

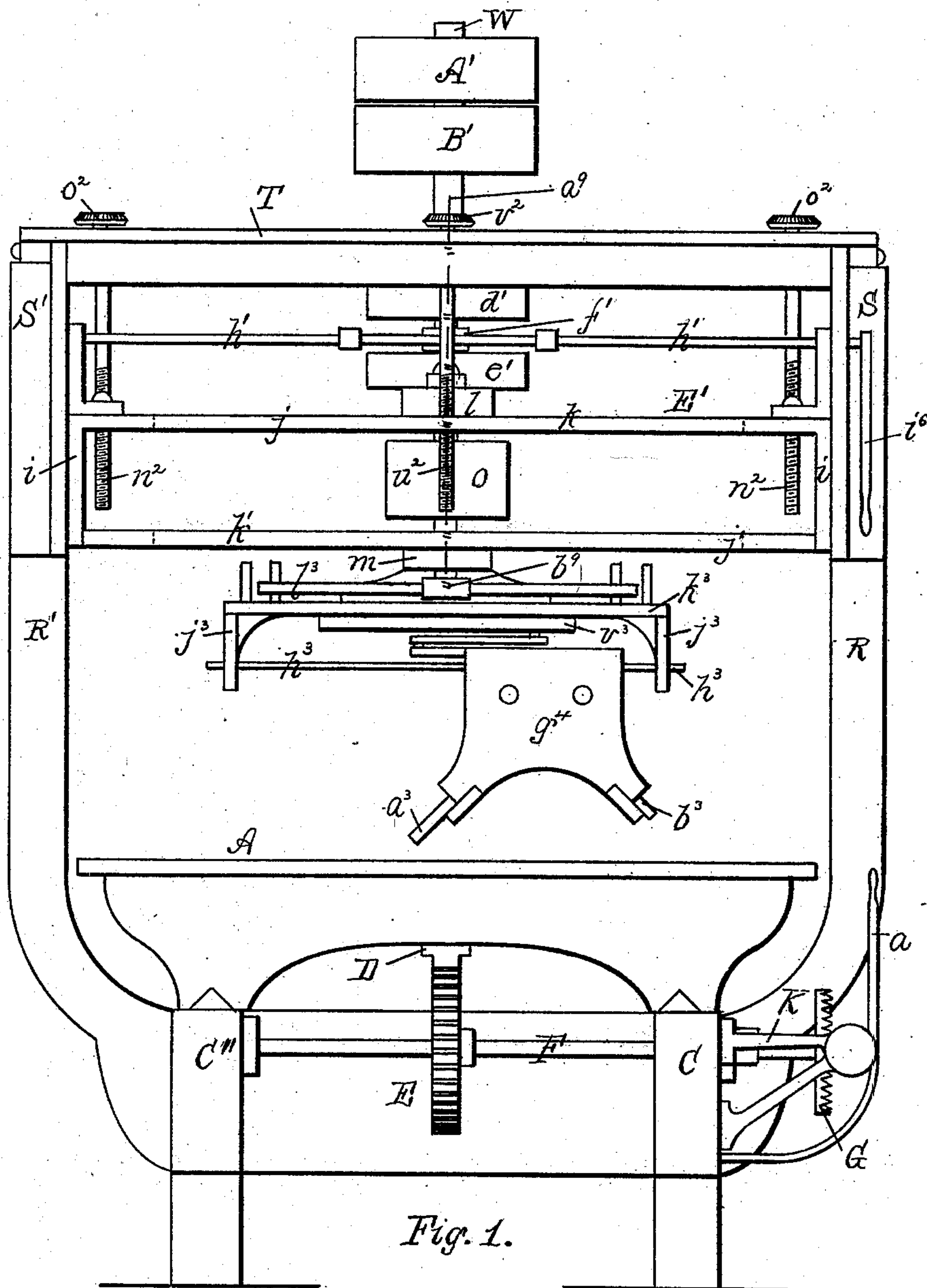
(No Model.)

4 Sheets—Sheet 1.

W. GOODMAN.
LEATHER DRESSING MACHINE.

No. 252,369.

Patented Jan. 17, 1882.



Witnesses.
H. C. Lodge
F. B. Simpson

Inventor.
Wm. Goodman.
J. Curtis, Atty.

(No Model.)

4 Sheets—Sheet 2.

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Fig. 2.

