

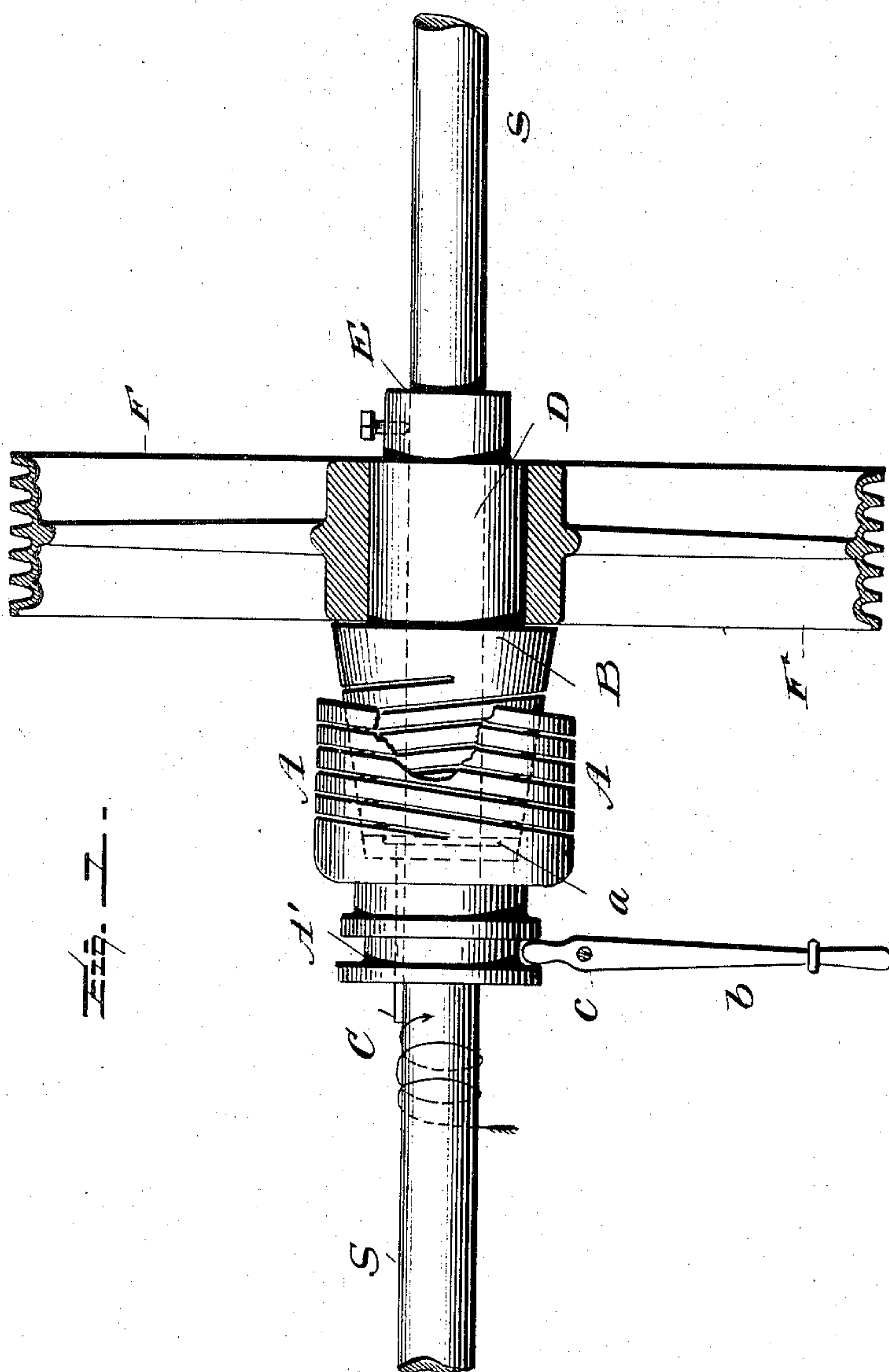
(No Model.)

3 Sheets—Sheet 1.

E. SHAW.  
CLUTCH.

No. 495,602.

Patented Apr. 18, 1893.



