

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 265 975 B2

(12)

NEW EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the opposition decision:
04.09.1996 Bulletin 1996/36

(51) Int. Cl.⁶: **B21B 13/00**, B21B 31/06

(45) Mention of the grant of the patent:
04.03.1992 Bulletin 1992/10

(21) Application number: **87201727.2**

(22) Date of filing: **10.09.1987**

(54) Modular rolling stand

Moduläres Walzgerüst

Cage de laminoir modulaire

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

(30) Priority: **06.10.1986 IT 6048386 U**

(43) Date of publication of application:
04.05.1988 Bulletin 1988/18

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Description

This invention concerns a complete modular rolling stand. To be more exact, the invention concerns a rolling stand already pre-arranged in the manufacturer's factory for installation and immediate functioning without the normal operations of assembly, setting up, testing, etc.

Rolling stands may have their rolls supported at both ends or supported as a cantilever and the axes of the rolls may be horizontal, vertical or inclined.

The rolling stands having their rolls supported at both ends may be of any type such as stands with housings, cartridge-type stands, pre-stressed stands, etc.

The present invention therefore means by the words "rolling stand" any type of rolling stand which comprises rolls supported at both ends or supported as a cantilever.

The known art provides for rolling stands, even those having rolls supported as a cantilever, to cooperate on a base which comprises civil works such as conduits, discharge channels, hydraulic works prepared for individual tasks, etc., the whole having the purpose of supplying the rolling stand itself.

In the known art the rolling stands are anchored to the ground, which has already been prepared with all the necessary civil works.

After the stand has been anchored to the ground, connections are made to the civil works, whether of an electrical, or hydraulic type, etc., or to coordinating and linking works.

This entails a great waste of money and time since the execution of such works causes reciprocal interference between the various persons thus employed and requires considerable space and successive intermediate times for timing and testing the machine; it also necessitates great care in checking and testing the works themselves and also the rolling machine when installed.

Moreover, the problems of procurement and delivery in themselves are considerable.

Document EP-A-0 057 101 discloses a rolling stand which is mounted on a frame, said frame being fixed to a base which includes a baseplate and is detachably secured to foundation skids. Said base is not provided with any means for supporting the motor for driving the rolls, or for supporting a control panel. The stand is also not provided with feeder and service conduits located in predetermined areas of the base.

The problem underlying the invention resides in how to facilitate the installation of a rolling mill and to shorten the time necessary for replacement of a roll milling stand.

This is achieved by a modular rolling stand having the features disclosed in claim 1.

The dependent claims outline preferred forms of embodiment of the invention.

By means of the invention the rolling stand leaving its manufacturer has already been tested and perfected

in every detail and component, so that for its installation it is enough to fix its base to the ground and to connect the stand to its supply means as already arranged; the machine has already been tested and is operational at the time when the final connection is made.

The stand according to the invention entails also the advantage that it possesses standard dimensions and can therefore be readily combined with other stands or other machines without creating problems of disturbance of the layout or foundations, such problems not being easy to foresee in the case of traditional machines.

According to a preferred form of embodiment of the invention the rolling stand comprises a soundproofed room which holds the motor. Such room is equipped with means to cool the environment and contains the electrical control and operating panel.

According to the invention the stand includes a base containing zones individually equipped for the positioning and passage of the various feed and service units, whether these be for the water, hydraulic or electrical supplies, etc.

The various supply and service units are equipped at their ends with means to obtain a speedy and firm connection to the stand or to the preceding or subsequent usage means.

A motor and the stand itself are positioned on the base, while a channel to discharge slag is included in direct cooperation with the stand.

The stand in itself may be provided with shields, and means to actuate the shields and other equipment.

According to the invention the machine is completely finished in every detail in the supplying factory, where it may be fitted with means to cool the rolls, connections required for the means to cool the motor, brackets for hydraulic clamping and every other necessary component.

