J. H. HURST.

COMPRESSOR FOR AIR AND GAS.

APPLICATION FILED OCT. 29, 1912.

1,082,156. Patented Dec. 23, 1913.

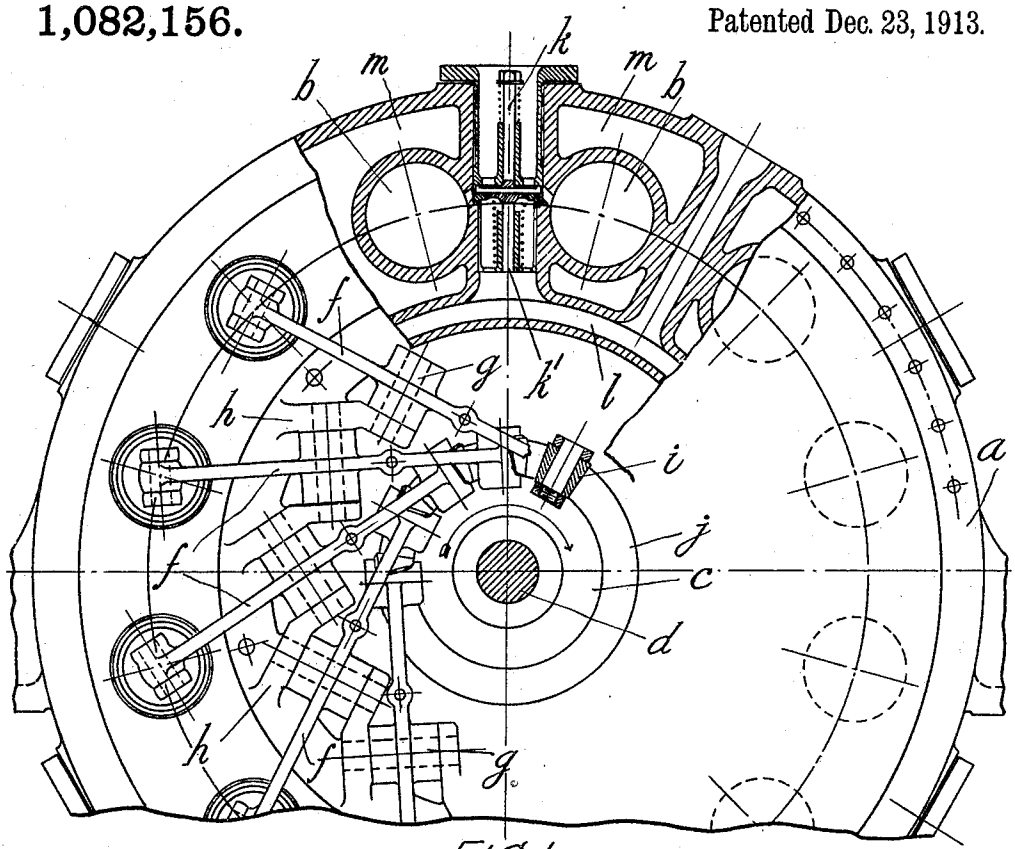


FIG. 1.

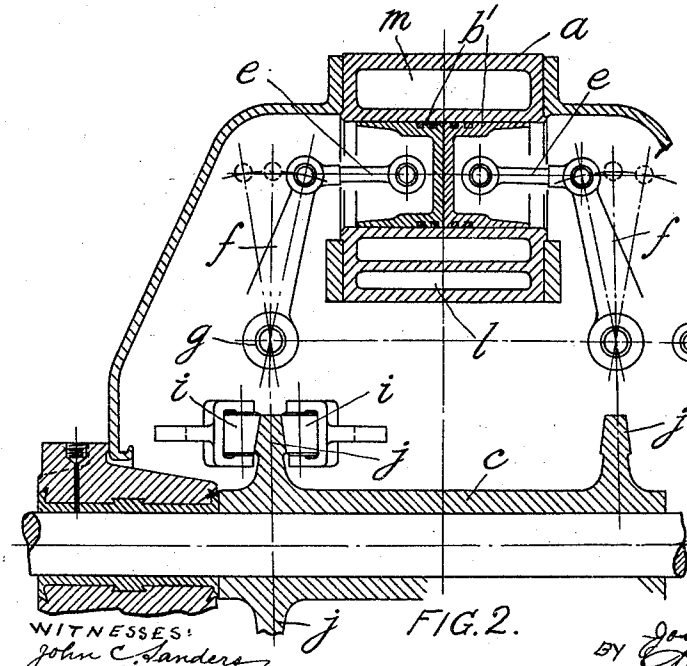


FIG. 2.

