

*J. Fitzgerald,*

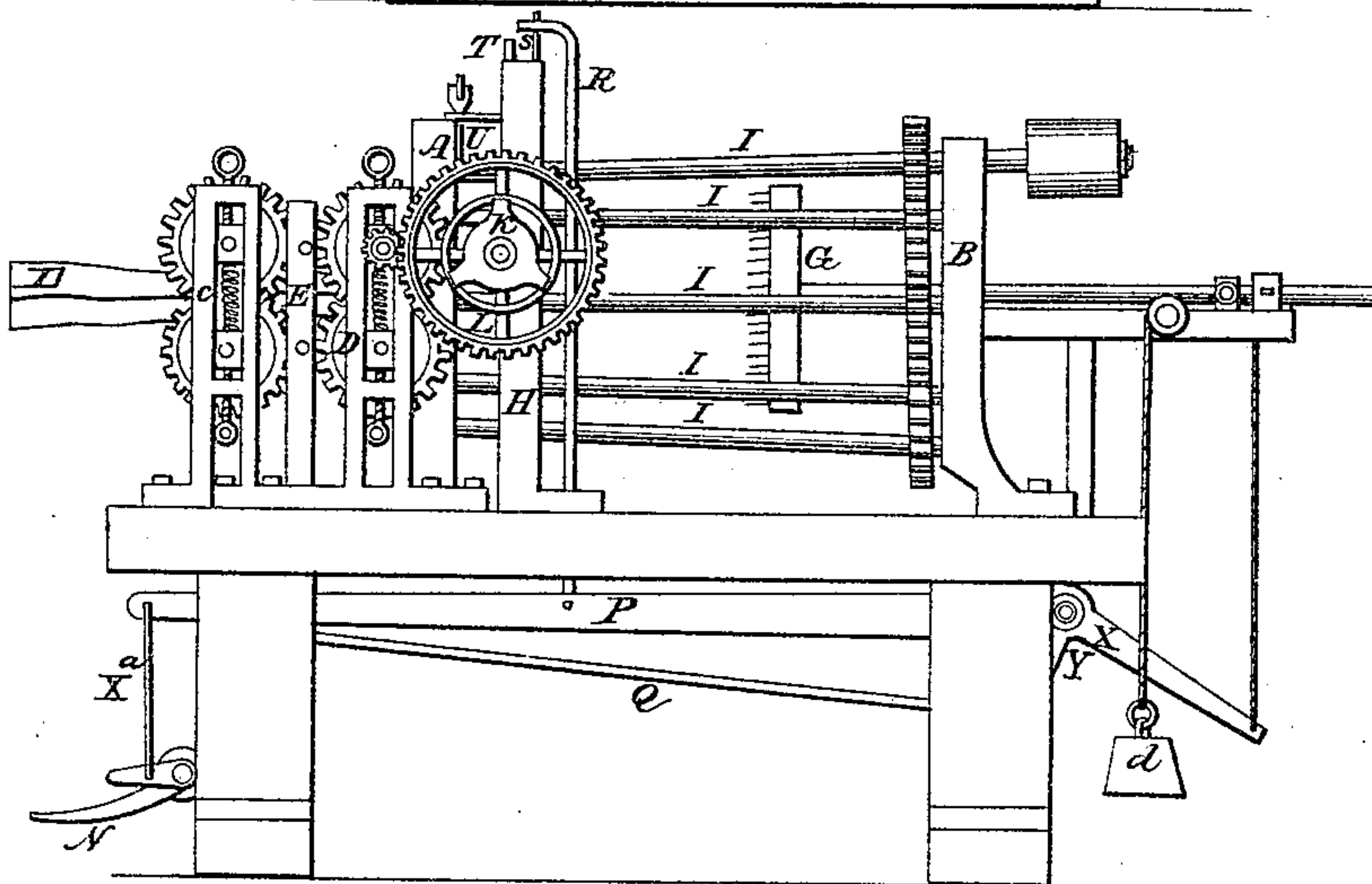
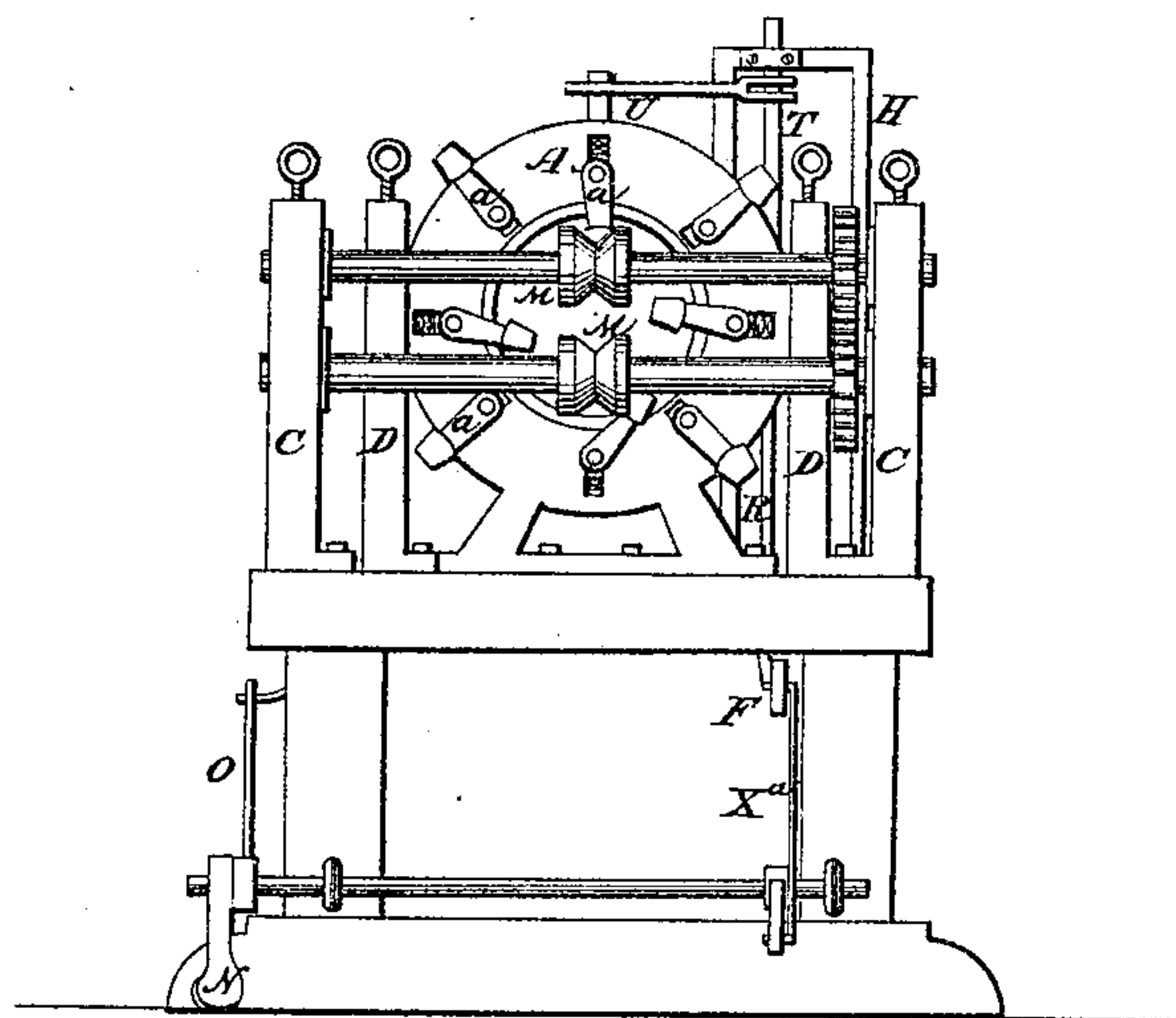
*4 Sheets, Sheet 1.*

