

No. 697,607.

Patented Apr. 15, 1902.

W. J. COCHRAN.  
WOOD TURNING MACHINE.

(Application filed Nov. 8, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

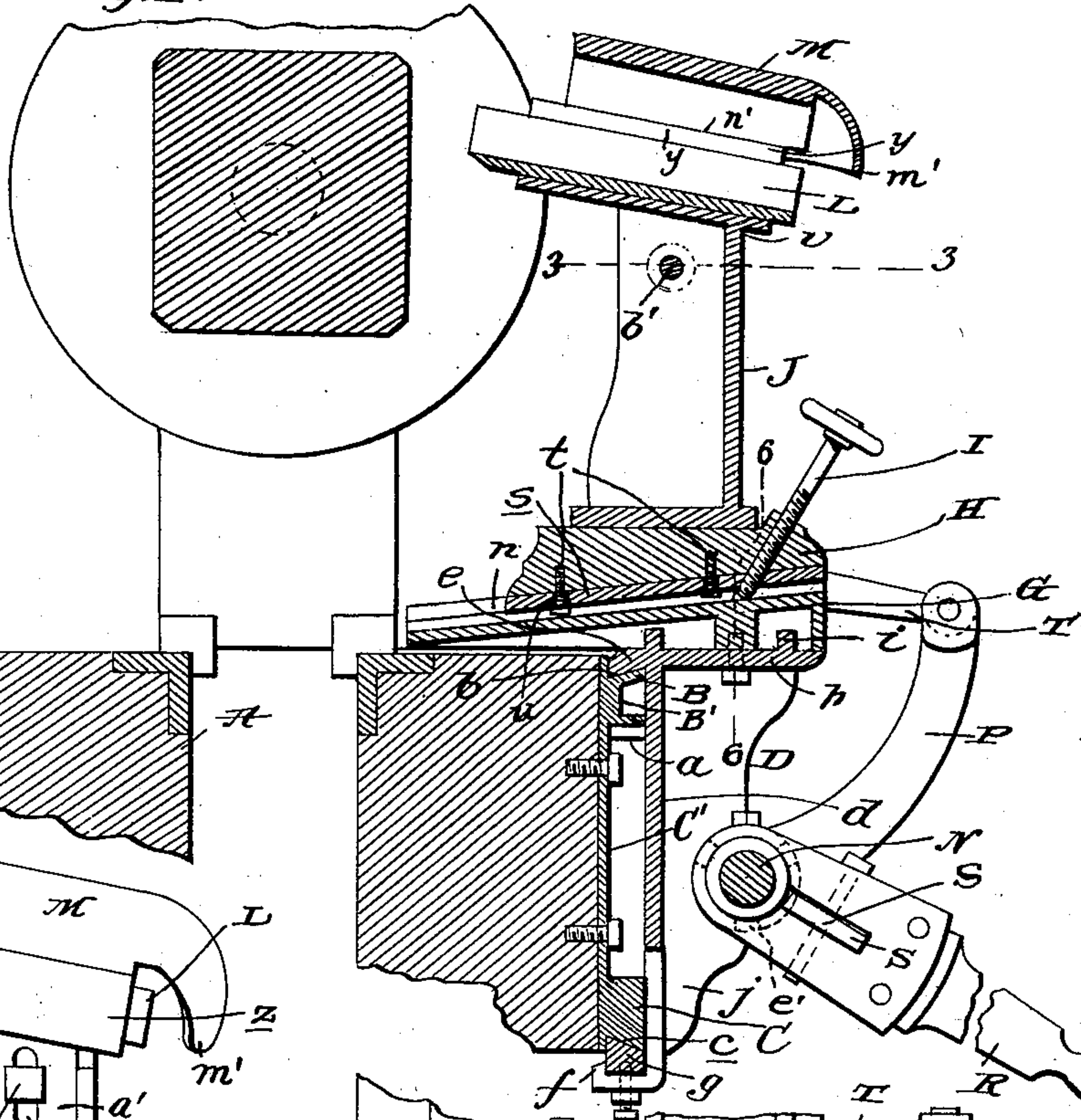


Fig. 2.

