Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
Description

FIELD OF THE INVENTION

[0001] The invention relates to portable work benches or tables which include an integral clamping table or vise. More particularly, the present invention relates to a work bench according to the preamble of claim 1 and to a belt or chain drive transmission for a work bench according to the preamble of claim 19. Such a device is known from US 5284331.

BACKGROUND OF THE INVENTION

[0002] Carpenters, woodworkers and handymen which work with wood as well as other materials, often need a work bench or table which may be utilized to hold workpieces. Ordinarily, these work benches include a vise which clamps portions of the table top together to secure the workpiece on the table. One such device is that of the assignee of the present invention which is sold under the WORKMATE™ trademark. These tables are versatile, provide for secure clamping, are compact and are convertible to dual height positions.

[0003] The work bench ordinarily includes two vise screws with handles on each one. The vise screws, via the handles, are operated by the user with the user using both hands. While a user may utilize one hand, the user must rotate both handles in order to clamp a workpiece between the clamping table members. Accordingly, it is desirable to utilize one hand to crank both of the vise screws so that clamping of the workpiece may be accomplished by the user using only one hand. By enabling cranking of the vise to clamp the workpiece with one hand, the user is capable of holding the workpiece in place with his other hand. Also, it is desirable that the vise clamp irregular objects while turning the vise screws with one hand.

[0004] Examples of tools of the prior art which demonstrate some of the problems set out above are disclosed in US5284331 and US2331588.

SUMMARY OF THE INVENTION

[0005] According to an aspect of the present invention, there is provided a work bench comprising the features of claim 1.

[0006] According to another aspect of the present invention, there is provided a belt or chain drive transmission for a work bench comprising the features of claim 19.

[0007] Accordingly, it is an object of the present invention to provide an improved vise for a work bench which enables the vise to be tightened down utilizing one hand.

[0008] In accordance with an embodiment of the invention, a work bench comprises a frame; a table surface on the frame, with the table surface including at least two members; one of which is movably coupled with the frame to enable clamping of a workpiece between the two table surface members. A mechanism for moving the table members with respect to one another. The mechanism includes two screws coupled with one of the members. The two screws are spaced from one another to move the table member upon rotation of the screws. A sprocket is coupled with each screw. A transmission belt or chain is coupled with the sprockets to drive the screws together. At least one handle is coupled with one of the screws to rotate the screws. At least one clutch is coupled with at least one screw to limit clamping pressures on the workpiece. The clutch enables rotation of one screw with respect to the other screw so that irregular workpieces may be clamped between the table members and clamping of the workpiece may be accomplished by rotation of the handle by one hand of the operator. The clutch is self-actuating. The preferred clutch includes a spring and a detent removably coupled within slots in a hub of the sprocket. Also, both screws may include a clutch. Further, each screw may include a handle. One of the handles has a different configuration than the other to identify to the user that clamping of the table surfaces may be accomplished by rotation of only one handle to drive both screws.

[0009] On a preferred embodiment a guard covers the transmission belt or chain. The guard is coupled with the frame. The guard includes at least one tensioning member unitarily formed with and extending from the guard.

[0010] The guard includes at least one alignment member to maintain alignment of the belt or chain to the sprocket. A biasing member is associated with the belt or chain to automatically adjust to changes in the belt or chain length to take up slack and provide positive belt or chain tension. The biasing member may be a helical spring. Further, the guard may include two tensioning members as well as two pairs of alignment members, each pair sandwiching a tension member.

[0011] In a preferred embodiment the handle includes a hub, a straight portion extending from the hub, a curved portion extending from the straight portion, and a knob extending from the curved portion. The knob enables rotation of the handle. The curved portion has a truncated U-shape with one end coupled with the straight portion and the knob extending from the other end. The hub has a desired height as well does the straight portion which is less than that of the hub. The curved portion has a height greater than the hub. An end of the curved portion and a side of the straight portion are continuous forming a planar side portion of the handle. A connecting member extends from the hub and is unitary with the straight portion and a portion of the curved portion. The handle may be injected molded from a plastic material.

[0012] Preferably the guard for the work bench drive transmission comprises a first wall, at least one second wall extending substantially perpendicular to the first wall, and at least one guide extending from the first wall. The guide extends transverse to the direction of travel of the transmission belt or chain. Preferably, a second guide extends from the first wall. Preferably, two parallel
spaced second walls extend from the first wall. An alignment member extends from the first wall. Preferably, the alignment member is stamped into the first wall and two alignment members sandwich each guide member. Also, a second wall includes a biasing member to provide positive belt or chain tension. The first or second walls include cut-outs to secure the helical spring biasing member to the guard.