Moreover, possible sprayer nozzles cooperating with the channel for discharge of slag and every other electrical and hydraulic service means are pre-assembled in the supplying factory.

All the various parts which constitute a finished stand ready to work are previously connected and tested during preparation of the stand, so that such parts do not have to be checked or connected when the stand is installed on its usage site. Transport operations too are simplified.

The attached figures, which are given as a non-restrictive example, give a diagrammatic idea of the embodiment as follows:-

- Fig.1 shows a lengthwise section of a rolling stand with rolls supported as cantilevers;
 Fig.2 gives a side view of the stand of Fig.1;
 Fig.3 shows a stand with rolls supported at both ends.

The drawings and description cover both a stand having horizontal rolls supported as cantilevers and a stand having rolls supported at both ends in housings.

According to the invention a stand 10 connected to a motor 11 is located on a base 37, which in this example comprises levelling feet 16 solidly fixed to a base plate 17.

The base 37 may include plates for lateral connection to other modular units.

The leveling feet 16 are positioned crosswise to the lengthwise vertical plane of the machine.

A soundproofed room 19 cooperates with the motor 11 and comprises a door 20 for access to the room and also at least one window 38.

An airconditioner unit 39 or at least a means to cool the environment is located in the room 19 to keep the inside of the room at the required temperature.

Means to detect fumes or fire and possible extinguishers may also be provided.

An electrical control panel 22 is comprised inside the soundproofed room 19 and will be complete with all the actuation means and controls required for the proper and complete functioning of the rolling stand, equipment and every other connected element.

The electrical control panel 22 is connected to the motor 11 through a connection box 25 and is fed from the exterior supply through a feed box 23.

The feed box 23 comprises means for speedy connection to the supply sources or other external utilities and to other units positioned alongside the stand.

A series of electrical conduits 24 passes transversely through the base of the stand and provides the electrical connections to make possible the passage and supply of power, services and controls.

The electrical conduits 24 are already connected to the feed box 23 and thereby to the electrical control panel 22 and utilities.

Connection to the exterior takes place normally by a butt connection through the feed box 223 but may also take place through the feed box 23.

At the ends of the electrical conduits 24, therefore, suitable means are included for connection to analogous conduits included in stands located upstream and downstream, or to supply, service and control means located upstream, or to other usage means located downstream.

The electrical conduits 24 serve to convey motive power, generally electrical power, and also the electrical controls and links.

A means 21 to cool the motor 11 is also comprised in the soundproofed room 19 and is connected directly to a cooling water inflow pipe 27 and to a water return flow pipe 30.

The cooling water inflow pipe 27 supplies water at the required pressure, whereas the return flow pipe 30 acts as a drain for water used either within the cooler means 21 or in the airconditioner 39 or in other possible usage means.

The rolling stand 10 of Figs.1 and 2 is equipped with rolls 12 supported as a cantilever, which in this case have a horizontal rolling axis 13 and comprise already installed brackets for hydraulic clamping and balancing as required to withstand and annul the weights acting on the shafts of the rolls 12.

The rolling stand 110 of Fig.3 is provided with rolls 112 supported at both their ends and with rolling shafts 113 and is already directly equipped with the necessary equipment and usage devices.

Cooling units 36-136 which are fed with water under pressure by a pipe 29 are included in cooperation with rolls supported as cantilevers 12 or supported at both ends 112.

Such pipe 29 feeds also spray nozzles 35 which scour and clean a slag discharge channel 18. Such discharge channel 18 for slag is comprised in the base of the stand and runs crosswise to the stand, being positioned in cooperation with rolls 12 supported as a cantilever or with rolls 112 supported at both ends.

The rolls 12 supported as a cantilever and possibly at least part of the rolls 112 supported at both ends are protected by a shield 14-114 which can be lifted by a jack 15 to permit ready access.

In the case of a stand 110 having rolls 112 supported at both ends the zone of roll extensions 40 and possibly also a gear box 41 may be protected by a shield 214.

