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⑦ Applicant: **I.M.B.A.C. S.p.a.**
Via delle Industrie
I-20050 Mezzago (Mi) (IT)

72 Inventor: **Cattaneo, Rino**
via delle Industrie
I-20050 Mezzago (Milan) (IT)

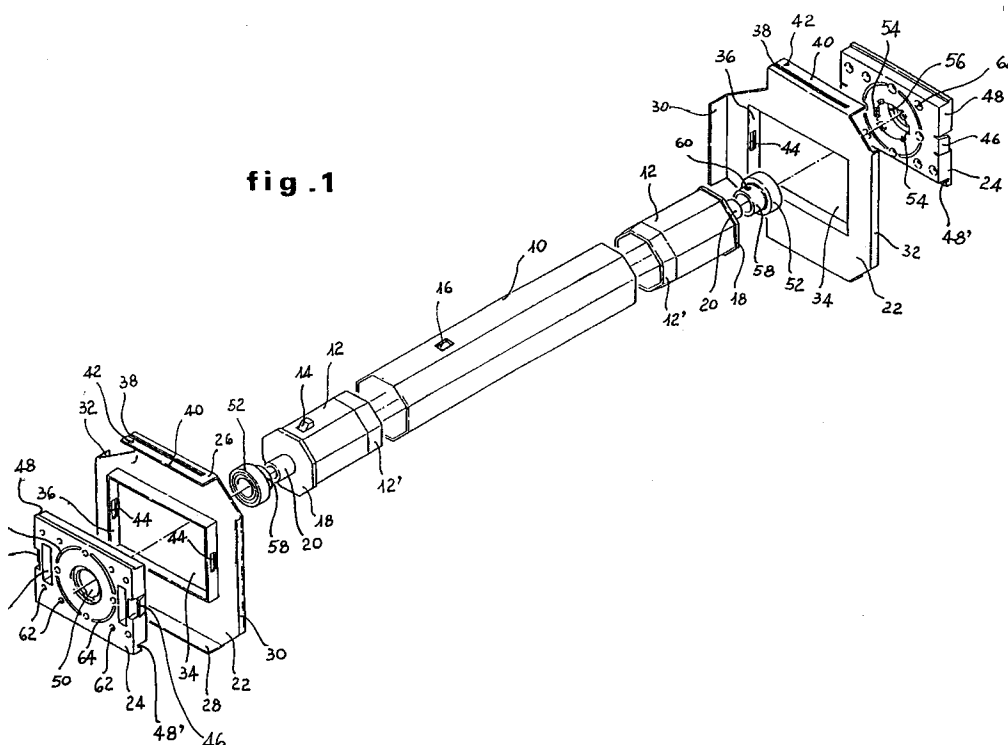
74 Representative: **Lecce, Giovanni**
Ufficio Internazionale Calciati S.r.l.
Via G. Negri 10
I-20123 Milano (IT)

⑤4 **P**re-assembled roller shutter box with roller shutter for windows and door windows.

57) A preassembled roller shutter box comprises a roller for the roller shutter, a pin (20) projecting from the opposing heads thereof for connection with the end supports consisting of a plate (22) and a flange (24) engaged and constrained in an elastic manner in an opening (34) of the plate (22) and having in its

centre a circular seat (50) for a ball bearing (52) with integrated front bush (58).

On said bush is provided a threaded hole which receives a set screw (60) designed to be tightened on the pin (20) of the shutter roller previously engaged with said bush.



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The present invention relates to a preassembled roller shutter box with roller shutter for windows and door windows

More specifically the present invention relates to a roller shutter box with roller shutter in which the various elements consisting of the roller on which is wound the roller shutter and the related supporting means are previously assembled and positioned enbloc in the seat defined by the compartment above the window or door window.

Installation of external window and door frames formed by roller shutters in the openings created in the walls of buildings involves conventionally a series of laborious operations which must be performed directly at the work site. Indeed, it is necessary to position in the upper part of the opening the shaft or roller of the roller shutter and connect it with the respective end supports. Said shutter must also be constrained to the roller and the operating devices consisting e.g. of a pulley and a winch or motor which must in turn be connected to a support integral with a roller head.

