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EUROPEAN PATENT APPLICATION

⑲ Application number: 81830202.8

⑤① Int. Cl.³: **D 03 D 47/12**

⑳ Date of filing: 21.10.81

⑳ Priority: 18.09.81 IT 2402781

④③ Date of publication of application:
04.05.83 Bulletin 83/18

⑥④ Designated Contracting States:
BE CH DE FR GB LI NL SE

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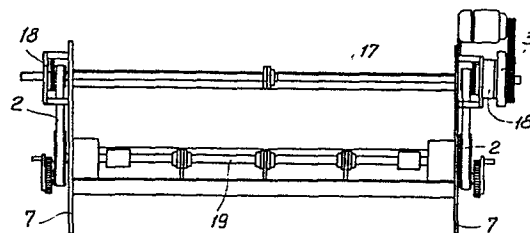
⑤④ **Mechanical assembly for reciprocally driving the pliers bearing tape in a textile loom.**

⑤⑦ The present invention relates to a mechanical assembly, effective to reciprocally driving the pliers bearing tapes in textile looms.

This mechanical assembly essentially comprises a toothed pulley eccentrically thereto there is pivoted a spur gear, effective to provide a planetary movement in such a way as to drive a slider with a rectilinear reciprocating movement.

To the slider a toothed belt is associated with, through transmission members, transmits movement to a further spur gear effective to reciprocate the pliers bearing tape.

Fig 5



BACKGROUND OF THE INVENTION

The present invention relates to a mechanical assembly, effective to reciprocately driving the pliers bearing tape in a textile loom.

As it is known, presently in many looms the weft threads are inserted into the warp threads by means of pliers pairs, as suitably designed and driven with a reciprocating movement, in opposite directions.

Said pliers as mounted at one end of corresponding tapes, as provided with a plurality of cross slots, in such a way as to be able of engaging with spur gears.

These latter are reciprocated by means of driving mechanisms which are usually very complicated, because of the great amplitude of rotation to be transmitted to said spur gears.

Practically the thereinabove cited driving mechanisms generally comprise large diameter pulleys, cooperating with connecting rods and cranks effective to transform the movement and, accordingly, they have a great inertial mass.

This fact acts against obtaining a suitable

evenness in the variations and reversions of the movements of the weft thread inserting pliers.

SUMMARY OF THE INVENTION

Accordingly the task of the present invention is to eliminate the thereinabove cited drawback, by providing a mechanical assembly, effective to reciprocately driving the pliers bearing tapes in textile looms, having drastically reduced inertial masses.

Within said task, it is a main object of the present invention to provide such a mechanical assembly, effective to reciprocately driving the pliers bearing tapes in textile looms, which comprises a reduced number of component parts, effective to mutually cooperate, in such a way as to provide a greatly efficient and sure operating assembly.

The task and object thereinabove mentioned, as well as yet other objects which will become more apparent hereinafter are achieved by a mechanical assembly effective to reciprocately driving the pliers bearing tapes in textile looms, characterized in that it comprises a toothed pulley, eccentrically thereto there is pivoted a spur gear, supporting an arm member at one end thereof there is articulated a slider rigid with a toothed belt, said spur gear meshing with an internal gear, said toothed belt engaging with a second

spur gear, meshing with said pliers bearing tape, said toothed pulley being driven, through a belt or the like driving member, by a driving pulley and eccentrically supporting the axis of said first spur gear meshing with said internal gear as mounted cantilever-wise on said loom shoulder.

Advantageously said driving pulley is mounted at one end of a high speed operating shaft, bearing a brake assembly at both ends thereof and effective to transmit movement to the two ends of the swingable shaft.

Owing to this approach the possibility is eliminated of possible torsion phenomena on said swingable shaft during the braking, which would occur in looms provided with a brake assembly at the motor or at one end only of the shaft.

Said first spur gear supports an arm member or crank, on the pin thereof there is pivoted a slider, formed by two adjoining plates and effective to clamp a portion of an endless toothed belt which, through transmission members and a tension member, engages the shaft or the second spur gear, this latter meshing with said pliers bearing tape.