The extensions 40 and housings of the stand of Fig.3 are obviously complete with all the equipment required to support the extensions and to replace the rolls 112.

One or more reserved conduits 28 may be provided in the base 37, which will also include one or more conduits for lubricating oil 26, conduits for grease 31, conduits for oil under pressure 32, conduits for oleodynamic drive units 33 and possible reserve conduits 34.

Further conduits may be provided for other functions such as compressed air, an inert gas, etc.

All such conduits positioned crosswise to the base 37, whether they be electrical, hydraulic or oleodynamic, include suitable terminal connections able to connect them to coordinated supply conduits positioned upstream or to further usage means or to conduits located downstream of the stand itself.

The channel for discharge of slag 18 too comprises suitable means for connection to analogous channels or coordinated discharge means located upstream or downstream of such discharge channel 18.

Each zone of the stand is therefore prepared for individual tasks and finalized functions and includes the operational means and necessary auxiliary means as well as possible means for connections upstream and downstream.

It is to be understood that the stand 110 of Fig.3 comprises also the gear box 41 and extensions 40.

The stand according to the invention is therefore perfectly finished and tested as regards all its parts when despatched from the manufacturer's factory, and

this situation provides both its producer and the end-user with a great number of advantages and great usefulness.

A first advantage lies in the fact that all the civil works forming part of the machine are already positioned and set up in the machine without any need to be arranged.

A further advantage is the fact that all the parts of the stand are finished and ready, thus reducing sharply the times involved and the problems of despatch, storage, assembly and timing of start-up of the machine itself.

If such stands have to be stopped for replacement or innovation of equipment, this embodiment requires very short times for such replacement work.

Moreover, the approval trial of the stand on its installation site becomes unnecessary to the extent hitherto known since such trial has already been performed when the stand was being prepared in the factory.

Claims

1. Modular rolling stand (10; 110) comprising a pair of rolls (12,13; 112,113) mounted on a supporting frame which is fixed to an independent base (37) including a baseplate (17), characterized in that said independent base (37) supports an electric motor (11) for driving said rolls (12,13; 112,113), said motor being provided with cooling means (21), an electric control panel (22), a channel (18) for discharging slag and electric and/or hydraulic feeder and service conduits (24, 26-34) located in predetermined areas of said base (37), said slag discharge channel (18) and said feeder and service conduits (24, 26-34) being positioned cross-wise to the lengthwise vertical plane of the stand and being provided, at each end thereof, with connecting means suitable for carrying out electric and/or hydraulic connections to corresponding slag discharge channels and supply or usage conduits of rolling stands which are located upstream or downstream of said rolling stand (10; 110).
2. Rolling stand (10;110) according to claim 1, characterized in that said base (37) further supports a soundproofed room (19) inside of which said motor (11) is housed.
3. Rolling stand (10;110) according to claim 2, characterized in that said control panel (22) is housed inside of said room (19).
4. Rolling stand (10;110) according to any one of claims 2 and 3, characterized in that said room (19) is at least cooled by a conditioner unit (39).
5. Rolling stand (10;110) according to any one of claims 2 to 4, characterized in that said means (21) to cool the motor (11) is housed in said room (19).
6. Rolling stand (10;110) according to any one of the preceding claims, characterized in that it comprises spray nozzles (35) cooperating with said discharge channel (18).

