

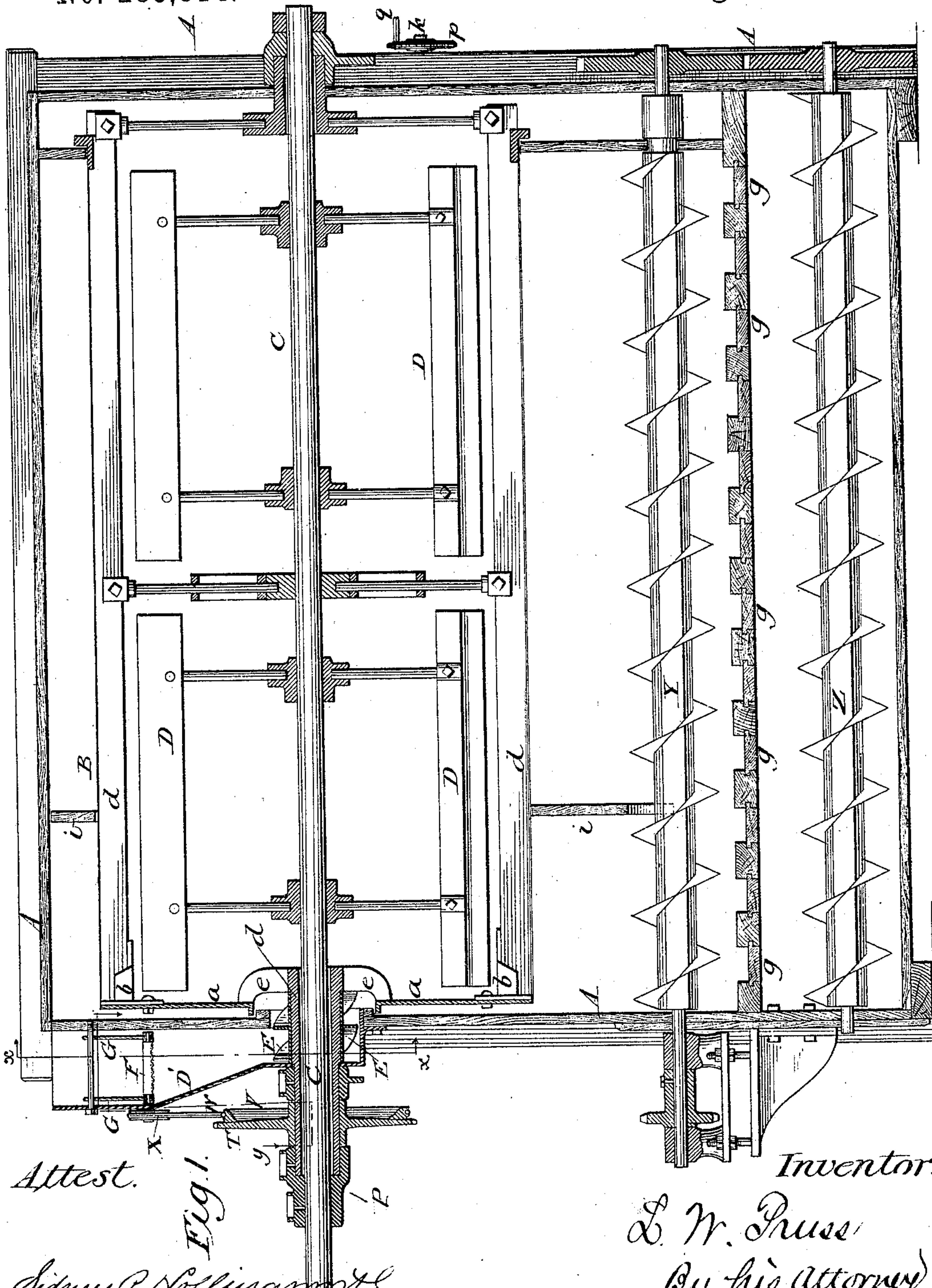
(No Model.)

4 Sheets—Sheet 1.

L. W. PRUSS.
CENTRIFUGAL REEL.

No. 283,814.

Patented Aug. 28, 1883.



Attest.

Fig. 1.

Sidney P. Hollingsworth

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Inventor.

L. W. Pruss

By his attorney.

Philip T. Dodge.

(No Model.)

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Fig. 3.

