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(12) # EUROPEAN PATENT APPLICATION

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(54) **Gripping device.**

(57) A gripping device has a pair of jaws which can be moved towards or away from one another, and one of which can be rotated or moved sideways. The jaws have projecting and recessed portions, and that a projecting part on one can be brought opposite a recess on the other to enable an irregular object to be gripped.

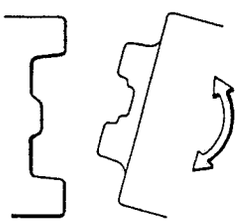

FIG. 2-6

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Description

GRIPPING DEVICE

The applicant is specified at manufacturing the tools for picking up and holding the irregular works and has disclosed the invention on the clipping equipments for various kinds of irregular works in European Patent Applicant No. 86301397.5. This is an advanced device for the method and facility for clipping, pressing and shearing the irregular works, by means of a clipping phase with convex & concave make up each other, and can slide in parallel and vibrate slantly. This method is available for lower requirements to clip, shear and press the irregular works. The primary principle as follows:

a set with the first chucks, the feature, is, in its middle with progress or circular shape or V-shape verticle concave structure, and the protruded sector on both laterals with smaller space than that of indented sector in the middle of opposite chucks, and combined with the second chucks of the same shape or appeared with convex and concave make up each other. The further feature, is, by means of , one of two chucks can slide in parallel or regulate the clipping direction of vibration, so as to provide for convex & concave make up each other or normally clipping combination each other, to suit various shapes of works; or

between these two chucks, with the structure of making up each other, one-stage or poly-stage progress or secular or V-shape verticle convex & concave, to do mutual clip, or by means of two chucks, which can slide in parallel or regulate the clipping direction of vibration, so as to provide for convex and concave make up each other or normally clipping combination each other, to suit various shapes of works.

DETAILED DESCRIPTION OF THE INVENTION

Referring to clipping the irregular works, it is usually by means of the device of the auxiliary equipments to reach for it. The applicant previously disclosed the device for sliding chucks to clip the irregular works int he European Patent No. 86301397.5 and this, by means of a clipping phase with convex & concave make up each other and slide in parallel or vibrated slantly, is an advanced device for the methods and facility for clipping, pressing and shearing the irregular works. the primary principle as:

a set with the first chucks, the feature, is, in its middle, with progress or circular shape or V-shape verticle concave structure, and the protruded sector on both laterals with smaller space than that of indented sector in the middle of opposite chucks, and combined with the second chucks of the same shape or appeared with convex & concave make up each other. The further feature, is, by means of two chucks, can slide in parallel or regulate the clipping direction of vibration, so as to provide for convex & concave make up each other, to suit each kind of shape of works; or

between these two chucks, with the structure of mutual make up, one-stage or poly-stage progress or secular or V-shape verticle convex & concave, to do mutual clip, or by means of one of two chucks, which can slide in parallel or regulate the clipping direction of vibration, so as to provide for convex & concave each other or normally clipping

combination, to suit various shapes of works. Though the traditional tongs equipped with V-shape of verticle chuck slot, it was not equipped with mutual -sorting or mutual-coupling chucks, to expand its clipping diameter-dimension and could not slide in parallel and without the function of vibrating angle, which limited to suit for certain kind of shapes. This device, due to the aforesaid mutual-coupling, slide in parallel and vibrate, with one or more of them, combined with indented slot, can facilitate the facility of clipping the works in any shape. Hereby refering to its feature of structure and facility example, to disclose as follows:

Fig. 1 & 1-1, is the facility example of this method. In this Fig., including two sets for forwarding to pick up and hold or backward and separated, chucks 101, 102, which is available to accept the thread leads or drive the other force power to clip in opposition and release backwards. Any set of chuck-jowl can be slide in parallel. Its primary feature as:

1. disclosed by Fig. 1-1, the first set of chucks, in the middle with a single or poly indented structure (progress-tooth shape or circular shape shown as Fig. 1-4), two laterals with convex extending in parallel shown as Fig. 1-1, 1-3, which is the facility example of double-layer convex & concave.