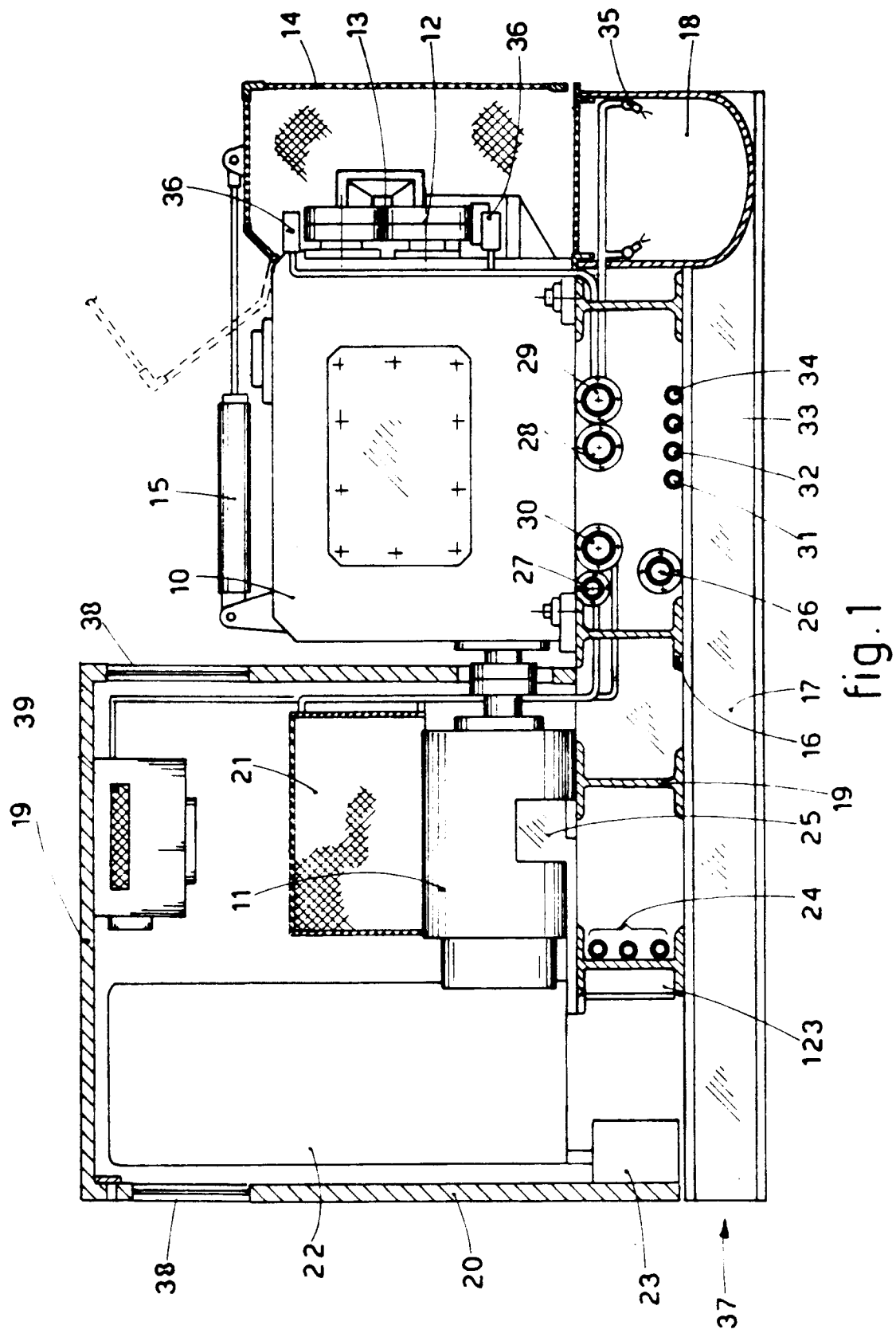
10 Patentansprüche

1. Modulares Walzgerüst (10; 110) mit einem Walzenpaar (12, 13; 112, 113), das in einem an einer eine Grundplatte (17) besitzenden, unabhängigen Basis (37) befestigten Rahmen gelagert ist, **dadurch gekennzeichnet, daß** die unabhängige Basis (37) einen Elektromotor (11) zum Antrieb der Walzen (12, 13; 112, 113) trägt, wobei der Motor mit einer Kühlung (21) versehen ist, weiters eine elektrische Steuertafel (22), einen Kanal (28) zum Abführen von Schlacke und elektrische und/oder hydraulische Speise- und Betriebsleitungen (24, 26-34), die in vorgegebenen Bereichen der Basis (37) gelegen sind, wobei die Speise- und Betriebsleitungen (24, 26-34) quer zu der vertikalen Längsebene des Gerüsts angeordnet sind und an ihren beiden Enden mit Anschlußmitteln versehen sind, die zur Herstellung elektrischer und/oder hydraulischer Verbindungen mit zugehörigen Schlackenausgabekanälen und je stromauf oder stromab des Walzgerüsts (10; 110) gelegenen Speise- und Betriebsleitungen geeignet sind.
2. Walzgerüst (10; 110) nach Anspruch 1, **dadurch gekennzeichnet, daß** die Basis (37) weiters einen schallgedämpften Raum (19) trägt, in dessen Innerem der Motor (11) untergebracht ist.
3. Walzgerüst (10; 110) nach Anspruch 2, **dadurch gekennzeichnet, daß** die Steuertafel (22) im Inneren des Raums (19) untergebracht ist.
4. Walzgerüst (10; 110) nach einem der Ansprüche 2 oder 3, **dadurch gekennzeichnet, daß** der Raum (19) zumindest durch eine Klimaanlage (39) gekühlt ist.
5. Walzgerüst (10; 110) nach einem der Ansprüche 2 bis 4, **dadurch gekennzeichnet, daß** die Einrichtung (21) zur Kühlung des Motors (11) in dem Raum (19) untergebracht ist.
6. Walzgerüst (10; 110) nach einem der vorgehenden Ansprüche, **dadurch gekennzeichnet, daß** es mit dem Ausgabekanal (18) zusammenwirkende Sprühdüsen (35) enthält.

Revendications