*Gage Lathe.*

*N<sup>o</sup> 6,670.*

*Patented Aug. 28, 1849.*

*Fig. 1.*



*Fig. 2.*

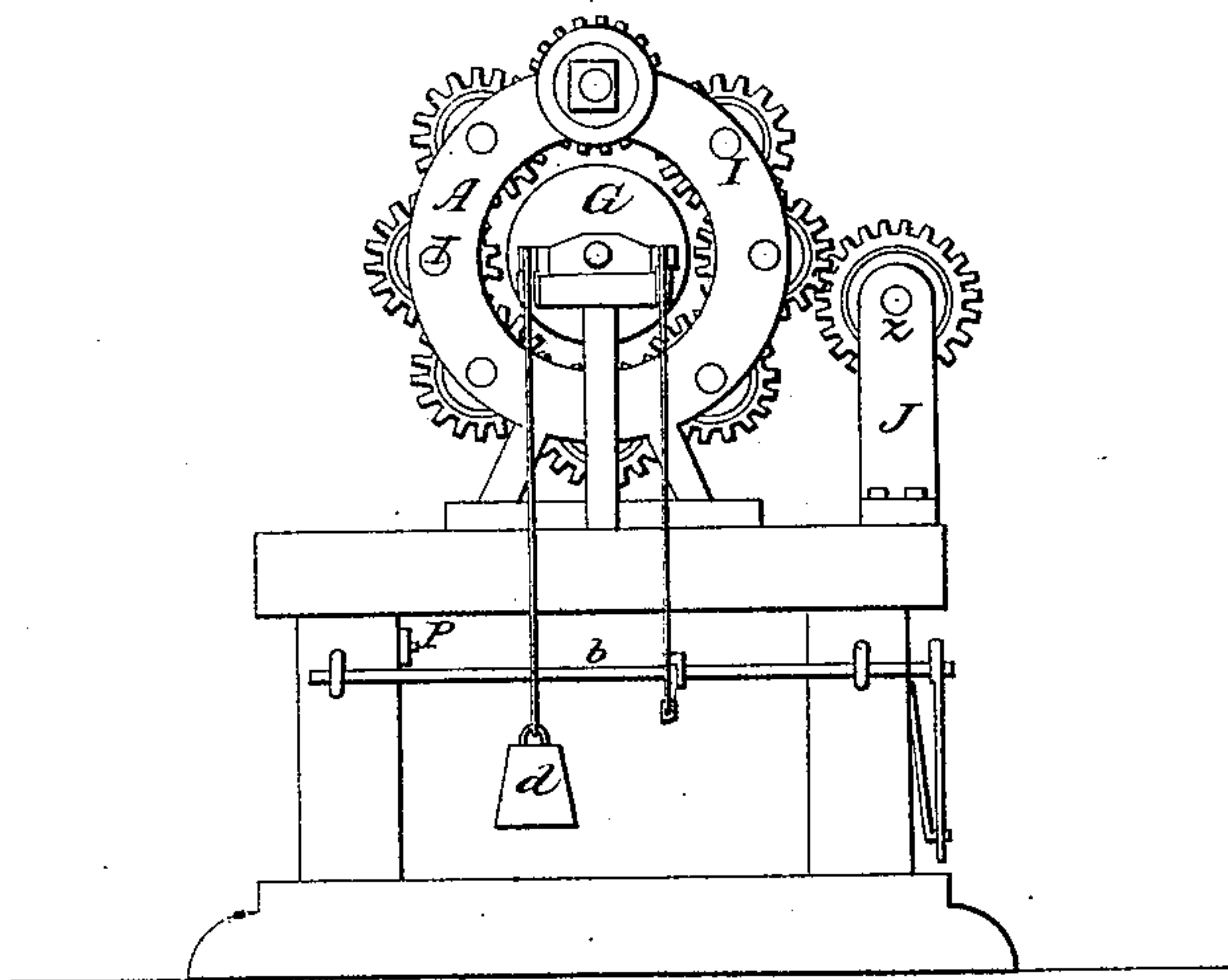
*J. Fitzgerald, 4 Sheets. Sheet 2.*

*Gage Lathe.*

