

(No Model.)

2 Sheets—Sheet 1.

W. E. MOFFATT.
SAWING MACHINE.

No. 497,676.

Patented May 16, 1893.

Fig. 2.

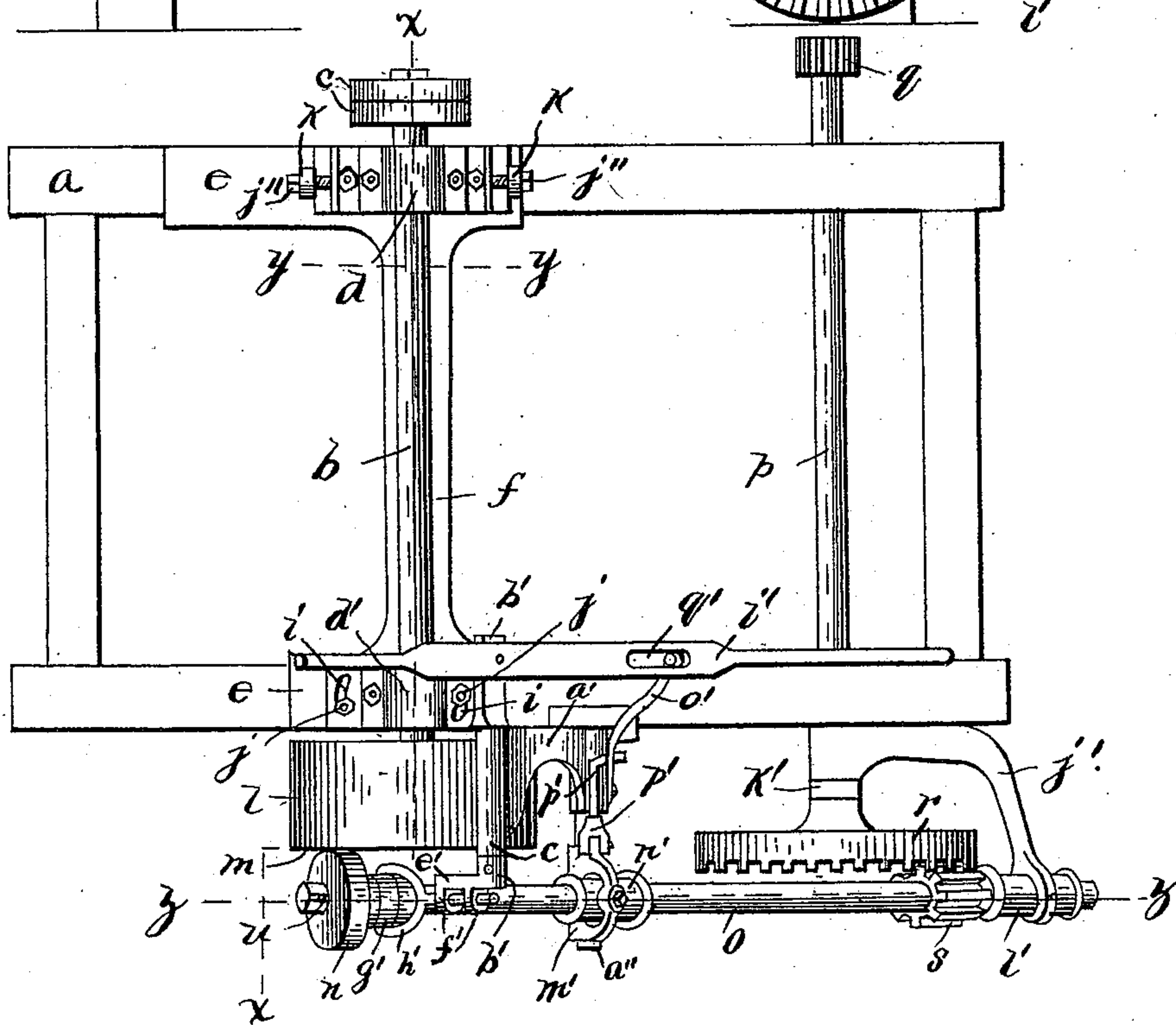
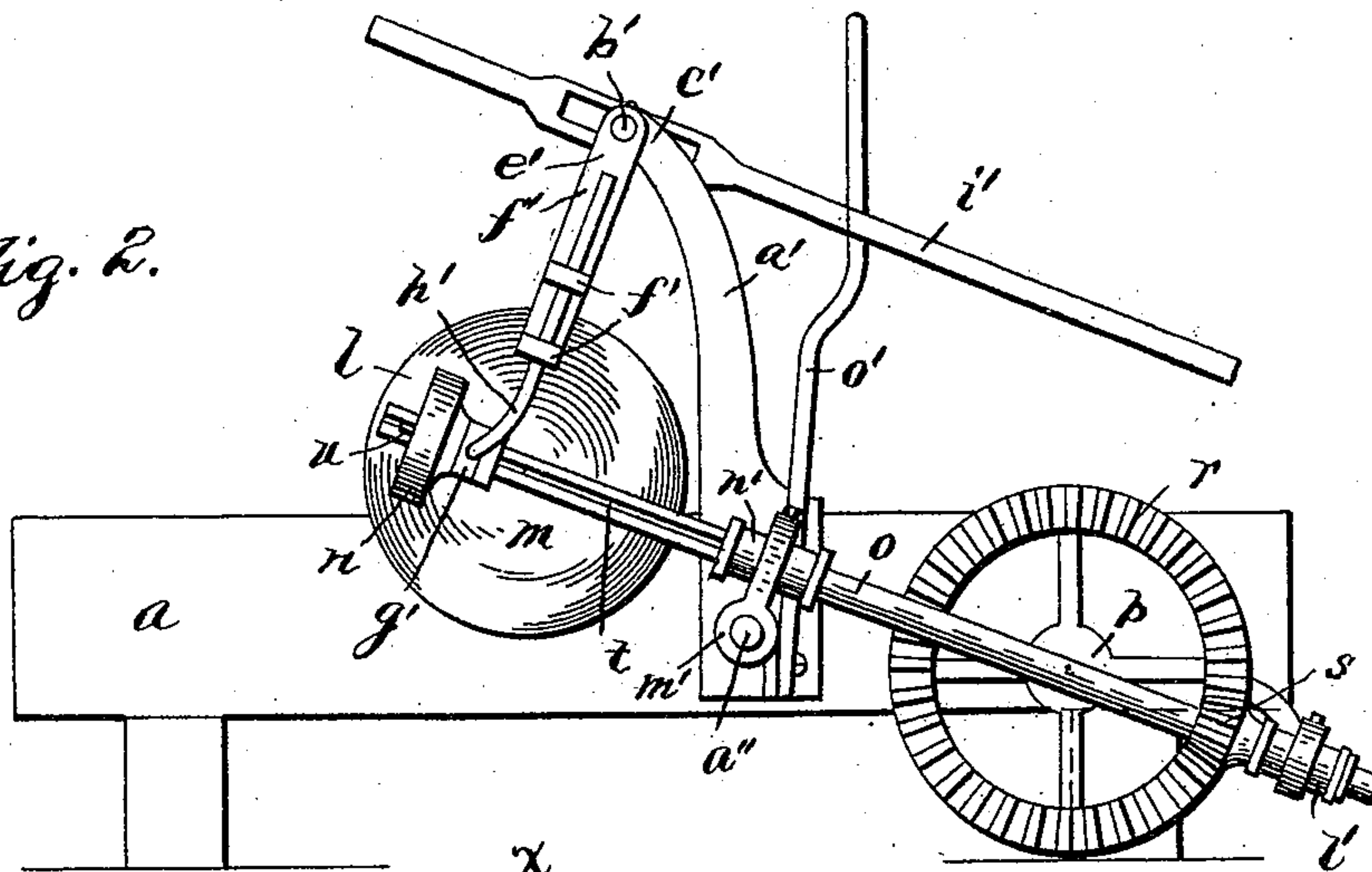


Fig. 1.

