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(54) **A weft inserter drive.**

(57) A rapier loom having one or more rapiers (10) which are movably mounted for reciprocatory movement for insertion of weft yarns, each rapier being reciprocated by a drive means including first (14) and second (17) flexible elongate members each of which is attached at one end (11, 12) to the rapier (10) and attached at its opposite end to the loom frame (16,18), the first (14) and second belts (17) each being wrapped in opposed directions about a common drive pulley (15) which is moved in an oscillatory manner to cause reciprocation of the rapier, the ends of the first and second belts or cords being attached to the rapier at separate points(11,17) of attachment spaced along the rapier.

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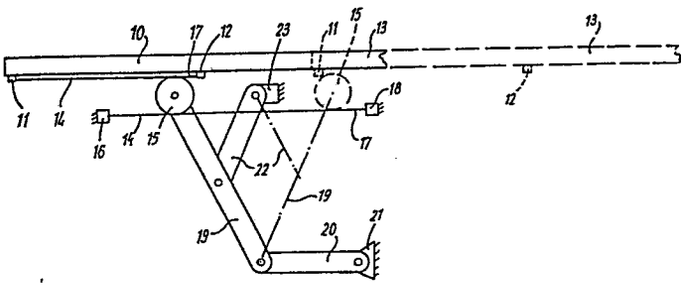
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A WEFT INSERTER DRIVE.

This invention concerns a weft inserter drive and in particular a drive for a weft inserter of the rigid rod type (hereinafter referred to as a 'rapier').

For the sake of convenience the loom with which the rapier is used will be referred to as a 'rapier loom' and it is to be understood that the invention is applicable to rapier looms in which there is a single rapier adapted to insert weft through the warp shed from one side only of the loom, or to rapier looms in which there are two rapiers each of which is adapted to insert weft across half of the width of the warp shed, there being transfer means to ensure that the weft after insertion by one rapier is engaged with, and inserted through the remainder of the shed, by the other rapier.

It is an object of the present invention to provide a drive means for a rapier which is relatively simple in construction, is compact and is capable of being operated at high speed.

Thus according to the present invention there is provided a rapier loom having one or more rapiers which are movably mounted for reciprocatory movement for insertion of weft yarns, each rapier being reciprocated by a drive means including first and second flexible elongate members each of which is attached at one end to the rapier and attached at its opposite end to the loom frame, the first and second belts each being wrapped in opposed directions about a common drive pulley which is moved in an oscillatory manner to cause reciprocation of the rapier, the ends of the first and second flexible elongate members being attached to the rapier at separate points of attachment spaced along the rapier.

The invention will be described further, by way of example, with reference to one practical form thereof and the accompanying schematic drawing which illustrates a rapier drive means made in accordance with the invention.

Thus as can be seem from the drawing there is provided a rapier 10 which is free to slide axially in guide means (not shown). The rapier 10 is provided with attachment means 11 and 12, the attachmens means 11 being located at the non-operative end of the rapier.

The attachment means 12 is attached to the rapier at a point between its mid-position and its operative end 13. The distance between attachment means 11, 12 is at least equal to the amplitude of oscillation of the drive pulley 15 which is described hereinafter. Secured to the attachment means 11 is a first flexible elongate member in the form of a belt or cord 14 which passes around a drive pulley 15 and has its free end anchored at 16 to a fixed part of the loom frame. A second flexible elongate member in the form of a belt or cord 17 is provided and this has one of its ends secured to the attachment means 12 and its other to an anchor means 18 secured to a fixed part of the looms spaced from the anchor means 16. The second cord 17 wraps the pulley 15 in the opposite direction to that by which the first cord wraps the pulley 15.

The pulley 15 is mounted at one end of a first link 19 the other end of which is pivotally attached to a tie link 20 which is itself pivotally attached to a tie link 20 which is itself pivotally mounted on a bracket 21 fixed to the loom frame. Pivotally attached to the first link 19 at its mid-position is one end of a control link 22 the other end of which is pivotally mounted on a bracket 23 attached to a fixed part of the loom frame and spaced from the bracket 21. Links 19, 20 and 22 serve to maintain the drive pulley 15 in a linear oscillatory

path of movement which is substantially parallel to the path of movement of the rapier 10. The present drive means is chosen by suitable adaption of size of pulley 15 to ensure that when the first link 19 is pivoted about its pivot axis on the tie link 20 and its direction of movement is controlled by the control link 22, the operative end 13 of the rapier 10 will move through a distance equal to twice that through which the drive pulley is moved.

A drive means, not shown, is provided for the link system and conveniently this includes an eccentric upon which is mounted a drive rod which may be attached either to the first link 19 or the control link 22 in such manner that reciprocation of the drive rod will operate the link system. The drive means for the link system is, of course, synchronised with the other loom motions.

The broken lines on the drawing serve to indicate the positions assumed by the rapier and the link system when the rapier has been moved from a position in which its end 13 is outside a warp shed to a position in which it is fully inserted into the warp shed.

One of the advantages of the arrangement described above lies in the fact that the link system described is required to move the pulley 15 only through half of the total distance travelled by the operative end 13 of the rapier and thus it is possible to use a small and compact linkage. Clearly the linkage described is of a simple nature and since it consists of only three small moving parts its inertia will be low and thus it can be operated at high speed.

In a loom in which there are two rapiers the arrangement described above would be associated with each rapier, and, of course, the movement of the linkages would be synchronised to ensure that the operative ends of the rapiers met and overlapped at the middle of the warp shed to enable the weft yarn to be transferred from one rapier to the other.

