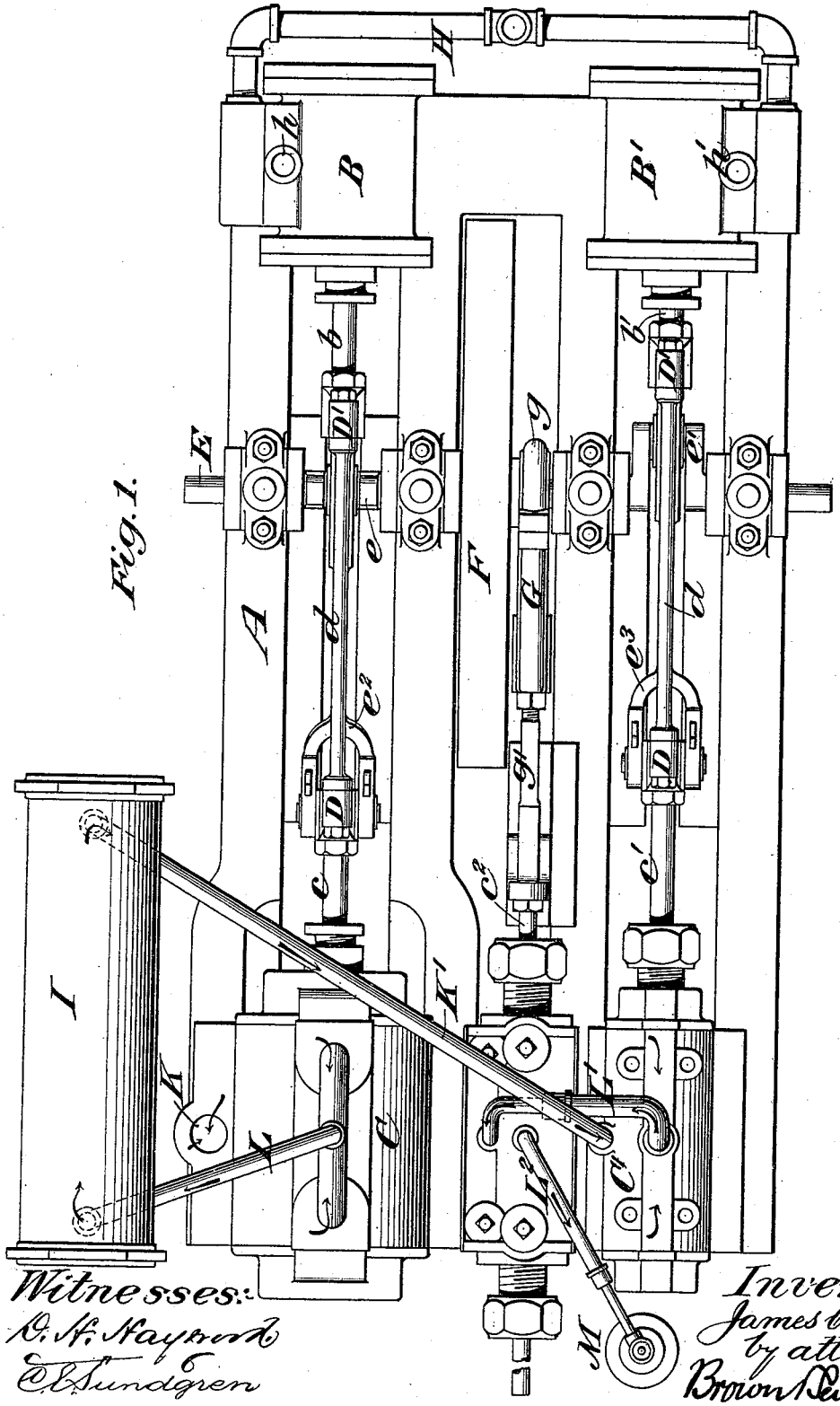
(No Model.) 2 Sheets—Sheet 1.

J. CLAYTON.

TRIPLE COMPOUND AIR OR GAS COMPRESSOR.

No. 492,915. Patented Mar. 7, 1893.

Fig. 1.



Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

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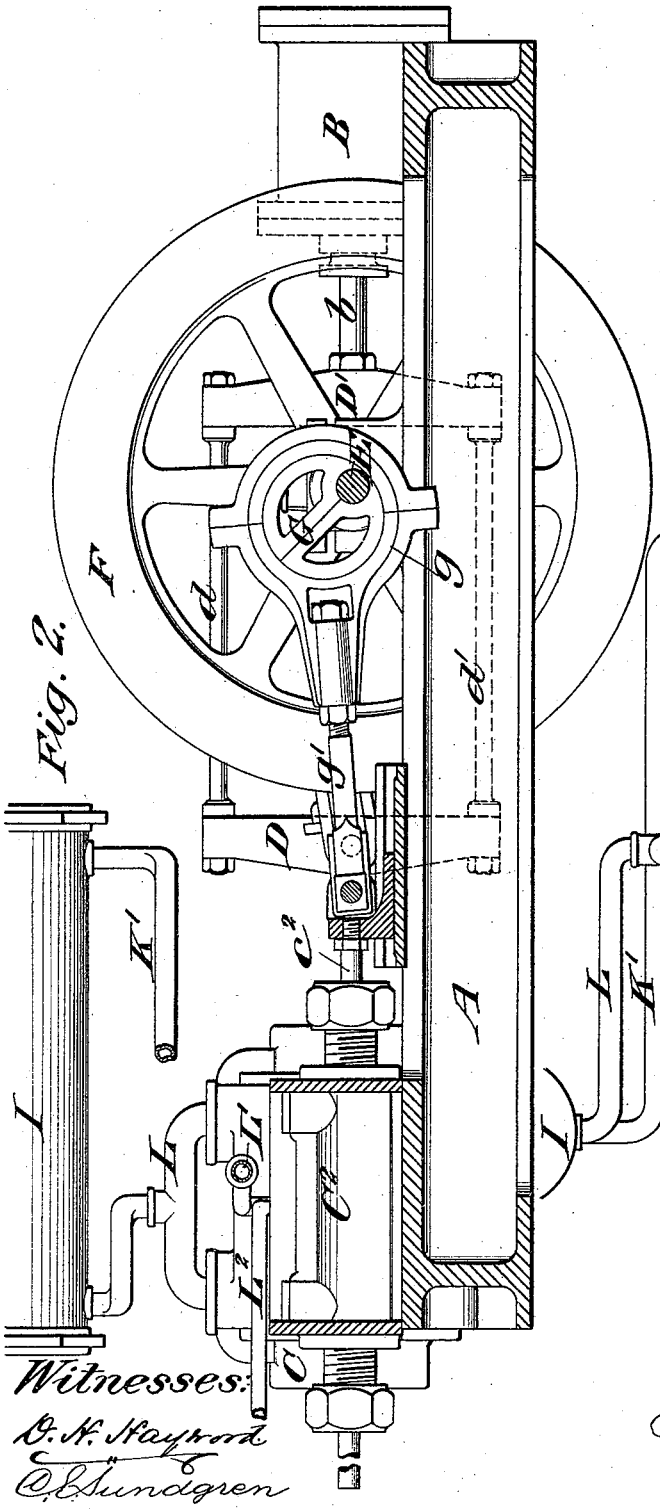

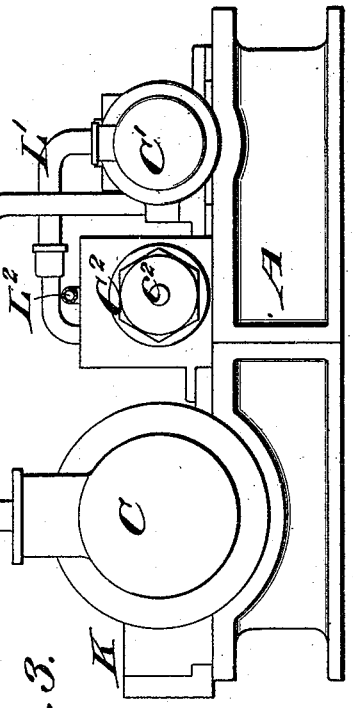

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UNITED STATES PATENT OFFICE.

JAMES CLAYTON, OF BROOKLYN, NEW YORK.

TRIPLE COMPOUND AIR OR GAS COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 492,915, dated March 7, 1893.

Application filed September 22, 1892. Serial No. 446,532. (No model.)

To all whom it may concern:

Be it known that I, JAMES CLAYTON, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Triple Compound Air or Gas Compressors, of which the following is a specification.

My invention relates to an improvement in triple compound air and gas compressors in which a third compressor is actuated by a shaft driven by the piston rods which directly actuate the other compressors.

A practical embodiment of my invention is represented in the accompanying drawings in which,

Figure 1 is a top plan view of a triple compressor. Fig. 2 is a vertical longitudinal section, and Fig. 3 is an end elevation.

