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(54) Spiral cramp iron bender

(57) The present invention relates to a spiral cramp iron bender, which mainly comprises a bender body (5) and a transmission shaft (6) borne thereon. The bender body comprises a power roller (53), a driven roller (54), and a transporter (55). The transmission shaft comprises a connection end to connect to a screw shaft (7), and the screw shaft comprises a plurality of groove spires in predetermined thread pitches on the surface thereof. The

transmission shaft (6) rolls by power driving, and so rolls the screw shaft (7). As cramp iron is transported to the bender body by the transporter, the power roller (53) guides cramp iron into the groove spire of the screw shaft. The power roller and the driven roller driving guide cramp iron forward rolling around the rolling screw shaft and along one groove spire to the next groove spire round and round, and finally cramp iron is automatically bent to a spiral cramp iron with the predetermined thread pitch.

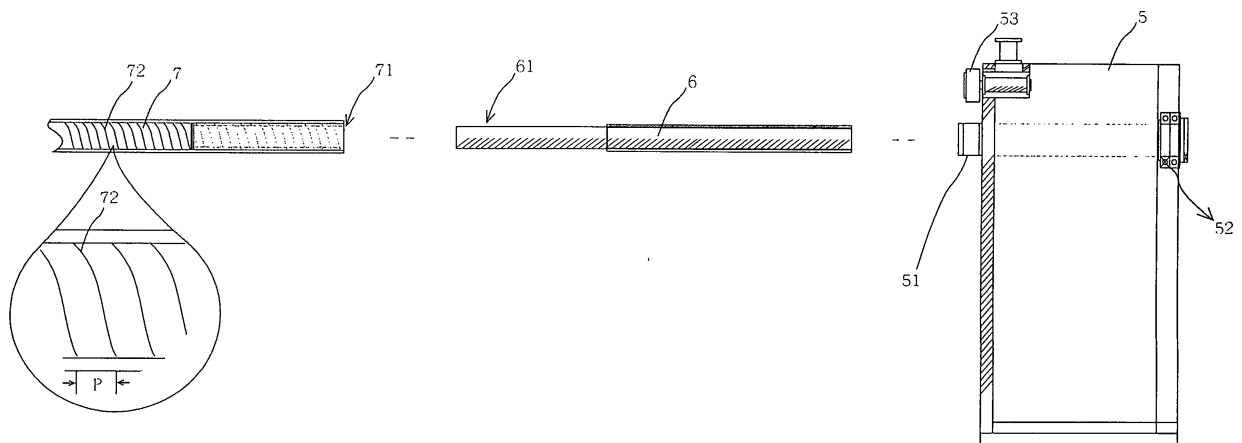


FIG. 1

EP 1 726 379 A1

Description

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

[0001] The present invention relates to a spiral cramp iron bender, especially to a bender comprising a screw shaft with a plurality of equidistant groove spires on the surface thereof. A cramp iron is guided to the first groove spire forward to the next groove spire around the screw shaft round and round, and bent to a spiral cramp iron with a predetermined thread pitch.

2. DESCRIPTION OF THE RELATED ART

[0002] To manufacture a spiral cramp iron in prior arts, normally a bender bends a cramp iron to a stack of circles, and then the stack of cramp iron is pulled out to a spiral form by manpower in some thread pitch. The pull of manpower is unbalance and unstable, so that the thread pitch of the spiral cramp iron is unequal. The prior arts waste time and manpower, and the quality control of the product cannot be achieved. Moreover, manpower manufacturing often hurts labors and causes damages.

[0003] Some attempts at automatic bender for spring like spiral cramp iron manufacturing were tried in prior arts. However the qualities of thread pitches or lengths control were failed. A better invention is needed for quality and efficiency upgrade.

SUMMARY OF THE INVENTION

[0004] To resolve the foregoing defects, the primary object of the present invention is to provide an automatic mass manufacturing spiral cramp iron bender to bend cramp iron into a proper thread pitch and length without manpower.

