CLAIMS:

1. A noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function, which is installed with a transmission belt between two noncircular synchronous transmission pulleys, by means of the non-sliding synchronous transmission feature provided between the belt and the pulleys, the noncircular synchronous transmission pulley set comprising:

when the noncircular active pulley is driven to synchronously link the noncircular passive pulley to rotate through the transmission belt, a noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function is formed, through the two pulleys being formed with certain noncircular wheel shapes, during the synchronous transmission, the circumferences of the two wheel shapes can be mutually compensated, thereby when generating periodically varying speed ratios during the synchronous transmission, the tightness of the synchronous transmission belt can be remained the same or restrained within a smaller tightness varying level, a following pre-stressed idle wheel can therefore be optionally installed; which mainly consists of:

through two noncircular synchronous transmission pulleys being combined with a transmission belt, a non-sliding synchronous transmission is formed between the synchronous transmission belt and the pulleys, so the noncircular active pulley can be driven to synchronously link the noncircular passive pulley for forming the noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function, which is applicable in a treadle-drive device, e.g. a bicycle, a fixed treadle-drive bicycle for exercising or applicable in other transmission having periodically varying speed ratios; wherein:

-- an active pulley assembly (500)~~:~~ comprising a noncircular active pulley ~~is~~being combined on an active wheel shaft (111) used for inputting the

rotational kinetic power, the active wheel shaft (111) is installed in a machine body through a bearing structure;

--a passive pulley assembly (600): composed of a noncircular passive pulley and a passive wheel shaft (211) serving as a revolving center, driven by a transmission belt having non-sliding synchronous transmission function, the passive pulley is used for directly driving a load or driving the load through a speed varying device;

--transmission belt (100): composed of a chain or a tooth-shaped transmission belt, a non-releasing synchronous transmission feature is formed between the transmission belt and the active pulley and the passive pulley, thereby structuring a non-sliding synchronous transmission pulley set; the mentioned pulley set includes being composed of a chain type transmission belt and a chain wheel, or a tooth-shaped pulley and a tooth-shaped transmission belt, or a tooth-shaped steel belt used for transmission and a gear;

when the noncircular active pulley is driven to synchronously link the noncircular passive pulley to rotate through the transmission belt, a noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function is formed, through the two pulleys being formed with certain noncircular wheel shapes, during the synchronous transmission, the circumferences of the two noncircular wheel shapes can be mutually compensated, thereby when generating periodically varying speed ratios during the synchronous transmission, the tightness of the synchronous transmission belt can be remained the same or restrained within a smaller tightness varying level, a following pre-stressed idle wheel can therefore be optionally installed, and through two noncircular synchronous transmission pulleys being combined with a transmission belt, a non-sliding synchronous transmission is formed between the synchronous transmission belt and the pulleys, so the noncircular active pulley can be

driven to synchronously link the noncircular passive pulley for forming the noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function, which is applicable in a treadle-drive device, includes a bicycle, a fixed treadle-drive bicycle for exercising or applicable in other transmission having periodically varying speed ratios;

wherein the noncircular active pulley includes an oval active pulley (112), the radial mechanical angle between the two convex peaks of the oval shape and the radial mechanical angle between the first and the second crank can be set according to actual needs;

the noncircular passive pulley includes an eccentric circular passive pulley (413); and

the transmission belt (100) composed of a chain or a tooth-shaped transmission belt, a non-releasing synchronous transmission feature is formed between the transmission belt and the oval active pulley (112) and the eccentric circular passive pulley (213), thereby structuring a non-sliding synchronous transmission pulley set.

2. A noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function as claimed in claim 1, ~~which is applied in a treadle-drive device and mainly consists of:~~

through two noncircular synchronous transmission pulleys being combined with a transmission belt, a non-sliding synchronous transmission is formed between the synchronous transmission belt and the pulleys, so the noncircular active pulley can be driven to synchronously link the noncircular passive pulley for forming the noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function, which is applicable in a treadle-drive device, e.g. a bicycle, a fixed treadle-drive bicycle for exercising or a treadle-drive power generator;

wherein:

~~--active pulley assembly (500): a noncircular active pulley is combined on an active wheel shaft (111) used for inputting the rotational kinetic power, the active wheel shaft (111) is installed in a machine body through a bearing structure,~~ wherein one side of the active wheel shaft (111) is installed with a first crank (101), a first treadle shaft (103) and a first treadle (102), the first treadle (102) drives the first crank (101) for linking the active pulley, the other side of the active wheel shaft (111) is installed with a second crank (201), a second treadle shaft (203) and a second treadle (202), the second treadle (202) drives the second crank (201) for linking the active pulley~~;~~

--passive pulley assembly (600): composed of a noncircular passive pulley and a passive wheel shaft (211) serving as a revolving center, driven by a transmission belt having non-sliding synchronous transmission function, the passive pulley is used for directly driving a load or driving the load through a speed varying device;

--transmission belt (100): composed of a chain or a tooth-shaped transmission belt, a non-releasing synchronous transmission feature is formed between the transmission belt and the active pulley and the passive pulley, thereby structuring a non-sliding synchronous transmission pulley set;

the mentioned pulley set includes being composed of a chain type transmission belt and a chain wheel, or a tooth-shaped pulley and a tooth-shaped transmission belt, or a tooth-shaped steel belt used for transmission and a gear.

