

(No Model.)

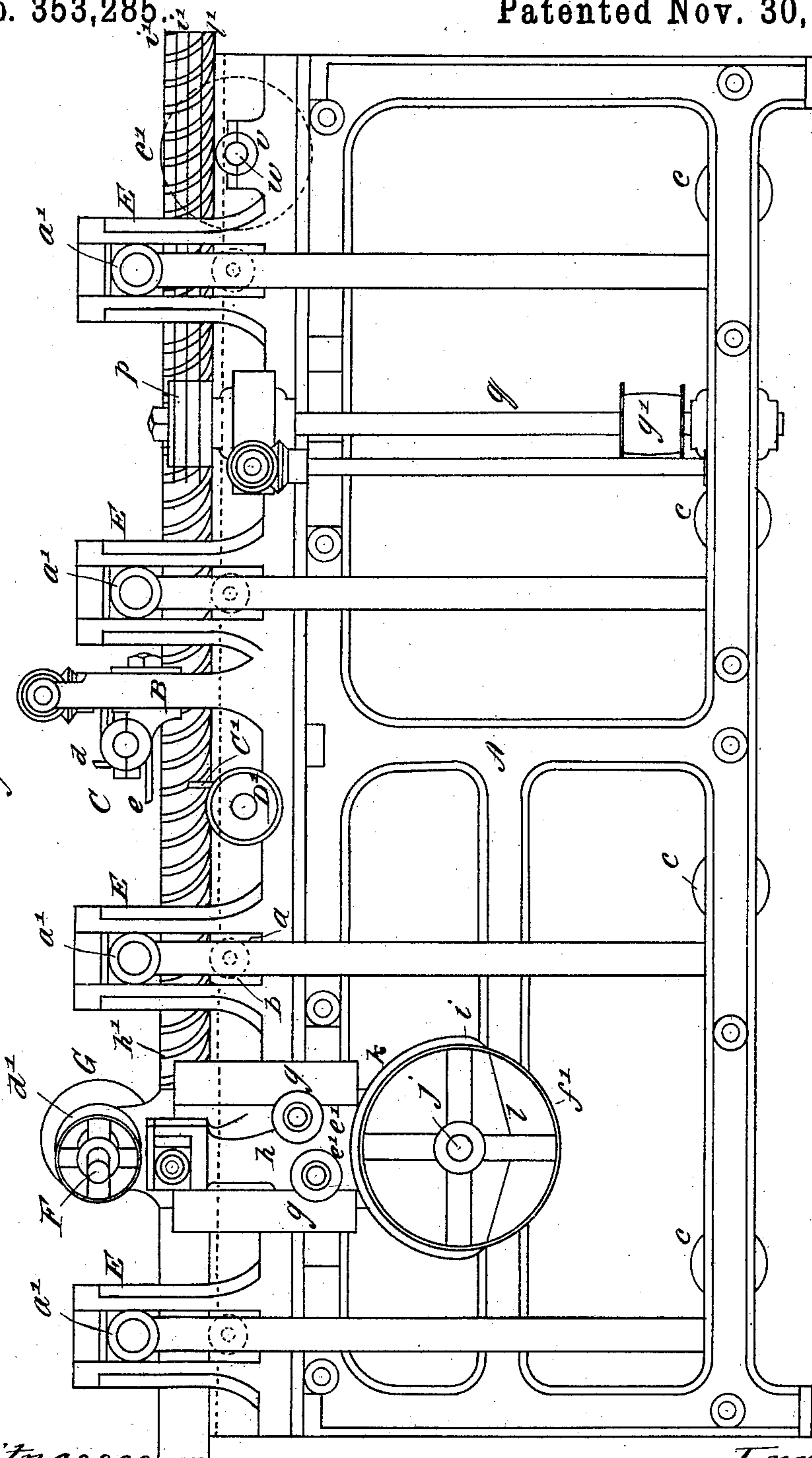
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S. C. BURRIS.  
MOLDING MACHINE.

No. 353,285

Patented Nov. 30, 1886.

Fig. 1.



Witnesses:

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Edgar Tate

Inventor:

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By *Murin & Co.*  
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(No Model.)

