(No Model.) 6 Sheets—Sheet 1.

# J. W. MESERVE & W. MORSE.

## CLUTCH.

No. 495,425. Patented Apr. 11, 1893.

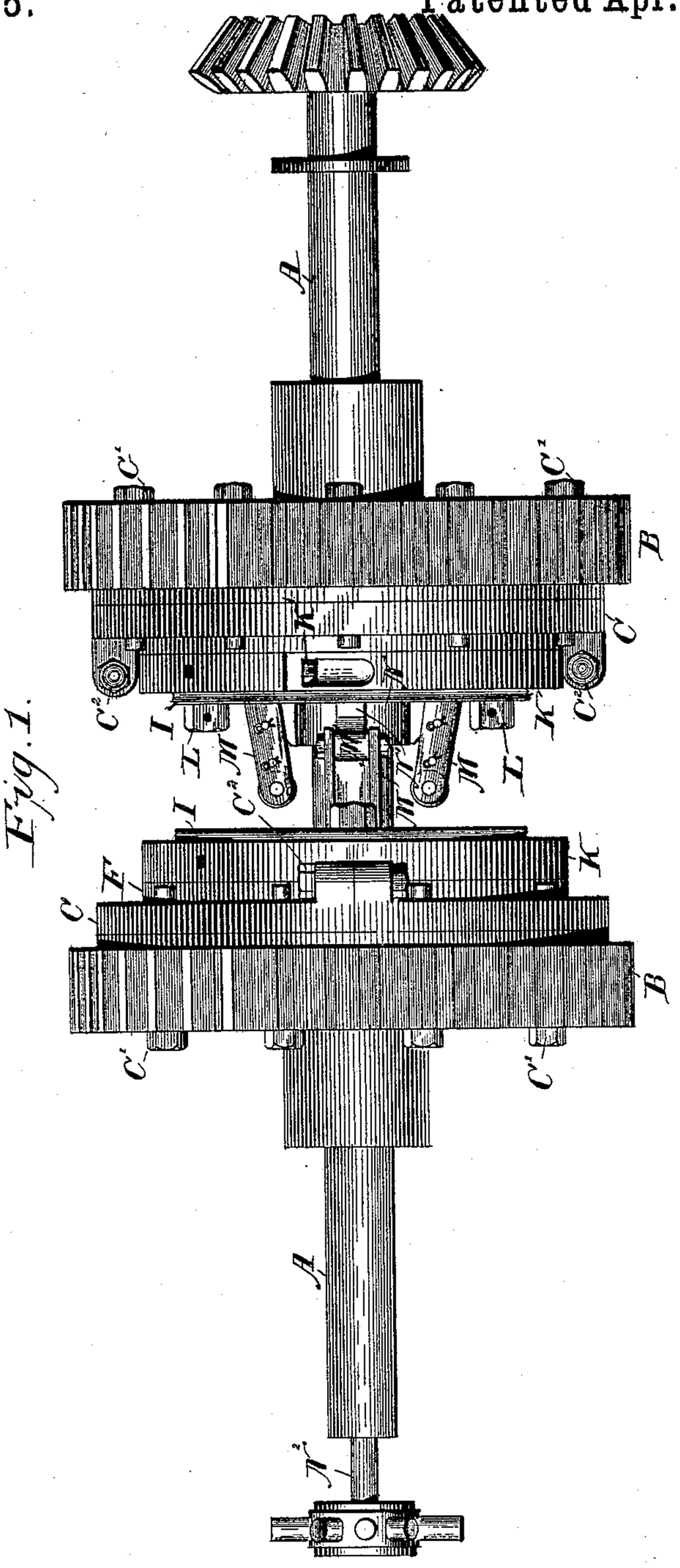



Fig. 1.