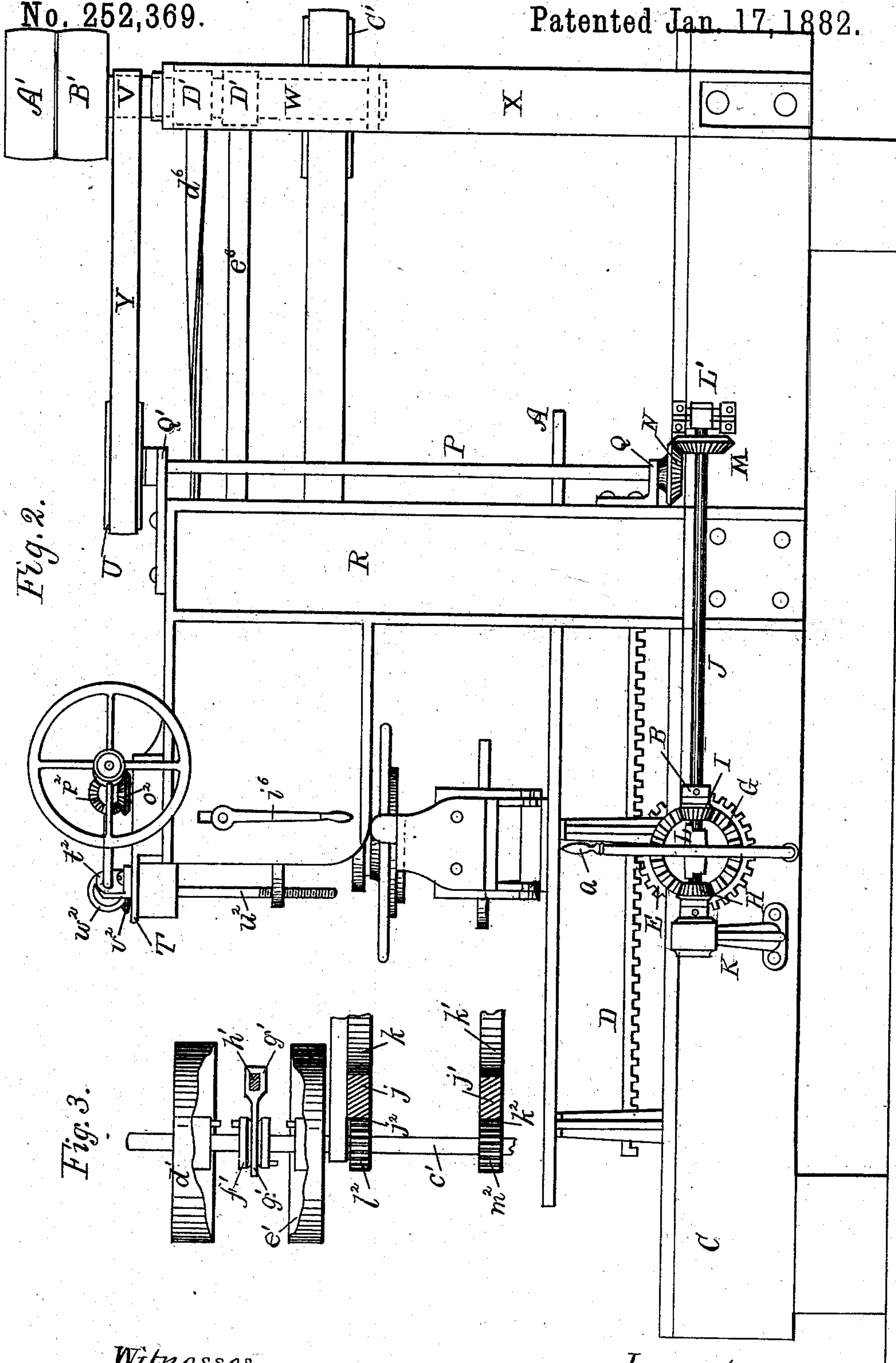
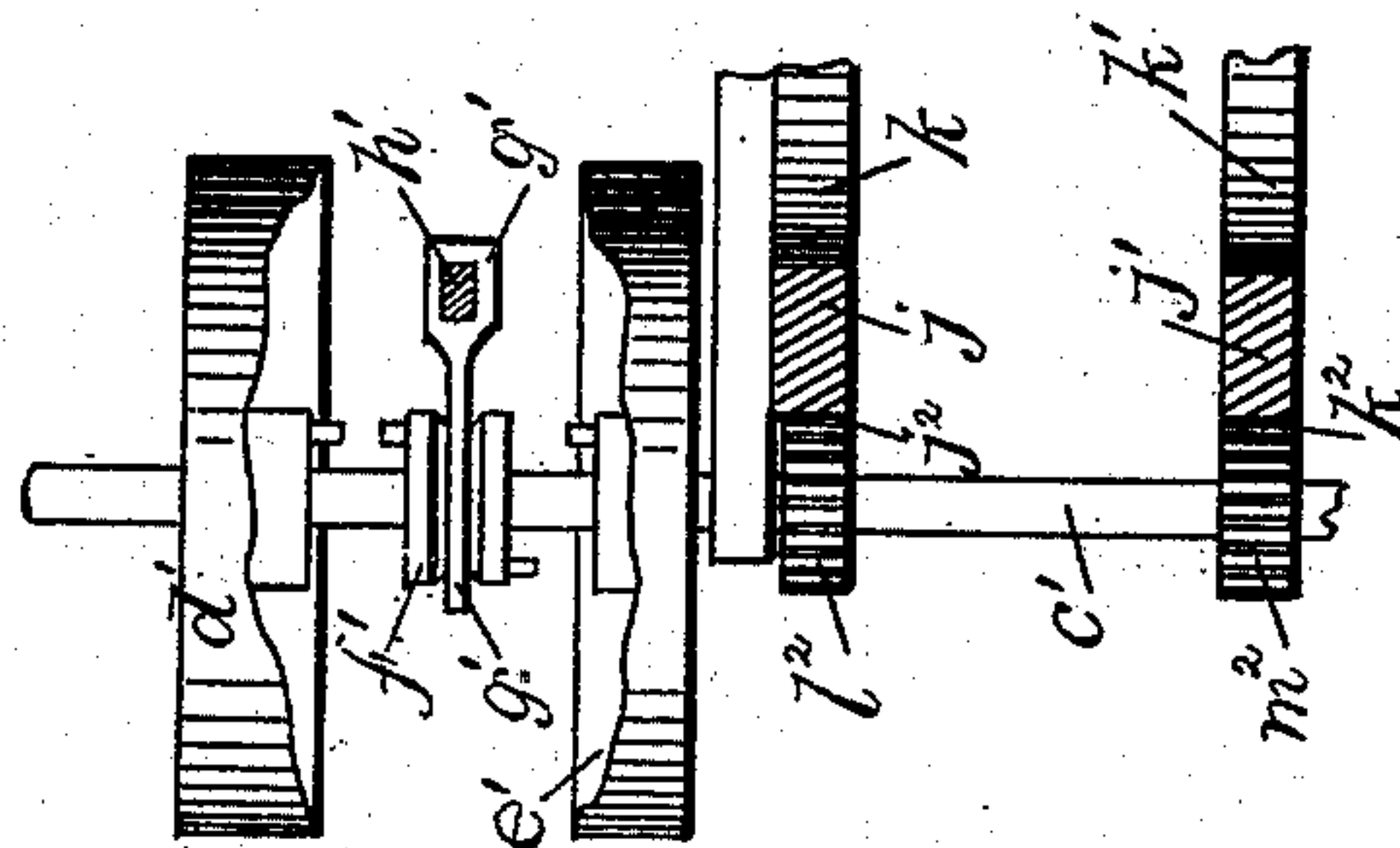


Fig. 3.



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Fig. 4.

