

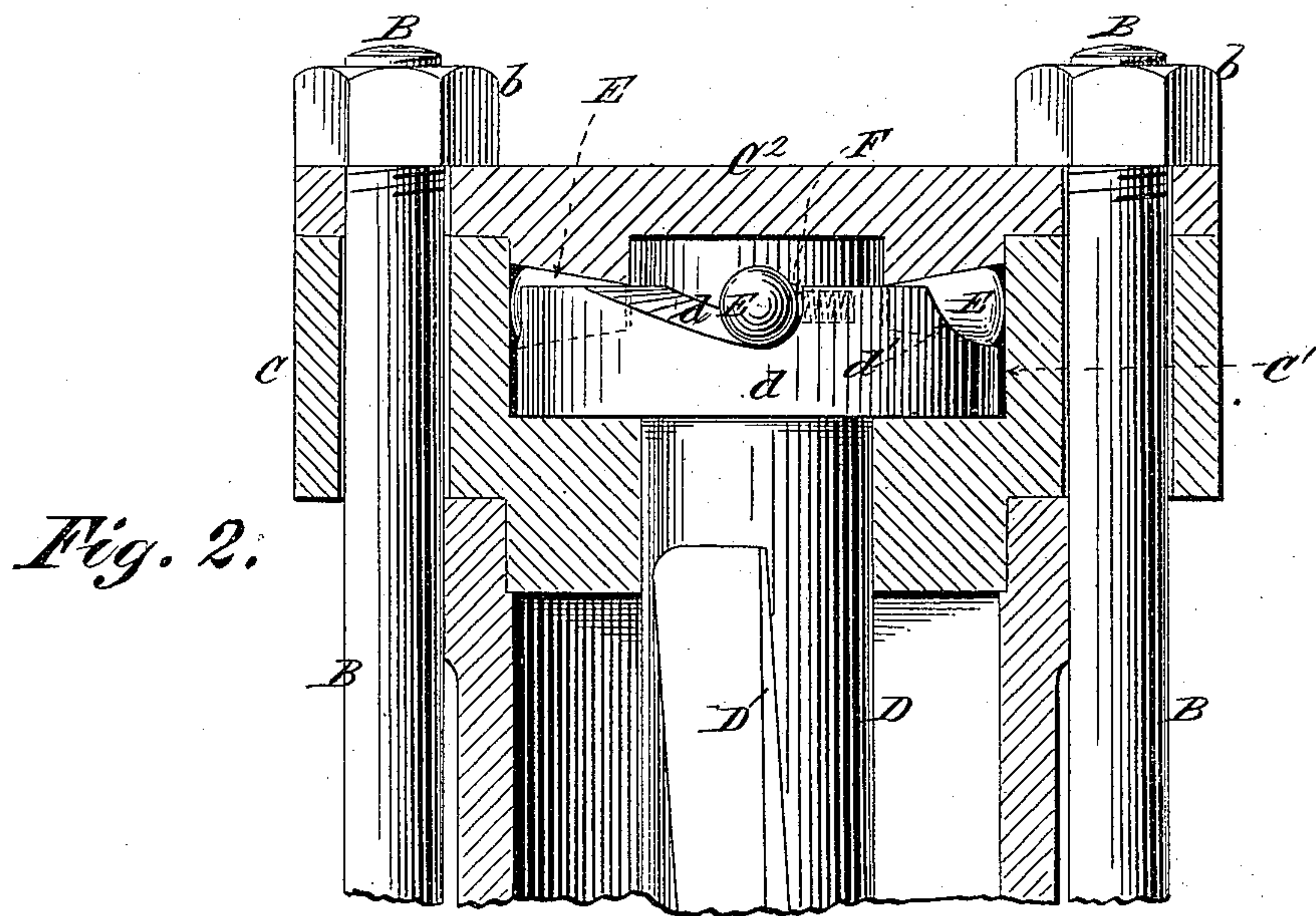