2. the second chucks equipped with the similar indented structure of the first chucks, or by means of one of chuck-jowl's clipping phase which can vibrate slantly and cause these two chucks to meet mutual combination, at this moment, the width of convex on both laterals of chuck equals to the indented sector in the middle parts between the swingable chucks vibrates slantly to sort into the first chucks (shown as Fig, 1-2).

3. the second chucks equipped with the similar indented structure of the first chucks, by means of the structure with one of the chuck-jowls, which can slide in parallel, so as to let the two clipping phases available to meet and combine without parallel. The feature is, the convex on both laterals of the chucks appear a plane width which can be sorted into, as soon as the second chucks slide to cause the convex & concave coordinated (shown as Fig.1).

4. the second chucks equipped with the protruded chuck structure appear the mutual make up with the first chucks, and directly clip each other (shown as Fig.2), and a lower degree latitude difference is made between the protruded sector and two laterals plane clipping phase of the second chucks, available to pick

up and hold the thinner works (shown as Fig.2-1), or by means of one of a set of clipping phase which can vibrate slantly to force two clipping phases mutually meet and combine each other without parallel. The feature, is, the protruded chuck of the second chucks smaller than the indented sector of the first chucks, which can be sorted (shown as Fig.2-2).

5. equipped with a protruded chuck structure which can mutual make up with the second chucks as well as the first chucks, and by means of one of a set of clipping phase which appear a chuck-jowl structure available to slide in parallel, so as to make two clipping phases to meet and combine, and the feature, is, two laterals of the chuck appear a opposite structure of plane clipping phase, available to clip the parallel and small works (shown as Fig.2-3).

6. equipped with convex & concave mutual make up type, and two sets of chucks, in their middle appear magnified the dimension of protruded and indented, mutually appear make-up each other, the first chucks and the second chucks directly pick up and hold each other (shown as Fig.2-4, 2-5), or, one of chuck-jowls clipping phase appear to be able to meet and combine without parallel (shown as Fig.2-6).

7. equipped with poly - convex & concave mutual make-up type, and two sets of chucks in their middle appear magnified the dimension of protruded and indented, mutually appear make-up each other, either of chucks is the one with the functional structure of sliding in parallel shown as (Fig.2-7).

The aforesaid way of facility including

A. only for moving and clipping back and forth.

B. at least with a set of chuck-jowl which can slide in parallel right and left, available for the two chucks to do mutual-coupling for much more types.

C. equipped with at least one set of chuck-jowl, its clipping phase can vibrate slantly so as to increase its availability for the works with different shapes.

D. combined with the functions of B and C.

The functional structure relating to the aforesaid jowl sector which can slide or vibrate, is previously disclosed by European Patent Applicant No.86301397.5 (shown as the Fig. in the attachment), their structure are alluded, and need not describe repeatedly.

The aforesaid facility of chuck and chuck-jowl, its structure can be made into a block of chuck-jowl chuck sets or a block of chuck-jowl and screwed chucks or consisted of poly-sets of thin pieces piled up (shown as Fig.3), and allow to attach a horizontal V-shape slot available to provide for similar function as the traditional tong with horizontal clipping round stick and piled up by thin pieces, and can make one of sets of thin pieces into smaller indented shape. In the practical facility, besides used as clip the works, it also can be used for press, such as, press-tong for the operation of wire connection ends, shown as Fig.4, which will make into a,b,c,d, various kinds of width specification, if used in manual-tong, it can minimize the maxium diameter into the progress difference of smallest diameter, shown as Fig.5, it is, a traditional round materials, and the progress diameter required comparison among manual-tong or pipe-tong in bi-V-shape sharp jaw and traditional jaw. The distance S2 shorter than traditional S1, and due to the progress distance shorter, it can save lots of force.

