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(54) **Device for detecting in advance the height of locking latches in installation for changing the gage.**

(57) A device for detecting in advance the height of locking latches in installations for changing the gage constituted by a frame (9) composed of four supports (12) holding, at a certain height, detectors acting on a semaphoric signaling, the frame being joined, by means of tie rods, to a holding plate supporting resilient stops, and fixed to said resilient stops there are supports for polyamide wheels, the task of which is to take as reference the lower part of the vehicle bogie and to hold microswitches at an adequate distance.

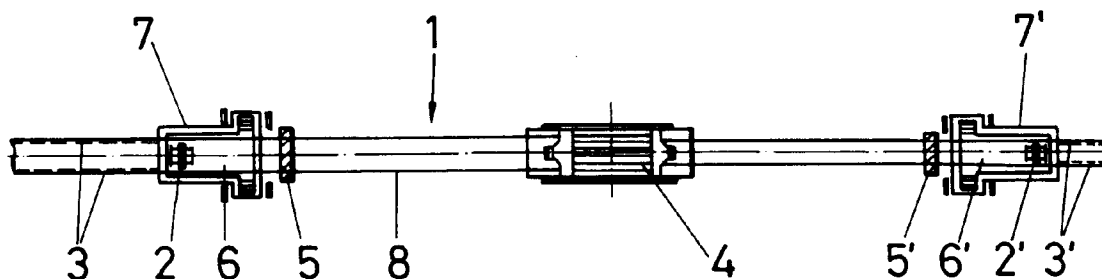


FIG.-1

The present specification refers to a device for detecting in advance the height of locking latches in installations for gage change, the purpose of which is to carry out the function of detecting that the height of the locking latches of rolling assemblies is within admissible limits, since otherwise the resulting collision could occur between the lower bridge of these latches and the unlocking guides when the rolling gear has entered the fixed installation or interchanger in order to change the gage, i.e., the pacing of the gage used by RENFE in their tracks to the universal gage known as UIC or vice versa.

FIELD OF THE INVENTION

This invention will find application in the industry devoted to railways and their auxiliary installations.

RELATED ART

Nothing is known, at present, above the existence of a device having as a specific task to detect in advance the height of locking latches in installations for changing the gage when this operation is carried out on passing a railway vehicle to use a railway rolling track provided of a larger or lesser gage or - vice versa.

It is to bear in mind that, when carrying out the gage change operation, the trailer brake is fully blocked up, for which only the unit or trailer assembly which is trailed uses exclusively the locomotive brake. Nevertheless, if the vertical profile of one of the tracks acceding to the change installation is not horizontal, the corresponding track flanged brake is incorporated.

Since the locking latch bridge height, in relation to a fixed height, such as the rail head, is variable, depending on the wear condition of the wheels, it is necessary to rely on a detecting device eliminating, in any way, the influence of the wheel diameter variation, i.e., from 880 mm for a new wheel to 830 mm for a wheel at the end of its useful lifetime.

Also, it must be pointed out that the suitable device for attaining the pretended purpose must obviate the drawback of invading the low parts gauges for the width and height of freight cars, for which reason it must essentially have a protecting system or means allowing the device to be hidden in case that a locomotive passes on the zone where it is installed.

Nevertheless, up to now nothing is known about the existence of a device for detecting in advance the height of the locking latches in installations for gage change counting on the features and advantages similar to that considered as suitable.

SUMMARY OF THE INVENTION

The device for detecting in advance the height of

locking - latches in installations for gage change as proposed by the invention constitutes per se an evident solution to the present problems on this subject, since it performs, in an efficient manner, the function of detecting the height of the locking latches of the rolling assemblies and checking if the height itself of these locking latches is within admissible limits, obviating the resulting collision between the lower bridge of these latches and the unlocking guides.

The contemplated device is constituted from the use, as main component of the assembly, of a frame, which is composed of four supports the function of which is to keep, at a fixed height, about 25 mm, height detectors for the locking latches, which avoid a rolling gear to enter the fixed installation having some latch out of its correct position.