[0005] Another object of the present invention is to provide a simple structure bender to bend forward cramp iron automatically to a spiral cramp iron with a predetermined thread pitch and length.

[0006] For the aforementioned objects, the present invention is a spiral cramp iron bender comprising:

- a bender body, which comprises a power roller driven directly by power, a driven roller, a transporter, and a shaft bearing for a transmission shaft;
- a transmission shaft, which comprises a connection end for a screw shaft connecting, and the other end of the transmission shaft is set passed through the shaft bearing to roll when power is driving;
- a screw shaft, which comprises a hollow sheath end to connect with the connection end of the transmission shaft, and a plurality of groove spires in a predetermined equidistant thread pitch on the surface thereof;
- wherein a shaft base is set in a position of the bender

body corresponding to the shaft bearing for the transmission shaft setting and rolling.

[0007] Wherein the connection end of the transmission shaft can be connected with the hollow sheath end of the screw shaft by screwing, inserting, or welding. The screw shaft is switchable to different standards of thread pitch and circles of groove spires for manufacturing various specific spiral cramp irons when needed.

[0008] With foregoing structure of the present invention, as a cramp iron is transported through the transporter to the bender body, the cramp iron will be guided to the groove spires of screw shaft. The power roller and the driven roller of the bender body guide the cramp iron forward rolling around the rolling screw shaft and along one groove spire to the next groove spire round and round, and finally the cramp iron is automatically bent to a spiral cramp iron with a predetermined thread pitch. The present invention is laborsaving and timesaving for manufacturing spiral cramp iron.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

Fig. 1 is a diagram of the exploded sectional view of the preferred embodiment of the present invention; Fig. 2 is a diagram of the sectional view of the preferred embodiment of the present invention; Fig. 3 is a diagram of the front view of the preferred embodiment of the present invention; Fig. 4 is a diagram of the perspective view of the preferred embodiment of the present invention; Fig. 5 is a diagram of the lateral view of the preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0010] In the following description of the embodiments of the present invention, please refer to the drawings for further details description.

[0011] As shown in Fig. 1 and Fig. 2, a preferred embodiment of the present invention comprises a bender body 5, a transmission shaft 6, and a screw shaft 7, wherein the bender body 5 at least comprises a power roller 53 which is directly driven by power, a driven roller 54 (not shown in Fig. 1 nor Fig. 2, please refer to Fig. 3 and Fig. 4), and a transporter 55 (not shown in Fig. 1 nor Fig. 2, please refer to Fig. 3 and Fig. 4). The transporter 55 comprises a plurality of transport rollers 551 (not shown in Fig. 1 nor Fig. 2, please refer to Fig. 3 and Fig. 4), and the bender body 5 further comprises a shaft bearing 51 for the transmission shaft 6 in a proper position, and a shaft base 52 in a position corresponding to the shaft bearing 51. The transmission shaft 6 is passed through the shaft bearing 51 and set on the shaft base 52.

[0012] One end of the transmission shaft 6 is a con-

nection end 61 for the screw shaft 7 connecting, and the other end of the transmission shaft 6 is passed through the shaft bearing 51 of the bender body 5. The transmission shaft 6 will be rolling when power is driving.

[0013] One end of the screw shaft 7 is a hollow sheath end 71, which is screwed to and welded with the connection end 61 of the transmission shaft 6. The screw shaft 7 also comprises a plurality of groove spires 72 with a proper thread pitch "P" on the surface thereof.

[0014] Please also refer to Fig. 3 and Fig. 4, a front view and a perspective view of the preferred embodiment of the present invention. A cramp iron 81 set on a cramp iron base 8 is transported to the bender body 5 by the transporter 55. The cramp iron 81 is rolled and transported by the transport rollers 551 to the groove spire 72 of the screw shaft 7. The power roller 53 and the driven roller 54 of the bender body 5 guide the cramp iron 81 forward rolling around the rolling screw shaft 7 and along the groove spire 72 to the next groove spire 72 round and round. Finally the cramp iron 81 is bent to a spiral cramp iron 9 with a proper thread pitch "P" as shown in Fig. 4.