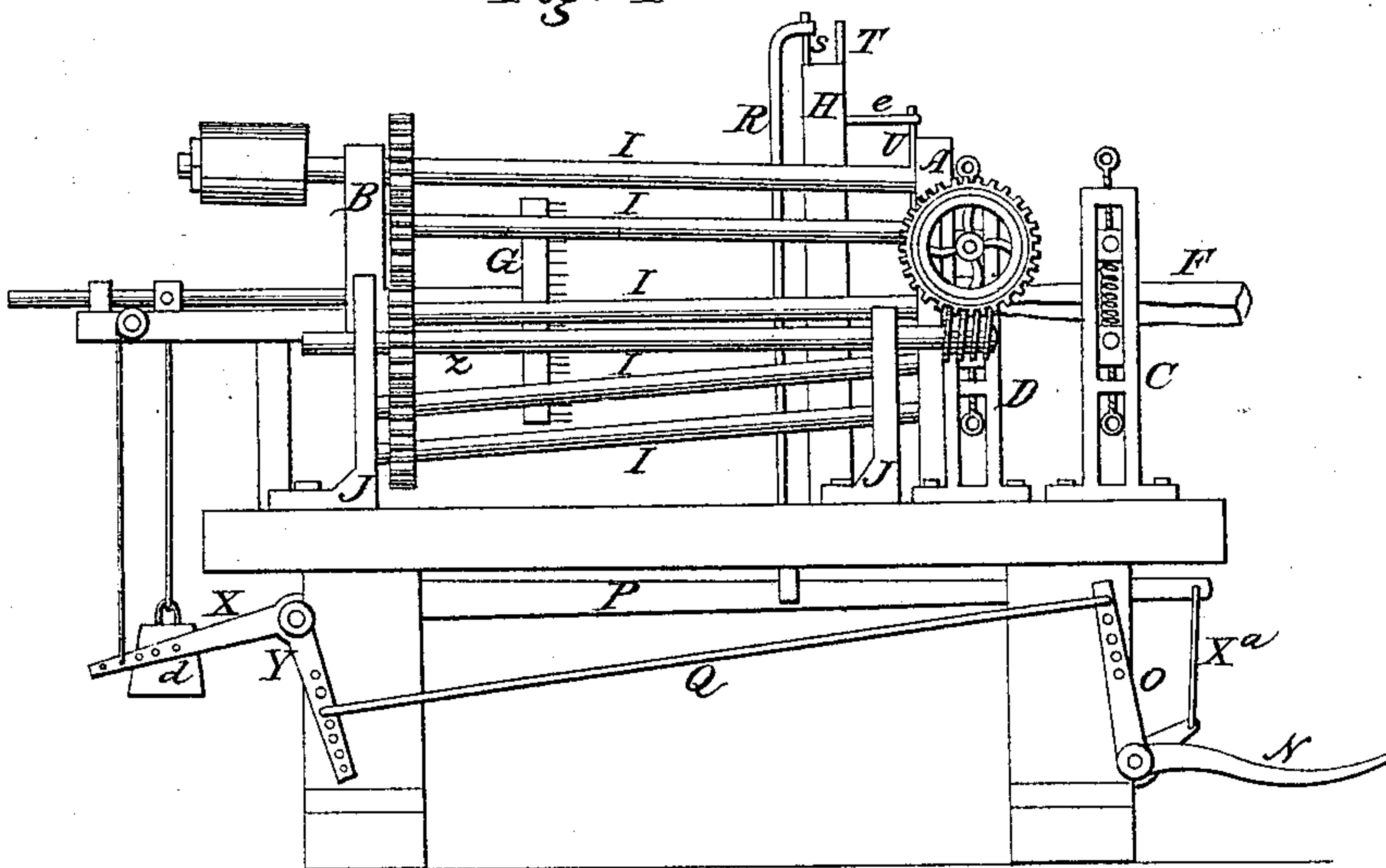
*N<sup>o</sup> 6,670.*

*Patented Aug. 28, 1849.*

*Fig. 3.*



*Fig. 4*



*J. Fitzgerald, 4 Sheets, Sheet 3.*

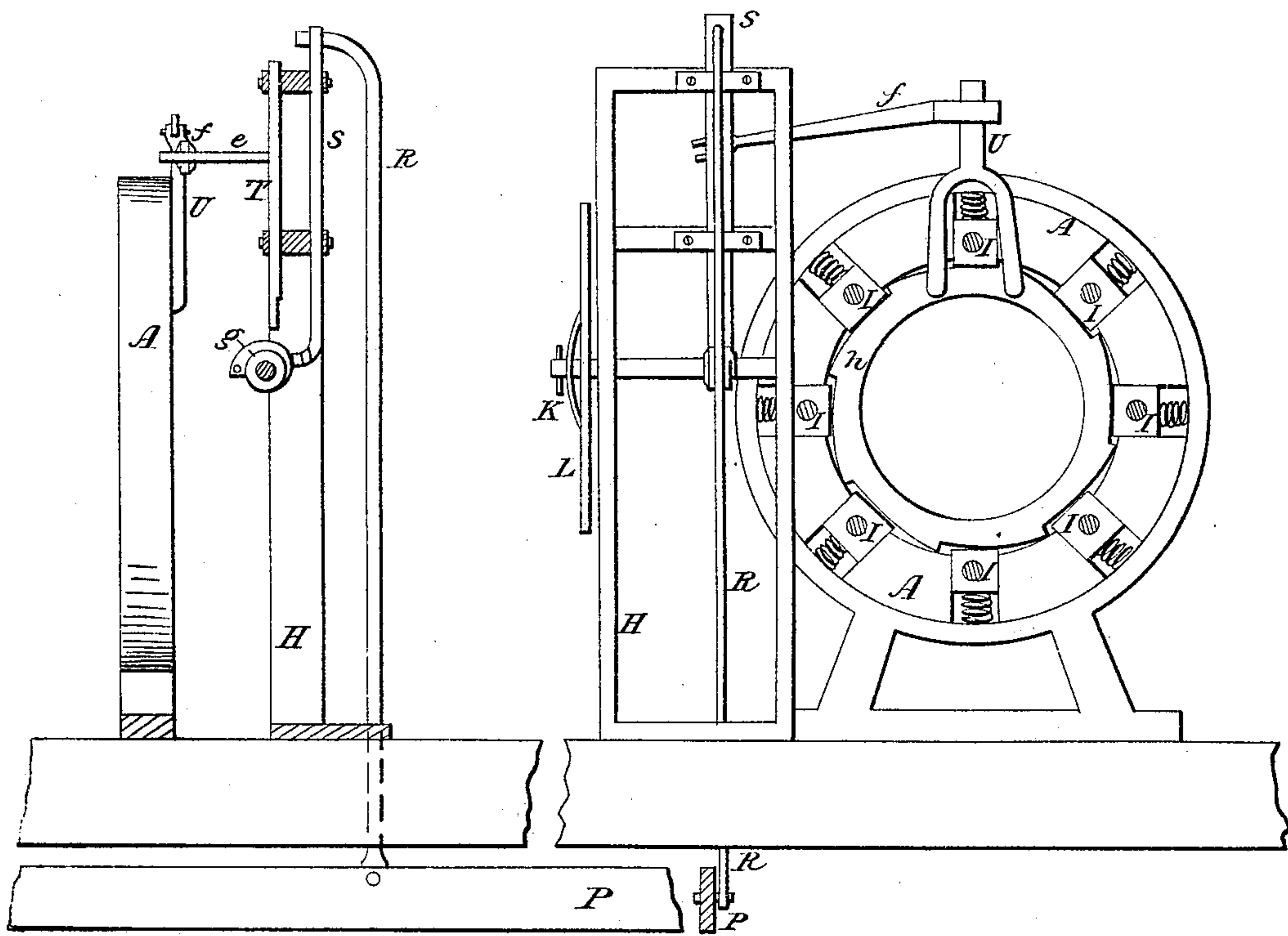
*Gage Lathe.*