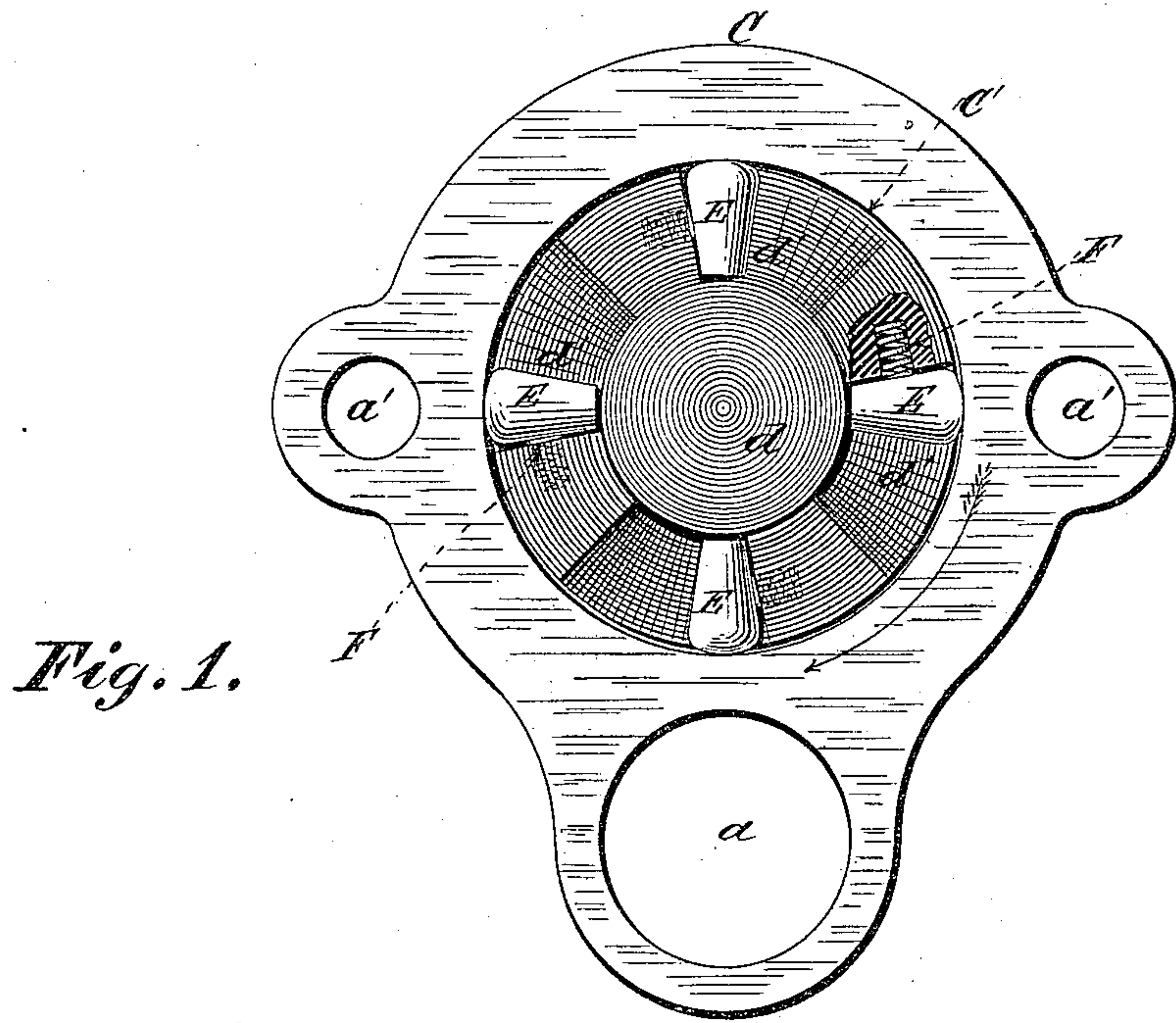
(No Model.)

