O. JOHO

OPPOSED CYLINDER AIR COMPRESSOR

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Fig. 1.

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Fig. 2.

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Attorneys
The present invention relates to an opposed cylinder air compressor.

Of the well-known mechanisms of the kind, the driving device according to the invention is distinguished by an electric motor adapted to drive at least one cam-disc having at least two cams diametrically displaced from each other, by means of which at least two compressor pistons operatively connected to the cam-disc by spring action can be moved against this in opposite directions and then restored to starting position due to the action of the springs thereby pneumatically driving an operating unit.

The accompanying drawing shows by way of example a preferred embodiment of the invention, in which:

Fig. 1 is an elevation of the driving device in part-sectional view, and

Fig. 2 represents a cross-section taken on the line 2—2 of Fig. 1.

In the form of embodiment illustrated, numeral 1 designates a base having an electric motor 2 mounted thereon. On top the housing of the electric motor carries a holder 4 with a needle cushion 5. On one frontal side of the electric motor 2 a casing 6 is detachably mounted. The casing 6 is provided with two horizontally and coaxially arranged compressor cylinders 8 displaced 180° with respect to each other, and each respectively accommodating pistons 9 and 10. The two pistons 9 and 10 are of hollow design, open at one end and each thrust over an inset 11 integral with a sealing cover 12 provided at the corresponding frontal side of the compressor cylinder 8. Each inset 11 has inside an off-set air port 13 merging into a nipple 14 attached in the sealing cover 12 and whose end outside the cylinder is connected up with a hose line 15 which leads to a working device, say, a mending apparatus carrying a needle for mending ladders in stockings and other meshed fabrics, the needle embodying in known manner two parts relatively displaceable in longitudinal direction.

The numeral 21 marks two helical compression springs, each located in the clearance between the outer circumference of the inset 11 and the inner circumference of the pistons 9 and 10, respectively, resting at one end against the respective cover 12 and at the other end against the bottom of the respective pistons 9, 10.

Keyed to the shaft 19 of the electric motor 2 is a pinion 22 which constantly meshed with a toothed wheel 23. The toothed wheel 23 is rigidly mounted on shaft 24 journaled at one end in casing 8 and at the other end in the electric housing, said shaft having further rigidly arranged thereon a cam disc 25 with two cams 25a and 25b displaced 180° with respect to each other. The numerals 26 and 27 denote two swing levers pivotal on fixed axles 28 and 29, the free ends thereof bearing against the bottoms of the pistons 9 and 10. The swing levers 26 and 27 are at the same time maintained in contact with the cam disc 25 by the compression springs 21.

When started, the electric motor causes rotation of the cam-disc 25, but at a speed which is smaller than that of the motor shaft 19 because of the reduction gears 22, 23. As the cam disc 25 starts to rotate from the position indicated in Fig. 2 the swing levers 26, 27 are pushed apart by the cams 25a and 25b, whereby the two pistons 9, 10 are forced from opposite sides into the cylinders 8 against the action of springs 21.

20 (Fig. 2) the compression stroke of the pistons 9, 10 is completed. On further rotation of the cam disc 25 the pistons 9, 10, due to the action of springs 21, are again moved out of the cylinders 8 and towards each other, and so on. Thereby air is alternately compressed by the two pistons 9, 10, discharged through the lines 13, 14, 15 and again sucked in so as to produce intermittent pulsations of air by which the connected working units are set in operation.

The ratios are thereby chosen in such a way that the perpendicular distance between the axis of shaft 24 and the points of contact between the swing levers and the pistons is greater than the perpendicular distance between the axis of shaft 24 and the axles 28, 29 with the result that the stroke of the cams 25a, 25b is amplified and transferred by the swing levers 26, 27 onto the pistons 9, 10.

The aforesaid driving device is characterized by its simple and compact design. A special feature resides in the fact that the two pistons work in opposite directions, whereby vibrations due to inertia are practically eliminated.

Instead of two, it is also possible to arrange three or more cylinders on one side of the motor, whereby the cam disc would be provided with cams which would correspond in number with the cylinders. In the case of three cylinders, there would have to be displaced 120° with respect to each other. In another modification, such a compressor system could be arranged at both frontal sides of the electric motor.

What I claim:

1. In an air compressor, a cylindrical cover,
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diametrically positioned cylinders extending from said cover, closure plates over the outer ends of said cylinders, cylindrical inserts formed on said cover plates, and extending within the cylinders, conduit means terminating at one end in said inserts, pistons within said cylinders having their skirts surrounding the inserts, and cam and follower movements in driving engagement with said pistons for simultaneously forming same outwardly.

2. In an air compressor, a cylindrical cover, diametrically positioned cylinders extending from said cover, closure plates over the outer ends of said cylinders, cylindrical inserts formed on said cover plates and extending within the cylinders, conduit means terminating at one end in said inserts, pistons within said cylinders having their skirts surrounding the inserts, coil springs within said cylinders surrounding the inserts and bearing at one end against the cover plates and at the other end against the ends of the pistons, and cam and follower movements in driving engagement with said pistons for simultaneously forming same outwardly.

OLGA JOHO.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,244,955</td>
<td>Christiansen</td>
<td>Oct. 30, 1917</td>
</tr>
<tr>
<td>1,306,190</td>
<td>Pickstone</td>
<td>June 10, 1919</td>
</tr>
<tr>
<td>1,677,539</td>
<td>Wollman</td>
<td>July 17, 1922</td>
</tr>
<tr>
<td>1,698,419</td>
<td>Wappler</td>
<td>Jan. 8, 1923</td>
</tr>
<tr>
<td>1,738,425</td>
<td>Kupka</td>
<td>Dec. 3, 1929</td>
</tr>
<tr>
<td>1,915,701</td>
<td>Thomas</td>
<td>June 27, 1933</td>
</tr>
<tr>
<td>1,939,211</td>
<td>Sausedde</td>
<td>Apr. 30, 1935</td>
</tr>
<tr>
<td>2,062,263</td>
<td>Schleimer</td>
<td>June 1, 1937</td>
</tr>
<tr>
<td>2,092,721</td>
<td>Arter</td>
<td>Sept. 7, 1937</td>
</tr>
<tr>
<td>2,202,820</td>
<td>Forrester</td>
<td>May 28, 1940</td>
</tr>
<tr>
<td>2,270,586</td>
<td>Jahant</td>
<td>Jan. 20, 1942</td>
</tr>
<tr>
<td>2,341,186</td>
<td>Svenson</td>
<td>Feb. 8, 1944</td>
</tr>
</tbody>
</table>