1. Cage de laminoir modulaire (10; 110) comprenant une paire de cylindres (12, 13; 112, 113) montés sur un cadre du support qui est fixé à une base indépendante (37) comprenant une plaque de base (17), caractérisée en ce que la base indépendante (37) supporte un moteur électrique (11) pour entraîner lesdits cylindres (12, 13; 112, 113), le moteur en question étant équipé d'un moyen de refroidissement (21), un tableau de commande électrique (22), un chenal (28) pour évacuer les crasses et des conduites d'alimentation et de service électriques et/ou hydrauliques (24, 26-34) situées à des endroits prédéterminés de ladite base (37), le chenal d'évacuation de crasses (18) et ces conduites d'alimentation et de service (24, 26-34) positionnés transversalement au plan vertical longitudinal de la cage et étant munies à chacune de leurs extrémités, de moyens de connexion adéquats permettant de réaliser des connexions électriques et/ou hydrauliques aux chenaux d'évacuation de crasses et aux conduites d'alimentation et d'utilisation correspondants qui sont situés respectivement en amont ou en aval de ladite cage de laminoir (10; 110). 5 10 15 20 25
2. Cage de laminoir (10; 110) suivant la revendication 1, caractérisée en ce que la base (37) supporte, en outre, une enceinte insonorisée (19) à l'intérieur de laquelle est logé le moteur (11). 30
3. Cage de laminoir (10; 110) suivant la revendication 2, caractérisée en ce que le tableau de commande (22) est logé à l'intérieur de l'enceinte (19). 35
4. Cage de laminoir (10; 110) suivant l'une quelconque des revendications 2 et 3, caractérisée par le fait que l'enceinte (19) est au moins refroidie par un appareil de conditionnement d'air (39). 40
5. Cage de laminoir (10; 110) suivant l'une quelconque des revendications 2 à 4, caractérisée en ce que le moyen (21) de refroidissement du moteur (11) est logé dans l'enceinte (19). 45
6. Cage de laminoir (10; 110) suivant l'une quelconque des revendications précédentes, caractérisée en ce qu'elle contient des ajutages de pulvérisation (35) coopérant avec le chenal d'évacuation des crasses (18). 50