*N<sup>o</sup> 6,670.*

*Patented Aug. 28, 1849.*

*Fig. 5.*

*Fig. 6*



*J. Fitzgerald,*

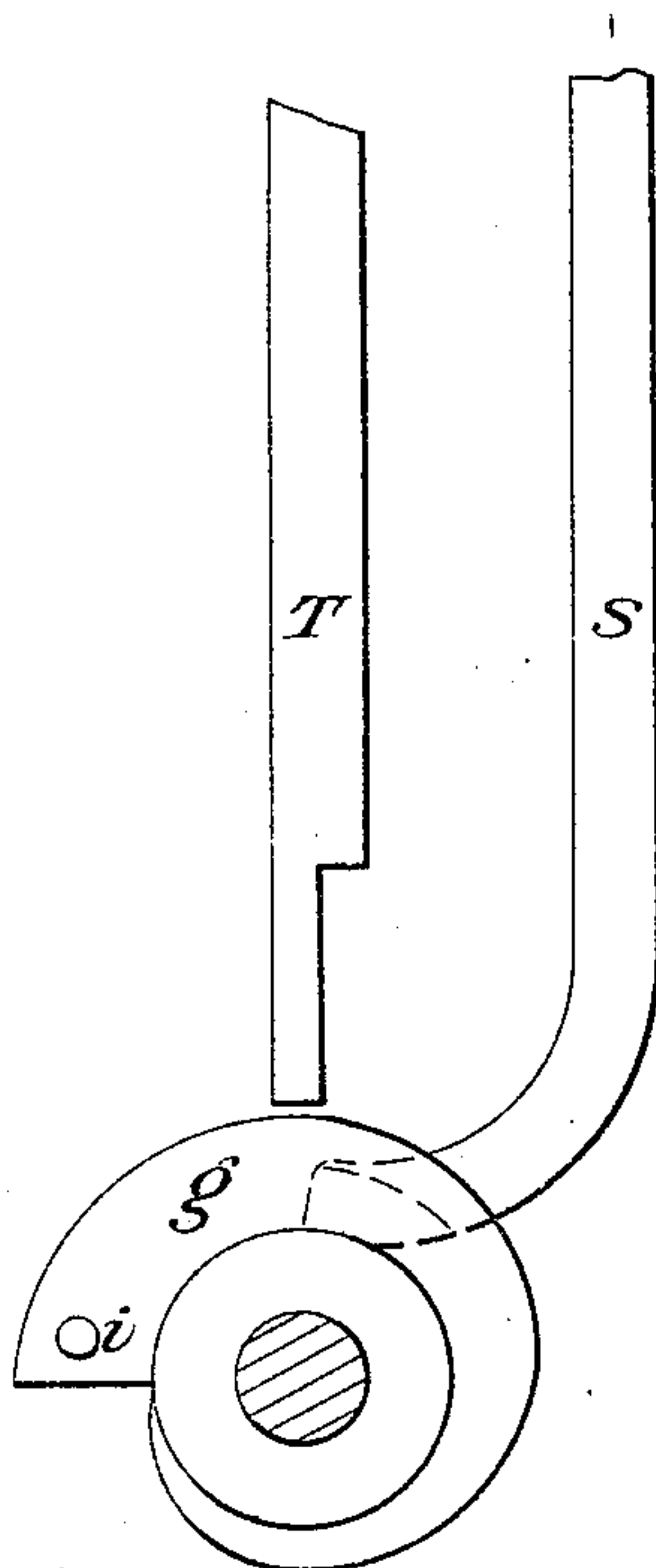
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*Gage Lathe.*