These are laborious operations which require considerable time for performance and are excessively difficult because the work must be done while standing on ladders or scaffolding.

The purpose of the present invention is to overcome the above shortcomings.

More specifically, the purpose of the present invention is to provide a roller shutter box with roller shutter in which the various components are already assembled and are installed enbloc rapidly and easily in the window or door window opening at the designed height.

Another purpose of the present invention is to provide a preassembled roller shutter box with roller shutter capable of giving a high degree of reliability and resistance over time and also being easy and economical to produce.

These and other purposes are achieved by the roller shutter box with roller shutter which is the object of the present invention comprising a tubular body equipped with opposed extensions engaged on its ends and elastically constrained therein and housing and clamping means for each of the pins emerging from the extensions and characterised in that said means consist of a metal plate with an extended central opening and a flange of plastic material or equivalent respectively engaged under pressure and elastically constrained along the peripheral edge of the opening and projecting at right angles away from the tubular body and there being housed and retained in a circular seat formed in said flange a bearing with front collar projecting towards the pins.

The construction and functional characteristics of the preassembled roller shutter box with roller shutter which is the object of the present invention

are clarified by the detailed description given below with reference to the annexed drawings of a preferred embodiment thereof by way of nonlimiting example applying said principles. In the drawings -

5 FIG. 1 shows diagrammatically an exploded view of the roller shutter box assembly of the present invention, and

10 FIG. 2 shows diagrammatically an exploded view of the roller shutter box assembly of the present invention in conformity with an alternative embodiment.

With reference to FIG. 1 the roller shutter box assembly of the present invention comprises a roller or shaft of aluminium or other suitable material on which is wound the roller shutter, which is not shown. Said roller is of known type and is formed of a tubular body 10, e.g. with octagonal cross section, in the opposing heads of which is engaged an extension 12 of limited length having analogous cross section and front end 12' slightly tapered to facilitate the above mentioned engagement.

At least one of the extensions 12 is provided with an elastic projecting spring 14 designed to be compressed during insertion of the extension in the body 10 and to project therefrom after insertion through a slot 16 formed therein. This solution permits easy removal of the roller by known procedures from roller shutter boxes of conventional type to perform e.g. maintenance operations with no need of operations on the roller supports. The extensions 12 are provided on the end opposite that of engagement in the body 10 with a plate or head 18 from which projects along the longitudinal axis a pin 20. Said pin is short and constitutes the element for connection of the above mentioned roller with the opposed end supports as set forth below.

In accordance with the present invention each of said supports consists of a plate 22 and a flange 24 which are coupled together and made integral with the pins 20 emerging from the extensions 12 of the body 10. The plate 22 or containment plate for the flange 24 is preferably achieved in galvanised sheet metal and has a substantially quadrangular shape with bevelled corners, upper 26 and lower 28 peripheral edges bent outward at 90° and side edges 30, 32 bent 90° in opposite directions. The inward or outward bending of the peripheral edges forms along the perimeter of the plate 22 the same number of slightly projecting tabs. This bending is limited to the horizontal portion of each side of said plate while the bevelled parts of the corners are excluded. The upper edge 26 is bent outward, i.e. away from the tubular body 10 and has a long narrow slot 38 preferably achieved along the longitudinal axis. The slot 38 extends from one end of said edge nearly to the

opposite end to divide said edge in two parallel strips connected together. The outermost of the strips, indicated by reference number 40, can be moved away from the plate 22 and directed entirely or partly at various angles outward or vertically. The strip 40 of the upper edge 26 has at its free end a hole 42. The plate 22 has in a central position an extended quadrangular opening 34 delimited peripherally by an edge 36. Said edge extends orthogonally outward for a limited distance towards the upper 26 and lower 28 edges of said plate. The edge 36 of the opening 34 defines a continuous projecting frame which, at least on two opposing sides, has a slot 44, e.g. quadrangular, designed to form the seat for constraint of the flange 24. Said flange 24 consists of a nylon or equivalent plate and has a shape complementary to that of the opening 34 in the plate 22. The flange 24 has at least on two opposite sides an elastic projection formed by a tooth 46 designed to engage and connect with the corresponding slot 44 in the edge 36 in which it is inserted. Along the horizontal upper side of said flange 24 is achieved a slight lowering 48 extending longitudinally which forms a striker on the edge 36 of the opening 34. On the opposite side near the lower base the flange 24 is provided with a longitudinal milling 48' which receives at least partly the corresponding base of the edge 36 of the opening 34.

