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(54) **WHEEL END SURFACE DETECTION AND CORRECTION DEVICE**

VORRICHTUNG ZUR DETEKTION UND KORREKTUR VON RADENDFLÄCHEN

DISPOSITIF DE DÉTECTION ET DE CORRECTION DE LA SURFACE D'EXTRÉMITÉ DE ROUE

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(73) Proprietor: **Citic Dicastal Co., Ltd.**
Qinhuangdao, Hebei 066011 (CN)

(72) Inventors:
- **XUE, Bowen**
  Qinhuangdao, Hebei 066011 (CN)
- **CUI, Baojun**
  Qinhuangdao, Hebei 066011 (CN)
- **BAO, Lei**
  Qinhuangdao, Hebei 066011 (CN)
- **GUO, Jiandong**
  Qinhuangdao, Hebei 066011 (CN)

(74) Representative: **Gerauer, Marc Philippé et al**
Kraus & Weisert
Patentanwälte PartGmbB
Thomas-Wimmer-Ring 15
DE-80539 München (DE)

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Description

Field

[0001] The present disclosure relates to a detection and correction device, and more particularly relates to a wheel end surface detection and correction device.

Background

[0002] In a machining process of aluminum alloy wheels, a machined wheel end surface is often unqualified in runout due to an end surface deformation and a clamping deformation of a blank, which will cause a wheel to vibrate during driving and affect the driving safety and comfort. Therefore, there is a need for automated equipment that performs online detection on the end surface runout of the wheel and corrects unqualified workpieces.

[0003] Among the prior art, CN 108 555 069 A discloses a wheel correcting equipment that can be used for correcting axial deformation and radial deformation of a wheel. Moreover, CN 108 273 875 A discloses an end face detecting and correcting device, and more particularly an improved wheel end face detecting and correcting device.

Summary

[0004] The present disclosure aims to provide a wheel end surface detection and correction device. The device may detect the end surface runout of a wheel on line and correct the wheel end surface on line when used.

[0005] In order to achieve the aforementioned objective, the technical solution of the present disclosure is as described in claim 1. A wheel end surface detection and correction device, consisting of a stand, cylinders I, guide columns I, guide sleeves I, a fixed plate, a lifting frame I, guide rails I, guide rails II, a servo electric cylinder I, a translational frame, guide rails III, a lifting frame II, a dial indicator, a supporting plate, an expansion core, an expansion sleeve, a reference plate, a cylinder rod, a piston, a cylinder body, a left copying pressing block, a left pressing rod, a rotating ring, a left guide sleeve, a movable plate, a servo motor, servo electric push rods, a lifting plate, guide columns II, guide sleeves II, a left servo electric cylinder, a cylinder II, a right servo electric cylinder, a right guide sleeve, a right pressing rod, a right copying pressing block and a servo electric cylinder II, the fixed plate is fixed on the stand; the four guide sleeves I are fixed on the fixed plate; the four guide columns I matched with the guide sleeves I are fixed below the lifting frame I; the two cylinders I are also fixed on the fixed plate, and the output ends of the two cylinders I are hinged with the bottom of the lifting frame I; two sides of the lifting frame I are connected with the stand through the guide rails I; the front and rear ends of the supporting plate are fixed on the stand.

[0006] A detection system is that: the bottom end of the translational frame is mounted above the bottom of the lifting frame I through the guide rails II; the lifting frame II is mounted on the side surface of the translational frame through the guide rails III; the servo electric cylinder I is fixed on a bottom plate of the translational frame, and the output end of the servo electric cylinder I is connected with the lifting frame II; the dial indicator is mounted on the lifting frame II; the servo electric cylinder II is fixed above the bottom of the lifting frame I, and the output end of the servo electric cylinder II is connected with the translational frame.

[0007] A customized cylinder is that: the reference plate is fixed below the cylinder body; the piston is matched with an inner hole of the cylinder body; the cylinder rod is connected with the piston.

[0008] The expansion sleeve is fixed below the reference plate; the expansion core is fixed at the top end of the cylinder rod; the outer side of the expansion core is matched with the inner side of the expansion sleeve; the top end of the cylinder body is mounted below the movable plate through the rotating ring; the servo motor is fixed above the movable plate, and the output end of the servo motor is connected with the top end of the cylinder body; the upper ends of the three servo electric push rods are hinged with the lower end of the lifting plate, and the lower ends are hinged with the top end of the movable plate; the three servo electric push rods are uniformly distributed between the movable plate and the lifting plate; the four guide columns II are fixed above the lifting plate; the four guide sleeves II matched with the four guide columns II are fixed at the top end of the stand; the cylinder II is also fixed at the top end of the stand, and the output end of the cylinder II is hinged with the top end of the lifting plate.

[0009] A correction system is that: the left servo electric cylinder is fixed on the left side of the top end of the stand; the left guide sleeve is fixed below the left servo electric cylinder and is matched with the left pressing rod; the top end of the left pressing rod is connected with the output end of the left servo electric cylinder, and the left copying pressing block is fixed at the left end of the left pressing rod; the right servo electric cylinder is fixed on the right side of the top end of the stand; the right guide sleeve is fixed below the right servo electric cylinder and is matched with the right pressing rod; the top end of the right pressing rod is connected with the output end of the right servo electric cylinder; and the right copying pressing block is fixed at the lower end of the right pressing rod.

