United States Patent

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[31] 17416/67 and 5920/68

[54] **FASTENING DEVICE FOR BALCONY RAILINGS, BANISTERS, BRIDGE RAILINGS AND THE LIKE**
8 Claims, 5 Drawing Figs.

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[51] Int. Cl. E04b 1/41, E04f 11/18
[50] Field of Search 296/43; 280/143; 52/184, 296, 298, 704, 706; 256/70, 65, 59; 24/126.1

[56] References Cited

UNITED STATES PATENTS

868,805	10/1907	Peterson	296/43 X
1,335,617	3/1920	Solomon	52/706 X
1,353,624	9/1920	Bergstrom	296/43
1,552,569	9/1925	Schurman	52/184 X
3,233,377	2/1966	Blum	52/704 X
3,299,984	1/1967	Svedahl	52/184 X

FOREIGN PATENTS

75,074	6/1954	Netherlands	52/296

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ABSTRACT: A body is adapted to be embedded in a concrete floor, step and the like. A socket portion includes a plurality of walls defining an opening therethrough for receiving a vertical metallic post of a railing and the like. The socket portion is pivotally supported by said body for pivotal movement about a pivot axis with respect to the body. A member is disposed between the opening and said body, the member defining a pair of grooves facing said opening. These grooves are disposed on opposite sides of said pivot axis, and each groove receives a wedge means engaging and holding a vertical post in place within said opening.

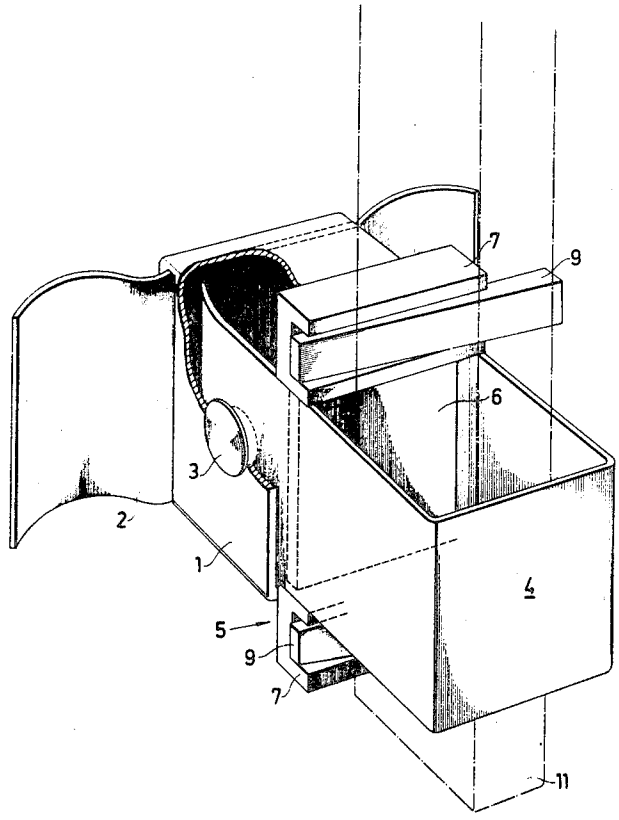
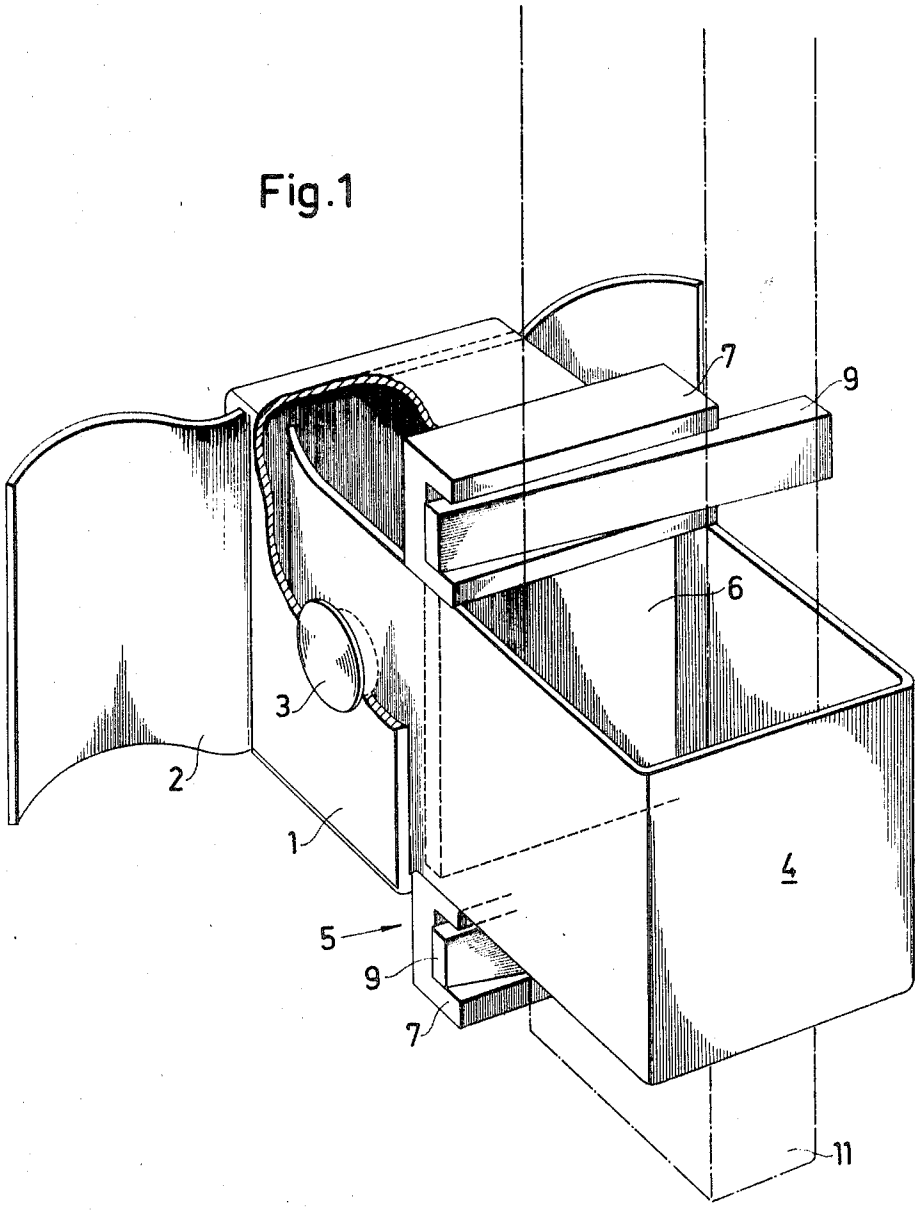