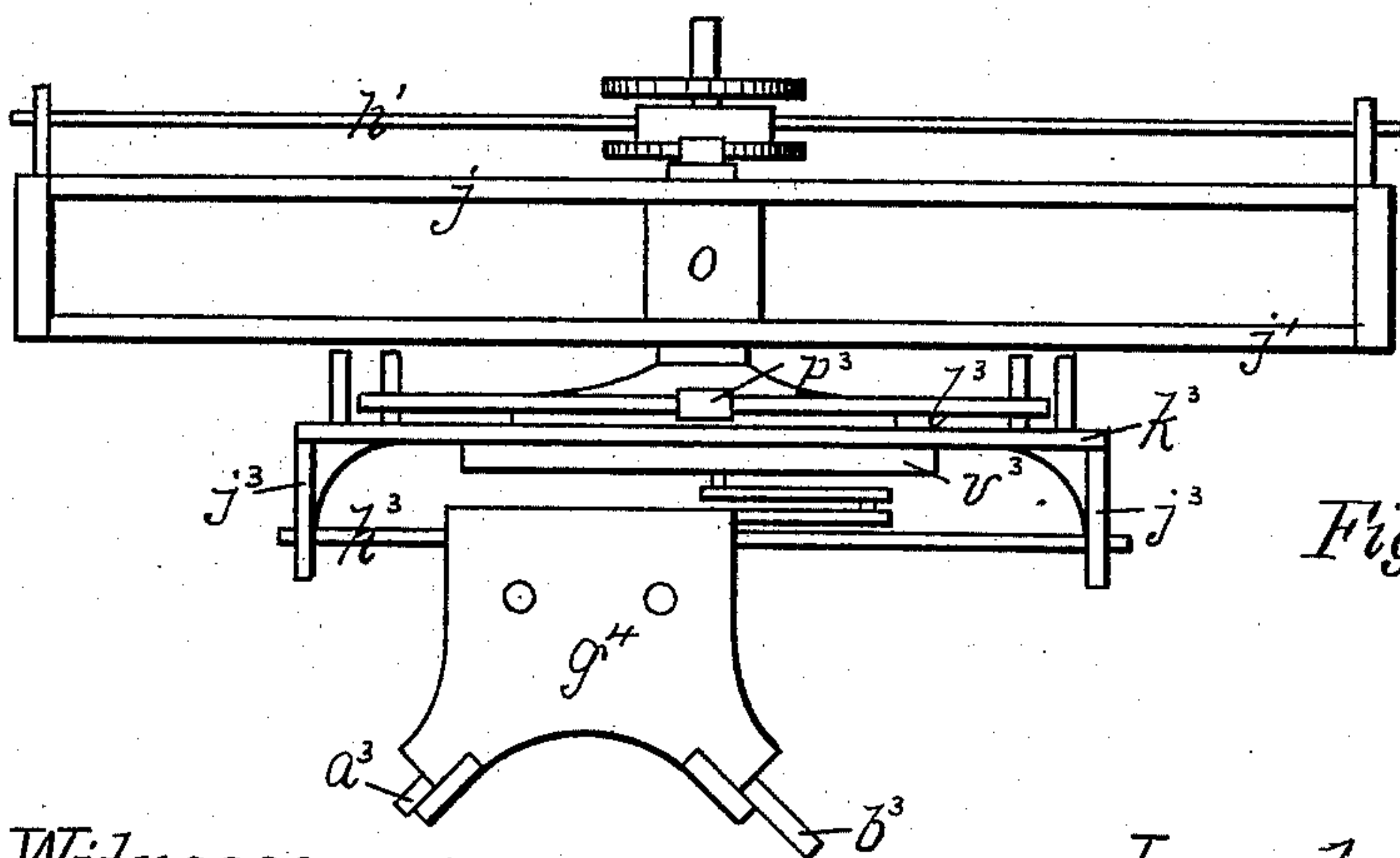
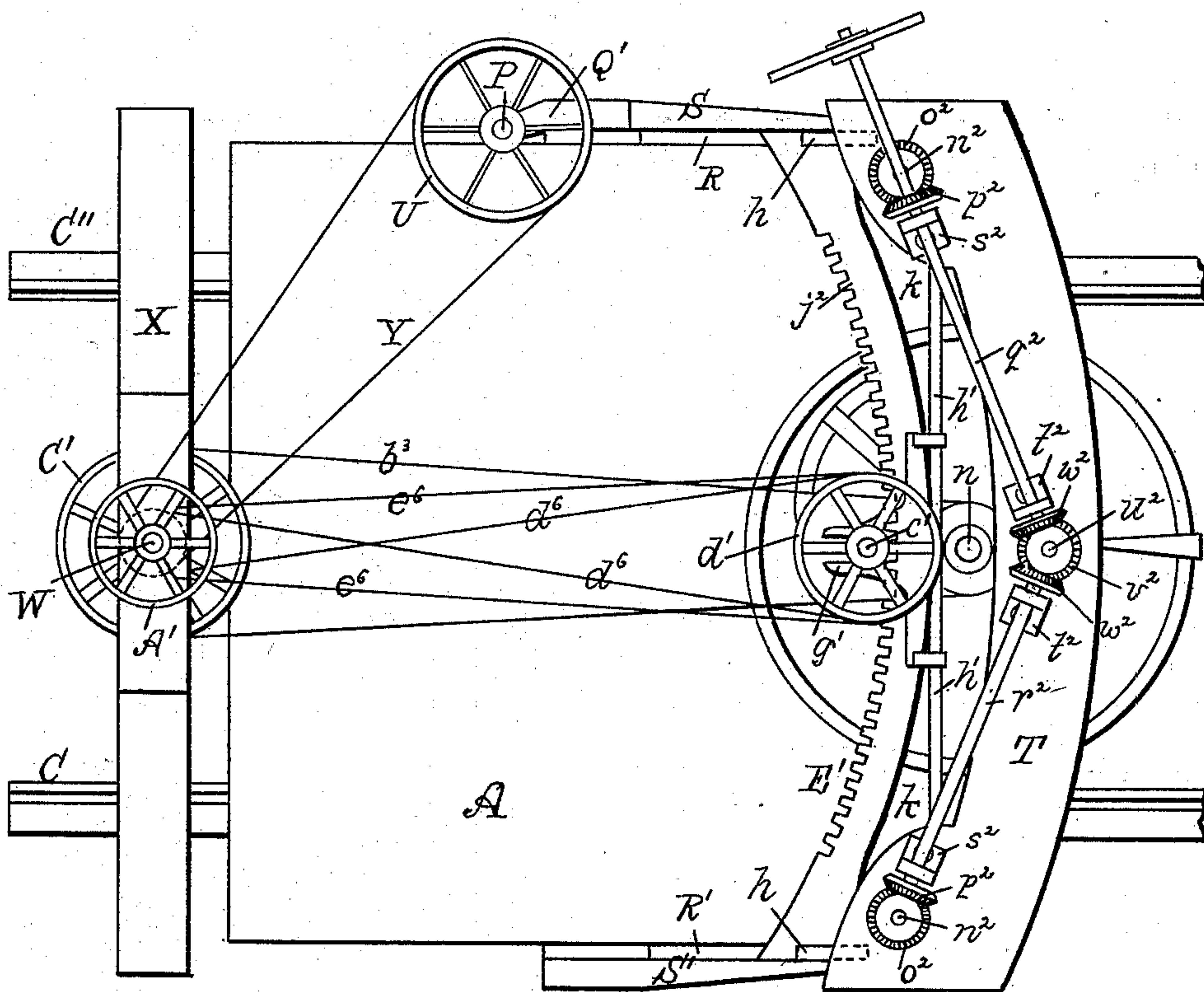


Fig. 5.

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(No Model.)

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Fig. 6.