On the assumption that this anomaly could exist, the above mentioned detectors would automatically enable the semaphoric signalling, so immediately stopping the train.

Said frame is joined by means of said supports to a holding plate the function of which is to keep resilient stops fixed to it, disposing of second supports for polyamide wheels, the task of which is to take as reference the lower part of the railway vehicle bogie and to keep microswitches at the adequate distance.

Upon taking as a reference the lower part of the bogie through said polyamide wheels, it is consequently eliminated said influence of wheel diameter variation.

The function of the resilient stops is to cushion the blow - with the bogie and absorb small inclinations which the bogie could have due to the difference of diameters between both wheels, a difference that, as already mentioned, is always owing to wear.

To diminish the impact probably caused by the bogie against the polyamide wheels, some ramps have been provided, which are joined by supports to the holding plate supporting secondary resilient stops, the purpose of which is to smooth the bogie entering the device for detecting the height of locking latches.

At the beginning of these ramps, a set of four brushes is installed on the supports to clean the locking latches, so eliminating the possibility of the existence of foreign matters on them, such as papers, plastics, cans, and so on, and which are adhered to same.

The purpose for eliminating these foreign matters is well evident: these latter could cause to enable the corresponding microswitch, the latch even being located in a correct position.

The whole frame is guided by bars (14), slides on bushes and is suspended from springs, which are weather protected by a bellows-shaped protecting system, which allows the frame to rise and descend, depending, of course, on the height marked by the polyamide wheel.

In addition to the above elements, it should be

pointed out the existence of a hiding mechanism which is formed by a pneumatic - cylinder allowing to hide about 160 mm, which is the distance - considered as sufficient for not interfering with the locomotive gauge.

This pneumatic cylinder is joined to the main support by means of locking elements.

The main support is screwed to four of the posts in the observation pit, and is destined to hold up the whole device.

In order to achieve a correct positioning and centering of the bogie, as a consequence of the micro-switches passing on the center of the locking latches, counter rails have been provided just at the entrance of the observation pit in order to assure the perfect guiding of the rolling element.

The device for detecting locking latches is located in the observation pit at a distance from the concrete wall of about 2.80 meter, and it is fastened to four posts.

The observation pits are located at the entrance and exit of the fixed installation about 30 meter from it.

This 30 meter distance is considered as sufficient for, if the semaphoric signaling turns on because it has been detected the existence or presence of a latch fallen in the vehicle rolling element, having time enough to stop the train before this enters the fixed installation.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to complement the present description and to aid to a better understanding of the features of the invention, the accompanying drawings, which are a part of this specification, show in an illustrative but non limitative sense, the following:

Figure 1 is a plan view of a fixed installation or interchanger on which the device for detecting in advance the height of the locking latches, which is the object of the invention, is incorporated.

Figure 2 is a plan view of the observation pit.

Figure 3 is a front elevational view of the device for detecting in advance the height of locking latches in installations for changing the gage.

Figure 4 is a side elevational view of the object illustrated in Fig. 3.

Figure 5 is, lastly, a side elevational view of the object illustrated in Figs. 3 and 4, located within the observation pit.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

From these figures, it can be seen that the device for detecting in advance the height of locking latches in installations for changing the gage, is constituted by the following elements:

- Interchanger assembly (1).
- Detector of wrongly located locking latches (2).
- Track brake (3).
- Fixed installation (4).
- Braked shaft detector (5).
- Observation pit (6).
- Installation zone of track brake (7).
- Railway (8).
- Main frame (9).
- Main support (10).
- Holding plate (11).
- Microswitch support (12).
- Frame support (13).
- Guided bar (14).
- Bush (15).
- Cylinder support (16).
- Column holder plug (17).
- Guide profile (18).
- Wheel support (19).
- Resilient stop (20).
- Polyamide wheel (21).
- Spring (22).
- Bellows-shaped spring protector (23).
- Microswitch (24).
- Ball bearing or bushing (25).
- Pneumatic cylinder (26).
- Counter-rail (27).
- Sliding ramp (28).
- Brush holder (29).
- Guiding bar (30).