Witnesses
Louis J. Jolibois.
C. A. Elwell

Inventors
John W. Meserve.
Warren Morse.
By Hopkins & Atkins.
Attorneys

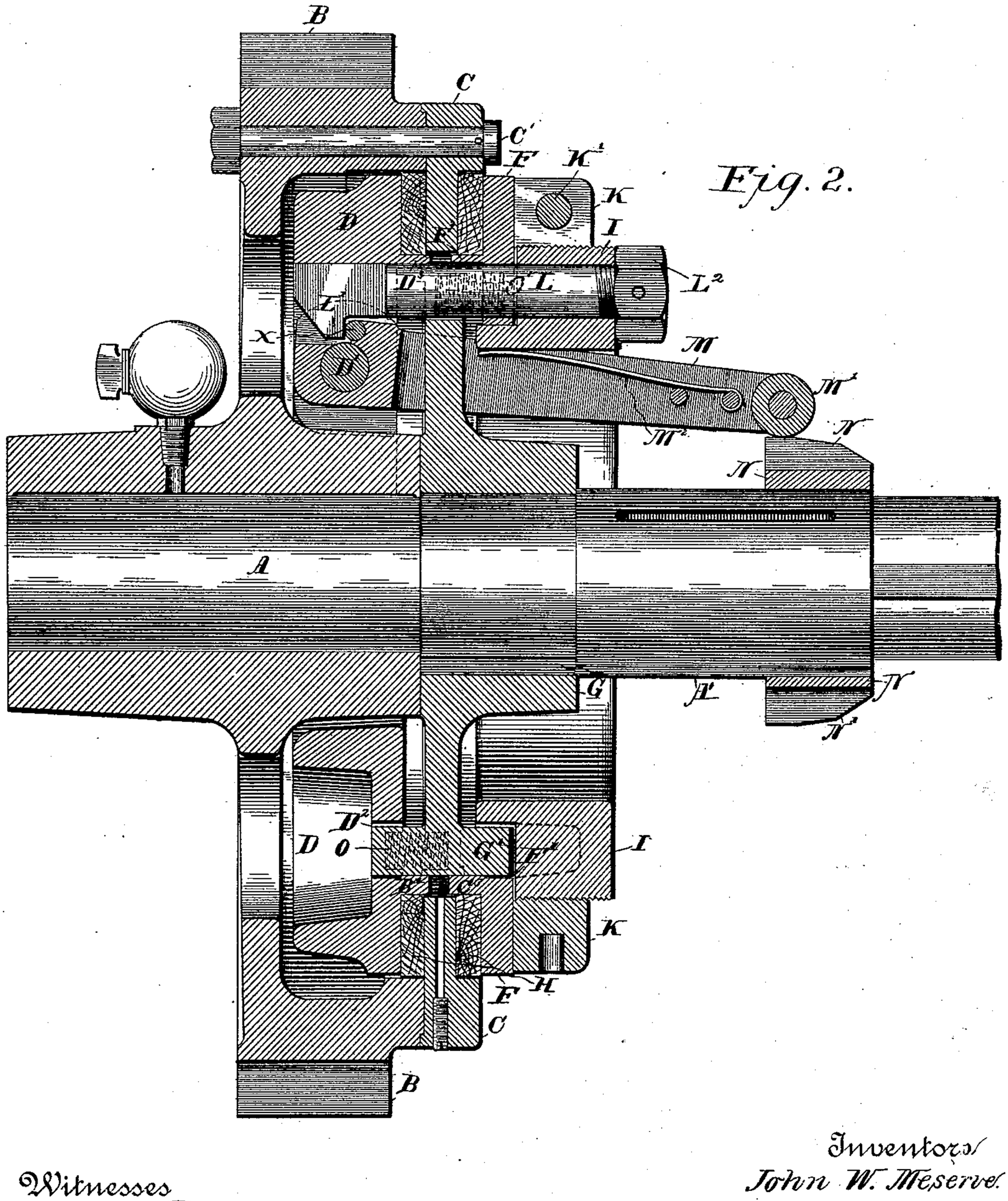
(No Model.) 6 Sheets—Sheet 2.

# J. W. MESERVE & W. MORSE.

## CLUTCH.

No. 495,425. Patented Apr. 11, 1893.

Fig. 2.




Witnesses
Louis F. Judlow.
C. P. Elwell.

Inventors
John W. Meserve.
Warren Morse.
By Hopkins & Atkins.
Attorneys

(No Model.) 6 Sheets—Sheet 3

# J. W. MESERVE & W. MORSE.

## CLUTCH.

No. 495,425. Patented Apr. 11, 1893.