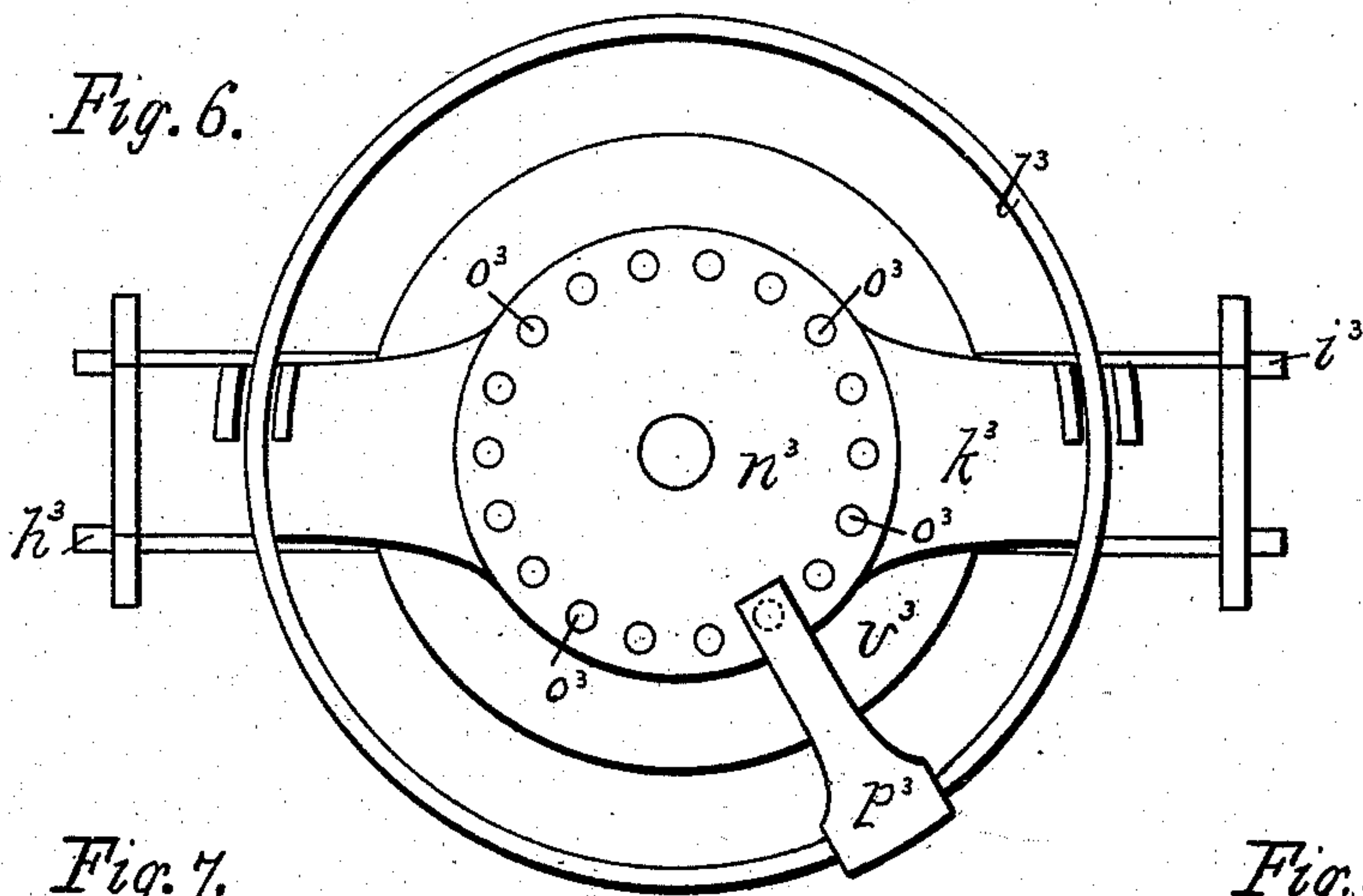


Fig. 7.

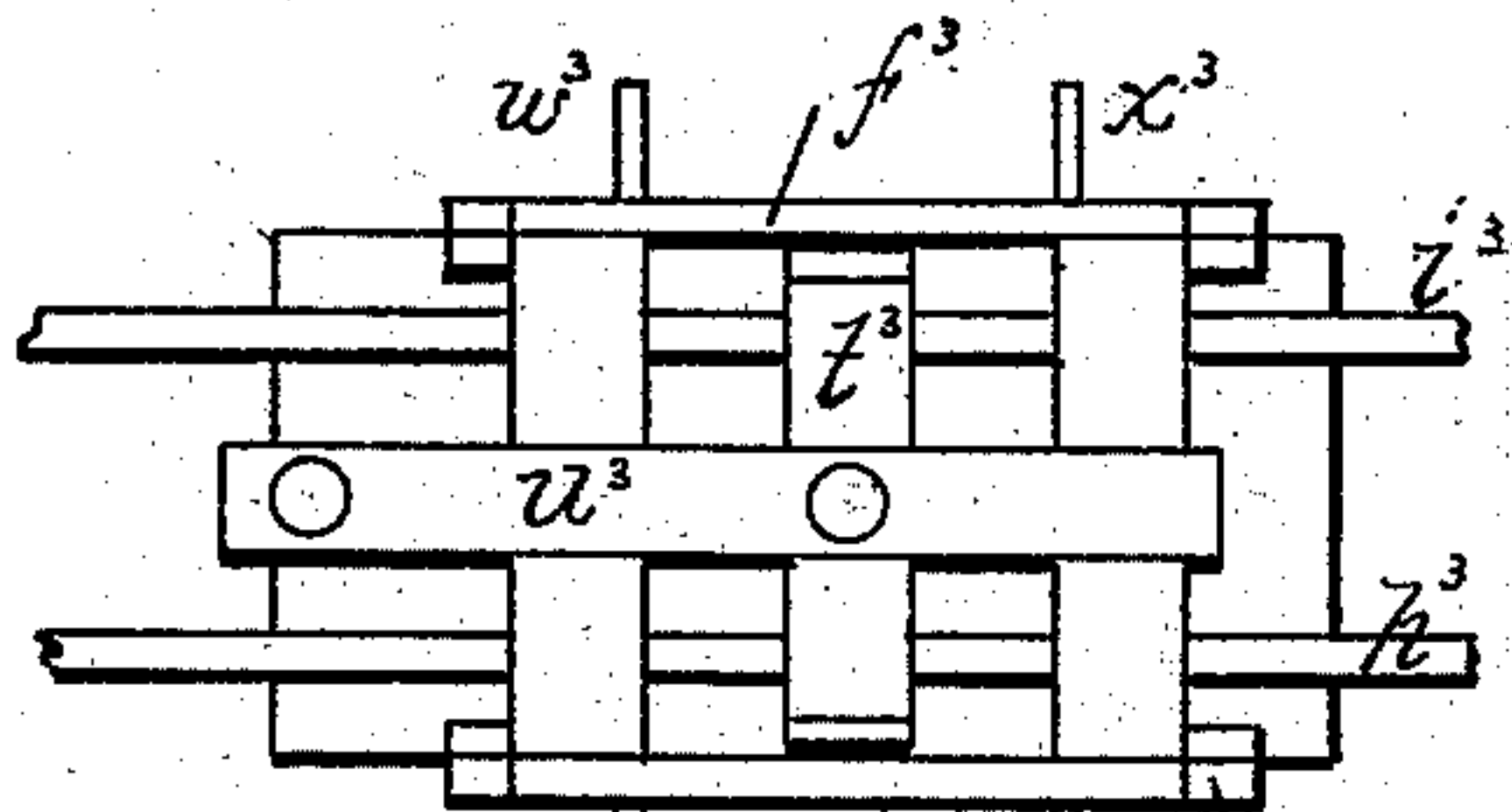


Fig. 8.