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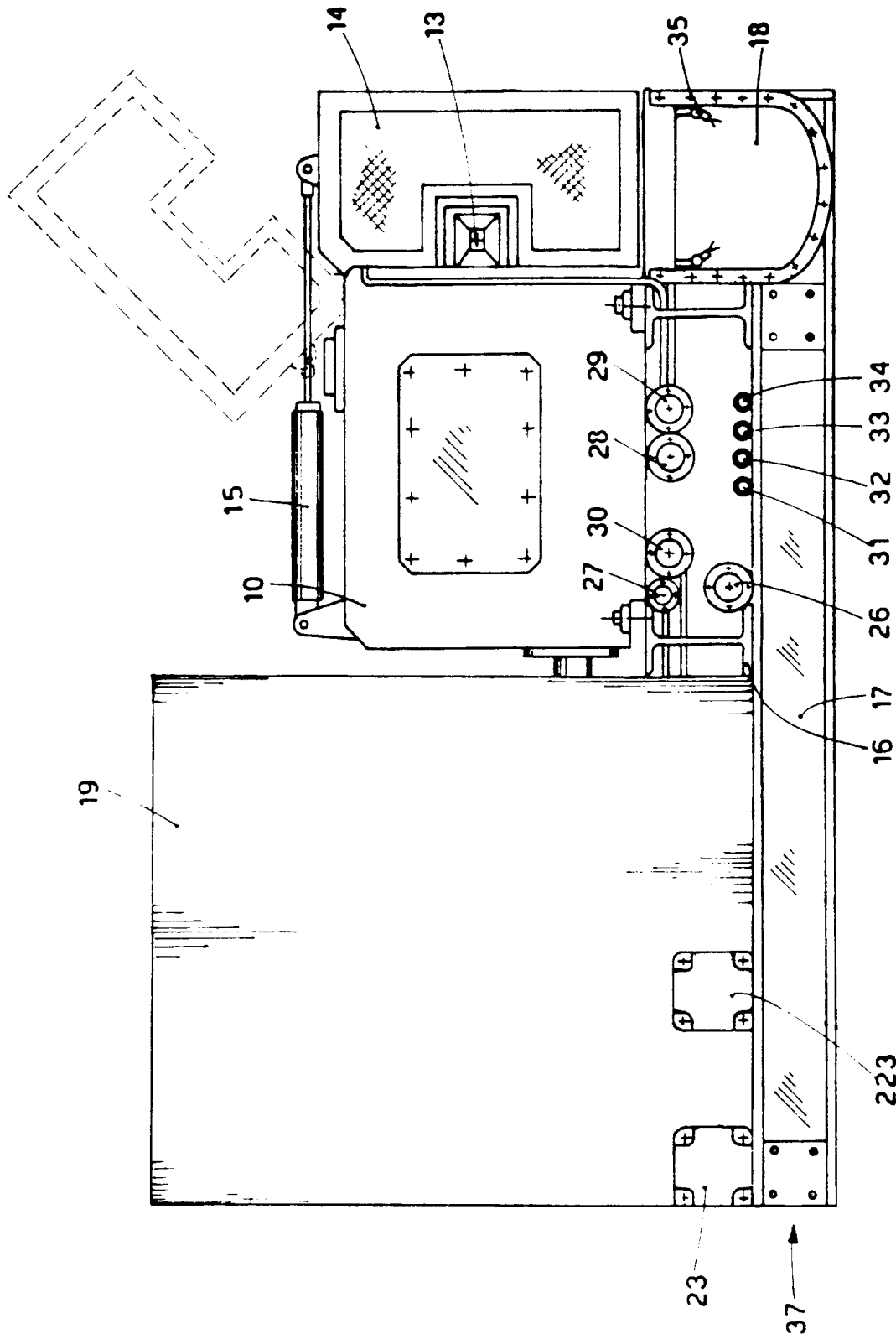


