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(54) Satellite block-down receiver set having adjustable mounting

(57) a satellite block-down receiver set having adjustable mounting is disclosed. The satellite block-down receiver set (10) comprises a plurality of satellite block-down receivers and a mounting. The mounting (100) comprises a coupling part (110) incorporated with the plurality of satellite block-down receivers, a fixture part (120) being povable mounted on an arm (2) of a dish bracket and an adjustably connecting mechanism for adjustably connecting and fastening the coupling part and the fixture part. At least one of the coupling part and the fixture part is provided with an extension portion extending to and overlapping the other one of the two parts. The connecting mechanism is provided in the overlapping portions of the two parts such that the relative position of the two parts is adjustable when the connecting mechanism is loosed. According to the above structure, the position of each satellite block-down receiver relative to a reflector of a dish aerial is adjustale in at least two-dimensions when a plurality of satellite block-down receivers are used to receiving satellite signal by only one dish arial. Thus, a neutral and balanced receiving strength and effect can be obtained.

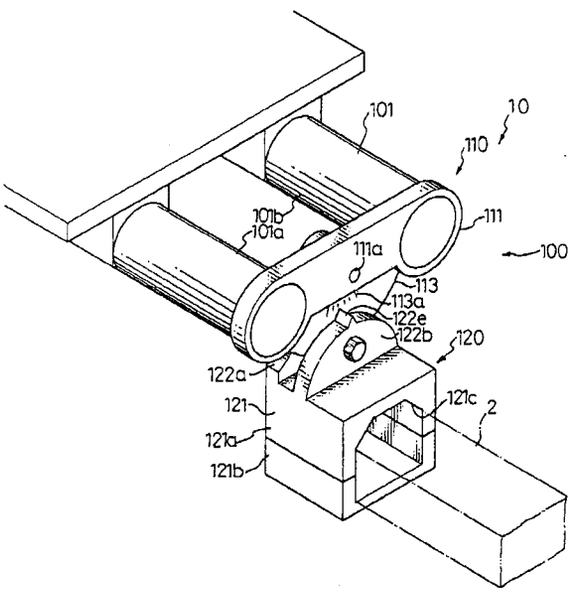

FIG.2

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Description

BACKGROUND OF THIS INVENTION

1. Field of this invention

[0001] This invention relates to a satellite block-down receiver set having an adjustable mounting, more particular to a satellite block-down receiver set used in a dish aerial which uses a plurality of satellite block-down receivers to receive different satellite signals. Each of the satellite block-down receivers can obtain an excellent receiving effect by means of the mounting which incorporates with the satellite block-down receivers and makes the orientation of each satellite block-down receiver relative to a reflector of the dish aerial adjustable.

2. Related art of this invention

[0002] In the course of receiving the satellite signals, a dish aerial which comprises a dish bracket, a dish reflector, and a satellite block-down receiver located in the focus point of the reflector is usually used. The satellite block-down receiver is generally composed of a horn, a wave guide, and a processing circuit, and can receive and process the satellite signals and then output the processed satellite signals to a TV receiving system. However, following up the development of the satellite system, the source of the satellite signal is also diversified and pluralized. Thus, the adaptive scope and the orientation of each dish aerial should be adjusted in accordance with the difference in orientation of the satellite. Therefore, a plurality of dish aerials are necessary for receiving various satellite signals.

[0003] However, for the sake of saving space, a shared dish aerial and a plurality of satellite block-down receivers to receive satellite signals are normally used. That is, a plurality of adjacent satellite block-down receivers are arranged in the focus point of one reflector. Fig 1 shows a conventional embodiment that fixes two satellite block-down receivers to an arm of the dish bracket via a conventional mounting dedicated for a single satellite block-down receiver. As shown in Fig. 1, the satellite block-down receivers 3a and 3b are combined as a satellite block-down receiver set. The satellite block-down receiver set is detachably fixed to the arm 2 of the dish bracket via a mounting 1 which is dedicated for a single satellite block-down receiver. However, since the mounting 1 can only hold one satellite block-down receiver 3a, only the horn of the satellite block-down receiver 3a can be located on the focus point of the reflector of the dish aerial. The other satellite block-down receiver 3b is located in a position offsetting from the focus point of the reflector and thus obtains a receiving effect far worse than satellite block-down receiver 3a. As a result, a bad receiving effect is obtained using the combination of the satellite signals received by these two satellite block-down receivers.

SUMMARY OF THIS INVENTION

[0004] The object of this invention is to provide a satellite block-down receiver set having an adjustable mounting which can make the orientation of each satellite block-down receiver of the invention, relative to the reflector of the dish aerial, adjustable.

[0005] The other object of this invention is to provide a mounting by which at least one satellite block-down receiver can be fixed on the arm of the dish bracket, and the orientation of each satellite block-down receiver relative to the reflector of the dish aerial can be adjusted so as to obtain an excellent and balanced receiving effect

[0006] To achieve the object mentioned above, a satellite block-down receiver set having an adjustable mounting in accordance to this invention comprises a plurality of satellite block-down receivers, and a mounting which includes a coupling part incorporated with the plurality of satellite block-down receivers, a fixture part being movably mounted on an arm of a dish bracket; and an adjustably connecting mechanism for adjustably connecting and fastening the coupling part and the fixture part wherein at least one of the coupling part and the fixture part is provided with an extension portion extending to and overlapping the other one of the two parts, and the connecting mechanism is provided in the overlapping portions of the two parts such that the relative position of the two parts is adjustable when the connecting mechanism is loosed, which thereby making the position of each satellite block-down receiver relative to a reflector of a dish aerial adjustable in at least two-dimensions.

[0007] According to the above structure, a set of satellite block-down receivers which comprises at least two satellite block-down receivers would be able to be fixed on the arm of the dish bracket which is dedicated for a single satellite block-down receiver, and a balanced receiving effect with respect to each satellite block-down receiver would be obtained due to the adjustment of the orientation of each satellite block-down receiver relative to the reflector of the dish aerial.

