

(No Model.)

3 Sheets—Sheet 1.

W. H. GRIFFITHS.
BARREL STAVE MACHINE.

No. 273,274.

Patented Mar. 6, 1883.

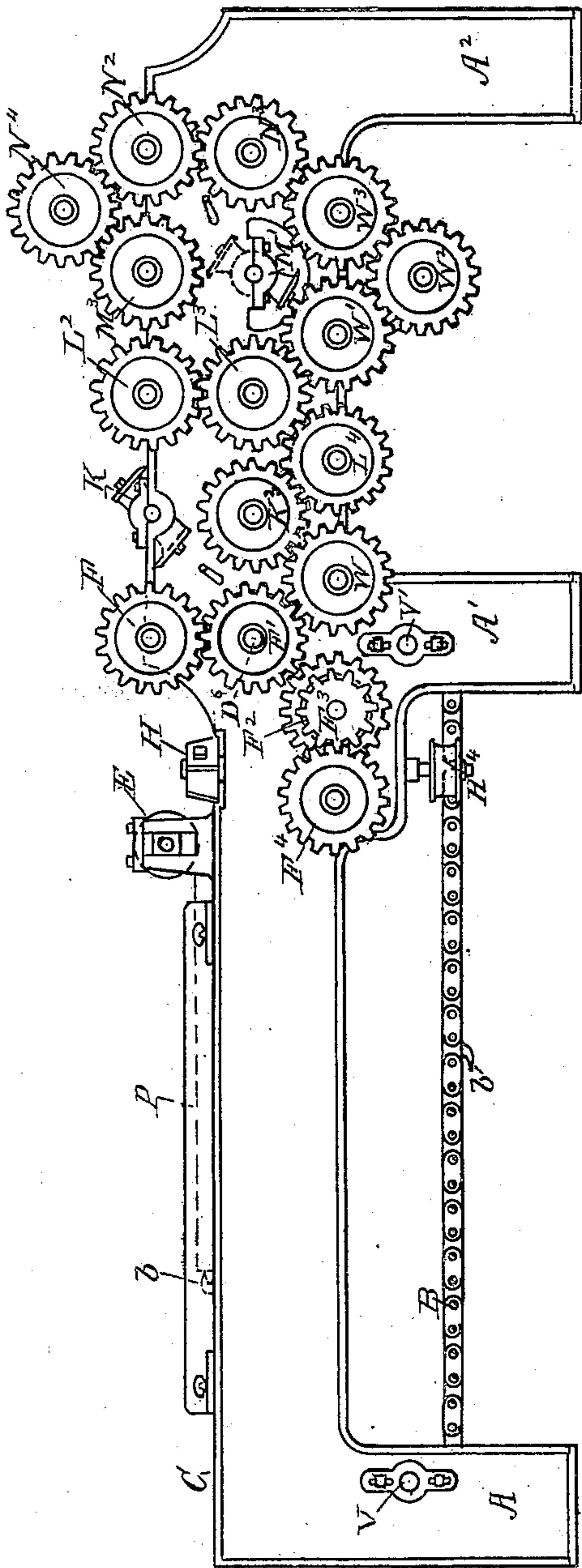


Fig. 1.

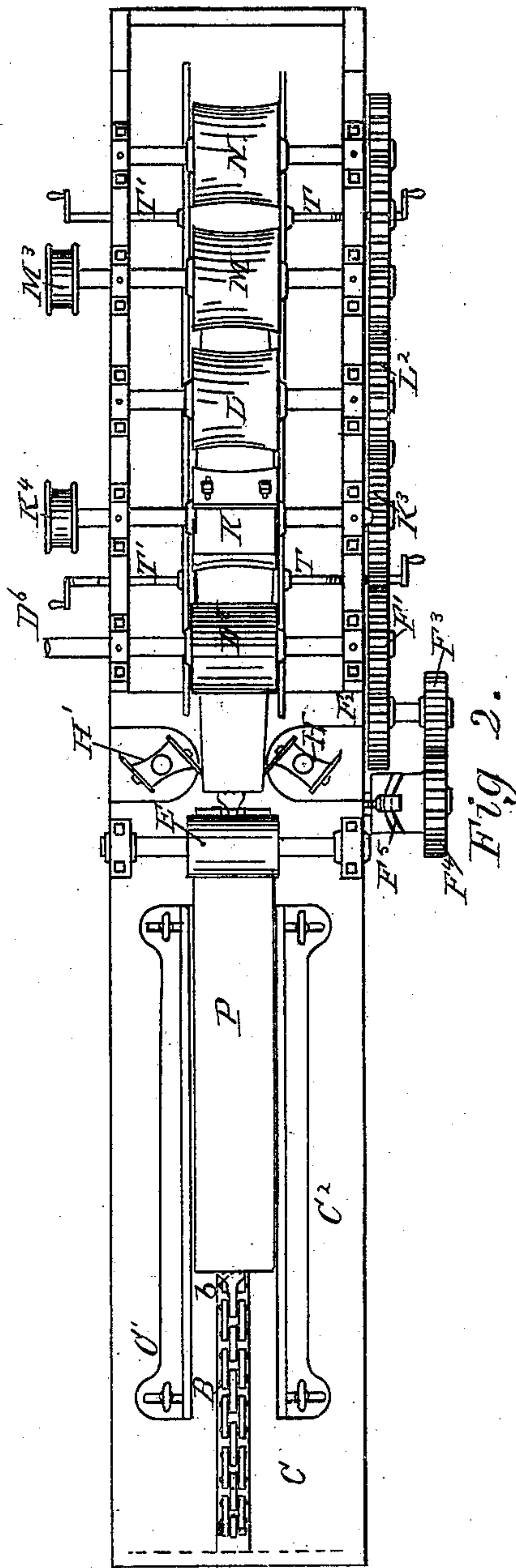


Fig. 2.