Witnesses:

L. C. Mills

E. A. Bond

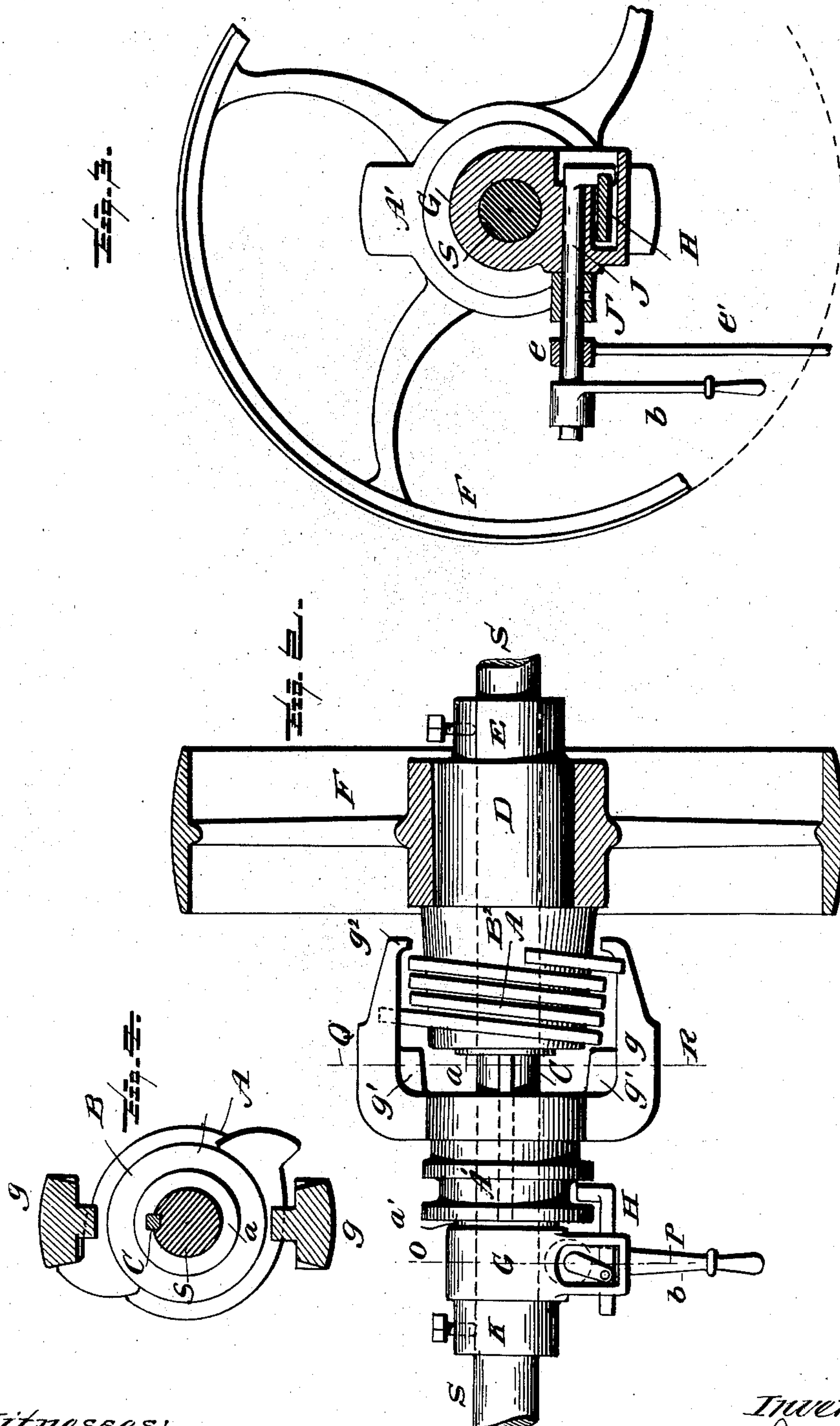
Inventor:

Edward Shaw  
by his attorney  
Thomas Drew Peterson

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CLUTCH.

No. 495,602.

Patented Apr. 18, 1893.



Witnesses:  
L. C. Mills.  
H. A. Johnstone.