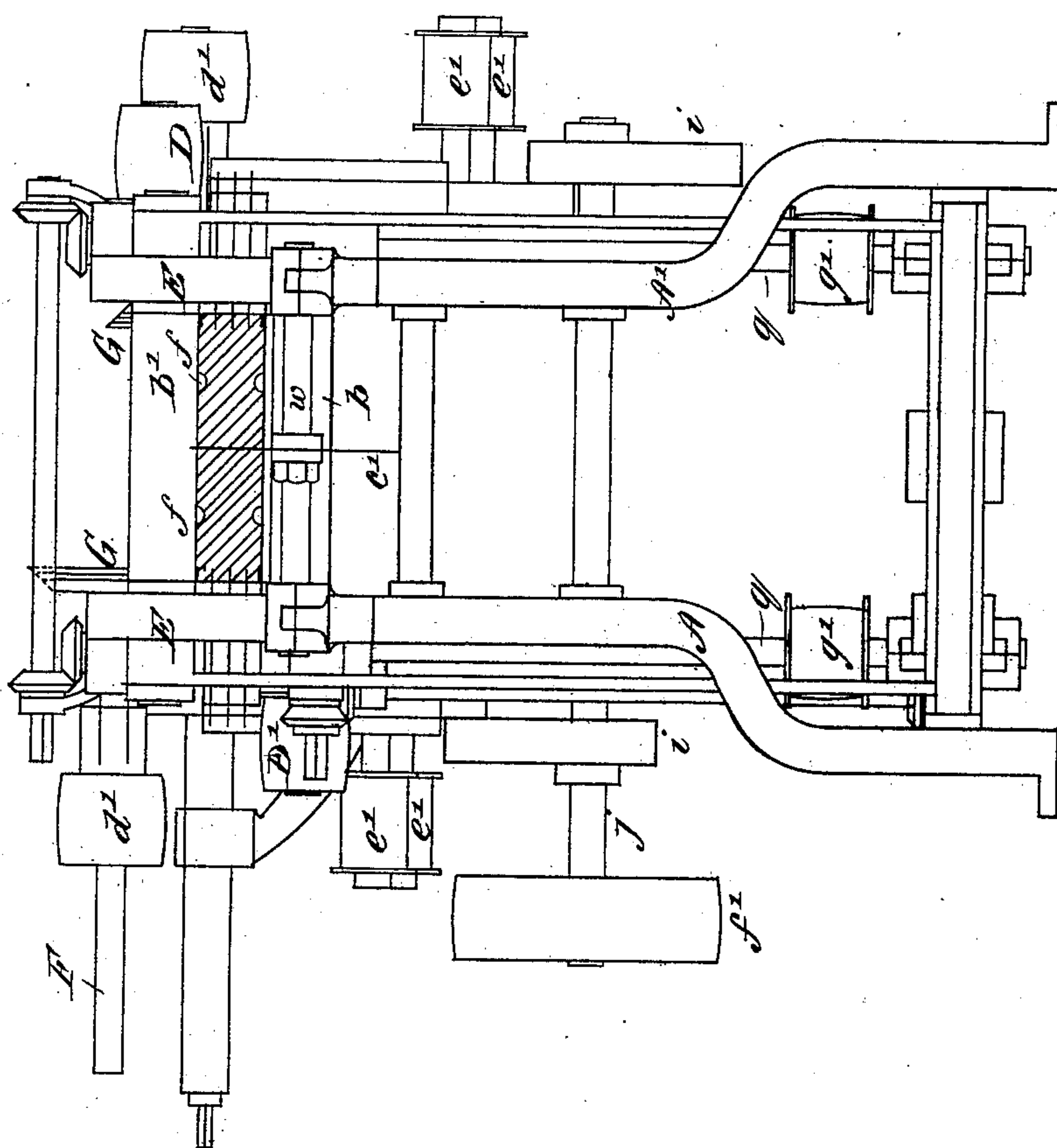
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*Fig. 2.*



