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DRIVE FOR GRIPPER LOOMS

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Fig. 1

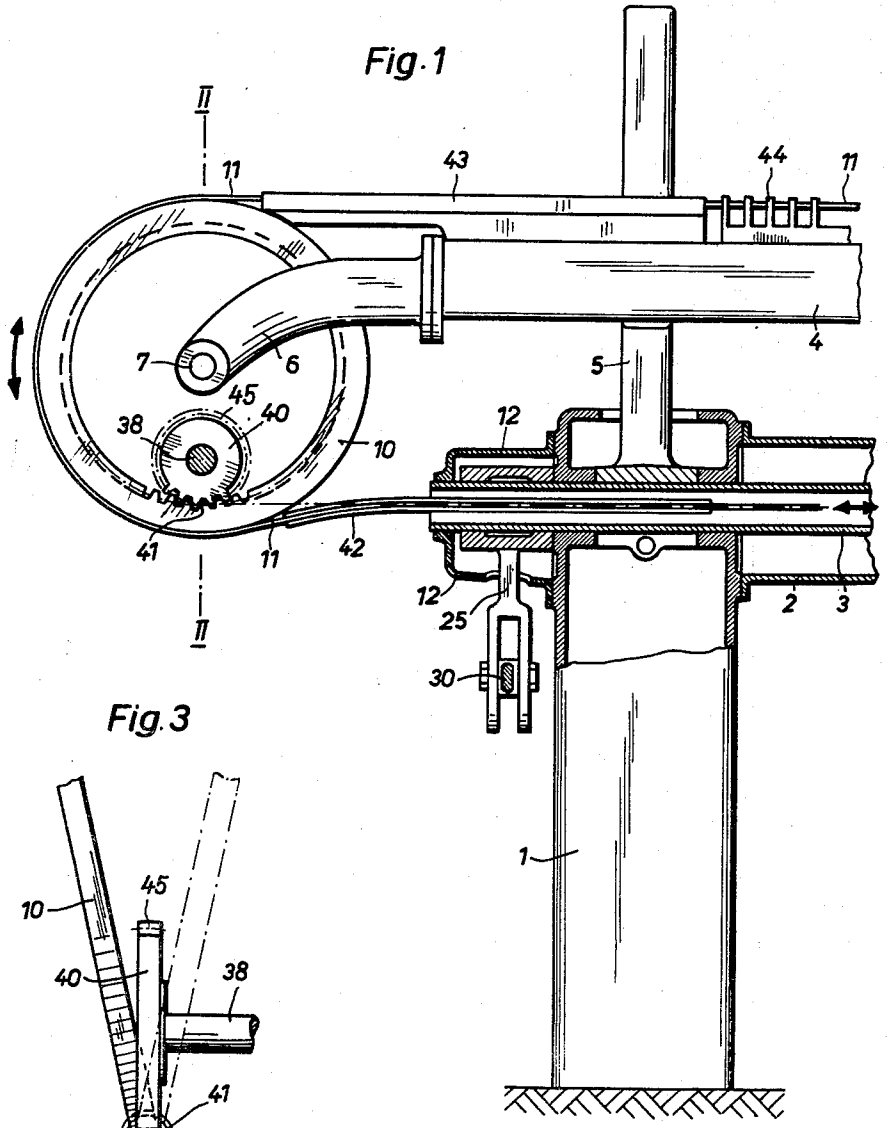


Fig. 3

INVENTORS
JOSEF BIRMANS
GUSTAV DUBS

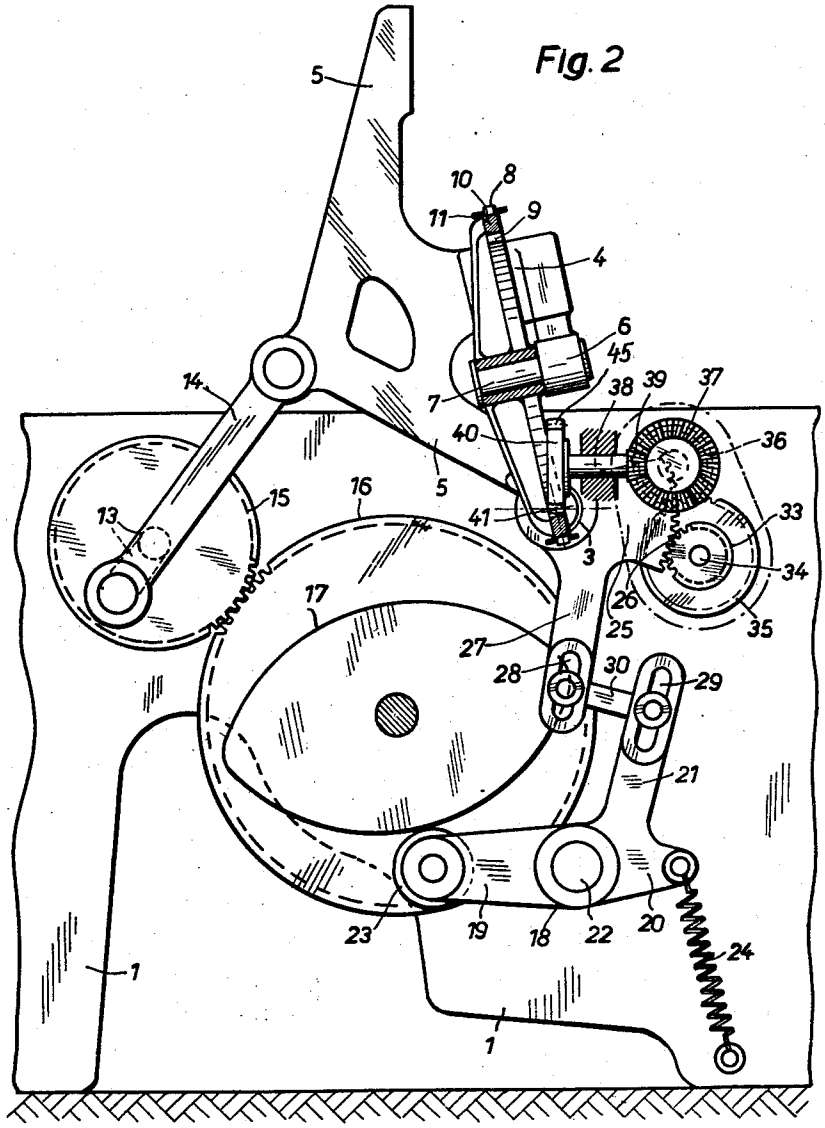
by Tolmichaels, Att'y

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Fig. 2



INVENTORS
JOSEF BIRMANS
GUSTAV DUBS
by TU Michaelis, Atty

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DRIVE FOR GRIPPER LOOMS

Josef Birmans and Gustav Dubs, Arbon, Switzerland, assignors to Adolph Saurer Ltd., Arbon, Switzerland

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4 Claims. (Cl. 139—122)

This invention relates to looms, and more particularly to picking devices for gripper looms wherein picking is effected while the slay is in motion, by means of band-shaped, flexible gripper carriers which are guided in guide rakes distributed across the slay.

Known devices of this kind suffer from the drawback that either the mass of the gripper drive sharing the rocking motion of the slay, is very large so that for this reason, they are not suitable for high speed operations, or the rocking motion of the slay imparts to the gripper carrier an added motion which for all cloth widths is always the same throughout the angle of deflection of the slay. The stroke of the gripper carrier, however, varies with variations of the cloth width. The overlap of the two time-path curves resulting from differences in cloth width, causes variations in the picking speed which are most undesirable.

It is a primary object of the present invention to substantially eliminate these drawbacks, and to provide a picking drive for gripper looms wherein an additional motion imparted to the gripper carrier by the movement of the slay, is completely avoided, and wherein the mass of the drive for the gripper carrier which takes part in the movement of the slay is reduced to a minimum.

Another object of the invention is the provision of gripper looms with improved picking devices which will vastly enhance the operation of the loom without undue complication of the mechanism, or a material increase in the cost of the loom.

Other objects, and the manner in which the same are attained, will become apparent as this specification proceeds.