Following the mentioned figures, and specifically Fig. 1, it can be seen how the interchanger assembly (1), in the pits of which the device for detecting in advance the height of locking latches is incorporated, is constituted starting from wrongly located locking latch detectors (2, 2'), as well as the track brake units (3, 3'), located before and after the fixed installation (4).

In Fig. 1, it can be seen the existence of braked shaft detectors (5, 5'), and the observation pits (6, 6'), as well as the zones referenced as (7, 7'), which correspond to the lengths of the sections where the track brakes are mounted which will vary according to the slope where they will be installed, the railway track itself being referred as (8).

Figure 3 shows how the device for detecting in advance the - height of locking latches is constituted starting from a frame (9), which is formed by four supports (12) holding, at a certain height, about 25 mm, height detectors for the locking latches, the function of said detectors being to avoid a rolling gear to enter the fixed installation (4) with some latch out of its correct position.

If this anomaly would happen, the detectors (2) would enable a semaphoric signaling, so immediately stopping the train.

The frame (9) is joined, by means of supports (13), to a holding plate (11) having resilient stops (20), and fixed to these there are supports (19) for poly-

mid wheels (21), the function of which is to take as a reference the lower part of the vehicle bogie, keeping the microswitches (24) at the appropriate distance.

Upon taking as a reference the lower part of the bogie frame of the railway vehicle through said polyamide wheels (21), the mentioned influence is eliminated, i.e. that corresponding to the - diameter variation existing between new and used wheels.

The function of the resilient stops (20) is to cushion, as far as possible, blows with the bogie, absorbing small inclinations which could carry the bogie due to the difference of diameters existing between both wheels owing to wear.

In order to diminish the impact probably caused by the bogie against the polyamide wheels, ramps have been provided (28), which are joined to the holding plate (11) by means of supports, so smoothing the bogie entering the device for detecting the height of locking latches.

At the beginning of these ramps, a set of four brushes is installed on holders (29), which clean possible foreign matters adhered to them. These foreign matters could provoke the trip of the corresponding microswitch (24), the latch being in a correct position.

The whole frame (9) is guided by means of bars (14), slides on bushes (15, 25), and is suspended from springs (22), which are weather protected by bellows or protecting system (23), being destined to allow the frame (9) to rise or descend, depending on the height marked by the polyamide wheel (21).

Apart from the above mentioned elements, it should be pointed out the existence of a hiding mechanism which is formed by a - pneumatic cylinder (26) which allows to hide 160 mm, which is a distance considered as sufficient not to interfere with the locomotive gauge.

This pneumatic cylinder (26) is joined to a support (16) by means of locking elements.

As already said in the description of the invention, the cylinder configured hiding mechanism obviates the drawback of invading low parts gauges, and is capable of hiding the device of the invention in the case that a locomotive passes on the zone where it is installed.

The support (16), which is joined to the pneumatic cylinder (26), is welded to the first four posts of the observation pit (6, 6'), and it supports the whole device for detecting in advance the height of locking latches.

In order to achieve a correct positioning and centering of the bogie, as a consequence of the microswitches (24) passing on the center of the locking latches, counter rails (27) have been provided just at the entrance to the observation pit, which assures a perfect guiding of the rolling gear.

The device for detecting in advance the height of locking latches will be always located in the observation pit (6, 6') at a distance from the concrete wall of

2.80 m, fastened to eight posts.

The observation pits (6, 6') must be always located at the entrance and exit of the fixed installation (4), and about 30 m from it.

This 30 m distance has been considered as sufficient for, in the case that the semaphoric signaling turns on because it has been detected the presence of a latch fallen in the vehicle rolling gear, having time enough to stop the train before this enters the fixed installation (4).

In synthesis, the device for detecting the height of locking latches in installations for changing the gage, according to the invention, is constituted by a main frame (9), with a main support (10) and a holding plate (11), disposing of a microswitch support (12), as well as frame support (13), a guided bar (14) and a bush (15).