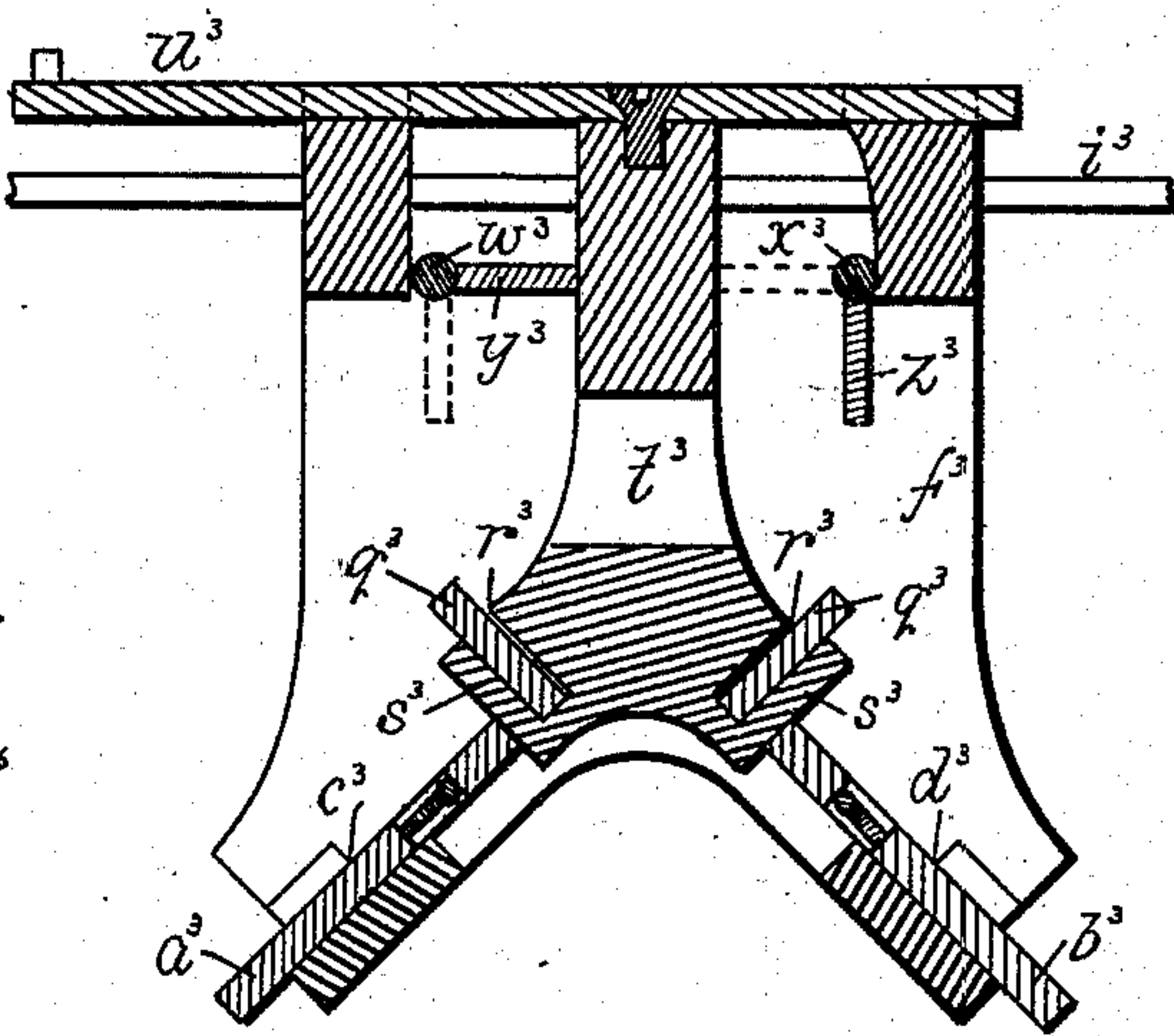


Fig. 9.

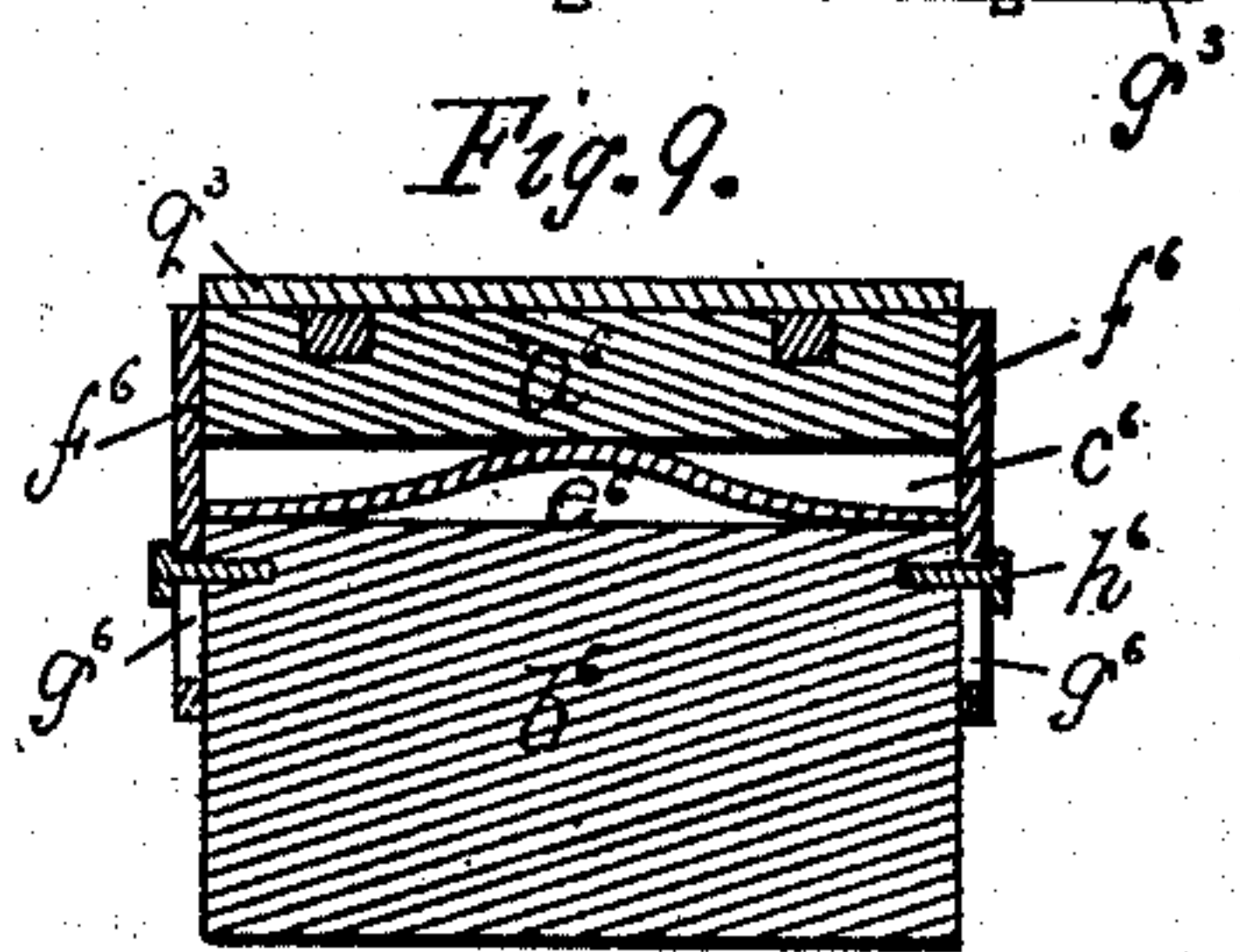


Fig. 10.