Witnesses.
Geo A. Long
W. L. Lathrop & W. L. Lathrop

Inventor.
William H. Griffiths

(No Model.)

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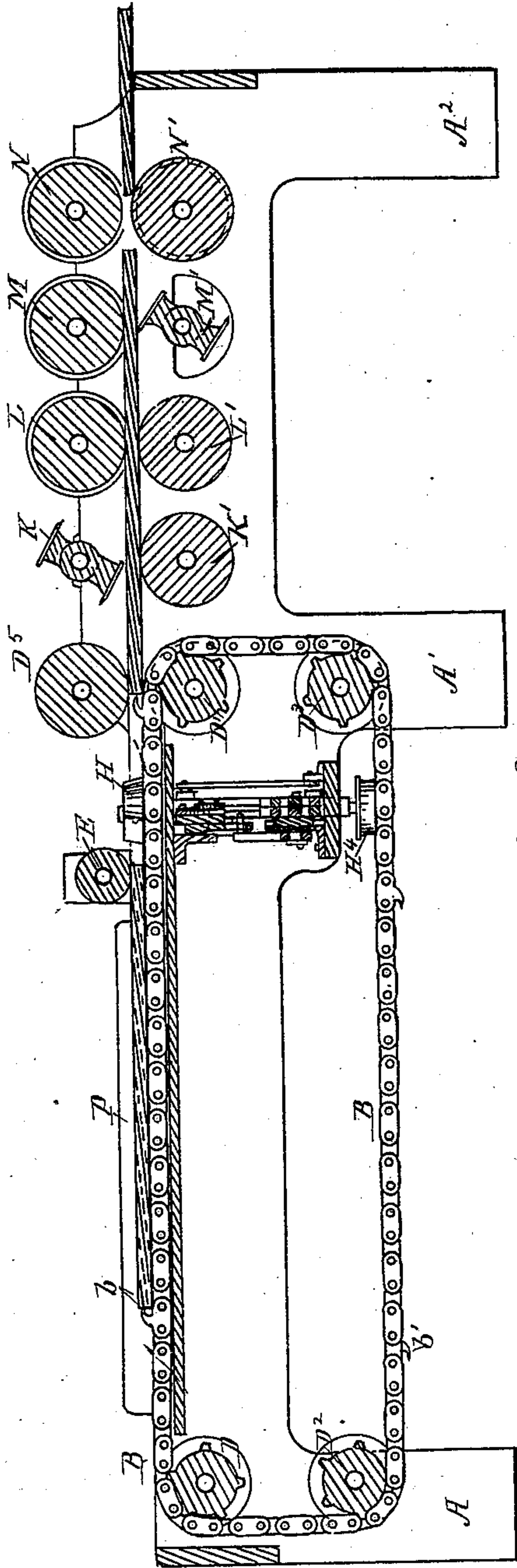


Fig. 3.

