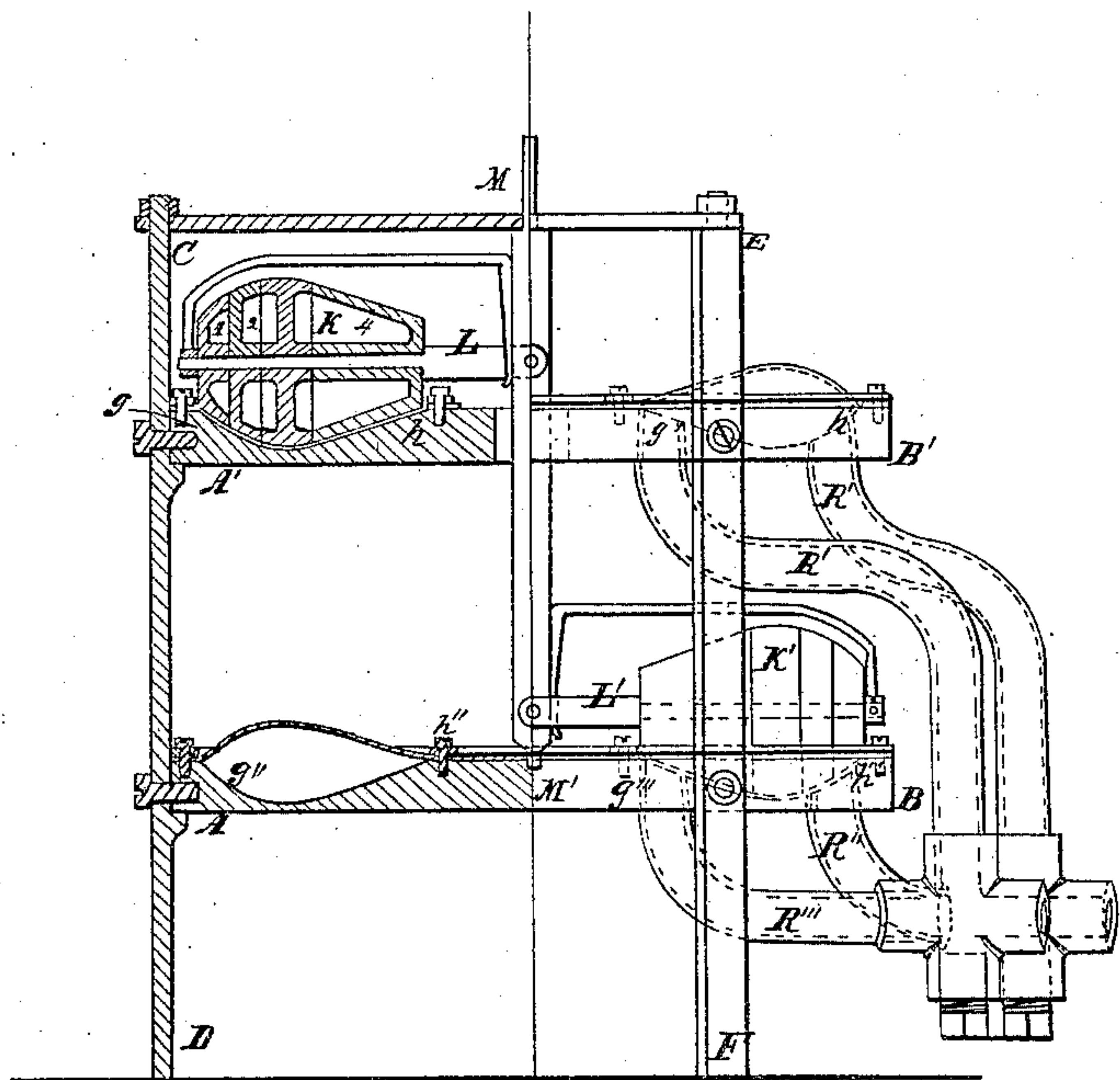