[0010] In a working process, firstly, a stopper initially locates a wheel in the center; a cylinder II 32 enables an expansion sleeve 16 to move down through guide columns II 29 and be matched with a wheel center hole; three servo electric push rods 27 adjust a posture of a reference plate 17 to cause the reference plate 17 to be flatly fitted to a wheel flange surface; a cylinder rod 18 pulls an expansion core 15 to tighten the wheel; the cylinder II 32 lifts the wheel, and a servo motor 26 enables the wheel to rotate; a servo electric cylinder II 37 enables

a dial indicator 13 to be located below the end surface of a wheel rim of the wheel through guide rails II 8; a servo electric cylinder I 9 enables the dial indicator 13 to be in contact with the wheel end surface through guide rails III 11; at the moment, the end surface runout of the wheel may be detected; after the detection is completed, cylinders 12 enable a lifting frame 16 to move down via guide columns 13; meanwhile, the cylinder II 32 enables the wheel end surface to be flatly fitted to a supporting plate 14; a right servo motor 33 enables a right copying pressing block 36 to be flatly fitted to the upper end surface of one side of the wheel through a right pressing rod 35, but no force is applied; and a left servo motor 31 enables a left copying pressing block 21 to over press the other side of the wheel through a left pressing rod 22 to cause the lower end surface to move down, so as to achieve the aim of correcting the end surface.

[0011] The present disclosure may detect the end surface runout of the wheel on line and correct the wheel end surface on line when used, and has the characteristics of high automation degree, advanced process, high generality, safe and stable performance and the like.

Brief Description of the Drawings

[0012]

Fig. 1 is a front view of a wheel end surface detection and correction device of the present disclosure;
Fig. 2 is a left view of a wheel end surface detection and correction device of the present disclosure; and
Fig. 3 is a front view of a wheel end surface detection and correction device of the present disclosure during working.

[0013] In the drawings, 1: stand; 2: cylinder I; 3: guide column I; 4: guide sleeve I; 5: fixed plate; 6: lifting frame I; 7: guide rail I; 8: guide rail II; 9: servo electric cylinder I; 10: translational frame; 11: guide rail III; 12: lifting frame II; 13: dial indicator; 14: supporting plate; 15: expansion core; 16: expansion sleeve; 17: reference plate; 18: cylinder rod; 19: piston; 20: cylinder body; 21: left copying pressing block; 22: left pressing rod; 23: rotating ring; 24: left guide sleeve; 25: movable plate; 26: servo motor; 27: servo electric push rod; 28: lifting plate; 29: guide column II; 30: guide sleeve II; 31: left servo electric cylinder; 32: cylinder II; 33: right servo electric cylinder; 34: right guide sleeve; 35: right pressing rod; 36: right copying pressing block; and 27: servo electric cylinder II.

Detailed Description of the Embodiments

[0014] Details and working conditions of a specific device provided according to the present disclosure are described below in combination with accompanying drawings.

[0015] The device consists of a stand 1, cylinders I 2, guide columns I 3, guide sleeves I 4, a fixed plate 5, a lifting frame I 6, guide rails I 7, guide rails II 8, a servo electric cylinder I 9, a translational frame 10, guide rails III 11, a lifting frame II 12, a dial indicator 13, a supporting plate 14, an expansion core 15, an expansion sleeve 16, a reference plate 17, a cylinder rod 18, a piston 19, a cylinder body 20, a left copying pressing block 21, a left pressing rod 22, a rotating ring 23, a left guide sleeve 24, a movable plate 25, a servo motor 26, servo electric push rods 27, a lifting plate 28, guide columns II 29, guide sleeves II 30, a left servo electric cylinder 31, a cylinder II 32, a right servo electric cylinder 33, a right guide sleeve 34, a right pressing rod 35, a right copying pressing block 36 and a servo electric cylinder II 37, the fixed plate 5 is fixed on the stand 1; the four guide sleeves I 4 are fixed on the fixed plate 5; the four guide columns I 3 matched with the guide sleeves I 4 are fixed below the lifting frame I 6; the two cylinders I 2 are also fixed on the fixed plate 5, and the output ends of the two cylinders I 2 are hinged with the bottom of the lifting frame I 6; two sides of the lifting frame I 6 are connected with the stand 1 through the guide rails I 7; the front and rear ends of the supporting plate 14 are fixed on the stand 1;

a detection system is that: the bottom end of the translational frame 10 is mounted above the bottom of the lifting frame I 6 through the guide rails II 8; the lifting frame II 12 is mounted on the side surface of the translational frame 10 through the guide rails III 11; the servo electric cylinder 19 is fixed on a bottom plate of the translational frame 10, and the output end of the servo electric cylinder I 9 is connected with the lifting frame II 12; the dial indicator 13 is mounted on the lifting frame II 12; the servo electric cylinder II 37 is fixed above the bottom of the lifting frame I 6, and the output end of the servo electric cylinder II 37 is connected with the translational frame 10;

a customized cylinder is that: the reference plate 17 is fixed below the cylinder body 20; the piston 19 is matched with an inner hole of the cylinder body 20; the cylinder rod 18 is connected with the piston 19;

the expansion sleeve 16 is fixed below the reference plate 17; the expansion core 15 is fixed at the top end of the cylinder rod 18; the outer side of the expansion core 15 is matched with the inner side of the expansion sleeve 16; the top end of the cylinder body 20 is mounted below the movable plate 25 through the rotating ring 23; the servo motor 26 is fixed above the movable plate 25, and the output end of the servo motor 26 is connected with the top end of the cylinder body 20; the upper ends of the three servo electric push rods 27 are hinged with the lower end of the lifting plate 28, and the lower ends are hinged with the top end of the movable plate 25; the three servo electric push rods 27 are uniformly distributed between the movable plate 25 and the lifting plate 28; the four guide columns II 29 are fixed above the lifting plate 28; the four guide sleeves II 30 matched with the four guide columns II 29 are fixed at the top end of the stand 1; the cylinder II 32 is also fixed at the top end of the stand 1, and the output end of the cylinder II 32 is hinged with the top end of the lifting plate 28; and