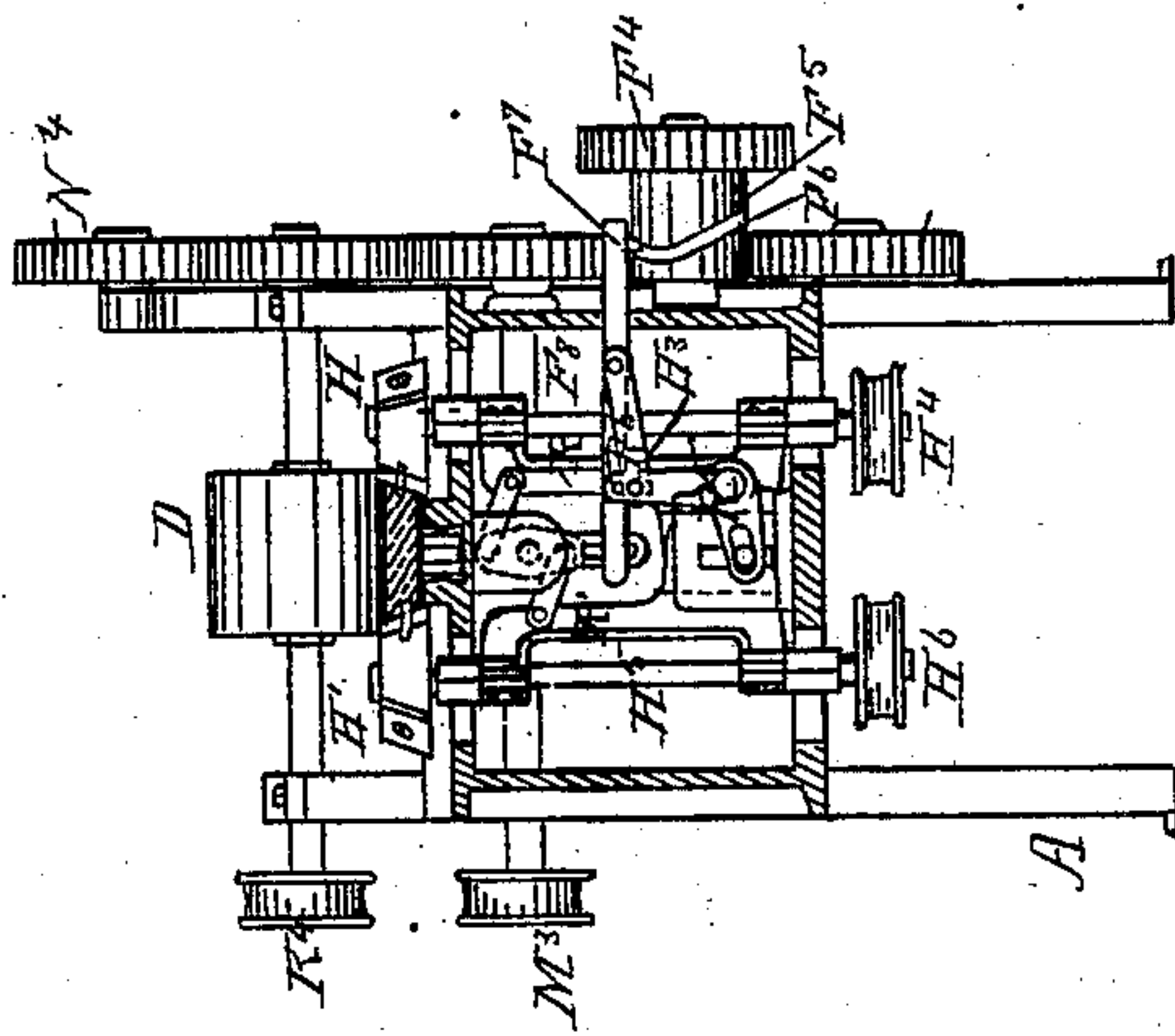


Fig. 4.

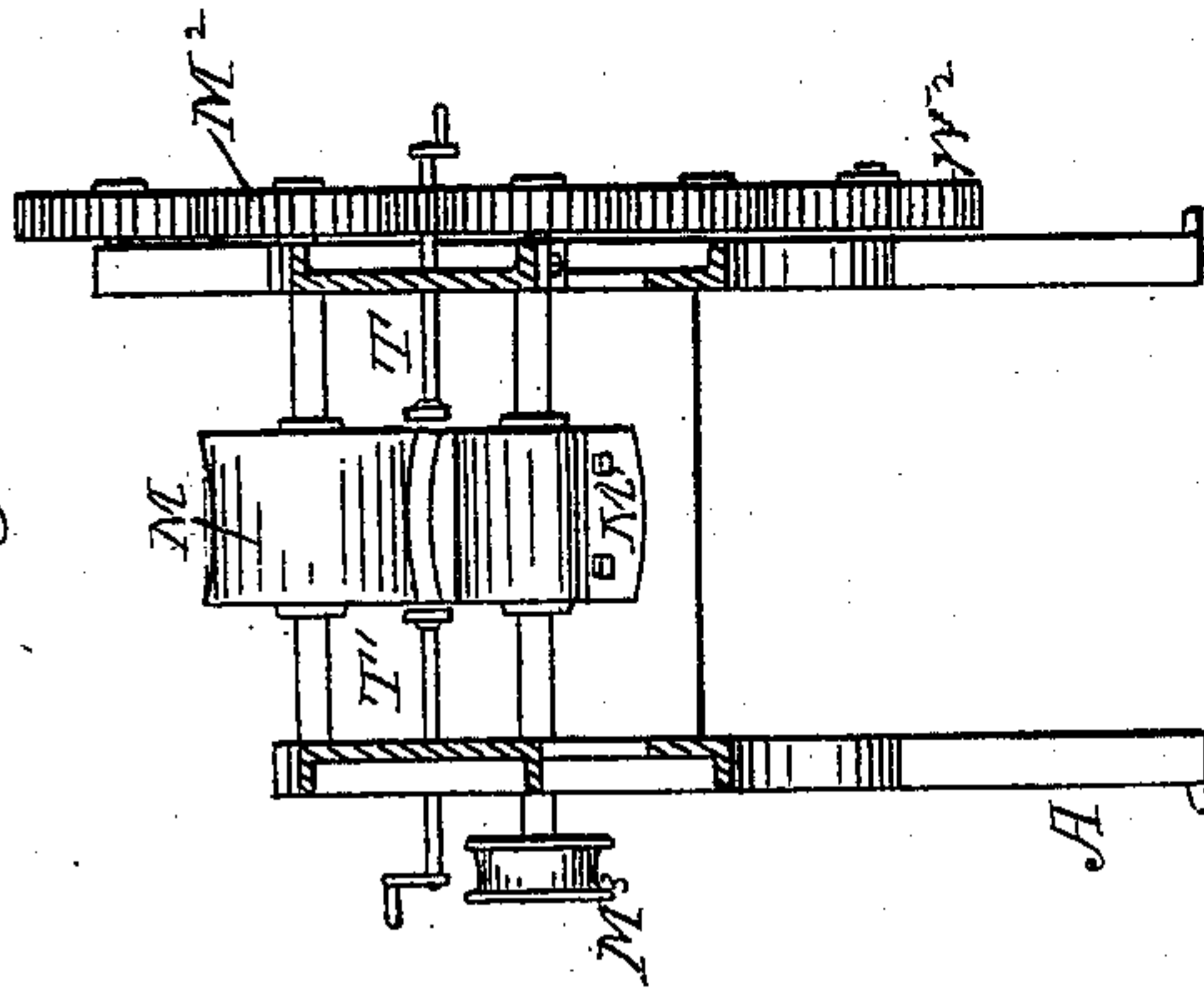


Fig. 5.