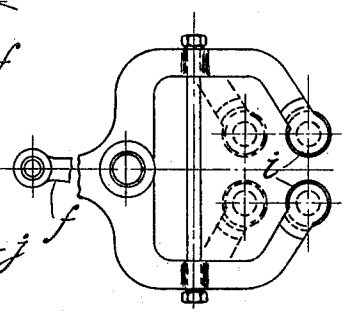


FIG. 3.

WITNESSES:
John C. Sanders
Albert F. Heuman

INVENTOR:
Joseph Henry Hurst
BY
ATTY.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH HENRY HURST, OF SHEFFIELD, ENGLAND.

COMPRESSOR FOR AIR AND GAS.

1,082,156. Specification of Letters Patent. Patented Dec. 23, 1913.

Application filed October 29, 1912. Serial No. 728,493.

To all whom it may concern:

Be it known that I, JOSEPH HENRY HURST, subject of the King of England, residing at 40 Fossdale road, Millhouses, Sheffield, in the county of York, England, have invented certain new and useful Improvements in Compressors for Air and Gas, of which the following is a specification.

My invention relates to compressors of the multiple type and is applicable for air or gas compression.

I carry out my invention in the following manner, the nature of which will be better understood on reference to the accompanying sheet of drawings in which,

Figure 1, is a front elevation (partly in section) of my improved compressor. Fig. 2, is a transverse sectional view through one of the cylinders and also illustrates the cam paths on the central shaft. Fig. 3, illustrates the form of connecting lever employed with the cam paths.

The same letters refer to similar parts throughout the several views.

In a suitable metallic double faced frame, *a*, I arrange a number of cylinders, *b*, radially around a central boss, *c*, on the driving shaft, *d*. The longitudinal axes of the cylinders, *b*, are shown at right angles to the frame, *a*, and parallel with the main driving shaft, *d*, but they may be placed at any convenient angle for ease of operation. The pistons, b^1, (by preference of the trunk type) in the said cylinders are each connected by a link shaped rod, *e*, to a connecting beam or double ended lever, *f*, provided at about the center of its length with a pin or gudgeon, *g*, working in bearings formed in suitable brackets, *h*, on the framework. The other or inner end of each of these levers, *f*, is forked and fitted with two or more hardened steel rollers, *i*, *i*, adapted to engage with both sides of a projecting cam path, *j*, formed on the periphery of the central boss, *c*. Suitable adjustments for wear, either on the cam or on the rollers may be provided. Pistons, b^1, are arranged to operate from both ends of the cylinders, *b*, and a cam path, *j*, is formed at each end of the central boss, *c*, to engage with each set of connecting levers, *f*.

The projecting cam paths, *j*, may be arranged so that both pistons, b^1, in each cylinder, *b*, are drawn outward simultaneously and also return simultaneously; or the pistons on one side may be arranged to operate in advance of those on the other side, that is, one piston commences to move before the other, but the cam paths are so arranged that both pistons are at the end of the stroke before the return is commenced, one being again in advance of the other, but both being allowed to get fully "home" before commencing a fresh stroke.

Each cylinder, *b*, is fitted with an inlet and a delivery valve, *k*, k^1, or one set of valves may be arranged to serve two cylinders as shown in Fig. 1. The air or gas after being compressed is delivered into a suitable chamber, *l*, arranged circumferentially externally or internally around the group of cylinders and is discharged therefrom by any convenient outlet, and the whole series of cylinders are surrounded by water jackets, *m*, formed or cored out in the main framing.

The output of the compressor may be greatly increased by providing more cylinders in the form of an outer ring or rings, such additional cylinders being in the same radial line with and actuated by the levers operating the innermost set of cylinders. These additional cylinders may be of the same capacity or of different capacity to those first described.

By my improved appliances air or gas may be compressed in few or several stages as desired by connecting the delivery port of one or more cylinders with the inlet port of another cylinder.

It will be obvious that a compressor as herein described may be driven in any suitable manner, either directly connected to an engine, or motor, or indirectly through belting or gearing, and likewise that as an alternative arrangement the frame carrying the cylinders may be arranged to revolve around a fixed cam.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is.

In compressors for air and gas the combination of parts, comprising a metallic double faced frame, a driving shaft provided with a central boss, a number of cylinders in said frame and positioned radially around said central boss, said cylinders each containing two pistons, each of which is connected by means of a link shaped rod to a connecting beam or double ended lever pro-

vided at about the center of its length with a pin or gudgeon working in bearings in brackets on the framework, a projecting cam path on said boss, the inner end of each of said levers being forked and provided with two or more hardened steel rollers adapted to engage with both sides of said cam path, in the manner and for the purposes substantially as herein described and illustrated on the accompanying sheet of drawings.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOSEPH HENRY HURST.

Witnesses:
W. H. BAIRSTO,
F. WALKER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."