a correction system is that: the left servo electric cylinder 31 is fixed on the left side of the top end of the stand 1; the left guide sleeve 24 is fixed below the left servo electric cylinder 31 and is matched with the left pressing rod 22; the top end of the left pressing rod 22 is connected with the output end of the left servo electric cylinder 31, and the left copying pressing block 21 is fixed at the left end of the left pressing rod 22; the right servo electric cylinder 33 is fixed on the right side of the top end of the stand 1; the right guide sleeve 34 is fixed below the right servo electric cylinder 33 and is matched with the right pressing rod 35; the top end of the right pressing rod 35 is connected with the output end of the right servo electric cylinder 33; and the right copying pressing block 36 is fixed at the lower end of the right pressing rod 35.

[0016] According to the invention, firstly, a stopper is configured to initially locate a wheel in the center; the cylinder II 32 is configured to enable the expansion sleeve 16 to move down through guide columns II 29 and to be matched with a wheel center hole; three servo electric push rods 27 are configured to adjust a posture of the reference plate 17 to cause the reference plate 17 to be flatly fitted to a wheel flange surface; the cylinder rod 18 is configured to pull the expansion core 15 to tighten the wheel; the cylinder II 32 is configured to lift the wheel, and the servo motor 26 is configured to enable the wheel to rotate; the servo electric cylinder II 37 is configured enable the dial indicator 13 to be located below the end surface of a wheel rim of the wheel through guide rails II 8; the servo electric cylinder I 9 is configured to enable the dial indicator 13 to be in contact with the wheel end surface through guide rails III 11; at the moment, the end surface runout of the wheel is configured to be detected; after the detection is completed, cylinders I 2 are configured to enable the lifting frame I 6 to move down via guide columns I 3; meanwhile, the cylinder II 32 is configured to enable the wheel end surface to be flatly fitted to the supporting plate 14; the right servo motor 33 is configured to enable the right copying pressing block 36 to be flatly fitted to the upper end surface of one side of the wheel through the right pressing rod 35, but no force is applied; and the left servo motor 31 is configured to enable the left copying pressing block 21 to over press the other side of the wheel through the left pressing rod 22 to cause the lower end surface to move down, so as to achieve the aim of correcting the end surface.

Claims

1. A wheel end surface detection and correction device, consisting of a stand (1), cylinders I (2), guide columns I (3), guide sleeves I (4), a fixed plate (5), a lifting frame I (6), guide rails I (7), guide rails II (8), a servo electric cylinder I (9), a translational frame (10), guide rails III (11), a lifting frame II (12), a dial indicator (13), a supporting plate (14), an expansion core (15), an expansion sleeve (16), a reference plate (17), a cylinder rod (18), a piston (19), a cylinder body (20), a left copying pressing block (21), a left pressing rod (22), a rotating ring (23), a left guide sleeve (24), a movable plate (25), a servo motor (26), servo electric push rods (27), a lifting plate (28), guide columns II (29), guide sleeves II (30), a left servo electric cylinder (31), a cylinder II (32), a right servo electric cylinder (33), a right guide sleeve (34), a right pressing rod (35), a right copying pressing block (36) and a servo electric cylinder II (37), wherein the fixed plate (5) is fixed on the stand (1); the four guide sleeves I (4) are fixed on the fixed plate (5); the four guide columns I (3) matched with the guide sleeves I (4) are fixed below the lifting frame I (6); the two cylinders I (2) are also fixed on the fixed plate (5), and the output ends of the two cylinders I (2) are hinged with the bottom of the lifting frame I (6); two sides of the lifting frame I (6) are connected with the stand (1) through the guide rails I (7); the front and rear ends of the supporting plate (14) are fixed on the stand (1);

a detection system is that: the bottom end of the translational frame (10) is mounted above the bottom of the lifting frame I (6) through the guide rails II (8); the lifting frame II (12) is mounted on the side surface of the translational frame (10) through the guide rails III (11); the servo electric cylinder I (9) is fixed on a bottom plate of the translational frame (10), and the output end of the servo electric cylinder I (9) is connected with the lifting frame II (12); the dial indicator (13) is mounted on the lifting frame II (12); the servo electric cylinder II (37) is fixed above the bottom of the lifting frame I (6), and the output end of the servo electric cylinder II (37) is connected with the translational frame (10);

a customized cylinder is that: the reference plate (17) is fixed below the cylinder body (20); the piston (19) is matched with an inner hole of the cylinder body (20); the cylinder rod (18) is connected with the piston (19);

the expansion sleeve (16) is fixed below the reference plate (17); the expansion core (15) is fixed at the top end of the cylinder rod (18); the outer side of the expansion core (15) is matched with the inner side of the expansion sleeve (16); the top end of the cylinder body (20) is mounted below the movable plate (25) through the rotating ring (23); the servo motor (26) is fixed above the movable plate (25), and the output end of the servo motor (26) is connected with the top end of the cylinder body (20); the upper ends of the three servo electric push rods (27) are hinged with the lower end of the lifting plate (28), and the lower ends are hinged with the top end of the movable plate (25); the three servo electric push rods (27) are uniformly distributed between the movable plate (25) and the lifting plate (28); the four guide columns II (29) are fixed above the lifting plate (28); the four guide sleeves II (30) matched with the four