In particular, said slider and crank may be joined to one another by means of interposed connecting

Furthermore, in order to restrain the tapes from vibrating, which would damage the warp threads, and to control the shed opening, there is provided a device which restrains the tape only at the edge opposite to the comb, thereby said tape is able of sliding in a position nearly adhering to said comb.

Said tape guiding device consists of a L-shaped section, made rigid with the loom slay and bearing, at the free end of its horizontal wing, a plurality of vertically extending shaped plates, as evenly spaced, and provided, at the top thereof, with a parallel wall recess: at the top of the vertical wing of said section there is fixed a resilient material rectangular cross-section rod, provided with a suitably stiffened and abrasion resistant surface.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the mechanical assembly effective to reciprocately driving the pliers bearing tapes in textile looms, according to the present invention, will become more apparent from the figures of the accompanying drawings, relating to a preferred and essentially indicative embodiment of the invention and where:

fig.1 is a schematic side view illustrating the mechanical assembly according to the present invention;

fig.2 is a perspective view illustrating that same mechanical assembly;

fig.3 is a detail view illustrating the fixed spur gear and the planetary gear as eccentrically mounted to the driven pulley;

fig.4 illustrates the spur gear effective to transmit the reciprocating movement to the pliers bearing tape;

fig.5 is a plan view illustrating the arrangement of the mechanical assembly on the two shoulders of a textile loom provided with a high speed operating shaft;
and

fig.6 is a cross-section view illustrating the tape guiding device.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the number references of the figures of the accompanying drawings, the mechanical assembly according to the present invention comprises a toothed pulley 1 driven, through a belt 2 or other

suitable driving member, by a driving pulley 3.

This toothed driving pulley eccentrically supports the axis 4 of a spur gear 5, meshing with the teeth of an internal gear 6, as fixed, cantilever-wise, on the shoulder 7 of the loom.

Said spur gear, in turn, supports a crank 8 to the pin thereof there is pivoted a slider 9, formed by two adjoining plates.

The slider 9 is effective to clamp a portion of a toothed belt 10 which, through transmission members 11 and a tension member 12, engages the shaft 13 of a further spur gear 14.

Practically, by rotating the pulley 1, the axis of the spur gear 5 moves on a circular path, in such a way that said spur gear is able of meshing with the teeth of said fixed internal gear 6.

Accordingly, this latter is driven with a planetary movement, in such a way as to cause the pin of the crank 8 to rectilinearly reciprocate.

The slider 9, therefore, drives, with a like reciprocating movement, the toothed belt 10, thereby causing the spur gear 14 to rotatively reciprocate.

This latter engages the pliers bearing tape 15, restrained in the guide 16, thereby causing said tape to reciprocate.

It is moreover provided the possibility of replacing the direct fixing of the slider 9 by connecting rods, in such a way as to vary the stroke of said pliers bearing tape.

Advantageously, said driving pulley 3 is mounted at one end of a high speed operating shaft 17, bearing at both ends thereof a braking assembly 18, effective to transmit movement to the two ends of the swingable shaft 19.

Moreover, it is possible to provide for the use of a tape guiding device 20, formed by a L-shaped section member 21 made rigid with the loom slay 22.

The vertical wing 21' of said section member is located at one side of the loom comb 23 and supports, at the top thereof, an elastomeric or plastics material rod 24, provided with a suitably stiffened and abrasion resistant surface.

On the free edge of that same section member there are fixed a plurality of shaped plates 25 as evenly spaced at adjoining positions.

These plates are provided with a top recess 26 in such a way as to jointly provide a sliding guide effective to restrain an edge of the tapes 27 bearing the pliers 28.

It should be noted that the aforesaid resilient material rod 24 is located at a slightly lower level than the theretical sliding plane of said tapes, in order not to hinder the passage of the warp threads 29, not rised by the heddles.

That same rod, anyhow, advantageously acts as a damping member, against possible vibrations of said pliers bearing tapes.

From the above description and the observation of the figures of the accompanying drawings the great functionality and use facility characterizing the mechanical assembly effective to reciprocately driving the pliers bearing tapes in textile looms according to the present invention are self-evident.

Obviously the mechanical assembly has been illustrated and described only by way of an indicative and not limitative example, and only to demonstrate the practicing and main characteristics of the present invention and, accordingly, it should be pointed out that it is susceptible to all of variations and modifications as falling within the scope of the invention.