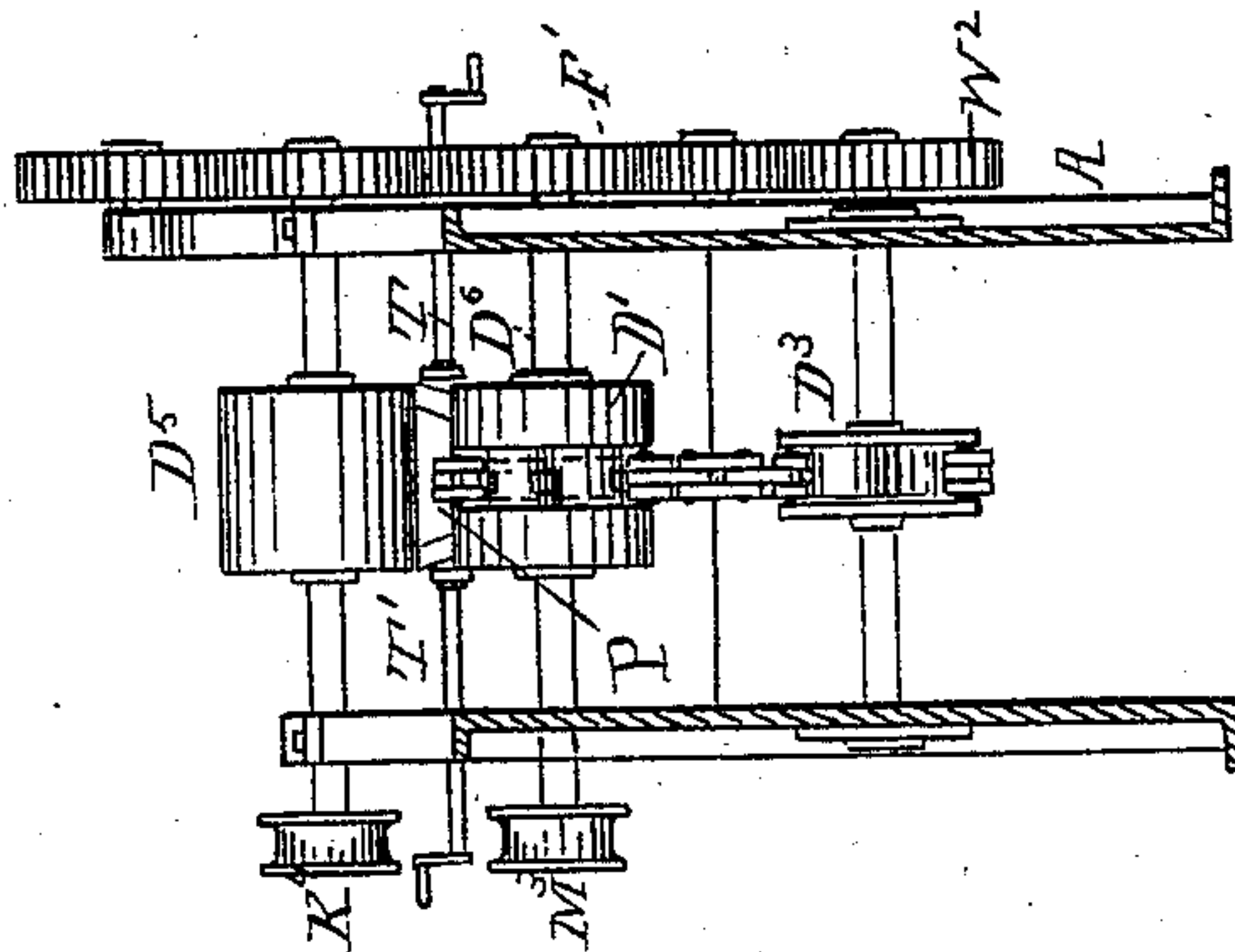


Fig. 6.

Witnesses
Geo. A. Loring,
Whitham & Willey.

Inventor.

William H. Griffiths

(No Model.)

