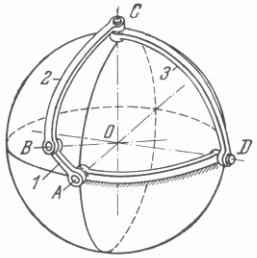
Atlante di Artobolewsky

Gruppo 3. Meccanismi con membri mobili (n>3)

Sottogruppo 1. Meccanismi con 4 membri per uso generico

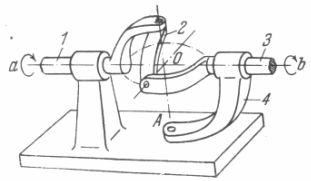
Parte Seconda

553 FOUR-BAR SPHERICAL CRANK AND ROCKER-ARM MECHANISM LW 4L



The axes of all the kinematic turning pairs should intersect at the common point *O*. When crank *1* is rotated 360° about axis *OA*, rocker arm *3* is turned through a certain angle α about axis *OD*. The magnitude of angle α is determined by the relations between the constant angles $\angle AOB$, $\angle BOC$, $\angle COD$ and $\angle AOD$.

554 FOUR-BAR SPHERICAL MECHANISM LW 4L

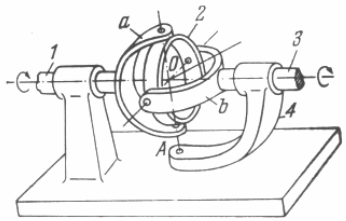


When bracket *4* is put into various positions by turning it about axis *A* and clamping it, rotation from link *1* can be transmitted through link *2* to link *3* under the condition that the axes of all the turning pairs intersect at a single common point *O*. The angle between the turning pairs of any single link equals 90°. Angle φ_1 of rotation of link *1* is related to angle φ_3 of rotation of link *3* by the equation

$$\frac{\tan \varphi_1}{\tan \varphi_3} = \cos \alpha$$

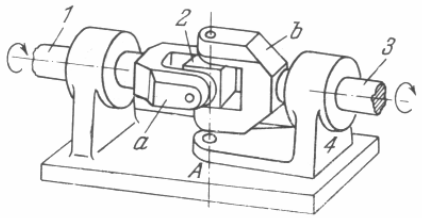
where α is the angle between axes *Oa* and *Ob*.

555 FOUR-BAR SPHERICAL MECHANISM LW 4L



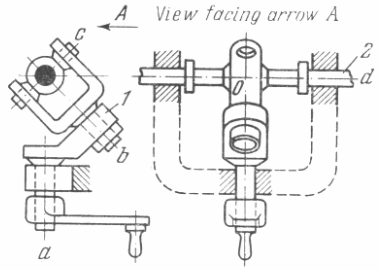
When bracket *4* is put into various positions by turning it about axis *A* and clamping it, rotation can be transmitted from link *1* to link *3* under the condition that the axes of all the turning pairs intersect at a single common point *O*. Links *1* and *3* have arc-shaped forks *a* and *b*. Link *2* is designed as a cylindrical ring.

556 | FOUR-BAR SPHERICAL MECHANISM | LW 4L



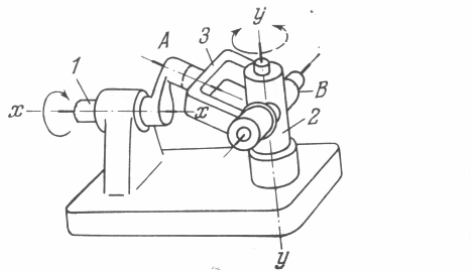
When bracket *4* is put into various positions by turning it about axis *A* and clamping it, rotation can be transmitted from link *1* to link *3* under the condition that the axes of all the turning pairs intersect at a single common point *O*. Links *1* and *3* have forks *a* and *b*. Link *2* is designed as a cube.

557 | FOUR-BAR SPHERICAL MECHANISM | LW 4L



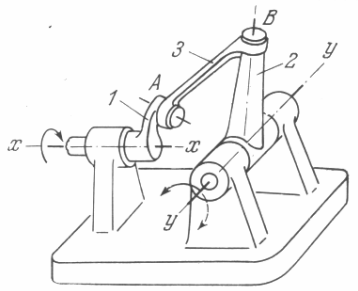
Axes *a*, *b*, *c* and *d* of all the kinematic turning pairs of the mechanism intersect at a single common point *O*. Axes *a* and *d* are perpendicular. Axes *a* and *b* are at an angle of 45°. Upon rotation of crank *1*, link *2* oscillates with an amplitude of 90°.

558 | FOUR-BAR SPHERICAL MECHANISM | LW 4L



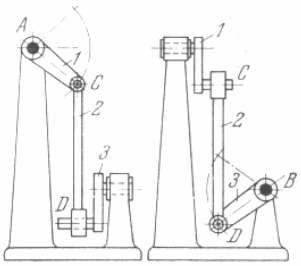
Crank *1* rotates about fixed axis *x-x*. Link *3* is connected by turning pairs *A* and *B* to crank *1* and link *2* which turns about fixed axis *y-y*. In rotation of crank *1* about axis *x-x*, link *2* oscillates about axis *y-y* under the condition that the axes of all the kinematic turning pairs intersect at a single point.