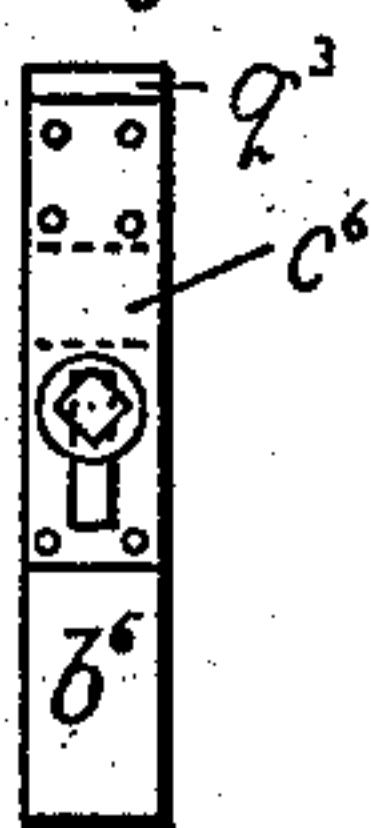
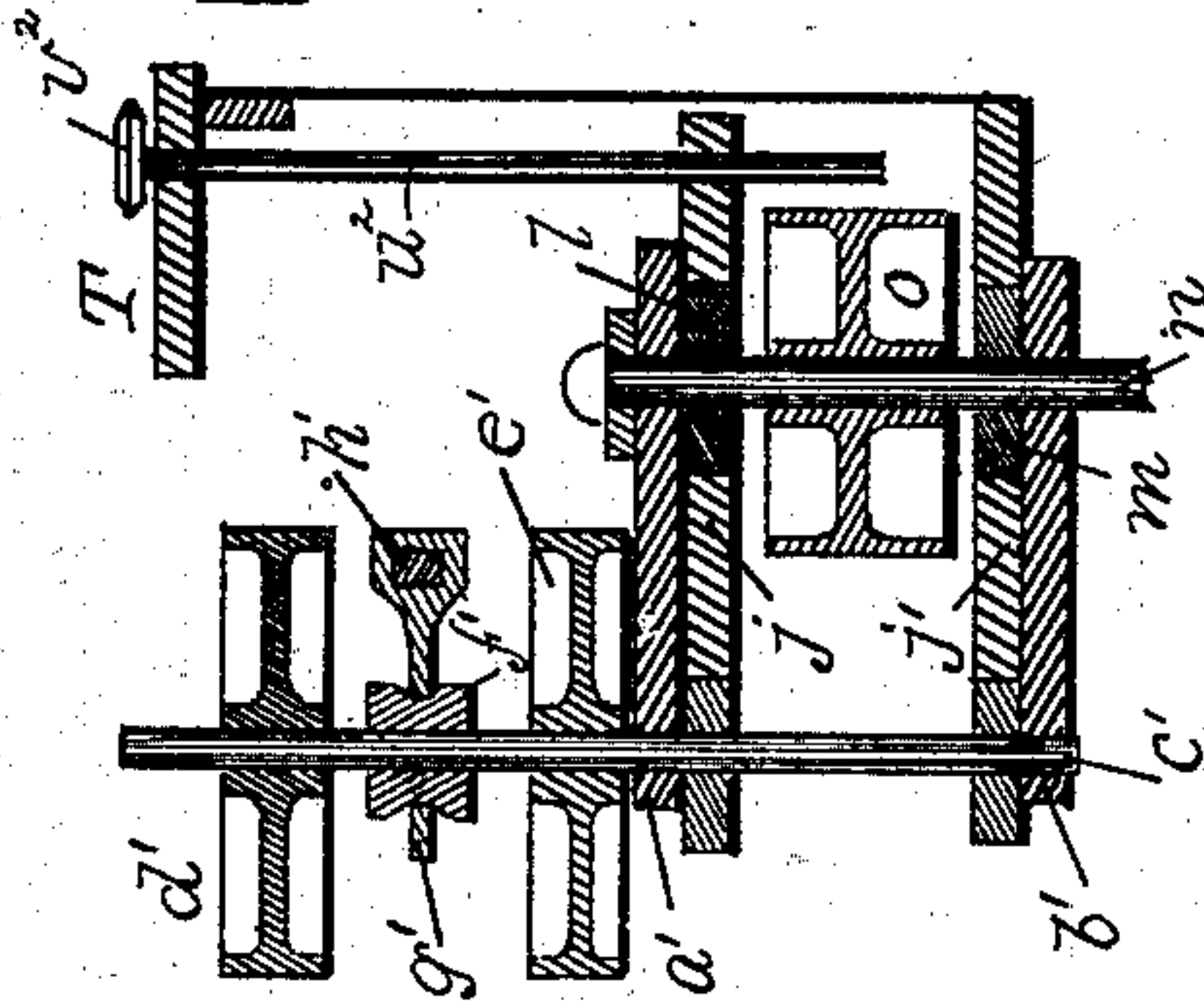


Fig. 11.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM GOODMAN, OF BOSTON, MASSACHUSETTS.

LEATHER-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 252,369, dated January 17, 1882.

Application filed July 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GOODMAN, a subject of Great Britain, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Leather-Dressing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as 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 letters or figures of reference marked thereon, which form a part of this specification.

This invention is an improvement upon a class of machines shown and described in Letters Patent of the United States issued to myself on the 3d day of May, 1881, for improvements in machinery for dressing leather, the novel features in which consist in a skin-supporting table adapted to travel to and fro on suitable guides in a horizontal plane, and the combination, with such table, of dressing-tools connected adjustably with carriers which are mounted upon and traverse horizontal bars disposed in a suitable carriage above the table, the carriage, carrier, and tools being adjustable transversely of and vertically with respect to said table.

My present improvements relate to details of mechanism for raising and lowering bodily the tool-carriage and its adjuncts for effecting the traverses of such carriage and its adjuncts laterally of the table, for raising and depressing the dressing-tools in their carrier, and for shipping the belt from one to the other of the two pulleys which effect the vertical movement of the tool-carriage.

The drawings accompanying this specification represent, in Figure 1, an end elevation; Fig. 2, a side elevation of a machine embodying my improvements; Fig. 3, a sectional elevation of the clutch-mechanism for moving the carriage across the line of travel of the table. Fig. 4 is a plan of the machine, while Fig. 5 represents an elevation of the tool-carriage. Fig. 6 is a plan of said carriage; Fig. 7, a top view, and Fig. 8 a vertical longitudinal section, of the tool-stock. Fig. 9 is a longitudinal section through the tool, and Fig. 10 an end view of same. Fig. 11 is a vertical section in plane $a^9 b^9$ of Fig. 1.

In these drawings, A represents the flat horizontal table upon which the skins to be dressed are placed, this table resting and sliding upon the upper edge of horizontal parallel beams or rails C C'', erected upon the floor or foundation of the apartment in which the machine is situated, these beams constituting the ways or guides which give direction to the reciprocating traverses of the table.

To effect the requisite reciprocating traverses of the table to and fro of the ways C C'', I add to the under side of such table, and longitudinally thereof, a toothed rack, D, and meshing with this rack I employ a driving-gear, E, which I affix to a horizontal shaft, F, disposed below the table at right angles to its path of movement, and mounted in suitable bearings in the rails or beams C C'', before named, this shaft F being in turn rotated by a bevel-gear, G, affixed to one end of it outside of the adjacent beam, C.

Operating with the gear G, I employ two conical bevel-gears, H I, of equal size and capacity, such gears loosely encompassing one end of a horizontal shaft, J, which is mounted in brackets K L', affixed to the outside of the beam C.

The gears H I are prevented from end play upon the shaft J, one by the bracket K and the other by a collar, B, secured to the shaft, and both of such gears engage the gear G. To clutch one or the other of the gears H I to the shaft J, according to the direction in which it is desired to drive the latter, I employ a tubular hub, L, which loosely encompasses such shaft between said gears and is connected with it by a spline-and-groove connection which compels the hub to rotate with the shaft, but permits it to slide longitudinally thereon.

A hand lever or shipper, a , is connected with the beam C and operates the hub L; and by means of this shipper the hub is made to engage one or the other of the gears H I, and thereby transmit the rotations of the shaft J in one or the other direction to the gear G, and through the latter and the shaft F gear E and rack D effect a traverse of the table A.

The shaft J is put in motion by a bevel-gear, M, fixed to its rear end, which is engaged and driven by a twin gear, N, secured to the lower end of a vertical shaft, P, which is supported in brackets Q Q', secured to the rear side of one

of two upright columns or posts, R or R', which are erected respectively upon the beams C C' and upon opposite sides of the table A, each of these posts terminating at front in a horizontal bend or housing, S or S', these housings being
5 spanned by a horizontal beam or bridge, T, and the posts, beams, and connecting-bridge constituting the support of the tool-carrying mechanism, to be hereinafter explained.