[0008] To achieve the other object of this invention, a mounting for a satellite block-down receiver set in accordance with this invention comprises a coupling part incorporated with a plurality of satellite block-down receivers, a fixture part being movably mounted on an arm of a dish bracket; and an adjustably connecting mechanism for adjustably connecting and fastening the coupling part and the fixture part, wherein at least one of the coupling part and the fixture part is provided with an extension portion extending to and overlapping the other one of the two parts, and the connecting mechanism is provided in the overlapping portions of the two parts such that the relative position of the two parts is adjustable when the connecting mechanism is loosed, which thereby making the position of each coupling part relative to a reflector of a dish aerial adjustable in at least

two-dimensions.

[0009] Based on the above structure, the conventional satellite block-down receiver set can also obtain a balanced receiving effect due to the adjustment of the orientation of each satellite block-down receiver relative to the reflector of the dish aerial.

[0010] Moreover, in a further embodiment of this invention, the mounting is provided with an angle scale by which the orientation of each satellite block-down receiver is easily ascertained.

[0011] Furthermore, in a further embodiment of this invention, the fixture part is composed of an upper frame and a lower frame for clamping the arm of the disk bracket from two sides. The pitch of the two frames changes depending upon the size of the arm. By virtue of this structure, the fixture part can be mounted on any size of arm.

[0012] The above and the other objects, features, and merits of this invention will be more apparent from the following description directed towards the preferred embodiments of this invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Fig. 1 is a schematic perspective view showing a conventional satellite block-down receiver set which is mounted on an arm of the dish bracket via a conventional mounting.

[0014] Fig. 2 is a schematic perspective view showing a satellite block-down receiver set in accordance with a first preferred embodiment of this invention.

[0015] Fig. 3 is an explored schematic perspective view showing the fixture part of the satellite block-down receiver set of Fig. 2.

[0016] Fig. 4 is an explored schematic perspective view showing a satellite block-down receiver set in accordance with a second preferred embodiment of this invention.

[0017] Fig. 5 is an explored schematic perspective view showing a satellite block-down receiver set in accordance with a third preferred embodiment of this invention.

[0018] Fig. 6 is an explored schematic perspective view showing a satellite block-down receiver set in accordance with a fourth preferred embodiment of this invention.

[0019] Fig. 7 is an explored schematic perspective view showing an alternate embodiment of the fixture part of the satellite block-down receiver set shown in Fig. 4.

[0020] Fig. 8 is an explored schematic perspective view showing a satellite block-down receiver set in accordance with a fifth preferred embodiment of this invention.

DETAILED DESCRIPTIN OF THIS INVENTION

[0021] Fig. 2 shows a satellite block-down receiver set having an adjustable mounting in accordance with a first preferred embodiment of this invention. For the sake of clearness, the horn located on the front end of the satellite block-down receiver is not shown. As shown in Fig. 2, the satellite block-down receiver set 10 comprises two block-down receiver bodies of 101a, 101b being adjacent to and coupled to each other, and a mounting 100 for coupling and holding the two block-down receiver bodies 101a and 101b. The mounting 100 comprises a coupling part 110 integrally formed as a whole with the two block-down receiver bodies 101a and 101b, and a fixture part 120 being mounted on the arm 2 of the dish bracket (not shown). The coupling part 110 comprises a coupling portion 111 integrally formed with the block-down receiver bodies 101a and 101b and an extension portion 113 extending from the coupling portion toward the fixture part 120. Moreover, the fixture part 120 comprises a fixing portion 121 being mounted on the arm of the dish bracket and a protruding portion 122 extending from the fixing portion 121.

[0022] As shown in Fig. 3, the fixing portion 121 comprises an upper frame 121a and a lower frame 121b. The lower frame 121b is coupled to the upper frame 121a by means of four long screws 121d being inserted from the bottom side thereof to the topside thereof. A rectangular hole is formed between the upper and lower frame 121a and 121b and used for receiving the arm 2 of the dish bracket. Four bevel faces 121c are formed in the four comers of the rectangular hole so as to receive different sizes of rectangular or circular arms 2. More detailed, by virtue of the provision of the bevel face 121c, the gap between the upper frame 121a and lower frame 121b, and the long screws 121d, the arm 2 of the dish bracket could be inserted into the fixing portion 121.

[0023] The protruding portion 122 of the fixture part 120 comprises a first protruding plate 122a and a second protruding plate 122b. The first protruding plate 122a is provided with a pivot hole 122c through which a pivot screw 130 can penetrate. The pivot screw 130 can be coupled, by thread, to a thread hole 111a provided in the coupling portion 111. According to the above mechanism, the first protruding plate 122a can movably overlap to the coupling portion 111 and the coupling part 110 can swing against the fixture part 120 around the pivot screw 130. The pivot screw 130 and the pivot 122c construct a shaft bracket mechanism. A locking screw 122d which functions as a locking mechanism is coupled to the second protruding plate 122b for abutting at the side wall of the extension portion 113 such that it pushes the extension portion 113 against the first protruding plate 122a and thereby fixing the swing angle of the coupling part 110 relative to the fixture 120 when the extension portion 113 of the coupling part is inserted into a space between the first protruding plate 122a and second protruding plate 122b. Moreover, as shown in Fig. 2, a pointer 122e is provided on the upper edge of the second protruding plate 122a, and a set of angle indicating scale 113a is provided on the extension portion

113 of the coupling part. Thus, the swing angle between the coupling part 110 and the fixture part 120 is easily identified.

[0024] Based on the above structure, the orientation of each satellite block-down receiver relative to the reflector of the dish aerial could be adjusted by virtue of the swing of the coupling part 110 relative to the fixture part 120 around the shaft bracket mechanism, when the fixture part 120 is fixed to the arm 2 of the dish bracket Thus, a suitable orientation of each satellite block-down receiver is available and an excellent and balanced receiving effect could be obtained.

[0025] Fig. 4 shows a perspective view of a satellite block-down receiver set in accordance with a second preferred embodiment of this invention. Most of parts of the satellite block-down receiver set in the second embodiment are similar to those shown in the first embodiment except the following. First, the coupling portion 211 in the second embodiment is composed of an upper claming part 211a and a lower clamping part 211b, both thereof being combined together by means of screws. The lower clamping part 211b is provided with an extension portion 213 extending therefrom. Second, there is only one protruding plate 222 provided on the fixture part 220. Moreover, the extension portion 213 is provided with a curved slot 213a for receiving a locking screw 222d, and a pivot hole 213b for receiving a pivot screw 230. The protruding plate 222 of the fixture part 220 is provided with a through hole 222a for receiving the locking screw 222d, and a thread hole 222b for coupling with the pivot screw 230. Furthermore, the pointer 213c is provided on the extension portion 213 of the coupling part and the angle scale 222c is provided on the edge portion of the protruding plate 222 of the fixture part 220.