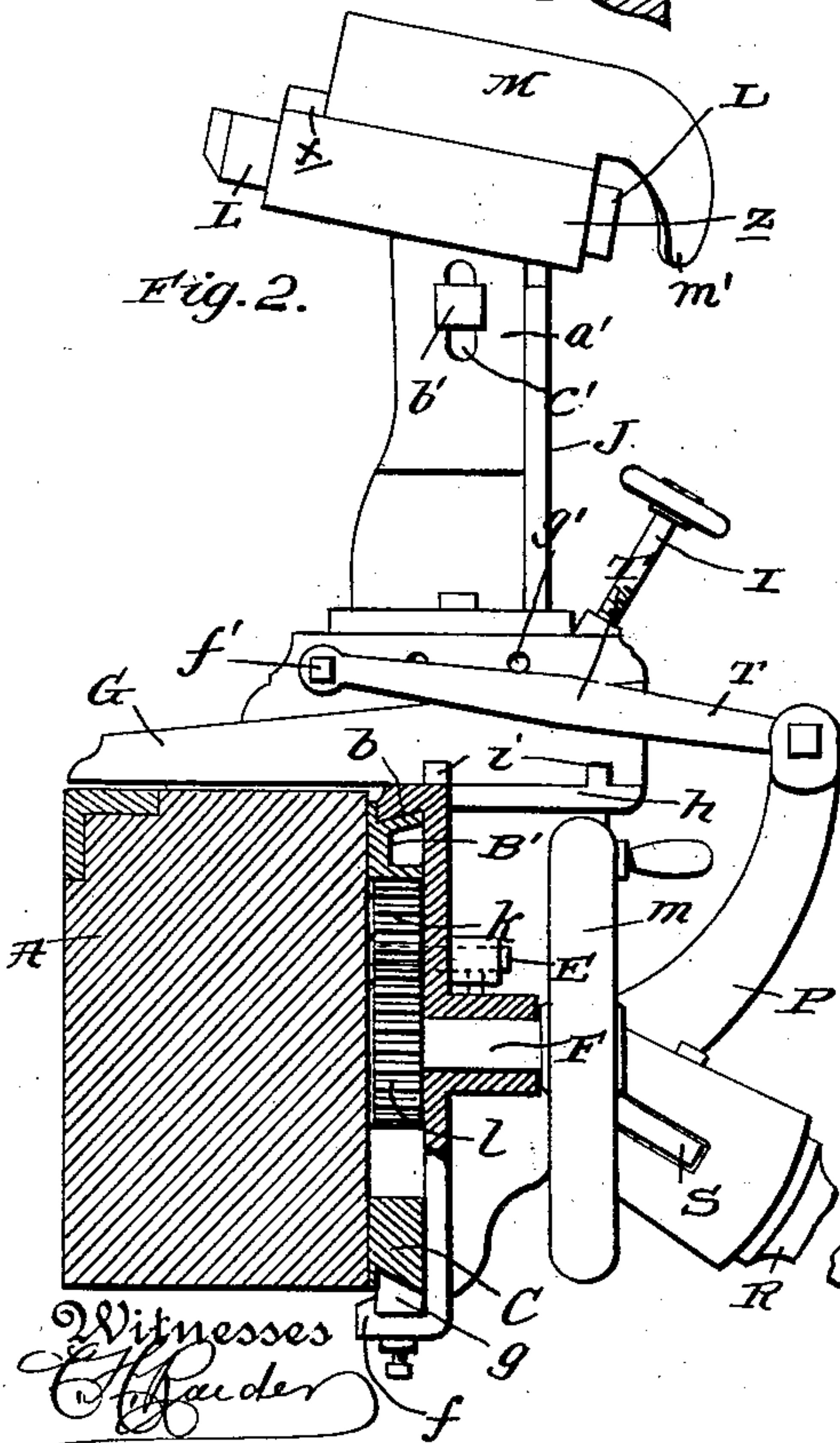