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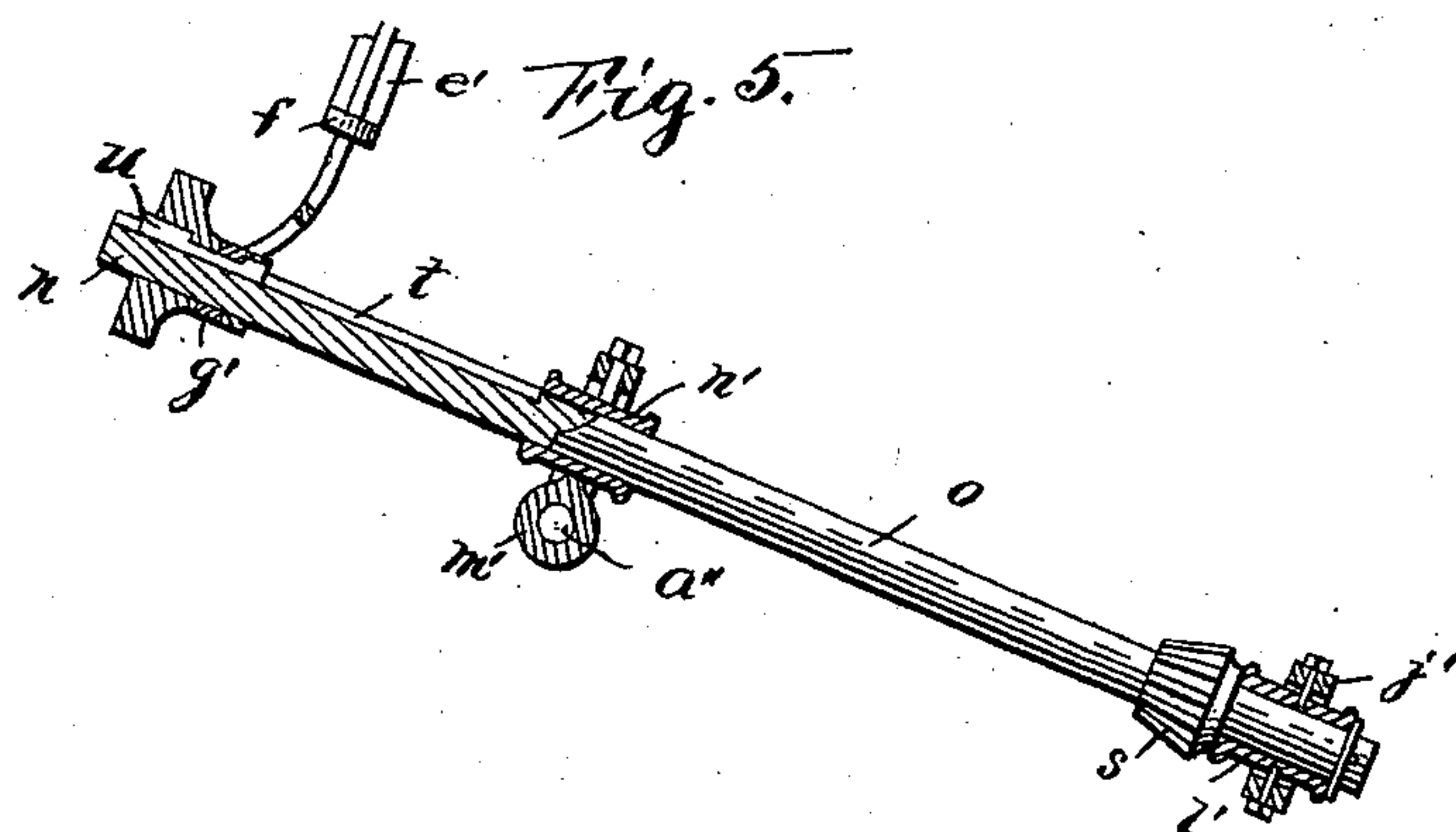
