

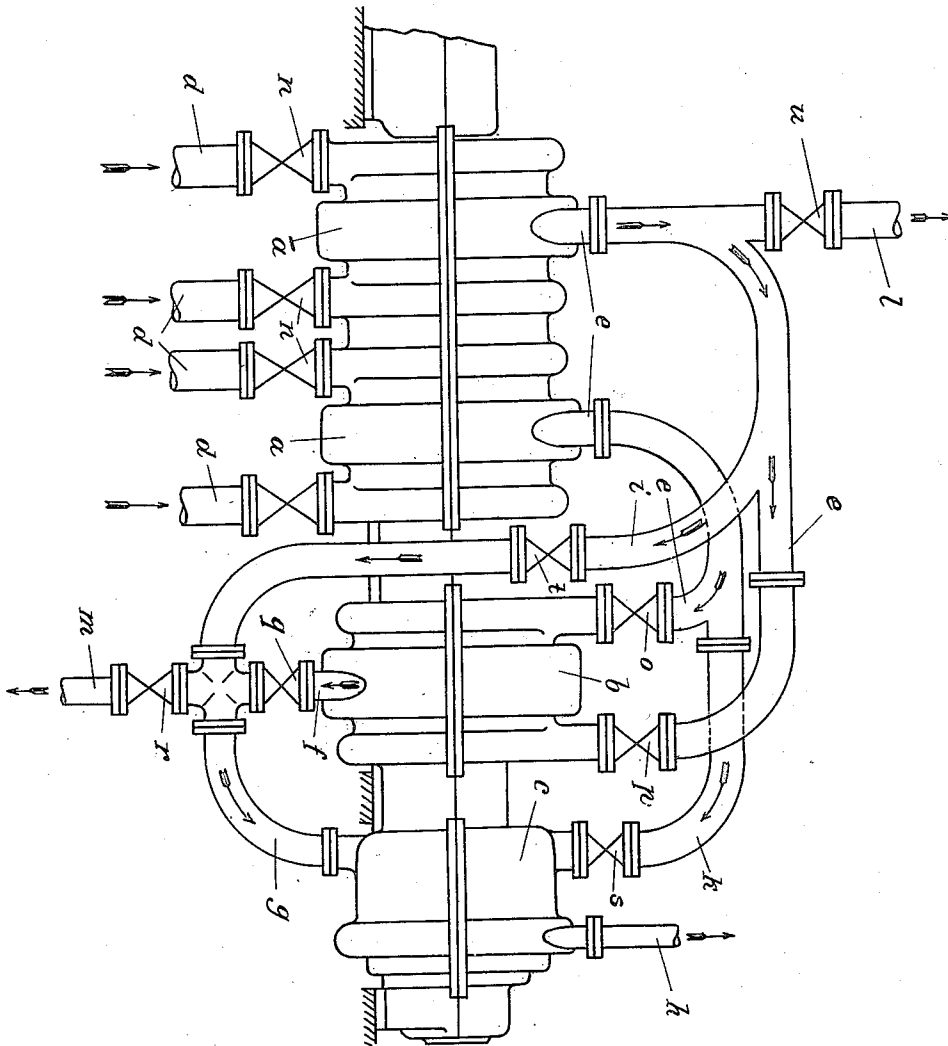
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MULTISTAGE CENTRIFUGAL ELASTIC FLUID COMPRESSOR

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MULTISTAGE CENTRIFUGAL ELASTIC-FLUID COMPRESSOR.

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To all whom it may concern:

Be it known that I, FRANZ LÖSEL, a citizen of Czechoslovakia, residing at Brunn, Czechoslovakia, have invented certain new and useful Improvements in Multistage Centrifugal Elastic-Fluid Compressors, of which the following is a specification.

This invention relates to multistage centrifugal elastic fluid compressors of the type, in which the quantity of elastic medium or fluid, for instance, air to be converted and compressed is drawn in by suction in a plurality of partial streams, at least two in number, which, as the fluid is progressively compressed, unite to form fewer and fewer streams, and, after complete compression, leave the last compressor stage in a single stream. With this arrangement, separate compression stages and the guide paths of separate partial streams may be arranged so as to be capable of being disconnected and connected for the purpose of regulating the flow of the medium to be conveyed.

The present invention consists in a modification of such centrifugal elastic fluid compressors, in which provision is made of draw-off or extraction pipes capable of being disconnected and connected for drawing off from any of the partial streams or stages any desired quantities of the medium to be conveyed. Means should preferably be provided for regulating the quantity drawn off. Transfer passages or by-passes are also provided for any separate stages or parts of the elastic fluid compressor, for enabling such stages or parts to be entirely or partially passed over in conveying the medium to the last stage.

The drawing shows a constructional example of an elastic fluid compressor according to the invention.

