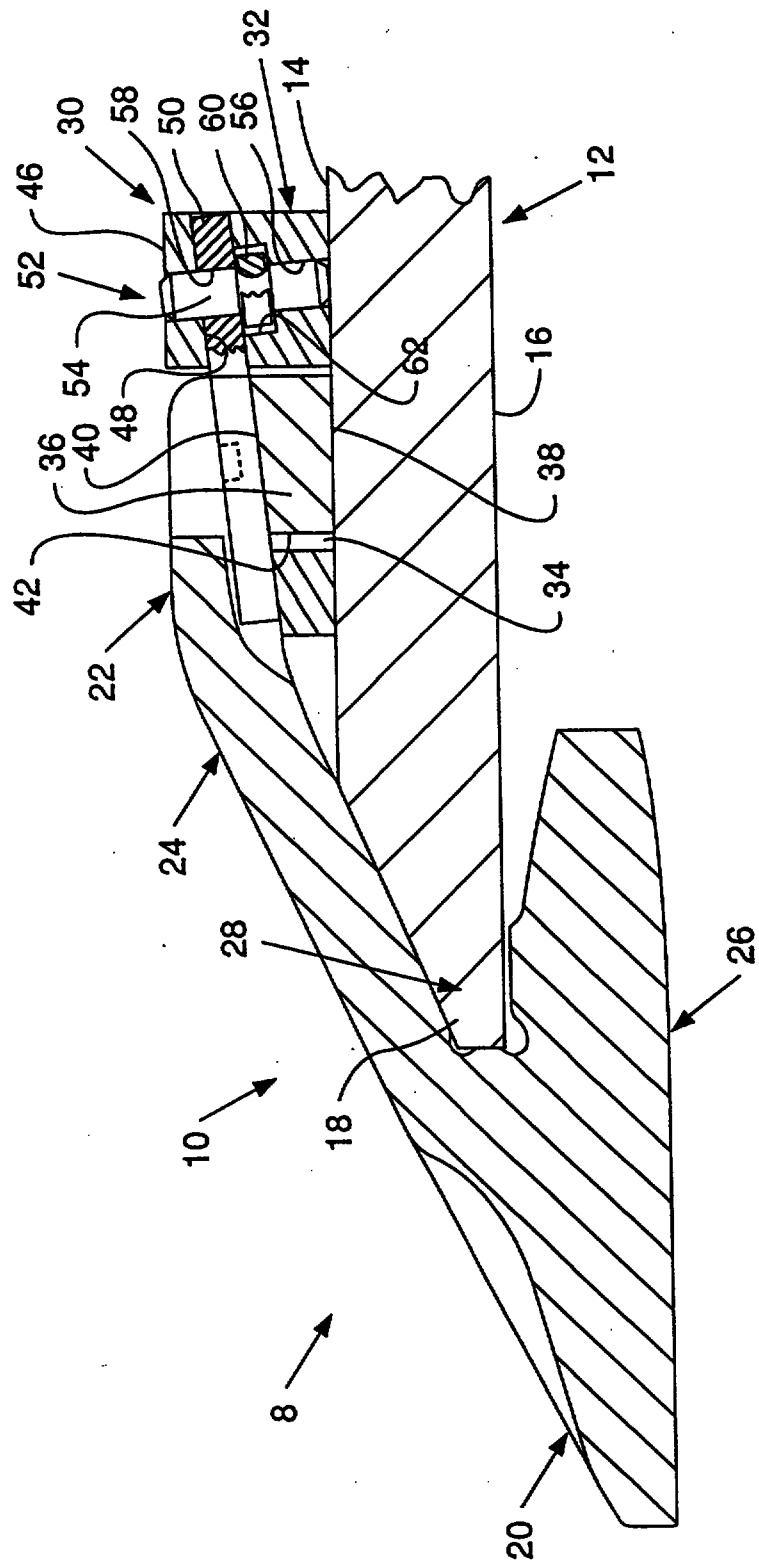


FIG. 3

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