[0015] For further illustration, please refer to Fig. 5, a lateral view of the preferred embodiment of the present invention. As the cramp iron 81 is transported through the transporter 55 to the bender body 5, the cramp iron 81 will be guided to the first track of the groove spires 72 of screw shaft 7. The power roller 53 and the driven roller 54 of the bender body 5 guide the cramp iron 81 forward rolling around the rolling screw shaft 7 and along the groove spire 72 to the next groove spire 72 round and round. Finally the cramp iron 81 is automatically bent to a spiral cramp iron 9 with a proper thread pitch "P" and a predetermined length (rounds of the spiral cramp iron), and can be mass manufactured without manpower.

[0016] The screw shaft 7 is switchable to different standards of thread pitch and circles of groove spires for manufacturing specific spiral cramp iron 9.

[0017] The foregoing describing of the preferred embodiment of the present invention is for the purpose of illustration and description. It is not intended to exhaustive or to limit the present invention to the precise from disclosed. Many other possible modifications and variations can be made without departing from the scope of the present invention, which following claims are depended.

Claims

1. A spiral cramp iron bender comprising:

a bender body, which comprises a power roller driven directly by power, a driven roller, a transporter, and a shaft bearing for a transmission shaft;

a transmission shaft, which comprises a connection end for a screw shaft connecting, and

the other end of the transmission shaft is set passed through the shaft bearing to roll when power is driving;

a screw shaft, which comprises a hollow sheath end to connect with the connection end of the transmission shaft, and a plurality of groove spires in a predetermined equidistant thread pitch on the surface thereof;

wherein a cramp iron is transported through the transporter to the bender body, the cramp iron will be guided to the groove spires of screw shaft, then the power roller and the driven roller of the bender body guide the cramp iron forward rolling around the rolling screw shaft and along one groove spire to the next groove spire round and round, and finally the cramp iron is automatically bent to a spiral cramp iron with the predetermined thread pitch.

2. A spiral cramp iron bender according to the claim 1, wherein a shaft base is set in a position of the bender body corresponding to the shaft bearing.

3. A spiral cramp iron bender according to the claim 1, wherein the connection end of the transmission shaft can be connected with the hollow sheath end of the screw shaft by screwing, inserting, or welding.

