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(73) Proprietor: **COMBUSTION ENGINEERING, INC.**
1000 Prospect Hill Road
Windsor Connecticut 06095 (US)

(72) Inventor: **Sullivan, Robert Patton**
104 Asbury Drive
Chattanooga, Tennessee 37411 (US)
Inventor: **Jacobs, Clyde Lewis**
826 Murrell Road
Signal Mountain, Tennessee 37377 (US)

(74) Representative: **Gross, Gernot K.**
Kleiberweg 5
D-6200 Wiesbaden (DE)

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Actuating mechanism for a soot blower

Background of the Invention

The invention relates to actuating mechanisms for soot blowers including means for protecting them from thermal damage.

Structure for actuating a fluid lance into a furnace space is known including a casing for the lance, a furnace wall with an aperture through which the front end of the lance casing is inserted to position a discharge nozzle to impinge cleaning fluid from within the lance casing on the furnace surfaces to be cleaned, a sealing box mounted on the external side of the furnace wall and about the opening for the lance, a guide ring rotatably mounted with a central opening accommodating the lance casing, at least two roll bearings mounted on the guide ring to engage surfaces of the lance casing, motive means connected to the guide ring for rotation of the guide ring and roll bearings and lance casing, and a rack and pinion connected to the rotating lance casing to actuate the rack and pinion to result in reciprocation of the lance casing into and out of the furnace space as the lance casing is rotated by the motive means. Such structure is disclosed in NL—A—289060.

Summary of the Invention

The invention as claimed in claim 1 is directed to a soot blower which includes a novel seal plate which rotates with the lance casing while blocking heat radiation from the furnace. The invention is further directed to a specific wheel support for the feed tube to maintain it concentric with the lance housing during operation.

Brief Figure Designations

Figure 1 is a sectioned elevation of the front end of a lance penetrating a furnace wall as rotated through a powered bushing and embodying the present invention.

Figure 2 is a sectioned elevation along lines 2—2 of Figure 1 of the bushing structure with which the lance is rotated.

Figure 2A is a sectioned elevation along lines 2A—2A of Figure 1 of the scraper plate as about the lance casing and suspended from the guide ring of the bushing structure.

Figure 3 is a partially sectioned plan view of the carriage to which the rear portion of the lance is connected for reciprocation and rotation.

Figure 4 is a partially sectioned elevation taken along lines 4—4 of Figure 3 to disclose the carriage in its track reciprocated through a rack and pinion.

Figure 5 is a partially sectioned elevation of the rear of the carriage disclosing the structure for aligning and supporting the feed tube.

Description of the Preferred Embodiment

Featured attraction of the disclosure is the lengthy body of the lance which is thrust into the furnace space for 20 feet, or more, to carry out its cleaning mission. Unique structure is arranged at various stations along this length. An overall grasp of this structure, at these stations, is difficult to extract from a single sheet of drawing. Therefore, the plan descends to a more or less piecemeal consideration of the structure embodying the invention along the length of the lance. Those skilled in the art will have to meet the test of organizing the disclosure from the various figures scattered over multiple sheets of drawing.

In orientation, the end of the lance of the soot blower viewed in Figure 1 will be described as the "front" end. It is the cleaning fluid which is discharged from the nozzles on the front end of the lance which carries out the cleaning of the surfaces in the furnace interior. Looking backward from this nozzle end of the lance, supporting structure at the furnace wall is first analyzed in the first two figures of the drawing. Attention next shifts to the carriage structure to which the rear portion of the lance is attached. This carriage structure is reciprocated toward and away from the furnace interior to carry the lance nozzles over and/or between the furnace surface being cleaned. The disclosure next includes drawings depicting the structure with which the feed tube is held in alignment to avoid mechanical stress on the all-important packing gland seal between the feed tube surface and the casing of the lance. Seen in the overall organization of supporting and articulating structure for the lance are features which give the soot blower distinct advantages over the prior art. In the final analysis the structure is simple and inherently resists the accumulation of dirt which always threatens to degenerate the performance efficiency of soot blowers of the prior art.

Figures 1, 2 and 2A — Front End:

The structure of Figure 1 includes a portion of the furnace wall with an opening through which the cleaning lance is reciprocated and rotated to project its cleaning fluid over the surfaces of the furnace interior to rid them of soot and slag. Figure 1 discloses the structure mounted at the furnace wall aperture which maintains the lance in alignment with the aperture in the furnace wall and rotates the lance as the lance is reciprocated by structure shown in subsequent Figures.

The furnace wall, or that portion of the wall which is penetrated by the lance, is designated 10. The aperture 11 is shown with the lance 12 thrust partway into the furnace interior. The

configuration of the external casing of the lance 12 is essentially square and rotates in the position shown in Figure 1. Therefore, aperture 11 is sized to accommodate this rotation without interference.

Of course, there are hot gases streaming up through the furnace interior. In the present disclosure, the assumption is made that the furnace operates at a negative pressure. More specifically, the flow of air through aperture 11 will be toward the furnace interior. However, the radiant heat within the furnace is to be blocked by a structure mounted on the outside of furnace wall 10. The structure on the external side of wall 10 is a seal box 13.

The seal box 13 extends back to scraper plate 14, which plate encompasses the rotating and reciprocating outer surface of lance 12.

The seal box structure is a sturdy mount forming a link between the furnace wall and the front end of the lance 12. More specifically, the seal box 13 is connected to a shroud enclosure for the reciprocating carriage of the lance. This connection is illustrated with yoke and bracket 16. Within the shroud housing is mounted, at the front end of the shroud, bearing assembly 15 which is the link between the lance and a motive means disclosed in Figure 2 with which the lance is rotated.

Roll bearings 17 are mounted on a guide ring 18 which is captured between eccentric side camrol bearings 19 fixed to bearing assembly 15. Guide ring 18 is rotated in the plurality of bearings 19 and 33 by means of a chain shown in Figure 2 which engages sprocket 20. It is apparent from the drawings of Figures 1 and 2 that the rotation of guide ring 18 results in rotation of roll bearings 17 which completes the direct link with the external surface of the square casing of the lance.

