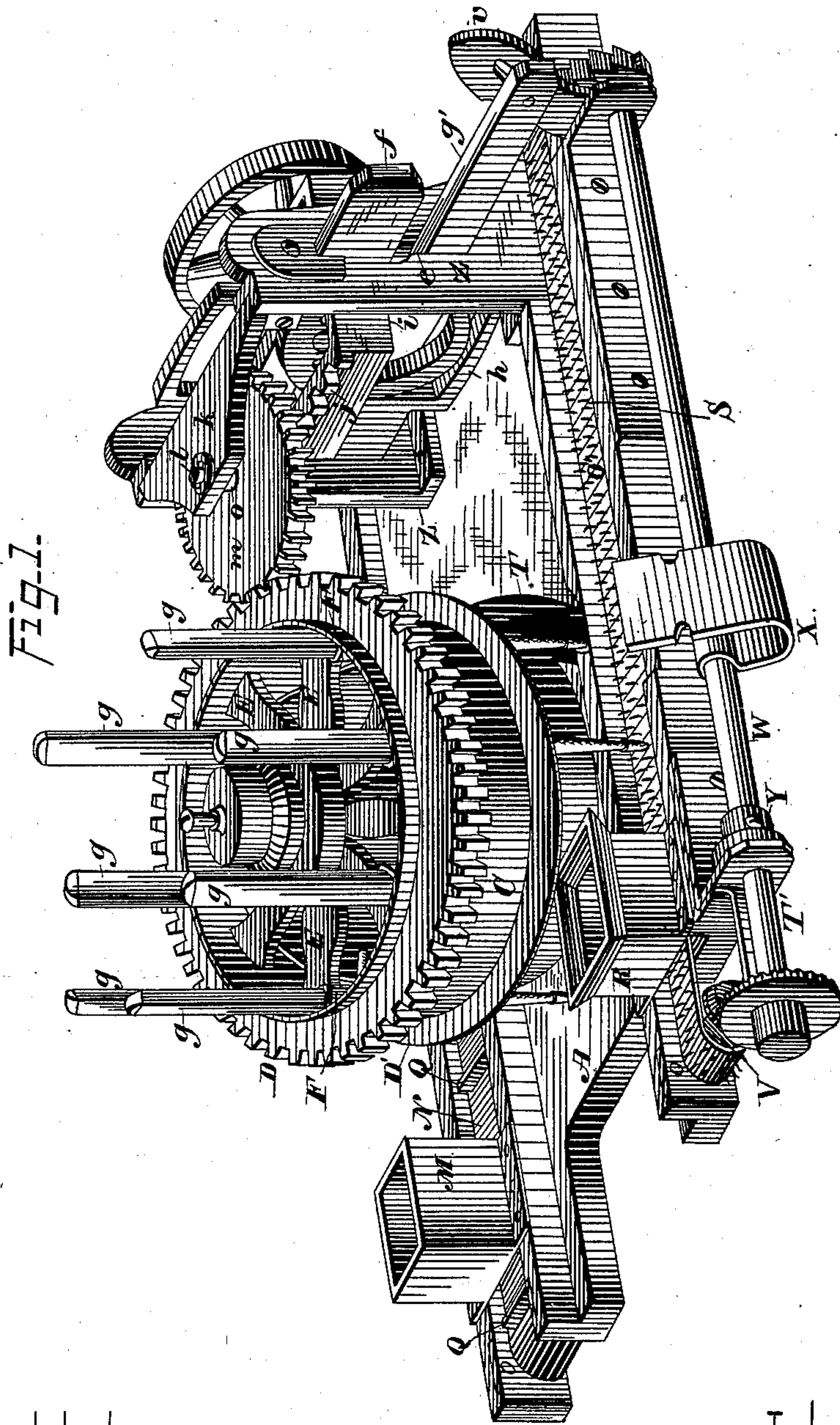


R. B. WHITZEL.
Machine for Dipping and Coating Fire-Kindling Blocks.
No. 216,480. Patented June 10, 1879.



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Fig. 2.