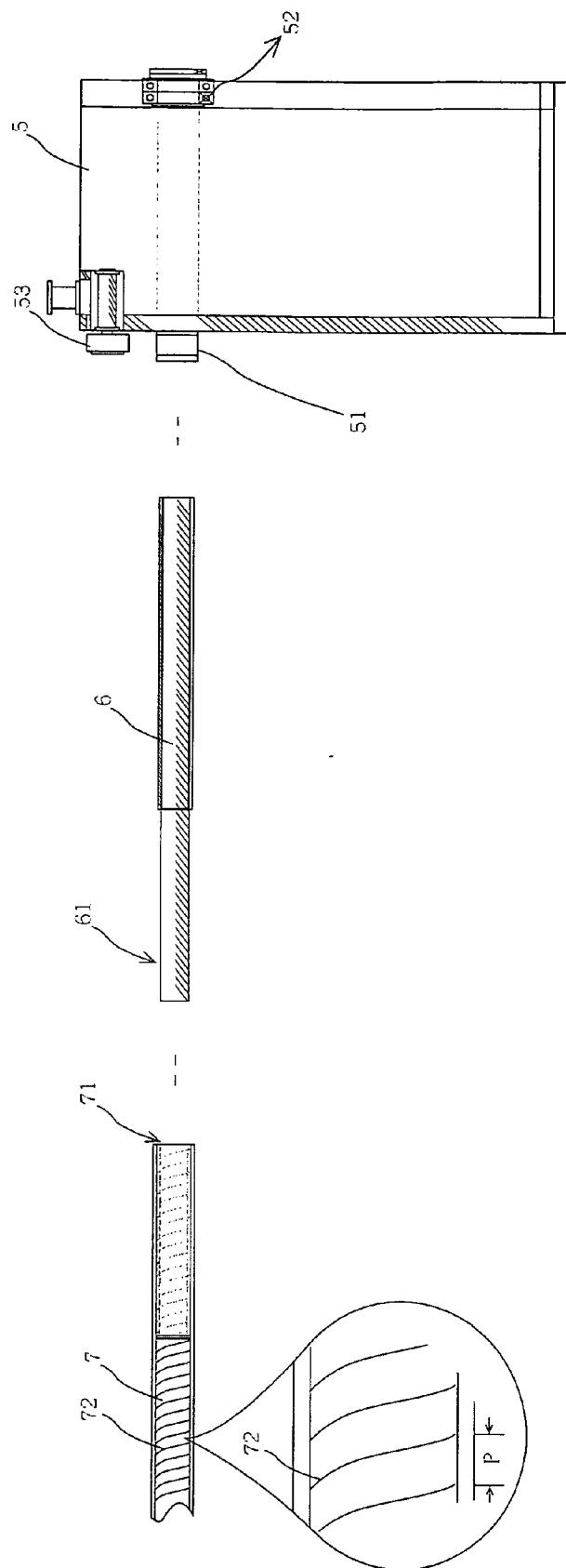


FIG. 1

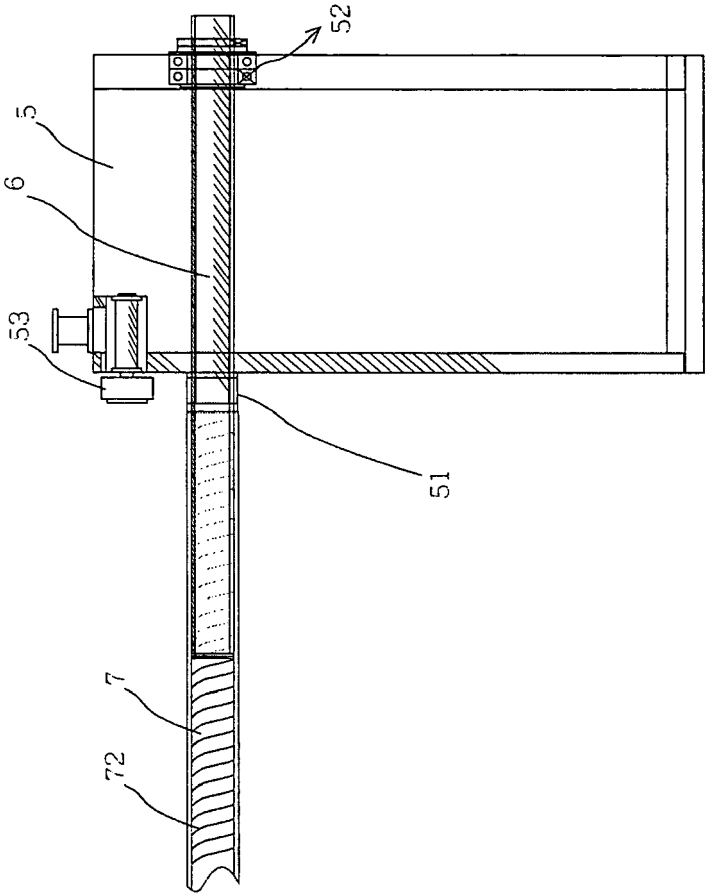


FIG 2

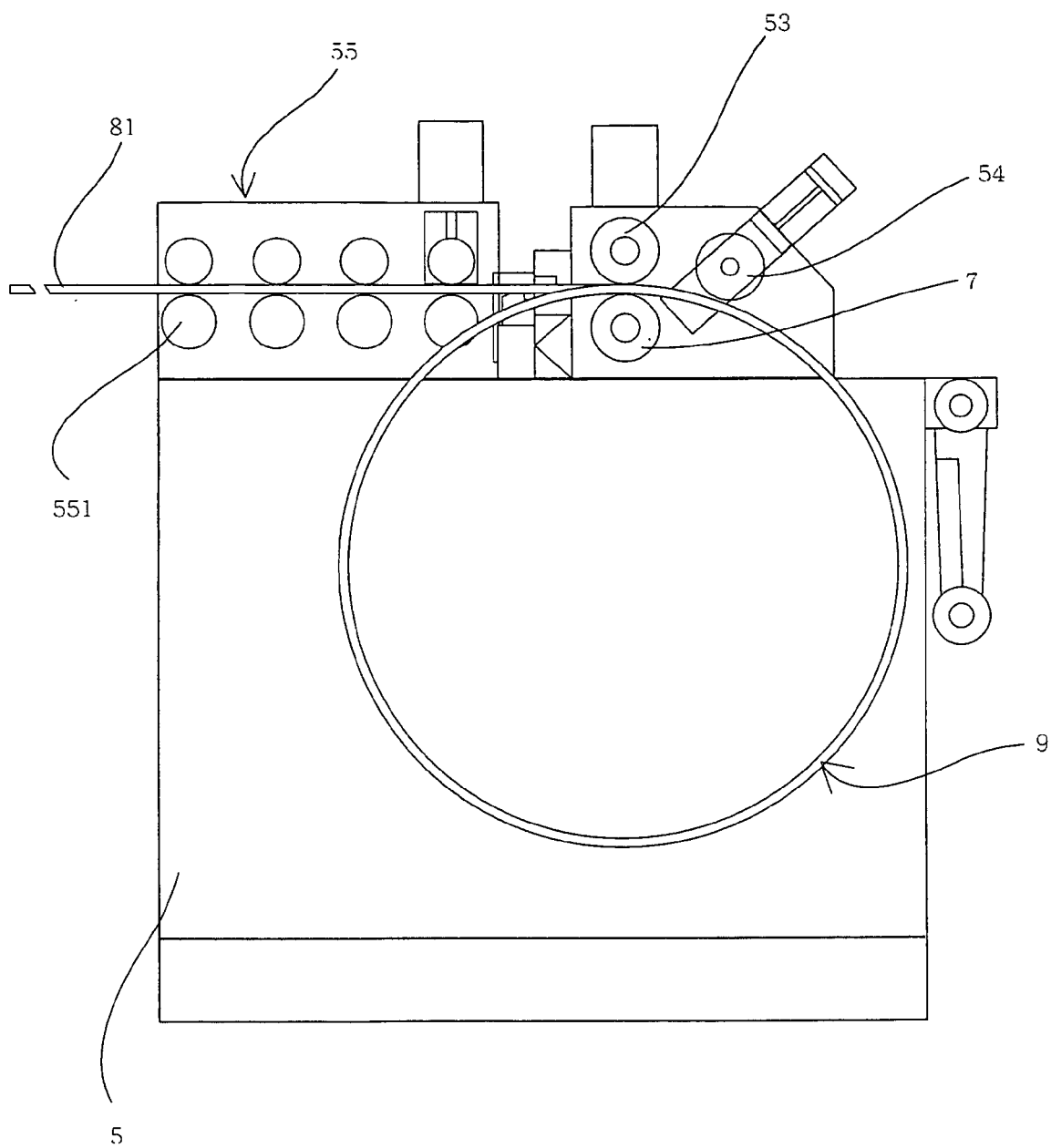


FIG 3

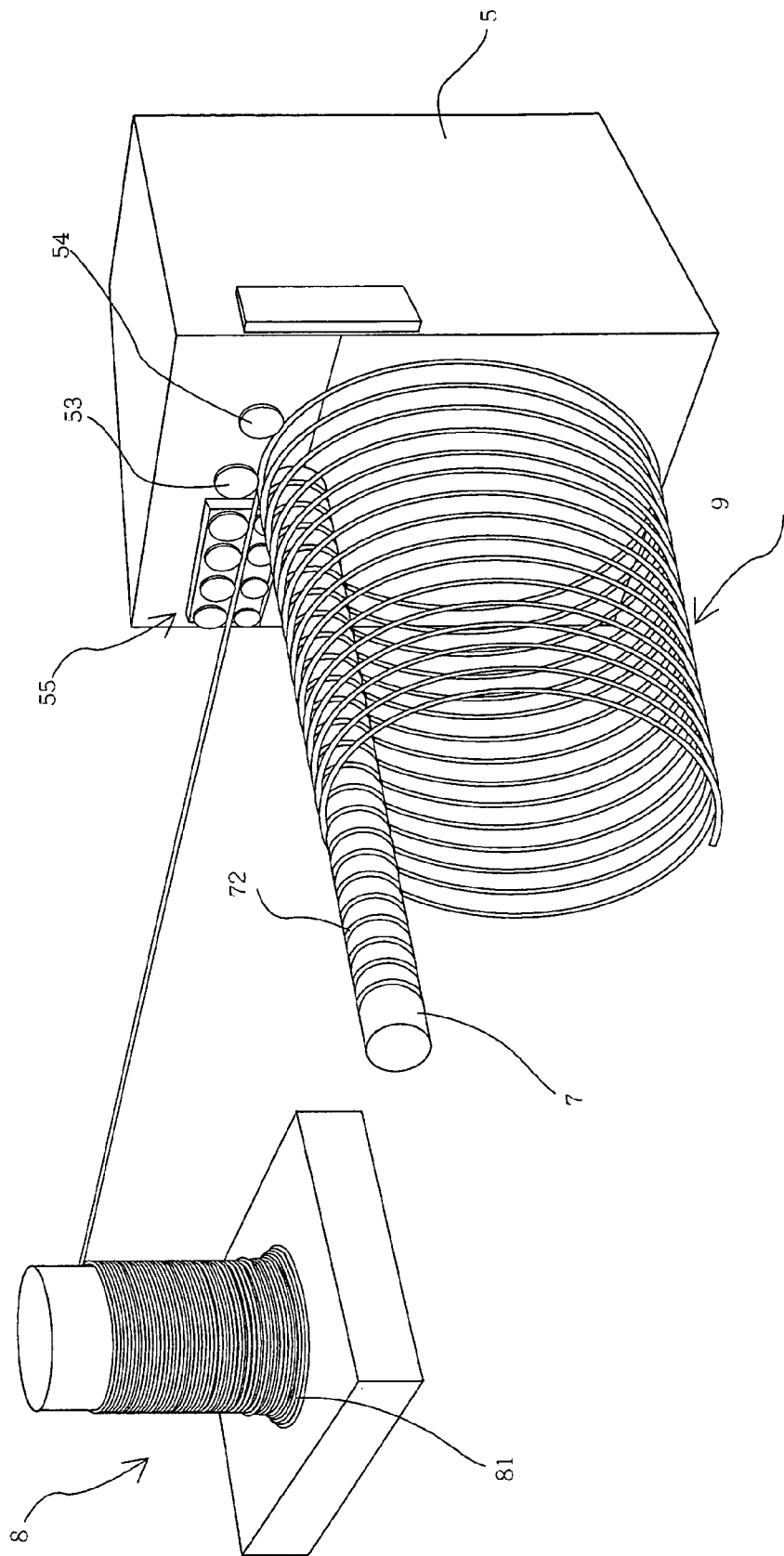