[0013] Preferably the handle for operating the movable work bench comprises a hub, a straight portion extending from the hub, and a curved portion extending from the straight portion. A knob extends from the curved portion to enable rotation of the handle. The curved portion has a truncated U-shape with one end coupled with the straight portion and the knob extending from the other end. The hub has a desired height, as well does the straight portion, which is less than the height of the hub. Also, the curved portion has a height greater than the hub. Also, one end of the curved portion and a side of the straight portion are continuous forming a planar side portion of the handle. A connecting member extends between the hub, straight and curved portions, and is unitary with the three. The handle is ordinarily molded from a plastic material.

[0014] In accordance with a sixth aspect of the invention, a belt or chain drive transmission for a work bench comprises two screws adapted for coupling with a first member to be moved against a second member to provide clamping. A sprocket is coupled with each of the screws. A transmission belt or chain is coupled with the sprockets. At least one handle is coupled with one of the screws to rotate the screws. At least one clutch is coupled with at least one screw to limit clamping pressures on a workpiece. The clutch enables rotation of the other screw with respect to the other which is being rotated. The clutch is self-actuating and preferably includes a spring and a detent coupled with a slot in a hub of the sprocket. Preferably, each screw includes a clutch and each screw includes a handle. Also, one of the handles has a different configuration which identifies to the user that only one handle may be rotated to drive both the screws. Also, each screw includes a stop to position the spring with respect to the sprocket.

[0015] In a preferred embodiment a guard covers the transmission belt or chain. The guard is coupled with the frame. The guard includes at least one tensioning member unitarily formed with and extending from the guard. The guard includes at least one alignment member to maintain alignment of the belt or chain to the sprocket. A biasing member is associated with the belt or chain to automatically adjust to changes in the belt or chain length to take up slack and provide positive belt or chain tension. The biasing member may be a helical spring. Further, the guard may include two tensioning members as well as two pairs of alignment members, each pair sandwiching a tension member. The handle includes a hub, a straight portion extending from the hub, a curved portion extending from the straight portion, and a knob extending from the curved portion. The knob enables rotation of the handle. The curved portion has a truncated U-shape with one end coupled with the straight portion and the knob extending from the other end. The hub has a desired height as does the straight portion, which is less than that of the hub. The curved portion has a height greater than the hub. An end of the curved portion and a side of the straight portion are continuous to form a planar side portion of the handle. A connecting member extends from the hub and is unitary with the straight portion and a portion of the curved portion. The handle may be injected molded from a plastic material.

[0016] Additional objects and advantages of the invention will be apparent from the detailed description of the preferred embodiment, and the appended claims and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] In the drawings, the same reference numerals indicate the same parts.

Figure 1 is a perspective view of a work bench top in accordance with the present invention.

Figure 2 is a side elevation view of the work bench with the top of Figure 1.

Figure 3 is an exploded perspective view of Figure 1. Figure 4 is a cross-section view of Figure 1 along line 4-4 thereof.

Figure 5 is a perspective partially in cross-section view of a portion of the transmission drive.

Figure 6 is an enlarged perspective view of a portion of the drive.

Figure 7 is a perspective view of the handle without the knob.

Figure 8 is a cross-section view of Figure 7 along line 8-8 thereof.

Figure 9 is a cross-section view of Figure 7 along line 9-9 thereof.

Figure 10 is an enlarged cross-section view of Figure 1 along line 10-10 thereof.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0018] The preferred embodiment of the present invention is a work bench which is identified with the reference numeral 10. The work bench includes a frame structure 12 which includes a base 14, four foldable legs 16, two upright H supports 18 which extend from the base 16, and brackets 20 at the other end of the supports 18. The work bench 22 is generally formed from two members 24 and 26 which are coupled with the brackets 20.

[0019] The brackets 20 are hollow and include elongated slots 21 which enable movement of the front table 24 with respect to the brackets 20. Also, the brackets include apertures 23 to enable the second table portion 26 to be stationarily locked onto the brackets 20. An ad-
Two screws 30 are positioned within the brackets 20. The screws include a threaded portion 32 which includes a threaded pivot nut 34 which in turn, via a block 36, is coupled with the front moving member 24 of the work bench 22. Also, the screws 30 includes a smooth shank portion 38 which includes a portion which extends out beyond the bracket 20 as seen in Figure 1. The smooth shank portion 38 includes a stop 40 as well as apertures 44 and 46.