The flange 24 has a central circular opening 50 in which is engaged under pressure and elastically constrained a ball bearing or equivalent 52. To provide locking of the bearing 52 the opening 50 is provided with two or more opposing elastic teeth 54 formed on the inside of the flange 24. At the opposing side said opening defines an annular seat 56 for stopping the bottom portion of said bearing which, towards its own front part, bears an integral bush 58 whose inside diameter corresponds to that of the pin 20 excepting mating tolerances. On the bush 58 is achieved radially a threaded hole which receives a set screw 60 designed to stop said pin.

Along the flange 24 is achieved a plurality of seats formed by holes 62 and recesses 64, through or not, concentric with the central circular opening 50 or distributed along the perimeter of said flange for constraint of conventional roller shutter operating devices. Said devices consisting e.g. of pulleys for the operating belt, winches, electric motors or equivalent can be made integral with either of the above mentioned flanges before connection thereof to the other components consisting of the plates 22 and shutter roller.

FIG. 2 shows diagrammatically an alternative and simplified embodiment of the roller shutter box of the present invention.

In this case the opposing shutter roller supports formed by the telescopic extensions 12 en-

gaged in the roller heads consist of a single element or plate 22'. The latter is preferably achieved in galvanised sheet metal and formed of a substantially quadrangular body with bevelled corners, upper 26' and lower 28' edges bent 90° away from said shutter roller and side edges 30' and 32' bent 90° in opposite directions.

Said bends form along the perimeter of the plate 22' in the unbevelled portions the same number of slightly projecting tabs. Both the upper 26' and lower 28' edges are bent away from the shutter roller and have a long narrow slot 38' preferably achieved along the longitudinal axis and extending from one end of each edge to the portion near the opposite end. The above mentioned slots divide the respective projecting edges 26' and 28' in two parallel strips the outermost 40' of which can be moved away from the plate 22' and directed entirely or partly outward at various angles or vertically. Near its free end each strip 40' has a hole 42'.

The plate 22' has in a central position a circular seat 50' for a ball bearing analogous to that arranged in the flange 24 of the embodiment described above. Said circular seat is delimited peripherally by a series of holes and recesses 62', 64' for constraint of the roller shutter operating devices.

On the outer face of the plate 22' along the upper and lower portions included between said holes and recesses and the opposing edges 26' and 28' there is achieved a series of projecting tabs 36' formed in the shape of the letter L. Said tabs 36' are slightly spaced and parallel to said edges 26', 28' and are aligned with the opposing ends of the side edges 30', 32' of the plate 22'. In the tabs formed along the upper portion included between the holes and recesses 62', 64' and the upper edge 26' the outer strip is bent 90° upward towards the edge 26'. In the tabs formed along the opposite lower portion the outer strip of said tabs is bent 90° downward towards the edge 28'.

Given the structure of the elements forming the roller shutter box of the present invention it can be easily and rapidly assembled before installation in the window or door window opening.

With reference to the first embodiment (FIG. 1) the bearing 52 is engaged under pressure in the circular opening 50 of the flange 24 and strikes against the annular bottom seat 56 and is clamped in position by the elastic teeth 54. The flange 24 is in turn inserted under pressure in the opening 34 formed in the plate 22. The teeth 46 created on the flange and initially compressed upon meeting the edge 36 expand and butt in the corresponding openings 44 formed along said edge. The final connection between the plate 22 incorporating the flange 24 and the bearing 52 and the extensions 12

of the tubular body 10 which form the shutter roller is achieved by tightening of the set screws 60 arranged radially in each of the collars 58 which protrude from the front of said bearings. In said collars are previously engaged the pins 20 of the extensions 12 of the tubular body 10.