fig. 2

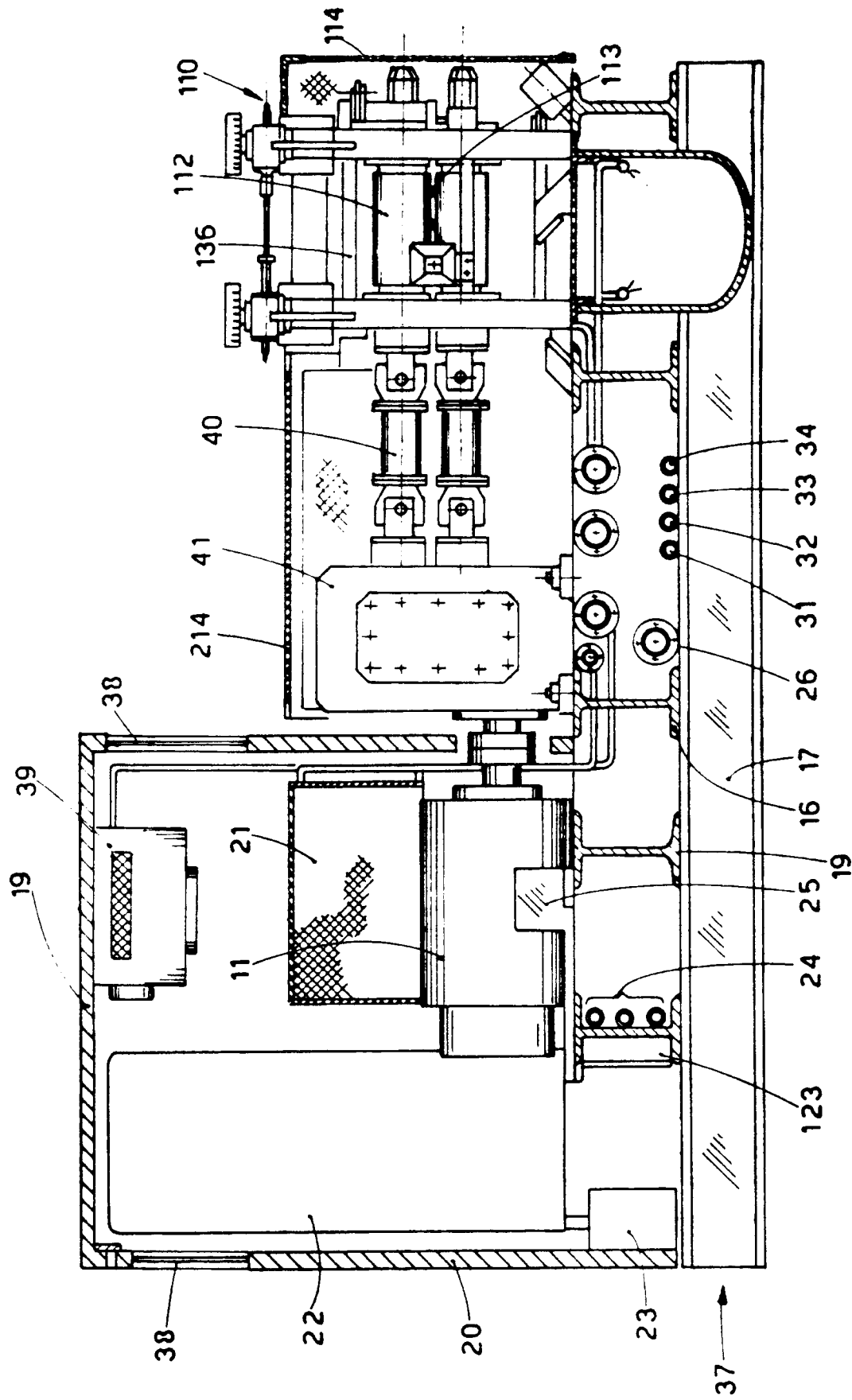


fig. 3