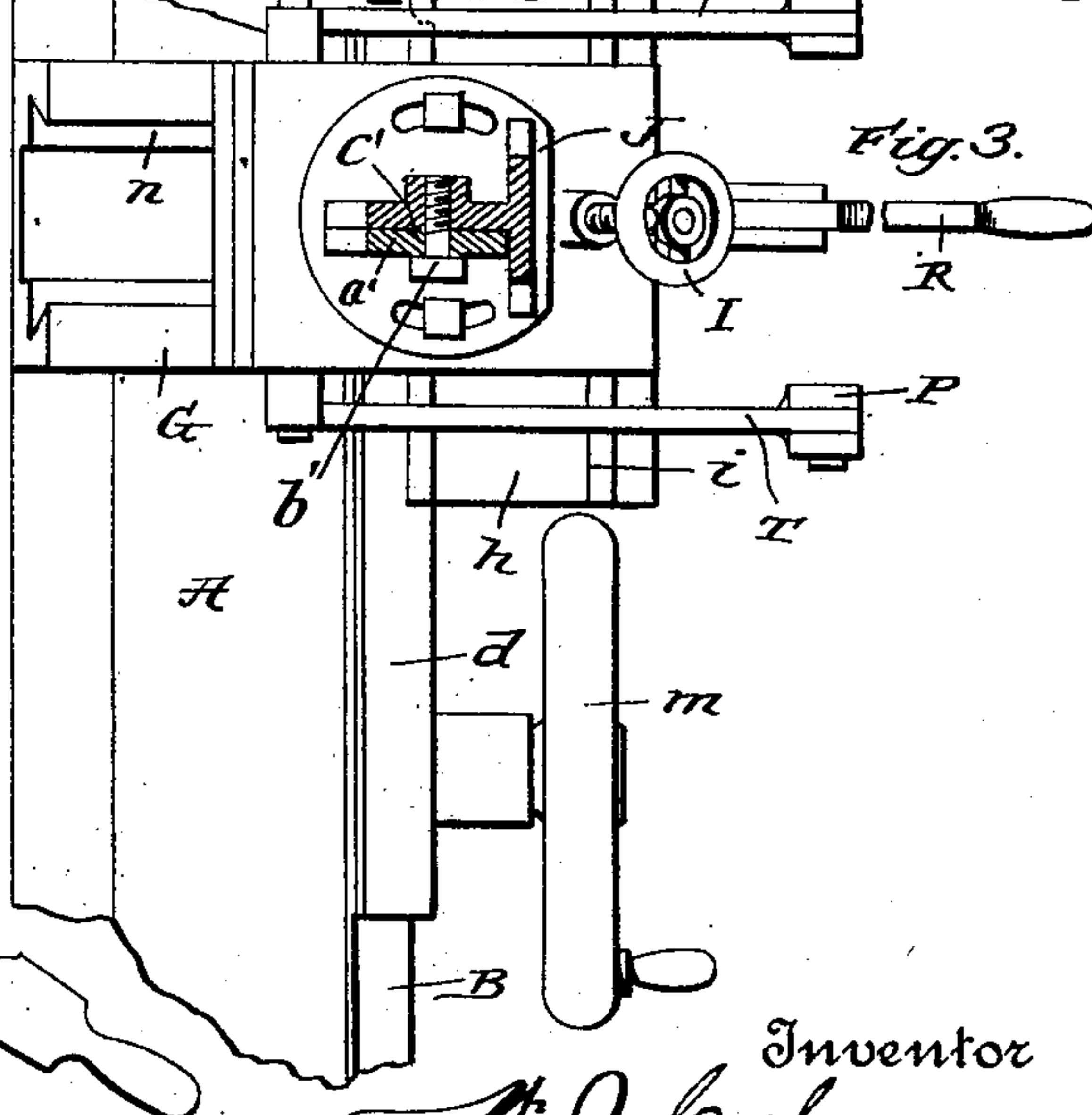