[0026] According to the above structure, the coupling part 210 can be supported by the pivot screw 230 and then swing relative to as well as change its angle to the fixture part 220, when the pivot screw 230 is inserted through the pivot hole 213b and coupled to the thread hole 222b. The orientation of each satellite block-down receiver relative to the reflector of the dish aerial would be changed as the angle of the coupling part 210 to the fixture part 220 is changed. Moreover, the orientation of the coupling part 210 relative to the fixture part 220 can be fixed by virtue of the clamping of the locking screw 222d and a nut 222e when the thread end of the locking screw 222d is inserted through the through hole 222a and the curved slot 213a and then coupled to the nut 222e. Briefly, the main difference between the second embodiment and the first embodiment is the provision of the coupling part which is constructed separately from the satellite block-down receiver body. By means of the above mechanism, the mounting composed of the coupling part 210 and the fixture part 220 can also be used to support a conventional satellite block-down receiver set which is not provided with an adjustable mounting.

[0027] Fig. 5 shows a satellite block-down receiver set having an adjustable mounting in accordance with the third embodiment of this invention. In this embodiment, the satellite block-down receiver set also comprises satellite block-down receiver bodies 301 and a mounting 300, and the mounting 300 comprises a coupling part 310 and a fixture part 320. Moreover, a ball journal 313a is provided at the end of the extension portion 313 of the coupling part 310. The fixture part 320 comprises an upper frame and a lower frame, as same as that in the first embodiment and thus not shown, and the upper frame is composed of a first upper frame 321a and a second upper frame 321b. Each of the upper frames 321a and 321b is provided, on its inner side wall, with a recess 321c suitable for receiving each side surface of the ball journal 313a and thus overlapping therewith. The ball journal 313a is clamped by the first upper frame 321a, the second upper frame 321b, and the locking screw 323a and 323b which are inserted into the thread hole 322a and 322b and tightly screwed.

[0028] According to the above structure, the ball journal 313a functions as a ball pivot and the recesses 321c functions as a pivot hole and thus these two elements constructs a so-called shaft bracket mechanism. By virtue of the above structure, the angle and the orientation of each satellite block-down receiver relative to the reflector of the dish aerial can also be adjusted by means of the adjustment of the rotating angle of the ball journal 313a relative to the recesses 321c.

[0029] Fig. 6 shows an explored perspective view of a satellite block-down receiver set having an adjustable mounting in accordance with the fourth embodiment of this invention. As shown in Fig. 6, the satellite block-down receiver set also comprises satellite block-down receiver bodies and a mounting 400. The mounting 400 comprises a coupling part 410 and a fixture part 420. Moreover, the coupling part 410 comprises a coupling portion 411 and an extension portion 413, and the fixture part 420 comprises a fixing portion 421 and a protruding portion 422. The extension portion 413 is provided with a pivot hole 413a and the protruding portion 422 is provided with an elongated slot 422a. The fixing portion 421 consists of an upper plate 421a and a lower clamp 421b in which face-to-face surfaces are formed as an arc surface and there are arc teeth provided thereon for biting, from the top and the bottom, the arm of the dish bracket The thread screws 421d can fix the position of the fixing portion 421 relative to the arm of the dish bracket.

[0030] Moreover, the protruding portion 422 and the extension portion 413 are overlapped and fixed together by means of a nut 423b and a locking/shafting screw 423a which passes through the elongated slot 422a and the pivot hole 413a, and further couples to the nut 423b. Furthermore, the portion of the side wall which is adjacent to the pivot hole 413a and faces to the protruding portion 422 is provided with teeth-shaped knurl for biting the surface of the protruding portion 422 so as to prevent sliding when the extension portion 413 and the protruding portion 422 is fixed.

[0031] According to the above embodiment, a first di-

mensional adjustment can be obtained by virtue of the movement of the extension portion 413, accompanying with the locking/shafting screw, relative to the protruding portion 422 along the elongated slot 422a. A second dimensional adjustment can be obtained by virtue of the movement of the extension portion 413 relative to the protruding portion 422 around the locking/shafting screw 423a. A third dimensional adjustment can be obtained by virtue of the movement of the fixing portion 421 relative to the arm of the dish bracket. Therefore, a three dimensional adjustment can be obtained.

[0032] Fig. 7 is a perspective view showing an alternative embodiment of the fixture part of the second embodiment The fixture part 220' shown in Fig. 7 basically can be used accompanied with the coupling part 210 of the second embodiment shown in Fig. 4, and thus the same portion is not stated repeatedly. As shown in the alternative embodiment of Fig. 7, the fixture part 220' is composted of a frame body 221a' for receiving the arm of the dish bracket, and a ⊓-shaped adjusting part 221b' being attached to the frame body 221a'. The adjusting part 221b' is integrally provided with a protruding portion 222' inclining at an angle, such as 60 degrees. The ⊓-shaped adjusting part 221b' is further provided, in its two leg portion, with elongated slots 221c' for receiving fastening screws 221d' respectively. Thus, the position of the adjusting part 221b' relative to the frame body 221a' is adjustable.

[0033] According to the above alternative embodiment, the position of the coupling part 210 relative to the fixture part 220' can be adjusted in height direction by means of the adjusting part 221b' as well as in side direction by means of the shaft bracket mechanism shown in Fig. 4 and thus a two-dimension adjustment is available. Moreover, the adjustment of the frame body 221a' relative to the arm of the dish bracket can further contribute a one-dimension adjustment and thus a three-dimension adjustment is available.