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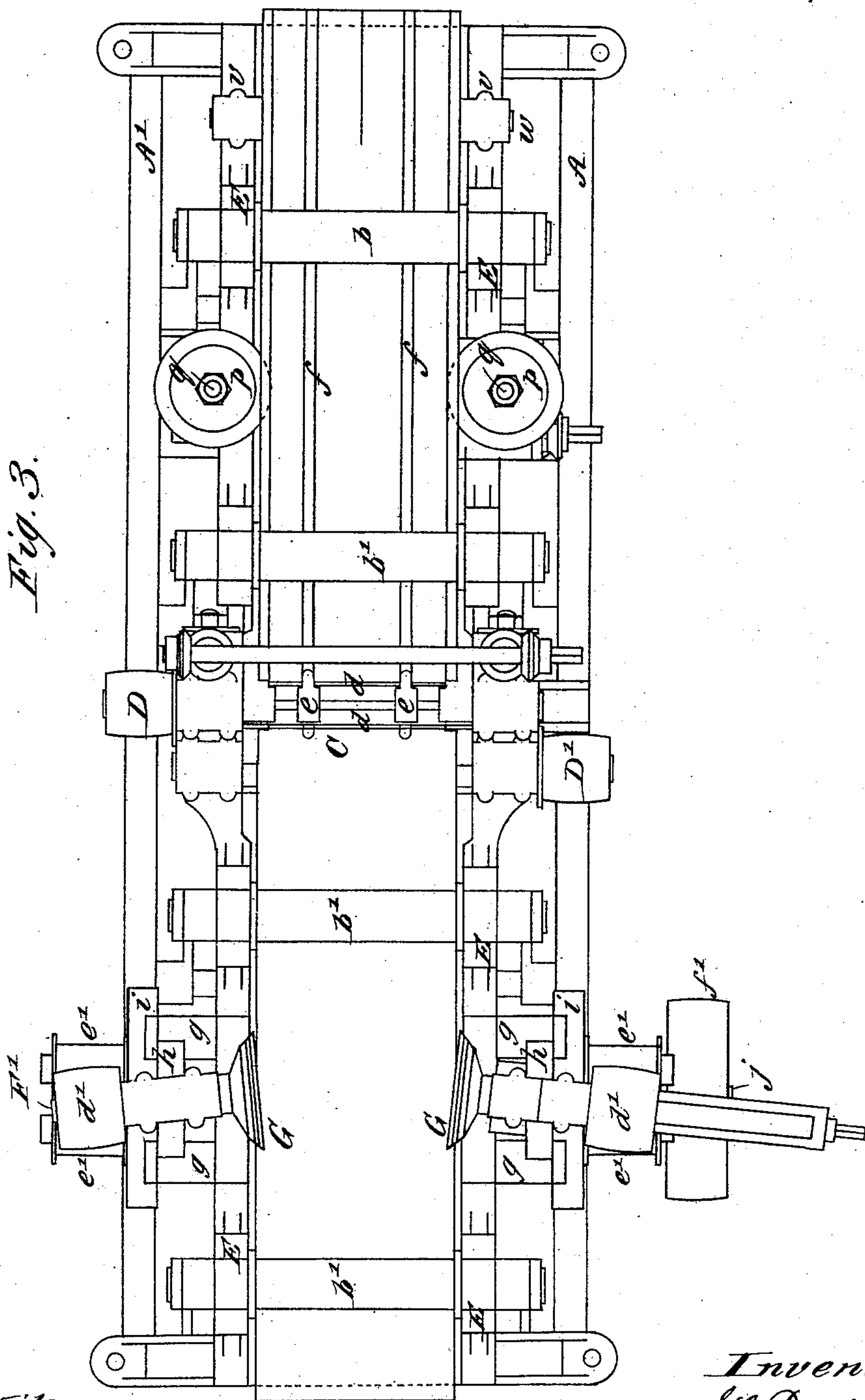
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Witnesses:

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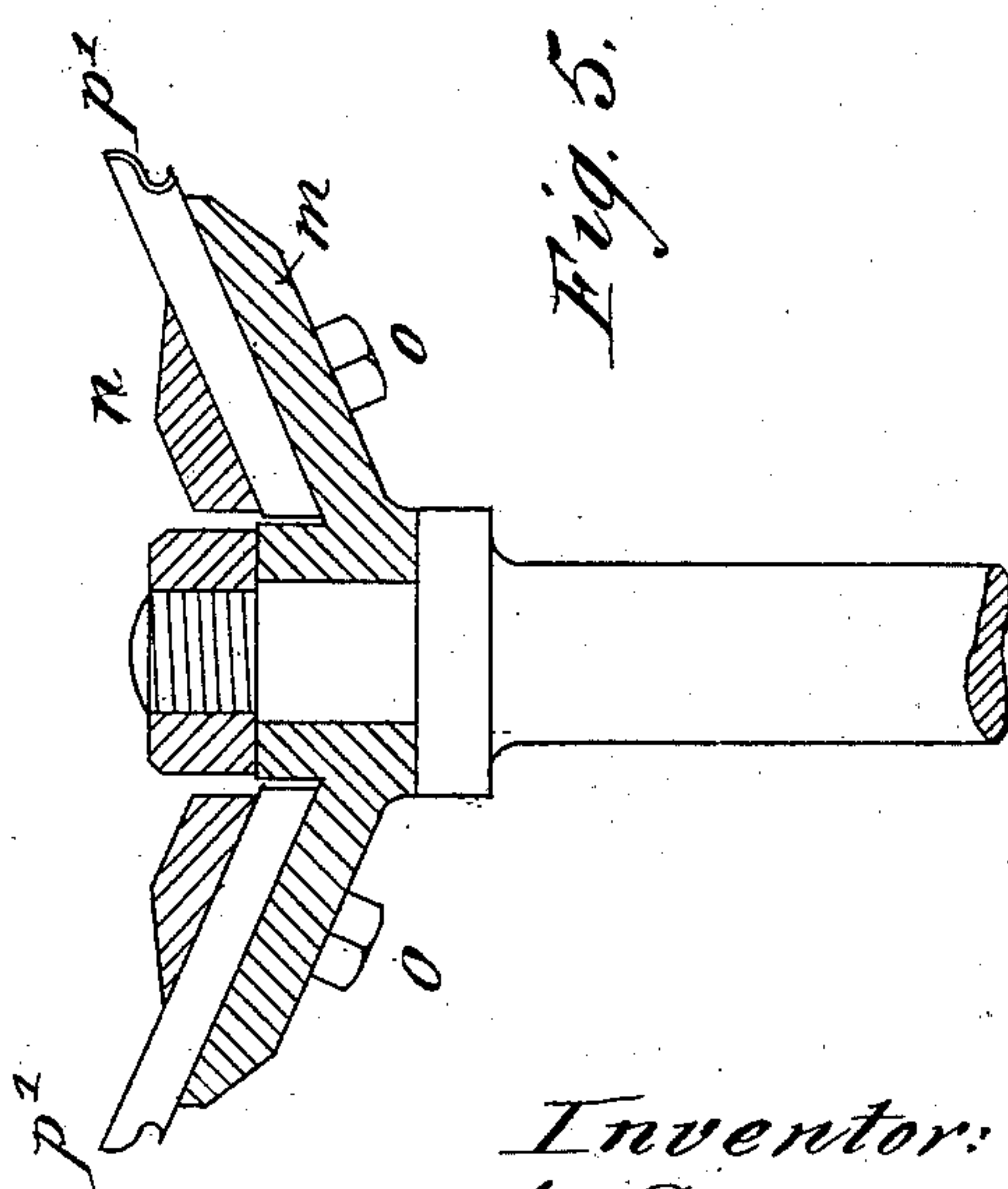