Refering to aforesaid, this, by means of the make-up of convex & concave clipping phases each other ans slide in parallel or vibrate slantly, available for the method and facility of clipping pressing and shearing the works, which disclosed the method of clipping the irregular works. After the trials made by the applicant, the effect is in actuality, please refer to and survey accordingly.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is the real example of the perspective view on the chuck structure with intermediate indent ans slide in parallel available to offer clipping function.

Fig. 1-1 is the solid view of Fig. 1, on chuck with the structure of intermediate indented chuck.

Fig.1-2 is the demonstration on the intermediate indented chuck structure combined with the function of regulating the slant and slide of the second chucks.

Fig.1-3 is the presepctive view on the structure of chuck with double-layer secular contex & concave make-up each other.

Fig.1-4 is the prespective view on the structure of chuck with single set of intermediate indented make-up each other.

Fig. 2, is the pres-pective view on the chuck structure with intermediate convex & concave make-up each other.

Fig. 2-1 is the lateral view on Fig. 2.

Fig. 2-2, is the perspective view on the chuck structure with intermediate convex & concave make-up each other, and one of sets can be the structure available for slide slantly.

Fig.2-3 is the perspective view on the chuck structure with intermediate convex & concave make-up each other, and one of sets can be the structure available for slide in parallel.

Fig.2.4 is the perspective view on the chuck structure with poly-stage intermediate convex & concave make-up each other.

Fig.2-5 is the lateral view on Fig.2-4.

Fig.2-6 is the perspective view on the chuck with poly-stage intermediate convex & concave make-up each other and one of sets with the structure available for slide slantly.

Fig.2-7 is the perspective view on the chuck with polystage intermediate convex & concave make-up each other and one of sets with structure available for slide in parallel.

Fig.3 is the structural example for chucks of

pieces piled.

Fig.3-1 is the structural example for chucks of pieces piled, intermediate with indent.

Fig.4 is the perspective view on the chuck structure available for the press-tong with different width tooth and poly-layer of convex & concave make-up each other.

Fig.5 is the efficiency comparison drawn between the structure with poly-layer convex & concave make-up each other and the structure with traditional double V-shape structure.

Claims

1. Gripping device comprising a pair of jaws movable towards or away from one another, each jaw having projecting and recessed portions, and one of the jaws being notable and/or transversely movable, whereby a projecting portion of our jaw may be brought opposite a recessed portion of the other to enable an object of non-rectangular section to be securely gripped.

2. A structure of method and facility for clipping, pressing and shearing the irregular works, by means of a clipping phase with convex & concave make-up each other and slide in parallel or vibrate slantly. The primary principle is,
a set with the first chucks, the feature is, intermediate with progress or circular shape or V-shape verticle concave structure, and the protruded sector on both laterals with smaller space than that of indented sector in the middle of opposite chucks, and combined with the second chucks of the same shape or appeared with convex & concave make-up each other. The further feature, is, by means of, one of two chucks can slide in parallel or regulate the clipping direction of vibration, so as to provide for convex & concave make-up each other or normally clipping and combining each other, to suit various shapes of works; or
between these two chucks, with the structure of make-up each other, one stage or poly-stage progress or secular or V-shape vertical convex & concave, to do mutual slip or by means of one of two chucks which can slide in parallel or regulate the clipping direction of vibration, so as to provide for convex & concave mutually make-up or normally clipping combination each other, to suit various shapes of works.
including two sets for forwarding to pick up and hold or backward and separated, the chucks are available to accept the thread leads or drive the other force power to clip in opposition and release backwards.