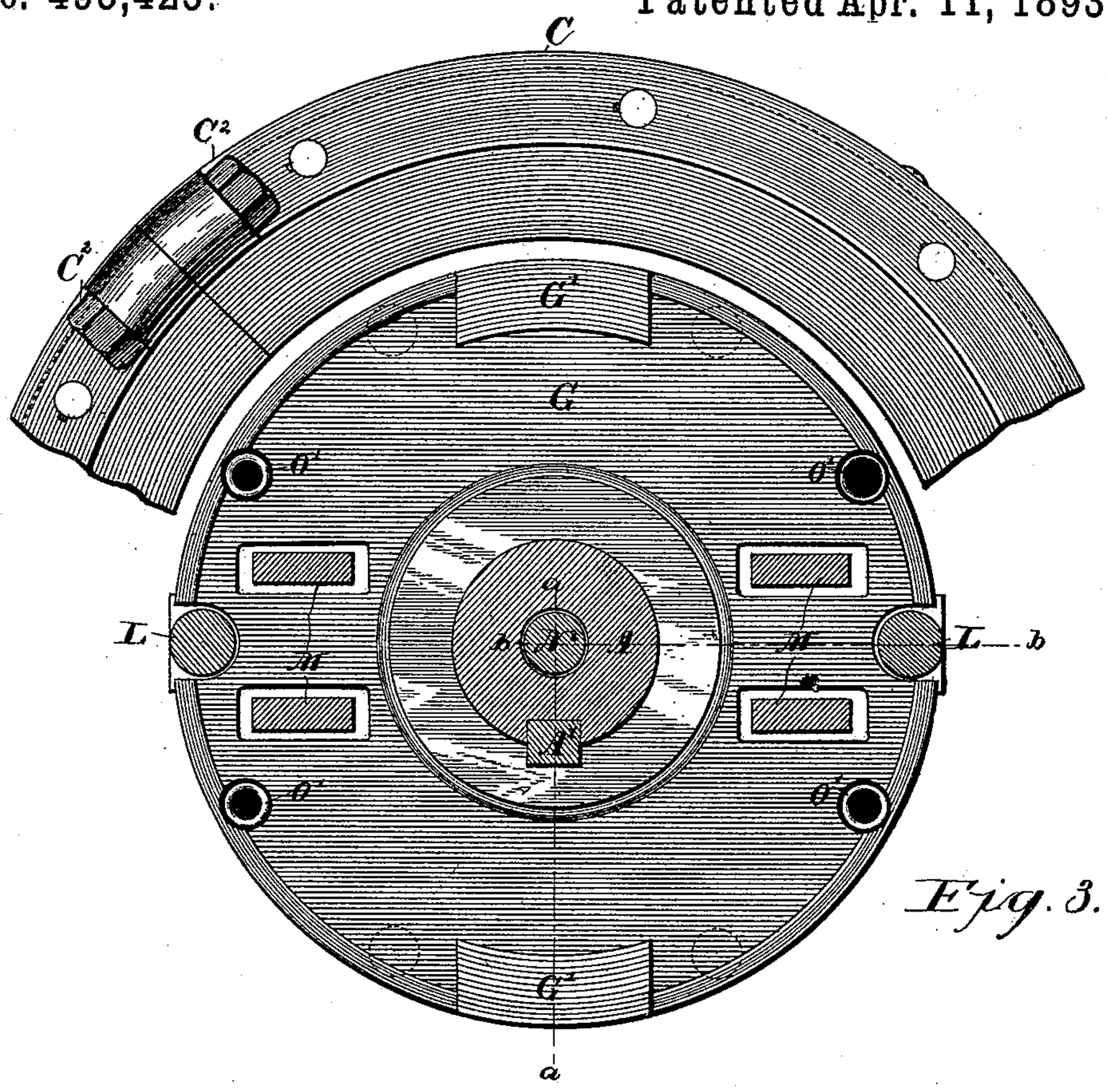



Fig. 3.

