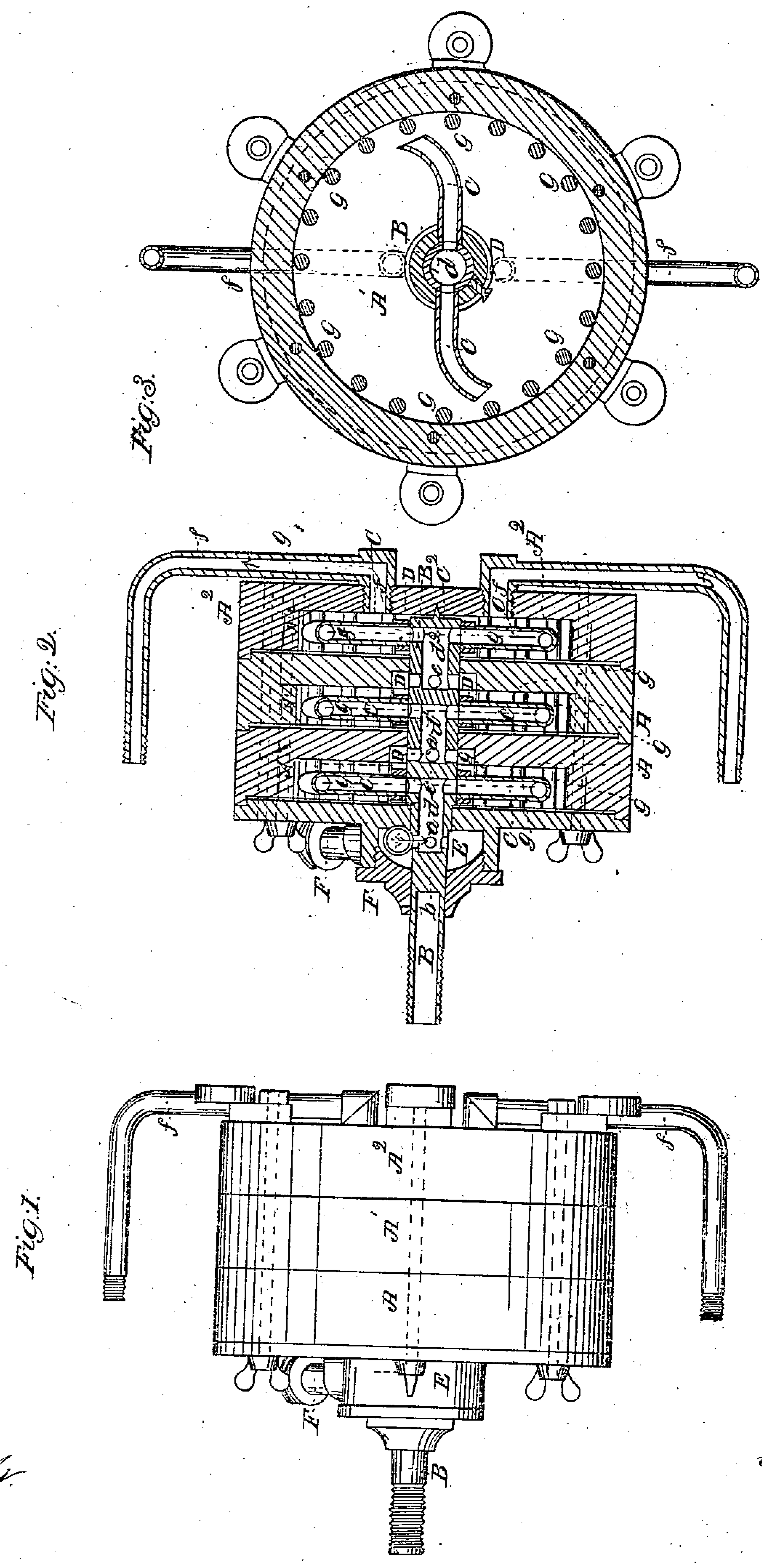
C. MONSON.

ROTARY ENGINE.

No. 36,164. Patented Aug. 12, 1862.



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UNITED STATES PATENT OFFICE.

CHARLES MONSON, OF NEW HAVEN, CONNECTICUT.

IMPROVED ROTARY ENGINE.

Specification forming part of Letters Patent No. **36,164**, dated August 12, 1862.

To all whom it may concern:

Be it known that I, CHARLES MONSON, a citizen of the United States of America, and a resident of the city and county of New Haven, of the State of Connecticut, have invented a new and useful Repeating Rotary Engine; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 denotes a side elevation, Fig. 2 a longitudinal section, and Fig. 3 a transverse section, of it.

The principle on which my invention is based is that the same current which, when confined under pressure, will revolve one wheel or instrument may be caused to so operate a larger number successively or consecutively that the aggregate power of the whole or the useful effect thereof shall be increased, such current being either of a liquid, aeriform, or gaseous character.