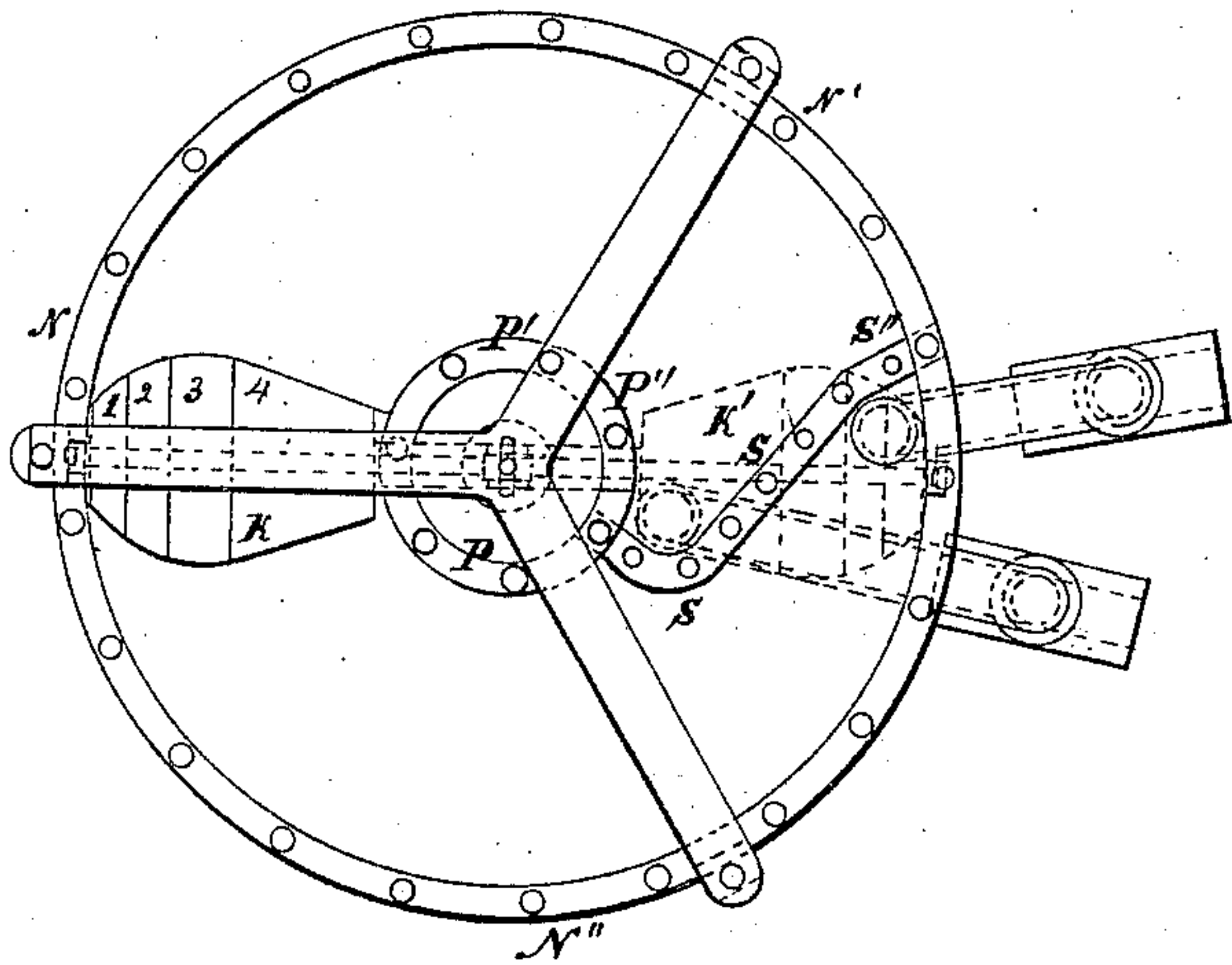