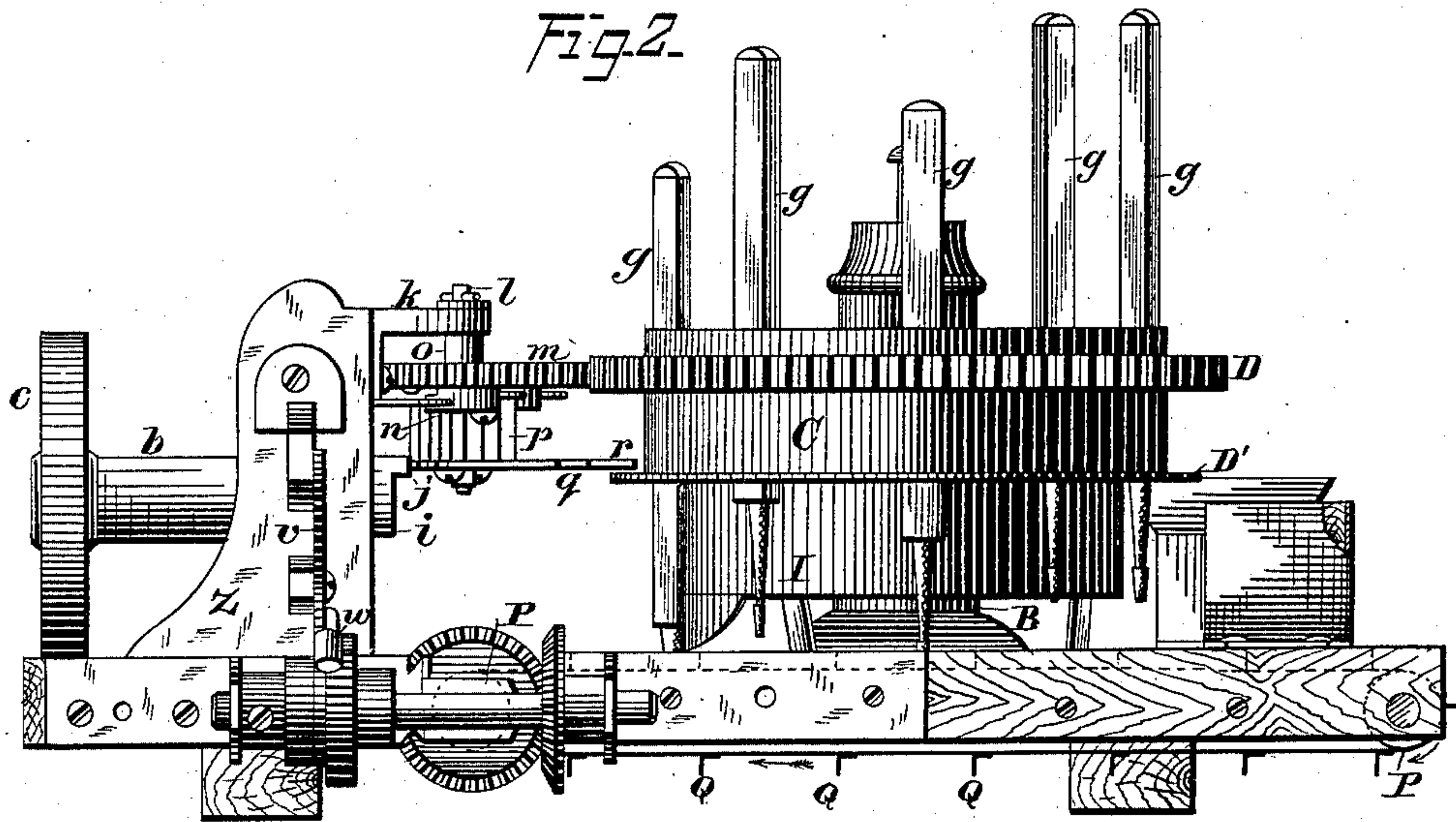
