Jan. 16, 1962 M. GRAF 3,016,925

HEDDLE FRAME

Filed Feb. 13, 1961 2 Sheets-Sheet 1

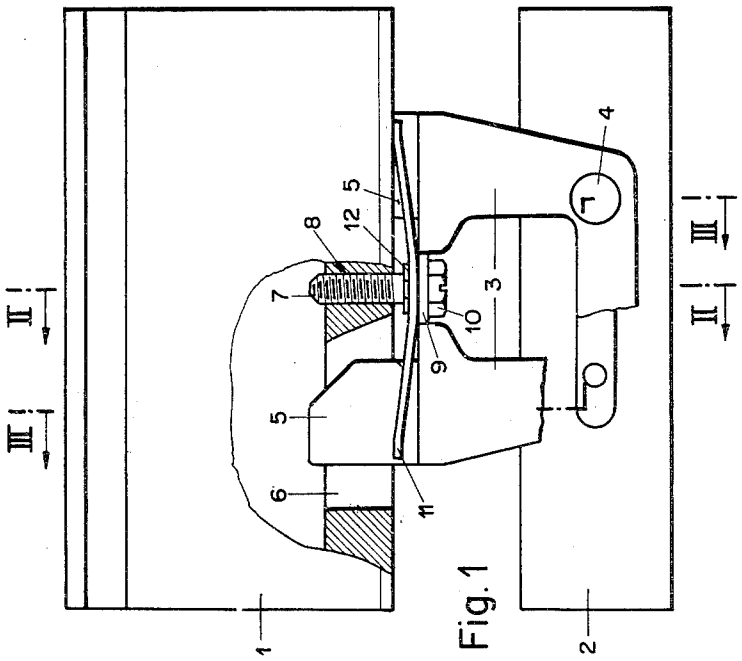


Fig. 1

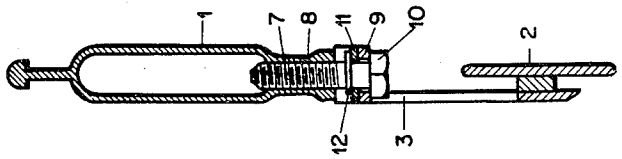


Fig. 2

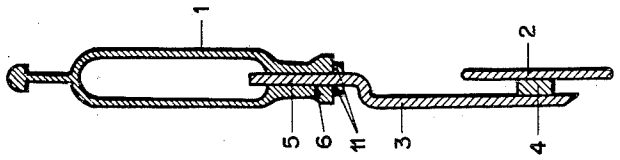


Fig. 3

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HEDDLE FRAME

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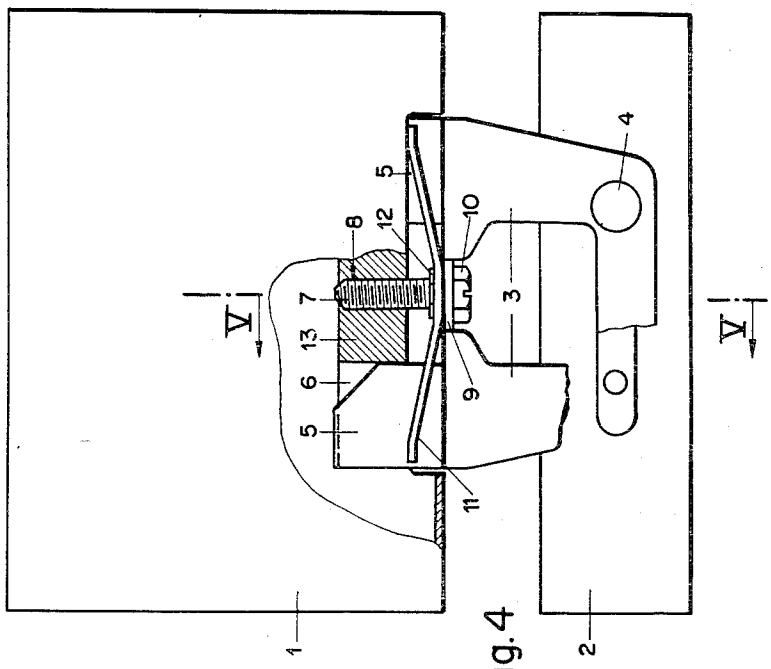