Although not completely apparent from Figure 1, the external configuration of lance 12 provides a cross-sectional profile with four flat sides. Roughly, the external shape of the lance can be referred to as square, at least two of the sides of the square at any one time engaged in rolling contact with roll bearings 17. In the final analysis, the assembly thus far described is a compact structure which both admits of access to the furnace interior by the lance 12 through aperture 11 while blocking radiant heat about the lance structure and forming a mechanical link with a motive means for rotation of a lance while the lance is reciprocated.

Figure 2A discloses details of the scraper plate 14, in its position to block the escape of radiant heat of the furnace through aperture 11. Scraper plate 14 is suspended from guide ring 18, and, therefore, rotates with guide ring 18 and lance 12. Figure 2A discloses scraper plate 14 as comprised of four scraper plate segments. An edge of each of the four segments is positioned closely adjacent one side of the lance casing. The four segments fit together in a plane normal the axis of the lance. The four segments, together, as the scraper plate 14, are spaced closely adjacent the rear end of the seal box 13. Positioned in this arrangement about the lance casing, the segments block the escape of radiation from the furnace interior and remove soot and/or slag from the external lance casing 22 as the lance 12 is retracted from the furnace interior.

Each segment is held in its position by a strap, which connects the segment to the guide ring 18. Therefore, strap 23A connects segment 14A to the guide ring 18. Likewise, the remaining three straps connect their respective segments to the guide ring. The now obvious result for this assembly is the rotation of scraper plate 14 with guide ring 18 and external lance casing 22.

It may appear that the segments 14A—14D are somewhat precariously held in their positions from guide ring 18. It is true that straps 23A—23D are relatively elongated members. However, in their actual reduction to practice, they are normally sturdy enough to maintain their segments of the scraper plate in position while retaining flexibility to prevent binding and galling on the reciprocating surface of the external lance casing 22.

The description here is of a soot blower classed as a "long, reciprocating" type. One common denominator of these soot blowers is a feed tube 21 which provides the cleaning fluid ultimately discharged from the lance against internal furnace surfaces. Feed tube 21 must be long enough to maintain communication of its cleaning fluid with the nozzles 24 at the forward end of the casing of the lance while the lance is reciprocated over its range of longitudinal movement. The external lance casing 22 must be effectively sealed near its rear end against the escape of cleaning fluid which has been conducted into the casing. This seal structure is not disclosed in the front end apparatus of Figure 1, the lance and feed tube extending a substantial distance beyond the boundary of Figure 1, as will be shown in subsequent figures.

Assuming a seal between the internal wall of the lance casing and the external surface of the feed tube is provided in subsequent disclosures, it can well be appreciated that a horrendous problem with this seal hangs over the lance. The prior art may speak profusely of many different fluids which can be provided for the soot blowers, but high pressure, high temperature steam available as a product from the furnace itself is the most practical cleaning fluid available. This steam in feed tube 21 is surpassingly warm. The life of a seal reciprocating and rotating along the external surface of the feed tube 21 will be threatened by the elevated temperature of the steam within the feed tube. One barrier to this heat flow is an insulating structure about the feed tube.

None of the structure so far disclosed touches the reciprocating mechanism to which

the lance 12 is connected. The disclosure of Figure 1 is basically designed to teach the mechanism mounted near the furnace wall through which the lance is rotated and in which reciprocation is accommodated.

Figure 2 coordinates with Figure 1 by the fact that Figure 2 is a section along lines 2—2 in Figure 1. Therefore, the structure of Figure 2 is viewed as looking into the forward end of the lance or that end extended into the furnace. The bearinging assembly 15 is shown as about lance 12 and attached to the front of housing shroud 30. Now the motor 31 is observed in its position to one side of the bearing assembly, rotating the lance through its linkage, including chain 32. The lance is reciprocated within housing shroud 30, retreating and advancing relative to the observer of Figure 2. The structure for holding the lance in this position and reciprocating the lance will be disclosed in other drawings.

In Figure 2 the bearing structure holding the guide ring 18 in its position about the lance while it is rotated by motor 31 is more clearly seen. The eccentric side camrol bearings 19 were first disclosed in Figure 1. The bearings can now all be seen as three sets which are mounted equidistant around the edge of guide ring 18. Edge bearings 33 engage the edge of guide ring 18, cooperating with bearings 19 to give the guide ring stability while it is rotated by the motor 31. Of course, the guide ring is mounted in the bearing assembly 15 which is mounted on the inside of housing shroud 30. Further, as disclosed in connection with Figure 1, the housing is suspended from seal box 13 through yoke and bracket 16. Finally, roll bearings 17 are mounted on guide ring 18 to directly engage the surface of external lance casing 22. Thus, the linkage is completed between motor 31 and lance 12 to rotate the lance in distributing its cleaning fluid from the nozzles 24, such nozzles viewable in Figure 1 but obscured in Figure 2.

Other views clarify the manner in which the carriage for the lance is reciprocated along a track within housing shroud 30. An indication of this track within the shroud is found at 41.

The purpose of Figure 2 is simply to enlarge upon, and make more specific, the linkage between motor 31 and the lance 12, the train of linkage including chain 32, the sprocket 20, guide ring 18, and roll bearings 17. Some additional orientation is given by showing the shroud 30 about the lance 12.

Figure 3 — The Carrier:

Figure 3 is a plan view of the carrier mechanism with which the lance is reciprocated into, and out of, the furnace. The carrier mechanism traverses the length of shroud 30. Only the fragments of shroud 30 necessary to orient the carrier within are disclosed.

Basically, the carrier can be studied as a framework supported on parallel tracks within shroud 30. The tracks 40 and 41 are mounted along the sides of shroud 30. Rollers 42 and 43 engage track 40 and rollers 44 and 45 engage track 41. Between these rollers 42—45, the carriage framework 46 is suspended while reciprocated the length of shroud 30 with power transmitted through pinion 47 and rack 48. Roller 42A (under roller 42 and track 40) and roller 44A (under roller 44 and track 41) are used for carrier loading while the lance 12 is extended fully into the furnace space.