Also, the invention provides a cylinder support (16), a column holder plug or block (17) and a guide profile (18), counting on a wheel support (19), a resilient stop (20), the corresponding polyamide wheels (21) and a spring (22) fitted with its adequate protector or bellows (23).

Lastly, the device has a microswitch (24), a ball bearing or bushing (25) and counter rails (27).

It is not considered necessary to extend more this description for an expert in the art to understand the scope of the invention and the advantages derived from it.

The materials, shape, size and arrangement of the components are open to variation, provided that it does not imply any alteration to the essence of the invention.

The terms under which this specification has been described should be always taken in an ample and not limitative sense.

Claims

1.- A device for detecting in advance the height of locking latches in installations for changing the gage, of those destined to detect the existing height in locking latches of rolling assemblies and to check if said height is within allowable limits, characterized in that it is constituted starting from a frame (9), composed of four supports (12) keeping, at a certain height, height detectors for locking latches, enabling a semaphoric signaling in case of anomalies, the frame (9) being joined, by means of supports (13), to a holding plate (11), having resilient stops (20), and fixed to said resilient stops (20) there are supports (19) for polyamide wheels (21), the function of - which is to take as a reference the lower part of the railway vehicle bogie, keeping at an adequate distance the microswitches (24).

2.- A device for detecting in advance the height of locking latches in installations for changing the gage,

according to - claim 1, characterized in that the resilient stops (20) cushion blows with the bogie, absorbing the possible inclinations which could have the bogie, caused by the difference of diameter between both wheels due to wear.

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3.A device for detecting in advance the height of locking latches in installations for changing the gage, according to any preceding claims, characterized in that the frame (9) is guided by means of bars (14), slides on bushes (15, 25), and is suspended from springs (22) fitted with a weather protection by means of bellows (23), allowing the frame to rise and descend starting from the height marked by the polyamide wheel.

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4.- A device for detecting in advance the height of locking latches in installations for changing the gage, according to the preceding claims, characterized in that it has a hiding mechanism composed of a pneumatic cylinder (26) joined to the main support (10) by means of locking elements, the cylinder support (16) being welded to eight posts in the observation pit, supporting the whole device.

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5.- A device for detecting in advance the height of locking latches in installations for changing the gage, according to the preceding claims, characterized in that it is fitted with center rails (27) located at the observation pit entrance, obtaining an adequate positioning and an appropriate centering of the bogie, as a consequence of the microswitches passing on the center of the locking latches.

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6.- A device for detecting in advance the height of locking latches in installations for changing the gage, according to the preceding claims, characterized in that the device will be located in the observation pit, supported by eight posts at a distance of 2.80 m, the observation pits (6, 6') being situated at the entrance and exit of the fixed installations and at a distance of about 30 m from same.

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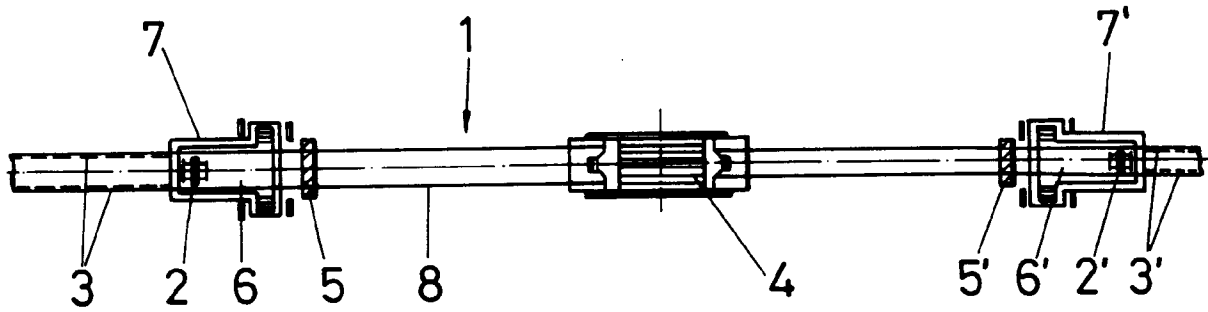