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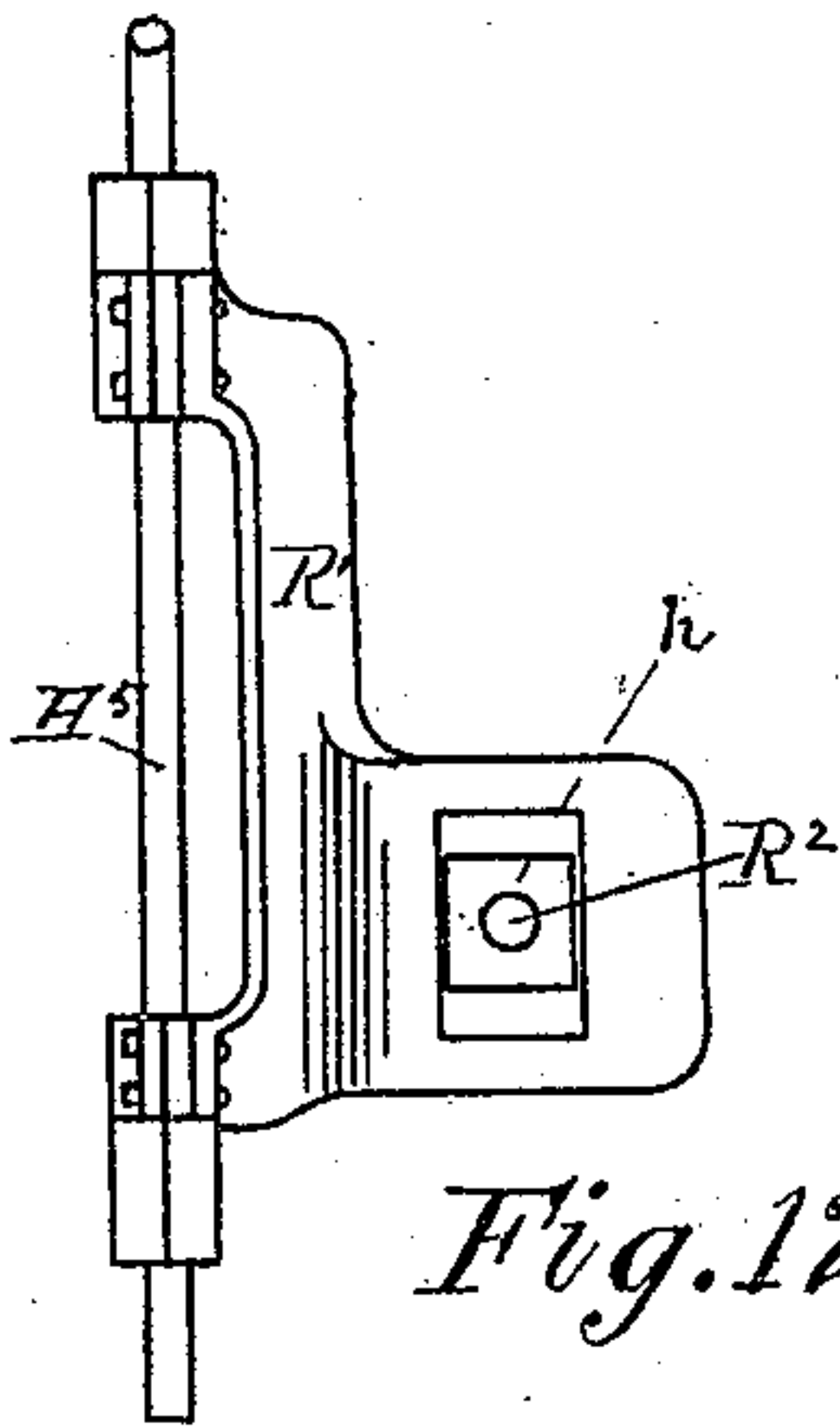


Fig. 12.



Fig. 7.

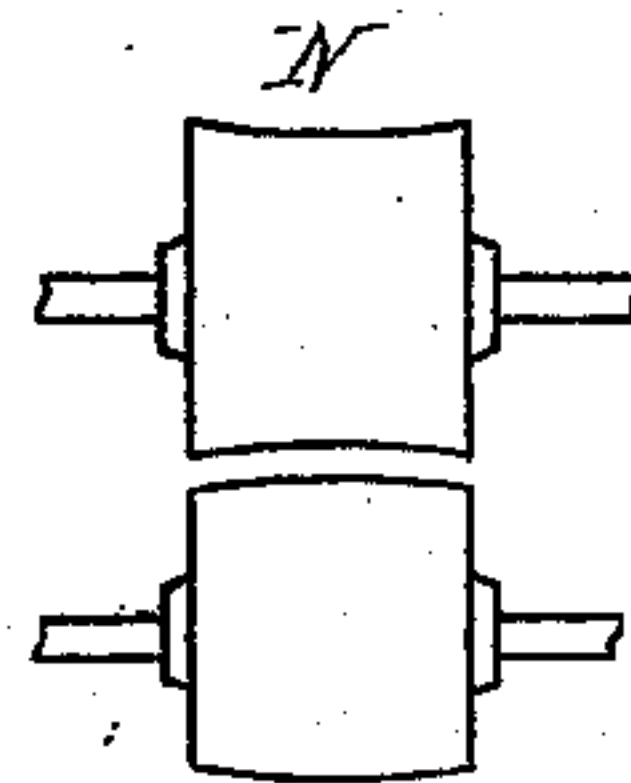


Fig. 8.