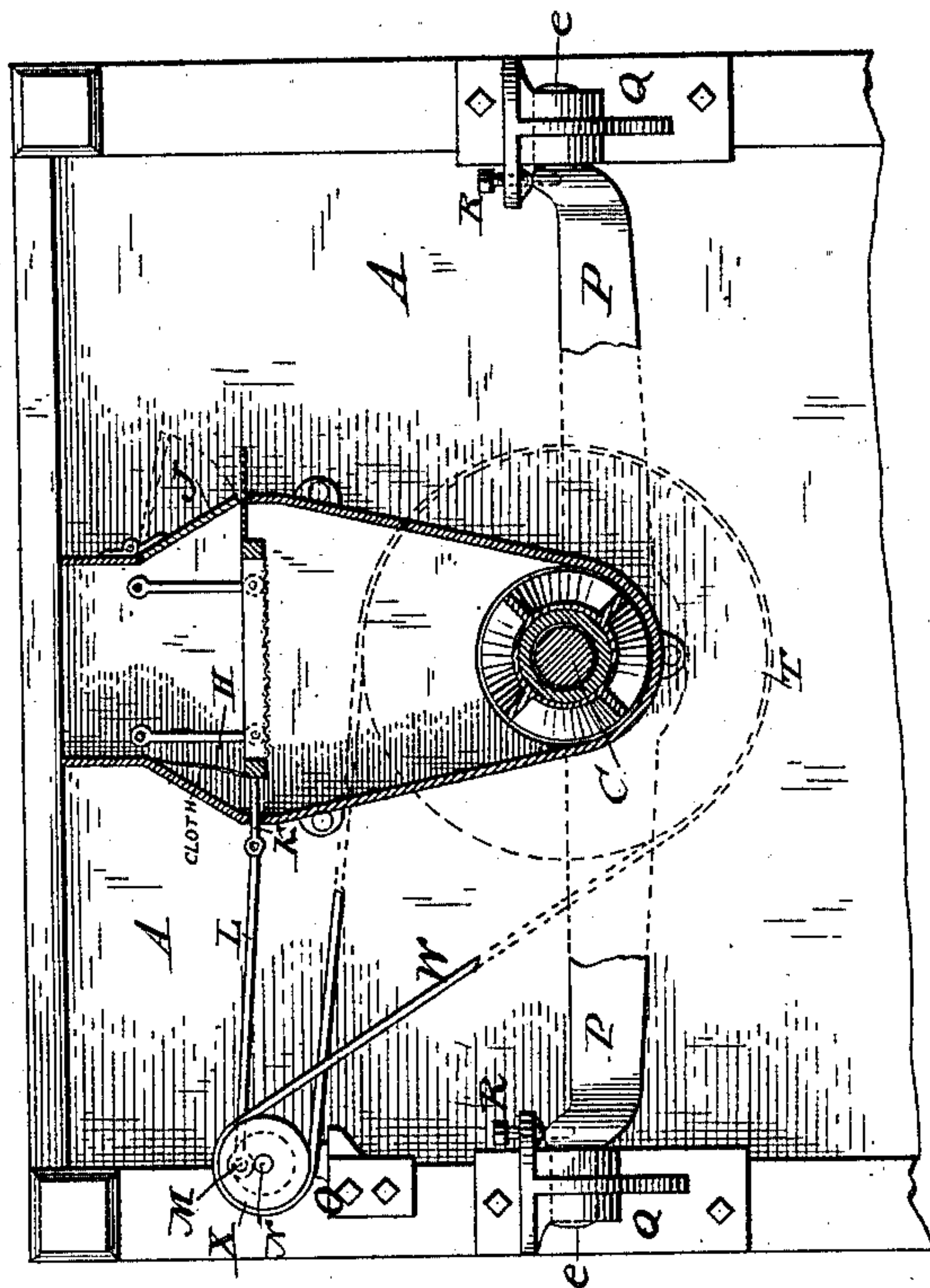
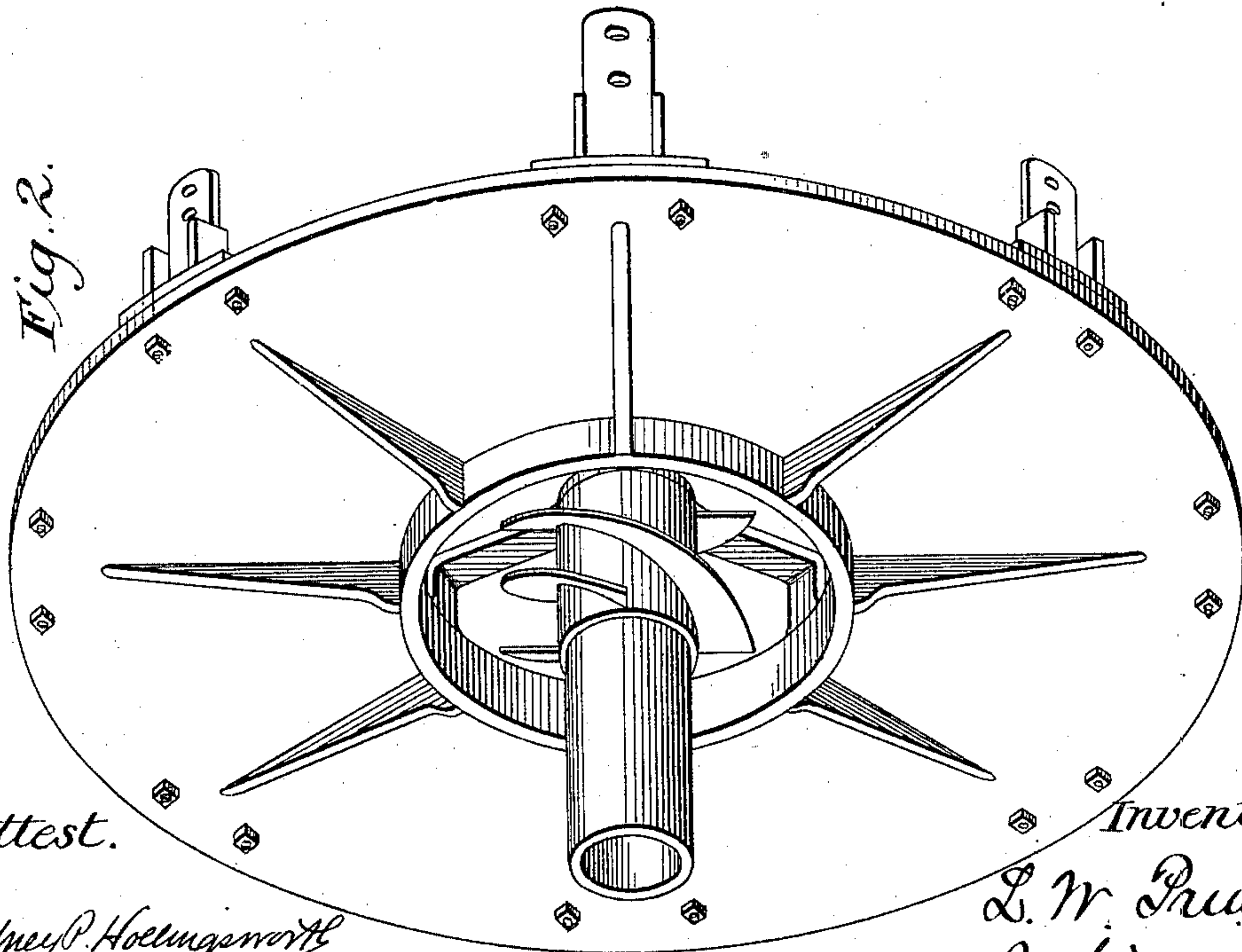