On a common shaft or on a plurality of shafts coupled to one another are mounted the low pressure compressor *a*, the intermediate pressure compressor *b*, and the high pressure centrifugal compressor *c*. The medium to be conveyed and compressed is drawn in by the low pressure compressor *a* in four separate streams through the pipes *d*, is thereupon conveyed in two separate streams through the branches and connecting pipes *e* to the intermediate pressure compressor *b* and then passes through the branches *f* and the connecting pipe *g* to the

high pressure compressor *c*, by which the compressed medium to be conveyed is forced through the pipe *h* to the places where it is to be used.

The cut-off and regulating valves *n*, *o*, *p* and *q* serve the purpose of regulating the quantity of medium to be conveyed and for disconnecting and connecting separate compression stages and partial streams.

According to the present invention the drawing-off or extraction pipes *l* and *m* are provided with cut-off or regulating valves *u* and *r*, through which any desired quantities of the elastic medium to be extracted may be drawn off with the degree of compression required in each case. In addition transfer passages *i* and *k* having cut-off valves *t* and *s*, are provided, by means of which, when the cut-off valves in the pipe are suitably set, the intermediate compressor *b* may be entirely or only partially passed over. The controlling members *u*, *t*, *o*, *p*, *s*, *q*, *r* also make it possible for the low pressure compressor *a* or separate stages of the same to work at the same time on the intermediate or high pressure compressor and to supply the medium through the extraction pipe *l* to the various places where it is to be used.

The invention provides a great number of possible ways of controlling and regulating the multistage compressor, whereby the most varied requirements and conditions of working may be provided for in a simple manner. But more especially through the disconnecting and connecting, the drawing-off and passing over certain stages, it is possible to affect the characteristic of the compressor, whereby the pumping limit is shifted to any desired point and the pulsating of the centrifugal elastic fluid compressor is very effectively prevented. At the same time compressors arranged with means for extraction render the use of separate uneconomically working smaller compressor units unnecessary, whereby a high total efficiency of the compressor installation is assured.

What I claim is:—

1. A multistage centrifugal elastic fluid compressor comprising a plurality of inlets for the admission of the elastic medium in a plurality of separate streams to be compressed separately, means for conveying said medium in a smaller number of combined

streams as the compression progresses to and through the following compressor parts, and means for conveying the medium in at least one stream for final compression through the last compressor part and away therefrom after it has been finally compressed.

2. A multistage centrifugal elastic fluid compressor comprising a plurality of inlets for the admission of the elastic medium in a plurality of separate streams to be compressed separately, means for conveying said medium in a smaller number of combined streams as the compression progresses to and through the following compressor parts, means for conveying the medium in a single stream for final compression through the last compressor part and away therefrom after it has been finally compressed, and intermediate means for extracting elastic medium from any desired part of the multistage centrifugal elastic fluid compressor.

3. A multistage centrifugal elastic fluid compressor comprising a plurality of inlets for the admission of the elastic medium in a plurality of separate streams to be compressed separately, means for conveying said medium in a smaller number of combined streams as the compression progresses to and through the following compressor parts, means for conveying the medium in a single stream for final compression through the last compressor part and away therefrom after it has been finally compressed, and intermediate means for extracting elastic medium from any desired part of the multistage centrifugal elastic fluid compressor, such latter means comprising regulating means, as and for the purpose set forth.

4. A multistage centrifugal elastic fluid compressor comprising a plurality of inlets for the admission of the elastic medium in a plurality of separate streams to be compressed separately, means for conveying said medium in a smaller number of combined streams as the compression progresses to and through the following compressor parts, means for conveying the medium in a single stream for final compression through the

last compressor part and away therefrom after it has been finally compressed, intermediate means for extracting elastic fluid or medium from any desired part of the multistage compressor and by-passes having valves for closing some of the parts of the elastic fluid compressor, in order that the compressed medium may be conveyed to the last stages without passing through such parts of the elastic fluid compressor, as and for the purpose set forth.

5. A multistage centrifugal elastic fluid compressor comprising a plurality of inlets for the admission of the elastic medium in a plurality of separate streams to be compressed separately, means for conveying said medium in a smaller number of combined streams as the compression progresses to and through the following compressor parts, means for conveying the medium in a single stream for final compression through the last compressor part and away therefrom after it has been finally compressed, and by-passes having valves for closing some of the parts of the elastic fluid compressor, in order that the compressed medium may be conveyed to the last stages without passing through such parts of the elastic fluid compressor, as and for the purpose set forth.

6. A multistage centrifugal elastic fluid compressor comprising a plurality of inlets for the admission of the elastic medium in a plurality of separate streams, to be compressed separately, means for conveying said medium in a smaller number of combined streams at least two in number as the compression progresses to and through the following compressor parts, and means for conveying the medium in at least one stream for final compression through the last compressor part and away therefrom after it has been finally compressed.

In testimony whereof I have signed my name to this specification.

FRANZ LÖSEL.

Witnesses:

KARL KUNLISTS,
CURT FREMAIN.