10 To the upper end of the shaft P, I affix a pulley, U, about which, and a pulley, V, secured to a vertical driving-shaft, W, mounted in bearings in an arched standard, X, erected upon and spanning the rear ends of the beams C C',
15 I pass an endless band, Y.

The shaft W is furnished with the ordinary fast and loose pulleys, A' B', and carries at its lower end a second fast pulley, C', and above this latter pulley a double fast pulley, D', or
20 pair of fast pulleys. The arrangement of the table and the mechanism for driving it, as above described, resembles the corresponding parts of a planer in general use in machine-shops for planing metal, and is a compact, simple, and
25 powerful device for holding the skins while subjected to the powerful thrusts of the dressing-tools; and in practice I propose to add to two diagonally-opposite corners of the table steps upon which the attendant may stand and travel
30 with it, in order the more readily and easily to apply and remove the hides or sides of leather.

The mechanism for supporting and operating the dressing-tool is composed as follows: To the inner side of the front end of each housing S S', I add vertical ways or guides h h', and sliding upon these guides in a vertical plane at right angles to the path of movement of the table A, I employ a horizontal carriage, E', which constitutes the support of the movable
40 tool carrier or head, such carriage in the present instance being composed of vertical side housings, i i, spanned and united at their upper and lower ends by horizontal bars j j', each of such bars having a vertical longitudinal slot,
45 k or k', to receive and constitute a guide to a tubular hub, l or m. A vertical shaft, n, extends through the bores of the hubs l m; and I affix to this shaft, intermediate between the said hubs, a fast pulley, o, about which and the pulley C',
50 fixed to the shaft W, before named, an endless band, b³, travels and puts the said shaft n in rotation.

The housings and bars above described constitute a supporting frame for the movable tool-carriage, hereinafter described.
55

To enable the shaft n and the dressing-tools carried by it to be moved bodily transversely of the table A in order to adapt such tools to operate upon the entire width of the skins upon such table, I proceed as follows: To the upper end of the upper hub, l, and the lower end of the lower hub, m, before named, I secure and extend rearward horizontal ears or brackets, a' b', which constitute bearings to support a
65 vertical shaft, c', the lower end of which is stepped in the bracket b', while its upper end

risers above the bracket a' and carries two loose pulleys, d' e', which are put in rotation by bands d⁶ e⁶, passing about them and the pulley D', before named, one of such bands being loosely
70 crossed. Intermediate between the pulleys d' e', last named, I mount upon the shaft c' a tubular hub, f', which is connected with it by a spline-and-groove connection, and at each end is formed with spurs to engage corresponding
75 spurs upon the adjacent ends of the hubs of the pulleys, by means of which the said hub f' may be locked to one or the other of such pulleys, after the manner of clutches of this class in general. (See Fig. 3.)
80

To ship or move the hub f' into engagement with one or the other of the pulleys d' e', or to an idle intermediate position, I employ a horizontal forked plate, g', which embraces a peripheral groove in the said hub, and its front
85 end or base is secured to a horizontal rock-shaft, h', which is journaled at its ends within the upper part of the carriage E', one end of such shaft protruding beyond the outer face of the adjacent housing and having a lever, i⁶,
90 affixed to it by which it may be rocked in its bearings.

Upon the rear edge of each bar j or j', I cut a toothed rack, j² or k², and I secure to the shaft c' two pinions, l² m², which respectively
95 engage such racks, it being understood that the said racks j² k² are arcs of circles struck from the axis of the shaft W, before named.

The two bands d⁶ e⁶ travel in opposite directions. Hence if the shaft h' is rocked in its bearings in a direction to raise the plate g' and throw the clutch f' into connection with the pulley d', the tool-carriage is forced to traverse the bars j j' in one direction laterally of the table, while if the position of the clutch is reversed by a reverse rocking of the shaft the tool-carriage is forced in the opposite direction.
105

To raise and lower the carriage E' and the dressing-tools with respect to the table, or the table and the skins being operated thereupon, in order not only to elevate the tools sufficiently above the table to permit of introduction and removal of such skins, but to regulate the degree of pressure with which such tools shall act upon the skins, I employ at each end of such
110 carriage E' a vertical screw-threaded shaft, n², which at its lower end screws through the upper part or bar, j, of such carriage, and at its upper end is journaled in the bridge-plate T, before named, as spanning the tops of the housings S S', while at its extreme upper end and above such bridge each shaft has affixed to it a bevel-gear, o², which is engaged and driven by a twin gear, p², which is affixed to horizontal shafts q² r², mounted in bearings s²
115 t², erected upon the bridge T.

To insure greater effectiveness in raising and lowering the carriage E', I employ a third vertical screw-shaft, which is shown at u² as screwing through the bar j, and at its upper end carrying a bevel-gear, v², which engages and is driven by two bevel-gears, w², affixed onto each
130

inner end of the shaft $q^2 r^2$. A rotation of the shaft r^2 (which is provided with a hand-wheel) in one direction rotates the three screws in a direction to raise the carriage E' , and vice versa.

5 The manner of mounting and operating the dressing-tool is as follows: These tools are shown at $a^3 b^3$, two in number, and as thin flat slabs of stone or other material, supported and sliding in grooves or guides $c^3 d^3$, formed in the
10 inner faces of the lower parts of two vertical housings, $f^3 g^3$, which are united at top and constitute a furcated head, g^4 , which is supported upon and slides to and fro of two horizontal rods, $h^3 i^3$, the ends of which are secured
15 to pendent ears j^3 of a carrier in the form of a horizontal yoke-shaped plate, k^3 , which at its center loosely rotates upon the lower part of the hub f' , before named, such carrier being provided with a circular hand-rail, l^3 , pivoted
20 to its upper part, as shown at $m^3 m^3$, by which its change in position axially upon the hub f' may be readily effected.

The purpose in mounting the tool-carrier loosely upon the hub f' and providing it with
25 a hand-rail, as stated, being to enable it to be changed in position radially about such shaft to adjust the direction of the stroke of the tools upon the skin, in order that all portions of the latter may be effectually treated or the work
30 carried on from the center of the skin outward in all directions, if desirable.

I propose to add between the upper edge of each tool and its stock a spring of suitable construction to equalize the pressure of the
35 tool upon the skin.

To arrest and lock the tool-carrier k^3 in any given position and thereby relieve the attendant of the great labor of holding by manual force, I affix to the extreme lower end of the
40 tubular hub f' a circular horizontal disk, n^3 , pierced with a concentric range of holes, $o^3 o^3$, &c., and operating with those holes I employ a spring-latch, p^3 , secured to the head-rail and provided at its inner end with a spur to enter
45 any one of the holes.

The dressing-tools $a^3 b^3$ are placed upon opposite sides of the center of the head g^4 , and are sloping or inclined in order to exert the best action upon the skin; and in order to lift
50 each tool during its retreat movement above the surface of such skin and to lower it upon the skin during its active stroke, I proceed as follows: Each tool has a pendent spur, q^3 , upon its inner edge, and the two adjacent ends of these spurs are embraced by notches $r^3 r^3$,
55 formed in the lower ends of ears $s^3 s^3$, depending from opposite sides of a stock or plate, t^3 , disposed within the head g^4 , and sliding back and forth therein, the reciprocating traverses
60 of this plate t^3 , as well as the traverses of the head g^4 upon the bars $h^3 i^3$, being effected by a link, w^3 , one end of which is pivoted to the upper part of such plate and the other eccentrically to the under side of a horizontal disk,
65 v^3 , secured to the extreme lower end of the shaft.