A guard 80 is positioned over the transmission belt 56 as shown, has projecting members 52 which extend into apertures 54 of the belt 56. However, if a chain is used, the projections may be substituted for recesses or the like. The sprocket 50 includes a hub 58 which includes slots or detents 60. The slots 60 are adapted to couple with a detent pin 62 which passes through aperture 44 of the screw 30.

A helical spring 64 is positioned on the smooth shank portion 38 of the screws 30. The sprocket 50, as shown, has projecting members 52 which extend into apertures 54 of the belt 56. However, if a chain is used, the projections may be substituted for recesses or the like. The sprocket 50 includes a hub 58 which includes slots or detents 60. The slots 60 are adapted to couple with a detent pin 62 which passes through aperture 44 of the screw 30.

A guard 80 is positioned over the transmission belt or chain 56. The guard 80 includes a first wall 82 and at least one second wall 84, preferably two, which are perpendicular to the first wall 82 forming an overall U-shape and define a channel 85. The guard 80 includes two guides 86 stamped in and cut out of the first wall 82. The guides 86 extend substantially perpendicular to the first wall 80 into the channel 85. The guides 86 are substantially parallel with the second wall 82 and apply tension on the leading 55 side of the belt 56. The guides 86 help to tension the belt or chain as it moves during rotation of the screws 30. Also, the guides 86 extend from the wall 82 transverse to the direction of travel of the belt 56. The guard 80 spans the length of the belt 56 and is secured with the brackets 20. The alignment members 90, 92 help to maintain the belt 56 or chain onto the sprockets 50 during the clamping modes.

A biasing member 96 is secured to the second wall 82 to automatically adjust for changes in belt length and to take up slack in the belt 56. The biasing member 96 is a helical spring which is secured on cut-outs 98, 99 in the guard 80. The spring 96 always provides for positive belt 56 or chain tension. The spring 96 is positioned under the belt 56 and tensions both the leading 55 and trailing 57 sides of the belt 56.

Each screw includes a handle 100 and 110. The handle 100 includes a hub 102, a handle arm 104 and a knob 106. The handle 110 includes a hub 112, a straight portion 114, a curved portion 116 and a knob 118. The hub 112 has a desired height which is larger than the straight portion 114, but less than the curved portion 116. The curved portion 116 has an overall truncated U-shape. Also, a connecting member 120 extends between the hub 112, straight portion 114, and curved portion 116. The handle 110 provides a visual indication to the user that the work bench clamping system may be rotated with one hand. Also, the hub 112 includes an aperture 122 which enables a pin 124 to pass through to secure it on the screw 30.

The work bench vise of the present invention is ordinarily operated as follows. One of the handles 100, 110 is rotated which, in turn, rotates either one of the screws 30. The rotation of the screw 30 rotates the sprocket 50 and via belt 56 rotates the other screw 30 via its sprocket 50. Thus, both of the screws 30 rotate at the same time, ordinarily, synchronously. As the user is utilizing one hand to rotate both screws 50, the user can use his other hand to hold the workpiece in between the two table members 24, 26. As the table members 24, 26 contact the workpiece, and especially if the workpiece has an irregular shape, the front table member 24 will contact the workpiece and the sprocket 50 will compress against the spring 64 and move away from the pin 62, thus engaging the clutch 70. If an irregular shaped workpiece is between the table portions, then one of the screws 30 will not rotate due to the clutching effect while the other will continue to rotate to clamp on the irregular shape of the workpiece.

Once the workpiece is initially clamped and not over tightened, the individual screws can be shored up to give a firm grip onto the workpiece.

While the above detailed description describes the preferred embodiment of the present invention, the invention is susceptible to modification, variation, and alteration without deviating from the scope of the claims.
a frame (12);
a table surface on said frame, said table surface including at least two members (24, 26), at least one of said members movably coupled with said frame for enabling clamping of a workpiece between said members;
a mechanism for moving said members, said mechanism including two screws (30) coupled with one of said members, said two screws spaced with said member for moving said member upon rotation of said screws;
a sprocket (50) coupled with each screw;
a transmission belt or chain (56) coupled with said sprockets, and at least one handle (100) coupled with one of said screws for rotating said screws,

characterised by at least one clutch (64, 62, 50, 60) coupled with at least one screw for limiting clamping pressure on the workpiece, and said clutch enabling rotation of one screw with respect to the other screw so that irregular workpieces may be clamped between said members and clamping of the workpiece may be accomplished by rotation of the screws with one hand of an operator.