3. The structure in claim 9, with the primary feature as:
the first set of chucks, in the middle with a single or poly indented structure, two laterals with convex extending in parallel, which is the facility example of double-layer convex & concave.
the second chucks equipped with the similar indented structure of the first chucks, or by means of one of chuck-jowl's clipping phase which can vibrate slantly and cause these two chucks to meet mutual combination, at this moment, the width of convex on both laterals of chuck equals to the indented sector in the middle parts between the swingable chucks vibrates slantly to sort into the first chucks,
the second chucks equipped with the similar indented structure of the first chucks, by means of the structure with one of the chuck-jowl, which can slide in parallel, so as to let the two clipping phases available to meet and combine without parallel. The feature is, the convex on both laterals of the chucks appear a plane width which can be sorted into, as soon as the second chucks slide to cause the convex & concave coordinated, the second chucks equipped with the protruded chuck structure appear the mutual make-up with the first chucks, and directly clip each other, and a lower degree latitude difference is made between the protruded sector and two laterals plane clipping phase of the second chucks, available to pick up and hold the thinner works, or by means of a set of clipping phase which can vibrate slantly to force two clipping phases mutually meet and combine each other without parallel. The feature, is, the protruded chuck of the second chucks smaller than the indented sector of the first chucks, which can be sorted, equipped with a protruded chuck structure which can mutually make up with the second chucks as well as the first chucks, and by means of one of a set of clipping phase which appear a chuck-jowl structure available to slide in parallel, so as to make two clipping phases to meet and combine, and the feature, is,two laterals of the chuck appear on opposite structure of plane clipping phase, available to clip the parallel and small works, equipped with convex & concave mutual make-up type, and two sets of chucks, in their middle appear magnified the dimension of protruded and indented, mutually appear make-up each other, the first chucks and the second chucks directly pick up and hold each other, or, one of chuck-jowl's clipping phase appear to be able to vibrate slantly, which available to cause two clipping phases able to meet and combine without parallel, equipped with poly - convex & concave mutual make-up type, two sets of chucks in their middle appear magnified the dimension of protruded and indented, mutually appear make-up each other, either of chucks is the one with the functional structure of sliding in paralle, the aforeseaid way of facility including:

(A) only for moving and clipping back and forth,

(B) at least with a set of chuck-jowl which can slide in parallel right and left, available for the two chucks to do mutual

coupling for much more types,

(C) equippd with at least one set of chuck-jowl, its clipping phases can vibrate slantly so as to increase its availability for the works with different shapes,

(D) combined with the functions of B and C.

4. The aforeseaid facility of chucks and chuck-jowl in claims 2 or 3, its structure can be made into a block of chuck-jowl and screwed chucks or consisted of poly-sets of thin pieces piled up, and allow to attach a horizontal V-shape slot available to provide for the similar function as the traditional tong with horizontal clipping round stick and piled up by thin pieces, and can make one of sets of thin pieces into smaller indented shape.

5. The aforesaid structure in claim 2, the width of different progress indent of the structure, can be the same or different.