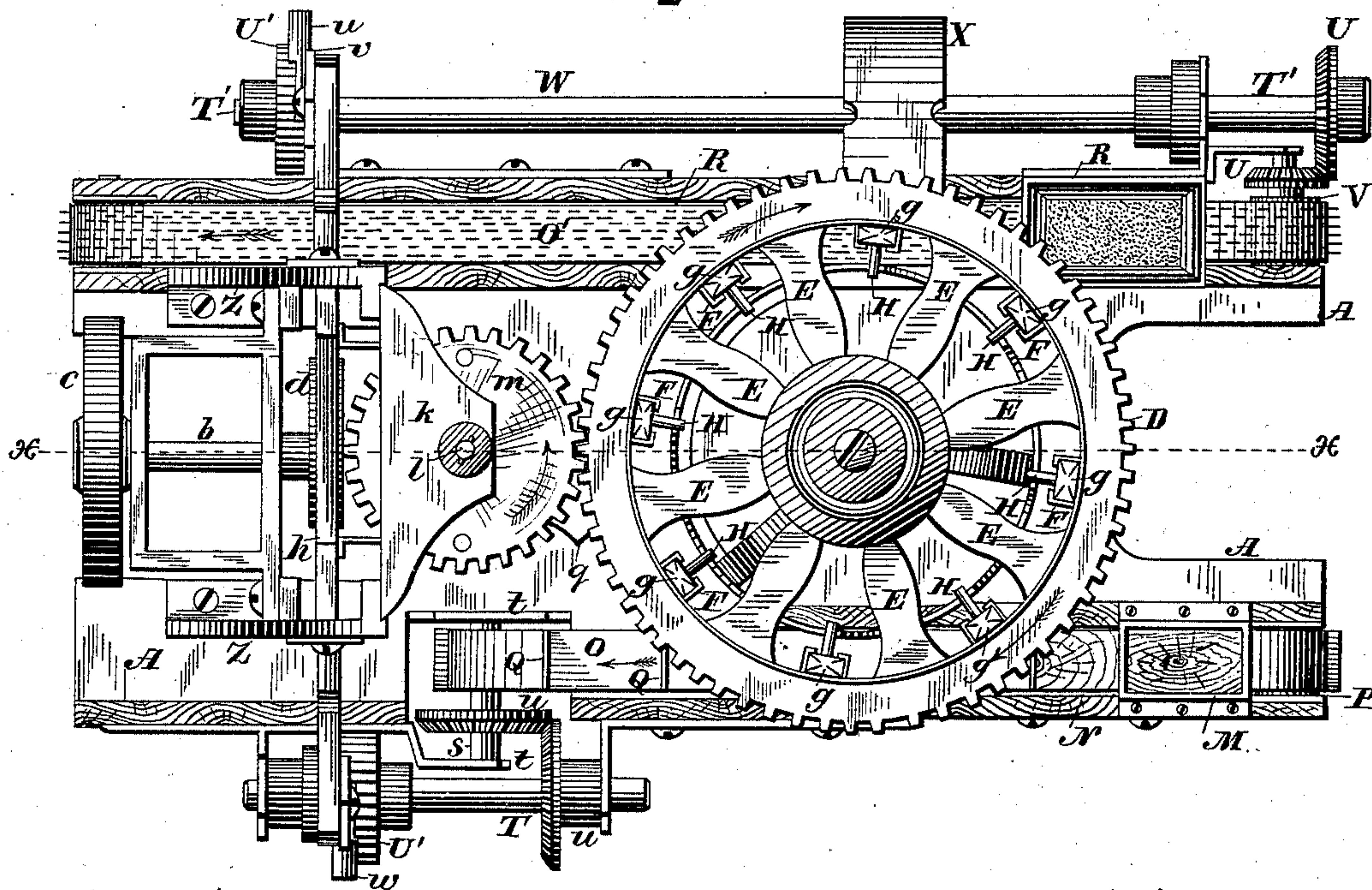