2. The work bench according to Claim 1, wherein said clutch being self actuating.

3. The work bench according to Claim 2, wherein said clutch includes a spring (64) and a detent in said sprocket (62).

4. The work bench according to any one of the previous Claims, wherein each screw includes a clutch.

5. The work bench according to any one of the previous Claims, wherein each screw includes a handle.

6. The work bench according to Claim 5, wherein one handle has a different configuration identity that only one handle need be rotated to drive said screws.

7. A work bench according to any one of the previous claims wherein there is further provided a guard (80) for covering said transmission belt or chain, said guard coupled with said frame.

8. The work bench according to Claim 7, wherein said guard includes at least one tensioning member (86) unitarily formed with and extending from said guard.

9. The work bench according to either of Claims 7 or 8, wherein said guard includes at least one alignment member (90, 92) to maintain alignment of the belt or chain on the sprocket.

10. The work bench according to any one of Claims 7 to 9, wherein a biasing member (96) being associated with said belt or chain for eliminating slack in said belt or chain.

11. The work bench according to Claim 10, wherein the biasing member is a spring which biases both a leading and trailing portion of the belt or chain.

12. The work bench according to Claim 8, wherein said guard includes two tensioning members.

13. The work bench according to Claim 9, wherein said guard includes two pair of alignment members each pair sandwiching a tensioning member.

14. A work bench according to any one of the previous claims wherein said handle including a hub (112), a straight portion (114) extending from said hub, a curved portion (116) extending from said straight portion, and a knob (118) extending from said curved portion for enabling rotating of said handle.

15. The work bench according to Claim 14, wherein said curved portion has a truncated U-shape with one end coupled with said straight portion and said knob extends from the other end of said curved portion.

16. The work bench according to Claim 15, wherein said hub has a desired height, said straight portion has a height less than said hub and said curved portion having a height greater than said hub.

17. The work bench according to Claim 16, wherein in an end of said curved portion and a side of said straight portion are continuous forming a planar portion.

18. The work bench according to Claim 17, wherein a connecting member extended from said hub and is unitary with said straight and curved portions.

19. A belt or chain drive transmission for a work bench comprising:

two screws (30) adapted for coupling with a first member (24) to be moved against a second member (26) to provide clamping;
a sprocket (50) coupled with each screw;
a transmission belt or chain (56) coupled with each said sprocket; and
at least one handle (102, 112) coupled with one of said screws for rotating said screws; and

characterised by at least one clutch (64, 62, 50, 60) coupled with at least one screw for limiting clamping pressure on a workpiece, and said clutch enabling rotation of the other screw with respect to the screw which is being rotated.
20. The belt or chain drive transmission according to Claim 19, wherein each screw includes a stop (40) for positioning a spring with respect to said sprocket.

Patentansprüche

1. Werkbank (10) umfassend:
   einen Rahmen (12),
   eine Tischfläche an dem Rahmen, wobei die Tischfläche wenigstens zwei Elemente (24, 26) umfasst, wobei eines der Elemente beweglich mit dem Rahmen verbunden ist, um ein Klemmen eines Werkstücks zwischen den Elementen zu ermöglichen,
   einen Mechanismus zum Bewegen der Elemente, wobei der Mechanismus zwei Schrauben (30) umfasst, die mit einem der Elemente verbunden sind, wobei die zwei Schrauben an dem Element beabstandet sind, um das Element bei Drehung der Schrauben zu bewegen,
   einen Zahnkranz (50), der mit jeder Schraube verbunden ist,
   einen Übertragungsriemen oder eine Kette (56), die mit den Zahnkränzen verbunden ist, und wenigstens einen Griff (100), der mit einer der Schrauben zum Drehen der Schrauben verbunden ist,
   gekennzeichnet durch wenigstens eine Kupp lung (64, 62, 50, 60), die mit wenigstens einer Schraube zum Begrenzen des Klemmdrucks auf das Werkstück verbunden ist, und dadurch, dass die Kupplung eine Drehung einer Schraube in Bezug auf die andere Schraube ermöglicht, so dass ungleichmäßige Werkstücke zwischen den Elementen geklemmt werden können und ein Klemmen der Werkstücke durch Drehung der Schrauben mit einer Hand eines Benutzers erreicht werden kann.