[0034] Fig. 8 shows an explored perspective view of a satellite block-down receiver assembly having an adjustable mounting in accordance with the fifth embodiment of this invention. As shown in Fig. 8, the satellite block-down receiver assembly also comprises satellite receiver bodies and a mounting 500. The mounting 500 comprises a coupling part 510 and a fixture part 520. The structure of the fixture part 520 is substantially the same as that disclosed in Fig. 6. Thus, its detail description is omitted here. The coupling part 510 comprises a coupling portion consisted of two half pieces 511a and 511b which can be combined by screws and nuts 511c, and an extension portion 513. Each of the two half pieces 511a and 511b is provided with half portion of two holes for receiving two satellite block-down receiver bodies and half portion of a sphere-surface hole for receiving the extension portion 513. The extension portion 513 comprises a sphere body 513a to be received in the sphere-surface hole formed in the coupling part 510, and a column body 513b extending from the surface of the sphere body 513a. The column body 513b is provided with two flat side surfaces 513c for engaging and being received in the elongated slot 522a of the protruding portion 522, and a thread hole 513d opening to the extending end surface of the column body 513b for receiving a locking screw 523a. The orientation of the sphere body 513a in the sphere-surface hole provided in the two pieces 511a and 511b can be fixed by the screws 511c, and the height of the satellite block-down receiver body with respect to the reflector can be fixed by the locking screw 523a.

[0035] According to the above structure, the angle of the longitudinal axle of the receiver body with respect to the reflector would be adjustable in addition to the location of each receiver body projecting on to the reflector. Thus, an easier three-dimensional adjustment would be available between the coupling part 510 and the fixture part 520.

[0036] In view of all the above embodiments, the position of each satellite block-down receiver relative to the reflector of the dish aerial can be adjusted in light of the movement of the coupling part relative to the fixture part if there is an extension portion provided in one of the coupling part and fixture part, an portion overlapping the extension portion which is provided in the other one thereof, and a spatially adjustable mechanism in the overlapping portion thereof. An adjustment function can also be obtained with respect to the conventional satellite block-down receiver set by virtue of the provision of the mounting disclosed in the second embodiment. Moreover, although the quantity of the satellite block-down receiver is illustrated as two, it is obvious that the quantity thereof can also be three or more with a modification to the structure of the coupling part Therefore, the above embodiments are only illustrated as examples without limiting the scope of this invention.

Claims

1. A satellite block-down receiver set having adjustable mounting, comprising:

a plurality of satellite block-down receivers; and
a mounting, comprising

a coupling part incorporated with the plurality of satellite block-down receivers;
a fixture part being movably mounted on an arm of a dish bracket; and
an adjustably connecting mechanism for adjustably connecting and fastening the coupling part and the fixture part, wherein

at least one of the coupling part and the fixture part is provided with an extension port extending to and overlapping the other one of the two parts, and the connecting mechanism is provided in the overlap-

ping portions of the two parts such that the relative position of the two parts is adjustable when the connecting mechanism is loosed, which thereby making the position of each satellite block-down receiver relative to a reflector of a dish aerial adjustable in at least two-dimensions.

2. The satellite block-down receiver set having adjustable mounting of Claim 1, wherein the adjustably connecting mechanism comprises a pivot hole provided in the extension portion and a pivot for passing through the pivot hole and fastening to the other part.

3. The satellite block-down receiver having adjustable mounting of Claim 1, wherein the adjustably connecting mechanism comprises a ball journal provided on the extension portion and spherical recesses provided in the other part for receiving the ball journal.

4. The satellite block-down receiver set. having adjustable mounting of Claim 1, wherein the adjustably connecting mechanism comprises an elongated slot provided on the extension portion, a pivot hole provided on the other part, and a pivot being capable of passing through the elongated slot and the pivot hole and thus fastening the coupling part and the fixture part.

5. The satellite block-down receiver set having adjustable mounting of Claim 1, wherein the coupling part comprises an upper clamping part and a lower clamping part both thereof being connected together and using for detachably clamping the satellite block-down receivers.

6. The satellite block-down receiver set having adjustable mounting of Claim 1, wherein the coupling part is integrally formed with the plurality of satellite block-down receivers.

7. The satellite block-down receiver set having adjustable mounting of Claim 1, wherein the fixture part comprises an upper frame and a lower frame both thereof being connected together and clamping the arm of the dish bracket with a gap therebetween.

8. The satellite block-down receiver set having adjustable mounting of Claim 7, wherein the upper frame and the lower frame define a hole therebetween for receiving the arm of the dish bracket, and the hole has a section with a rectangular shape, at least one corner of the hole being provided with a beveled face.

9. The satellite block-down receiver set having adjustable mounting of Claim 1 or 2, wherein the mounting further comprises a locking mechanism for tightly fastening the coupling part and the fixture part together.

10. The satellite block-down receiver set having adjustable mounting of Claim 1, the coupling part and the fixture part is further respectively provided with an angle scale and a pointer.

11. The satellite block-down receiver set having adjustable mounting of Claim 1, the extension part is constructed as a single part being capable of movably coupling with a main body of the one part.

12. A mounting for a satellite block-down receiver set, comprising:

a coupling part incorporated with the plurality of satellite block-down receivers;
a fixture part being movably mounted on an arm of a dish bracket; and
an adjustably connecting mechanism for adjustably connecting and fastening the coupling part and the fixture part, wherein

at least one of the coupling part and the fixture part is provided with an extension portion extending to and overlapping the other one of the two parts, and the connecting mechanism is provided in the overlapping portions of the two parts such that the relative position of the two parts is adjustable when the connecting mechanism is loosed, which thereby making the position of each satellite block-down receiver relative to a reflector of a dish aerial adjustable in at least two-dimensions.

13. The satellite block-down receiver set having adjustable mounting of Claim 1, wherein the coupling part comprises an upper clamping part and a lower clamping part both thereof being connected together and using for detachably clamping the satellite block-down receivers.

14. The mounting for a satellite block-down receiver set of Claim 1, wherein the adjustably connecting mechanism comprises a pivot hole provided in the extension portion and a pivot for passing through the pivot hole and fastening to the other part.

15. The satellite block-down receiver having adjustable mounting of Claim 1, wherein the adjustably connecting mechanism comprises a ball journal provided on the extension portion and spherical recesses provided in the other part for receiving the ball journal.

16. The satellite block-down receiver set having adjustable mounting of Claim 1, wherein the fixture part

comprises an upper frame and a lower frame both thereof being connected together and clamping the arm of the dish bracket with a gap therebetween.