Fig. 2.



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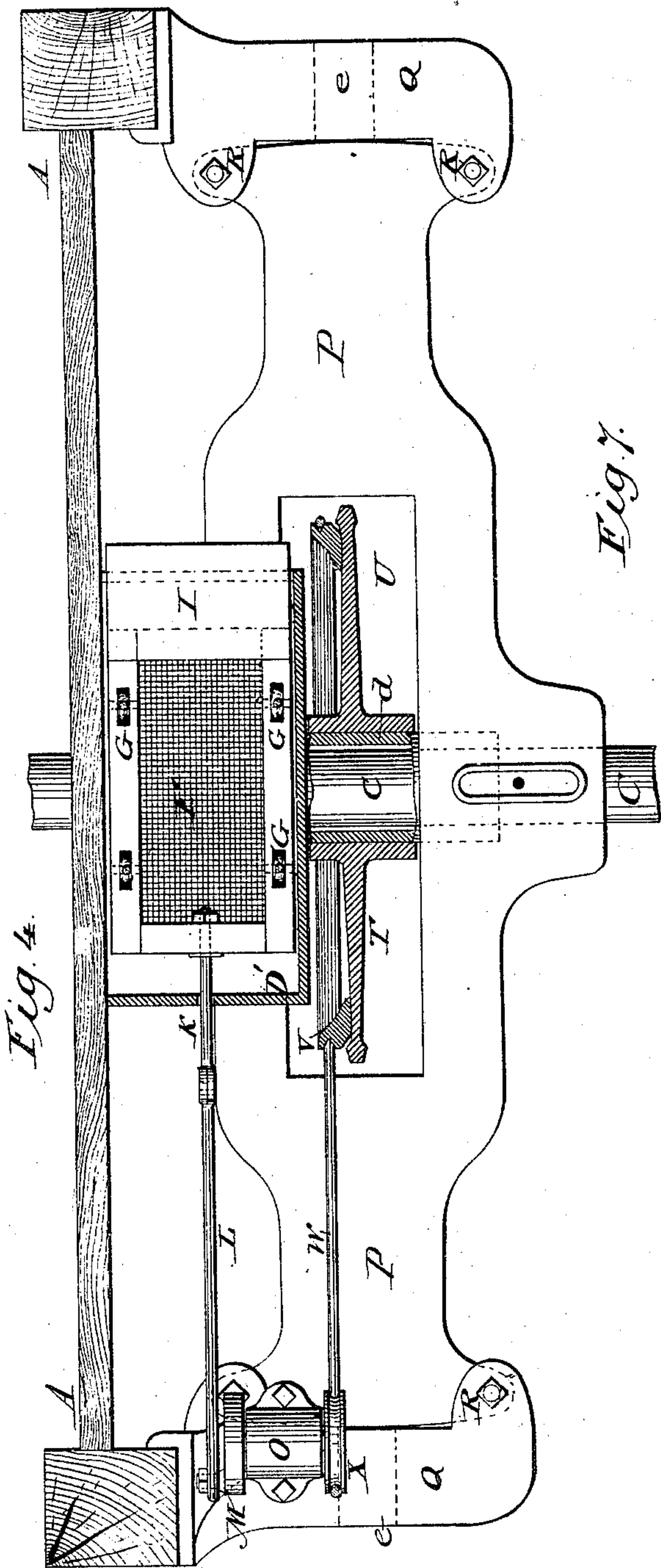
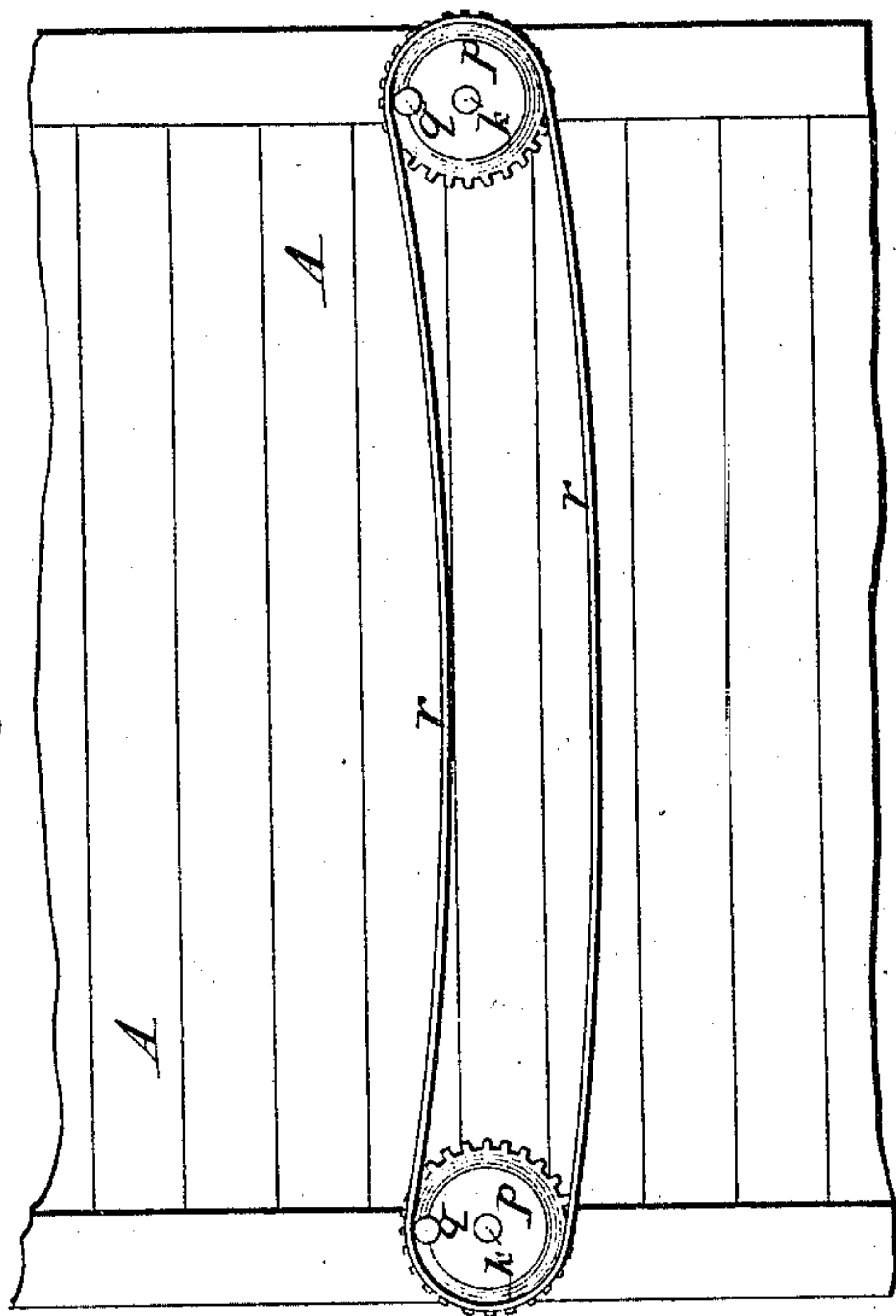


Fig. 4.

Fig. 7.



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Fig. 6.