Inventor:  
Edward Shaw  
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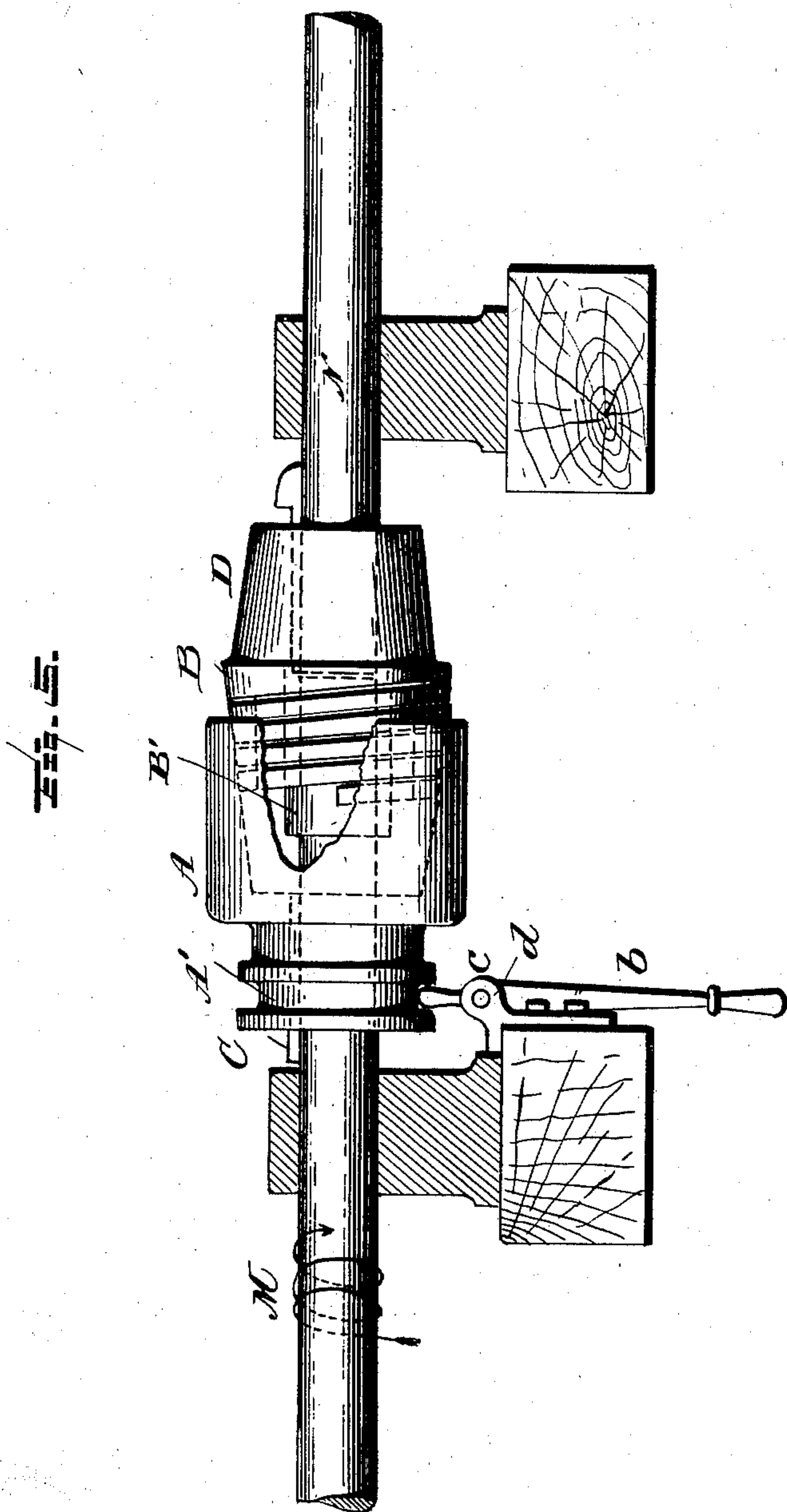
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3 Sheets—Sheet 3.

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L. C. Mills  
E. A. Bond

Inventor:

Edward Shaw  
by his attorney  
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# UNITED STATES PATENT OFFICE.

EDWARD SHAW, OF BRISTOL, ENGLAND.

## CLUTCH.

SPECIFICATION forming part of Letters Patent No. 495,602, dated April 18, 1893.

Application filed September 16, 1892. Serial No. 446,123. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD SHAW, a subject of the Queen of Great Britain and Ireland, residing at Bristol, England, have invented new and useful Improvements in and Relating to Clutches, of which the following is a specification.

This invention has special reference to clutches known as cone clutches and to brakes and like appliances constructed on similar principles. According to one arrangement comprised in this invention the cones employed therein are each cut so as to form coils. They are locked together or separated, at will, by means of suitable gear. Under a second arrangement, one cone, the outer, only is in the form of a coil; the other being not thus cut. The cones are locked together or separated, at will, by suitable gear. According to a third arrangement the inner cone only is in the form of a coil, the outer being an uncut cup or shell.