Note that pinion 47 extends upward to engage rack 48. Teeth of the rack and pinion are deliberately oriented vertically to militate against the accumulation of dirt within the teeth. The design of prior art soot blowers has consistently included horizontal orientation of rack and pinion teeth. Consequently, prior art teeth have accumulated dirt and debris which has deteriorated the performance of the rack and pinion drives. The present arrangement of soot blower construction makes it evident that vertical tooth orientation was a positive step in lengthening the maintenance-free operation of carriage framework 46.

Gear reducer 49 is mounted below pinion 47 and controls both the speed and direction of pinion 47 rotation to reciprocate the lance attached to the carrier framework 46. Additionally, the gear reducer is connected to sprocket 50 which is linked by chain 51 to provide rotation from the lance.

The lance of Figures 1 and 2 is connected to the framework of carriage 46 by a sleeved spindle 52. The spindle is fixed to carriage framework 46 so as to extend toward the furnace at the front end. Further, the sleeve receives feed tube 21 as feed tube 21 is connected to a source of cleaning fluid not shown in Figure 3. Also, by means of the dead air space between the inner and outer shells of the sleeved spindle 52, high temperatures from steam are greatly reduced to enhance the life of the bearings 52A and 52B that allow rotation of sleeved spindle 52.

Sleeved spindle 52 specifically carries an axially aligned packing housing 53 on what will be termed its rear end. Feed tube 21 is received through this packing housing 53 and is sealed thereto by the all-important packing structure which prevents the rearward escape of the highly pressured cleaning fluid. Thus, the sleeved spindle and its packing housing form the sliding and rotating link between the lance 12 and the feed tube 21. On the forward end of the sleeved spindle 52, the lance 12 is connected through a high quality connector 54. Therefore, travel of the carriage framework 46 the length of shroud 30 carries the lance into and out of operation within its furnace while receiving high pressure cleaning fluid from feed tube 21.

Note that sleeved spindle 52 bears sprocket 55. Obviously, rotation of lance 12 and sleeved spindle 52 will cause rotation of sprocket 55. Next, note that sprocket 50 is mounted on gear

reducer 49. Chain 51 links the two sprockets. Therefore, rotation of lance 12 operates gear reducer 49 which, in turn, rotates pinion 47. It follows that carriage framework 46 is reciprocated through engagement of the rack and pinion within housing shroud 30. In conclusion, rotation of lance 12 by motor 31 of Figure 2 brings about reciprocation of the lance into and out of the furnace being serviced.

The gear train between the rack and pinion and sleeved spindle 52 can be actuated by another source of power. Shaft 49A is provided into gear reducer 49. Rotational power applied to shaft 49A will both reciprocate and rotate lance 12. This means of rotation and reciprocation is alternate to the normal arrangement of applying power from motor 31.

The directional controls for gear reducer 49 and the selective clutching between gear reducer 49, pinion 47 and sprocket 50 are not shown in Figure 3. The details of disclosing how circuits are arranged to control gear reducer 49 would unnecessarily encumber the present disclosure. The novelty of this embodiment centers about the provision of a carriage framework 46 within shroud 30 and the control of the lance through spindle 52 mounted on the carriage. Additionally, the provision of the carriage-mounted spindle provides a unique sealing support at packing housing 53 so that mechanical stress may be isolated with relative ease from the sealing structure.

Figure 4 — Elevation of Figure 3 Carrier:

As an elevation of Figure 3, the view is taken along lines 4—4 of Figure 3. This particular view discloses with great simplicity how carriage framework 46 fits within shroud 30. Tracks 40 and 41 can be seen as essentially angle irons extended horizontally near the top of shroud 30. Rollers 43 and 45 are clearly viewed. Rollers 42 and 44 are not viewable because they are obscured by rollers 43 and 45. Still, it is easily divined how all four rollers bear firmly against their respective tracks in support of carriage framework 46.

Carriage framework 46 reciprocates the longitudinal length of shroud 30. In Figure 4, this reciprocation causes the carriage framework 46 to recede from and advance toward the eye of the viewer of Figure 4. Positive guidance in this reciprocating stroke is insured by a sturdy track between the depending flanges of angles 60 and 61. Nestled between these guides is roller 62 which extends from firm attachment to carriage framework 46.

Relative to Figure 3, the power to reciprocate the carriage framework 46, and its attached lance, has been explained as with gear reducer 49 through pinion 47 and rack 48. The rotation of the gear reducer 49 through sprockets 50 and 55 is clearly disclosed with chain 51. Figure 4 functions to consolidate the comprehension of how the moving parts of the structure cooperate to positively reciprocate and rotate lance 12.

Figure 5 — Feed Tube Support and Seal:

Figure 5 may be classified as a somewhat diagrammatic elevation in the rear end of shroud 30 with the carriage framework 46 near the end of its rear position. The familiar sleeved spindle 52 helps basic orientation in disclosing how feed tube 21 is introduced into connection with the lance through packing housing 53. Valve 70 is indicated as giving basic control to the flow of cleaning fluid from conduit 71 into feed tube 21. The basic function desired is to flow the cleaning fluid (commonly steam) into the lance from the feed tube 21 in order that the cleaning fluid may be nozzled against the proper interior surfaces of the furnace. The simple end function is complicated by the necessity for reciprocating the lance structure into and out of the furnace while sealed to the external surface of the feed tube. Additionally, rotation of the lance is also desired, putting the seal to further challenge.

This disclosure will not include details of the type, form, and material within packing housing 53, which actually contacts the outside surface of feed tube 21. Isolation of intolerable degrees of heat from the sealed structure has been discussed and there are several established arrangements for attaining this isolation. Simultaneous relief of mechanical stress from the seal is a more pertinent provision in this disclosure of Figure 5.