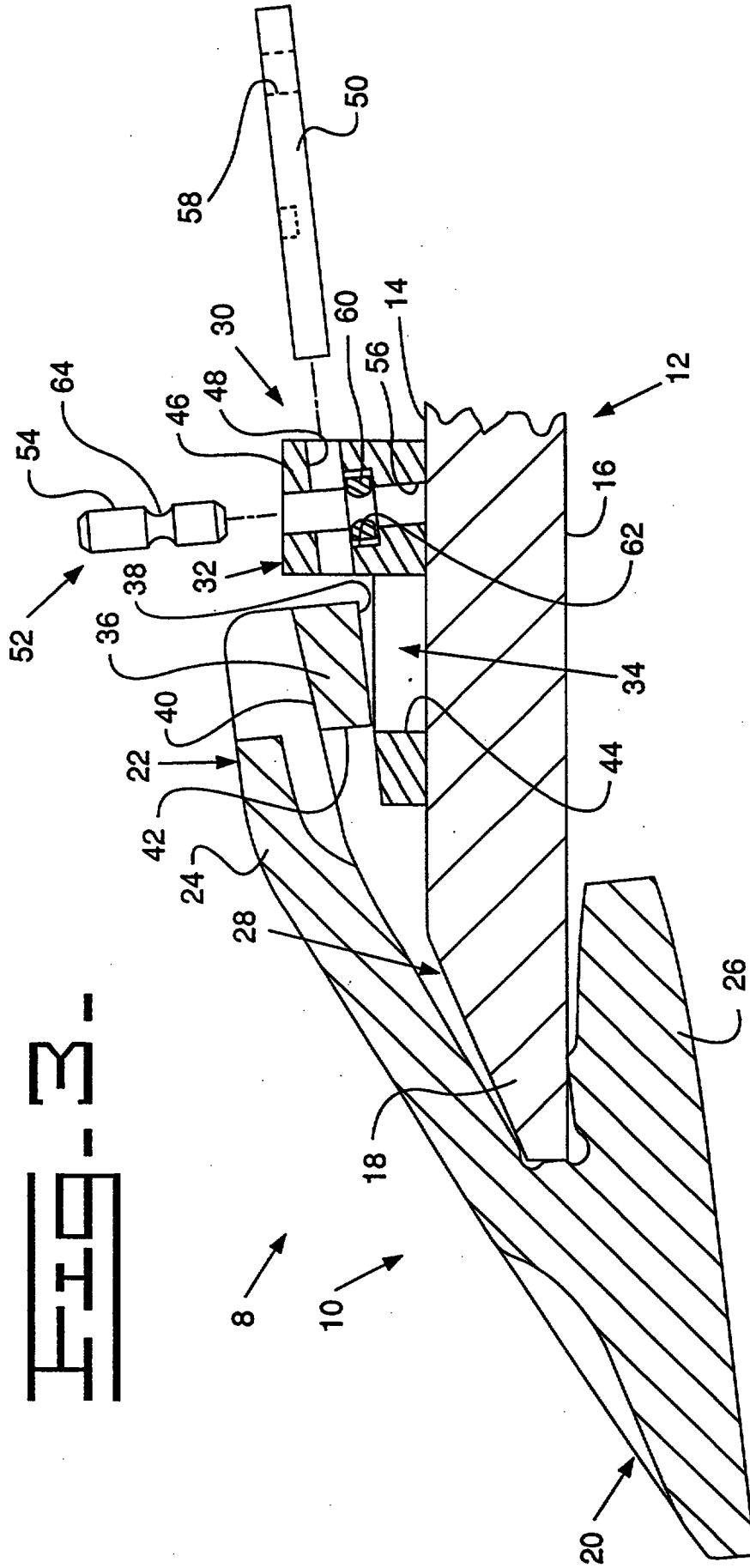


FIG. 4

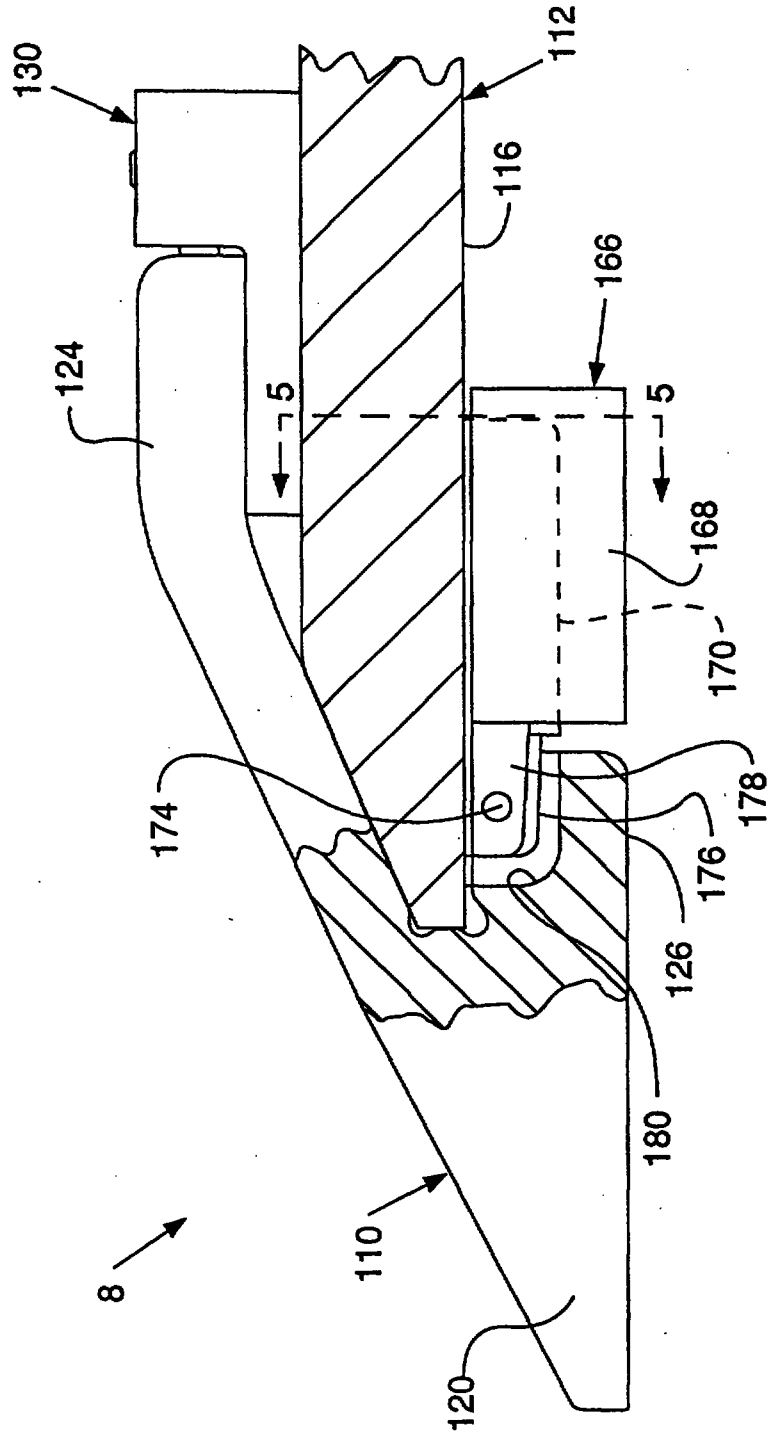


FIG. 5-