FIG 4

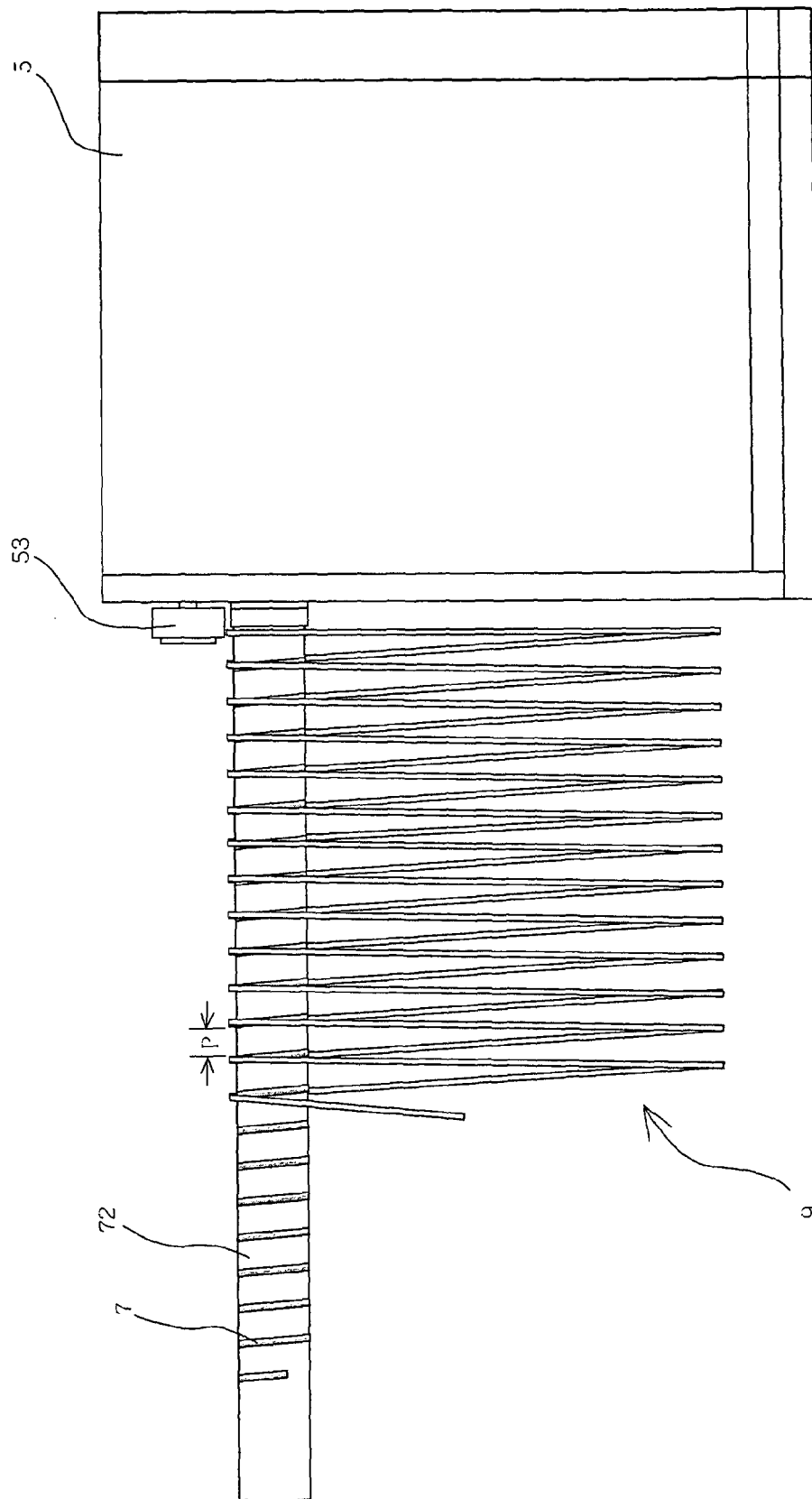


FIG 5



DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			B21F B21D E04C B21B B21C E21B
Place of search		Date of completion of the search	Examiner
Munich		29 August 2006	Meritano, L
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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 01 6099

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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29-08-2006

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