With reference to the second embodiment proposed (FIG. 2) a ball bearing identical to the bearing 52 of FIG. 1 is engaged under pressure in the circular seat 50' of the plate 22' and is held in position by elastic teeth or equivalent means of retention not shown. The pins (20) emerging from the extensions 12 of the shutter roller are engaged in the corresponding collars protruding from the front of said bearings having a set screw which tightens on said pins.

The roller shutter box as set forth above in the proposed embodiments can advantageously be completely assembled before installation thereof in the window or door window opening with considerable resulting savings of time and extreme ease. On the winding roller formed by the tubular body 10 and the opposing extensions 12 the rolling shutter can also be arranged and constrained in advance. Even the handling elements, pulleys, winches or motors can be made integral with one of the flanges 24 or the plate 22' in advance and constrained with screws or equivalent means in the holes and/or recesses 62, 64, or 62', 64'.

During transport of the assembled roller shutter box one of the side edges of the plate 22 or 22' bent 90° towards the tubular body 10 prevents accidental unrolling of the roller shutter already wound on the body. The upper edge 26 or both the upper 26' and lower 28' edges of the above mentioned plates constitute during installation of the roller shutter box an anchoring element because the strips 40 and 40' of the edges can be bent partially or entirely in different directions and later constrained by means of a generic screw inserted in the end holes 42, 42' to a metal or wood frame or support incorporated or emerging from the masonry which defines the window or door window opening.

The presence of the opposite lower edge 28 on the plates 22, or 26' and 28' on the plates 22', bent 90° away from the tubular body 10 defines with the lower bases of the flange 24 or the base of the tabs 36' a seat for running along which there can be advantageously engaged as a slide a projecting bracket connected stably to the rolling shutter sliding guide. Said bracket is not described or shown in the drawings because together with other complementary elements it constitutes a support system which is the object of a separate and simultaneous patent application filed by the same applicant.

As set forth below the advantages secured by the present invention are evident.

The roller shutter box as a whole is extremely compact and can be entirely assembled rapidly and easily before installation in the upper part of the window or door window opening incorporating also the rolling shutter and related operating elements. Particularly advantageous is direct permanent coupling of the tubular body 10 with extensions 12 to the opposed flanges 24 and said flanges to the respective containment plates 22 or said body 10 with extension 12 to the plate 22'.

The invention as described above and claimed below is proposed merely by way of example and it is understood that it can have numerous modifications and variations all falling within the inventive concept.

In particular, it is intended that structural reversals or alternative locations of the elements which form as a whole the preassembled roller shutter box which is the object of the present invention would be possible.

Claims

1. Preassembled roller shutter box with roller shutter for windows and door windows comprising a tubular body (10) having opposed extensions (12) engaged at its ends and therein elastically constrained and pairs of means (22), (24) or (22') for housing and clamping each of the pins (20) emerging from the extensions and characterised in that said means (22), (24) consist respectively of a metal plate with extended central opening (34) and a flange of plastic material or equivalent engaged under pressure and elastically constrained along the peripheral edge (36) of said opening projecting orthogonally away from the tubular body (20) and, in a circular seat (50) formed on said flange, there being housed and retained a bearing (52) with front collar (58) projecting towards the pins (20).
2. Roller shutter box in conformity with claim 1 characterised in that said means (22') of housing and clamping the pins (20) consist of a metal plate with central circular seat (50') for a ball bearing delimited at its perimeter by through holes and recesses (62'), (64').
3. Roller shutter box in conformity with claim 1 characterised in that each of said collars has at least one threaded through hole achieved radially for screwing in of a set screw (60) acting on the corresponding pin (20).

4. Roller shutter box in conformity with the above claims characterised in that the plate (22) or (22') has a substantially quadrangular development with bevelled corners and upper peripheral edges (26) or (26'), lower peripheral edges (28) or (28') and side peripheral edges (30), (32) or (30'), (32') bent back along its unbevelled portions and said side edges extending orthogonally from said plate in opposite directions.