C L A I M S

1- A mechanical assembly effective to reciprocately driving the pliers bearing tapes in textile looms, characterized in that it comprises a toothed pulley, eccentrically thereto there is pivoted a spur gear, supporting an arm member at one end thereof there is articulated a slider rigid with a toothed belt, said spur gear meshing with an internal gear, said toothed belt engaging with a second spur gear, meshing with said pliers bearing tape, said toothed pulley being driven, through a belt or the like driving members by a driving pulley and eccentrically supporting the axis of said first spur gear meshing with said internal gear as mounted cantilever-wise on said loom shoulder.

2- A mechanical assembly, according to claim 1, characterized in that said driving pulley is mounted at one end of a high speed operating shaft, said shaft supporting a braking member at both ends and being effective to transmit movement to both ends of a swingable shaft.

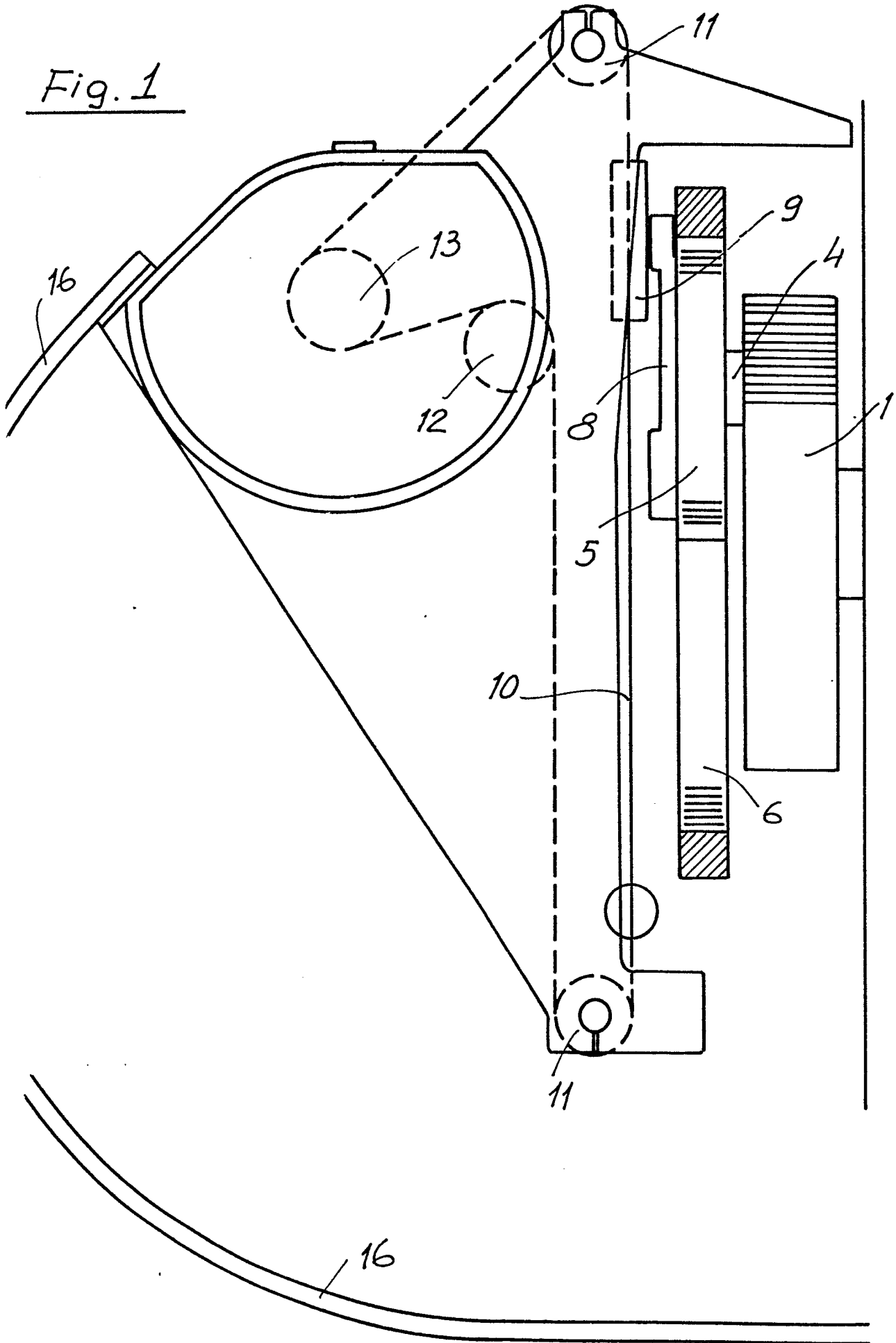
3- A mechanical assembly, according to one or more of the preceding claims, characterized in that said first spur gear supports an arm member or crank, on the pin thereof there is pivoted said slider, formed by two adjoining plates and effective to clamp a portion of an endless toothed belt which, through transmission