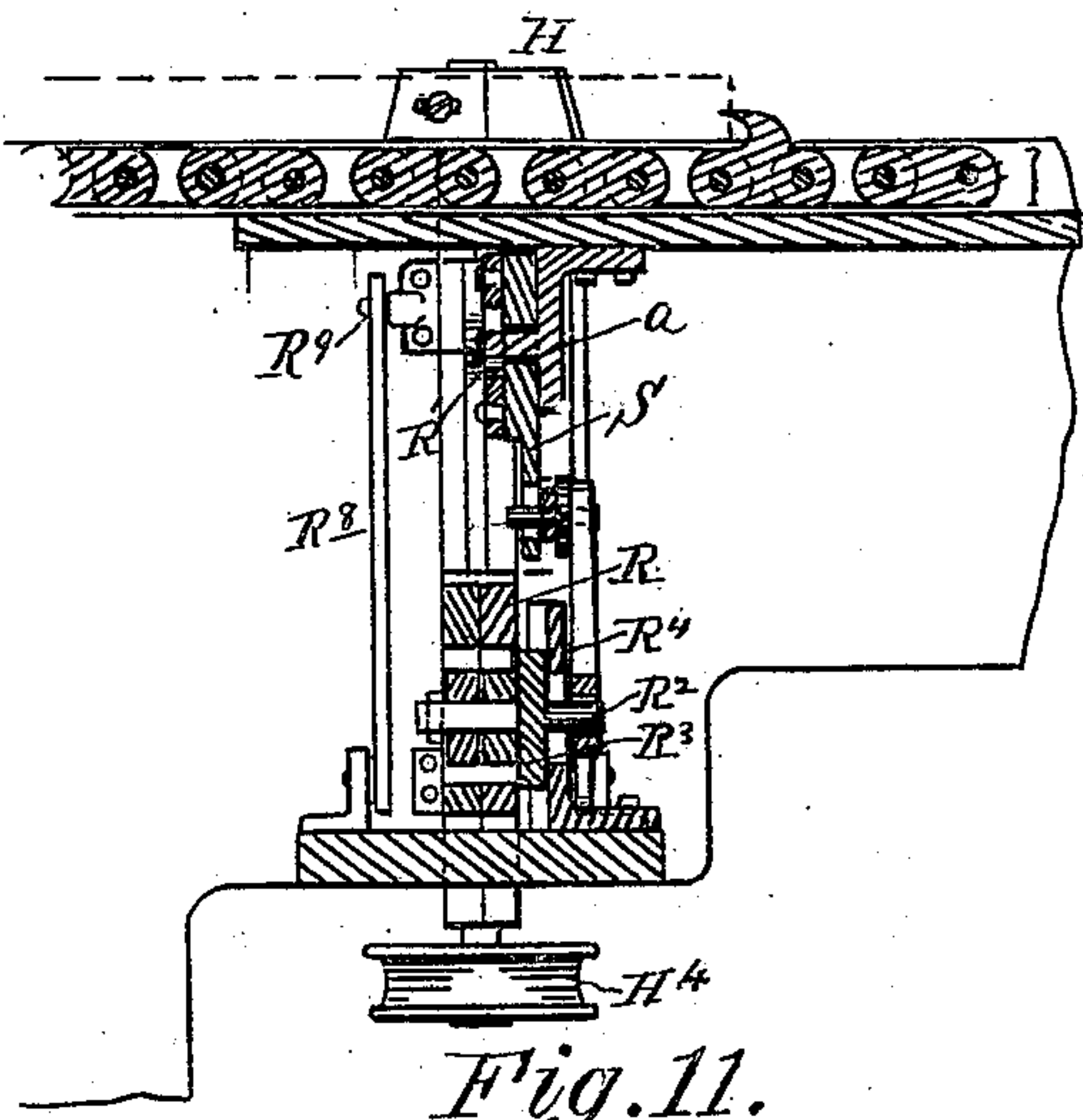
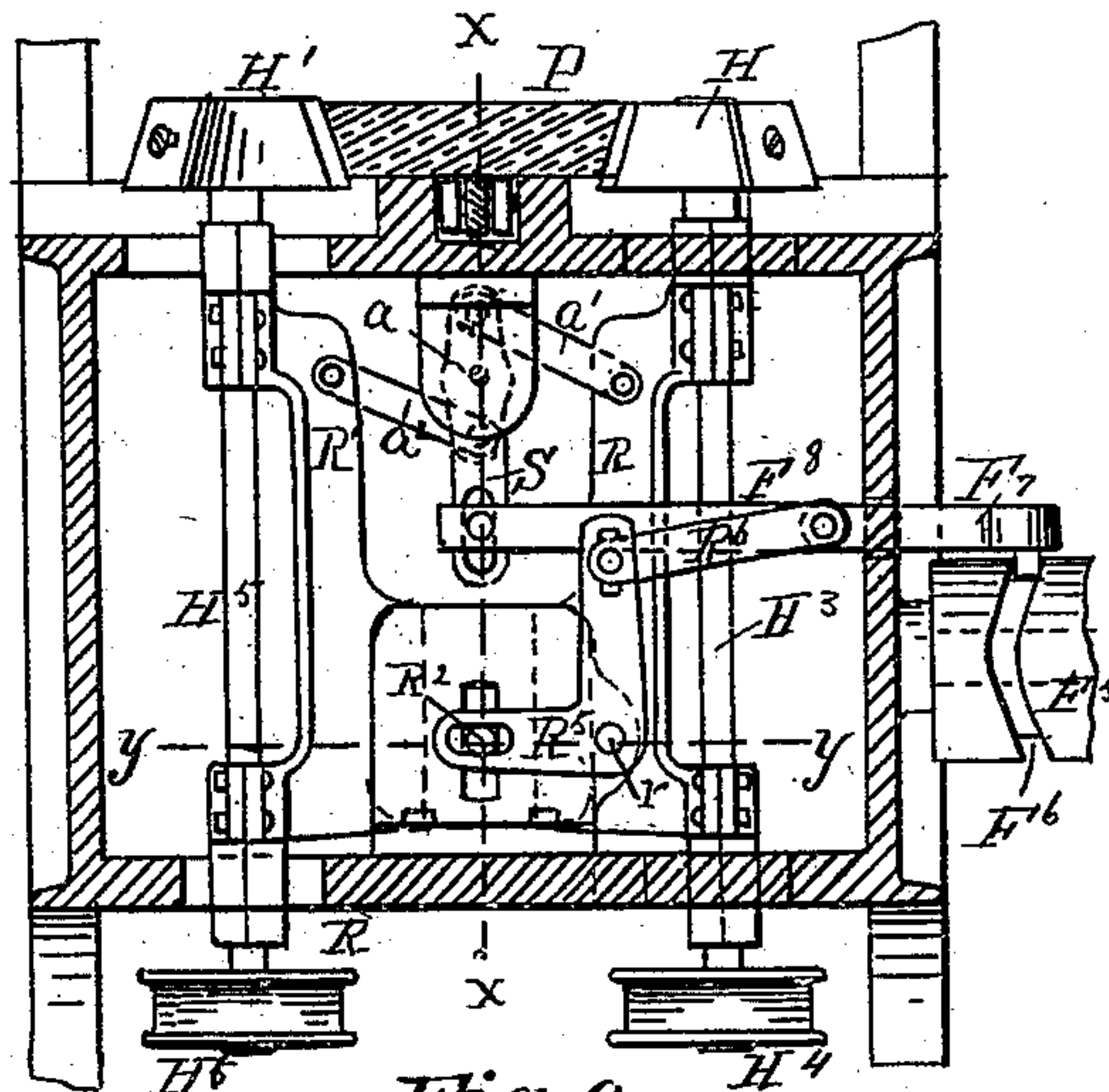