CLAIMS

1. A rapier loom having one or more rapiers which are movably mounted for reciprocatory movement for insertion of weft yarns, each rapier being reciprocated by a drive means including first and second flexible elongate members each of which is attached at one end to the rapier and attached at its opposite end to the loom frame, the first and second belts each being wrapped in opposed directions about a common drive pulley which is moved in an oscillatory manner to cause reciprocation of the rapier, the ends of the first and seond flexible elongate members being attached to the rapier at separate points of attachment spaced along the rapier.

2. A loom according to claim 1 wherein the separate points of attachment of the first and second elongate members are spaced apart by a distance equal to or greater than the amplitude of the oscillatory motion of the drive pulley.

3. A loom according to claim 1 or 2 wherein the point of attachment of the first elongate member to the rapier is at or adjacent to its non-operative end and the point of attachment of the second elongate member is at a location between the mid-point and the operative end of the rapier.

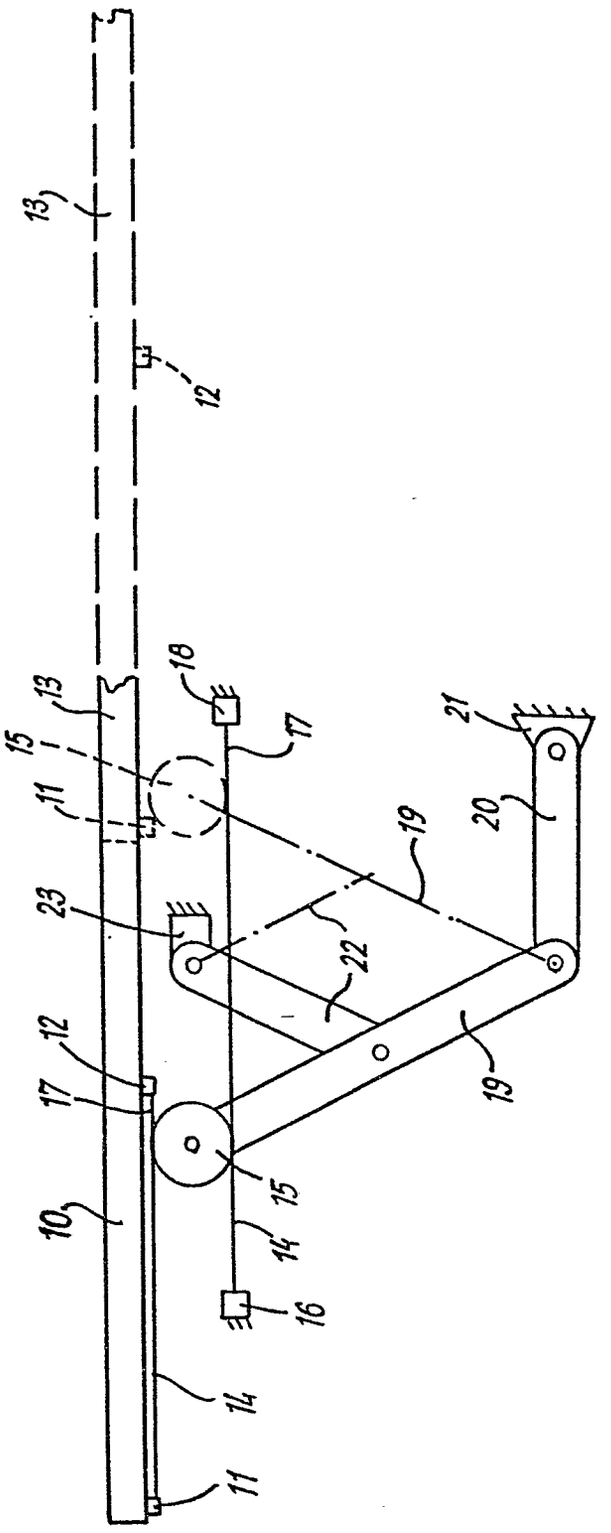
4. A loom according to claim 1, 2 or 3 wherein the points of attachment of the first and second elongate members to the loom frame are spaced apart along a line substantially parallel to the path of reciprocation of the rapier.

5. A loom according to any preceeding claim wherein the drive pulley is mounted so as to oscillate along a linear path which is substantially parallel to the path of reciprocation of the rapier.

6. A loom according to any preceeding claim wherein the drive means for each rapier is arranged to move the rapier a distance substantially twice that moved by the drive pulley.

7. A rapier loom substantially as described with reference to and as illustrated in any of the accompanying drawings.

Fig. 1



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EUROPEAN SEARCH REPORT

Application number

EP 80 30 1959.5

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	US - A - 2 524 734 (PFAU) * fig. 1 *	1,5,6
	US - A - 2 304 195 (PAYNE) * fig. 1 *	1,5,6
	US - A - 2 816 576 (SHIMWELL) * fig. 4 *	1
A	DE - A1 - 2 628 402 (DEWAS)	
A	DE - A - 1 710 233 (CAMARASA MONGE)	
A	GB - A - 704 401 (WILSON & LONGBOTTOM)	
A	GB - A - 774 021 (PORTER)	

CLASSIFICATION OF THE APPLICATION (Int. Cl.³)

D 03 D 47/27

TECHNICAL FIELDS SEARCHED (Int.Cl.³)

D 03 D 47/00

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

X The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Berlin	02-09-1980	KLITSCH

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