Fig. 3.



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Fig. 4.

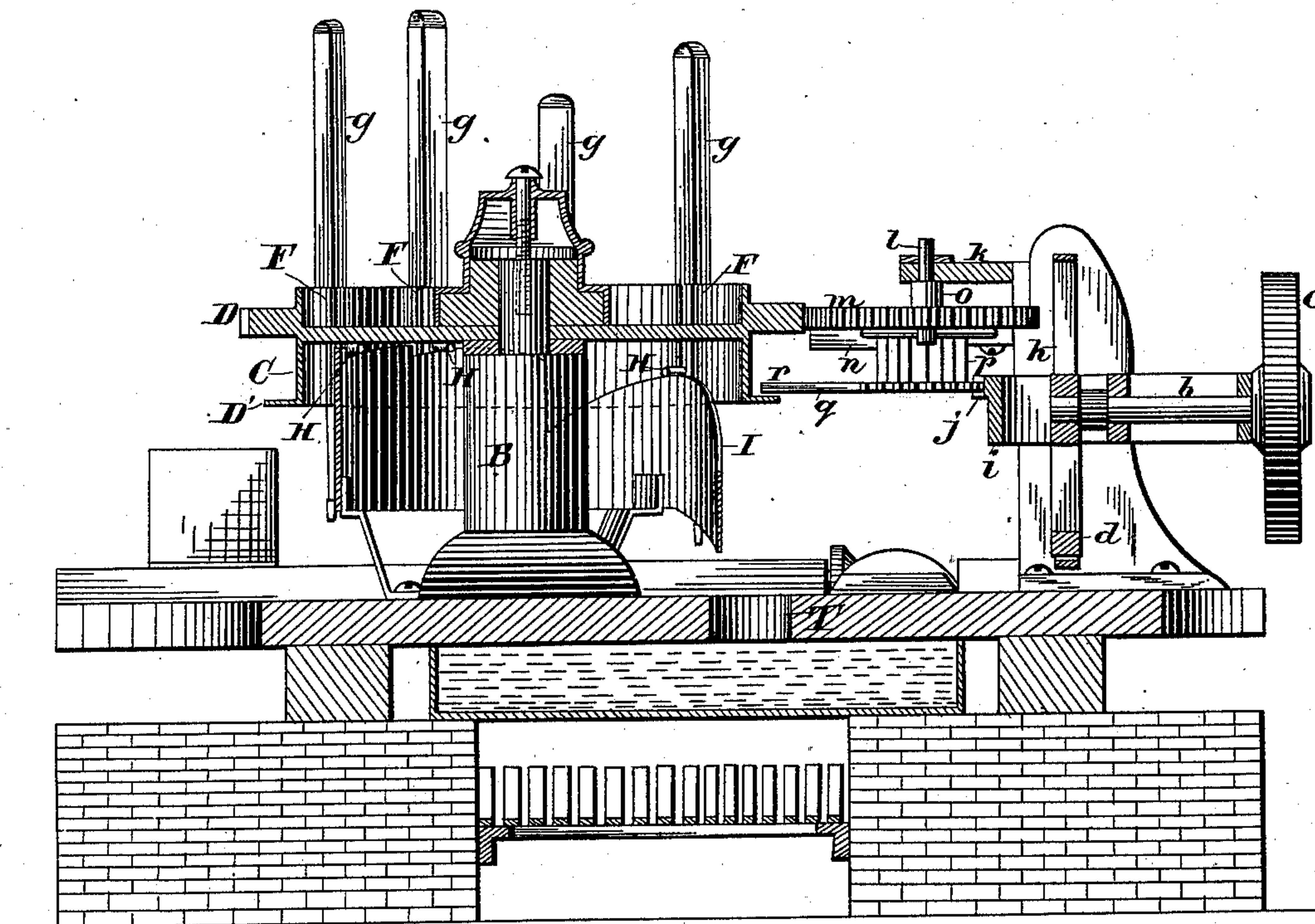


Fig. 5.