17. The satellite block-down receiver set having adjustable mounting of Claim 7, wherein the upper frame and the lower frame define out a hole therebetween for receiving the arm of the dish bracket, and the hole has a section of rectangular shape, at least one comer of the hole being provided with a bevel face.

18. The satellite block-down receiver set having adjustable mounting of Claim 1 or 2, wherein the mounting further comprises a locking mechanism for tightly fastening the coupling part and the fixture part together.

19. The satellite block-down receiver set having adjustable mounting of Claim 1, the coupling part and the fixture part is further respectively provided with an angle scale and a pointer.

20. The satellite block-down receiver set having adjustable mounting of Claim 1, the extension part is constructed as a single part being capable of movably coupling with a main body of the one part.

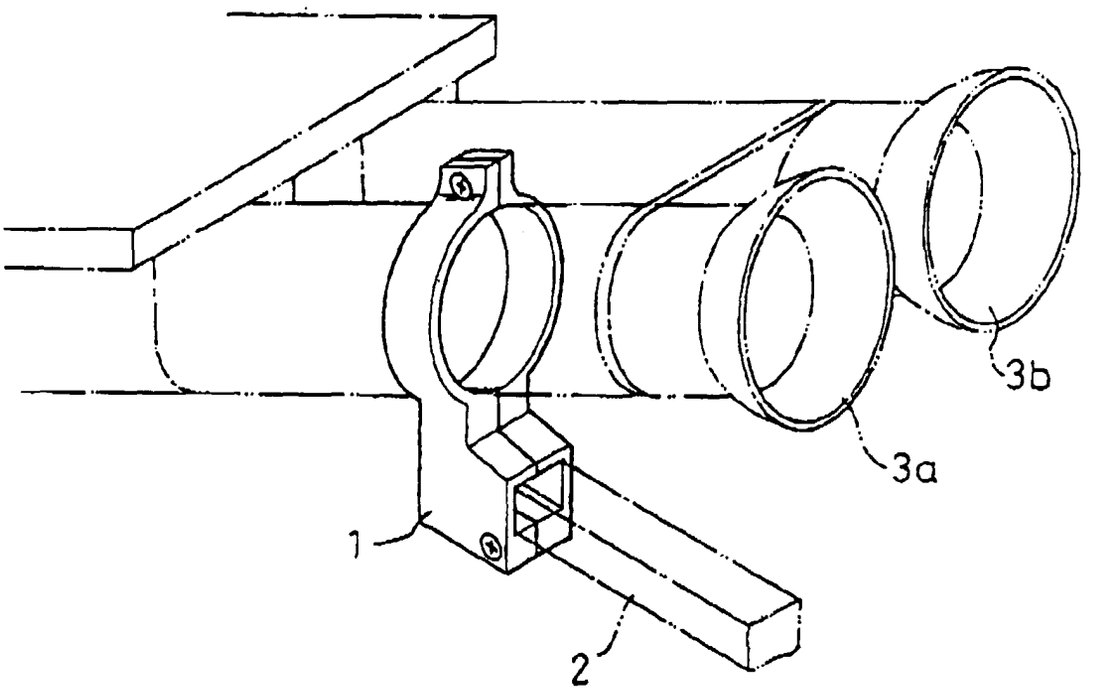

FIG.1

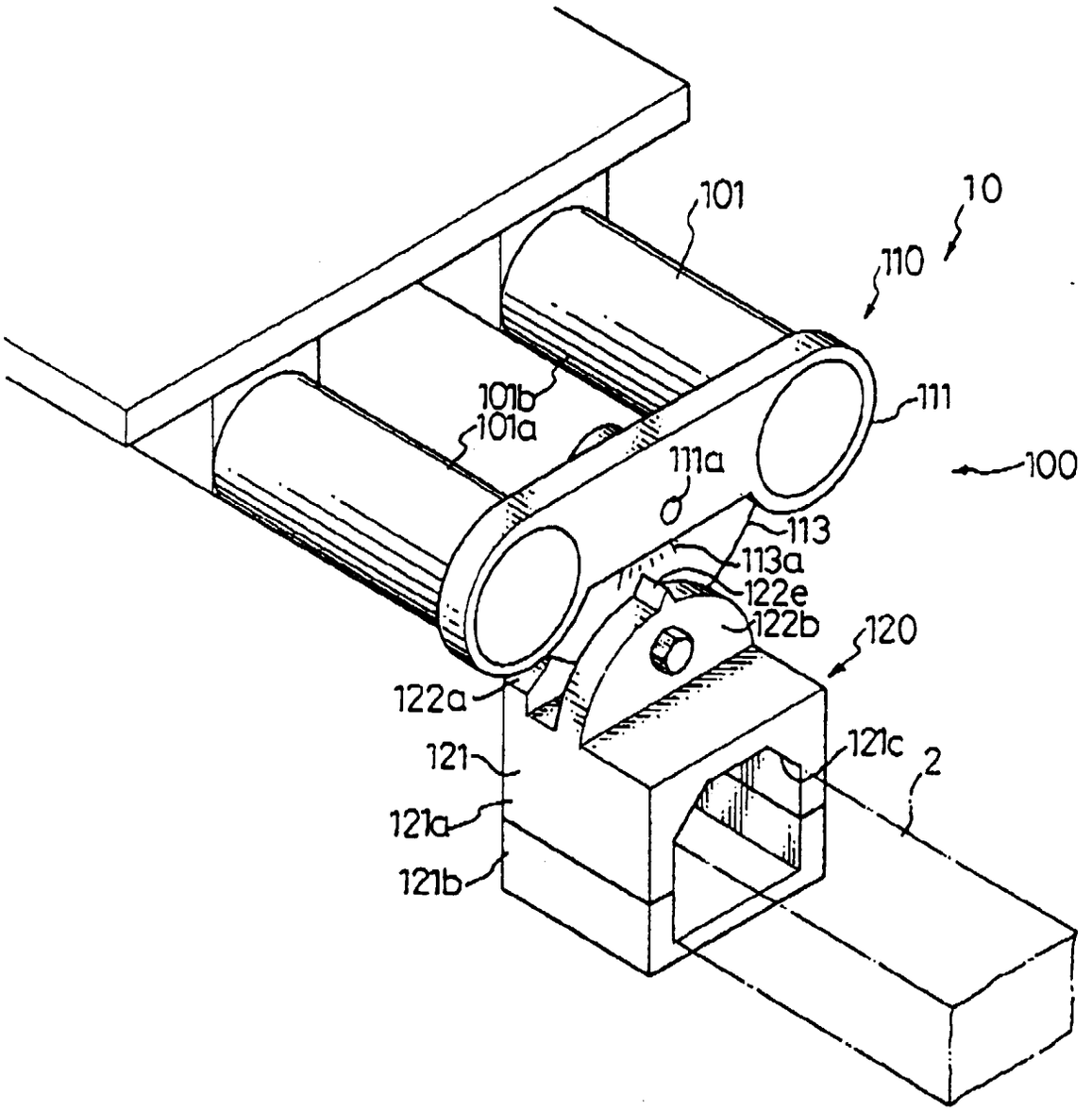
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FIG.2