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5. Roller shutter box in conformity with one or more of the above claims characterised in that the plate (22') is provided on its outer face with one or more projecting tabs (36') shaped like the letter L and parallel with the upper (26') and lower (28') edges and aligned with the opposite ends of the side edges (30'), (32') and said edges (26'), (28') having an extended longitudinal slot (38') forming thereon an outer strip (40') having an end hole (42').

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6. Roller shutter box in conformity with the above claims characterised in that the upper (26) and lower (28) edges of the plate (22) are bent back at 90° parallel to the edge (36) of the opening (34) and the edge (26) having an extended longitudinal slot (38) forming thereon an outer strip (40) having an end hole (42).

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7. Roller shutter box in conformity with one or more of the above claims characterised in that it has along at least two opposite faces of the projecting edge (36) of the opening (34) an opening (44) for insertion of corresponding elastic projections or teeth (46) achieved on the periphery of the flange (24).

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8. Roller shutter box in conformity with one or more of the above claims characterised in that along the upper horizontal side of the flange (24) is formed a depression (48) designed to strike the edge (36) of the opening (34) near the lower base on the opposite face and said flange having a longitudinal milling (48') which receives at least partly the corresponding base portion of said edge (36).

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9. Roller shutter box in conformity with one or more of the above claims characterised in that the circular seat (50) in the flange (24) has on its inner face an annular striking seat (56) for the bearing (52) and on the opposite face two or more integrated elastic teeth (54) for containment and clamping of the bearing.

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10. Roller shutter box in conformity with one or more of the above claims characterised in that

each of the flanges (24) has a plurality of seats consisting of through or blind holes (62) and recesses (64) concentric with the central opening (50) or formed along the peripheral portions of the flanges.