Fig. 3.



Witnesses  
C. H. Baader  
N. C. Haly

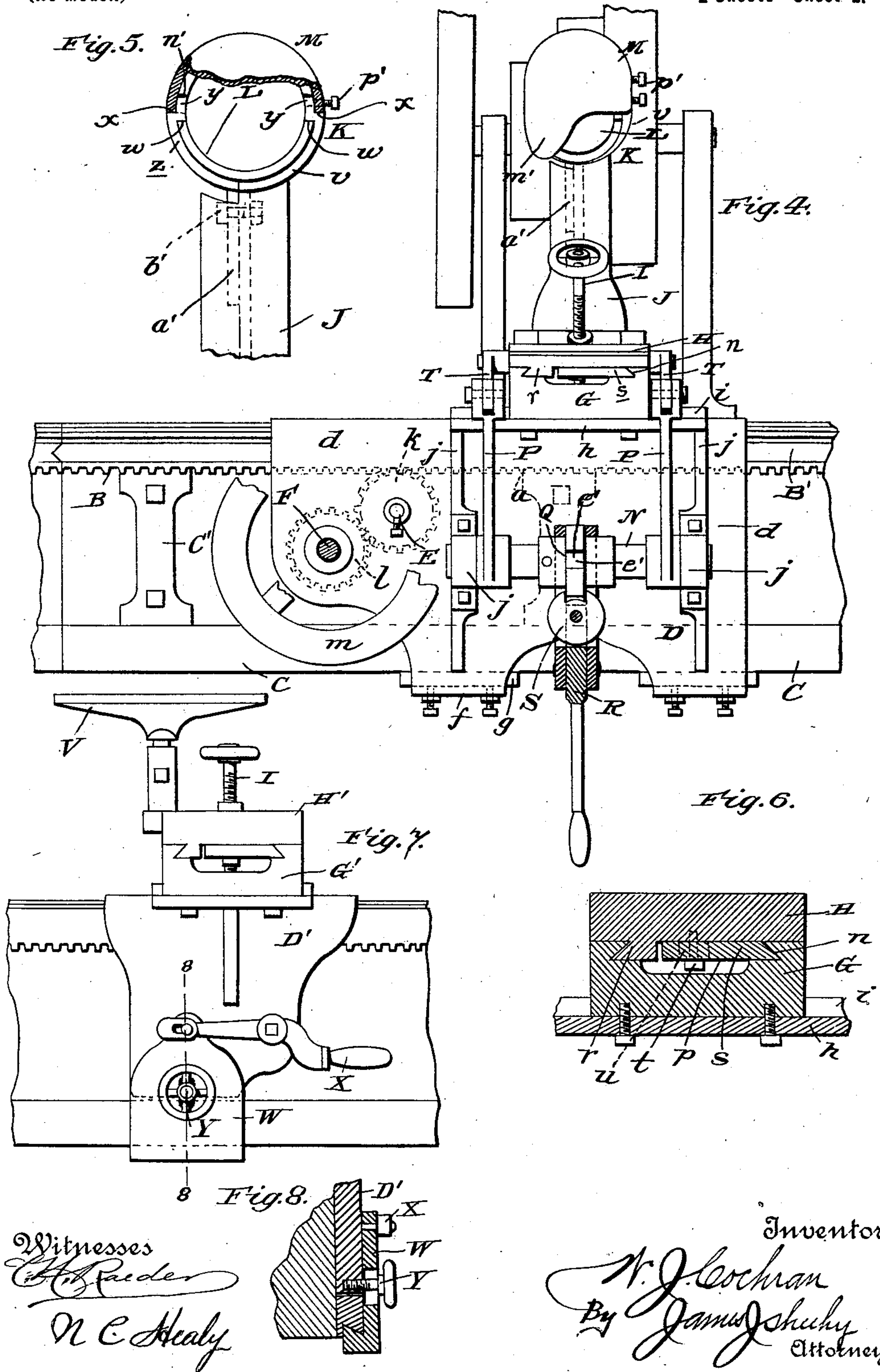
Inventor  
W. J. Cochran.  
By James J. Shuchy  
Attorney

W. J. COCHRAN.  
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2 Sheets—Sheet 2.



Witnesses  
*Chas. Raeder*  
*N. C. Healy*

Inventor  
*W. J. Cochran*  
By *James J. Shuey*  
Attorney



# UNITED STATES PATENT OFFICE.

WILLIAM JOHN COCHRAN, OF SAN FRANCISCO, CALIFORNIA.

## WOOD-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 697,607, dated April 15, 1902.

Application filed November 8, 1901. Serial No. 81,558. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM JOHN COCHRAN, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Wood-Turning Machines, of which the following is a specification.

My invention relates to improvements in wood-turning machines, and contemplates the provision in such a machine of means through the medium of which the corners of a piece of timber may be expeditiously "roughed" off—i. e., the timber reduced to a circular form and approximately the size desired in cross-section—and this with but a minimum amount of effort on the part of the operator and without subjecting him to the danger of being struck by flying chips.

The invention also contemplates equipping the machine embodying the roughing-off means mentioned with a tool-rest susceptible of quick and easy adjustment and adapted to be placed on the machine and used subsequent to the roughing-off operation.