Rollers 72 and 73 are mounted on extension 74 of carriage framework 46 to bear directly upon feed tube 21 at its entry into packing housing 53 and its contact with the seal structure within the housing. It is apparent that the parallel axes of the rollers are vertically offset from each other as the rollers bear upon the feed tube 21. These rollers may be positioned and adjusted, in their position, to maintain axial alignment between the feed tube 21 and packing housing 53 to isolate the packing from undue mechanical stress.

From the foregoing, it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth, together with other advantages which are obvious and inherent to the apparatus.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the invention.

Claims

1. Structure for actuating a fluid lance (12) into a furnace space (10) for cutting accumulation of particulate matter from heated surfaces within the furnace space, including,

a casing (22) for the lance with a cross-sectional configuration of four sides forming a square,

a furnace wall (10) with an aperture through which the front end of the lance casing (22) is inserted to position a discharge nozzle (24) to impinge cleaning fluid from within the lance casing on the furnace surfaces to be cleaned,

a sealing box (13) mounted on the external side of the furnace wall and about the opening for the lance,

an elongated open-bottomed housing (30) connected by its front end to the sealing box in order that the housing will be longitudinally moved as the furnace wall (10) shifts position under the varying thermal loads on the furnace,

a guide ring (18) rotatably mounted on the front end of the housing with a central opening accommodating the lance housing,

at least two roll bearings (17) mounted on the guide ring to engage flat surfaces of the lance casing,

motive means (20) connected to the guide ring for rotation of the guide rings and roll bearings and lance casing, and

a rack (48) and pinion (47) mounted within the elongated housing and connected to the rotating lance casing (22) to actuate the rack and pinion to result in reciprocation of the lance casing into and out of the furnace space as the lance casing is rotated by the motive means, characterized by a segmented seal plate (14) arranged about the lance casing (22) and closely adjacent the rear end of the seal box (13) to block radiation from the furnace, and

a connection (23) between the segmented seal plate (14) and the guide ring (18) by which the seal plate is rotated with the lance casing (22) while radiation is blocked from escape through the seal box.

2. The actuating structure of Claim 1, characterized in that the seal plate (14) comprises four segments and each segment is connected by a separate elongated support (23) to the guide ring (18).

3. The actuating structure of Claim 2, characterized by a carriage (46) mounted on tracks (40, 41) within the elongated open-bottomed housing (30) for reciprocating substantially the entire length thereof, means for mounting the pinion (47) on the carriage (46) in the arrangement whereby the pinion forms the length between the rack (48) and the lance casing (22), a feed tube (21) connected to a supply of cleaning fluid and telescoping within the lance casing (22) from the rear of the casing, a packing gland seal (53) mounted between the outer wall of the feed tube and the inner wall of the lance casing, and rolls (72, 73) mounted on the carriage in engagement with the feed tube to maintain the feed tube concentric to the inside wall of the lance casing and thereby obviating mechanical stress on the packing gland seal.

Revendications

1. Structure en vue d'actionner une lance de fluide (12) dans l'espace (10) d'un four en vue de détacher, des surfaces chauffées situées à l'intérieur de cet espace, les matières en particules qui s'y sont accumulées, cette structure comprenant:

une enveloppe (22) pour la lance, cette enveloppe ayant une section transversale comportant quatre côtés formant un carré;

une paroi de four (10) comportant une ouverture à travers laquelle l'extrémité avant de l'enveloppe (22) de la lance est introduite pour localiser une buse de décharge (24) de telle sorte qu'un fluide de nettoyage venant de l'intérieur de l'enveloppe de la lance soit projeté sur les surfaces du four qui doivent être nettoyées;

une boîte d'étanchéité (13) montée sur la face extérieure de la paroi du four et autour de l'ouverture pratiquée pour la lance;

un logement allongé à fond ouvert (30) assemblé par son extrémité avant à la boîte d'étanchéité afin que ce logement se déplace longitudinalement lorsque la paroi (10) du four change de position sous l'effet des contraintes thermiques variables imposées au four;

un anneau de guidage (18) monté de façon à pouvoir tourner sur l'extrémité avant du logement, cet anneau comportant une ouverture centrale recevant le logement de la lance;

au moins deux paliers à rouleaux (17) montés sur l'anneau de guidage pour venir s'engager sur les surfaces plates de l'enveloppe de la lance;

un moyen moteur (20) assemblé à l'anneau de guidage pour faire tourner ce dernier, les paliers à rouleaux et l'enveloppe de la lance;

une crémaillère (48) et un pignon (47) montés à l'intérieur de logement allongé et assemblés à l'envellope rotative (22) de la lance pour animer cette dernière d'un mouvement de va-et-vient dans et hors de l'espace du four lorsque cette enveloppe de la lance est entraînée en rotation par le moyen moteur, caractérisée en ce qu'une plaque segmentaire d'étanchéité (14) est disposée autour de l'enveloppe (22) de la lance à proximité immédiate de l'extrémité arrière de la boîte d'étanchéité (13) afin de bloquer la chaleur de rayonnement dégagée par le four, tandis qu'un raccord (23) est prévu entre la plaque segmentaire d'étanchéité (14) et l'anneau de guidage (18), raccord grâce auquel cette plaque d'étanchéité est entraînée en rotation avec l'enveloppe (22) de la lance, tandis que le rayonnement de chaleur est empêché de s'échapper par la boîte d'étanchéité,

2. Structure de commande suivant la revendication 1, caractérisée en ce que la plaque d'étanchéité (14) comprend quatre segments qui sont assemblés chacun à l'anneau de guidage (18) par un support allongé séparé (23).

3. Structure de commande suivant la revendication 2, caractérisée en ce qu'elle comprend un chariot (46) monté sur des voies de roulement (40, 41) à l'intérieur du logement

allongé à fond ouvert (30) pour effectuer un mouvement de va-et-vient pratiquement sur toute la longueur de ce dernier, un moyen en vue de monter le pignon (47) sur le chariot (46) à l'intérieur du système de telle sorte que le pignon définisse la longueur séparant la crémaillère (48) et l'enveloppe (22) de la lance, un tube d'alimentation (21) relié à une source d'alimentation d'un fluide de nettoyage et venant s'emboîter dans l'enveloppe (22) de la lance par l'arrière de cette enveloppe, un joint étanche à presse-étoupe (53) étant monté entre la paroi extérieure du tube d'alimentation et la paroi intérieure de l'enveloppe de la lance, tandis que des galets (72, 73) sont montés sur le chariot et viennent s'engager sur le tube d'alimentation afin que ce dernier reste concentrique par rapport à la paroi intérieure de l'enveloppe de la lance, tout en évitant ainsi d'imposer des contraintes mécaniques au joint étanche à presse-étoupe.