The invention contemplates a drive for the gripper carrier which comprises a pair of gears so arranged on the slay and on the frame of the loom, respectively, that the rolling circles of the gears coincide in a common point of contact which is disposed on the pivotal axis of the slay. Preferably, the gears of this pair are provided with inner and outer toothing; it is also expedient to provide for the drive of this pair of gears, a transmission mounted on the loom frame which via a control lever and a bell crank lever, is driven by a cam disc. The control lever, preferably, is provided adjustable to vary the turning angle of the pair of gears and thus, vary the stroke of the gripper carrier.

In the drawing accompanying this specification and forming part thereof, an embodiment of the invention is illustrated diagrammatically by way of example, but with no limitative intent.

In the drawing:

FIG. 1 is a front view, partly in section, of the left hand side of a loom, parts having no connection with the invention being omitted in the interest of clarity;

FIG. 2 is a section along line II—II in FIG. 1, and

FIG. 3 shows a detail of FIG. 2 on an enlarged scale.

Referring now to the several figures of the drawing wherein like parts are denoted by identical reference numerals, lateral frame supports **1** (of which only the one on the left is shown in FIGS. 1 and 2) are connected by the tubular traverse member **2**. Frame portions **1** support the hollow shaft **3** of the slay for rocking displacement in circumferential direction. The slay **4** is

firmly mounted on the shaft **3** by means of stilts **5**. Bearing brackets **6** are supported on the slay **4**, and the free ends of bearing brackets **6** carry pins **7** which in turn mount drive gears **10** provided with entrainer toothing **8** and inner toothing **9**, and designed for driving the band-shaped, flexible gripper carrier **11**. A housing **12** which accommodates part of the drive, to be described below, for the gears **10** and the gripper carrier **11**, is mounted on the side of the frame support **1**. The crankshaft **13** is mounted for rotation in frame **1**, and is driven by a motor not shown in the drawing. The crankshaft **13** imparts, by means of the connecting rod **14**, a back and forth rocking motion to the stilts **5** and thus, to the slay **4**. Besides, the crankshaft **13** drives, through a pair of gears **15** and **16**, a cam disc **17**. Lever **18** comprising three arms **19**, **20** and **21** is mounted for rocking displacement, on a pivot **22** which is supported on the frame support **1**. Arm **19** carries a roll **23** which is forced against the cam disc **17** by the force of a draw spring **24** which at one end, engages arm **20** of the three-armed lever **18** while the other end is firmly secured to the frame **1** of the loom.