guide columns II (29) are fixed at the top end of the stand (1); the cylinder II (32) is also fixed at the top end of the stand (1), and the output end of the cylinder II (32) is hinged with the top end of the lifting plate (28); and

a correction system is that: the left servo electric cylinder (31) is fixed on the left side of the top end of the stand (1); the left guide sleeve (24) is fixed below the left servo electric cylinder (31) and is matched with the left pressing rod (22); the top end of the left pressing rod (22) is connected with the output end of the left servo electric cylinder (31), and the left copying pressing block (21) is fixed at the left end of the left pressing rod (22); the right servo electric cylinder (33) is fixed on the right side of the top end of the stand (1); the right guide sleeve (34) is fixed below the right servo electric cylinder (33) and is matched with the right pressing rod (35); the top end of the right pressing rod (35) is connected with the output end of the right servo electric cylinder (33); and the right copying pressing block (36) is fixed at the lower end of the right pressing rod (35); a stopper is configured to initially locate a wheel in the center; the cylinder II (32) is configured to enable the expansion sleeve (16) to move down through guide columns II (29) and to be matched with a wheel center hole; three servo electric push rods (27) are configured to adjust a posture of the reference plate (17) to cause the reference plate (17) to be flatly fitted to a wheel flange surface; the cylinder rod (18) is configured to pull the expansion core (15) to tighten the wheel; the cylinder II (32) is configured to lift the wheel, and the servo motor (26) is configured to enable the wheel to rotate; the servo electric cylinder II (37) is configured enable the dial indicator (13) to be located below the end surface of a wheel rim of the wheel through guide rails II (8); the servo electric cylinder I (9) is configured to enable the dial indicator (13) to be in contact with the wheel end surface through guide rails III (11); at the moment, the end surface runout of the wheel is configured to be detected; after the detection is completed, cylinders I (2) are configured to enable the lifting frame I (6) to move down via guide columns I (3); meanwhile, the cylinder II (32) is configured to enable the wheel end surface to be flatly fitted to the supporting plate (14); the right servo motor (33) is configured to enable the right copying pressing block (36) to be flatly fitted to the upper end surface of one side of the wheel through the right pressing rod (35), but no force is applied; and the left servo motor (31) is configured to enable the left copying pressing block (21) to over press the other side of the wheel through the left pressing rod (22) to cause the lower end surface to move down, so as to achieve the aim of correcting the end surface.

Patentansprüche

1. Radstirnflächen-Erfassungs- und Korrekturvorrichtung, bestehend aus einem Gestell (1), Zylindern I (2), Führungssäulen I (3), Führungshülsen I (4), einer festen Platte (5), einem Hubrahmen I (6), Führungsschienen I (7), Führungsschienen II (8), einem servoelektrischen Zylinder I (9), einem Translationsrahmen (10), Führungsschienen III (11), einem Hubrahmen II (12), einer Messuhr (13), einer Stützplatte (14), einem Spreizkern (15), einer Spreizhülse (16), einer Referenzplatte (17), einer Zylinderstange (18), einem Kolben (19), einem Zylinderkörper (20), einem linken Kopierpressblock (21), einer linke Druckstange (22), einem Drehring (23), einer linken Führungshülse (24), einer beweglichen Platte (25), einem Servomotor (26), servoelektrischen Schubstangen (27), einer Hubplatte (28), Führungssäulen II (29), Führungshülsen II (30), einem linken servoelektrischen Zylinder (31), einem Zylinder II (32), einem rechten servoelektrischen Zylinder (33), einer rechten Führungshülse (34), einer rechten Druckstange (35), einem rechten Kopierpressblock (36) und einem servoelektrischen Zylinder II (37), wobei die feste Platte (5) am Gestell (1) befestigt ist; die vier Führungshülsen I (4) an der festen Platte (5) befestigt sind; die vier zu den Führungshülsen I (4) passenden Führungssäulen I (3) unterhalb des Hubrahmens I (6) befestigt sind; die beiden Zylinder I (2) ebenfalls an der festen Platte (5) befestigt sind, und die Ausgangsenden der beiden Zylinder I (2) mit dem Boden des Hubrahmens I (6) gelenkig verbunden sind; zwei Seiten des Hubrahmens I (6) durch die Führungsschienen I (7) mit dem Gestell (1) verbunden sind; die vorderen und hinteren Enden der Stützplatte (14) am Gestell (1) befestigt sind;
ein Erfassungssystem ist das: das untere Ende des Translationsrahmens (10) ist über dem Boden des Hubrahmens I (6) durch die Führungsschienen II (8) montiert; der Hubrahmen II (12) ist auf der Seitenfläche des Translationsrahmens (10) durch die Führungsschienen III (11) montiert; der servoelektrische Zylinder I (9) ist auf einer Bodenplatte des Translationsrahmens (10) befestigt und das Ausgangsende des servoelektrischen Zylinders I (9) ist mit dem Hubrahmen II (12) verbunden; die Messuhr (13) ist an dem Hubrahmen II (12) angebracht; der servoelektrische Zylinder II (37) ist über dem Boden des Hubrahmens I (6) befestigt, und das Ausgangsende des servoelektrischen Zylinders II (37) ist mit dem Translationsrahmen (10) verbunden;
ein kundenspezifischer Zylinder ist das: die Referenzplatte (17) ist unter dem Zylinderkörper (20) befestigt; der Kolben (19) ist mit einem inneren Loch des Zylinderkörpers (20) zusammenpasst; die Zylinderstange (18) ist mit dem Kolben (19) verbunden; die Spreizhülse (16) ist unterhalb der Referenzplatte (17) befestigt; der Spreizkern (15) ist am oberen En-

