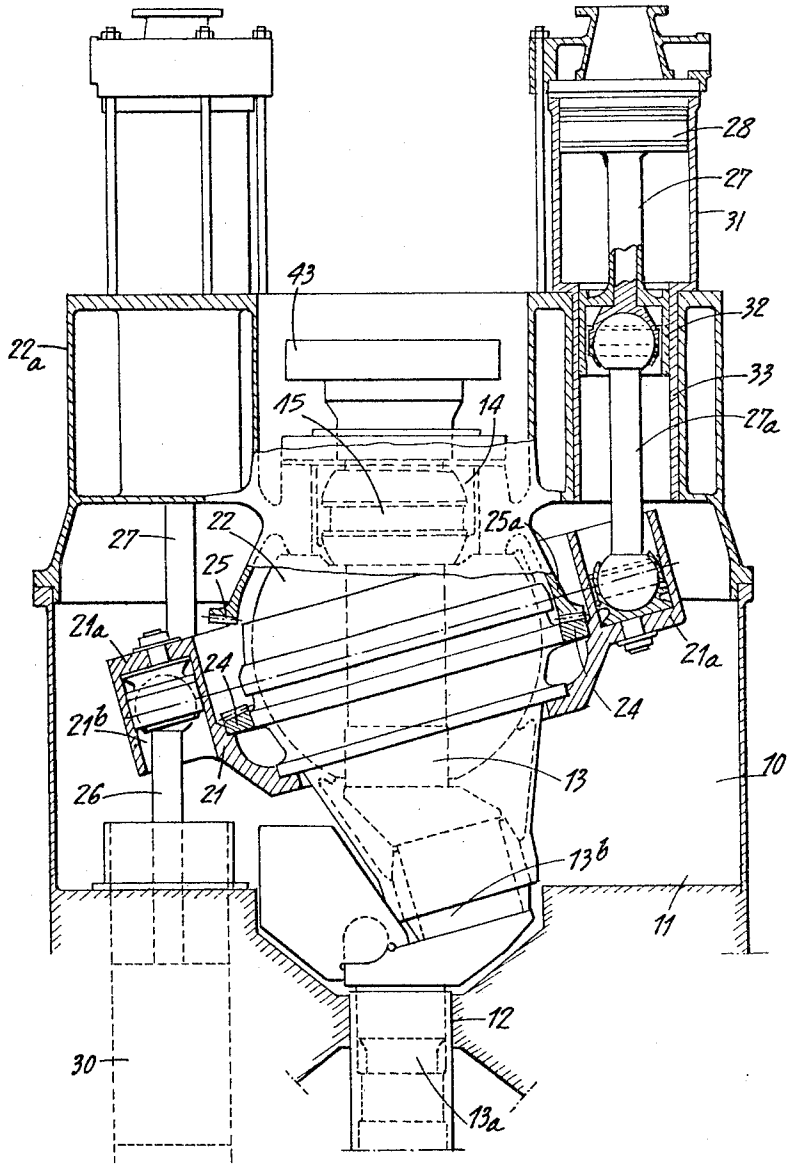
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WABBLER MECHANISM

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WABBLER MECHANISM

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It is known to pair the driving motor components and the compressor components driven by the same crankshaft for forming a single machine.

In a machine of this kind, generally known as a motor air-compressor, the power is transferred with the minimum of losses and load.

In conventional mechanisms of connecting-rods and crankshaft motors, the compressor cylinders are mounted either at the end of the driving cylinders with a crankshaft coupled up, or transversally to the driving cylinders.

For each of these arrangements, the increase of weight and space required is considerable.

The present invention obviates these disadvantages by creating a wabbler mechanism formed by a hollow central fixed knee-joint, or sphere, held integral with a supporting part, a spherical cover mounted on the aforesaid hollow sphere supports a movement conversion part, carrying, on the one hand, a hollow torus in which cavities are placed cooperating with the connecting-rod heads, and on the other hand, a toothed crown wheel cooperating with a second toothed crown wheel carried by the supporting part, whereas a crankshaft comprising a pin whose longitudinal axis passes through the centre of the hollow sphere, rests in a bearing integral with the front portion of the movement conversion part, this assembly comprising, in addition to the driving attachments placed on one side of the movement converter, compressor attachments placed on the other side.

Various other characteristics of the invention will moreover be revealed by the detailed description which follows.

A form of embodiment of the purpose of the invention is shown, by way of example, in the attached drawing.