Fig.1



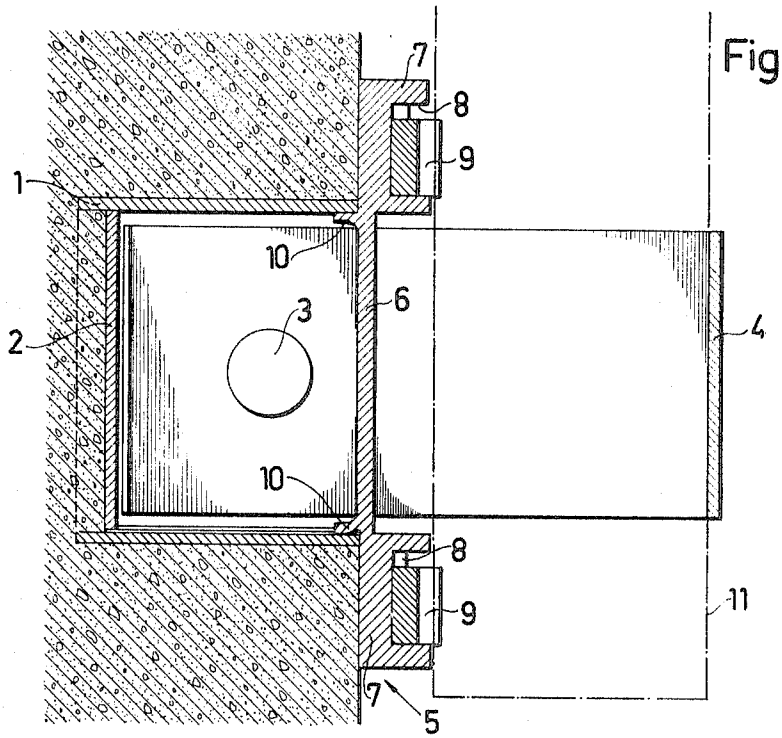


Fig. 2

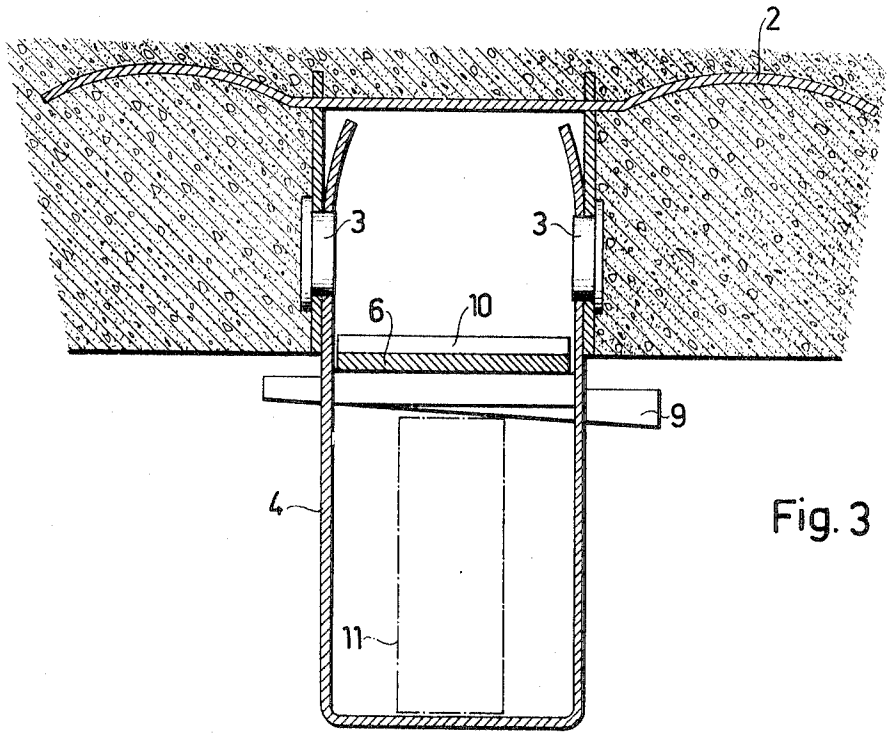