de der Zylinderstange (18) befestigt; die Außenseite des Spreizkerns (15) ist mit der Innenseite der Spreizhülse (16) abgestimmt; das obere Ende des Zylinderkörpers (20) ist unterhalb der beweglichen Platte (25) durch den Drehring (23) befestigt; der Servomotor (26) ist oberhalb der beweglichen Platte (25) befestigt, und das Ausgangsende des Servomotors (26) ist mit dem oberen Ende des Zylinderkörpers (20) verbunden; die oberen Enden der drei servoelektrischen Schubstangen (27) sind mit dem unteren Ende der Hubplatte (28) gelenkig verbunden, und die unteren Enden sind mit dem oberen Ende der beweglichen Platte (25) gelenkig verbunden; die drei servoelektrischen Schubstangen (27) sind gleichmäßig zwischen der beweglichen Platte (25) und der Hubplatte (28) verteilt; die vier Führungssäulen II (29) sind oberhalb der Hubplatte (28) befestigt; die vier zu den vier Führungssäulen II (29) passenden Führungshülsen II (30) sind am oberen Ende des Gestells (1) befestigt; der Zylinder II (32) ist ebenfalls am oberen Ende des Gestells (1) befestigt und das Ausgangsende des Zylinders II (32) ist mit dem oberen Ende der Hubplatte (28) gelenkig verbunden; und

ein Korrektursystem ist das: der linke servoelektrische Zylinder (31) ist an der linken Seite des oberen Endes des Gestells (1) befestigt; die linke Führungshülse (24) ist unter dem linken servoelektrischen Zylinder (31) befestigt und passt mit der linken Druckstange (22) zusammen; das obere Ende der linken Druckstange (22) ist mit dem Ausgangsende des linken servoelektrischen Zylinders (31) verbunden, und der linke Kopierpressblock (21) ist am linken Ende der linken Druckstange (22) befestigt; der rechte servoelektrische Zylinder (33) ist an der rechten Seite des oberen Endes des Gestells (1) befestigt; die rechte Führungshülse (34) ist unterhalb des rechten servoelektrischen Zylinders (33) befestigt und mit der rechten Druckstange (35) zusammengefügt; das obere Ende der rechten Druckstange (35) ist mit dem Ausgangsende des rechten servoelektrischen Zylinders (33) verbunden; und der rechte Kopierpressblock (36) ist am unteren Ende der rechten Druckstange (35) befestigt;

ein Stopper ist so konfiguriert, dass er ein Rad anfänglich in der Mitte positioniert; der Zylinder II (32) ist so konfiguriert, dass er es der Spreizhülse (16) ermöglicht, sich durch die Führungssäulen II (29) nach unten zu bewegen und an ein Radmittelloch angepasst zu werden; drei servoelektrische Schubstangen (27) sind so konfiguriert, dass sie eine Haltung der Referenzplatte (17) einstellen, um zu bewirken, dass die Referenzplatte (17) flach an eine Radflanschfläche angepasst wird; die Zylinderstange (18) ist so konfiguriert, dass sie den Spreizkern (15) zieht, um das Rad festzuziehen, der Zylinder II (32) ist so konfiguriert, dass er das Rad anhebt, und der Servomotor (26) ist so konfiguriert, dass er dem Rad ermöglicht, sich zu drehen; der servoelektrische Zylinder II (37) ist so konfiguriert, dass er der Messuhr (13) ermöglicht, durch Führungsschienen II (8) unter der Endfläche einer Radfelge des Rades angeordnet zu sein; der servoelektrische Zylinder I (9) ist so konfiguriert, dass er der Messuhr (13) ermöglicht, durch Führungsschienen III (11) in Kontakt mit der Radendfläche zu sein; in diesem Moment ist der Endflächenschlag des Rades so konfiguriert, dass er erfasst wird; nachdem die Erfassung abgeschlossen ist, sind die Zylinder I (2) so konfiguriert, dass sie es dem Hubrahmen I (6) ermöglichen, sich über die Führungssäulen I (3) nach unten zu bewegen; in der Zwischenzeit ist der Zylinder II (32) so konfiguriert, dass er es der Radendfläche ermöglicht, flach an einer Stützplatte (14) angebracht zu werden; der rechte Servomotor (33) so konfiguriert ist, dass er es dem rechten Kopierpressblock (36) ermöglicht, flach an der oberen Endfläche einer Seite des Rades durch die rechte Druckstange (35) angebracht zu werden, aber keine Kraft aufgebracht wird; und der linke Servomotor (31) so konfiguriert ist, dass er es dem linken Kopierpressblock (21) ermöglicht, die andere Seite des Rades durch die linke Druckstange (22) zu überpressen, um zu bewirken, dass sich die untere Endfläche nach unten bewegt, um so das Ziel der Korrektur der Endfläche zu erreichen.