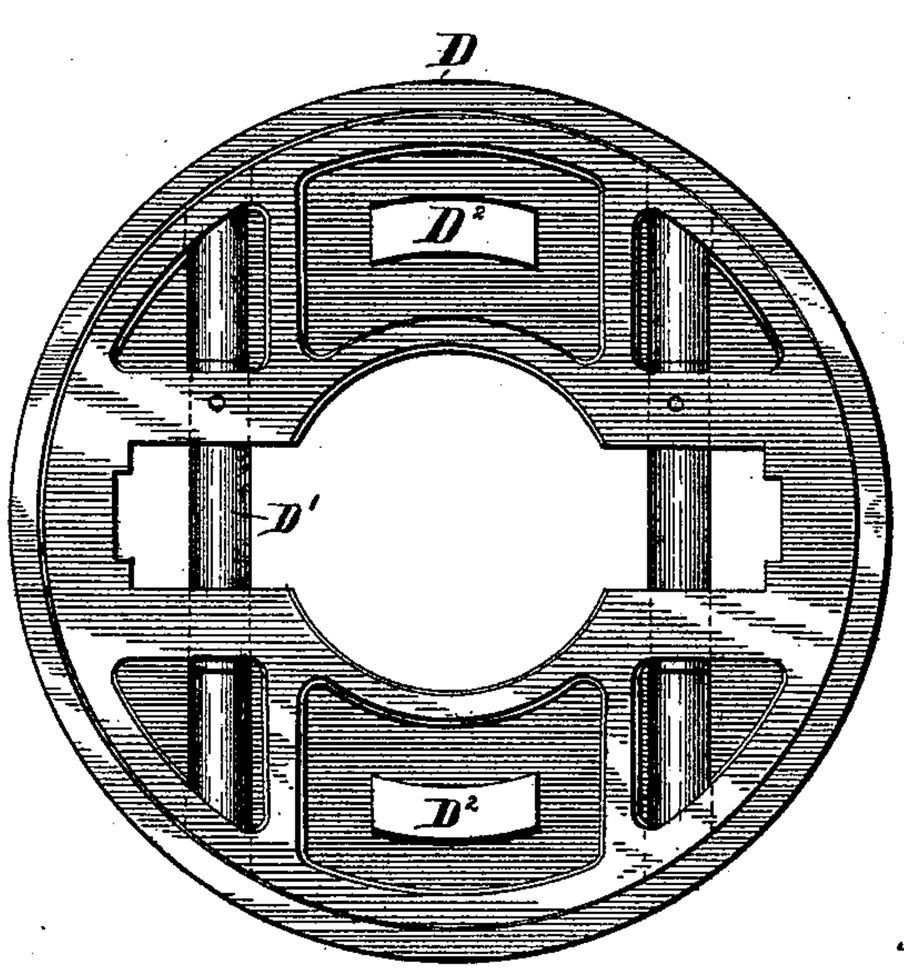



Fig. 4.

Witnesses
Louis T. Julihn.
C. P. Elwell

Inventors
John W. Meserve.
Warren Morse.
By Hopkins & Atkins.
Attorneys

(No Model.) 6 Sheets—Sheet 4.

# J. W. MESERVE & W. MORSE.

## CLUTCH.

No. 495,425. Patented Apr. 11, 1893.

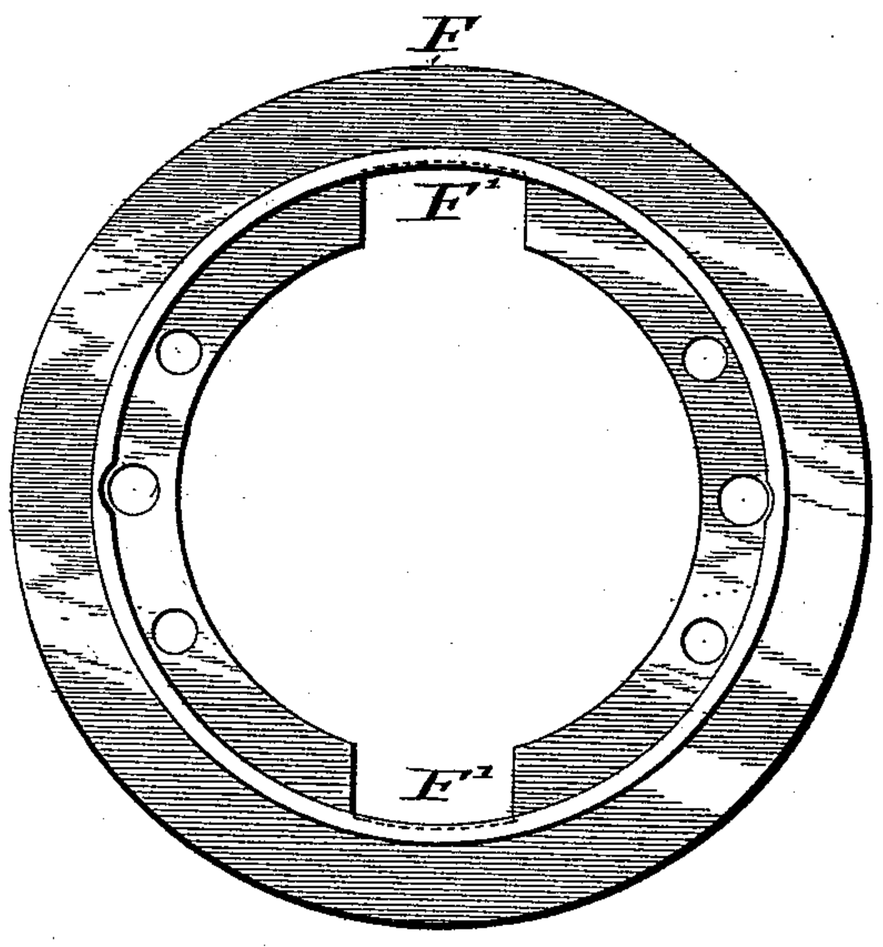



Fig. 5.