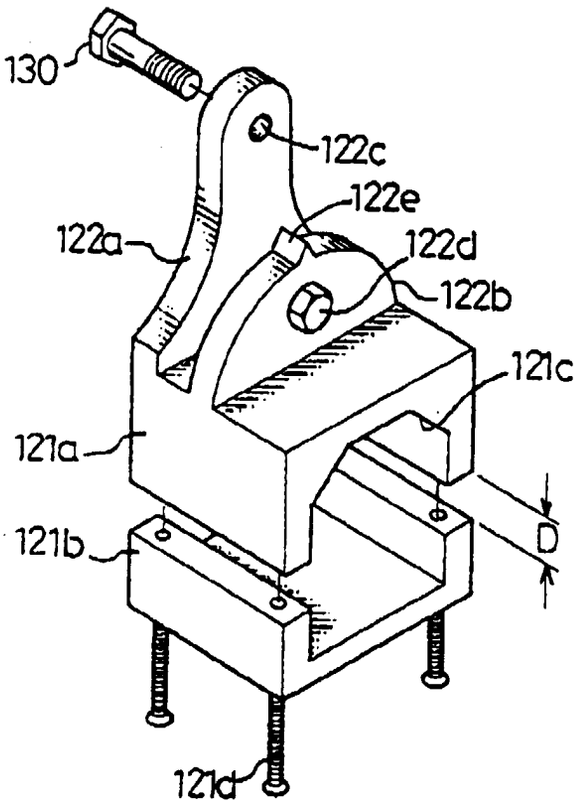

FIG.3

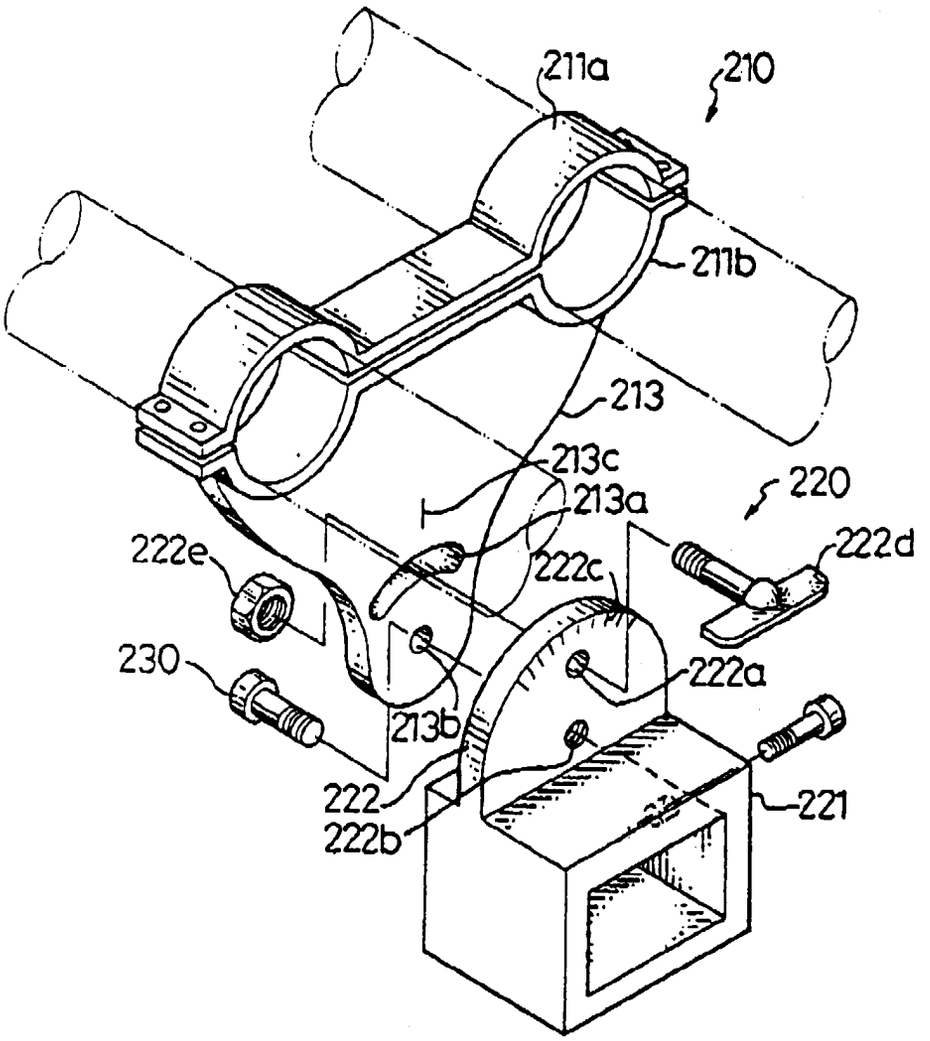
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FIG.4