members and a tension member engages the shaft of said second spur gear meshing with said pliers bearing tape.

4- A mechanical assembly, according to one or more of the preceding claims, characterized in that said slider and crank are joined to one another by means of interposed rod members.

5- A mechanical assembly, according to the preceding claims, characterized in that it provides for the use of a tape guiding device, formed by a L-shaped section made rigid with the loom slay and bearing, at the free end of its horizontal wing, a plurality of evenly spaced vertically extending shaped plates provided, at the top thereof, with a vertically extending wall recess, at the top of the vertical wing of said section there being fixed a resilient material rectangular cross-section rod, as provided with a stiffened and abrasion resistant surface.

Fig. 1



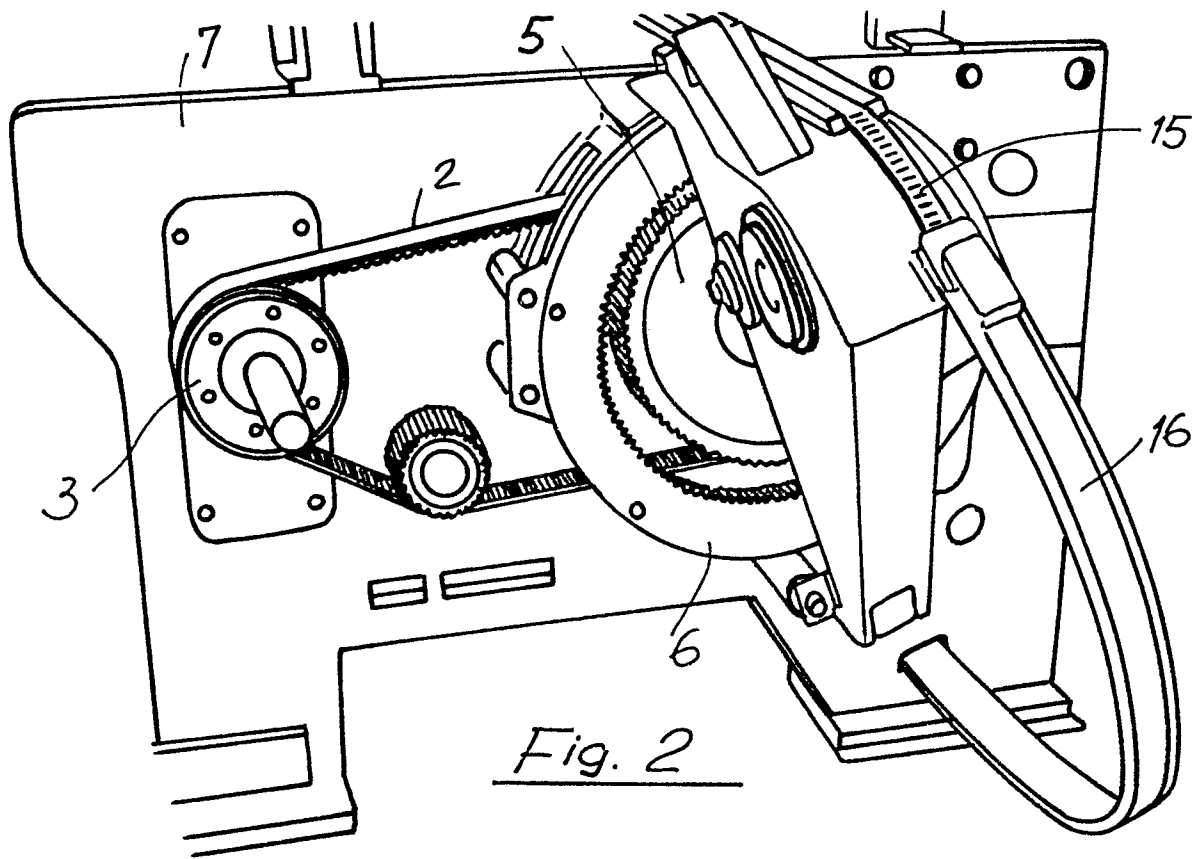


Fig. 2

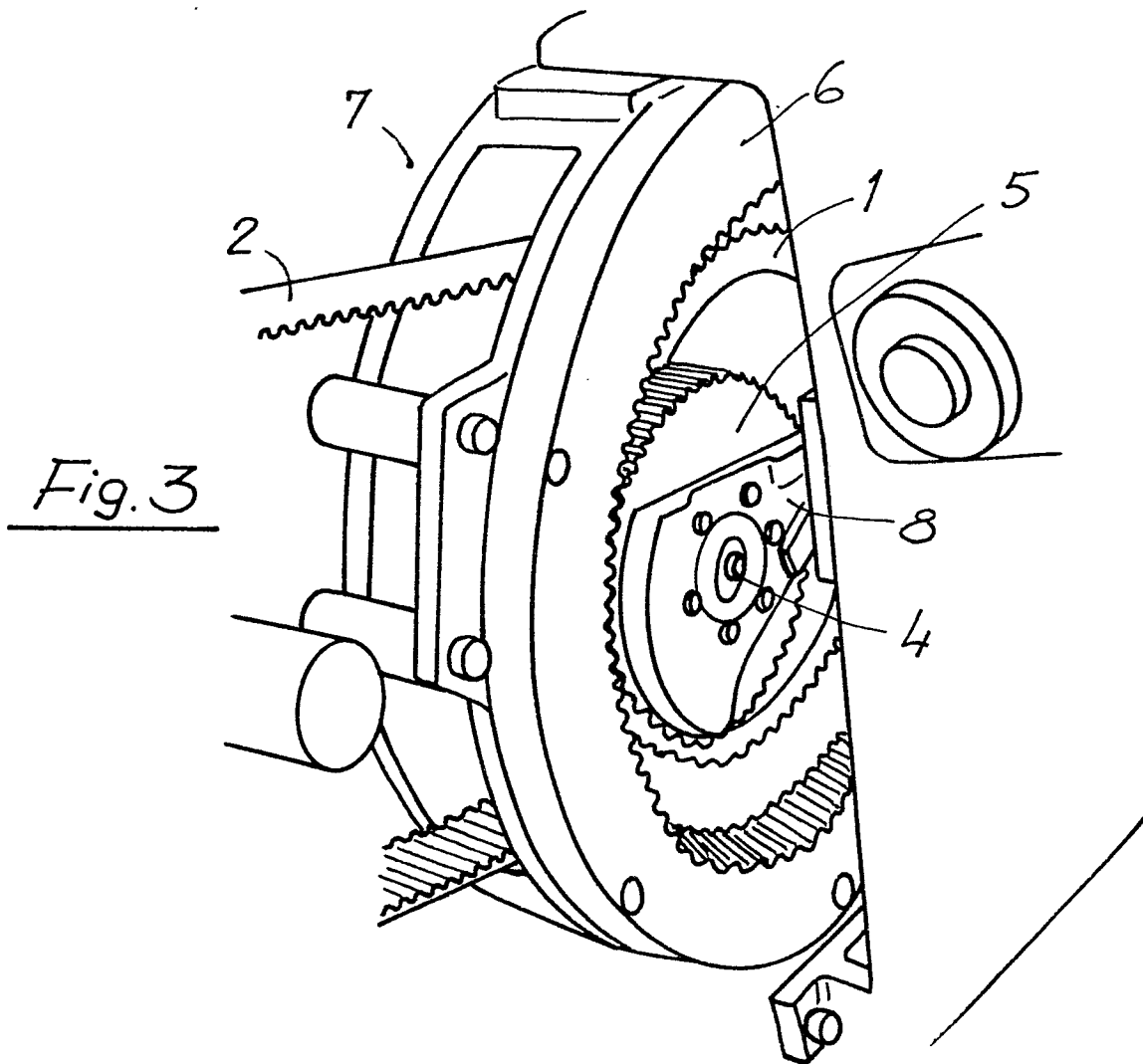


Fig. 3

Fig. 4

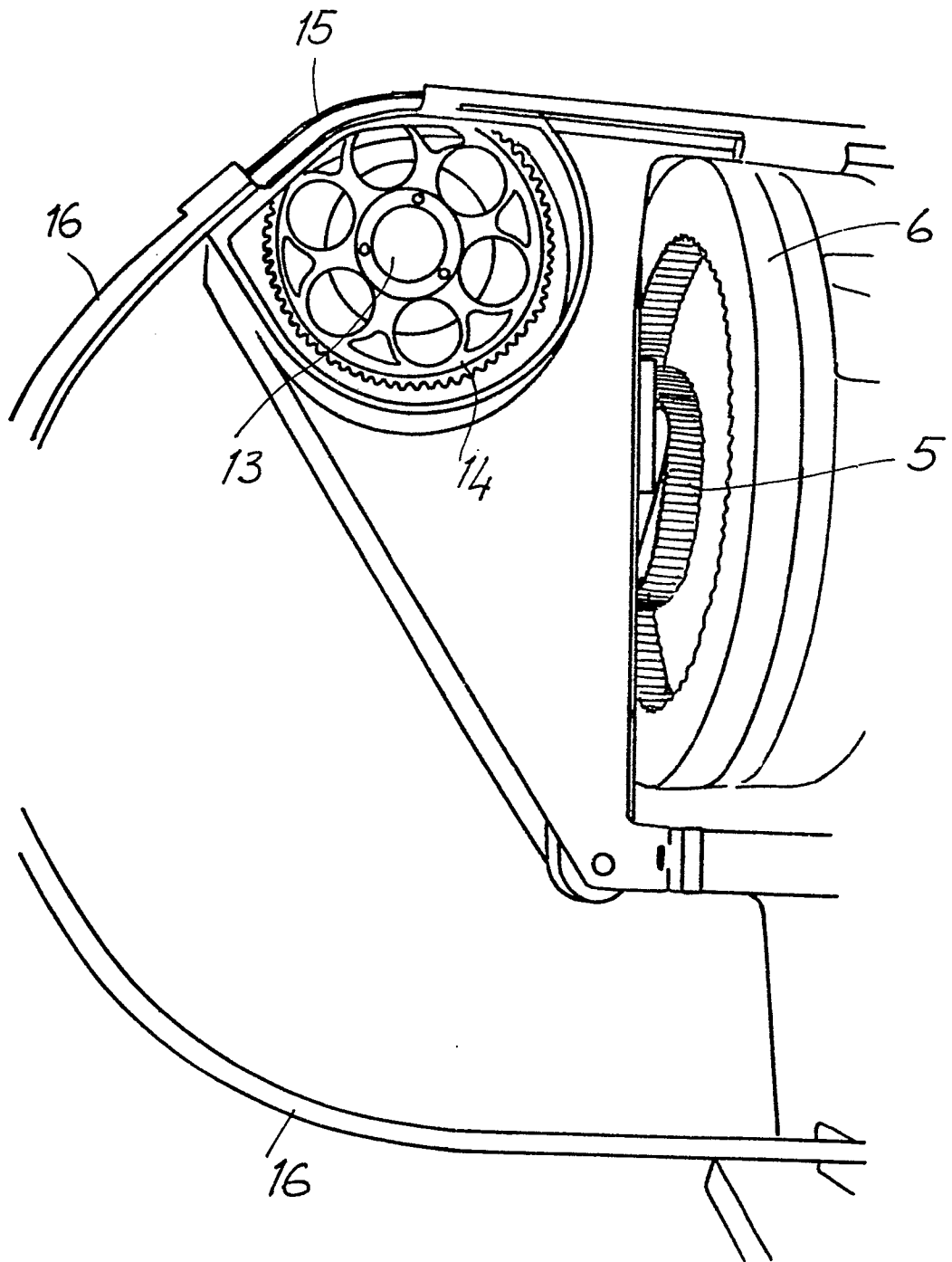
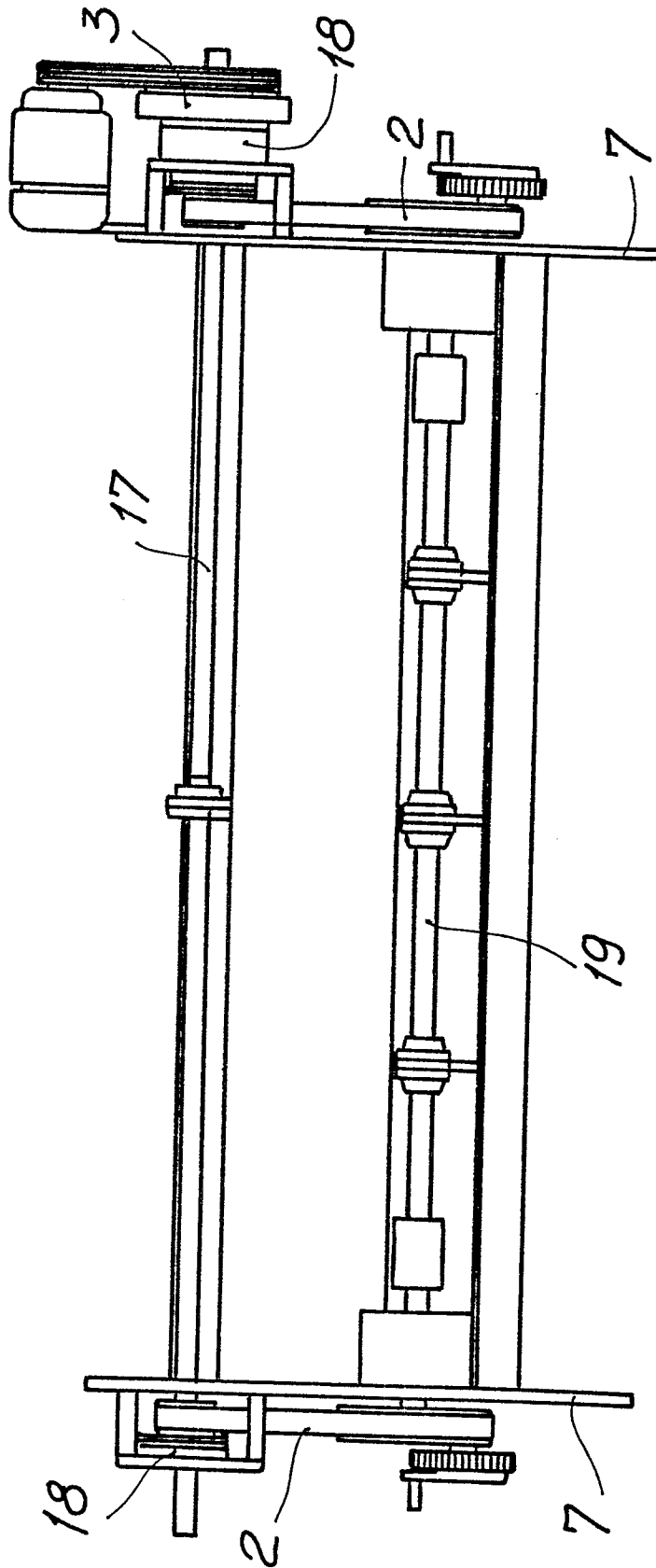


Fig. 5





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. ³)
A	<p style="text-align: center;">---</p> BE-A- 867 817 (LEFEBRE) *Figures; pages 4,5*	1,3,4	D 03 D 47/12
A	<p style="text-align: center;">---</p> FR-A-2 317 399 (ALBATEX) *Figures*	5	
A	<p style="text-align: center;">---</p> FR-A-2 315 559 (DEWAS) <p style="text-align: center;">-----</p>		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl. ³) D 03 D
Place of search THE HAGUE		Date of completion of the search 17-02-1983	Examiner BOULEGIER C.H.H.
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	