Other advantageous features of the invention will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a transverse section illustrating a portion of a wood-turning machine embodying my improvements for roughing off the corners of a piece of timber or, in other words, reducing the same to a circular form and the approximate size desired in cross-section; Fig. 2, a similar view with the major portion of the improvements in elevation; Fig. 3, a horizontal section taken in the plane indicated by the line 3 3 of Fig. 1; Fig. 4, a front elevation of the improved machine with some parts in section; Fig. 5, an enlarged detail view, partly in elevation and partly in section, of the tool-holder and hood; Fig. 6, an enlarged detail vertical section taken in the plane indicated by the line 6 6 of Fig. 1; Fig. 7, a detail front elevation illustrative of the tool-rest in its proper operative position on the machine, and Fig. 8 a detail section taken in the plane indicated by the line 8 8 of Fig. 7.

Similar letters of reference designate corre-

sponding parts in all of the several views of the drawings, referring to which—

A is the bench or table of the machine, which is formed by parallel timbers, as shown in Fig. 1, or other suitable means. In addition to said bench the machine embodies means, such as spindles and a pulley on one of the same for holding and rotating the timber to be reduced; but as these latter form no part of my invention I have deemed it unnecessary to illustrate the same in detail.

B is a longitudinal guide on the front side of the bench. This guide preferably comprises an upper bar B' of the shape shown in cross-section, having a rack *a* at its under side and its upper side rabbeted and beveled, as indicated by *b*, a lower bar C, having its underside rabbeted and beveled, as indicated by *c*, and uprights C', interposed between and cast or otherwise formed integral with the bars B' C. The said guide may be connected to the front side of the bench in any approved manner, although I prefer to effect the connection by lag-screws passed through the uprights, as shown.

D is a carriage movable lengthwise on the bars B' C of the guide B. The said carriage in the preferred embodiment of the invention comprises a longitudinally-disposed vertical wall *d*, having an inward projection *e*, undercut or beveled to engage the upper side of the bar B, and also having clamps *f*, in which beveled shoes *g*, of brass or other suitable metal, are held in engagement with the under side of the bar C, a platform *h* extending outwardly from the upper portion of the wall *d* and having longitudinal ribs or projections *i* on its upper side and brackets *j*, which are interposed between and formed integral with or otherwise suitably joined to the wall *d* and platform *h*.

E is a short shaft extending inwardly from the carriage-wall *d* and bearing a gear *k*, intermeshed with the rack *a*, and F is a shaft journaled in said wall *d* and bearing at its inner end a gear *l*, intermeshed with the gear *k*, and at its outer end a hand-wheel *m*. By simply turning the said wheel *m* the operator is enabled to expeditiously and easily move the carriage in a longitudinal direction to and fro on the bench for a purpose presently described.



G is a slide-rest which is arranged on and held to the platform *h* by the ribs *i* thereof and is also arranged to overhang and rest a slight distance above the top of the bench, as best shown in Fig. 1, and H is a slide movable transversely—*i. e.*, in and out on the rest. The slide-rest has its upper side beveled or inclined downwardly and inwardly and is provided in said side with a dovetail groove *n*, while the inwardly and outwardly movable slide has its under side beveled in conformity with the upper side of the rest and is equipped with a dovetail projection *p*, movable in the complementary groove of the rest. Said dovetail projection comprises by preference a section *r*, formed integral with or fixedly connected to the slide, and a section *s*, adjustably connected to the slide by screws *t*, which extends through slots *u*, as best shown in Figs. 1 and 6. This construction is desirable, since it permits of the section *s* being readily adjusted on the slide to compensate for wear of either the slide or the slide-rest.

I is a hand-screw which bears in the slide H and is arranged to be turned into engagement with the slide-rest G to adjustably fix the slide with respect thereto—*i. e.*, limit the inward movement of said slide—and J is an upright, preferably of T form in cross-section, which is connected to and rises from the slide H. On this upright is the tool-holder K of my improvements, which preferably comprises a member *v*, of concavo-convex form in cross-section, formed integral with or fixedly connected to the upper end of the upright and having the inner and outer shoulders *w x* and the flange *y* at its free edge, a member *z*, also of concavo-convex form in cross-section, which has inner and outer shoulders *w x* and a flange *y* at its free edge, and also has a slotted stem *a'*, disposed alongside the upright J and in front of the T-head thereof, and a screw *b'*, which extends through the slot *c'* of the stem and into the upright. The concavo-convex tool (indicated by L) is arranged in the holder K between the inner shoulders *w* of the members thereof, and when the screw *b'* is loosened may obviously be adjusted endwise in and out or removed to give place to a new tool. When, however, the holder member *z* is pressed down hard on the edge of the tool and the screw *b'* is turned tight against the stem of said member *z*, the tool will be securely held against casual backward or other movement.