Fig. 3

Fig.4

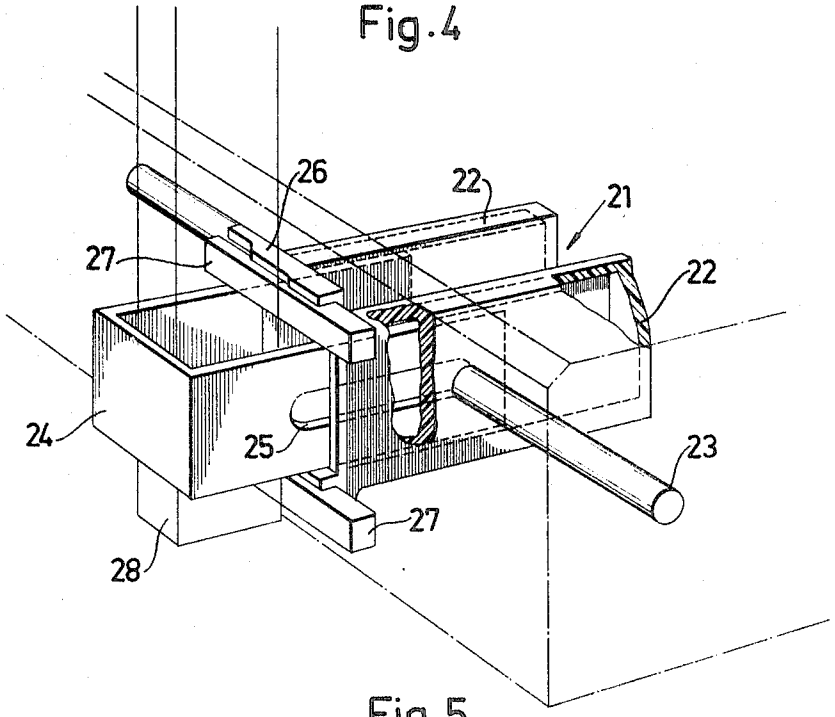
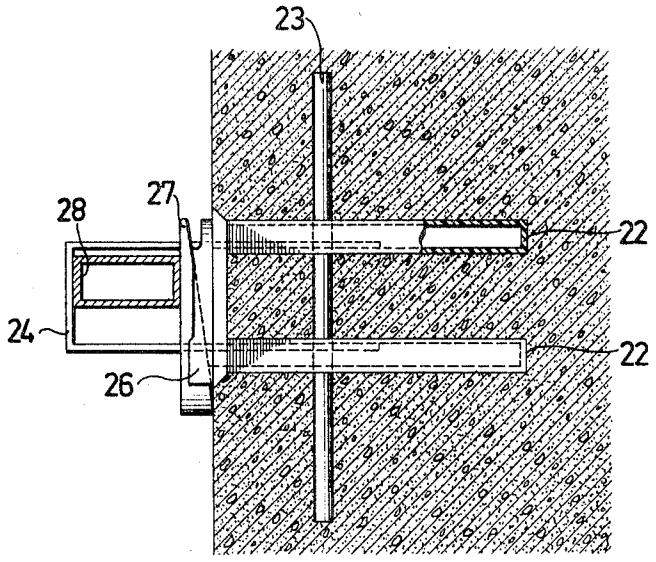