The single figure shows, in section, the wabbler mechanism and relative arrangement of its components in an engine-compressor according to the invention.

The casing **10** has, in its bottom **11**, a bearing **12** in which rests the end **13***a* of a crankshaft **13** comprising an oblique pin **13***b*. A cover **14** contains a double abutment bearing **15** receiving the other end of the crankshaft **13**. A hollow male sphere **22** is mounted on a part **22***a*, or annular caisson, fixed to the casing **10**.

A movement conversion crown wheel **21** is centered on the hollow male sphere **22** traversed by the oblique pinned crankshaft **13**.

The movement converter **21** having appreciably the shape of a truncated cone, comprises, near its large base, a torus **21***a* hollowed out and having cavities **21***b* for housing the connecting-rod heads, described hereafter. A toothed crown wheel **24**, fixed to the movement converter **21**, is disposed in the central zone of this movement converter. These teeth **24** cooperate with a second set of teeth **25** carried by a truncated part **25***a* integral with the central portion of hollow caisson **22***a*.

The driving connecting-rods **26** are mounted on one side of the crown wheel **21**, the receiving connecting-rods

27 linked up to the compressor pistons **28** are mounted on the other side of said crown wheel **21**.

It goes without saying that the driving cylinders **30**, parallel to the rotation axis, or appreciably so, are on one side of the mechanism, and that the compressor cylinders **31**, also parallel to the rotation axis, or appreciably so, are placed on the other side of the same mechanism.

According to another characteristic of the invention, the central male hollow sphere **22** of the movement is mounted on the part or caisson **22***a* of revolution, the receiving connecting-rods **27** traversing the latter. The compressor cylinders **31** are fixed on the caisson **22***a*.

When the gas to be compressed is injurious or detrimental to the mechanism, the receiving connecting-rods **27** are articulated on seal-tight crossheads **32** in guides **33**, with interposition of auxiliary connecting-rods **27***a*, it being understood that this mounting is effected just as well if the compressor pistons **28** are double or single acting.

The operation of the motor air-compressor is as follows: the driving connecting-rods **26** acting on the movement converter **21**, cause the crankshaft **13** to turn as in every piston-chamber motor utilizing the mechanism, but the power, instead of coming out by the crankshaft, does so by the connecting-rods **27** actuating the compressor pistons **28**. The flywheel **43** absorbs the instantaneous torque differences.

It goes without saying that in the case of an opposed piston engine, the motor air-compressor may comprise, according to the invention, two groups of cylinders, each group being arranged in relation to the corresponding movement converter.

I claim:

1. A wabbler mechanism, for a barrel type, multiple cylinder engine-compressor machine having a plurality of driving and driven piston-cylinder devices located symmetrically around the machine, comprising a tubular casing for supporting internally thereof and near one end a plurality of driving piston-cylinder devices parallel to the axis of the casing, an annular, hollow caisson secured to and extending said one end of the casing for supporting the driven piston-cylinder devices, a hollow sphere secured to said caisson and positioned partly within said one end of the casing, a crankshaft including an oblique pin, said crankshaft being journalled for rotation with its longitudinal axis passing through the center of said hollow sphere, said hollow sphere swivelly supporting a movement converting part including a truncated conic portion journalling said crankshaft pin and a hollow torus in which two series of oppositely directed cavities are formed, a toothed crown wheel carried by said movement converting part, a second toothed wheel cooperating with said first wheel and secured to said caisson, ball and socket elements forming universal joints seated in one of said series of cavities of the torus for connecting the piston rods of said driving piston-cylinder devices to said torus, and similar ball and socket elements disposed in said opposite series of cavities for connecting the piston rods of said driven piston-cylinder devices to the torus.

2. A wabbler mechanism according to claim **1** wherein said connecting rods secured to the pistons of the driven piston-cylinder devices traverse the said annular caisson.

3. A wabbler mechanism according to claim 1 wherein the cylinders of said driven piston-cylinder devices are fixed on the free outer edge of said caisson.

4. A wabbler mechanism according to claim 2, wherein said connecting rods which traverse the caisson are articulated in seal-tight cylindrical crossheads which slide in guide sleeves in said caisson.

5. A wabbler mechanism according to claim 1, wherein said crankshaft is journalled at its outer end in a bearing held in a housing integral with said caisson member.

6. A wabbler mechanism according to claim 1, wherein a fly wheel is mounted on said outer end of the crankshaft.

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