Rotary Steam Engine.

N^o 34,190.

Patented Jan. 21, 1862.



Witnesses:

Gemini Nila
 Janu. M. Calice

Inventor:

N W Baldwin

UNITED STATES PATENT OFFICE.

M. W. BALDWIN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED ROTARY ENGINE.

Specification forming part of Letters Patent No. 34,190, dated January 21, 1862.

To all whom it may concern:

Be it known that I, M. W. BALDWIN, of Philadelphia, State of Pennsylvania, have made certain new and useful Improvements in the Construction of Rotary Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 represents a top view of an engine constructed on my improved plan, and Fig. 2 represents an elevation of the same.

The nature of my improvement consists in the employment of a flexible fabric in combination with rollers so arranged that a continuous diaphragm of the flexible fabric is interposed between a metallic disk and rollers attached to radii attached to a shaft. The steam is admitted between the disk and the flexible diaphragm at one portion of the circumference and escapes at another, a small partition being interposed.

A B and A' B' are two metallic disks supported on a frame or legs C D E F. These disks A B and A' B' are hollowed out, as shown in the sectional drawing, Fig. 2, at g , h , $g' h'$, $g'' h''$, and $g''' h'''$. This hollow or cavity corresponds precisely in section with the two rollers K and K' and fits closely to this cavity. The rollers K K' are each composed of several distinct rolling sectional pieces marked 1, 2, 3, and 4. These revolving pieces turn freely upon the radial arms L and L'. The radial arms L and L' are attached to the vertical shaft M M', which turns in a box above and rests upon a step below, or it may turn in a box at both ends.

A disk or annulus is made out of a sheet of vulcanized india-rubber or other flexible substance, equal in diameter to that of the metallic disk A B. This annulus is placed upon the disk, and two rings N N' N'' and P P' P'', the former at the outer circumference of the disk and the latter around the central shaft or axle M M', are placed upon the sheet of india-rubber, and the rubber is pinched or secured to the disk under these metallic rings by a series of screws or bolts passing through the disk. Another disk or

annulus of the rubber is fitted and secured in like manner by rings to the other metallic disk A' B'. The rollers rest upon or roll upon the india-rubber diaphragms. The steam is introduced from the boiler by means of pipes through openings or apertures in the metallic disk into the space between the disk and rubber, and escapes in a similar manner.

Instead of steam, water under pressure or condensed air or other fluid could be employed.

The rollers K K' have the portion or section 4 of nearly the section of a frustum of a cone. The sections 1, 2, and 3 are slightly curved on their outer surfaces, and, as before stated, correspond with the recesses g h in the disks.

The operation of the engine is as follows: The rollers having been placed upon the india-rubber diaphragm, as above described, steam is introduced by the pipes R' and R''' between the surface of the cavity of the disk and the india-rubber, thus causing the rubber to bulge up and press against the rollers K and K' and force them to roll along in the cavity, making the shaft M M' revolve. The steam finally escapes through the pipes R and R''. A small metallic strip S S' S'', Fig. 1, is placed over each india-rubber diaphragm and is secured to the disk below, so as to separate the port for the entrance of the steam from the port for its escape. This partition S S' S'' extends across from the outer to the inner ring in a diagonal direction. A recess or groove is cut in the disk, in which the piece S S' S'' and gum are forced by screws passing through S S' S''. It is so depressed in order to allow the rollers to pass over it freely and at the same time making a partition and preventing the steam from pressing the rollers without acting on them. The direction of motion or rotation can be reversed by changing the entrance into the escape port, as is customary in other engines.

The engine may be used vertically or horizontally. Instead of vulcanized rubber, leather or other flexible fabric would answer for the diaphragm. The rubber may be arranged around the periphery of a disk; but

it does not answer so well as in the above arrangement.

Having thus described my improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

The flexible diaphragm and disk, in combination with the rollers, whereby by the

action of steam or other fluids between the diaphragm and disk the rollers are propelled in the manner above described.

M. W. BALDWIN.

Witnesses:

J. E. MINI MILES,
JAMES McCULUN.