Revendications

1. Dispositif de détection et de correction de surface d'extrémité de roue, constitué d'un support (1), de vérins I (2), de colonnes de guidage I (3), de manchons de guidage I (4), d'une plaque fixe (5), d'un cadre de levage I (6), de rails de guidage I (7), de rails de guidage II (8), d'un servo-vérin électrique I (9), d'un cadre de translation (10), des rails de guidage III (11), d'un cadre de levage II (12), d'un comparateur à cadran (13), d'une plaque de support (14), d'un noyau d'expansion (15), d'un manchon d'expansion (16), d'une plaque de référence (17), d'une tige de vérin (18), d'un piston (19), d'un corps de vérin (20), d'un bloc de pression de copie gauche (21), d'une tige de pression gauche (22), d'une bague rotative (23), d'un manchon de guidage gauche (24), d'une plaque mobile (25), d'un servomoteur (26), des tiges de poussée servoélectriques (27), d'une plaque de levage (28), des colonnes de guidage II (29), des manchons de guidage II (30), d'un servo-vérin électrique gauche (31), d'un vérin II (32), d'un servo-vérin électrique droit (33), d'un manchon de guidage droit (34), d'une tige de pression droite (35), d'un bloc de pression de copie droit (36) et d'un servo-vérin électrique II (37), dans lequel la plaque fixe (5) est fixée sur le support (1) ; les quatre manchons de guidage I (4) sont fixés sur la plaque fixe (5) ; les quatre colonnes de guidage I (3) apariées

aux manchons de guidage I (4) sont fixées sous le cadre de levage I (6) ; les deux vérins I (2) sont également fixés sur la plaque fixe (5), et les extrémités de sortie des deux vérins I (2) sont articulées avec le fond du cadre de levage I (6) ; deux côtés du cadre de levage I (6) sont reliés au support (1) par les rails de guidage I (7) ; les extrémités avant et arrière de la plaque de support (14) sont fixées sur le support(1) ;

un système de détection est tel que : l'extrémité inférieure du cadre de translation (10) est montée au-dessus du fond du cadre de levage I (6) par l'intermédiaire des rails de guidage II (8) ; le cadre de levage II (12) est monté sur la surface latérale du cadre de translation (10) par l'intermédiaire des rails de guidage III (11) ; le servo-vérin électrique I (9) est fixé sur une plaque inférieure du cadre de translation (10), et l'extrémité de sortie du servo-vérin électrique I (9) est reliée au cadre de levage II (12) ; le comparateur à cadran (13) est monté sur le cadre de levage II (12) ; le servo-vérin électrique II (37) est fixé au-dessus du fond du cadre de levage I (6), et l'extrémité de sortie du servo-vérin électrique II (37) est reliée au cadre de translation (10) ;

un vérin personnalisé est tel que : la plaque de référence (17) est fixée au-dessous du corps de vérin (20) ; le piston (19) est apparié à un trou intérieur du corps de vérin (20) ; la tige de vérin (18) est reliée au piston (19) ;

le manchon d'expansion (16) est fixé sous la plaque de référence (17) ; le noyau d'expansion (15) est fixé à l'extrémité supérieure de la tige de vérin (18) ; le côté extérieur du noyau d'expansion (15) est apparié au côté intérieur du manchon d'expansion (16) ; l'extrémité supérieure du corps de vérin (20) est montée sous la plaque mobile (25) par l'intermédiaire de la bague rotative (23) ; le servomoteur (26) est fixé au-dessus de la plaque mobile (25), et l'extrémité de sortie du servomoteur (26) est reliée à l'extrémité supérieure du corps de vérin (20) ; les extrémités supérieures des trois tiges de poussée servoélectriques (27) sont articulées avec l'extrémité inférieure de la plaque de levage (28), et les extrémités inférieures sont articulées avec l'extrémité supérieure de la plaque mobile (25) ; les trois tiges de poussée servoélectriques (27) sont uniformément réparties entre la plaque mobile (25) et la plaque de levage (28) ; les quatre colonnes de guidage II (29) sont fixées au-dessus de la plaque de levage (28) ; les quatre manchons de guidage II (30) appariés aux quatre colonnes de guidage II (29) sont fixés à l'extrémité supérieure du support (1) ; le vérin II (32) est également fixé à l'extrémité supérieure du support (1), et l'extrémité de sortie du vérin II (32) est articulée avec l'extrémité supérieure de la plaque de levage(28) ; et

un système de correction est tel que : le servo-vérin électrique gauche (31) est fixé sur le côté gauche de l'extrémité supérieure du support (1) ; le manchon de guidage gauche (24) est fixé sous le servo-vérin électrique gauche (31) et est apparié à la tige de pression gauche (22) ; l'extrémité supérieure de la tige de pression gauche (22) est reliée à l'extrémité de sortie du servo-vérin électrique gauche (31), et le bloc de pression de copie gauche (21) est fixé à l'extrémité gauche de la tige de pression gauche (22) ; le servo-vérin électrique droit (33) est fixé sur le côté droit de l'extrémité supérieure du support (1) ; le manchon de guidage droit (34) est fixé sous le servo-vérin électrique droit (33) et est apparié à la tige de pression droite (35) ; l'extrémité supérieure de la tige de pression droite (35) est reliée à l'extrémité de sortie du servo-vérin électrique droit (33) ; et le bloc de pression de copie droit (36) est fixé à l'extrémité inférieure de la tige de pression droite (35) ;