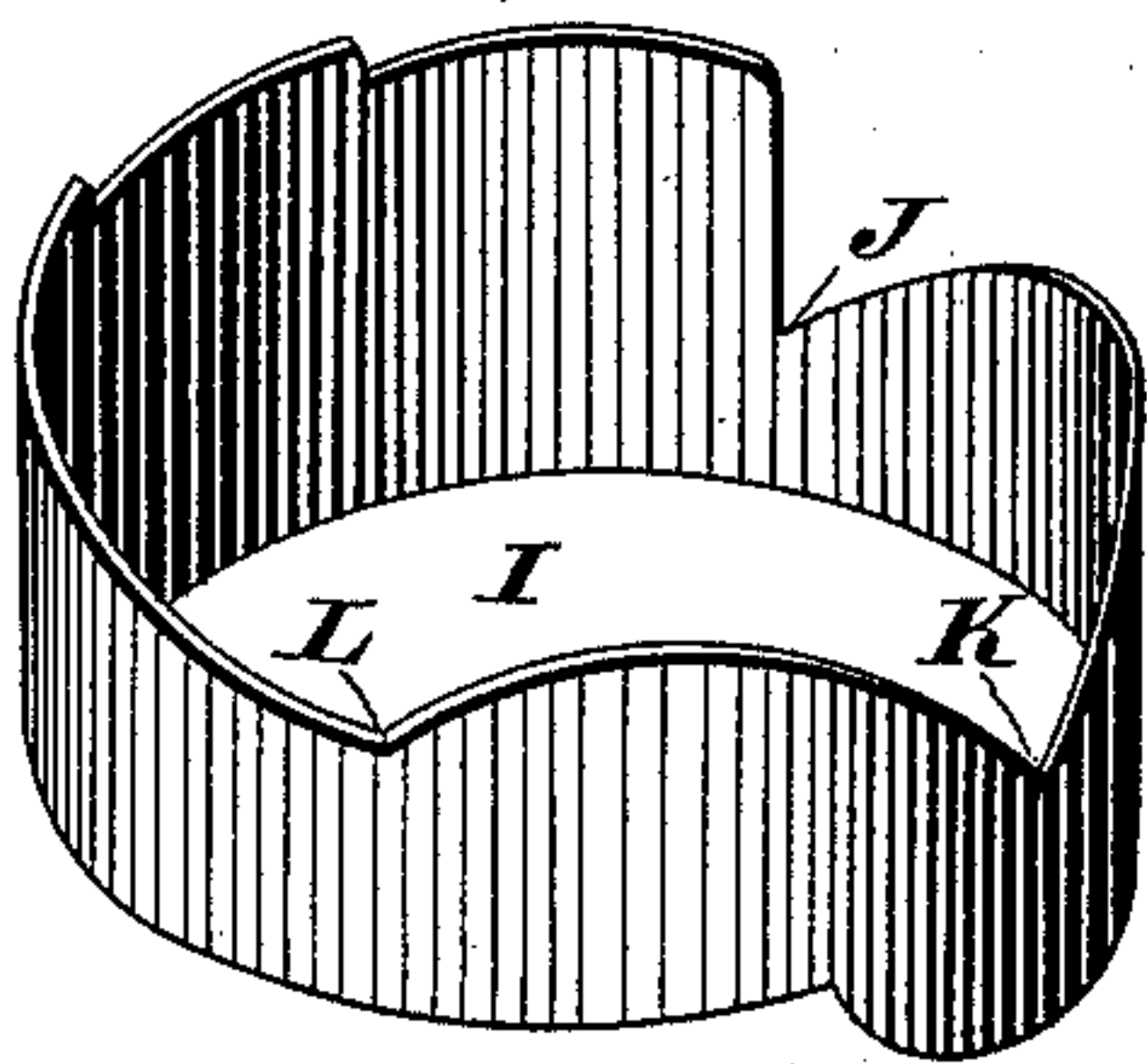