M is a concave hood which is designed, in conjunction with the tool L and tool-holder K, to form a tubular chute calculated to receive and convey the chips rearwardly. Said hood is provided at its rear or outer end and at the left side of said end with a depending lip *m'*, the purpose of which is to deflect the chips downwardly, and thereby remove the danger of the operator being struck. It also has interior shoulders *n'*, which are designed when the hood is in use to rest on the flanges *y* of the tool-holder members, while the edges

of the hood are designed to rest on the exterior shoulders *x* of said members. By virtue of this construction it will be observed that when the hood is fixed on the tool-holder members by set-screws *p'*, engaging the member *v*, or other means, a tube is formed the interior of which is perfectly smooth and forms no obstruction to the passage of chips.

N is a shaft journaled in the brackets *j* of the carriage D and provided with upwardly-extending arms P; Q, a disk fixed on said shaft between the arms thereof and provided with notches *e'* in its periphery; R, a lever which is fulcrumed on the shaft and straddles the disk thereof; S, a notched disk mounted in the lever and disposed at right angles to the disk Q, and T T links interposed between and connecting the arms P and the slide H. The connection of the links to the slide is effected by bolts *f'*, which take into threaded sockets *g'* in the slide, and in order that the throw or travel of the slide with respect to the longitudinal center of the work may be readily regulated to adapt the machine to timbers of various sizes in cross-section a plurality of the sockets *g'* is provided in either side of the slide, as best shown in Fig. 2.

When the disk S of lever R rests in one of the notches *e* of the disk Q, the lever is fixed to the shaft N, and in consequence the slide H and the tool may be conveniently adjusted or moved in and out through the medium of the lever, and the tool may be held to its work by the operator. When, however, the disk S is turned so that its notch is coincident with the disk Q, the lever is rendered free on the shaft and may be permitted to drop into a pendent position, so as to be out of the way of the operation.

In the practical operation of the machine the links T are connected to the slide H at the proper point to adapt the throw or travel of the slide to the size of the work to be roughed off, and the wheel *m* is turned so as to move the carriage D to a position opposite the pulleys of the lathe or machine, as shown in Fig. 4, in which position said carriage and its appurtenances will be out of the way. The timber to be turned is then secured in the lathe, and the carriage D is moved through the medium of wheel *m* to a point opposite the portion of the timber to be reduced, after which the lathe is started to rotate the timber. With this done, the operator, holding the wheel *m* with his left hand and the lever R with his right hand, raises said lever and through the medium of the same moves the slide H inwardly and forces the tool L into the timber and then adjustably fixes the slide to the slide-rest G through the medium of the screw I, or, in other words, limits the inward movement of the slide H. The carriage D is now moved through the medium of the wheel *m*, the tool L meanwhile cutting the timber, until said tool reaches the end of the portion to be reduced, when the screw I