FIG.-1

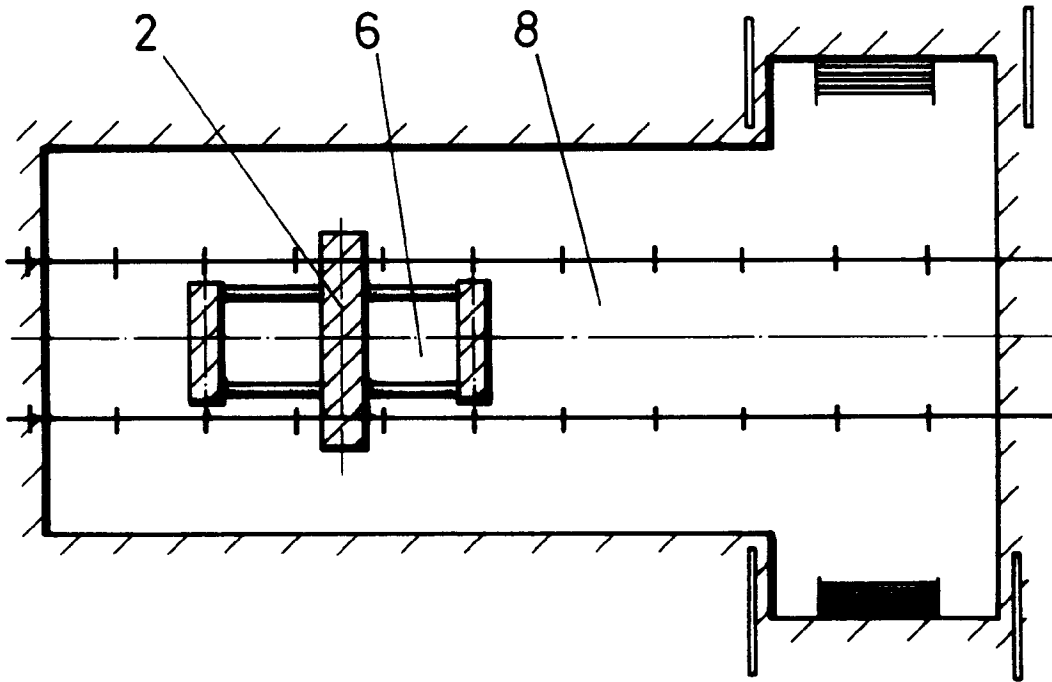


FIG.-2

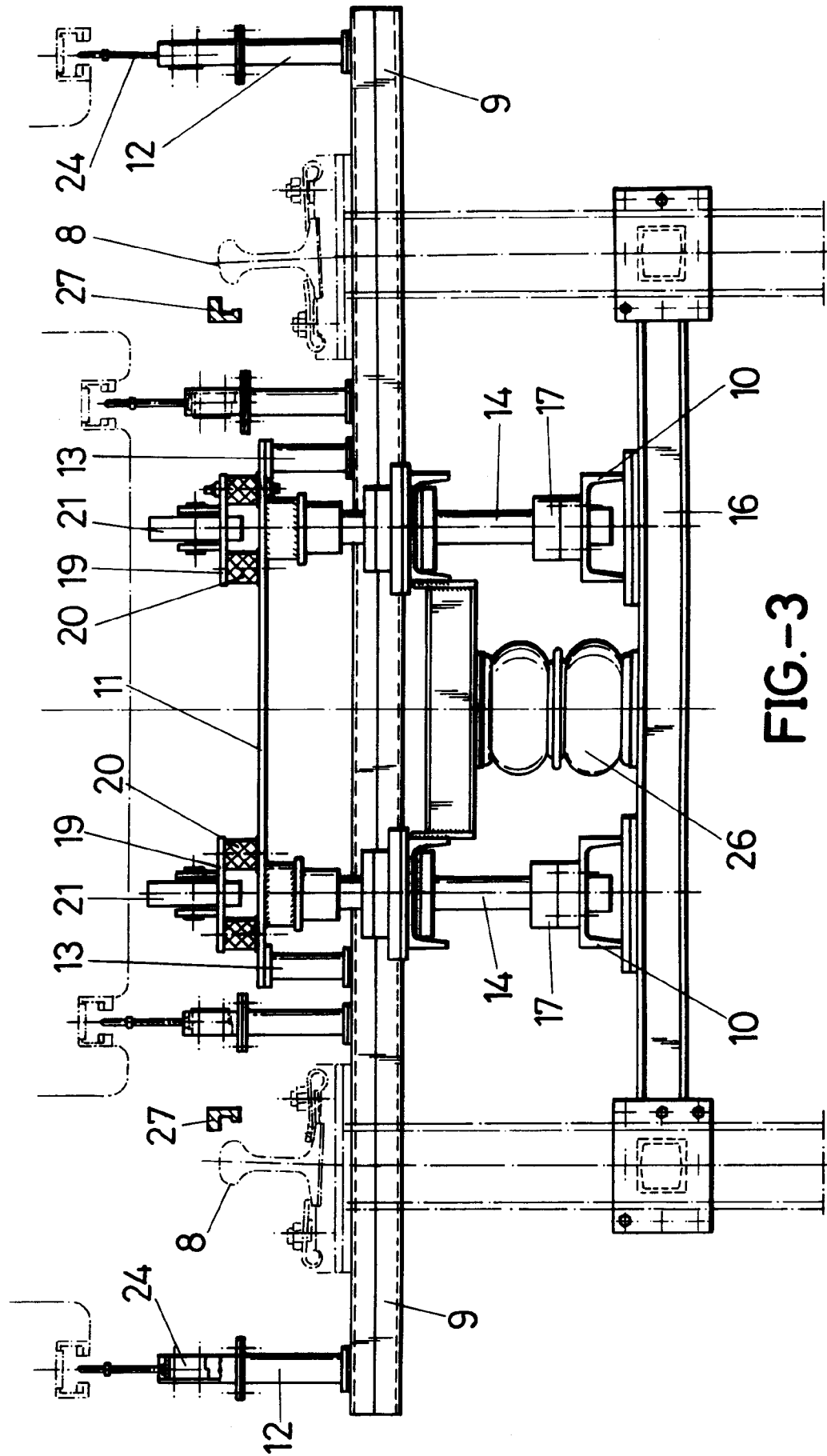
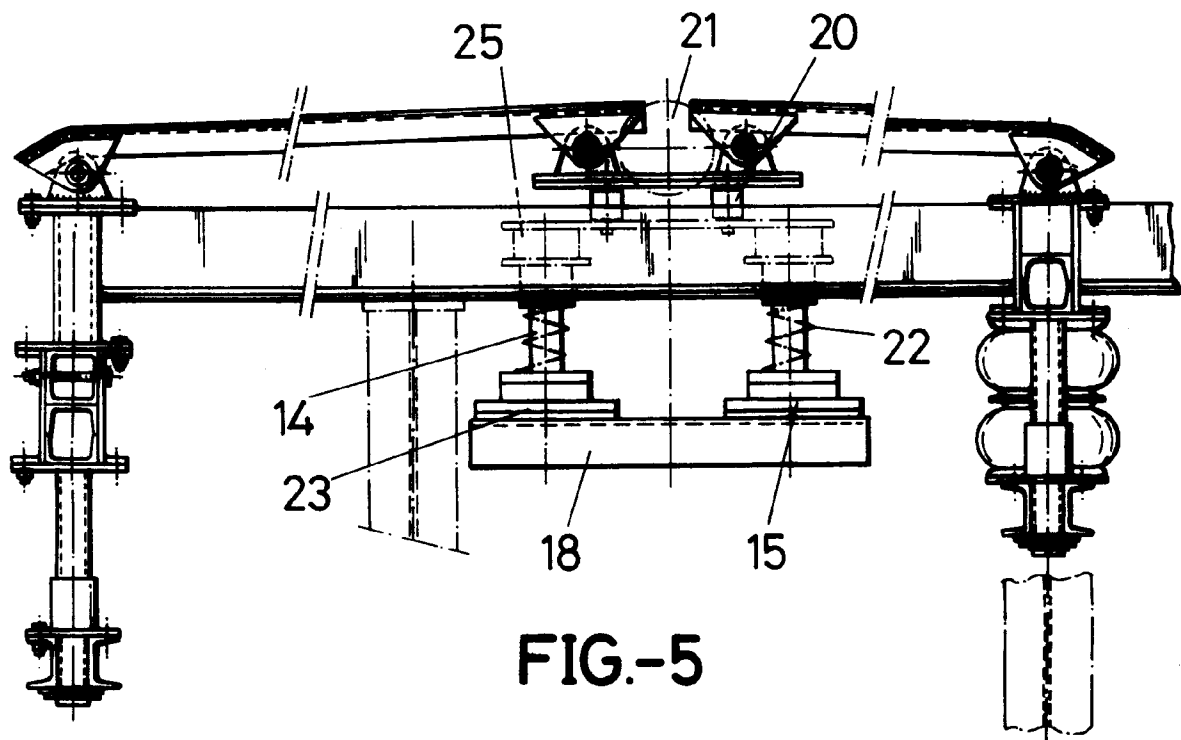
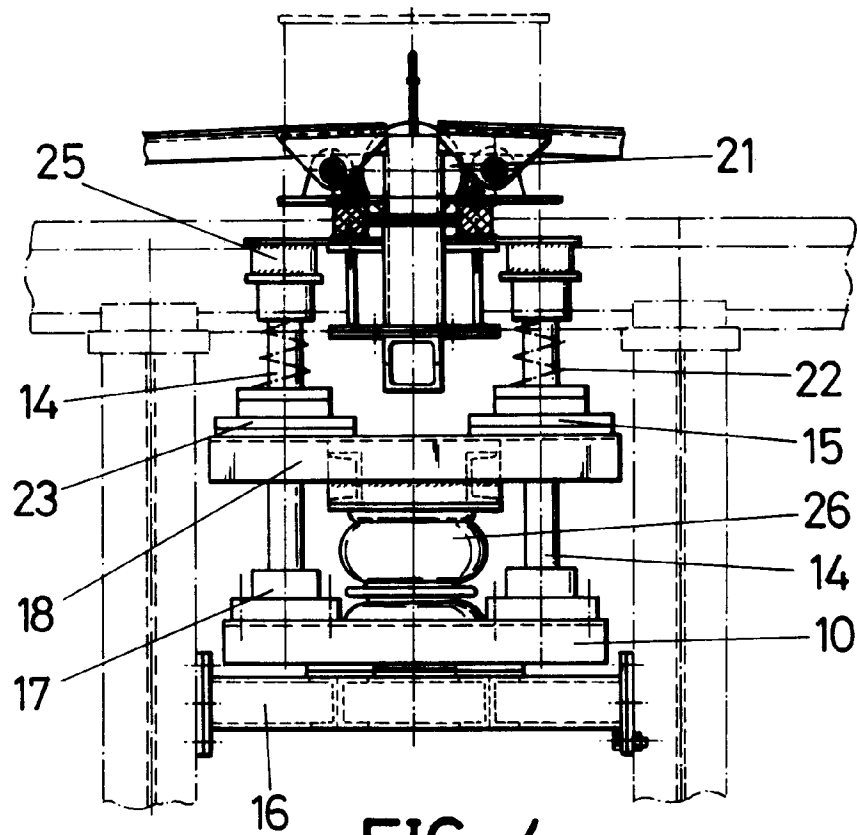


FIG.-3





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 93 50 0131

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.5)
A	DE-C-729 561 (MITTELDEUTSCHE STAHLWERKE AG) * page 3, line 59 - line 75; figures 1,3 * -----	1	B61F7/00
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			B61F B61K B60B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 January 1994	Examiner Chlosta, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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