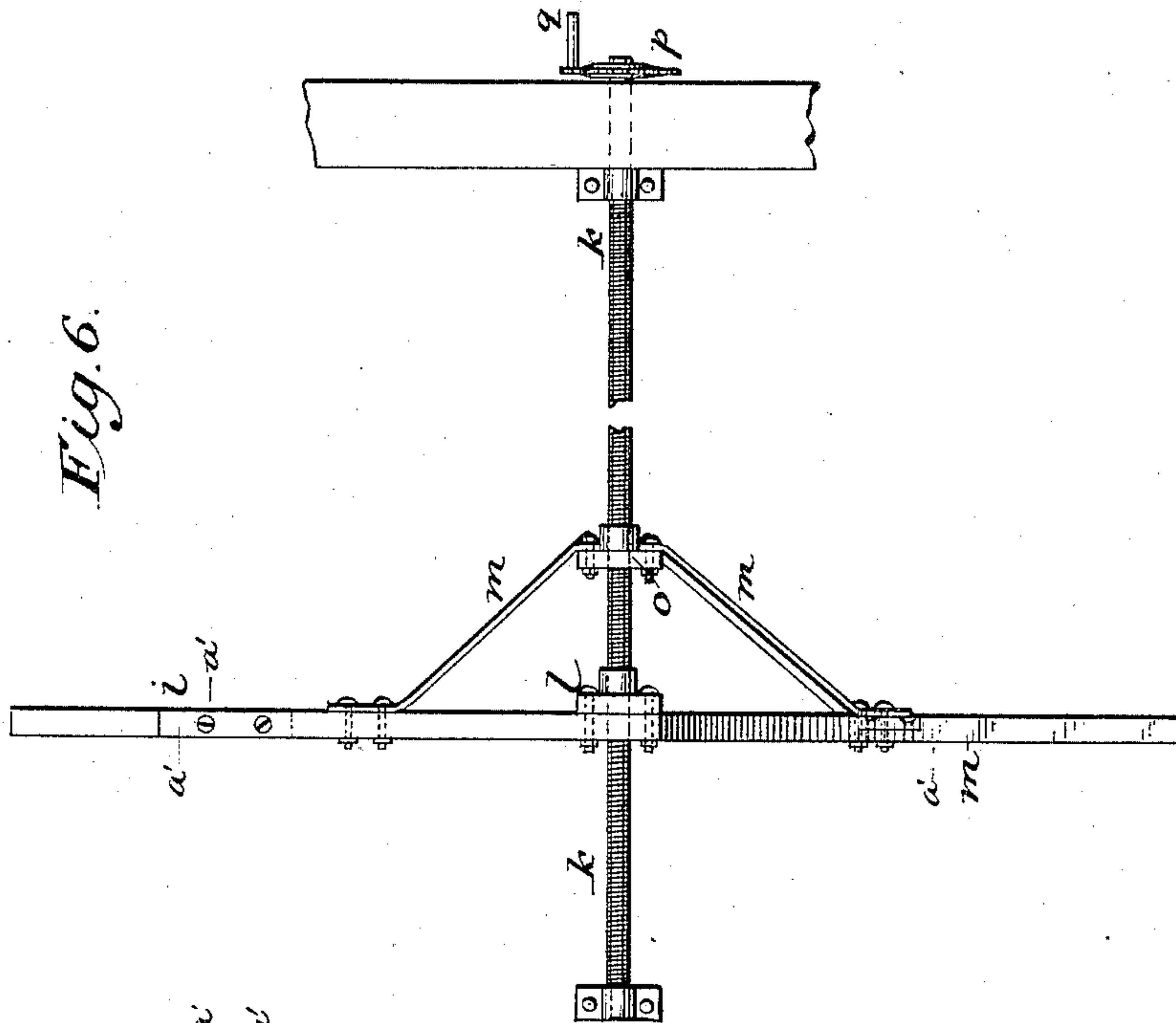