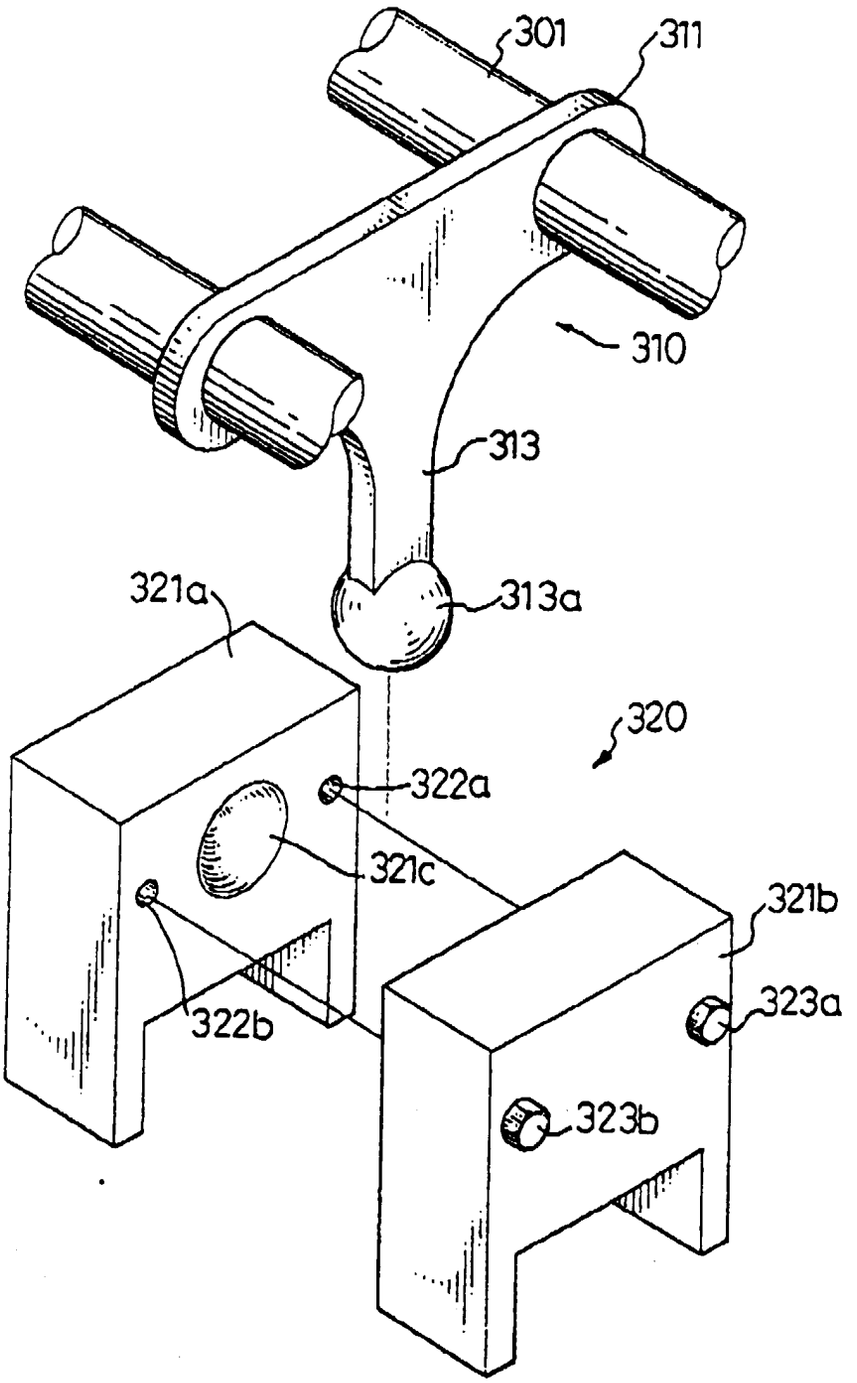

FIG.5

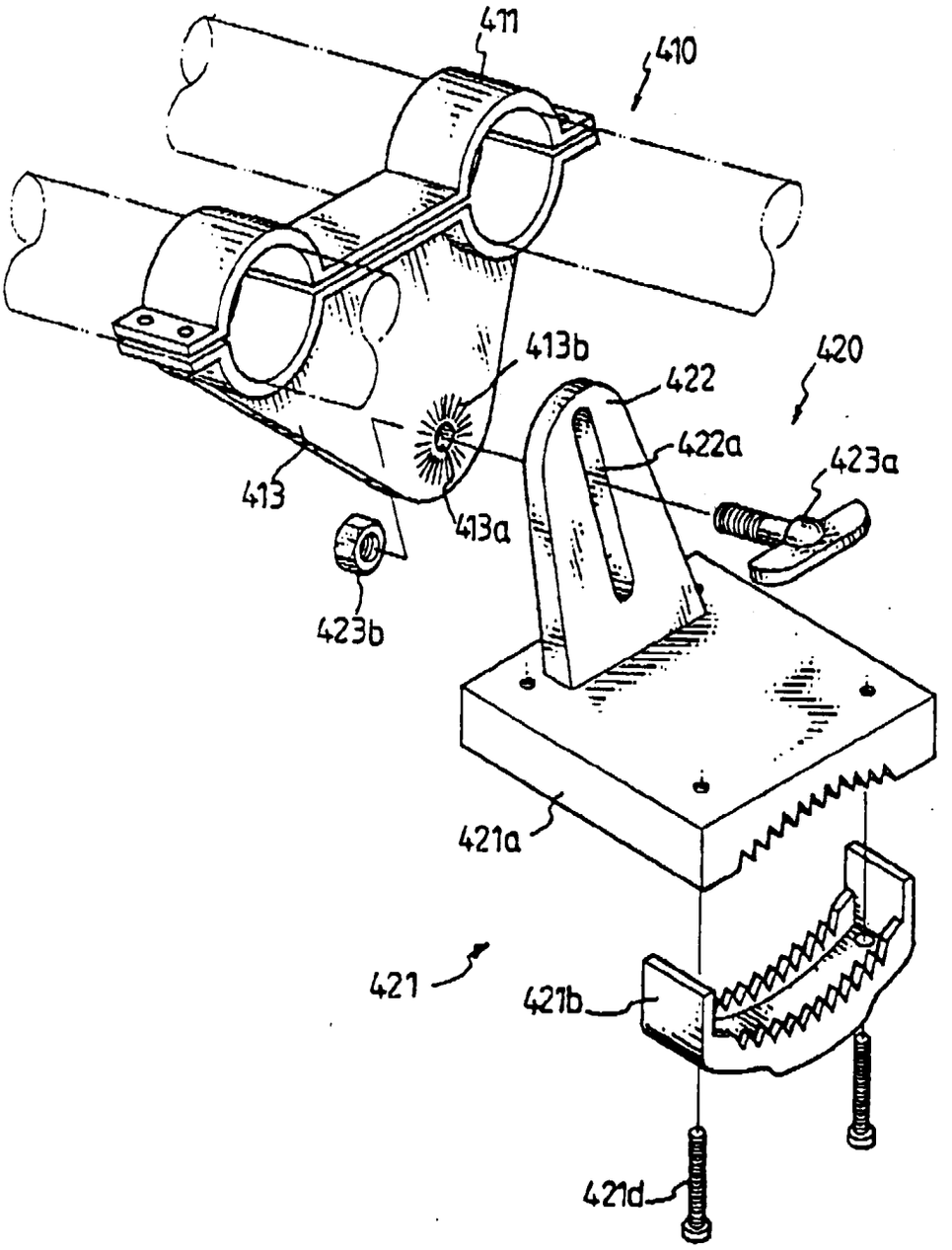
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FIG.6