2. Werkbank nach Anspruch 1, wobei die Kupplung selbstbetätigt ist.

3. Werkbank nach Anspruch 2, wobei die Kupplung eine Feder (64) und einen Vorsprung in dem Zahnkranz (62) umfasst.

4. Werkbank nach einem der vorhergehenden Ansprüche, wobei jede Schraube eine Kupplung umfaßt.

5. Werkbank nach einem der vorhergehenden Ansprüche, wobei jede Schraube einen Griff umfasst.

6. Werkbank nach Anspruch 5, wobei ein Griff einen unterschiedlichen individuellen Aufbau hat, so dass nur ein Griff gedreht werden muss, um die Schrauben anzutreiben.

7. Werkbank nach einem der vorhergehenden Ansprüche, wobei ferner eine Schutzhaube (80) zum Abdecken des Übertragungsriemens oder der Kette vorgesehen ist, wobei die Schutzhaube mit dem Rahmen verbunden ist.

8. Werkbank nach Anspruch 7, wobei die Schutzhaube zumindest ein Spannelement (86) umfasst, das einstöckig mit der Schutzhaube ausgebildet ist und sich davon erstreckt.

9. Werkbank nach Anspruch 7 oder 8, wobei die Schutzhaube zumindest ein Ausrichtungselement (90, 92) aufweist, um die Ausrichtung des Riemens oder der Kette an dem Zahnkranz beizubehalten.

10. Werkbank nach einem der Ansprüche 7 bis 9, wobei ein Vorspannelement (96) mit dem Riemen oder der Kette verbunden ist, um einen Schlupf in dem Riemen oder der Kette zu eliminieren.

11. Werkbank nach Anspruch 10, wobei das Vorspannelement eine Feder ist, die sowohl einen führenden als auch einen nachlaufenden Abschnitt des Riemens oder der Kette vorspannt.

12. Werkbank nach Anspruch 8, wobei die Schutzhaube zwei Spannelemente umfasst.

13. Werkbank nach Anspruch 9, wobei die Schutzhaube zwei Paare von Ausrichtungselementen umfasst, wobei jedes Paar ein Spannelement einklemmt.


16. Werkbank nach Anspruch 15, wobei die Nabe eine gewünschte Höhe hat, der gerade Abschnitt eine Höhe, die geringer als die Nabe ist, und der gekrümmte Abschnitt eine Höhe hat, die größer als die Nabe ist.

17. Werkbank nach Anspruch 16, wobei ein Ende des gekrümmten Abschnitts und eine Seite des geraden Abschnitts ineinander übergehen, wobei ein ebener Abschnitt gebildet wird.

19. Riemens- oder Kettenantriebsübertragungsanordnung für eine Werkbank umfassend:
    zwei Schrauben (30), die für eine Verbindung mit einem ersten Element (24), das gegen ein zweites Element (26) bewegt werden soll, um eine Klemmung vorzusehen, angepasst sind, einen Zahnkranz (50), der mit jeder Schraube verbunden ist, einen Übertragungsriemen oder eine Kette (56), die mit jedem Zahnkranz verbunden ist, und wenigstens einen Griff (102, 112), der mit einer der Schrauben zum Drehen der Schrauben verbunden ist, und gekennzeichnet durch wenigstens eine Kupplung (64, 62, 50, 60), die mit wenigstens einer Schraube zum Begrenzen des Klemmdrucks auf ein Werkstück verbunden ist, und dadurch, dass die Kupplung eine Drehung der anderen Schraube in Bezug auf die Schraube, die gedreht wird, ermöglicht.

20. Riemens- oder Kettenantriebsübertragungseinrichtung nach Anspruch 19, wobei jede Schraube einen Anschlag (40) zum Anordnen einer Feder in Bezug auf den Zahnkranz umfasst.

Revendications

1. Établi (10) comprenant :
   ♦ un châssis (12) ;
   ♦ une surface de table sur ledit châssis, ladite surface de table comprenant au moins deux éléments (24, 26), au moins l’un desdits éléments étant coupé de manière mobile avec ledit châssis pour permettre de serrer une pièce entre lesdits éléments ;
   ♦ un mécanisme pour déplacer lesdits éléments, ledit mécanisme comprenant deux vis (30) couplées avec l’un desdits éléments, lesdites deux vis étant espacées dudit élément pour déplacer ledit élément suite à la rotation desdites vis ;
   ♦ un pignon (50) coupé avec chaque vis ;
   ♦ une courroie ou chaîne de transmission (56) coupée avec lesdits pignons, et au moins une poignée (100) coupée avec l’une desdites vis pour faire tourner lesdites vis,

caractérisé par au moins un embrayage (64, 62, 50, 60) coupé avec au moins une vis pour limiter la pression de serrage sur la pièce, et ledit embrayage permettant la rotation d’une vis par rapport à l’autre vis de sorte que des pièces irrégulières peuvent être serrées entre lesdits éléments et le serrage de la pièce peut être réalisé en faisant tourner les vis avec une main d’un opérateur.