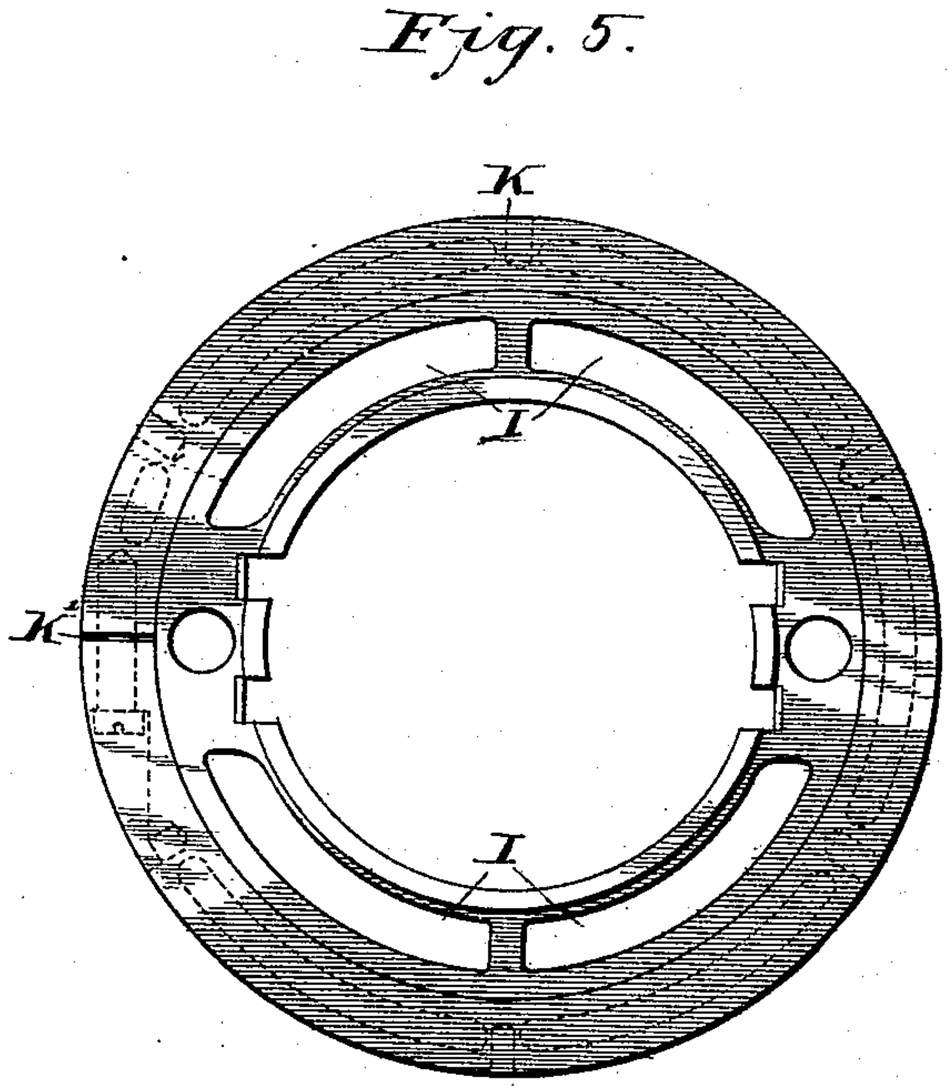



Fig. 6.