une butée est configurée pour placer initialement une roue au centre ; le vérin II (32) est configuré pour permettre au manchon d'expansion (16) de se déplacer vers le bas à travers les colonnes de guidage II (29) et de s'apparier à un trou central de roue ; trois tiges de poussée servoélectriques (27) sont configurées pour ajuster une posture de la plaque de référence (17) pour faire en sorte que la plaque de référence (17) soit ajustée à plat sur une surface de bride de roue ; la tige de vérin (18) est configurée pour tirer le noyau d'expansion (15) pour serrer la roue ; le vérin II (32) est configuré pour soulever la roue, et le servomoteur (26) est configuré pour permettre à la roue de tourner ; le servo-vérin électrique II (37) est configuré pour permettre au comparateur à cadran (13) d'être situé sous la surface d'extrémité d'une jante de la roue par l'intermédiaire de rails de guidage II (8) ; le servo-vérin électrique I (9) est configuré pour permettre au comparateur à cadran (13) d'être en contact avec la surface d'extrémité de roue par l'intermédiaire de rails de guidage III (11) ; à ce moment, le faux-rond de surface d'extrémité de la roue est configuré pour être détecté ; après que la détection soit terminée, les vérins I (2) sont configurés pour permettre au cadre de levage I (6) de descendre via les colonnes de guidage I (3) ; pendant ce temps, le vérin II (32) est configuré pour permettre à la surface d'extrémité de roue d'être ajustée à plat sur la plaque de support (14) ; le servomoteur droit (33) est configuré pour permettre au bloc de pression de copie droit (36) d'être ajusté à plat sur la surface d'extrémité supérieure d'un côté de la roue par l'intermédiaire de la tige de pression droite (35), mais aucune force n'est appliquée ; et le servomoteur gauche (31) est configuré pour permettre au bloc de pression de copie gauche (21) de surpresser l'autre côté de la roue par l'intermédiaire de la tige de pression gauche (22) pour faire descendre la surface d'extrémité inférieure, de manière à atteindre l'objectif de correction de la surface d'extrémité.

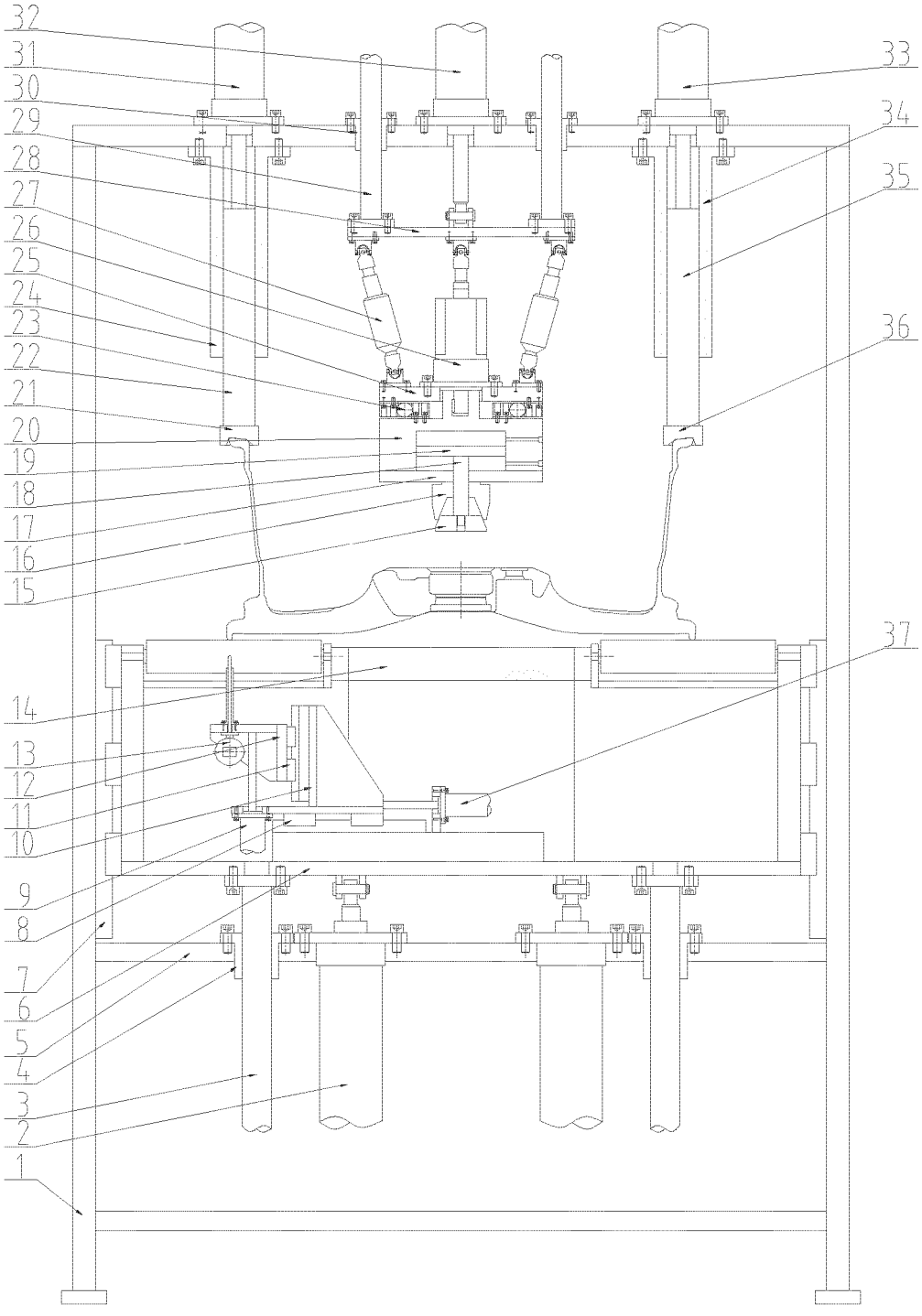
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Fig. 1