J. C. GITHENS.

ROTATING FEED FOR STEAM ROCK DRILLS.

No. 312,346.

Patented Feb. 17, 1885.



Witnesses:

M. L. Adams

R. C. Howes

Inventor:

Joseph C. Githens
Per Edw. E. Lumby
Atty.

UNITED STATES PATENT OFFICE.

JOSEPH C. GITHENS, OF NEW YORK, N. Y., ASSIGNOR TO THE RAND DRILL COMPANY, OF SAME PLACE.

ROTATING FEED FOR STEAM ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 312,346, dated February 17, 1885.

Application filed May 2, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. GITHENS, of the city and State of New York, have invented a certain Improvement in Rotating Feed for Steam Rock-Drills and Analogous Engines, of which the following is a specification.

This invention is a modification of that which I have shown in other pending cases, in which the backward rotation of the head of the spiral bar in a steam rock-drill is prevented by the interposition of cylindrical rollers between the periphery of the head of the spiral bar and the wall of the chamber in the head of the steam-cylinder in which the head of the spiral bar is contained.

In the present case my invention consists in the employment of conical rollers which are interposed between the face of the head of the spiral bar and the top or bottom of the chamber in the head of the steam-cylinder in which the head of the spiral bar is contained. These conical rollers are arranged radially with relation to the axis of the spiral bar, and are deposited in recesses formed either by recessing the face of the spiral bar, or by recessing the top or bottom of the chamber in which the head of the spiral bar is contained, such recesses varying in their widths in the paths in which the rollers tend to roll, and the rollers being backed up by expanding springs tending to thrust them toward the narrower parts of such recesses, and thus hold them on one side in contact with the head of the spiral bar, and on the other side in contact with the top or bottom of the chamber in which the head of the spiral bar is contained.

The accompanying drawings, representing so much of the cylinder of a steam rock-drill or other analogous engine as is necessary for the purpose of illustrating the application of my improvement, are as follows:

Figure 1 is a view of the end of the cylinder with the cap removed, showing the end of the spiral bar and the outer face of the head thereof. Fig. 2 is a central longitudinal section of a portion of the cylinder and the cylinder-head, showing the spiral bar and its head in elevation.

In the drawings, the conical rollers are represented as contained in recesses formed by

recessing the face of the head of the spiral bar. The cylinder-head A is provided with the usual hole, *a*, for the admission of the screw by which the longitudinal feed is imparted to the rock-drill cylinder, and with the apertures *a' a'*, for the reception of the longitudinal bolts B B, by which the opposite heads of the cylinder are bolted together. The cylinder-head C is centrally perforated to admit the spiral bar D, and is counterbored to form the chamber C', in which the head *d* of the spiral bar is contained. The head of the spiral bar is confined between the bottom of the chamber C' and the cap C², which is secured upon the end of the cylinder-head C by means of the bolts B and nuts *b*. The outer face of the head *d* of the spiral bar is provided with two or more recesses, each of which inclines outwardly and downwardly, as shown. The under surface of that part of the cap C² which incloses the outer portion of the head *d* of the spiral bar is preferably slightly conical, thus presenting an annular bearing of suitable inclination to engage the conical rollers E from end to end. The conical rollers are so tapered as to make the opposite sides of their central longitudinal section coincide with lines extending radially outward from the center of the spiral bar, as shown in Fig. 1. They thus tend to rotate in paths which are concentric with relation to the head of the spiral bar. Along these paths the widths of the recesses *d'* gradually diminish, and the rollers E are constantly thrust toward the narrower portions of the recesses by means of the spiral springs F, respectively, which are contained in suitable recesses formed in the end walls of the recesses *d'*, as shown. By the action of these springs the conical rollers are kept in constant contact on one side with the bottom of the recess in the head of the spiral bar, and upon the other side with the surface of the cap C². The piston, which is not shown in the drawings, is of the usual character, longitudinally recessed, and provided with a nut which engages the spiral rib D' upon the spiral bar. During the working-stroke of the piston by the action of the nut upon the spiral rib the spiral bar is rotated in the direction indicated by the arrow in Fig. 1. The frictional contact

of the head of the spiral bar upon the conical rollers E under these circumstances tends to roll the conical rollers toward the wider portions of the recesses d' , thus compressing the springs F. The tendency of the return-stroke of the piston is to rotate the spiral bar in the opposite direction, and the tendency of such rotation is to roll the conical rollers toward the narrower parts of the recesses in which they are contained. As the springs F hold the rollers in constant contact with the head of the spiral bar, any tendency of the spiral bar to rotate in the direction opposite to that indicated by the arrow in Fig. 1 is instantly arrested by the jamming of the conical rollers between the head and the under side of the cap C^2 . It follows that the extent of the rotatory feed following a working-stroke of the piston is governed by the length of such working-stroke, and variations in the length of the working-strokes are followed by correspond-

ing variations in the extent of the rotatory feed of the piston.

I claim as my invention—

In mechanism for effecting the rotatory feed of the piston in the cylinder of a steam rock-drill or other analogous engine, the combination, with the head D of the spiral bar and one of the walls of the chamber C' in which the head of the spiral bar is contained, of the springs F and conical rollers H, deposited in suitably-tapering recesses, formed either by recessing the face of the head B of the spiral bar or by recessing the opposed wall of the chamber in the head of the cylinder in which the head B of the spiral bar is contained, substantially as and for the purpose set forth.

JOSEPH C. GITHENS.

Witnesses:

R. C. HOWES,
M. L. ADAMS.