Witnesses
Louis J. Joslin
C. P. Elwell

Inventor
John W. Meserve.
Warren Morse.
By Hopkins & Atkins.
Attorneys

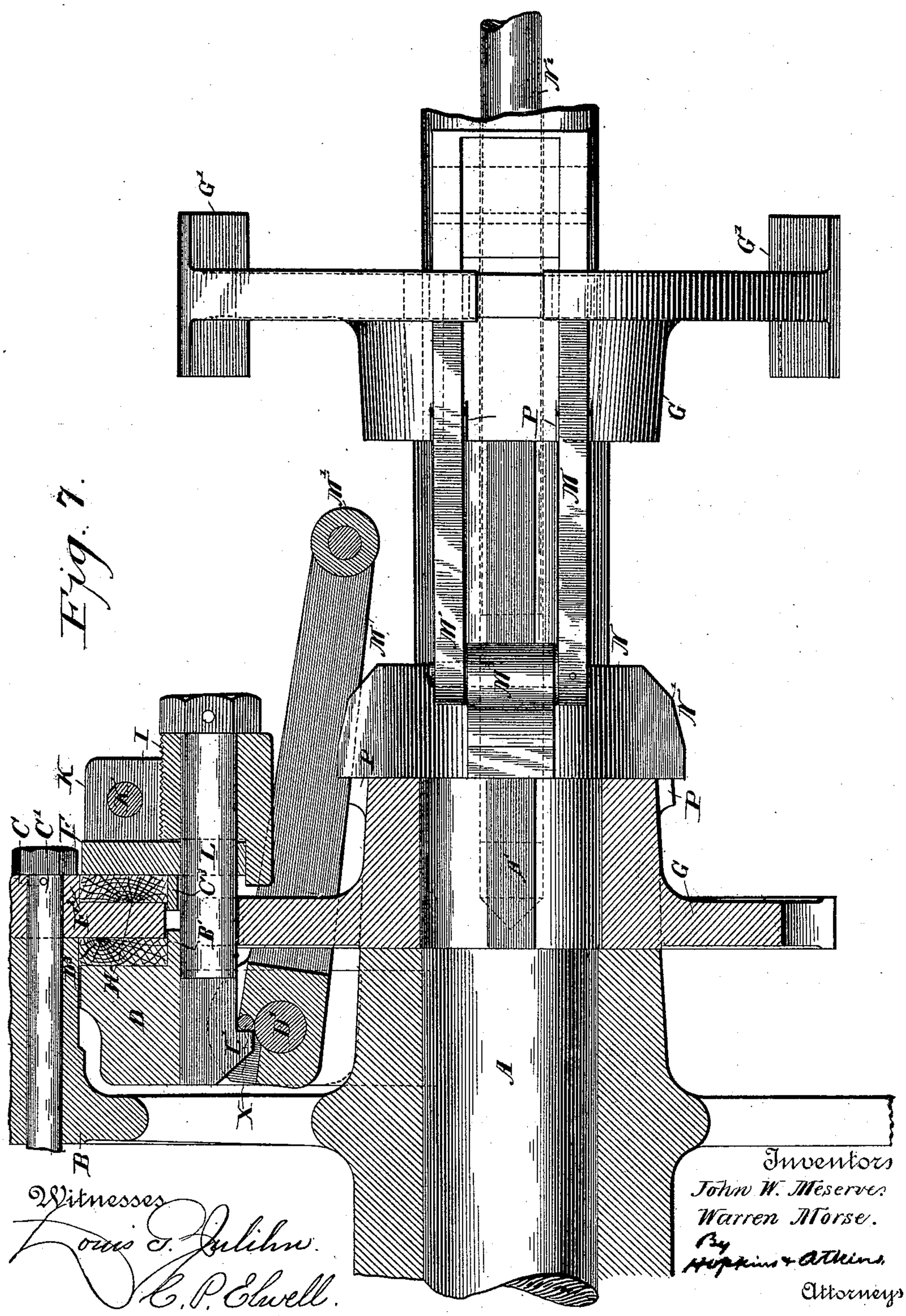
(No Model.) 6 Sheets—Sheet 5.

# J. W. MESERVE & W. MORSE.

## CLUTCH.

No. 495,425. Patented Apr. 11, 1893.

Fig. 7.




Witnesses
Louis F. Dulihw.
C. P. Elwell.