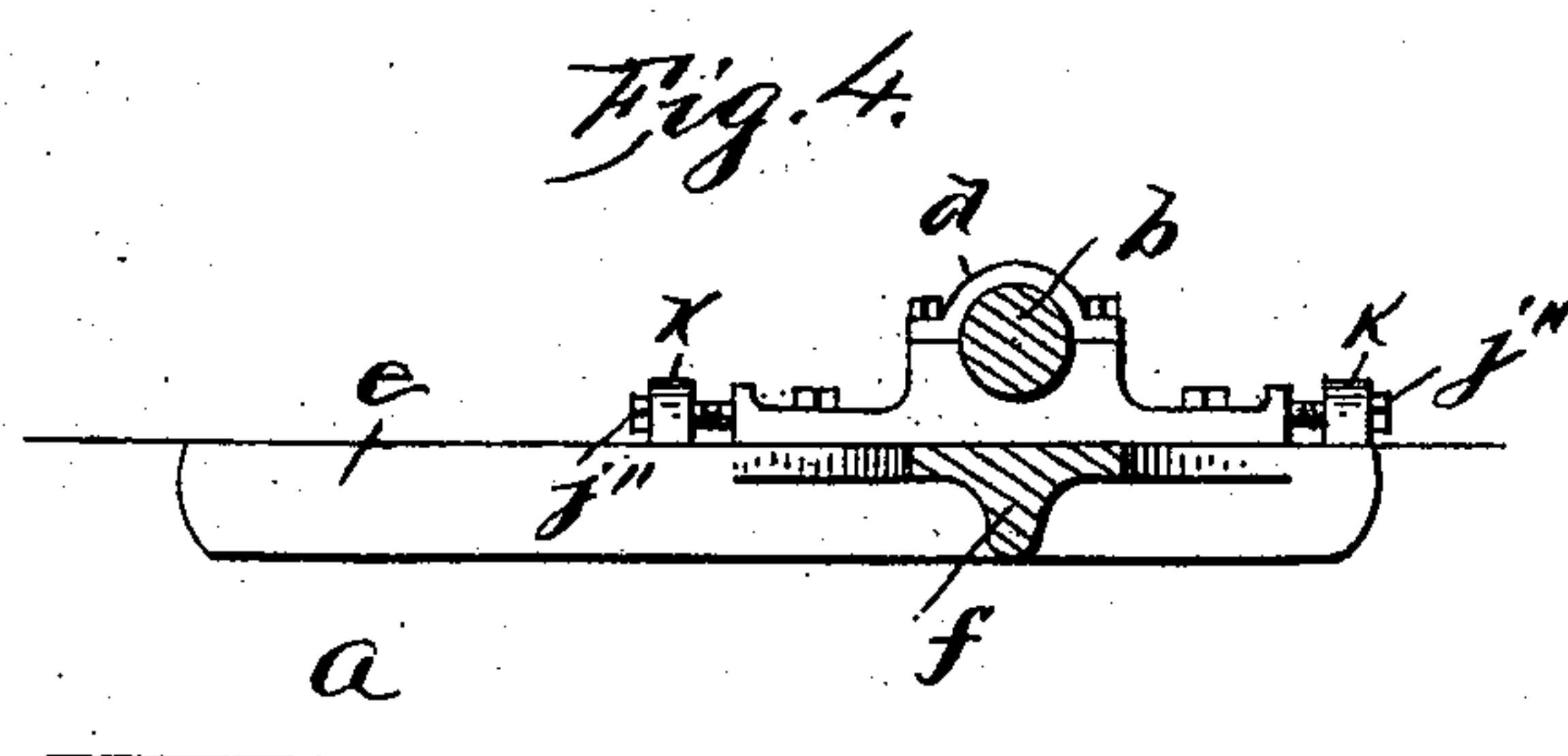
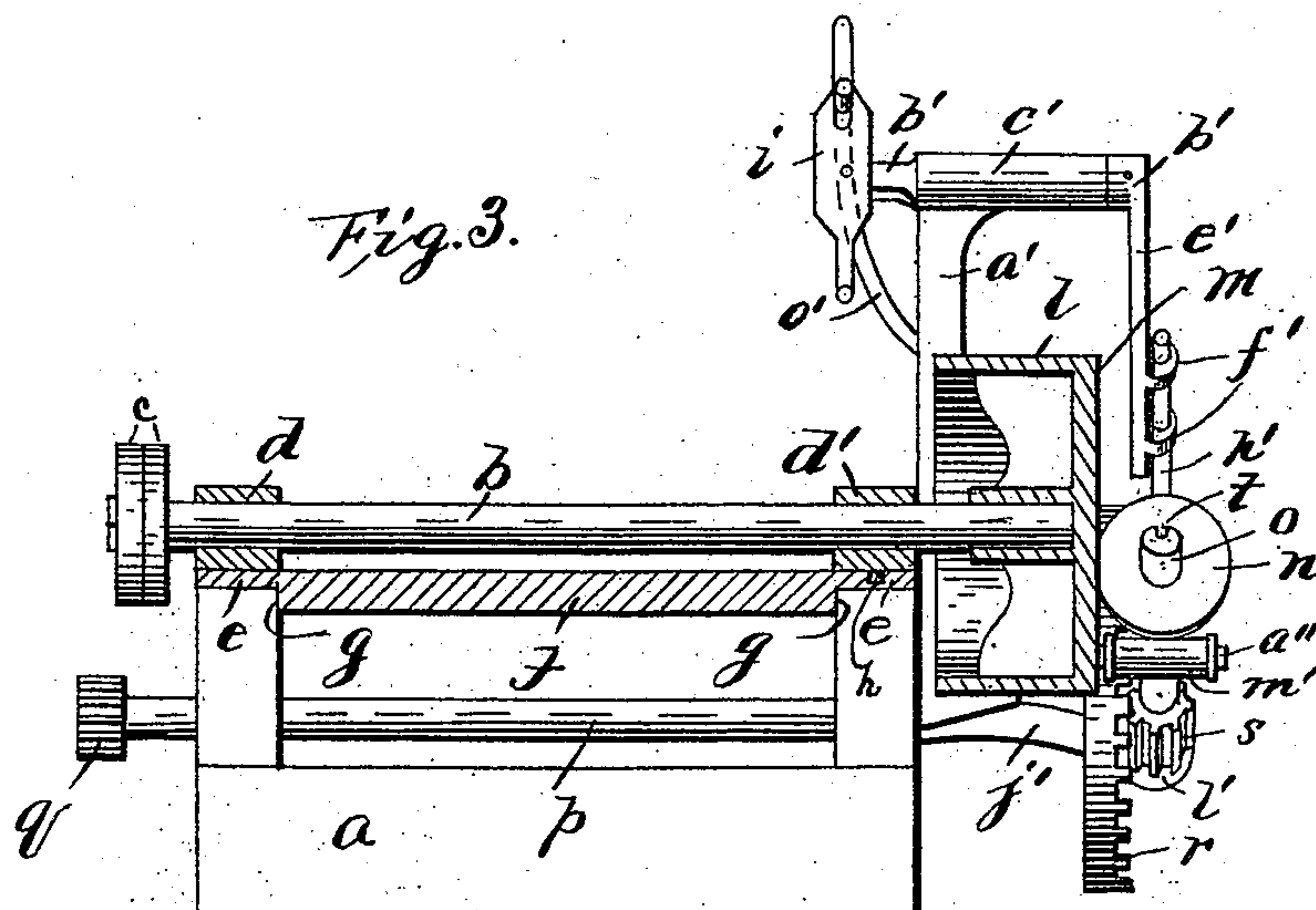
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WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM E. MOFFATT, OF CHESTER, SOUTH CAROLINA.

SAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,676, dated May 16, 1893.

Application filed August 22, 1892. Serial No. 443,785. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. MOFFATT, of Chester, in the county of Chester and State of South Carolina, have invented certain new and useful Improvements in Sawing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in sawing machines.

The object of the invention is to provide an improved variable speed and reversing gear to drive the feed carriage exceedingly effective and sure in operation and simple and durable in construction which can be easily and quickly thrown into or out of gear, or reversed and wherein one sawyer's lever can be employed to throw the speed gearing out of gear and to vary the speed thereof or to reverse the same.

A further object of the invention is to provide certain improvements in details in construction and arrangement of parts whereby a highly efficient and improved variable and reversing feed gear for saw mills is produced.

The invention consists in certain novel features of construction and in combinations of parts more fully described hereinafter and particularly pointed out in the claims.

Referring to the accompanying drawings:

Figure 1 is a top plan view of the sawing machine, the feed carriage and attachments not being shown. Fig. 2 is a side elevation. Fig. 3 is a section taken in plane of line $x-x$ Fig. 1, across the frame parallel with the axis of the saw mandrel. Fig. 4 is a detail section on the line $y-y$ Fig. 1 showing the mode of holding the saw mandrel at the desired angle or adjustment to vary the lead of the saw. Fig. 5 is a detail sectional view taken in plane of line $z-z$ parallel with the axis of the connecting shaft.

In the drawings, the reference letter a , indicates the frame of a saw mill.

b , indicates the saw mandrel having the saw collars c , for securing the saw. This mandrel is mounted in the boxes $d d'$ on the

frame beams. The boxes directly rest on plates $e e$, secured on the beams of the frame and these plates are rigidly connected by the cross bar or web f , cast or otherwise formed integral with the plates and provided with shoulders $g g$, respectively fitting the inner edges of the two top beams of the frame so as to hold them separate. The plates and cross bar, usually a single casting, form a frame which braces and greatly strengthens the frame against injury and weakening by the constant jar and strain of the saw mandrel. This frame on which the mandrel boxes are secured while it removes the strain from the main frame permits easy adjustment of the mandrel to vary the lead of the saw. The inner box d' of the mandrel has a downwardly projecting central pivot h , from its under side, fitted in a corresponding socket or bearing in the face of a plate e , of the metal frame, the projecting ends of this box d' having curved segmental slots i , through which the securing bolts j extend. These bolts are secured to said metallic frame and have nuts on their upper ends so that the shaft mandrel and box can turn on the pivot when the nuts are loosened. The box d , for the opposite end of the mandrel rests on the plate e , of the metallic frame so as to slide back and forth thereon with the mandrel and this box and the mandrel are held in position by the horizontal screws $j'' j''$, bearing against the ends of the box, and passed through threaded opening in vertical lugs $k k$, formed integral with the plate of the metallic frame. This is a simple and most advantageous construction for adjusting and securing the mandrel in controlling the lead of the saw.

The mandrel driving pulley l , is secured on the inner extremity of the mandrel and the pulley is formed with a friction disk m on its outer side. This pulley is preferably cast with its outer end closed by a straight wall smooth on the outer side to form the friction disk or surface m , at the end of the mandrel so that the friction wheel n , can move freely over any portion of said surface. The friction wheel n , travels on and is driven from said disk to actuate the feed mechanism. The friction wheel is mounted on the transverse connecting shaft o , located at the side of the frame and connected by suitable gear-

ing to drive the feed shaft *p*, mounted in the main frame. This feed shaft is usually mounted in the frame parallel with the saw mandrel and has the carriage driving pinion *q* on the same side of the frame as the saw. The opposite end of the feed shaft is provided with the bevel gear *r*, meshing with bevel pinion *s*, rigid on one end of the connecting shaft *o*. The opposite end of the connecting shaft opposite the friction disk is provided with a longitudinal groove *t*, preferably of substantially the same length as the diameter of the friction disk. The friction wheel is provided with a key *u*, fitted in said groove so that the wheel rotates the connecting shaft and can be readily moved longitudinally of the shaft the length of said groove and back and forth across the face of the friction surface or disk to vary the speed of the shaft or reverse the direction of rotation of the connecting shaft.