The nature of my invention therefore will be found in a series of wheels, arms, or their mechanical equivalents confined within tight chambers or inclosures and applied either to one or a number of shafts, and so provided with passages of connection and discharge that the motive element under pressure, (as steam, for instance,) after having entered or acted on and put in rotation the first instrument of such series, shall be caused to pass out of the inclosures of the said first instrument and so operate on each of the other instruments of the series, consecutively, as to induce rotation of it. This consecutive operation, or rather this simultaneous operation, upon consecutive instruments by the same jet or current of steam, is characterized, I believe, by this peculiar novelty—viz., that no one of the several instruments or motors can be any obstruction to the course of the current, except simply by friction through their passages of induction and eduction. In this respect my invention is peculiar. A series of bucket-wheels arranged in a stream would not be like it, for they would be such obstructions in the current that, provided the first of the series were loaded to the extent it could carry, all of the other wheels would be useless. In my plan, on the contrary, the current is effective throughout, even though the first of the series should be overloaded. This can be proved by an arrangement of shafts as herein indicated.

In my engine I contemplate the use of steam expansively by a progressive enlargement of the bore or capacity of the arms, and presume it can be so employed with as much advantage as in most other steam-engines, and although I have hereinafter shown one construction or mode of carrying out my invention this may be varied without changing the principle, combination, or character by which my invention is distinguishable from others, it consisting in one or more chambered shafts, a series or succession of wheels, arms, or equivalent devices, and a series of air-tight boxes or chambers so combined and arranged and provided with passages of induction and eduction that one and the same current of fluid under pressure shall be made repeatedly available for mechanical power, substantially as set forth.

In the drawings, A A′ A² represent a series of cylindrical vessels or chambers piled or placed together end to end and furnished with a tubular shaft, B, extending through all of them axially. This shaft is to be so applied to the several chambers or vessels as to be capable of being freely revolved on its axis. Within each chamber two or any other suitable number of curved arms, C C, are made to project from the shaft or from a hub, D, encircling it and fastened firmly to it.

A steam-chest or auxiliary chamber, E, is fixed on the outer end of the first chamber of the series and surrounds the shaft and receives a lateral induction-pipe, F. That part of the shaft which is within the chest E has one or more holes or passages, *a*, made through it, so as to enable steam to pass from the chest into the bore of the shaft. In rear of such hole or holes the hollow shaft has a partition, *b*, extended across it. There are also certain other partitions, *c c′ c²*, carried transversely across the bore of the shaft, so as to divide the shaft into a series of chambers, *d d′ d²*.

The chambers *d d′ d²* are respectively encompassed by the chambers A A′ A², and each of the arms C opens at its inner end directly into the shaft-chamber, which is surrounded by its hub. Furthermore, there is one or more holes, *e*, leading out of each of the two shaft-cham-

bers, d' d^2, and into the chambers A A'. There is also one or more eduction-pipes, *f*, leading out of the chamber A^2.

A series of pins, *g g g*, is arranged in a circular row within each of the chambers A A' A^2 and next to its circumference, and, finally, the shaft B is stepped or pivoted against the head of the last chamber, A^2, of the series.

Each of the hollow arms C C is curved, or should be constructed in such manner that the force of effluent steam when discharged out of it shall tend to produce a rotary motion of the shaft, and particularly in consequence of the reaction of the steam against a series of the pins *g g g*.

When steam is let into the induction-pipe of the engine above described, it will rush through the shaft-chamber *d*, and from thence into and out of the first pair of arms, C, from whence it will flow into their vessel or chamber A. From this chamber A the steam will pass into the second shaft-chamber, *d'*, and from it will rush into and through the second set of arms, C, and be received into the chamber A'. From the chamber A' it will escape into the third shaft-chamber, d^2, and finally will rush through the third series of arms, C, and into the last chamber, A^2, and out of the latter through the eduction pipe or pipes *f*. In passing out of each of the curved arms of the three sets of arms the steam by its reaction will exert a force on the shaft tending to put it in revolution.

The machine above described may be somewhat varied in construction and yet be made to operate substantially as specified. For instance, its main chambers may be separated so that there may be spaces between them, and there may be a shaft to each chamber and pair of arms, there being a pipe or conduit leading from each chamber into the shaft of the succeeding chamber. On each of these shafts there may be a gear to connect with and put in operation the driving-gear of any mechanism.

Instead of each of the several series of arms C C C, a hollow wheel may be used, provided it be so made that while discharging steam out of its periphery or other part such shall put the wheel in revolution.

I claim—

A repeating rotary engine constructed in manner or so as to operate substantially as described—viz., of two or more sets of curved arms, C, or their mechanical equivalents, a series of two or more tight chambers or vessels, A A' A^2, and a shaft (or its equivalent) divided into separate chambers and provided with induction and escape passages, the whole being arranged substantially as set forth.

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