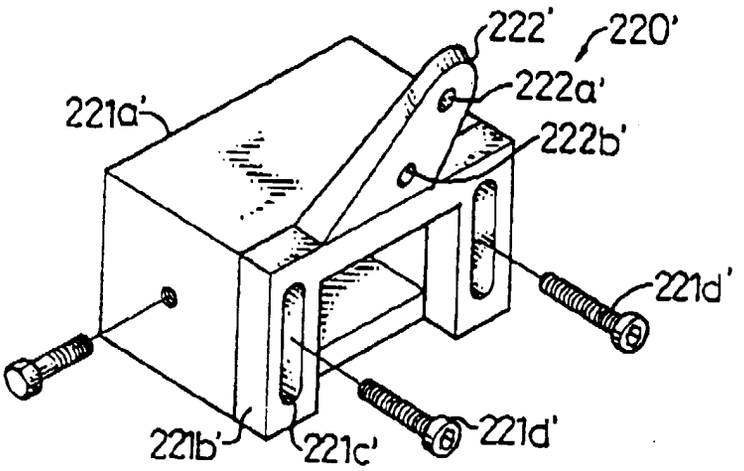

FIG.7

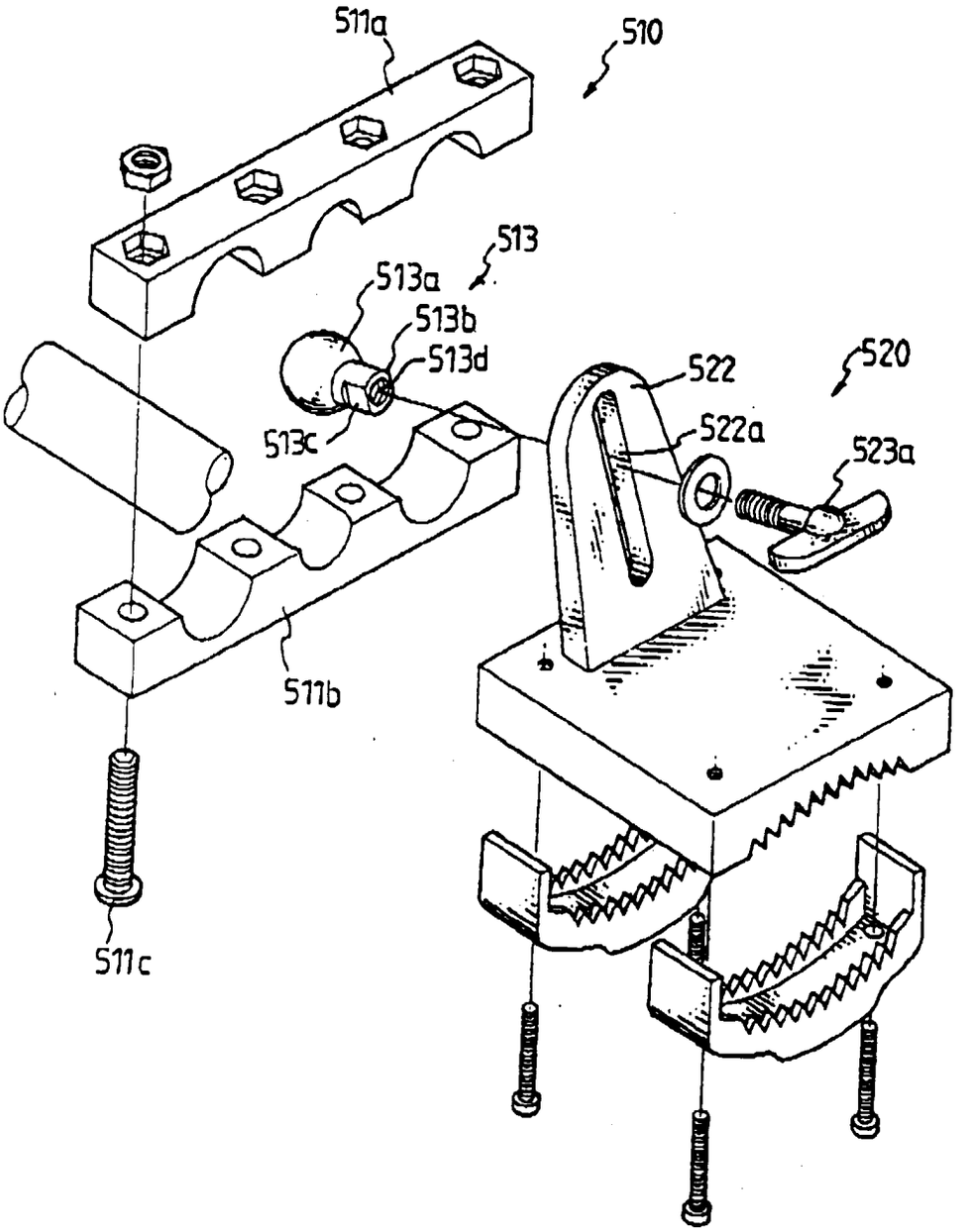

FIG.8