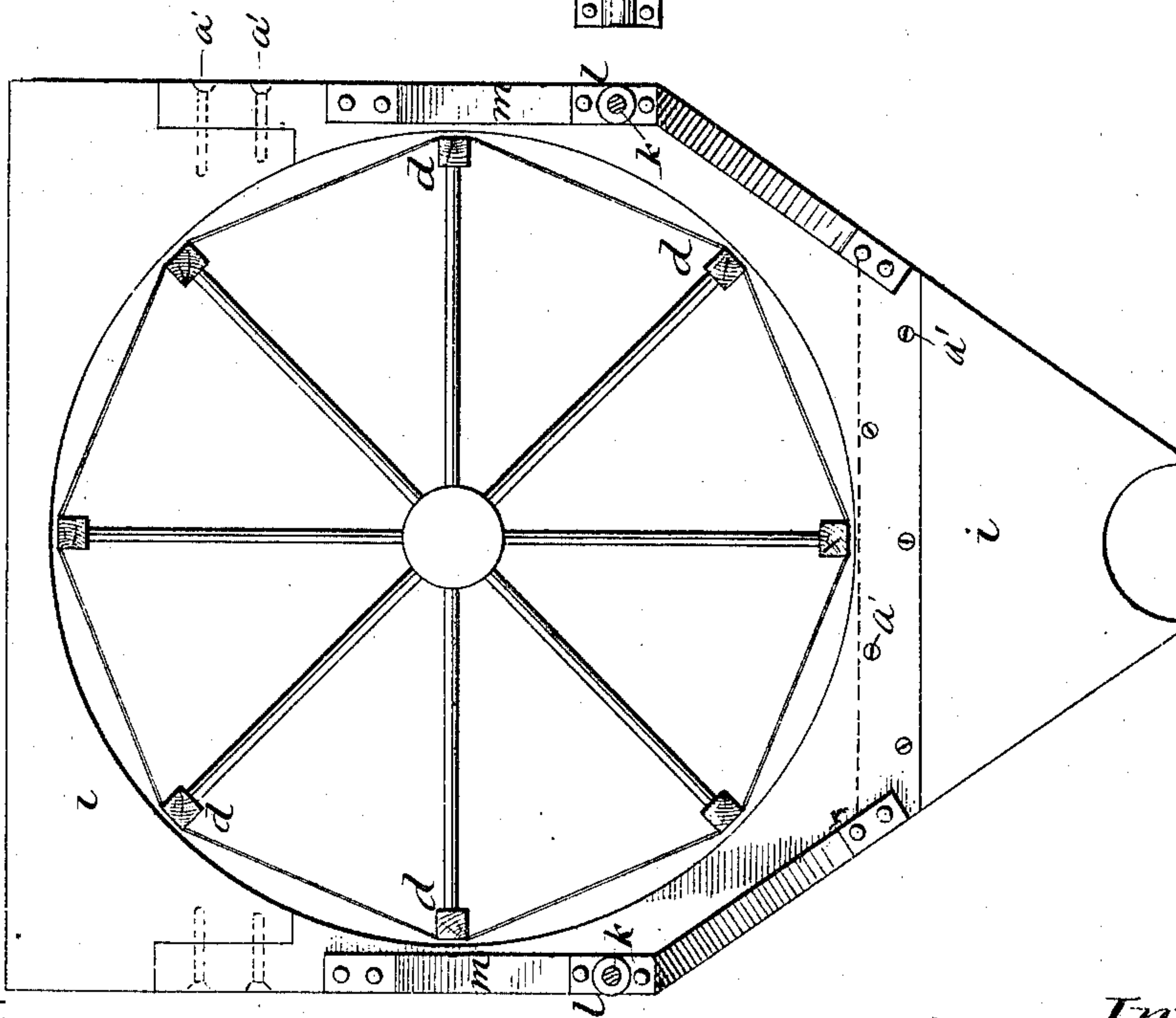