Figure 1 is a side elevation of a clutch with a portion broken away, and the wheel in vertical section. Figs. 2, 3 and 4 are different views of a single modification. Fig. 2 is a side elevation, the wheel, as before, being in vertical section. Fig. 3 is a section on the line O—P in Fig. 2. Fig. 4 is a section on the line Q—R in Fig. 2. Fig. 5 is a side elevation showing another modification, with a portion broken away.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

In Fig. 1 is illustrated an arrangement according to which both cones A and B are cut so as to form coils. The inner cone B with its boss D, made in one piece therewith, is loose upon the shaft S. On the boss D is keyed the rope-wheel F. The cone A, which, by means of the feather C, rotates with the shaft S is extended to form a neck A'. Projecting into a groove *f* in the neck A' is a hand lever *b* pivoted as at *c*. The cones A and B are cut spirally in reverse directions. The arrow shown in the drawings indicates the direction of rotation of the shaft S. The cone B is prevented from moving, in one direction along the shaft S, by the collar E clamped on the shaft, and, in the opposite di-

rection, by any suitable means. I have shown a collar *a* kept in place by the feather C. When, through the medium of the hand lever *b*, the cone A is moved into engagement with the cone B, the free end of the spiral on the cone A is retarded and the free end of the cone B carried forward, and hence the cone A contracts and the cone B expands. Thus the cones become inter-locked or more properly, efficiently engaged by friction and the wheel F is caused to rotate with the shaft S so long as this condition is maintained. The cones A and B are disengaged by withdrawing the former by turning the lever *b* in the proper direction.

In Figs. 2, 3 and 4 is shown, a modification under which the inner cone B, loose upon the shaft S, is not spirally divided, and the cone A consists of a coil made separate from the neck A'. Fig. 3 is a section on the line O P, Fig. 2, and Fig. 4 is a section on the line Q R, Fig. 2. Extending forward from the neck A', which, by means of the feather C rotates with the shaft S, is a pair of arms *g, g* with which the two ends of the cone A engage. The cone A is loose upon the cone B and is held against endwise displacement by the projections *g'* on the arms *g g* near their hubs or necks, and the lugs or projections *g<sup>2</sup>* at the ends of the said arms, as seen in Fig. 2. The arms *g, g* are turned inward at their free ends so as to engage over the inner end of the cone A, as shown. As in the arrangement above described, the cone B is kept in place on the shaft S by the collars *a* and E, and when the cone A is moved forward so as to interlock with the cone B the spiral binds upon the latter, and the pulley F keyed on the boss D which is formed in one piece until the cone B is carried round the shaft S. The special starting gear shown in these figures may serve with either form. Fitting the shaft S loosely, and prevented from rotating therewith by an outside attachment, such as an eye *e* in the end of a stay *e'*, is a sleeve G prevented, by suitable means, from traveling along on the shaft. On one side of the sleeve G is formed a bracket in a slot in which works a sliding-bar H. The cranked end of the spindle J engages with a notch in the bar H, which latter is turned up at one end



to project into the groove *f* of the neck A' of the cone A. The spindle J is kept in place by the collar J' clamped to it. By operating the hand-lever *b*, the bar H is moved along  
5 parallel with the shaft and causes the cones A and B to interlock or disengage according to the direction in which the bar is moved.

At Fig. 5 is shown a modification under which the inner cone B only is spirally cut.  
10 The figure illustrates the application of the device as a shaft-coupling. The cone B is rigidly secured upon the shaft N by a key passed into the boss D. The operating gear is similar to that hereinbefore described with  
15 reference to Fig. 1, and when through the medium thereof the cone A, which by means of the feather C rotates with the shaft M, is made to engage with the cone B, the spiral portion of the latter expands and binds on the  
20 inside of the cone A, and the shaft N is made to rotate with the shaft M. In order to steady the shafts M and N, a socket B' is formed on the cone B and extended forward, as shown. The ends of the shafts are received in this  
25 socket.

Either arrangement above described and illustrated in the drawings is applicable for the purpose of a brake, and for this, one part is to be rigidly secured and prevented from  
30 rotating, the other part being free to rotate so

that when the frictional grip is applied both parts rotate together.

I claim—

1. The combination with a shaft of cones on said shaft, one of said cones being spirally  
35 cut, and said cones being arranged to interlock or bind together when put into contact axially, and shifting mechanism for putting said cones into such contact, substantially as herein set forth.

2. In cone clutches and the like, the supporting shaft, the pair of cones, one within the other, spirally cut in opposite directions, one fixed on said shaft and the other arranged  
45 in line therewith, in combination and with means for moving the said cones into and out of contact with each other so as to interlock and transmit power from one cone and its connections to the other cone and its connections, when required, all substantially as here-  
50 in specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD SHAW.

Witnesses:

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*Bushy Park, Bristol.*