Fig.4

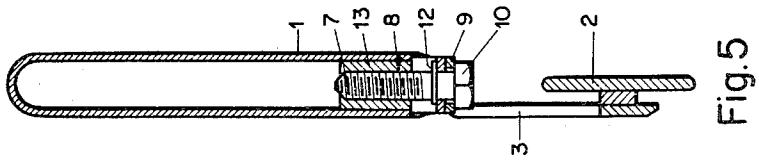


Fig.5

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3,016,925

HEDDLE FRAME

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4 Claims. (Cl. 139—92)

The present invention relates to a heddle frame having heddle supporting rods which are held each by means of at least one carrier strap exchangeably and adjustably in longitudinal slots of the adjacent top or bottom rail.

It is the primary object of the present invention to provide a heddle frame of the kind referred to, wherein exchange and adjustment of the said heddle rods can be effected by means of a single attachment screw for each of the said carrier straps.

It is another object of the invention to arrange the said attachment screws in a manner obviating the weakening of the said rails by bores.

It is yet another object of the invention to attach the said attachment screws of the said straps in such a manner that they cannot be lost.

Heddle frames having adjustable and exchangeable heddle rods are known. One of these known embodiments has, however, screws to be operated from outside the rails, which penetrate through the rails and accordingly weaken the same. Another proposed design provides an arrangement of not less than three adjustment nuts for each carrier strap, the latter moreover not entering into the rail and not being guided in slots thereof. This has the consequence that there exists the possibility of pulling the heddle rod to-and-fro. For the exchanging and adjusting of the heddle rod three adjustment nuts have to be loosened. Finally it has already been proposed to attach the heddle rods exchangeably and adjustably on the rails by means of carrier straps and of slider pieces guided in longitudinal grooves of the rails. The connection of the carrier strap to the slider pieces was effected by adjustment screws. When exchanging the heddle rods both adjustment screws had to be removed, whereby the slider pieces became freely movable in the longitudinal grooves. The disadvantages of this arrangement consisting in that the separate nuts got lost, that the refitting of the slider pieces was laborious and that moreover dust and fluff could accumulate in the longitudinal grooves.

In contrast, the heddle frame according to the present invention is characterised in that the carrier straps are fixedly connected to the heddle rods and have one attachment screw only which is attached to them rotatably but restrained axially and which enters into a matching tapped bore at the inside of the slotted rail.

Accordingly for the purpose of adjusting the heddle rods a single screw only per carrier strap has to be adjusted, in contrast to the known embodiments referred to hereinabove. Morover, after the loosening of the heddle rods, all the movable components are secured to the latter against getting lost, while the rails have only the complementary slots and tapped bores. Thereby a substantial simplification and reduction in costs may be attained, and any weakening of the cross section of the rails may be obviated.

With these and other objects in view which will become apparent from the following description and accompanying drawings, I provide a heddle frame comprising in combination: a heddle rod, a longitudinally slotted rail, and a carrier plate fixedly connected to the said heddle rod and having a single attachment screw only attached to it rotatably, but restrained axially, the said longitudinally slotted rail having a corresponding screw-tapped bore engaged by the said attachment screw and being exchangeably and adjustably connected by it to the said heddle rod.

Preferably a spring is secured to the said attachment screw against axial movement relative thereto so as to provide loading of the said screw connection by spring bias.

For example the said spring is a leafspring having forked ends extending on both sides of the said carrier strap.

In a modified embodiment the said rail is made of steel tubing, and inserts are fixedly arranged in it, the said longitudinal slots and screw tapped bores being arranged in the said inserts. Otherwise this modified embodiment corresponds to the embodiment referred to first.