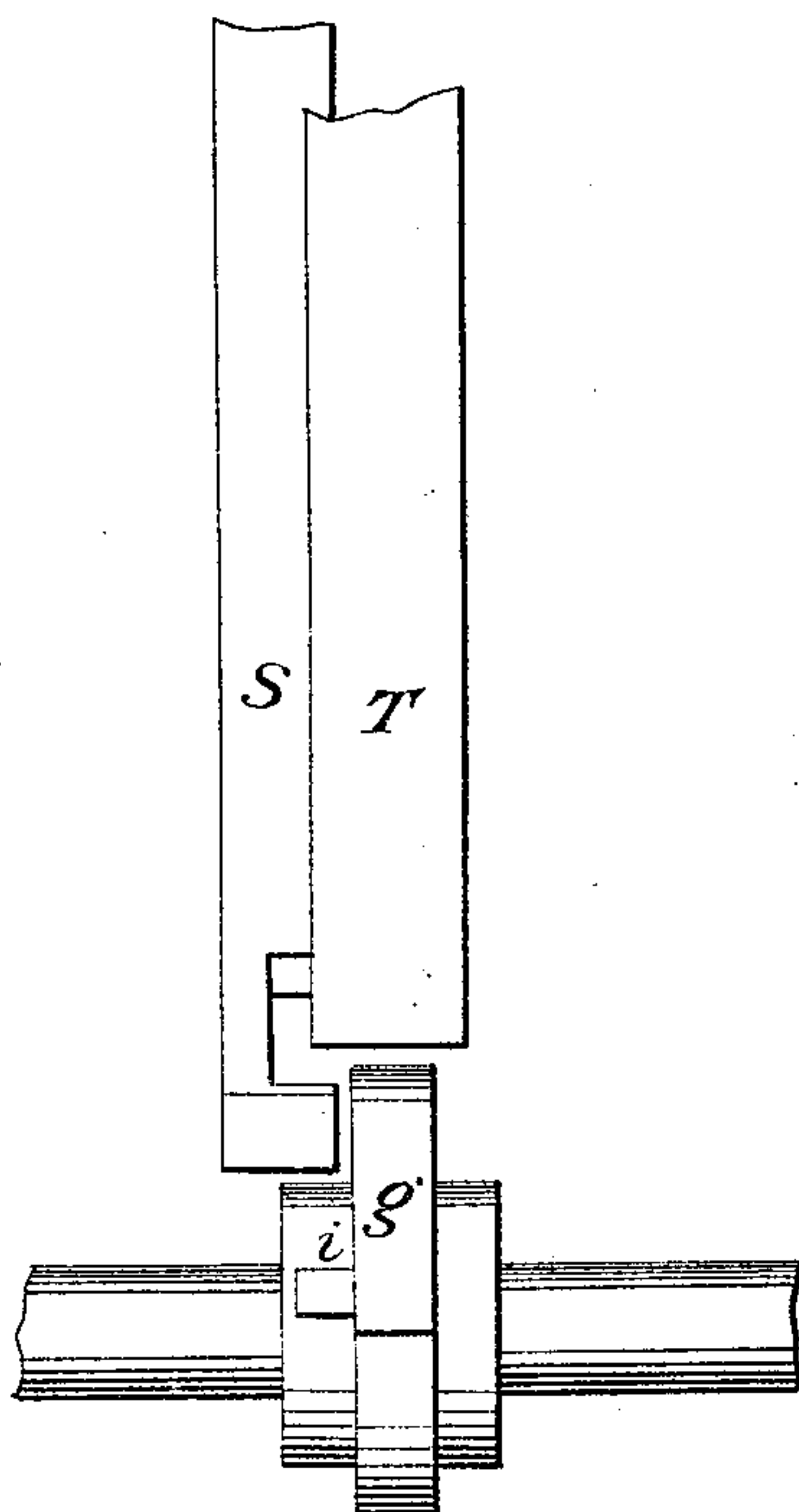
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