Fig.5



FASTENING DEVICE FOR BALCONY RAILINGS, BANISTERS, BRIDGE RAILINGS AND THE LIKE

The present invention relates to a fastening device for balcony railings, banisters, bridge railing and the like. More particularly, the invention is concerned with a fastening device comprising a mounting socket adapted to be fixed to a balcony floor, a step or the like and having an opening in which an upright post of a railing or the like can be received and secured in the desired position by wedge means.

A fastening device of this sort is previously known in which the post is secured through driving a wedge into the socket between the post and an inclined wall surface of the socket. This known fastening device has been found to require a very precise positioning and mounting of the socket in order to avoid any difficulties in mounting the post in the proper vertical position.

The invention has for its object to provide an improved fastening device of the kind described which eliminates the above requirement on precise orientation and positioning of the socket when fastening it to the fixed building portions and permits the post to be adjusted and secured in the desired vertical position in a simple manner.

The fastening device of the invention is primarily characterized in that two opposite wall surfaces of the socket are movable relatively each other so as to permit the angle therebetween to be varied within certain limits.

In a preferred embodiment of the invention the device comprises a body adapted to be rigidly secured to a fixed building portion and a yoke-shaped member, the web and the legs of said member forming three of the four walls of the mounting socket, said yoke-shaped member being adapted to be pivotally connected to the body with its legs so as to permit limited rotation thereof.

The invention will now be described in greater detail, reference being had to the accompanying drawings, in which:

FIG. 1 is a perspective view, partly in section, of a fastening device according to one embodiment of the invention,

FIGS. 2 and 3 show vertical and horizontal sections, respectively, of the device according to FIG. 1, and

FIGS. 4 and 5 show a perspective view and a plan view, respectively, of a fastening device according to another embodiment of the invention.

The fastening device shown in FIGS. 1 to 3 includes a body secured to a fixed building portion and comprising a housing 1 having a substantially rectangular cross section, and a sheet metal strip 2 passing through slots in two opposite walls of the housing 1. The central portion of the metal strip 2 forms a bottom in the housing 1 and the two end portions thereof an anchorage means for securing the body to a balcony floor or the like in connection with the casting thereof. The two vertical walls of the housing 1 are each provided with a circular pin 3 secured thereto and projecting into the inner of the housing, said two pins 3 being axially aligned to form pivot pins for a sheet metal yoke 4 having in each leg an opening for receiving the respective pin 3. In order to facilitate the insertion of the yoke 4 into the body housing 1 the legs of the yoke 4 are at their free ends slightly bent towards each other so that the yoke can be coupled to the pivot pins 3 simply through pushing the yoke into the housing 1. As appears from FIG. 2, the vertical height of the yoke 4 is shorter than the internal height of the body housing 1. Hereby the yoke 4 is permitted to pivot on pins 3.

Reference numeral 5 designates a wedge dolly comprising a central portion adapted to be inserted between the legs of the yoke 4 and having the shape of a plate 6 of a width corresponding to the distance between the legs of the yoke, and two end portions 7 each having a groove 8 for receiving a locking wedge 9. Provided that the central portion 6 of the wedge dolly 5 has a sufficient width the wedge dolly 5 will also serve as locking means to prevent disengagement of the yoke 4 from the pivot pins 3. In order to permit the wedge dolly 5 to be kept in its desired position during the mounting of a