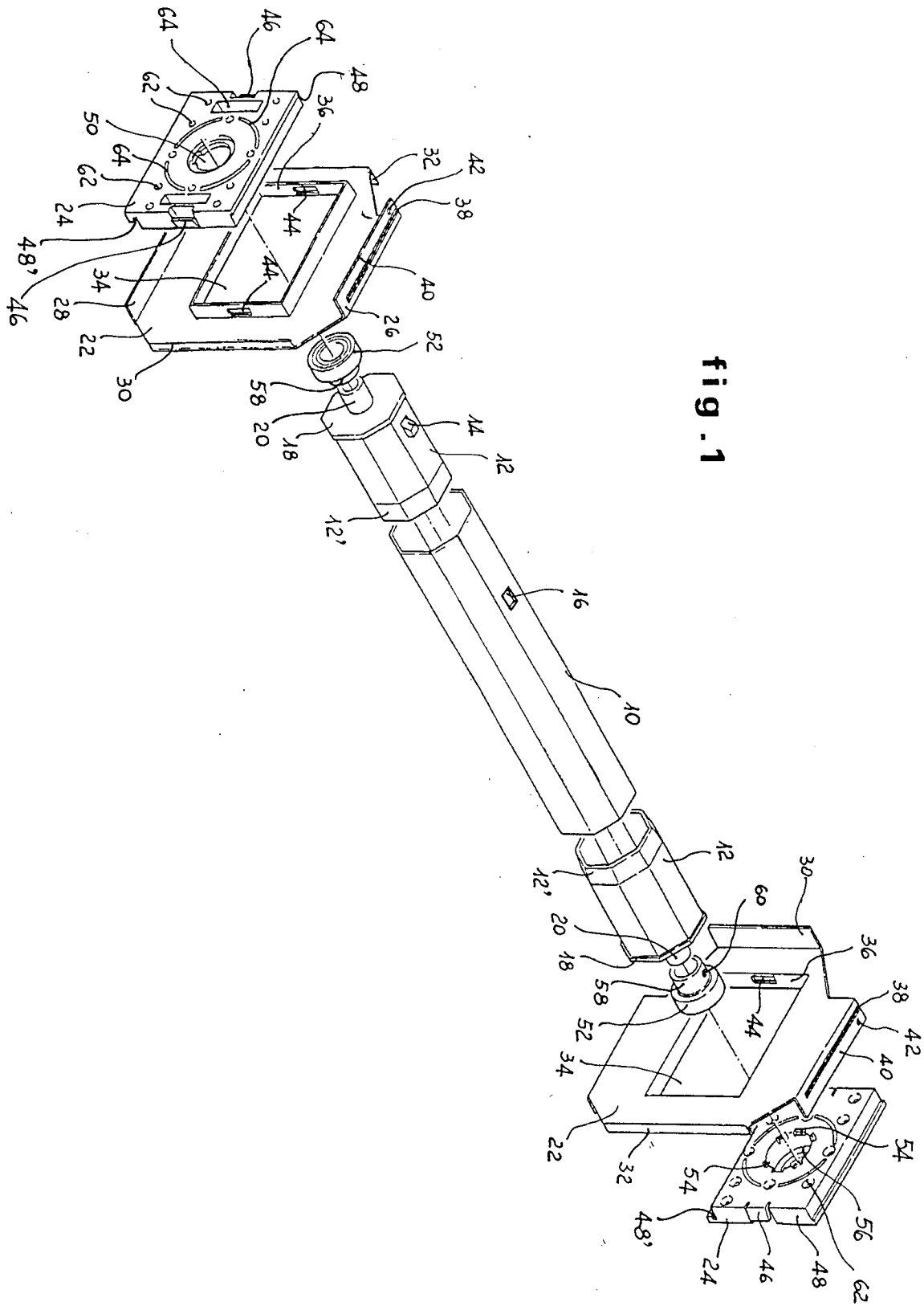
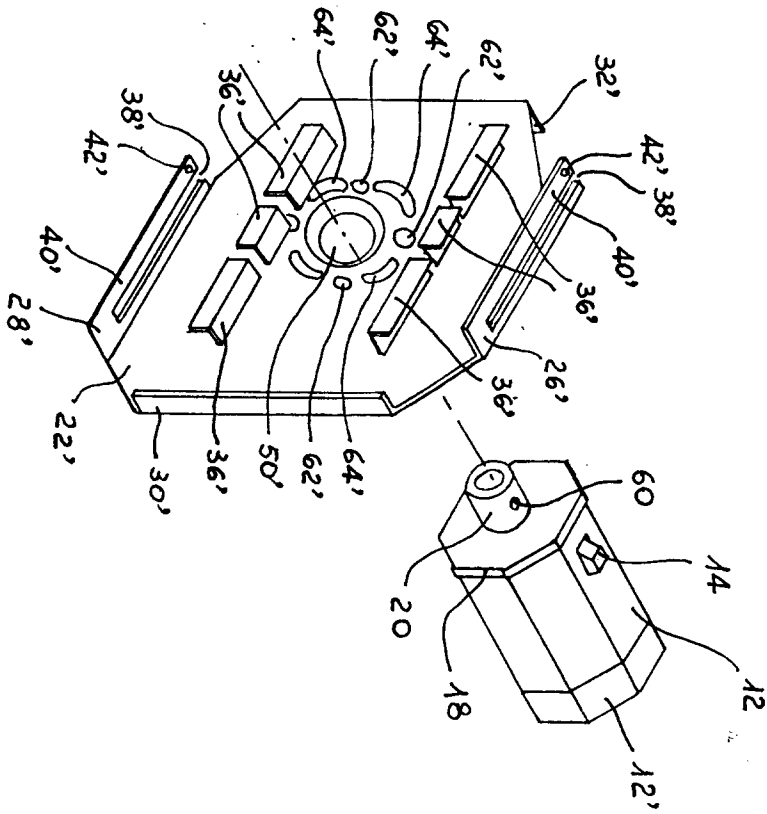


fig. 2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 93 83 0446

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	FR-A-2 550 270 (ACCOPLAS) * the whole document *	1-4,8	E06B9/00 E06B9/174
A	---	5,9	
X	GB-A-2 181 475 (ZUNDWARENFABRIK STARCKE GMBH & CO) * page 4, line 17 - line 99; figures * -----	1,2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E06B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 April 1994	Examiner Kukidis, S
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