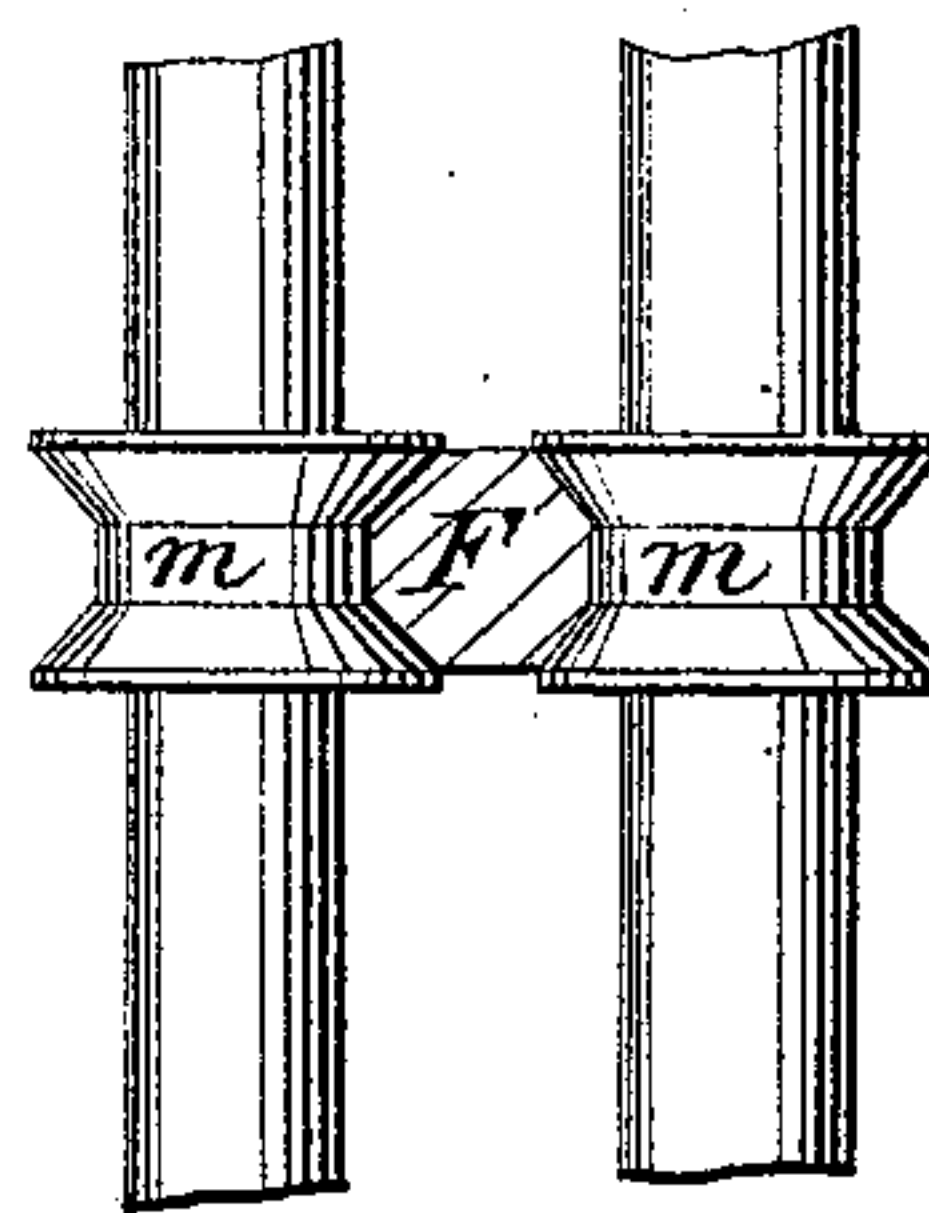
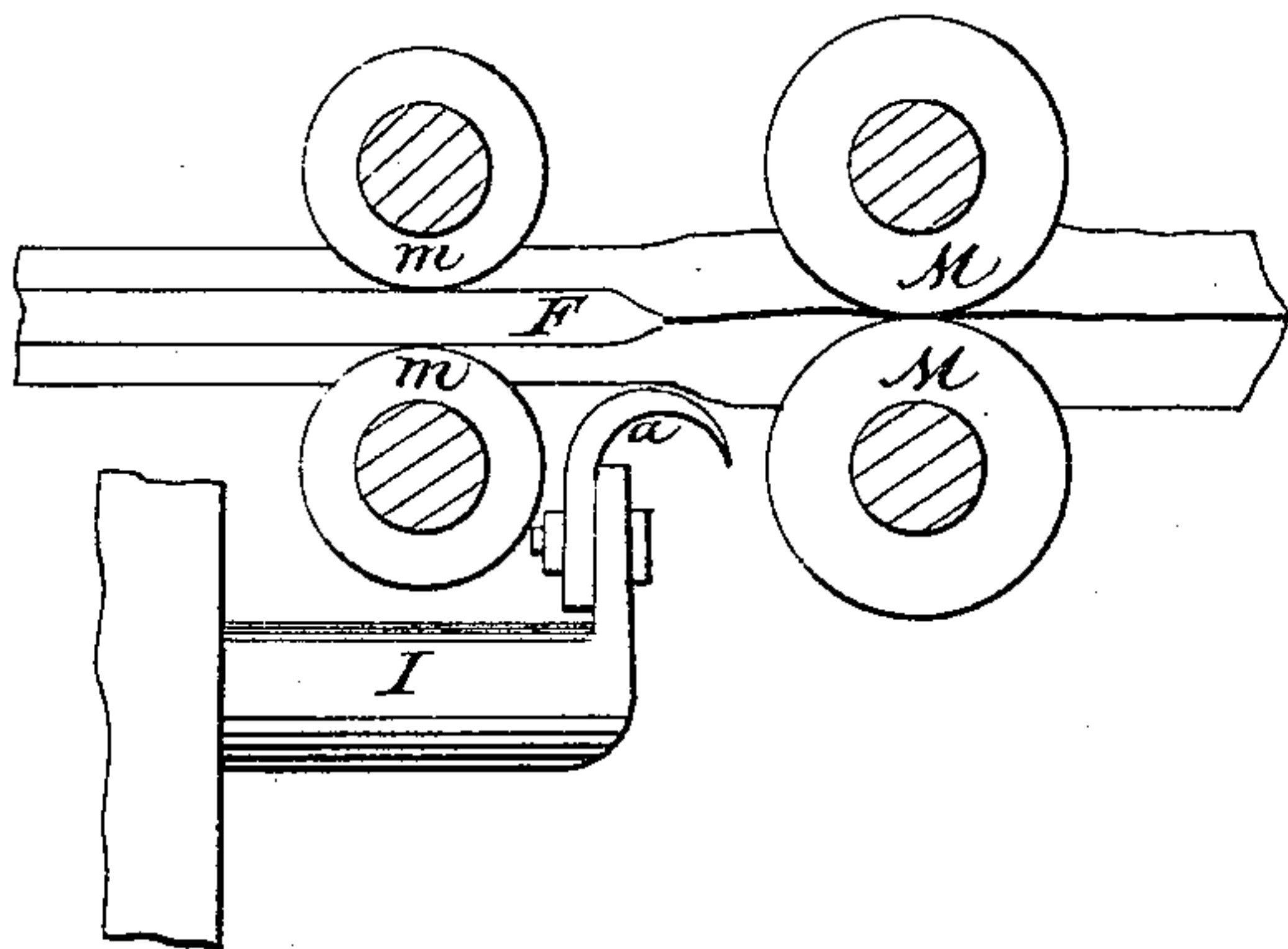
*Fig. 7.*