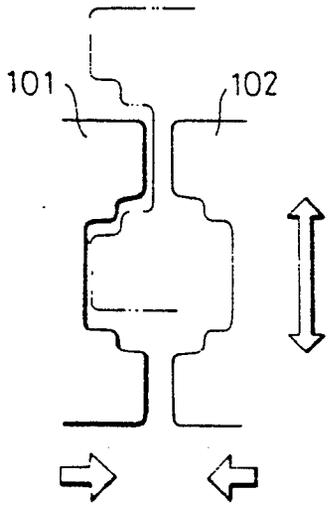


FIG. 1

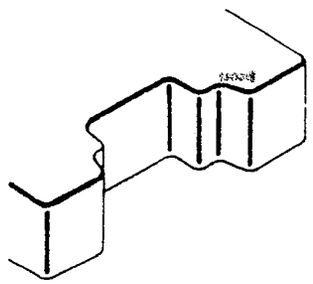


FIG. 1-1

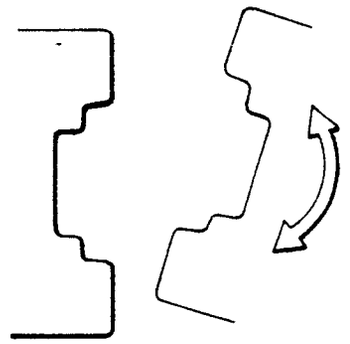


FIG. 1-2

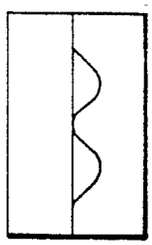


FIG. 1-3

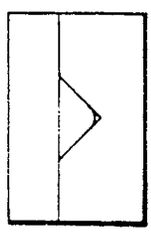


FIG. 1-4

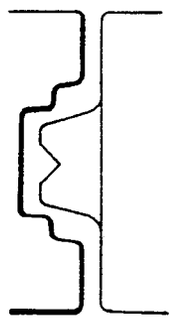


FIG. 2

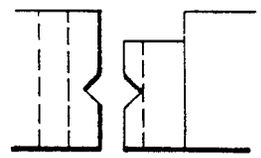


FIG. 2-1

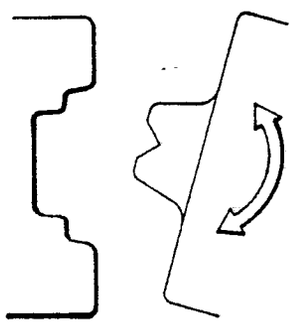


FIG. 2-2

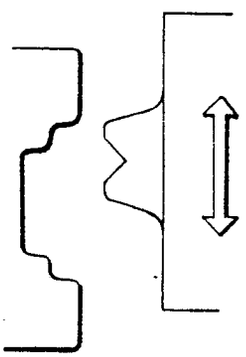


FIG. 2-3

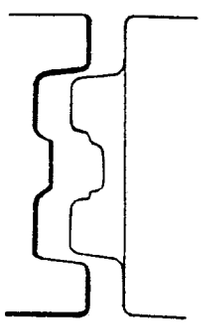


FIG. 2-4

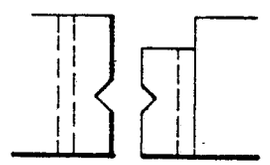


FIG. 2-5

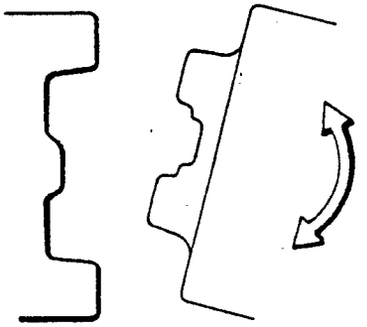


FIG. 2-6

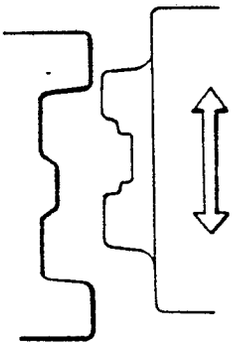


FIG. 2-7

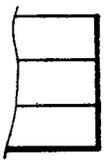


FIG. 3

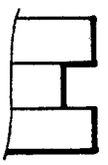
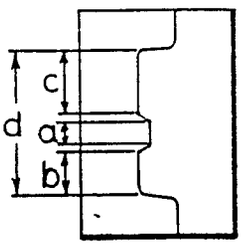
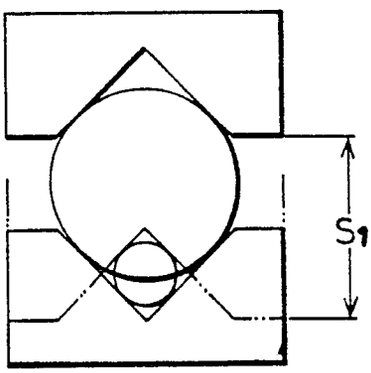


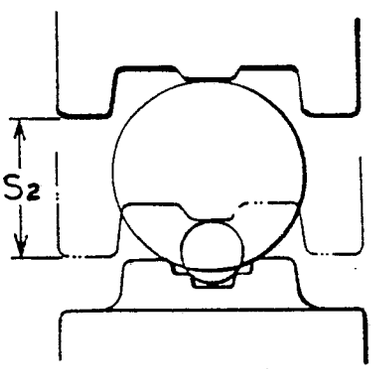
FIG. 3-1



a<b<c<d

FIG. 4





S1>S2

FIG. 5