2. Établi selon la revendication 1, dans lequel ledit embrayage est automatique.

3. Établi selon la revendication 2, dans lequel ledit embrayage comprend un ressort (64) et un encliquetage dans ledit pignon (62).

4. Établi selon l’une quelconque des revendications précédentes, dans lequel chaque vis comprend un embrayage.

5. Établi selon l’une quelconque des revendications précédentes, dans lequel chaque vis comprend une poignée.

6. Établi selon la revendication 5, dans lequel une poignée a une identité de configuration différente de sorte qu’une seule poignée doit être entraînée en rotation pour entraîner lesdites vis.

7. Établi selon l’une quelconque des revendications précédentes, dans lequel on prévoit en outre une protection (80) pour recouvrir ladite courroie ou chaîne de transmission, ladite protection étant couplée avec ledit châssis.

8. Établi selon la revendication 7, dans lequel ladite protection comprend au moins un élément de tension (86) formé de manière unitaire avec et s’étendant à partir de ladite protection.

9. Établi selon l’une quelconque des revendications 7 ou 8, dans lequel ladite protection comprend au moins un élément d’alignement (90, 92) pour maintenir l’alignement de la courroie ou chaîne sur le pignon.

10. Établi selon l’une quelconque des revendications 7 à 9, dans lequel un élément de sollicitation (96) est associé avec ladite courroie ou chaîne pour éliminer le jeu dans ladite courroie ou chaîne.

11. Établi selon la revendication 10, dans lequel l’élément de sollicitation est un ressort qui sollicite à la fois une partie d’attaque et une partie de fuite de la courroie ou chaîne.

12. Établi selon la revendication 8, dans lequel ladite protection comprend deux éléments de tension.

13. Établi selon la revendication 9, dans lequel ladite protection comprend deux paires d’éléments d’ali-
gnement, chaque paire prenant en sandwich un élé-
ment de tension.

14. Établi selon l’une quelconque des revendications précédentes, dans lequel ladite poignée comprend un moyeu (112), une partie droite (114) s’étendant à partir dudit moyeu, une partie incurvée (116) s’étendant à partir de ladite partie droite, et un bouton (118) s’étendant à partir de ladite partie incurvée pour permettre la rotation de ladite poignée.

15. Établi selon la revendication 14, dans lequel ladite partie incurvée a la forme d’un U tronqué avec une extrémité couplée avec ladite partie droite et ledit bouton s’étend à partir de l’autre extrémité de ladite partie incurvée.

16. Établi selon la revendication 15, dans lequel ledit moyeu a une hauteur souhaitée, ladite partie droite a une hauteur inférieure audit moyeu et ladite partie incurvée a une hauteur supérieure audit moyeu.

17. Établi selon la revendication 16, dans lequel, dans une extrémité de ladite partie incurvée et un côté de ladite partie droite, on forme de manière continue une partie plane.

18. Établi selon la revendication 17, dans lequel un élé-
ment de raccordement s’étend à partir dudit moyeu et est solidaire desdites parties droite et incurvée.

19. Transmission à entraînement par courroie ou chaîne pour un établi, comprenant :

♦ deux vis (30) adaptées pour se coupler avec un premier élément (24) destiné à être déplacé contre un second élément (26) pour fournir le serrage ;
♦ un pignon (50) couplé avec chaque vis ;
♦ une courroie ou chaîne de transmission (56) couplée avec chacun desdits pignons ; et
♦ au moins une poignée (102, 112) couplée avec l’une desdites vis pour faire tourner lesdites vis ; et

caractérisée par au moins un embrayage (64, 62, 50, 60) couplé avec au moins une vis pour limiter la pression de serrage sur une pièce, et ledit embraya-
ge permettant la rotation de l’autre vis par rapport à la vis qui est en train de tourner.

20. Transmission à entraînement par courroie ou chaîne selon la revendication 19, dans lequel chaque vis comprend une butée (40) pour positionner un ressort par rapport audit pignon.
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description