*Fig. 8.*



*Fig. 9.*



*Fig. 10.*



# UNITED STATES PATENT OFFICE.

JESSE FITZGERALD, OF NEW YORK, N. Y.

## MACHINERY FOR DRESSING TREENAILS.

Specification forming part of Letters Patent No. 6,670, dated August 28, 1849; Reissued July 17, 1855, No. 319.

*To all whom it may concern:*

Be it known that I, JESSE FITZGERALD, of the county and State of New York, have invented a new and useful Machine for  
5 Making Treenails or Trunnels used in ship-building; and I hereby declare that the following is a full and exact description.

To enable others to make and use my invention I proceed to describe its construction and operation—reference being had to the drawings hereunto annexed and making  
10 part of this specification.

Figure 1, front elevation, in which A is a circular piece (part of the frame work) in which are set in movable boxes the shafts,  
15 (I,) of the cutters, *a*. M, a pair of rollers which hold between them firmly and convey in, to the action of the cutters, the piece of timber which is to be formed into a tree nail. N is a pedal. C, uprights—one  
20 on each side—which hold in suitable boxes with thumb screws, the shafts of the rollers, M. D the uprights of another pair of shafts—on which are two rollers, *m*  
25 (Plate IV.) which hold firmly the tree nail after it has passed the cutters. H an upright support for the apparatus for enlarging the head or tapering the body of the tree nail.

Fig. 2, side elevation of the machine, in which B, is a circular piece (part of the frame) supporting the ends of the shafts of the cutters and pulley. At this end of the machine, on the shafts, I, of the cutters,  
35 are the connecting spur wheels, which drive the cutters. G, the steady plate—this is a disk, within the machine, having a surface full of sharp points, against which is thrust the tree nail in its passage through the machine which disk holds that end of the tree  
40 nail steady after it has passed through the first pair of rollers, M, and while the head is being finished. Upon the shaft G, which extends back is secured a cord and weight,  
45 *d*, which holds the disk against the end of the tree nail. To release the tree nail after the head is finished the disk is drawn back—see apparatus Fig. 4.

Fig. 3, the rear end of the machine, having the connecting gear of the shaft, I,—the disk, G, &c.