Patentansprüche

1. Anordnung zum Einfahren einer Flüssigkeitslanze (12) in einen Feuerungsraum (10) zur Entfernung angehäuften Teilchenmaterials von erhitzten Oberflächen innerhalb des Feuerungsraums, umfassend eine Verkleidung (22) für die Lanze mit einer vierseitigen, ein Quadrat bildenden Querschnittsanordnung, eine Feuerungswand (10) mit einer Oeffnung, durch welche das Vorderende der Lanzenverkleidung (22) eingeführt wird, um eine Strahldüse (24) so in Stellung zu bringen, dass die Reinigungsflüssigkeit aus der Lanzenverkleidung heraus auf die zu reinigenden Feuerungsoberflächen auftrifft,

einen auf der Aussenseite der Feuerungswand um die Oeffnung für die Lanze herum angebrachten Abdichtungskasten (13),

ein längliches, am Boden offenes Gehäuse (30), das an seinem Vorderende mit dem Abdichtungskasten so verbunden ist, dass das Gehäuse der Länge nach mit der Lageverschiebung der Feuerungswand (10) unter sich ändernden Wärmebelastungen der Feuerung beweglich ist,

einem auf dem Vorderende des Gehäuses drehbar gelagerten Führungsring (18) mit einer die Lanzenverkleidung aufnehmenden Mittenöffnung,

mindestens zwei auf dem Führungsring angebrachten Rollenlagern (17) zum Eingriff mit flachen Oberflächen der Lanzenverkleidung,

mit dem Führungsring verbundene Bewegungsmittel (20) zur Drehung des Führungsrings, der Rollenlager und der Lanzenverkleidung sowie

einer innerhalb des länglichen Gehäuses angebrachten Zahnstange (48) mit Trieb (47), die mit der sich drehenden Lanzenverkleidung (22) verbunden ist, um den Zahnstangentrieb so zu betätigen, dass die Lanzenverkleidung sich bei ihrer Drehung durch die Bewegungsmittel in den Feuerungsraum hinein und aus diesem heraus hin- und herbewegt, gekennzeichnet durch eine geteilte Dichtungsplatte (14), die um die Lanzenverkleidung (22) herum angeordnet ist und sich dicht bei dem Hinterende des Abdichtungskastens (13) befindet, um Abstrahlung von der Feuerung zu sperren, und

eine Verbindung (23) zwischen der geteilten Dichtungsplatte (14) und dem Führungsring (18), wodurch sich die Dichtungsplatte mit der Lanzenverkleidung (22) dreht, während ein Entweichen der Strahlung durch den Abdichtungskasten gesperrt ist.

2. Einfahranordnung nach Anspruch 1, dadurch gekennzeichnet, dass die Dichtungsplatte (14) aus vier Teilen besteht und die Teile jeweils über eine getrennte längliche Stütze (23) mit dem Führungsring 18) verbunden sind.

3. Einfahranordnung nach Anspruch 2, gekennzeichnet durch einen auf Schienen (40, 41) innerhalb des länglichen Gehäuses (3) mit offenem Boden gelagerten Wagen (46) zur Hin- und Herbewegung über praktisch deren ganze Länge, Mittel zum Besfestigen des Triebs (47) auf dem Wagen (46) in einer solchen Anordnung, dass der Trieb die Strecke zwischen der Zahnstange (48) und der Lanzenverkleidung (22) bildet, ein mit einem Reinigungsflüssigkeitsvorrat verbundenes und von der Rückseite der Verkleidung her innerhalb der Lanzenverkleidung (22) verschiebliches Zufuhrrohr (21), eine zwischen der Aussenwand des Zufuhrrohrs und der Innenwand der Lanzenverkleidung angebrachte Stopfbüchsendichtung (53) sowie auf dem Wagen im Eingriff mit dem Zufuhrrohr gelagerte Rollen (72, 73), um das Zufuhrrohr mit der Innenwand der Lanzenverkleidung konzentrisch zu halten und dadurch mechanische Belastung der Stopfbüchsendichtung auszuschalten.