Fig. 5.



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UNITED STATES PATENT OFFICE.

LOUIS W. PRUSS, OF MINNEAPOLIS, MINNESOTA.

CENTRIFUGAL REEL.

SPECIFICATION forming part of Letters Patent No. 283,814, dated August 28, 1883.

Application filed November 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, LOUIS W. PRUSS, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Flour-Dressing and Bran-Dusting Machines, of which the following is a specification.

My invention has reference to centrifugal reels, bran-dusters, and flour-dusters, wherein a revolving reel of cylindrical or polygonal form is combined with a series of internal revolving beaters or blades; and it has special reference to improvements in the machines for which I filed applications for Letters Patent on the 12th day of July and 18th day of August, 1882.

The improvements have reference to an improved manner of constructing the reel with metallic heads or end plates, having sockets bolted thereto to receive and sustain the ends of the ribs; to a dividing board or boards encircling the reel transversely, and adjustable endwise in relation thereto, for the purpose of effecting a clean division or separation of the material, as may be required, and to various details relating thereto; to a rocking adjustable bearing of peculiar construction, giving support to the journal of the reel and to the beater-shaft; also to minor features, which, together with those above mentioned, will be hereinafter described in detail.

Referring to the accompanying drawings, Figure 1 represents a vertical longitudinal section through the machine. Fig. 2 is a perspective view of the reel-head and the feed-worm. Fig. 3 is a transverse vertical section on the line *x x*, Fig. 1. Fig. 4 is a horizontal cross-section. Fig. 5 is a side elevation of one of the adjustable divide-boards with the end of the reel thereunder. Fig. 6 is an edge view of the same. Fig. 7 is a view illustrating the arrangement of pulleys and chain for adjusting the dividing-board.

Except as regards the features hereinafter described in detail, the machine represented in the drawings is of substantially the same construction as that represented in my previous applications above referred to, to which reference is made for a description of such details as are not set forth herein.

The machine consists, primarily, of an external closed chest or body, A, provided at the bottom with inclined gathering-boards and conveyer-screws, and provided at the top

with a substantially horizontal bolting-reel, B, which is sustained by hollow journals surrounding a central shaft, C, which latter is provided with radiating arms carrying blades or beaters D, the parts above mentioned having substantially the same mode of action as in previously-existing machines. The receiving end of the reel consists of a circular metallic plate or head, *a*, to which there is bolted near the periphery, on the inside face, a series of socket-plates, *b*, which receive and sustain the ends of the longitudinal ribs *d*, by which the bolting-cloth or other bolting-surface is sustained as usual. The end plate at the head of the reel is provided with a central opening to admit the meal, and with a series of sustaining-arms, *e*, which connect the body portion of the plate with the central sleeve or journal, as shown. Each of the socket-plates *b* is made of angular form, as shown, and secured by means of bolts firmly to the inner face of the plate *a*. The reel bars or ribs *d* are seated in the outer side of the socket-plates, and are secured thereto by screws inserted in the inner face, as shown. These plates are made of such width as to receive a solid support from the plate *a*, and of such length as to receive a firm connection with the ribs. They serve as an efficient means of maintaining the ribs at right angles to the face of the plate, thus giving the reel great rigidity and preventing it from twisting.