Inventors
John W. Meserve.
Warren Morse.
By Hopkins & Atkins.
Attorneys

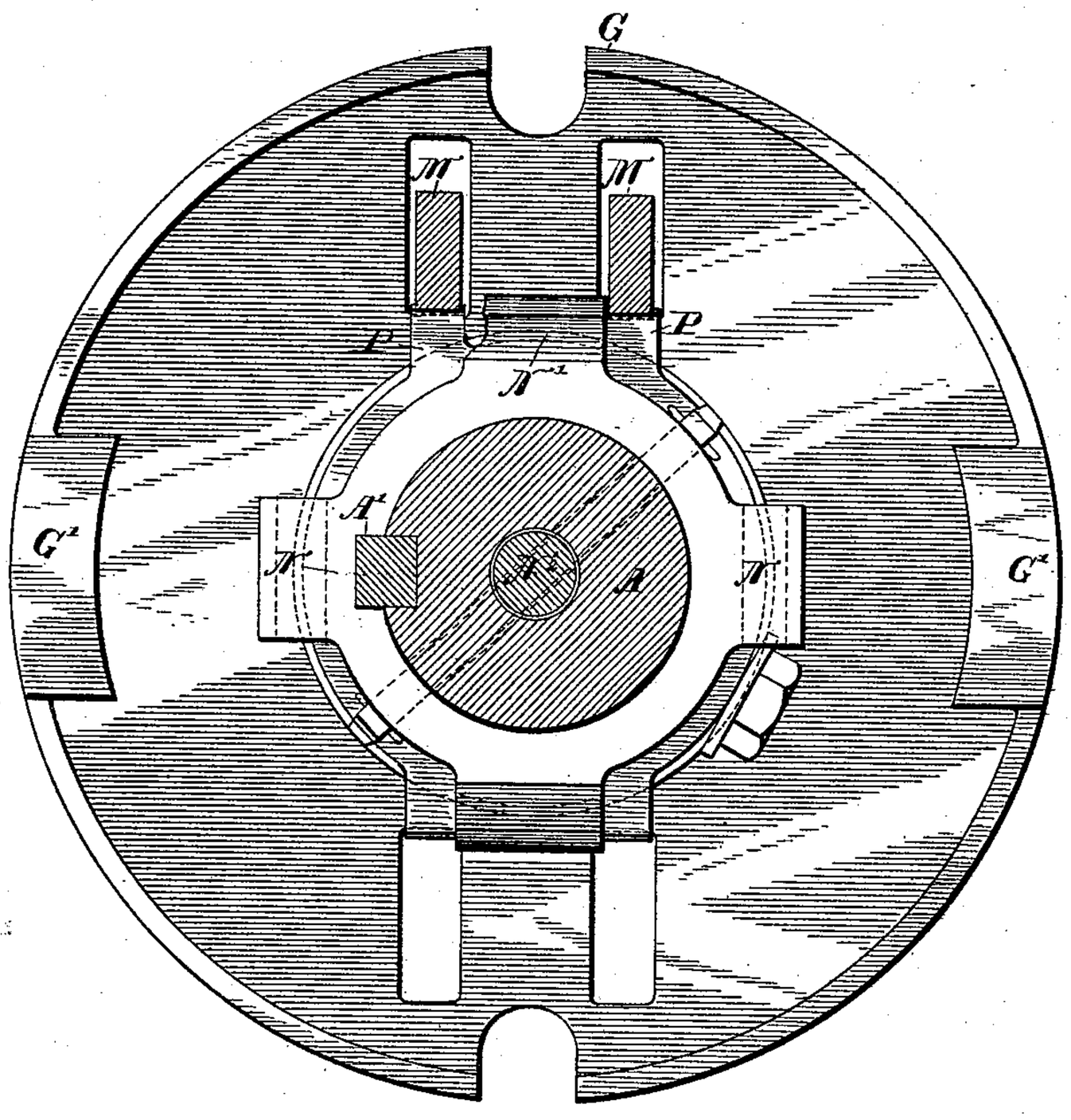
(No Model.) 6 Sheets—Sheet 6.

# J. W. MESERVE & W. MORSE.

## CLUTCH.

No. 495,425. Patented Apr. 11, 1893.

*Fig. 8*




Witnesses
Louis C. Fulton
C. P. Elwell.

Inventors
John W. Meserve.
Warren Morse.
By Hopkins & Atkins.
Attorneys.

# UNITED STATES PATENT OFFICE.

JOHN W. MESERVE AND WARREN MORSE, OF STAMFORD, CONNECTICUT, ASSIGNORS TO THE YALE & TOWNE MANUFACTURING COMPANY, OF SAME PLACE.

## CLUTCH.

SPECIFICATION forming part of Letters Patent No. 495,425, dated April 11, 1893.

Application filed October 18, 1890. Serial No. 368,613. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN W. MESERVE and WARREN MORSE, citizens of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Friction-Clutches, of which the following is a specification, reference being had to the accompanying drawings.

Our improvements are applicable to and have utility in a variety of clutches, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a longitudinal elevation of a pair of clutches embodying our invention, each clutch a duplicate of the other. Fig. 2 is a longitudinal section in the line *a*, *a* and *b*, *b*, Fig. 3. Fig. 3 is an elevation of the outer face of the driving flange with some of the adjacent parts in section; and Fig. 3 also shows a broken segment of the halved friction ring. Fig. 4 is an elevation of the fulcrum disk. Fig. 5 is an elevation of the follower disk. Fig. 6 is an elevation of the adjusting ring and adjusting hoop threaded thereon. Fig. 7 is a longitudinal section of the actuating elements of the clutch, showing also some adjacent parts of the operating mechanism. Fig. 8 is an elevation, partly in section, showing sliding collar and driving flange.

A is the shaft.

B is a gear wheel or pulley loose on the shaft and carrying, by means of bolts C′, a halved friction ring C, the latter united at the ends by bolts $C^2$.

D is the fulcrum disk wherein the levers M M are pivoted upon pins D′ D′. F is the follower disk. The disks D and F together are the gripping members between which the friction ring C is clasped or gripped frictionally.