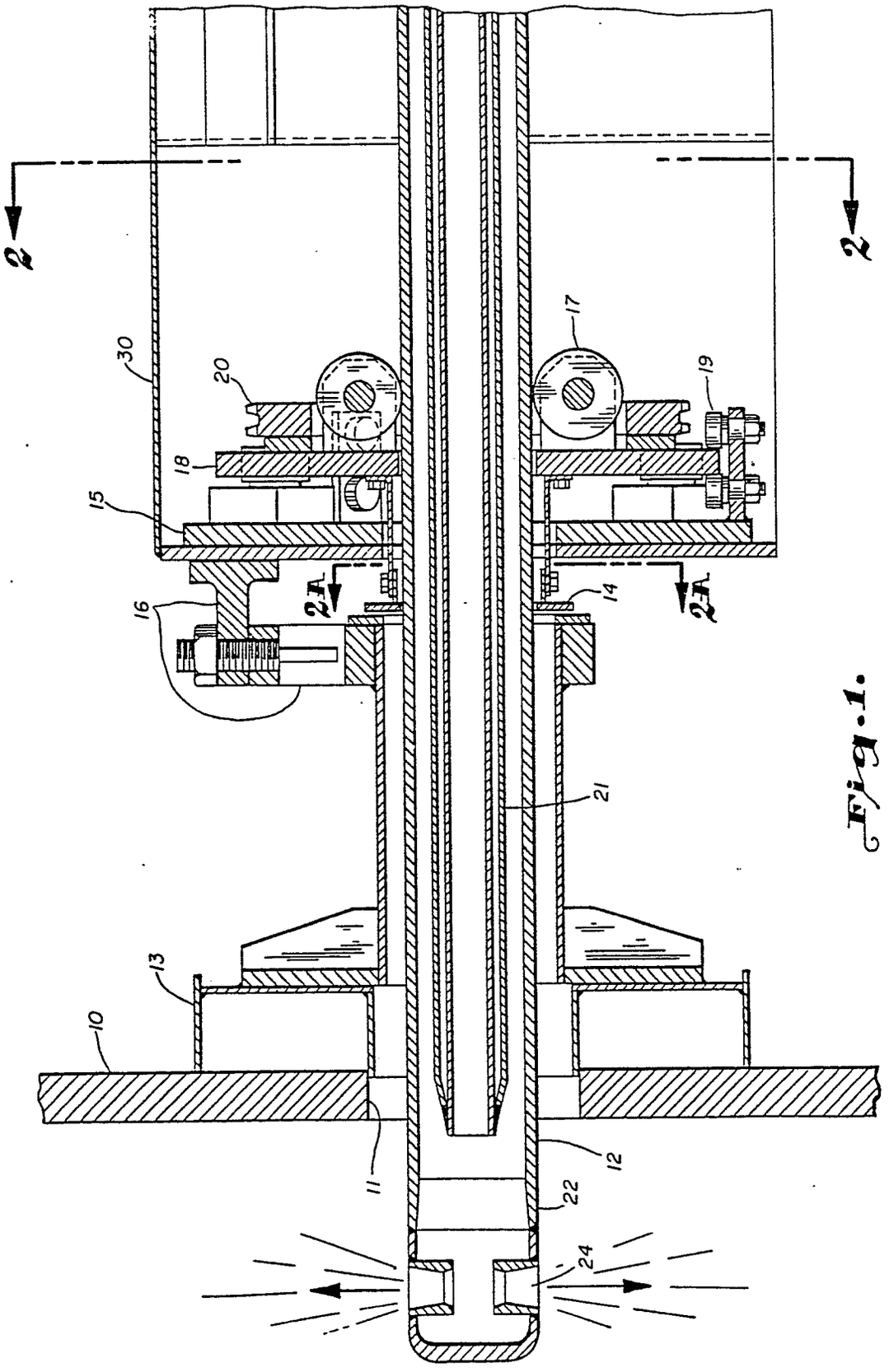


Fig.1.