A standard or bracket *a'* is rigidly secured to the main frame and extends upwardly over the mandrel driving pulley and at its upper end is provided with a horizontal bearing *c'* parallel with the saw mandrel. A shaft *b'* is mounted in and projects beyond the ends of said bearing. One end of the shaft is provided with the downwardly projecting crank arm *e'* having the outwardly projecting perforated ears *f'*. The friction wheel hub has a peripheral groove in which a loose collar *g'* is fitted. This collar has diametrically opposite bearings in which the ends of the forked extension or rod *h'* are journaled. The upper end of the rod passes through and works in the perforated ears *f'* of the crank arm *e'*. Hence when the shaft *b'* is rocked the crank arm moving with it will throw the rod *h'* (which practically forms an extensible connection between the crank and friction wheel) which will move the friction wheel longitudinally of the connecting shaft across the friction face of the pulley. The rod *h'* sliding back and forth in the perforated ears permits the circular motion of the shaft and crank being converted into the reciprocating movement of the friction wheel.

The rock shaft which throws the friction wheel is rocked by the sawyer's lever *i'* having a slot near one end in which the outer end of said shaft is pivoted. The shaft is rocked by swinging the lever vertically.

A bracket *j'* is secured to the outer side of the main frame and has a bearing *k'* in which the carriage feed shaft is mounted. This bracket also has an arm extending outwardly beyond the large gear on the end of the feed shaft. The bracket is here provided with an enlarged opening in which a journal box *l'* is mounted on pivots so as to rock laterally. The lower end of the connecting shaft is mounted in this box *l'* so that the opposite end thereof is permitted to rock laterally and carry the friction wheel to or away from the friction surface.

The bracket *a'* is provided with a horizontal

stud or projection *a''* extending across the plane of the connecting shaft. A tube *m'* is mounted on this stud so as to move longitudinally thereon. This tube or sleeve *m'* is provided with a lateral projection having an enlarged opening in which a journal box *n'* is mounted on pivots to swing laterally. The connecting shaft is mounted in this box *n'*. A lever *o'* is fulcrumed at its lower end to the bracket *a'* to swing in a plane transverse to the axis of the connecting shaft and between its ends is connected by connections *p'*, with the sliding sleeve *m'*. This lever extends upwardly loosely through an elongated vertical slot *q'* in the sawyer's lever.

The operation of the machine is obvious from the foregoing description and the drawings.

By swinging the sawyer's lever laterally toward the connecting shaft said shaft will be swung laterally through the medium of the vertical lever *o'*, connection *p'* and the sleeve, and will thereby carry the friction wheel away from the face of the friction disk. The sawyer's lever can then be swung vertically to move the friction wheel toward or from the center of the friction disk to vary the speed of the feed or from one side of the center of the friction disk to the other to reverse the direction of the feed. When the wheel has been adjusted to the proper point the sawyer's lever can be thrown inwardly to hold the friction wheel to the friction disk.

The simplicity and durability of the construction are evident.

The saw mandrel is provided with nothing but the saw collars and the driving pulley which is a point of great advantage. The one pulley serves to drive the saw mandrel and to drive the feed mechanism, and as the friction disk is located at the end of the shaft the friction wheel has free movement. One lever only is required to control the speed, stop or reverse the feed carriage, and the friction wheel can be pressed against the friction disk with any degree of pressure desired. But one set of gears is employed between the saw mandrel and the carriage gear.

It is evident that various changes might be resorted to in the forms, constructions and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the construction here shown and specifically described, but consider myself entitled to all such changes as fall within the spirit and scope of my invention.