is loosened, the tool forced farther into the timber through the medium of the lever R, and the screw I again tightened, after which the carriage D is moved to and fro through the medium of the wheel *m* until the timber is reduced to approximately the shape and size desired, the operator meanwhile holding the tool to its work through the lever R. Subsequent to this operation the screw I is loosened, the lever R is moved downwardly, and the carriage D is moved through the medium of the wheel *m* back to the position opposite the pulleys of the lathe or machine to give place to the tool-rest, which is lifted from the floor or other support and placed on the bench A, as shown in Fig. 7. By virtue of the inclined face of the slide-rest G being presented to the correspondingly-inclined face of the slide H it will be observed that in the event of the tool coming in contact with a knot or other hard place in the timber the slide-rest will prevent outward or rearward thrust of the tool and slide—i. e., “back kicking” of the slide—and enable the operator to hold the tool to its work through the medium of lever R without being jerked. Also the tool is held in a position slightly higher than the center of the timber to be turned, which is advantageous, because the edge is retained on the tool for a longer period than would otherwise be the case. Referring particularly to said Fig. 7, D' is a carriage carrying a slide-rest G', which overhangs the bench of the machine and is similar to the slide-rest G, and H' is a slide which is similar to slide H and is connected to the rest G' in the same manner that slide H is connected to slide-rest G and is equipped with one or more tool-rests V and also with a set-screw I, similar to that shown in Figs. 1 to 6. To the carriage D' is adjustably connected a clamp W, which is designed to be moved through the medium of a hand-lever X and adjustably fixed to the carriage through the medium of a screw Y. By virtue of this construction the tool-rest may obviously be quickly and easily secured on the bench A, and it will also be observed that said rest may be moved longitudinally and also transversely of the machine with great facility, so as to enable the operator to work to the best advantage in finishing the turning with a hand-tool. Subsequent to the finish of the turning operation the tool-rest and its carriage are removed from the bench, so as not to interfere with the manipulation of the carriage D and its appurtenances incident to the roughing off of another piece of timber.

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

1. In a wood-turning machine, the combination of a bench, a carriage movable longitudinally on the bench, a slide-rest on the carriage, overhanging the upper side of the bench, a slide held to and movable in and out on said

rest, a tool carried by and movable with the slide, a shaft journaled in the carriage, and having arms connected with the slide, and also having a notched disk, a lever fulcrumed on the shaft and straddling the notched disk thereof, a rotatable, notched disk carried by the lever and disposed at right angles to the disk of the shaft, and means for adjustably fixing the slide with respect to the slide-rest.

2. In a wood-turning machine, the combination of a bench, a carriage movable longitudinally on the bench, a slide-rest on the carriage, overhanging the upper side of the bench, and having its upper side beveled or inclined downwardly and inwardly, a slide held to and movable in and out on and having its under side beveled in conformity to the upper side of the slide-rest, means for adjustably fixing the slide with respect to the slide-rest, a tool carried by the slide, a shaft journaled in the carriage and having arms connected with the slide, and also having a notched disk, a lever fulcrumed on the shaft and straddling the notched disk thereof, and a rotatable notched disk carried by the lever and disposed at right angles to the disk of the shaft.

3. In a wood-turning machine, the combination of a bench having the lower and upper beveled guide-bars on its front side, a carriage having portions engaging said guide-bars, gearing for moving the carriage carried thereby and engaging one of the guide-bars, a slide-rest on the carriage, overhanging the upper side of the bench and having its upper side beveled or inclined inwardly and downwardly, and also having a dovetail groove in said side, a slide arranged on and beveled in conformity with the slide and having a dovetail projection arranged in the groove thereof, a tool carried by the slide, means for fixing the slide with respect to the rest, a shaft journaled in the carriage, and having arms connected with the slide, and also having a notched disk, a lever fulcrumed on the shaft, and a rotatable notched disk carried by the lever and disposed at an angle to and adapted to engage the disk of the shaft.

4. In a wood-turning machine, the combination of a tool-holder, concave in cross-section, a concave tool in said holder, and a concave hood secured on the holder and serving in conjunction with said holder and the tube to form a tubular chute.

5. In a wood-turning machine, the combination of an upright, a concave tool-holder member fixed with respect to said upright and having interior and exterior shoulders *w x* and a flange *y*, a concave tool-holder member adjustably connected with the upright and also having interior and exterior shoulders *w x* and a flange *y*, a concave tool arranged in the tool-holder between the interior shoulders *w* of the members thereof, a concave hood having its edges disposed on the exterior shoulders *x* of the tool-holder, and also hav-



ing interior shoulders arranged on the flanges  
y of the tool-holder members, and means for  
securing said hood on the tool-holder.

6. In a wood-turning machine, the combina-  
5 tion of a tool-holder, concave in cross-sec-  
tion, a concave tool in said holder, and a con-  
cave hood secured on the holder and having  
the depending lip *m'* at its rear or outer end.

7. In a wood-turning machine, the tubular  
10 chute arranged to receive the chips as the

same are cut, and having the deflecting-lip  
at its rear or outer end.

In testimony whereof I have hereunto set  
my hand in presence of two subscribing wit-  
nesses.

WILLIAM JOHN COCHRAN.

Witnesses:

JOHN HEINTZ,

DENNIS HIRREL.