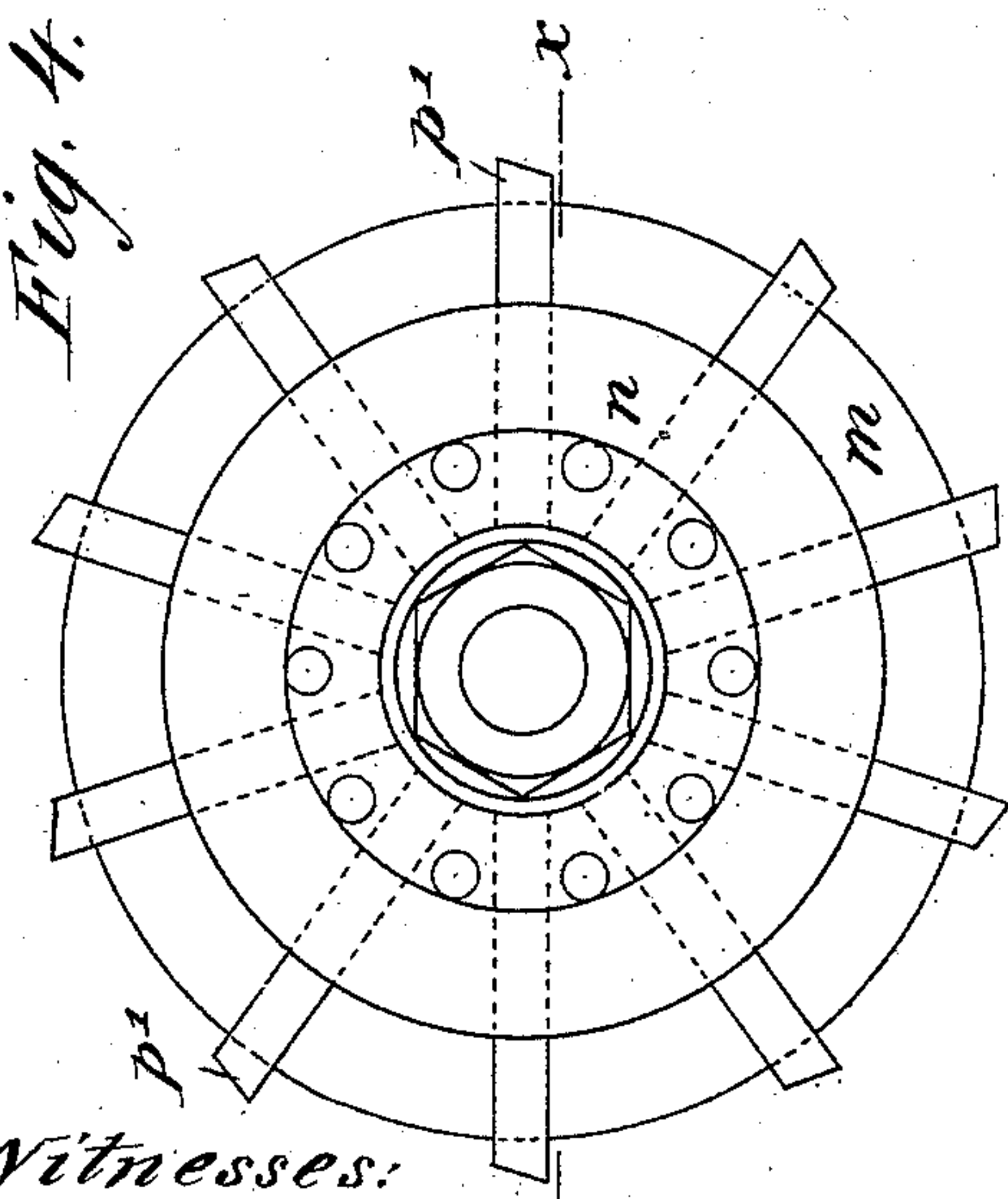