The machine is provided at its head with a hopper, D', which communicates through a central opening in the case with the opening in the reel-head. For the purpose of delivering the meal from the hopper into the reel, I employ a screw or worm, E, which is mounted upon and around the tubular sleeve or journal *d* of the reel, as clearly represented in Figs. 1 and 2, being secured thereon by set-screws, keys, or other equivalent devices. This worm, turning slowly and steadily with the reel, and extending through the opening in the head of the machine into the reel, and also into the hopper, serves to convey the material steadily and uniformly into the reel.

I am aware that feed-worms have been variously applied to machines of this class, and my invention in this regard is restricted to the arrangement of the worm upon the tubular journal on the reel, substantially as indicated. The construction of the feed-screw on my plan enables me to reduce the cost of construction,

employ a shorter screw, and secure a better action than under the ordinary method of construction.

In machines of the class now under consideration much difficulty is experienced because of the frequent injury to or destruction of the bolting-surface by foreign matters which find their way into the reel, and from the accumulation of "dough-balls" and other solid matters within the reel. To remedy this difficulty and to deliver meal to the machine in a uniformly loose and free condition, I provide at the head of the machine a primary reciprocating screen, of coarse mesh, adapted to loosen and disintegrate the meal and permit its free passage to the reel, (and also, incidentally, to prevent the meal from packing solidly upon the conveyer-screw,) while at the same time retaining the coarse impurities. This screen is represented at F, Figs. 1, 3, and 4. It is made of rectangular form, and suspended by swinging links G in the upper portion of the hopper D', which is preferably expanded to receive it, as shown. At one end the screen is connected with the interior of the hopper by a flexible sheet of cloth or equivalent material, H, and at the opposite end is provided with a horizontal plate or extension, I, which is extended outward through a slot in the side of the hopper. The sheet and plate thus applied permit the screen to reciprocate freely, but at the same time prevent the material from passing downward around its ends, the material being thus compelled to pass through the meshes of the screen in its course to the reel.

For the purpose of facilitating the examination of the screen F, and of removing foreign matters which may accumulate thereon, a gravitating door, J, is provided in one side of the feed-hopper, as represented in Fig. 3. Motion may be communicated to the screen in any suitable manner, but I prefer to employ the arrangement represented in the drawings, wherein it will be seen that a rod, K, is extended from the screen through the side of the hopper, and jointed at its outer end to a pitman, L, which latter is connected to a crank, M, applied to a horizontal shaft, N, mounted in a bracket or support, O, at the head of the machine, and driven as hereinafter described. The shaft-supporting bracket O is bolted to the main frame.

As shown in Figs. 1, 3, and 4, the bridge-tree P is adapted to extend horizontally across the head of the machine on the outside of the body, and is provided at each end with a horizontal journal or trunnion, e, extending endwise therefrom, these journals being seated in brackets Q, which are bolted firmly to the corners of the main frame. The bridge-tree thus journaled is free to rock or tip edgewise in a plane lying lengthwise of the machine, this motion permitting it to be adjusted in such manner as to secure the proper bearings of the shafts which are sustained by it. As shown in Fig. 1, the tree is adapted to receive and

give support to the hollow journal d of the reel, and also to give direct and separate support to the outer end of the beater-shaft C. In order to secure the proper alignment and adjustment of these bearings, so that both shafts may be permitted to turn with freedom, and that they shall not cramp or bind upon each other or within the box, an accurate adjustment of the bridge-tree is required. This is secured by providing one or both of the supporting-brackets Q with two vertical screws, R, arranged to bear on the end of the bridge-tree on opposite sides of its journal e, as is plainly represented in Figs. 3, 4, and 8. By adjusting these screws the bridge-tree may be rocked or tipped upon its journals, and thus adjusted and fixed in the exact position required. Fair results may be obtained when the screws R are omitted and the bridge-tree is permitted to rock or tip freely, in order that it may adjust itself to the varying position of the shafts to which it gives support; but the action is improved by the use of the screws to such an extent that it is preferred to retain them. In place of the screws, wedges, keys, or equivalent devices may be employed for rocking and fastening the bridge-tree.

The before-mentioned bracket O, in which the crank-shaft N receives support, is attached to the main frame.

For the purpose of imparting motion to the reel, I secure upon its hollow journal d a driving-pulley, T, and to admit this pulley at the desired point I construct the bridge-tree with a mortise or opening, U, therein, as plainly represented in Figs. 1 and 3. To the side of the pulley T, which will be driven by chains, as in my previous machines, or in any other suitable manner, I secure a grooved pulley, V, from which I extend a driving-belt, W, to a pulley, X, secured on the crank-shaft from which the primary screen is reciprocated. It will be seen that under the arrangement named, motion is transmitted through the pulley V to the pulley X, and thence through the intermediate parts to the screen.