These and other features of my said invention will be clearly understood from the following description of two embodiments thereof given by way of example with reference to the accompanying drawings, in which:

FIG. 1 is a part-elevation of a light metal heddle frame, with some parts broken off,

FIG. 2 is a section on the line II—II of the FIG. 1,

FIG. 3 is a section on the line III—III of the FIG. 1,

FIG. 4 is a part-elevation of a second embodiment, wherein likewise some parts are broken off, and

FIG. 5 is a section on the line V—V of the FIG. 4.

In FIGS. 1–3 reference character **1** denotes a light-metal rail, and **2** the heddle supporting rod. At least one cranked carrier strap **3** is fixedly connected to each of these heddle rods means of rivets **4**. The carrier strap **3** illustrated enters with two wing-like projections **5** into longitudinal slots **6** of the rail **1**. As will be seen particularly in FIG. 3, the carrier strap is closely guided in the slots **6** and is immovable transversely of the longitudinal direction of the rail. The adjustable and detachable connection of the carrier strap to the rail **1** is effected exclusively by a single attachment screw **7** which enters into a tapped bore **8** of the rail. This bore is arranged between the two longitudinal slots **6** into which penetrate the two projections **5** of the strap **3**. As will be seen in FIG. 2, the screw **7** passes through a lug **9**, turned up at a right angle, of the strap **3**, the inside of which lug is abutted by the screw head **10**. On the screw **7** and between the lug **9** and the rail **1** a leaf spring **11** is mounted, the free ends of which resiliently bear on the slotted inside of the rail **1**. The free ends of the legs of the leaf spring **11** are forked and extend at both sides of the projections **5** of the carrier strap **3** (FIG. 3). A spring washer **12** or the like secures the rotatability of the screw **7**, but restrains the latter against axial movements with respect to the carrier strap **3**. As will be seen, it suffices for adjusting and exchanging the heddle rod to turn the screw **7** more or less, or to loosen the same completely. All components required for the adjustment remain on the heddle rod.

In the embodiment according to the FIGS. 4 and 5 the heddle rod and all the components attached thereto are designed in the same manner as in the first embodiment, and identical components are denoted by the same reference characters. Since the rail **1** (FIGS. 4 and 5) is formed of a steel tube and cannot be slotted the same way as the rail consisting of light metal according to FIGS. 1–3, inserts **13** are welded into the tubular rail. The connection could obviously be effected also in a different manner, e.g. by means of rivets. The slots **6** and the screw-tapped bore **8** are provided in this embodiment in the inserts **13**. Otherwise the manner of functioning is the same.

While I have described herein and illustrated in the accompanying drawings what may be considered typical and particularly useful embodiments of my said invention, I wish it to be understood that I do not limit myself to the particular details and dimensions described

and illustrated, for obvious modifications will occur to a person skilled in the art.

What I claim as my invention and desire to secure by Letters Patent, is:

1. A heddle frame comprising in combination: a heddle rod, a longitudinally slotted rail, and a carrier strap fixedly connected to the said heddle rod and having a single attachment screw only attached to it, rotatably but restrained axially, the said longitudinally slotted rail having a corresponding screw-tapped bore engaged by the said attachment screw and being exchangeably and adjustably connected by it to said heddle rod.

2. A heddle frame comprising in combination: a heddle rod, a rail slotted at the inside, a carrier strap fixedly connected to the said heddle rod and having a single attachment screw only attached to it rotatably but restrained axially, and a spring secured to the said attachment screw against axial movement relative thereto, the said rail longitudinally slotted at its inside having a corresponding screw-tapped bore engaged by the said attachment screw and being exchangeably and adjustably connected by it to said heddle rod.

3. A heddle frame as claimed in claim 2, wherein the said spring is a leaf-spring having forked ends extending on both sides of the said carrier strap.

4. A heddle frame comprising in combination: a heddle rod, a tubular rail consisting of steel tubing, inserts fixedly arranged in the said tubular rail and having a longitudinal slot and a screw-tapped bore each, a carrier strap fixedly connected to the said heddle rod exchangeably and adjustably engaging the said slots, and a single attachment screw mounted, rotatably but restrained axially, on the said carrier strap and engaging the said screw-tapped bore in the said insert.

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