Fig. 4, side elevation in which are seen the shaft, Z, and spur wheel, which drives the feeding apparatus—by means of an end-  
55 less screw upon the end of the shaft, Z,

connecting with a spur wheel upon the shaft of the rollers, *m*. N, the pedal. O, a lever. Q, a connecting rod and, Y, X the elbow. These parts, N, O, Q, Y and X forming the apparatus for drawing back the disk, G, 60 and liberating the trunnel when finished.

Fig. 5, diagram (double the size of the preceding drawings) showing a vertical section of the apparatus for tapering the tree nail and enlarging the head. 65

Fig. 6, a face elevation of the same. In these diagrams A is the circular part of the frame in front in which the shafts, I, of the cutters are set. The immediate apparatus for enlarging is shown (Fig. 6) in *h*, 70 which is a circular piece (having eight cams or swellings on the periphery) set within the piece A. The boxes *g*, I, sit upon the periphery of *h*, which being turned a little pushes them out from the center thus 75 spreading apart the cutters—the boxes being held in by spiral springs.

Fig. 7. Diagram full size of the apparatus (other than that described in Figs. 5 and 6) for tapering, and enlarging the trunnel at the head. *g* is the cam which makes one revolution for each tree nail—gradually lifting up, T, which by means of an elbow, *f*, turns *h* and throws out the cutters a little from the center. The upright and curved 85 rod, S, is to meet the exigency of an unusually long tree nail. When the cam has come round the pin, *i*, strikes on the end of S, and stops the cam—while the wheel, L, Fig. 2, moves on the shaft (held firm only by 90 the friction against it of the cap piece, K, Fig. 2) thus holding the cutters out until the head is completed—when the pedal, N, is touched and by its apparatus brings down S, so that the cam can move on—(the pin, *i*, 95 passing through an opening in the side of S—see Fig. 8) and at the same time moving back the disk, G, so that the treenail will fall.

Fig. 8 is another view of the same apparatus. 100

Fig. 9 shows the two pairs of wheels with the tree nail timber passing through and their relative position to the cutter, *d*.

Fig. 10 the two rollers, M, and the tree 105 nail between them.

On any suitable frame I erect the supporting parts of the machine, A and B, D, C, J and H. The end supports are circular and serve to hold in suitable boxes the 110



shafts, I, on which are the crank cutters, *a*. At the front end, A, the boxes of these shafts, I, are made movable, so that by being thrust out from the center the cutters may  
 5 leave the tree nail with an enlarged head, as entirely tapered from end to end. On each of the shafts, I, is a pinion cog wheel. All of them are alike and connect with each other. Upon one of the shafts is the  
 10 band pulley. The shafts, I, must be as long as the tree nail is required to be and on the front end of it have a crank containing a sloat. Upon this crank is screwed fast the cutter, *a*, its distance from the center being  
 15 adjustable by means of the sloat in the crank.

The cutters reach as near the center as required for the size of the treenail. The pinions that gear them together are so arranged  
 20 that only four of them will touch the wood at the same time. This is easily done. The cranks are set in position before the pinions are keyed on to the shafts. Four of the cranks are turned in toward the center and  
 25 the other four outward. By the gearing they naturally move in opposite directions and do not interfere.

The feeding apparatus consists in a pinion, on the shaft, *z*, geared into one of the  
 30 pinions of the shaft, I. An endless screw on the end of the shaft, *z*, which turns a cog-wheel fixed on the shaft of one of the rollers, *m*. The four rollers, M and *m*, are geared together so as to equalize their motion. The  
 35 rollers, M, receive the timber and convey it steadily to the cutters. As soon as it has passed the cutters about an inch it is seized by the two rollers, *m*, which hold it steady and convey it along. These rollers are fur-  
 40 ther designed to compress the treenail and render it more compact. Before the timber has passed through and left the hold of the first pair of rollers, M, the end of the tree nail which has been finished strikes the disk  
 45 which is set with points G and is held by

it steady until it has passed through complete, when by means of the pedal, N, and its apparatus the disk is drawn back, and the tree nail falls down through the machine.

The apparatus for enlarging gradually the treenail consists of various pieces. Upon the upright support, H, is a horizontal shaft on the outside end of which is a cog wheel L, driven by a small pinion on the end of the  
 55 upper shaft of roller, *m*, (see drawings Figs. 7 and 8). On the middle of the shaft is a cam, *g*, which turns once for each tree nail. In the revolution it elevates the piece, T, which by its connection with *f* and U turns  
 60 round a little the ring or cam, *h*, and thus presses out from the center the boxes in which are held the shafts, I. There is connected with this apparatus another set of  
 65 pieces for holding the cutters (when expanded) in their position until the head is finished as is necessary when the piece is a little too long.

There is an arm, X *a*, upon the pedal shaft, attached to a lever, P. Attached to this  
 70 lever is the rod, R, which runs up the rear of, H, and connects with the upright piece, S. This at the lower end sits near the cam, *g*, and stops it (the pin, *i*, striking it) which  
 75 cam is held from turning and the cutters consequently kept expanded, until by touching the pedal, the lever P is pulled down, again with it, by means of R, the piece, S, when the cam goes on again.

What I claim as my invention and desire  
 80 to secure by Letters Patent is—

The combination of the cutters, *a*, with the enlarging and heading apparatus, via the cam, *g*. The elevating piece, T, with *f*, U and *h*.

JESSE FITZGERALD.

Witnesses:

OWEN G. WARREN,  
 JAMES S. JOHNSON.