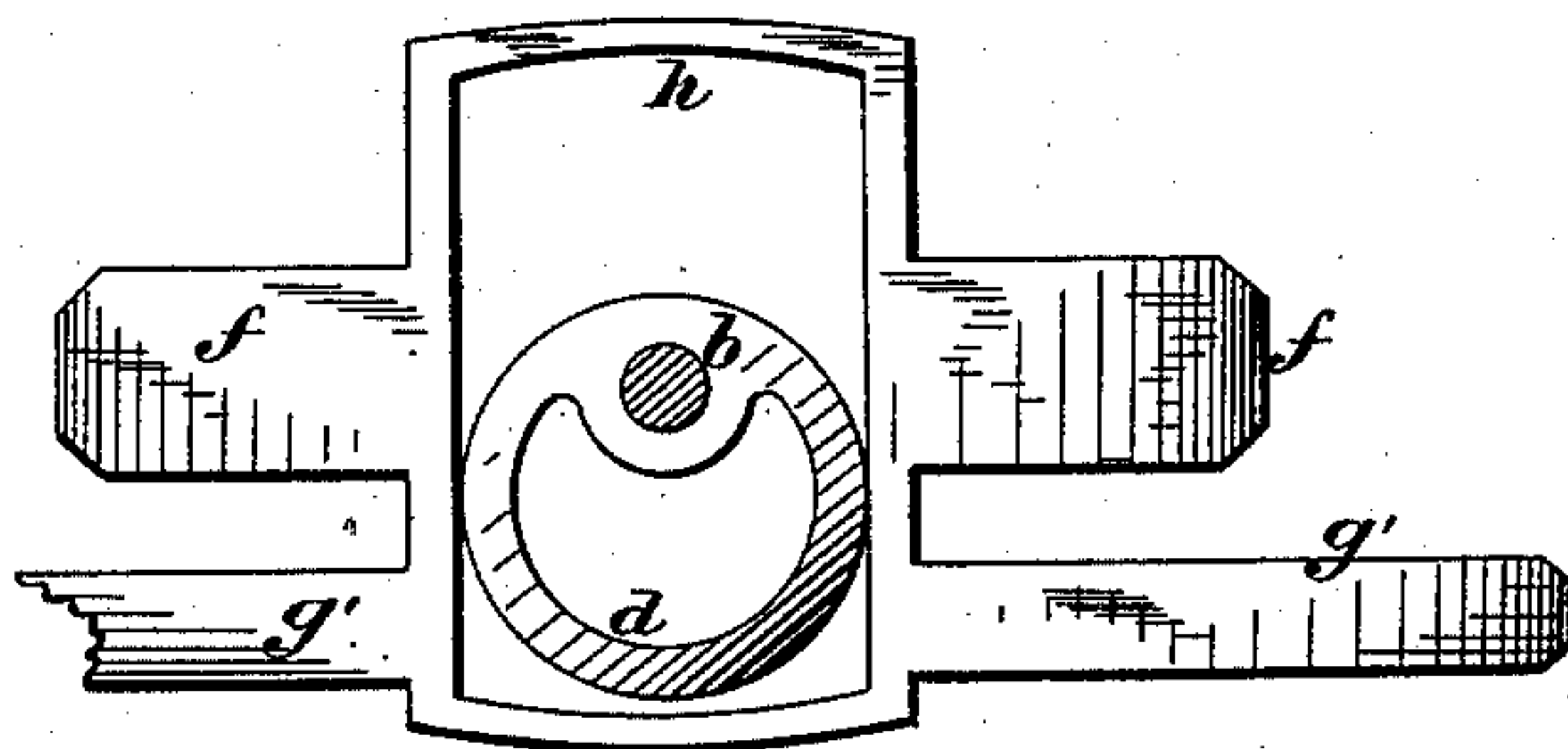