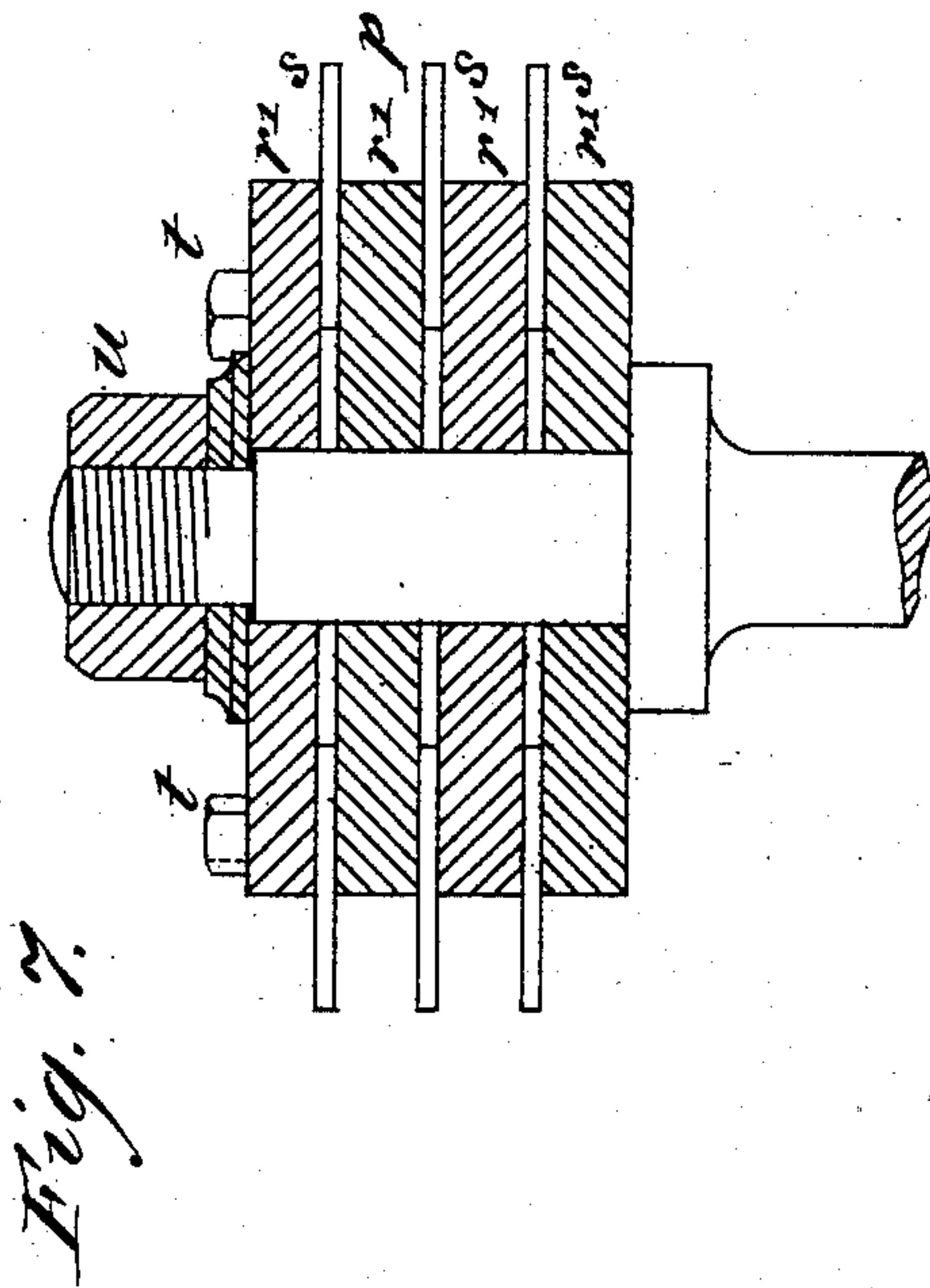
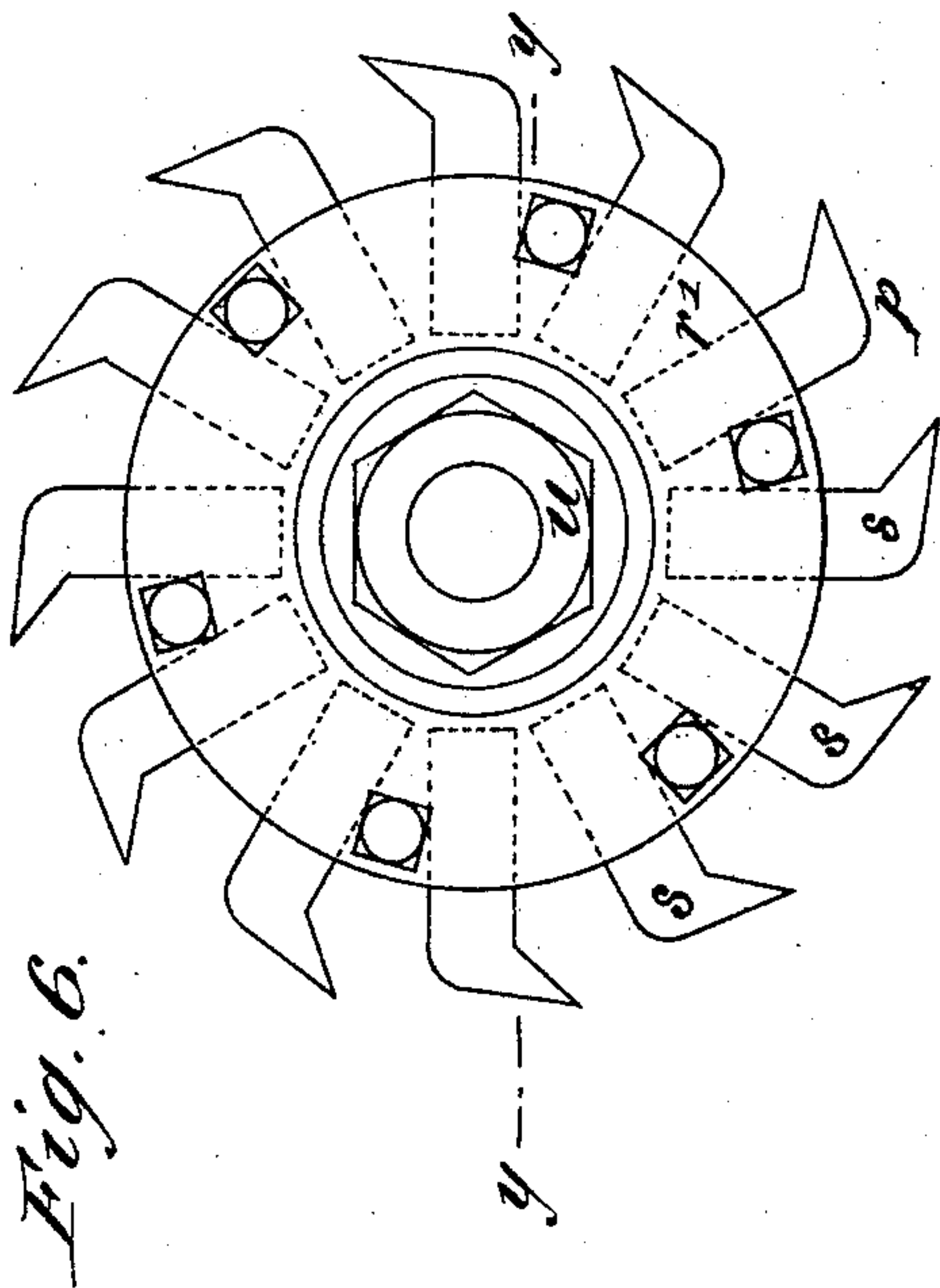
(No Model.)