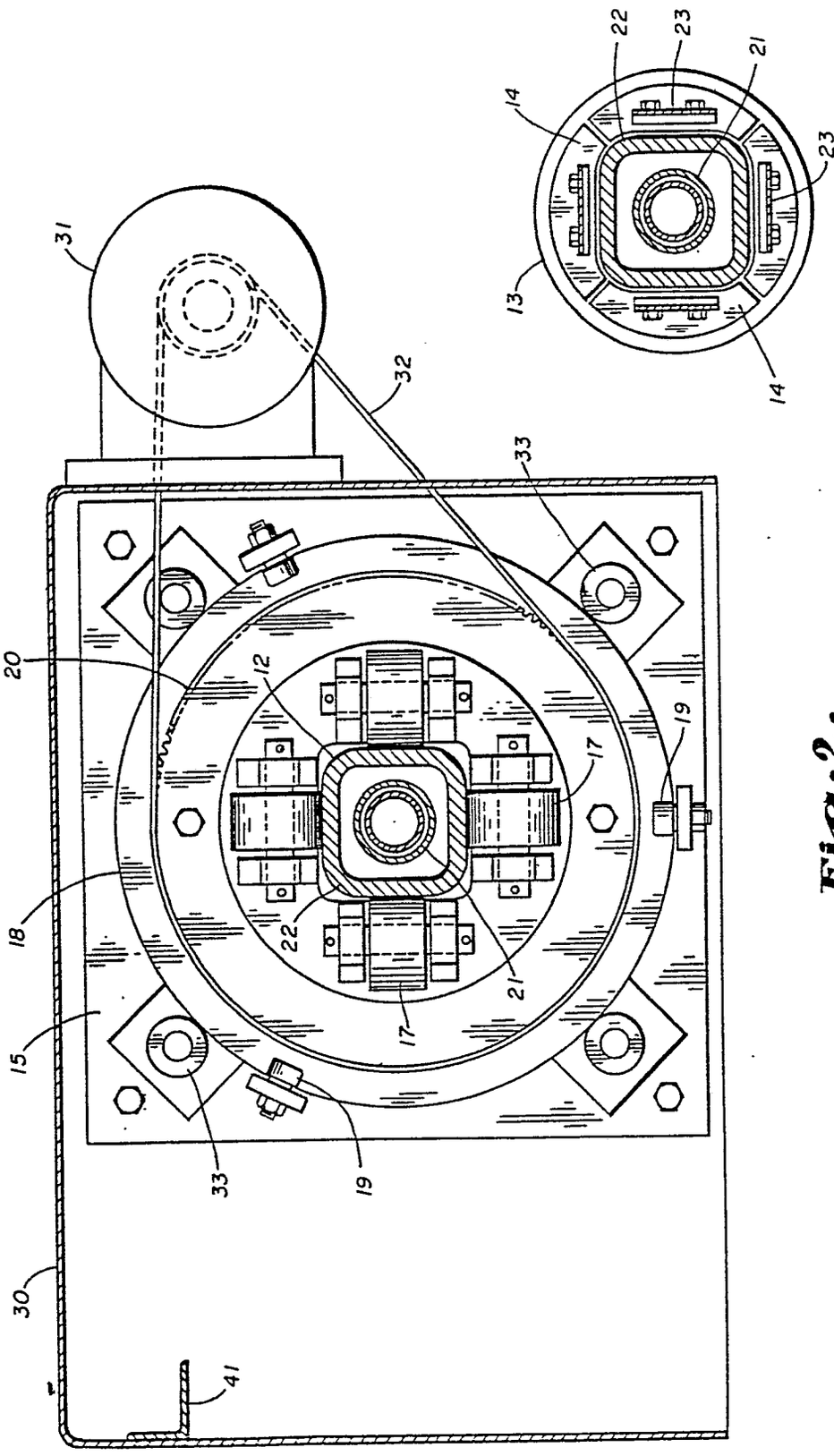
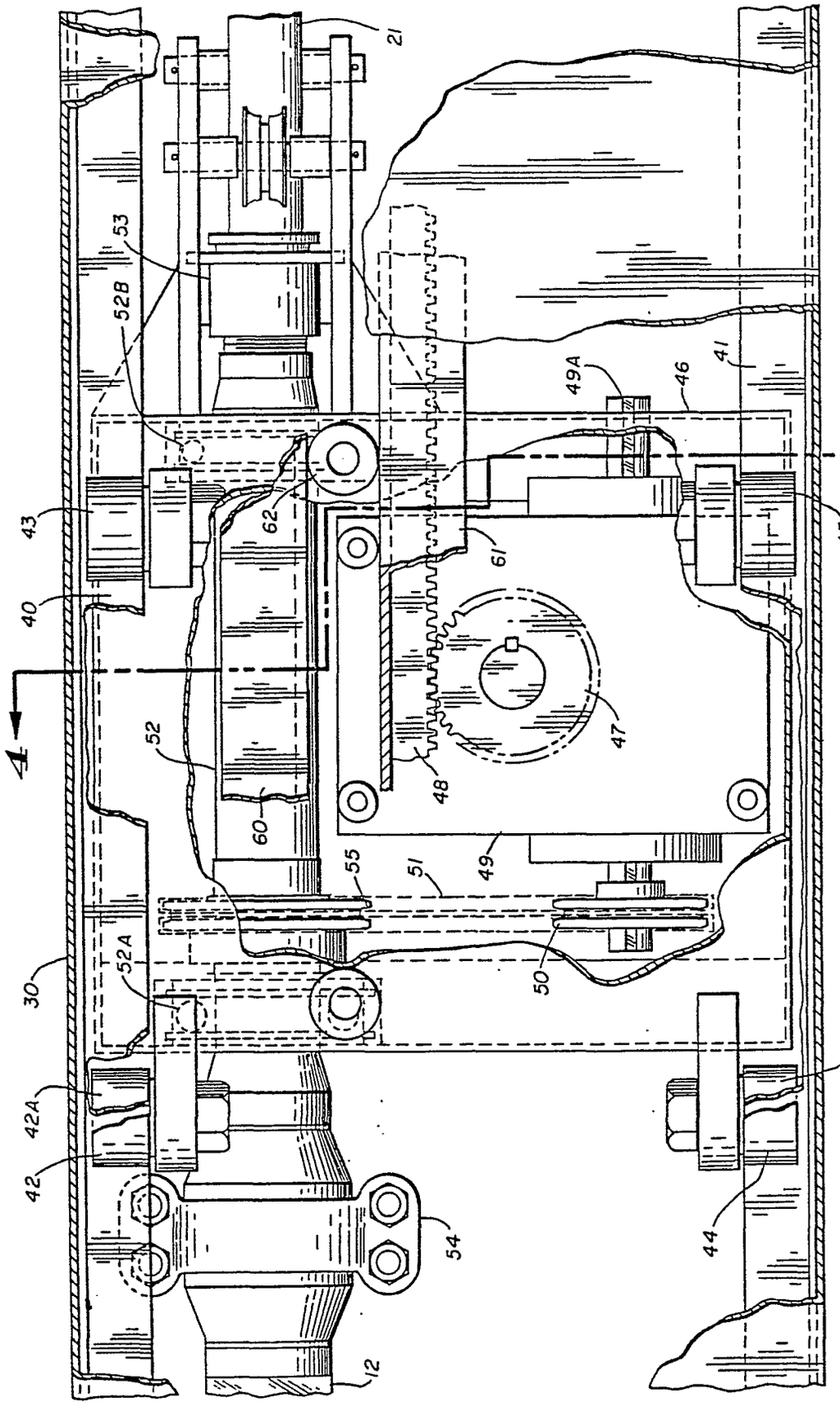


Fig.2.

Fig.2A.


21
53
52B
49A
46
41
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62
61
45
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52A
30
42A
44A
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44
12

Fig. 3.