Fig. 11.



UNITED STATES PATENT OFFICE.

WILLIAM H. GRIFFITHS, OF SOMERVILLE, MASSACHUSETTS.

BARREL-STAVE MACHINE.

SPECIFICATION forming part of Letters Patent No. 273,274, dated March 6, 1883.

Application filed March 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HALL GRIFFITHS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Barrel-Stave Machines, of which the following is a specification.

My invention has for its object the automatic shaping of barrel-staves by devices which work successively to bevel and shape the edges, then to convex the stave, and finally concave it. I attain this object by the mechanism illustrated in the accompanying drawings.

Figure 1 is a side elevation of my machine. Fig. 2 is a plan of the same. Fig. 3 is a longitudinal vertical section of the same. Fig. 4 is an end elevation of the same, part in section. Figs. 5 and 6 are views partly in elevation and partly in section. Fig. 7 illustrates methods of tonguing and grooving the edges of the staves. Fig. 8 shows a pair of withdrawing rolls. Fig. 9 is an enlarged view, showing in vertical elevation the device for regulating the spread and angle of the edge-jointing cutters. Fig. 10 is a horizontal section taken on a line $y y$, Fig. 9. Fig. 11 is a vertical section taken through the line $x x$ of Fig. 9. Fig. 12 is a detail showing one of the housings for holding the shaft of the edge-jointer cutter, and, in connection with the same, its sliding box.

In the drawings, $A A' A^2$ represent the frame of the machine, to which the other parts are attached, and C in Figs. 1 and 2 represents the bed-plate of the machine, upon which the stock to be worked is placed, as shown at P , Figs. 1, 2, and 3.

B , Figs. 1, 2, and 3, is a sprocket-chain, provided with hooks $b b'$ at intervals. This sprocket-chain passes around a sprocket-roller, D' , Figs. 3 and 6, this roller D' also answering for a supporting-roll for the stock P . (See Fig. 6.)

The grooved or sprocketed pulleys $D^2 D^3$, Fig. 3, serve simply as guides and adjusters for the chain B .

The sprocket-roller D' has a shaft, D^6 , Figs. 1, 2, and 6, which is connected to the power-generator, which drives it, and through it and the gear-wheel F' , Figs. 1 and 2, all of the other gear-wheels shown in Fig. 1 and their connected parts.

The device for trimming and beveling the edges of the staves is shown in Figs. 4 and 9 in elevation, and in section in Figs. 10 and 11.

R and R' , Figs. 4, 9, 10, and 11, represent swinging housings, which swing on a common adjustable center pivot, R^2 , Figs. 9, 10, 11, and 12. These housings $R R'$ are made in the form shown in Fig. 12. In these swinging housings $R R'$, I hang the shafts $H^3 H^5$, and upon the upper ends of these shafts H^3 and H^5 , I affix the cutter-heads, which serve as trimming and jointing or tonguing and grooving tools, H and H' , and to their lower ends the belt-pulleys H^4 and H^6 . (See Figs. 4, 9, and 11.) The center pivot, R^2 , is located at a point which is at a distance from the stave P equal to the semi-diameter of the barrel for which the stave is intended, and is made adjustable vertically by the following device: It (the pivot R^2) is attached to a slide, R^3 , Figs. 10 and 11, which moves vertically in ways R^4 , Figs. 10 and 11. The slide R^3 and the pivot R^2 are moved vertically by means of the bent lever R^5 , Figs. 9 and 10, this bent lever being pivoted upon r , Figs. 9 and 10, as a fulcrum, the upper end of the bell-crank lever R^5 being connected to the link F^8 , Figs. 4 and 9, by the link R^6 , so that any longitudinal movement of the link F^8 will cause a corresponding vertical movement of the pivot R^2 . The housings $R' R^2$ are moved about their adjustable common center at the pivot R^2 by the action of the cam-groove F^6 on the cylinder F^5 , which acts through the link F^8 on a lever, S , Figs. 9 and 11. This lever S swings on a pivot, a , Figs. 9 and 11, and is connected by the links $a' a^2$ to the housings $R R^2$, the action of this part of the device being to swing the cutters $H H'$ in and out to give the stave the desired widening at the middle and narrowing at the ends.