What I claim is—

1. In a sawing machine, the shaft having the friction disk, a carriage actuating shaft, a bracket in which one end of said actuating shaft is mounted, a connecting shaft at one end mounted in a pivoted box in said bracket and geared to the actuating shaft, another bracket having a stud, a sleeve longitudinally movable on said stud and provided with a pivoted box in which said connecting shaft

is journaled, a friction wheel longitudinally movable on the connecting shaft, a sawyer's lever connected to said sleeve to swing the connecting shaft laterally, and connections
5 between said lever and said wheel to adjust the wheel.

2. In a sawing machine, the combination of a frame, a shaft having a friction disk, a shaft extending across the face of said disk
10 and having a longitudinal groove, the friction wheel traveling on said disk and having a key in said groove, a loose collar on the hub of said wheel, a bracket having a bearing above
15 said shaft, a rock shaft in the bearing having a lever and a crank arm, the extension of said crank arm longitudinally movable in relation thereto and having the end pivotally connected to said collar, substantially as described.

3. In combination, a frame, a shaft having a friction disk, a laterally movable shaft extending across the face of said disk and having the adjustable friction wheel on said disk, the bracket secured to the frame, a vertical
25 lever secured to the bracket and connected to said shaft to swing the same laterally, the sawyer's lever having a slot through which said vertical lever extends, and connections from the sawyer's lever to adjust said wheel,
30 substantially as described.

4. In a sawing machine, the combination of the frame, the saw mandrel having the driving pulley on its outer end provided with a closed end forming the friction surface or
35 face of the pulley, the feed shaft, the connecting shaft geared to drive the feed shaft and extending across the face of said pulley and provided with a longitudinally movable friction wheel to travel on the friction face
40 of said pulley, said connecting shaft being mounted so as to move laterally toward and from the friction face of said pulley, a sawyer's lever, the rock shaft controlled by said sawyer's lever, and connected with said friction
45 wheel to move the same across the friction face of the pulley, and a lever connection from said sawyer's lever to the forward bearing of said connecting shaft to move the connecting shaft laterally, substantially as
50 described.

5. In a sawing machine, the combination of the frame, the saw mandrel having the friction face, the feed shaft, the connecting shaft geared to the feed shaft provided with
55 the longitudinally movable friction wheel to engage said friction face or disk of the saw

mandrel, the other end of the connecting shaft being mounted in a movable bearing, a sliding box for said shaft mounted on a suitable support, a lever connected to move said
60 box laterally to throw the connecting shaft in and out of gear with the saw mandrel, the sawyer's lever connected or mounted to swing laterally and operate said lever to move the connecting shaft laterally, and connections
65 from said lever to operate said friction wheel and the connecting shaft, substantially as set forth.

6. In a sawing machine, the combination of a frame, a saw mandrel provided with a
70 friction disk, a feed operating shaft, a connecting shaft geared to the feed operating shaft, and having a longitudinally movable friction wheel to travel across the face of said friction disk of the saw mandrel, a pivoted
75 box in which the outer end of said connecting shaft is journaled, a support, a sleeve movable on the support and carrying a pivoted box for the opposite portion of the connecting shaft, a sawyer's lever pivoted on
80 suitable supports to move laterally, a vertical lever connected with said sleeve to move the same laterally and having its upper ends raised in relation to the sawyer's lever so that the sawyer's lever will swing the vertical lever
85 when the sawyer's lever is swung laterally, and means to move said friction wheel, substantially as set forth.

7. In a sawing machine, the combination of a frame, a saw mandrel having a friction
90 disk, a feed shaft, a connecting shaft geared or connected to drive the feed shaft extending across the face of the friction disk and provided with a longitudinally movable friction wheel to engage said friction disk, a sawyer's
95 lever mounted on a suitable support, a rock shaft provided with a crank arm, a connection carried by and longitudinally movable independent of the crank arm, and loosely connected with said friction wheel to move
100 the same longitudinally of said shaft and connections between the sawyer's lever and said rock shaft so that the rock shaft is rocked by the sawyer's lever.

In testimony that I claim the foregoing as
105 my own I affix my signature in presence of two witnesses.

WILLIAM E. MOFFATT.

Witnesses:

B. M. SPRATT,
JOSEPH WYLEE.