The arrangement of the disk v^3 , link w^3 , and stock or plate t^3 , with the dressing-tools is such that a rotation of the disk effects, after the manner of an ordinary crank-wheel, a traverse in
70 each direction of the head g^4 upon the supports $h^3 i^3$; but in addition to this movement the effect of the link is also to effect at each traverse of the head, as stated, a sliding movement of the stock t^3 laterally within the head. 75

It will be seen that a sliding lateral movement of the stock t^3 within the head g^4 in either direction has a tendency to lower one dressing-tool and raise the other, and the arrangement of parts, as before described, is such that as
80 the head travels in one direction the advance or forward tool is depressed and scrapes upon the skin, while the rearward tool is lifted above such skin until as the head reaches the extreme of its traverse and is about to return, the rear-
85 ward tool becomes the front one and the link first exerts its function to move the stock within the head and lower such tool into contact with the skin (the head remaining stationary while this takes place) and raise the opposite
90 tool, and then, as the stock brings up to a bearing against the head, continues its function to move the head and the tools bodily upon the guides without change in position of the tools within the head until the limit of the traverse
95 in the opposite direction is reached, when the link exerts its functions as before to first change the positions of the tools within the head and then effect a traverse of the whole in the direction first named. 100

To suspend the function of either of the dressing-tools at the pleasure of the attendant, as frequently becomes necessary in machinery of this class, I employ two parallel horizontal
105 rock-shafts, $w^3 x^3$, which I journal in the upper part of the head g^4 upon opposite sides of its center and at right angles to the path of movement of such head, and I affix to the inner side of each shaft a rigid wing or fin, y^3 or z^3 .

I find by experiment that it is very necessary
110 in operating my machine that the tools should have some yielding movement, as when they meet with obstacles or uneven portions of the hide in their traverses over it. To this end I propose to form the tool proper of two portions,
115 and attach it in the manner as hereinbefore described. These two portions (shown in Figs. 9 and 10 as a front and side elevation) comprise the tool proper, and divide it into an upper and lower portion, $a^6 b^6$. The upper portion is se-
120 curred to the tool-stock, as shown in Fig. 8, but the lower portion is separated from it by a space, c^6 . This space contains a spring, e^6 , for the purpose of making the tool elastic or yielding. To each side of the tool I attach a thin
125 plate, f^6 , and in this I cut an elongated slot, g^6 , sufficient to allow of the action of the spring e^6 with lower portion, b^6 . Through this slot I pass a bolt, h^6 , which attaches and makes the lower portion integral with the upper in so far
130 as its advance or retreat movements go. The upper portion, a^6 , resting firmly against the

stock or plate t^3 , it follows that when the lower portion, b^6 , of the tool meets any obstacle in its traverses, said portion is thrust back, compressing the spring e^6 , and yielding slightly, but again resuming its position, owing to the compression of the spring behind it.

Springs of different strength may be used to advantage on the various grades of stock to be treated, and I find this method very efficient and effective. The wings or fins $y^3 z^3$ are so situated that when in a vertical position they are beyond the throw of the stock or plate in its traverse in either direction, but when turned to a horizontal position they intercept such stock and shorten the length of its traverse within the head, and in so doing prevent the lowering into active operation of the tool carried by such stock.

By means of the rock-shafts $w^3 x^3$ and wings $y^3 z^3$ the attendant may suspend the functions of either one of the tools, which often becomes necessary in order that a stroke shall be given in only one direction—for instance, when working out the flanks or corners of the skin.

In operating with this machine an attendant stands upon each step of the table and travels with the latter, as before explained; and a third attendant manipulates the hand-rail l^3 and the crank-shaft, which raises and lowers the tool-carriage E' , while a fourth controls the shipper, which throws the gears H I into or out of action. Piles of skins to be treated are to be located at points contiguous to the extremes of movements of the table, and in beginning two skins are laid upon the table lengthwise of the latter. The driving-pulley V is now put in revolution, and the dressing-tools caused to move backward and forward, as explained, and the carriage E' is next lowered until the tools come in contact with the skin. The table is now, by means of the shipper a , moved forward or backward, as the case may be, to the extent requisite to go over the skins from end to end as often or as long as occasion may require, while at the same time the carrier k^3 , by means of its hand-rail, is changed in position axially upon the hub f' as often or as long as may be necessary to act in any given direction upon the skin radially of such hub, while, finally, the shipper is to be operated at such times as it is desirable to move the tools bodily across the skins to act upon the entire width of the same.

I do not broadly claim a yielding spring-pressed tool or slicker, believing this to be old. I claim—

1. In combination with the tool-supporting carriage, the screws n^2 , journaled with the machine, and engaging the carriage, and adapted to be rotated by gears fixed to their upper ends, and the shafts $q^2 r^2$, with their gears p^2 , said de-

vices operating as mechanism for raising and lowering the tool-supporting carriage, substantially as set forth.

2. The combination of toothed racks $j^2 k^2$, pinions $l^2 m^2$, and shaft c' with the traversing tool-carriage and the table, substantially as set forth.

3. The means described for effecting traverses of the tool-carriage and tools bodily in opposite directions, consisting of the toothed racks $j^2 k^2$, pinions $l^2 m^2$, carried by the shaft c' , pulleys $d' e'$, rotating in opposite directions, and mounted loosely upon such shaft h' , and the clutch f' , sliding upon such shaft and adapted to engage either of the pulleys.

4. The combination of a table, a supporting-frame, and a carriage adapted to travel horizontally on said frame with a vertical shaft, c' , journaled in said carriage, a pair of loose pulleys on said shaft, an intermediate sliding clutch splined to said shaft, a forked plate, g' , which engages with the clutch to ship and unship the same, and a rock-shaft which operates said shipping-plate, whereby the rocking motion of said rock-shaft causes one or the other of said pulleys to turn with shaft c' , substantially as set forth.

5. In combination, the head g^4 , supported upon the rods $h^3 i^3$, sliding plate or stock t^3 , with its notched ears j^3 , and the dressing-tools sliding within the head and changed in position therein by the ears, substantially as stated.

6. In combination with the head g^4 , sliding stock or plate t^3 , and tools $a^3 b^3$, the rock-shaft $w^3 x^3$, with their wings $y^3 z^3$, substantially as herein set forth and described.

7. In combination with the head g^4 and stock t^3 , the disk n^3 and its link w^3 , connected with the stock and operating to effect the movement of both head and stock, substantially as stated.

8. In combination with the head g^4 , sliding stock or plate t^3 , the rock-shafts $w^3 x^3$, with their wings $y^3 z^3$, and the tools $a^3 b^3$, each consisting of two portions, $a^6 b^6$, with an intervening spring, e^6 , all as and for the purposes described.

9. The combination, with the head g^4 supported upon the rods $h^3 i^3$, sliding plate t^3 , with its notched ears j^3 , of the dressing-tools formed in two parts with the slotted strap f^6 , bolt h^6 , and the intervening spring, e^6 , whereby an elastic or yielding movement is imparted to said tools, substantially as herein described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM GOODMAN.

Witnesses:

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F. G. SIMPSON.