G is the driving flange secured at its boss to the shaft by a key A′. Upon the rim or periphery of the flange G the gripping disks D, F, are centered and supported, so that they may slide thereon. The disks D and F have also a driving and sliding engagement with the flange G, by means of the lugs or projections G′ G′, occupying corresponding slots or mortises $D^2$, $D^2$ in the disk D, and slots F′ F′ in the disk F.

H H are loose supplementary wearing rings of wood or other suitable material, preferably in segments which are retained radially in place between concentric flanges or rims B′ $D^3$ and $C^3$, $F^2$, formed respectively upon the gripping and gripped parts of the clutch.

I is the adjusting ring threaded externally to engage with the internal thread of the cut adjusting hoop K. The ring I is secured to the disk F by the round middle part of the hook-ended bolts L L. The hoop K is cut, and the ends united by a screw K′. This organization constitutes a separate adjusting device for compensating for wear on the frictional gripping parts. By unscrewing the screw K′ the hoop K expands, and it may then be easily rotated to any desired position, after which the screw K′ may be used to contract, and thus frictionally lock, the hoop K to the ring I. The overhung or hook ends L′ L′ of the adjustable bolts L L are supported against cross strains and bending in corresponding slots in the fulcrum disk D, their hook ends being in contact as abutments with the acting faces at the pivot ends of the levers M M.

To provide for inequalities of manufacture of the levers and fulcrums on the respective sides of the clutch, we provide upon the ends of the bolts L an adjusting nut $L^2$ adapted to permanently adjust the working parts with relation to each other.

X is a removable steel pin in the acting face of each lever to take the wear. The bolts L L are placed outside the levers, whereby the levers are brought close to the shaft conveniently for contact with the sliding collar N. Upon the hub of the driving flange G are small projections P P, one for each lever, whereon the lever rests in its normal position when the sliding collar N is retired toward and into action with the levers of the opposite clutch. The free ends of the levers are provided with pivoted rollers M′ M′, adapted to be acted on by the inclines N′ N′ of the sliding collar N.

$M^2$ are springs to restore the levers M to their normal position when out of action and retain them there against centrifugal force, but these are not novel. The collar N is actuated in an ordinary manner by an attached push-rod $N^2$ central in the shaft.

O are separating springs to relieve or push back the disk D from contact with the friction ring C. The springs O′ are a separate set to push back in like manner the disk F. The collar N has only sufficient axial length to carry the inclines N′ N′ of one clutch. By our improvement the inclines for actuating the other clutch also, are carried by the same collar without increasing its length, thus economizing space longitudinally upon the shaft, as shown in Fig. 7, wherein the four inclines for the two clutches are located around the same zone or section of collar surface ninety degrees apart from each other. By increasing the collar circumference, more than four inclines can be placed within the same axial limits. The inclines are preferably made obtuse or abrupt at the entering end, to lift the levers quickly and bring the frictional faces into contact. The middle part of the inclines is of flatter angle to give maximum force from the levers upon the friction faces, and the remainder of the face is parallel to the shaft, to act as a rest and lock the levers and operative parts in the driving position.

The operation of the clutch is obvious. The sliding movement of the collar N in one direction diverges the free ends of levers M, forcing the lever carrying disk D and the follower disk F toward each other; the contrary movement of the collar allowing the said disks to retire from each other under the recoil of the springs O and O′.

The distinctive features of our invention which we claim are as follows:

1. The combination in a friction clutch of two frictional gripping disks, a driving flange provided with a supporting rim or periphery, whereupon the two gripping disks are centered and supported and slide axially, and also provided with a lug driving and sliding engagement between each gripping disk and the said driving flange, substantially as set forth.

2. The combination in a friction clutch of the gripping members, the gripped member, and a screw-threaded non-continuous or cut adjusting hoop, and an adjustable clamping device for connecting the hoop ends, so that by revolving said hoop it may be longitudinally adjusted and clamped in place, substantially as set forth.

3. In a lever-actuated friction clutch, the combination of an adjusting device for permanently adjusting the working parts, with relation to each other, and a separate adjusting device for compensating for wear on the frictional gripping parts, substantially as set forth.

4. In a lever-actuated friction clutch, the combination of the lever and two movable gripping rings, the lever being fulcrumed to the inner one of said rings, both of said rings being adapted to be simultaneously actuated by the movement of the lever, substantially as set forth.

5. The combination in a friction clutch, of supplemental loose wearing rings, and concentric retaining flanges upon the gripping and gripped parts, respectively, for holding the rings in place, substantially as set forth.

In testimony whereof we have hereunto subscribed our names.

JNO. W. MESERVE.
WARREN MORSE.

Witnesses:
SCHUYLER MERRITT,
GEO. E. WHITE.