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S. C. BURRIS.  
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# UNITED STATES PATENT OFFICE.

SAMUEL CYRUS BURRIS, OF VICTORIA, BRITISH COLUMBIA, CANADA.

## MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 353,285, dated November 30, 1886.

Application filed February 20, 1886. Serial No. 192,647. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL CYRUS BURRIS, of Victoria, in the Province of British Columbia and Dominion of Canada, have invented a new and useful Improvement in Machines for Working Lumber, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation. Fig. 2 is an end elevation. Fig. 3 is a plan view. Fig. 4 is a plan view of the cove-cutting head. Fig. 5 is a transverse section taken on line *xx* in Fig. 4. Fig. 6 is a plan view of the head for cutting parallel grooves. Fig. 7 is a transverse section taken on line *yy* in Fig. 6.

Similar letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to improvements in wood-working machines; and it consists in the construction, arrangement, and combination of parts, as hereinafter described and claimed, whereby a piece of timber is surfaced, grooved, and divided.

The main frame of the machine is formed of the side pieces, *A A'*, connected by suitable cross-pieces, and in movable journal-boxes on the standards *B*, formed upon the frame, near the middle thereof, is journaled a cutter-head, *C*, whose shaft is provided with the usual pulley, *D*, for receiving a driving-belt. In journal-boxes secured to the side pieces, *A A'*, is journaled the shaft of the lower cutter, *C'*, the shaft being provided with a pulley, *D'*, for receiving the belt by which it is driven.

On the side pieces, *A A'*, of the frame are formed slotted standards *E*, which hold the journal-boxes *a* of the lower feed-rollers, *b*, and form guides for the journal-boxes *a'* of the upper rollers, *b'*. The journal-boxes of the upper rollers are in practice pressed down by weighted pivoted levers. (Not shown.) The rollers *b b'* receive motion in the usual well-known way, and as I do not lay any claim to this part of the machine I have omitted from the drawings the mechanism employed to drive these rollers.

The journals of the cutter-head *C* are adjustable up and down (in the usual way) to accommodate the cutter to timbers of different thicknesses. As the cutter-heads *C C'* are alike,

except as to their location in the machine, a description of one will answer for both. The cutter-head *C* is provided with surfacing-knives *d*, on diametrically-opposite sides, and upon the intermediate sides are placed cutters *e*, for producing semicircular grooves *f* in the surface of the timber operated on by the machine.

Near one end of the machine, and to opposite sides thereof, are secured guides *g*, to which are fitted the slides *h*, carrying at their upper ends the journals of the cove-cutter shafts *F F'*. The journal-boxes of the shaft *F* are made adjustable, to admit of working upon timbers of different widths, while the journals of the cutter-shaft *F'* are retained in a fixed position. The shafts *F F'* are oppositely arranged with respect to each other, at an angle of four or five degrees, with a transverse line extending across the machine at right angles, to bring the cutter-heads carried by the shafts into position to be brought into engagement with the edges of the timber to be operated upon to cut a groove in the timber, while at the same time permitting of the forward movement of the timber through the machine.