The rocking shaft **3** of the slay **4** mounts, for pivotal displacement, a bracket **25** provided with a toothed segment **26** and also including an arm **27**. The arm **27** of the bracket **25**, and the arm **21** of the lever **18** are provided with slots **28** and **29**, respectively. Arms **27** and **21** are detachably connected with one another by a control lever **30**. By displacement of control lever **30** in slots **28** and **29**, the stroke of arm **27**, and thus also the stroke of toothed segment **26**, can be varied and thus, adjusted to prevailing requirements. The toothed segment **26** meshes with the spur gear **33** of the transmission shaft **34** to which is also keyed the spur gear **35**. Spur gear **35** meshes with a gear **36** which is firmly connected with the bevel gear **37**. A shaft **38** supports for rotation on the loom support **1**, mounts fixedly a bevel gear **39** and a drive gear **40**, the latter including exterior toothing **45** which meshes with the inner toothing **9** of gear **10** which serves to drive the gripper carrier **11**. Guides **42** and **43** for the gripper carrier **11** which moves back and forth are provided on shaft **3** or slay **4**, respectively. For guide purposes in the region of the fabric, a guide rake **44** is provided on slay **4**.

In the operation of the mechanism according to the invention, the rotary displacement of the cam disk **17** is transmitted by means of lever **18** and control lever **30**, bracket **25**, toothed segment **26**, transmission **33** to **39** incl. and gears **40** and **10**, and thus translated into a back and forth motion of the gripper carrier **11**. Displacement of control lever **30** in the slots **28** and **29** permits the stroke of the gripper carrier **11** to be adjusted readily and in an easily surveyed manner, for any cloth width required.

The drawing shows clearly that the point of contact **41** of the rolling circles of gears **40** and **10** is disposed on the pivotal axis of shaft **3** of the slay **4**. By this arrangement, and by the adjustability of the gripper carrier stroke to any desired cloth width, the invention attains the several objectives outlined above, and results in a signal overall improvement of the type of looms to which the invention relates.

We wish it to be understood that we do not desire to be limited to the details of construction, design and operation shown and described, as numerous modifications embraced by the appended claims and involving no departure from the spirit of the invention nor any sacrifice of the advantages thereof, are likely to occur to persons skilled in the art.

We claim:

1. In a gripper loom including a frame, a shaft mounted for rocking displacement in said frame, a slay mounted on

said shaft, and a flexible gripper carrier, and guide means for said gripper carrier distributed across the slay for effecting picking while the slay is in motion, a picking drive comprising a pair of gears mounted for rotary displacement on said frame and on said slay, respectively, and so disposed relative to one another that their rolling circles coincide in a common point of contact located on the pivotal axis of said shaft of said slay.

2. In a gripper loom including a frame, a shaft mounted for rocking displacement in said frame, a slay mounted on said shaft, and a flexible gripper carrier, and guide means for said gripper carrier distributed across the slay for effecting picking while the slay is in motion, a picking drive comprising a pair of gears mounted for rotary displacement on said frame and on said slay, respectively, and so disposed relative to one another that their rolling circles coincide in a common point of contact located on the pivotal axis of said shaft of said slay, one of said gears being provided with inner and outer toothing while the other gear is provided with exterior toothing only.

3. In a gripper loom including a frame, a shaft mounted for rocking displacement in said frame, a slay mounted on said shaft, and a flexible gripper carrier, and guide means for said gripper carrier distributed across the slay for effecting picking while the slay is in motion, a picking drive comprising a pair of gears mounted for rotary displacement on said frame and on said slay, respectively, and so disposed relative to one another that their rolling circles coincide in a common point of contact located on the pivotal axis of said shaft of said slay, a cam disk, a bell crank lever engaging said cam disk, a transmission driving said pair of gears, and a control lever connecting said cam controlled bell crank lever with said transmission.

4. In a gripper loom including a frame, a shaft mounted for rocking displacements in said frame, a slay mounted on said shaft, and a flexible gripper carrier, and guide means for said gripper carrier distributed across the slay for effecting picking while the slay is in motion, a picking drive comprising a pair of gears mounted for rotary displacement on said frame and on said slay, respectively, and so disposed relative to one another that their rolling circles coincide in a common point of contact located on the pivotal axis of said shaft of said slay, a cam disk, a bell crank lever engaging said cam disk, a transmission driving said pair of gears, and a control lever connecting said cam controlled bell crank lever with said transmission, said control lever being provided adjustable to vary the angle of rotation of said pair of gears, and to correspondingly adjust the distance of back and forth travel of said gripper carrier.

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DONALD W. PARKER, *Primary Examiner.*