3. A noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function as claimed in claim 2, wherein two oval pulleys having phase angle differentiation are driven by the transmission belt for performing synchronous transmission

thereby forming the noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function, and it mainly consists of:

through two noncircular synchronous transmission pulleys being combined with a transmission belt, a non-sliding synchronous transmission is formed between the synchronous transmission belt and the pulleys, so the noncircular active pulley can be driven to synchronously link the noncircular passive pulley for forming the noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function; wherein:

--active pulley assembly (500): an oval active pulley (112) (or an oval-like active pulley) is combined on an active wheel shaft (111) used for inputting the rotational kinetic power, the active wheel shaft (111) is installed in a machine body through a bearing structure, one side of the active wheel shaft (111) is installed with a first crank (101), a first treadle shaft (103) and a first treadle (102), the first treadle (102) drives the first crank (101) for linking the oval active pulley (112), the other side of the active wheel shaft (111) is installed with a second crank (201), a second treadle shaft (203) and a second treadle (202), the second treadle (202) drives the second crank (201) for linking oval active pulley (112); radial mechanical angle between the two convex peaks of the oval shape and the radial mechanical angle between the first and the second crank can be set according to actual needs;

--passive pulley assembly (600): composed of an oval passive pulley (213) (or an oval-like passive pulley) and a passive wheel shaft (211) serving as a revolving center, driven by a transmission belt having non-sliding synchronous transmission function, the oval passive pulley (213) is used for directly driving a load or driving the load through a speed varying device;

--transmission belt (100): composed of a chain or a tooth-shaped transmission belt, a non-releasing synchronous transmission feature is formed between the transmission belt and the oval active pulley (112) and the oval passive pulley (213), thereby structuring a non-sliding synchronous transmission pulley set;

the mentioned pulley set includes being composed of a chain type transmission belt and a chain wheel, or a tooth-shaped pulley and a tooth-shaped transmission belt, or a tooth-shaped steel belt used for transmission and a gear.

4. A noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function as claimed in claim 2, wherein an oval active pulley and an eccentric oval passive pulley being driven by the transmission belt for performing synchronous transmission thereby forming the noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function, and it mainly consists of:

through two noncircular synchronous transmission pulleys being combined with a transmission belt, a non-sliding synchronous transmission is formed between the synchronous transmission belt and the pulleys, so the noncircular oval active pulley (112) can be driven to synchronously link the eccentric circular passive pulley (413) for forming the noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function; wherein:

--active pulley assembly (500): an oval active pulley (112) (or an oval-like active pulley) is combined on an active wheel shaft (111) used for inputting the rotational kinetic power, the active wheel shaft (111) is installed in a machine body through a bearing structure, one side of the active wheel shaft (111) is installed with a first crank (101), a first treadle

shaft (103) and a first treadle (102), the first treadle (102) drives the first crank (101) for linking the oval active pulley (112), the other side of the active wheel shaft (111) is installed with a second crank (201), a second treadle shaft (203) and a second treadle (202), the second treadle (202) drives the second crank (201) for linking the oval active pulley (112); radial mechanical angle between the two convex peaks of the oval shape and the radial mechanical angle between the first and the second crank can be set according to actual needs;

--passive pulley assembly (600): composed of an eccentric circular passive pulley (413) (or a substantially eccentric circular passive pulley) and a passive wheel shaft (211) serving as a revolving center, driven by a transmission belt having non-sliding synchronous transmission function, the eccentric circular passive pulley (413) is used for directly driving a load or driving the load through a speed varying device;

--transmission belt (100): composed of a chain or a tooth-shaped transmission belt, a non-releasing synchronous transmission feature is formed between the transmission belt and the oval active pulley (112) and the eccentric circular passive pulley (413), thereby structuring a non-sliding synchronous transmission pulley set;

the mentioned pulley set includes being composed of a chain type transmission belt and a chain wheel, or a tooth-shaped pulley and a tooth-shaped transmission belt, or a tooth-shaped steel belt used for transmission and a gear.

5. A noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function as claimed in any one claim of claims 1~4, wherein both or at least one of the active pulley and the passive pulley includes being formed by (1) a noncircular pulley; or (2) a circular or noncircular eccentric pulley.

~~6. A noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function as claimed in any one claim of claims 1~4, wherein the eccentric pulley includes being formed by a circular eccentric pulley or a noncircular eccentric pulley.~~

3~~7~~. A noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function as claimed in any one claim of claims 1~4~~3~~, wherein the periodical rotation ratio of the active pulley and the passive pulley ~~can be~~is 1:2, 1:1, or 2:1 or other integer ratios.

4~~8~~. A noncircular synchronous transmission pulley set having periodically varying speed ratio and circumference compensating function as claimed in any one claim of claims 1~4, wherein the periodical rotating ratio of the active pulley and the passive pulley ~~can be~~is non-integer ratios.