The slides *h* rest upon cams *i*, secured to the shaft *j*, near opposite ends thereof, the cams having circular surfaces *k* for supporting the cutters out of engagement with the timber, and having flattened surfaces *l*, which allow the slides *h* to drop and bring the cutters into engagement with the edges of the timber during about one-fifth of a revolution of the shaft *j*.

The cutter-heads *G*, which are secured to the shafts *F F'*, are shown in detail in Figs. 4 and 5. They each consist of a conical flange, *m*, and a conical collar, *n*, secured to the flange *m* by means of bolts *o*, and in cutters *p'*, having their shanks received between the collar *n* and flange *m*, the outer and cutting edges of the cutters being formed on a reverse curve and adapted to make an undercut circular groove in the edge of the timber whenever the slide *h*, the shafts *F F'*, and cutter-heads *G* are lowered by the cam *i*.

Near the opposite ends of the frame of the machine are journaled vertical shafts *q*, on opposite sides of the frame, with the cutter-heads *p* secured to their upper ends, opposite the edges of the timber operated upon by the machine.



The cutter-head *p* is shown in detail in Figs. 6 and 7, and consists of a number of collars, *r*', placed on the upper end of the shaft *q*, and series of cutters *s*, inserted between the collars *r*', the collars being clamped together by bolts *t*. A cutter thus formed is secured on the end of the shaft *q* by the nut *u*.

To the top of the side pieces, *A A'*, at the discharge end of the machine, are secured the journal-boxes *v* of the saw-mandrel *w*. Upon the saw-mandrel *w*, at the center of the machine, is secured a circular saw, *c'*, which is of sufficient diameter to reach through the timber being operated upon.

Motion is imparted to the cutter-heads *C C'* by belts running over their pulleys *D D'* from any suitable source of power. The feed-rollers *b b'* are driven in the usual well-known way. The shafts *F F'* receive power through belts running over pulleys *d'*, secured to their outer ends, passing around guide-pulleys *e'*, turning on studs projecting from the slides *h*. The shaft *j* receives its power through a belt engaging the pulley *f'*, secured to one end thereof. The shafts *q* are made adjustable vertically, and receive power by means of belts passing over pulleys *g'*, secured on their lower ends.

All of the parts being in motion, the timber to be operated upon is carried forward slowly by the feed-rollers *b b'*, and the cutter-heads *G* are lowered periodically by the cams *i*, forming curved undercut grooves *h'* in the edges of the timber. The angular position of the cutters *G* permits of bringing them into contact with the edges of the timber while they are in motion. It also permits of the continuous forward movement of the timber while the cutters *G* are acting upon it. When the timber reaches the cutter-heads *C C'*, it is surfaced by the cutters *d*, and the grooves *f* are formed therein by the cutters *e*. When the timber reaches the cutter-heads *p*, a number of longitudinal grooves are formed therein by the cutters *s*. The longitudinal grooves *i'* intersect the curved undercut grooves *h'*.

To facilitate the operation of forming grooves in the timber, I operate upon opposite edges of a stick of sufficient width to form two timbers when split by the saw *c'*, so that when the timbers are delivered from the machine they are grooved in one edge along the longitudinal and curved undercut transverse grooves, and have in their upper and lower surfaces the grooves *f*.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a wood-working machine provided with upper and lower cutter-heads for simultaneously surfacing and grooving opposite sides of a timber, of the cutters *G*, arranged at an angle to the line of motion of the timber passing through the machine, and mechanism for periodically dropping the cutters into engagement with the edges of the timber, as herein specified.

2. The combination of the cutters *G* and horizontal shaft *F*, arranged angularly with reference to the path of the wood being operated upon, the slides *h*, supporting the shafts of the cutters, the cams *i*, and the horizontal cutter-heads *p*, provided with series of cutters *s*, and arranged to produce longitudinal grooves in the edges of the timber, substantially as herein shown and described.

3. The combination, in a wood-working machine, of the vertically-reciprocating cutters *G*, arranged at an angle to the path of the timber passing through the machine, and adapted to act on the sides of said timber, the surfacing and grooving cutters *C C'*, arranged, respectively, above and below the timber, and the circular saw *c'*, arranged beneath the timber and midway of the width of the machine, for dividing the timber lengthwise, as specified.

SAMUEL CYRUS BURRIS.

Witnesses:

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W. G. KELLOGG.