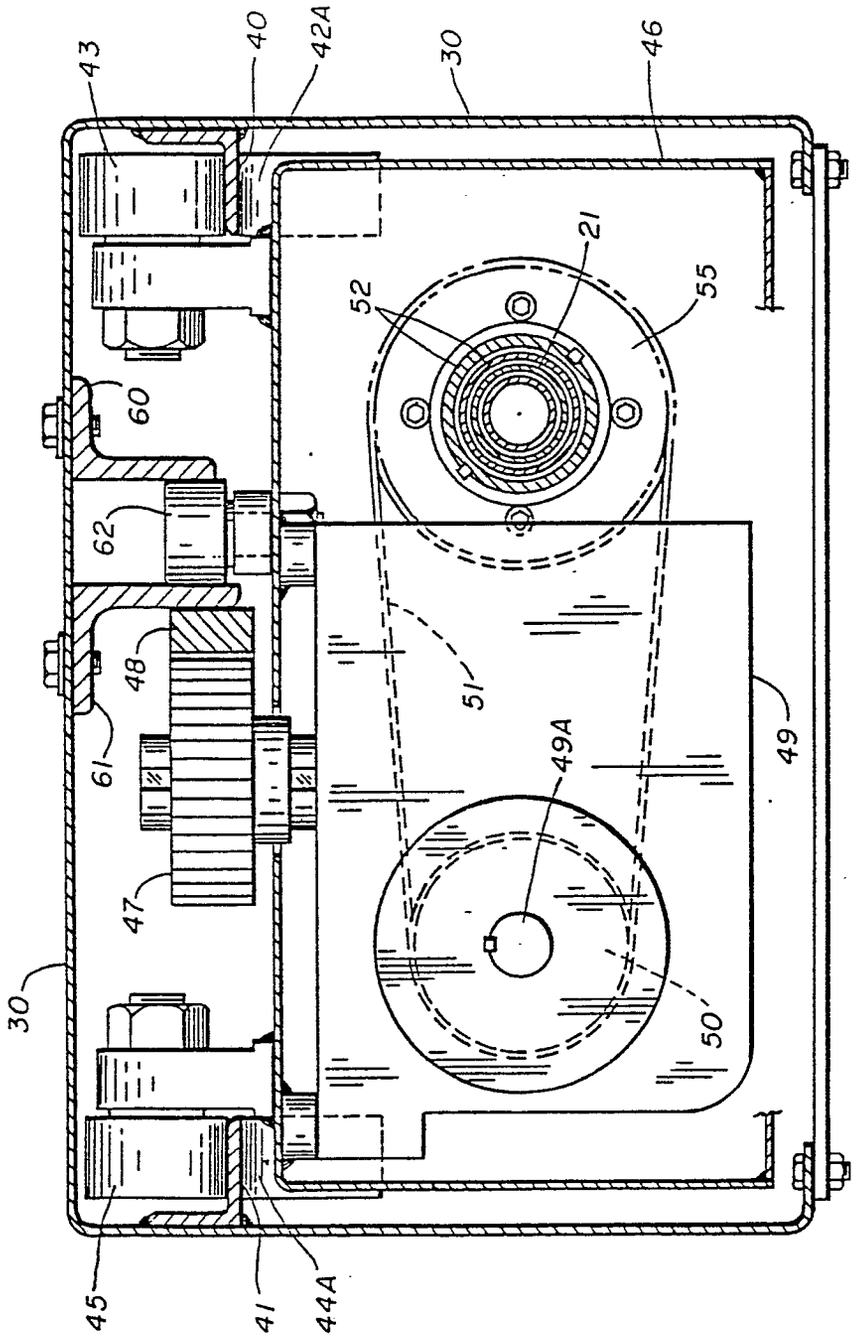

Fig.4.

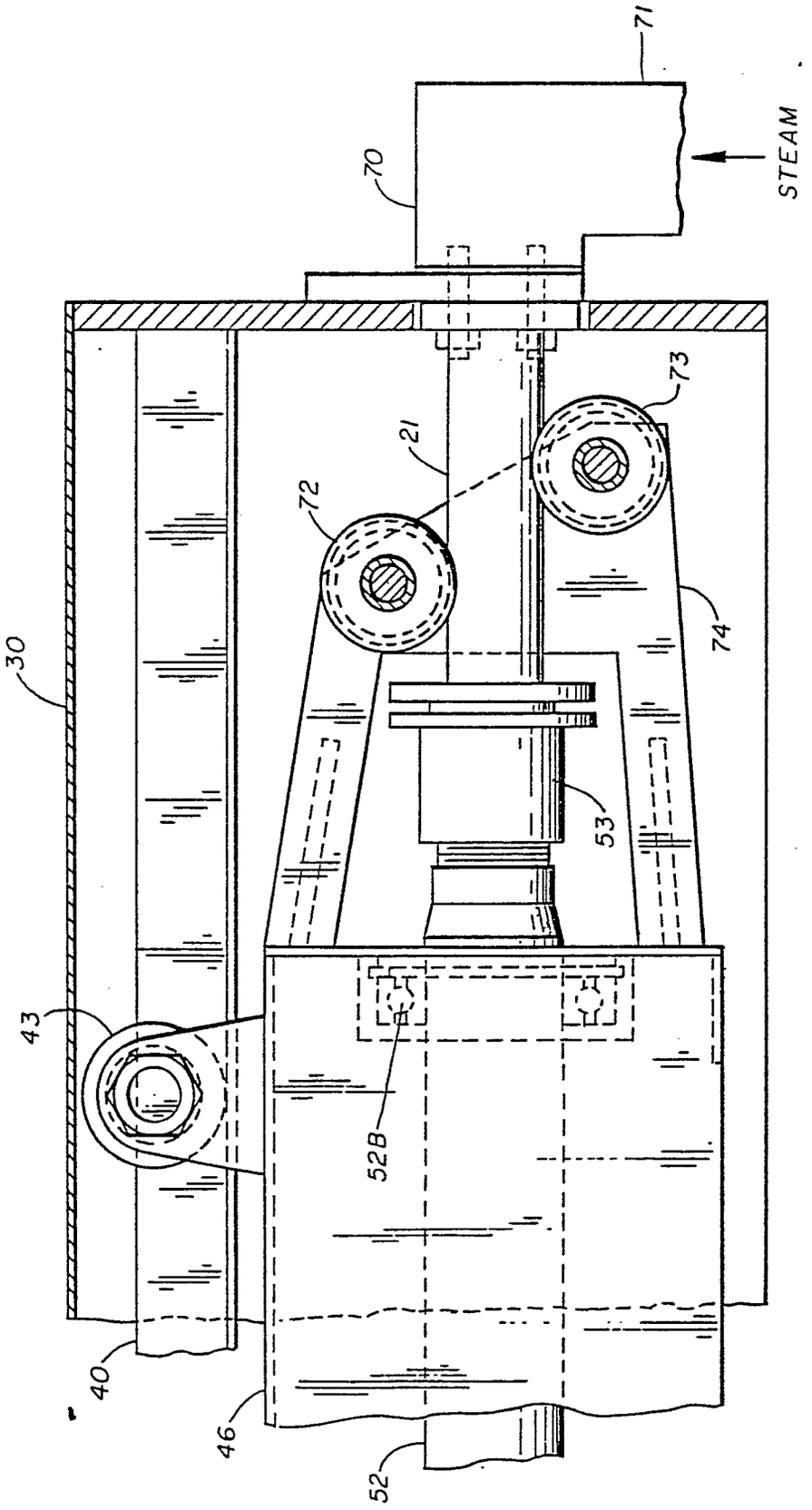

Fig.5.