The bed frame is represented by A and has fixed thereon at one end a pair of steam cylinders B, B′. At the opposite end and in alignment with the steam cylinders B and B′, are located compressor cylinders C and C′. The piston rods of the cylinders B and B′ are represented by *b* and *b′*, and the piston rods of the compressor cylinders C and C′ are represented by *c* and *c′*. The rods *b* and *c* are connected by a yoke constructed in the form of a loop comprising end bars or cross heads D, D′ spaced apart and connected by rods or bars *d*, *d′* so as to leave an open space between the ends and sides for the operation of a crank *e* on the transverse shaft E. The piston rods *b′* and *c′* are connected by a similar loop shaped yoke to permit the operation within it of a second crank *e′* on said transverse shaft E. The cranks *e* and *e′* are connected with the ends of the loop shaped yokes toward the compressor cylinders by rods e^2 and e^3 so that as the piston rods *b* and *b′* are driven to actuate the compressor pistons in the cylinders C and C′, they will at the same time positively rotate the transverse shaft E by the connections of the rods e^2 and e^3 with the cranks *e*, *e′* on said shaft.

A fly wheel F is fixed to rotate with the shaft E and is preferably located on the shaft intermediate of the loop shaped yokes. Said transverse shaft E is further provided with a crank or eccentric, preferably an eccentric, G intermediate of the loop shaped yokes and in the present instance in proximity to the fly wheel F. The eccentric is preferred because of its rendering a stroke more compact. The eccentric G is connected by a strap *g* and rod *g′* with a piston rod c^2 of a third compressor cylinder C^2, located intermediate of the compressor cylinders C and C′. From this it follows that, as the shaft E is positively driven by the cranks thereon and their connections with the yokes, it will in turn operate through its eccentric and connection with the piston rod c^2, the piston in the third compressor cylinder C^2.

The pipe for admission of steam to the cylinders B and B′ is represented by H and the exhausts are represented by *h* and *h′*.

The several compressors are each double acting, as is common, discharging at each end of their stroke.

For purposes of securing a supply of the air or gas under a reduced compression, I have provided a reservoir I, into which the air or gas is compressed from the first compressor cylinder and from which it is taken to the second cylinder. Instead of so discharging it, it is obvious that it might be discharged directly into the second cylinder in the same manner in which it is discharged from the second into the third cylinder, as will hereinafter appear. The air or gas to be compressed enters the first cylinder through the inlet K and is discharged from the cylinder C into the reservoir I through the discharge pipe L. The partially compressed air or gas is fed from the reservoir I into the second compressor cylinder C′ through a connecting pipe K′ and is discharged from said second compressor cylinder into the third compressor cylinder through a discharge and inlet pipe L′. From the third compressor cylinder C^2, the compressed air or gas is discharged through the pipe I^2 into the final reservoir or storage tank M.

In operation, the gaseous fluid is compressed at each stroke of the piston within the cylinder C and discharged in its compressed condition into the reservoir I. The cylinder C′ is supplied with the compressed fluid from the reservoir I and at each stroke discharges the same in a further compressed condition into the cylinder C^2. The fluid within the

cylinder C^2 is still further compressed and is discharged at each stroke of the piston therein into the final reservoir M.

By the compact arrangement of parts herein shown and described, I am enabled to secure a very high degree of compression, while the operating parts are so balanced as to render the working of the apparatus regular.

It is understood that valves of any well known or suitable form are to be inserted in the several pipes and connections as may be required.

What I claim is—

1. The combination with a pair of compressors, one arranged to take its supply of fluid from the other and means for operating said compressors directly from a motor, of a shaft driven by said motor and a third compressor driven from said shaft and in communication with the second of the aforesaid compressors to receive its supply of fluid therefrom, substantially as set forth.

2. The combination with a pair of compressors having their piston rods yoked to the piston rods of the motors, of a shaft extending through the yokes and provided with cranks connected with the ends of the yokes to drive it, a third compressor having its piston rod connected with said crank shaft, and the pipes connecting the several compressors with one another and with the supply and final reservoir, whereby the second and third compressors receive their supply of fluid from the first and second of the compressors respectively, substantially as set forth.

3. The combination with the two compressors having their piston rods yoked directly to their motors and the crank shaft connected to said yokes, of a third compressor connected with said crank shaft intermediate of said yokes and the connections between the several compressors, substantially as set forth.

JAMES CLAYTON.

Witnesses:
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GEORGE BARRY.