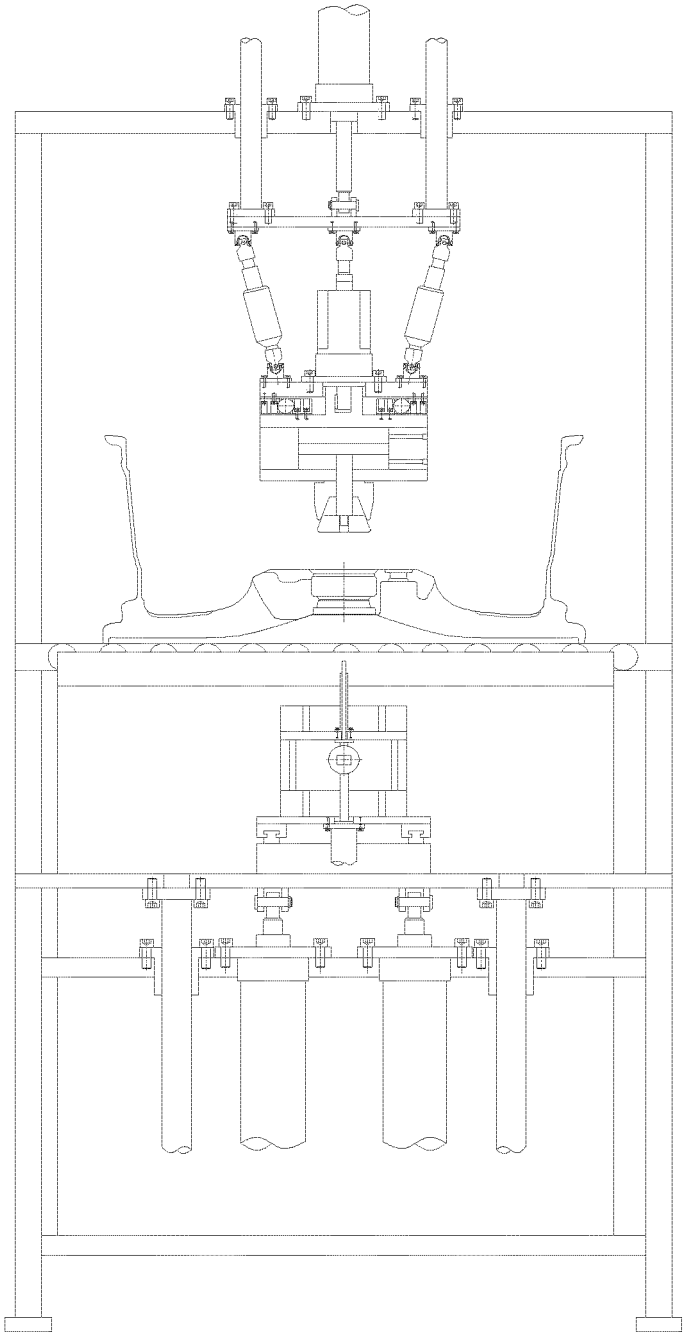

Fig. 2

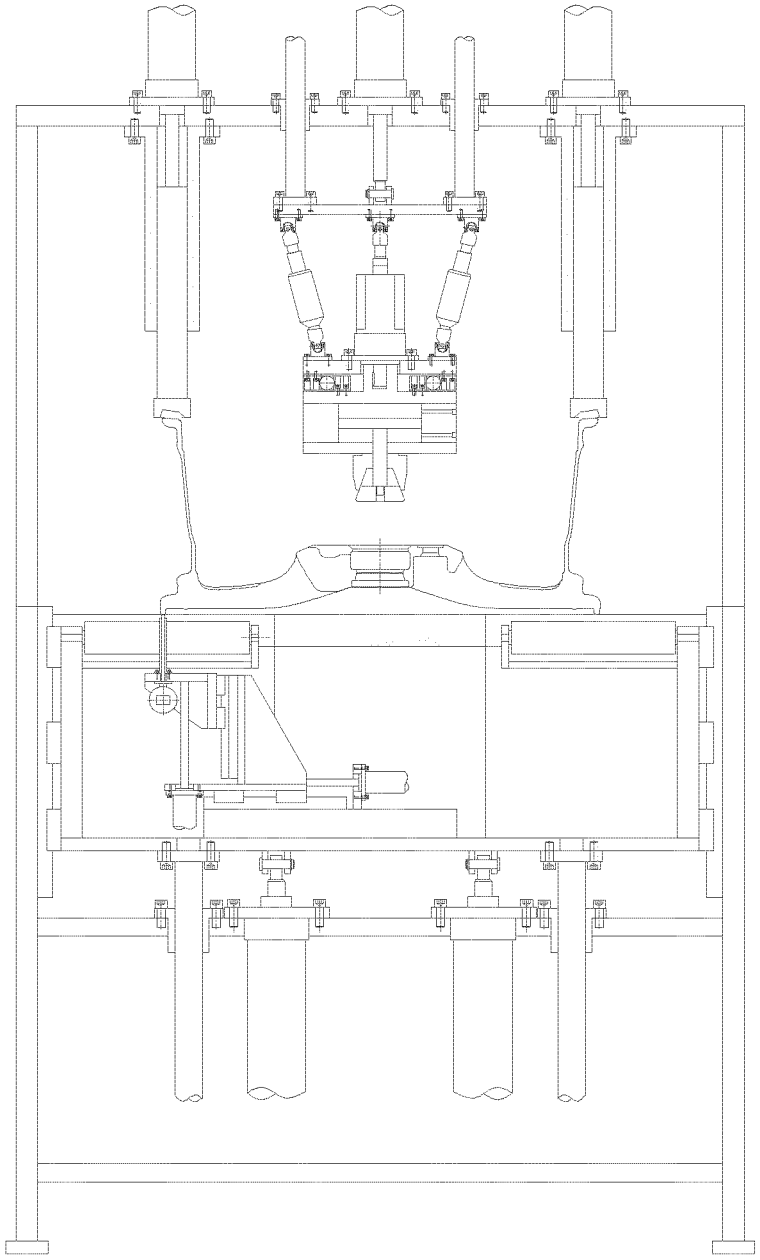

Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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