As usual in this class of machines, my machine is provided in the base with two screw-conveyers, Y and Z, located one above the other, and with intermediate cut-off slides, g, by which the material may be checked in its movement at any point and dropped from one conveyer to the other to effect the proper gradation.

Hitherto much trouble has been experienced in securing the clean division of the material at the desired point, owing mainly to the air-currents and to the fact that the material, in passing down the inclined sides of the machine, would pursue an irregular path. This difficulty I avoid by providing the machine with one or more upright division-boards, which extend downward from the reel to the conveyer, and which are adapted to be moved lengthwise of the reel. These boards serve effectually to prevent the material which de-

scends upon one side from becoming mingled with that which falls on the other. The boards may be constructed and supported in any suitable manner and provided with any convenient arrangement for effecting their movement from the top or side of the machine. It is preferred, however, to construct them in the form represented in the drawings, and to move them by screw-rods, as shown. The drawings represent the machine provided with but a single board; but it is to be understood that two, three, or more boards may be employed, and that they may be adjusted independently of each other.

Referring to Figs. 4, 5, and 6, *i* represents the division-board, having a marginal form or outline adapted to fit transversely within the body or chest, and provided with a large opening of suitable size to admit the reel upon which the board is placed, as shown. For the purpose of supporting and adjusting the board, two horizontal screws, *k*, are mounted in suitable bearings, one on each side of the machine, each screw being passed through a nut, *l*, secured to the face of the board. Upon turning the screws, which are secured against end motion, they cause the board to advance lengthwise of the reel. For the purpose of sustaining the board in an upright position it is provided on each side with brace-arms *m*, secured at their outer ends to the board and at their inner ends to a nut or guide, *o*, mounted upon the screw. For the purpose of insuring an equal and simultaneous motion of the two screws they are provided on their upper ends with pulleys *p*, provided with hand-cranks *q*, the two pulleys being connected by means of an intermediate chain or belt, *r*, so that motion may be communicated from either screw to the other.

It is obvious that in place of the chains and pulleys the screws may be connected by a transverse shaft and miter-gear or other equivalent means to insure their equal rotation.

In order to facilitate the insertion and removal of the division-board, if required, I prefer to construct it in sections, united by means of screws *a'*, in the manner represented in Figs. 5 and 6. When two boards are used in one machine, they may be operated, respectively, by screws passing through opposite ends of the case or by screws placed at different heights and extending through the same end of the case or chest.

Having thus described my invention, what I claim is—

1. In a reel, the combination of a circular metallic end plate or head, a socket-plate adapted to receive the end of the reel-frame and provided with an extended face for the application to the end plate, a reel arm or rib seated in the outer side of said socket, and means for firmly connecting said parts, substantially as described and shown.

2. In combination with the reel having the tubular journal, the pulley V, mounted on

said journal, the reciprocating screen, the pulley X, devices connecting the latter with the screen, and the belt connecting the pulleys V and X, whereby motion is communicated from the reel to the screen.

3. In combination with the hopper provided with the door, the reciprocating screen, the flexible sheet connecting the screen at one end with the hopper, and the plate extended from the opposite side of the hopper beneath the door, as described.

4. The bridge-tree provided with longitudinal sustaining-journals, as described, in combination with the two concentric shafts having the independent bearings therein, whereby the adjustment of the bridge-tree is permitted to secure a proper bearing of the two shafts.

5. In combination with the two concentric shafts, the bridge-tree, having journals at right angles to the axis of the shafts, and means, substantially as described, for rocking said bridge-tree upon the journals and securing it in position.

6. In a centrifugal reel or flour-dresser, the combination of a chest or body, the reel, the revolving beaters, an upright division-board mounted beneath said reel, and means, substantially as described, for its adjustment lengthwise thereof.

7. The combination of the primary reciprocating screen F, the flexible sheet H, and the extension-plate I.

8. The combination, with the bridge-tree having the end journals, of the supporting-brackets Q and the screws R, substantially as shown.

9. In combination with the body or chest, the reel, the revolving beaters, and the upright movable board *i*, the screws *k*.

10. The combination, with the dividing-board and adjusting-screws, of the pulleys applied to the respective screws and the chain or belt connecting said pulleys, substantially as shown, whereby an equal motion of the two screws is insured.

11. In a centrifugal reel or bolting-machine, the combination, with the case or body, of a horizontal reel, an upright board encircling said reel, and means, substantially as described, whereby said board may be adjusted at will from the outside of the machine.

12. In a centrifugal reel or bolting-machine, an upright division-board, substantially such as shown, constructed in sections separable from each other, whereby the introduction and removal of the board is facilitated.

13. In combination with the upright division-board and the adjustable screw, braces applied to the board and extending therefrom to nuts or guides mounted upon the screw, whereby the upright position of the board is maintained.

LOUIS W. PRUSS.

Witnesses:

ISAAC JACKSON,
P. CUTLER.