banister or post the wedge dolly is on its back, i.e. on the side thereof facing the housing 1, provided with two lips 10 adapted to be inserted into the opening of the housing 1. When mounting a post 11 in the fastening device shown in FIGS. 1 to 3 said post is inserted into the mounting socket formed by the web and the legs of the yoke 4 and by the wedge dolly, whereupon a wedge 9 is driven into each groove 8 to lock the post 11 in said mounting socket. Through providing a wedge on each side of the pivoting axis of the yoke 4 as above described, it is possible through varying the extent of driving in the different wedges 9 to lock the post 11 in the proper vertical position even if the body 1 has been mounted in a skew position. The bottom surfaces of the wedge-receiving grooves 8 can be parallel to the back of the wedge dolly 5. However, said surfaces may preferably form with the back of the wedge dolly an acute angle corresponding to the wedge angle thereby causing an increased contact surface between the post and each wedge 9.

In case of a casted building portion the body of the fastening device is preferably mounted in connection with the casting of said building portion. The body can be secured to the form in a very simple manner.

In the fastening device shown in FIGS. 4 and 5 the body to be secured to a fixed building portion consists of a box structure, generally designated 21 on the drawings, said box structure having two parallel box legs 22. The body is provided with an anchorage means in the shape of a rod 23 extending in a transverse direction through the two box legs 22. The rod 23 serves also as a pivot axis for a metal yoke 24 having its legs displaceably received in the box legs 22 and being provided with elongated openings 25 through which the rod 23 passes. In order to permit a limited pivoting movement of the yoke 24 around the rod 23 when the yoke is retracted from the body as far as possible, the yoke has been given a height slightly shorter than the internal height of each box leg 22.

Reference numeral 26 designates a wedge dolly in the shape of a plate having a central portion adapted to be inserted between the legs of the yoke 24, and two opposite end portions each having, on the side thereof remote from the body, a groove for receiving a locking wedge 27. As appears from the drawings, the two wedges 27 are disposed on opposite sides of the pivoting axis of the yoke 24 formed by the rod 23. Hereby it is possible, through varying the extent of driving in the wedges 27, to fix a post 28 inserted into the fastening device in the proper vertical position irrespectively of any skew mounting of the body of the fastening device.

Naturally, the invention is not restricted to the embodiments shown on the drawings. For instance, the device of FIGS. 4 and 5 may be provided with a body with a single box leg instead of two parallel box legs, for receiving the two legs of the yoke. Moreover, the body can have such an inner width that it will permit a limited displacement of the yoke in a direction parallel to the rod 23.

What I claim is:

1. A fastening device for balcony railings, banisters, bridge railings and the like, comprising a body adapted to be secured to a balcony floor, a step and the like, a socket portion defining an opening for receiving a vertical post of a railing and the like, said socket portion being pivotally supported by said body for pivotal movement about a pivot axis with respect to said body, means between said opening and said body defining a pair of wedge-receiving grooves each of which receives a wedge for engaging and holding a vertical post of a railing and the like in place within said opening, said wedge-receiving grooves being disposed on opposite sides of said pivot axis, said socket portion comprising a yoke-shaped member including a web and a pair of legs defining three sides of said opening, said yoke-shaped member having its legs pivotally supported by said body for limited rotation with respect thereto.

2. A device according to claim 1, including a wedge dolly engaging said body.

3. A device according to claim 2, wherein said wedge dolly includes means for preventing disengagement of said yoke-shaped member from said body.

4. A device according to claim 1, wherein said body comprises a box structure, said yoke-shaped member being movably received within said box structure, the legs of said yoke-shaped member having elongated openings formed therethrough, a pivot shaft extending through said openings and extending in a direction transverse to said legs, said pivot shaft being fixed to said body.

5. A device according to claim 4, wherein said pivot shaft is adapted to act as an anchor means for the body when a building portion is cast in place with respect thereto.

6. A device according to claim 4, wherein said body has two parallel box legs each of which receives one leg of the yoke-shaped member.

7. A device according to claim 4, wherein said yoke-shaped member is supported by said body for limited displacement in a direction parallel to said pivot shaft.

8. A fastening device for balcony railings, banisters, bridge railing and the like, comprising a body adapted to be secured to a balcony floor, a step and the like, a socket portion defining an opening for receiving a vertical post of a railing and the like, said socket portion being pivotally supported by said body for pivotal movement about a pivot axis with respect to said body, means between said opening and said body defining a pair of grooves facing toward said opening, a vertical post extending through said opening, each of said grooves receiving a wedge means, each of said wedge means engaging and holding said vertical post in place within said opening, said wedge receiving grooves being disposed on opposite sides of said pivot axis.