The device which I have described for moving the pivot R^2 up and down, about which the housings $R R'$ swing, operates in connection with the link F^8 , Fig. 9, and serves to vary the angle at which the cutter-heads $H H'$ work as they successively operate on the different portions of the length of the stave, so that although these staves are jointed before they are curved the angle of the joints will be right after the stave is bent to form the bulge of the barrel, since the distance between the pivot R^2 and the stave P is always the same as the semi-

diameter of the barrel at the place corresponding to the part upon which the cutter-heads are operating.

The housings R and R' are held vertically in position by links R⁸, Figs. 10 and 11, said links being pivoted at their lower end to the frame of the machine, and at their upper ends to the upper part of the housings R R', as shown at R⁹, Fig. 11.

Having described the more complicated parts of the machine, I will proceed to describe the other portions in connection with the working of the machine.

The stock (which is first sawed out) is placed on the table C, between the guides C' C², Fig. 2, and is caught by the hook b on the chain B, Figs. 2 and 3, on the table C, which carries it along to the roll E, said roll E holding it down while the cutters H H' are finishing the edges, the cutters H H' being opened and closed by the cam F⁶ and link F⁸, which action gives a taper to the stave, said cam making one revolution during the passage of a stave, the cutters being open the widest when operating on the center of the stave.

By adjusting the connecting-link F⁸, which transmits motion from the cam F⁶ to the lever S, so as to connect with the lever S at a point higher or lower, I can get more or less taper to the stave, as desired. By changing the knives on the cutter-heads H H', I can tongue and groove the staves in any form, some of which are shown in Fig. 7. The chain B carries the stave entirely past the said cutters H H', Fig. 2, between the first pair of feed-rolls, D⁵ D', Fig. 3. The bottom one, D', contains the sprocket-wheel, which carries the chain B. After passing the first pair of feed-rolls the stave runs over another roll, K', and under a concave cutter-head, K, which rounds off the top or outside of the stave. The stave then passes between the second pair of feed-rolls, L L', the top one of which is concave, to fit the stave which has been rounded off by the cutter K, and then passes under the second concave roll, M, and over the convex cutter M', which concaves the under or inside of the stave. The stave is then moved forward to the withdrawing rolls N N', Figs. 3 and 8, the upper one of which is concave and the under convex. These rolls carry the finished stave from the machine.

The chain is arranged with hooks b b' at certain distances apart, to take one stave after another.

On both sides of the frame, and between the rolls, are two rods, T T', Figs. 2, 5, and 6, held and adjusted by screws in such a manner as to keep the stave between the centers of the rolls.

The adjusting-boxes shown at V V', Fig. 1, are to adjust the chain-wheels to take up the slack of the chain as required. The upper feed-wheels are held down by springs acting on sliding boxes.

The machine can be used in dressing staves that have been sawed. The power is communicated to the cutter-heads K and M', Figs. 1 and 3, by means of the belt-pulleys K⁴ M³. Power is communicated from the gear-wheel F', Figs. 1 and 2, (which, as already stated, is driven by the shaft D⁶,) by means of the gears F², F³, and F⁴, to the cam F⁵ F⁶. Power is communicated from the gear F', through the intermediate gear, W, and the gear K³, Fig. 1, to the roller K', Fig. 3. Then the power is communicated from the gear K³, through the intermediate gear, L⁴, to the gear L³ L², Figs. 1 and 2, to the feed-rollers L L', Fig. 3. Then the power is communicated from the gear L³, through the gears W' W² W³, to the gears N³ N², Fig. 1, thence to the withdrawing rolls N' N. Then power is communicated from the gear N² to the gears N⁴ M³, Fig. 1, thence to the roller M, Fig. 3.

I claim—

1. In a barrel-stave machine, the combination of the swinging housings R R' and the adjustable pivot R with the pivot-adjusting bell-crank lever R⁵, the operating-links R⁶ and F⁸, swinging lever S, opening and closing links a' a², and cam F⁵, whereby the cutter-heads H and H' are automatically swung about their common pivot R², and the said pivot adjusted vertically, all operating together substantially as described, and for the purpose set forth.

2. In a barrel-stave machine, the combination of the chain B, the grooved rollers D² D³, and the sprocketed roller D with the sprocketed feed-roller D', said roller D' serving as a bearer for the chain, and also as a bed-roll for the stave to rest upon, all operating together substantially as described, and for the purpose set forth.

3. In a barrel-stave machine, the guides T T', provided with adjusting screw-rods, as shown, whereby they may be adjusted to or from each other, in combination with the feed-rolls D' D⁵ L L' N N' and the cutter-heads K M', all shaped and adapted to operate together substantially as described, and for the purpose set forth.

WILLIAM HALL GRIFFITHS.

Witnesses:

HELEN M. FEEGAN,
WILLIAM EDSON.