559 | FOUR-BAR SPHERICAL MECHANISM | LW 4L



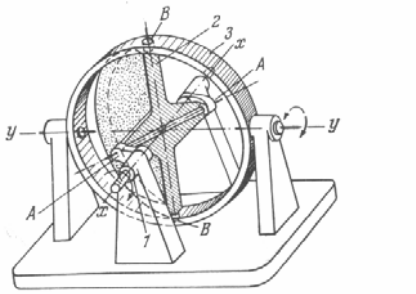
Crank *1* rotates about fixed axis *x-x*. Link *3* is connected by turning pairs *A* and *B* to crank *1* and link *2* which turns about fixed axis *y-y*. In rotation of crank *1* about axis *x-x*, link *2* oscillates about axis *y-y* under the condition that the axes of all the kinematic turning pairs intersect at a single point.

560 | FOUR-BAR SPATIAL MECHANISM | LW 4L



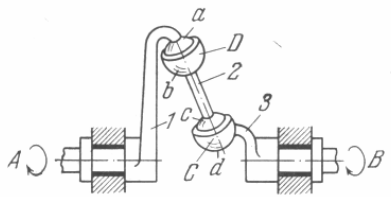
The oscillating motion of link *1* about fixed axis *A* is transformed by means of connecting rod *2* into oscillating motion of link *3* about fixed axis *B*. *C* and *D* are cylindrical pairs capable of both turning and sliding motion. *A* and *B* are turning pairs. Axes *A* and *C* are perpendicular to axes *B* and *D*.

561 | FOUR-BAR SPHERICAL MECHANISM | LW 4L



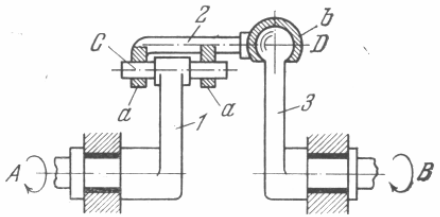
Crank *1* rotates about fixed axis *x-x*. Link *2* is connected by turning pairs *A* and *B* to crank *1* and ring *3* which turns about fixed axis *y-y*. Upon rotation of crank *1* about axis *x-x*, ring *3* oscillates about axis *y-y* under the condition that the axes of all kinematic turning pairs intersect at a single point. Link *2*, hinged to crank *1*, is shown in a cut-away view.

562 | FOUR-BAR SPATIAL MECHANISM | LW 4L



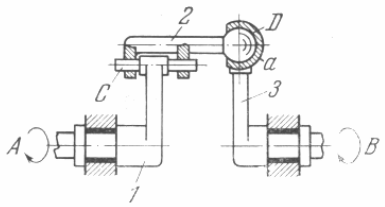
Link *1*, having spherical head *a* and rotating about fixed axis *A*, is connected by spherical pair *D* to link *2*. Link *2* has spherical socket *b* and spherical head *c*. Link *3*, rotating about fixed axis *B*, is connected by spherical pair *C* to link *2*. Link *3* has spherical socket *d*. The mechanism transmits rotation between any two arbitrarily located axes *A* and *B*.

563 | FOUR-BAR SPATIAL MECHANISM | LW 4L



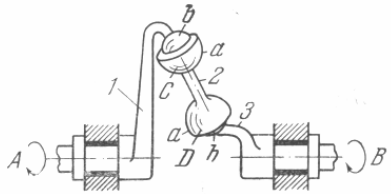
Link *1*, rotating about fixed axis *A*, is connected by cylindrical turning and sliding pair *C* to link *2*. Link *3*, rotating about fixed axis *B*, is connected by spherical pair *D* to link *2* which has cylindrical lugs *a* and spherical socket *b*. The mechanism transmits rotation between any two arbitrarily located axes *A* and *B*.

564 | FOUR-BAR SPATIAL MECHANISM | LW 4L



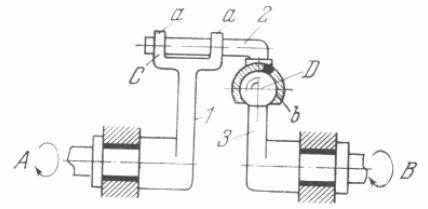
Link *1*, rotating about fixed axis *A*, is connected by cylindrical turning and sliding pair *C* to link *2*. Link *2* is connected by spherical pair *D* to link *3* which rotates about fixed axis *B* and has spherical socket *a*. The mechanism transmits rotation between any two arbitrarily located axes *A* and *B*.

565 | FOUR-BAR SPATIAL MECHANISM | LW 4L



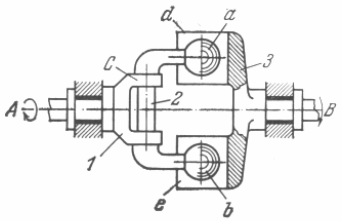
Link *1*, rotating about fixed axis *A*, is connected by spherical pair *C* to link *2* which, in turn, is connected by spherical pair *D* to link *3*. Link *3* rotates about fixed axis *B*. Link *2* has two spherical sockets *a* that fit over spherical heads *b* of links *1* and *3*. The mechanism transmits rotation between any two arbitrarily located axes *A* and *B*.

566 | FOUR-BAR SPATIAL MECHANISM | LW 4L



Link *1*, having cylindrical lugs *a* and rotating about fixed axis *A*, is connected by cylindrical turning and sliding pair *C* to link *2*. Link *2* has spherical socket *b* and is connected by spherical pair *D* to link *3* which rotates about fixed axis *B*. The mechanism transmits rotation between any two arbitrarily located axes *A* and *B*.

567 | FOUR-BAR SPATIAL MECHANISM | LW 4L



Link *1*, rotating about fixed axis *A*, is connected by turning pair *C* to link *2*. Link *2* is connected by a four-motion kinematic pair to link *3*. This pair consists of two spherical surfaces *a* and *b* which contact flat surfaces *d* and *e* of link *3*. Link *3* rotates about fixed axis *B*. The mechanism transmits rotation between any two arbitrarily located axes *A* and *B*.