Fig. 6.



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UNITED STATES PATENT OFFICE

RUSSEL B. WHITZEL, OF MUSKEGON, MICHIGAN.

IMPROVEMENT IN MACHINES FOR DIPPING AND COATING FIRE-KINDLING BLOCKS.

Specification forming part of Letters Patent No. **216,480**, dated June 10, 1879; application filed May 9, 1879.

To all whom it may concern:

Be it known that I, RUSSEL B. WHITZEL, of Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Machines for Dipping and Coating Fire-Kindling Blocks, of which the following is a specification.

My invention relates to an automatic device for coating wooden blocks for fire-kindlers with combustible materials.

It consists in, first, the combination, in a daubing-machine, of devices for seizing and lifting a kindling-block—immersing it first in resin or equivalent material, withdrawing it therefrom, and then removing it to a trough containing sawdust or similar material; second, the combination, in a daubing-machine, of devices for seizing and carrying the kindling-block, a tank for resin or similar material, a receptacle for sawdust, or equivalent substance, and mechanism for feeding the blocks to said seizing and carrying devices, and operating said devices to immerse the blocks in the resin-tank and remove them therefrom to the sawdust-receptacle, and to discharge them from said receptacle; third, the combination, with the block-carrying devices of a daubing-machine, of an automatic device for detaching the blocks from said carrying devices.

Figure 1 of the drawings is a perspective view of my daubing-machine. Fig. 2 is a side elevation, and Fig. 3 a top view, of the same. Fig. 4 is a detached perspective view of inside cylinder. Fig. 5 is a vertical section on line *x x* of Fig. 3.

The letter A indicates a base-frame, upon which stands the vertical stationary shaft B, carrying the outside rotating cylinder C, with gear-wheel D and the projecting flange D' upon its outer periphery. Upon the inner periphery of cylinder C, and between the arms E, are a number of slotted guides, F, in which work vertically the arms *g*, having awls projecting downward from their lower extremities, and having pins H or studs projecting from their inner sides a little distance above the awls.

Upon suitable standards is secured, on frame A, the stationary inside cylinder, I, of smaller diameter, and within cylinder C. Upon the

upper edge of cylinder I are formed three depressions, J K L, the walls of which act as cams upon pins or studs H.

M is a hopper to hold and feed the blocks, placed at one corner of frame A, with its bottom opening above and into a groove or trough, N, along the side of frame A, and longitudinally along the bottom of which works an endless belt or apron, O, upon the pulley P, at each end of groove N, and provided with cleats or lugs Q at regular distances upon its free face.

The letter R designates a second hopper, to hold and feed the sawdust, with its bottom opening above and into a groove or trough, S, along the side of frame A, and in which works the endless belt O', preferably provided with wire teeth, after the manner of a carding-belt, to keep and hold the sawdust upon its surface as it drops from hopper R and is carried forward. The bottom or vent of hopper R is set just so far above belt O as to permit the deposit of the depth of sawdust required on the belt, and the bottom of the hopper evens it off and keeps it at that depth as the belt carries the sawdust under and beyond it.

The letter T indicates a curved slot or opening cut in the floor of frame A, to allow the arms *g* to drop down into a caldron or tank of melted resin or similar material in their passage round.

A horizontal shaft, T', operates the beveled-gear wheels U, to operate the pulley V, over which passes the belt O'.

To a sleeve, W, surrounding the shaft T, is attached a bent bar, X, opposite the point where arms *g* cross the inner edge of the trough S in their line of travel. This bar works up and down, operated by the sleeve with a reciprocating motion, and projects sufficiently far over the trough S to strike and detach the block from the awl, so that the belt can carry it away.

At one end of sleeve W is attached the sleeve-coupling Y, which presses against a spiral spring on horizontal shaft, and prevents the bevel-gear wheel which it carries from disengaging outward from the other wheel with which it intermeshes.

The letter Z indicates vertical standards

bolted upon frame A, to which is bolted the horizontal bracket *a*, in which rotates horizontal shaft *b*, carrying the driving wheel or pulley *c* upon one end, and the eccentric *d* upon the other.

The letter *e* designates two slots in the standards Z, in which play the upper and lower bars, *f* and *g'*, springing from vertical loop *h*, with reciprocal horizontal motion, which is communicated to the loop *h* by the eccentric *d*.

The letter *i* indicates a horizontal bracket projecting from the inner side of bar *f*, and having the rack-bar *j*; and *k* is a bracket attached to the upper part of standards Z, in which rotates the vertical axle *l*, carrying gear-wheel *m*, to which are attached the spring-pawls *n*.

The letter *o* indicates a vertical sleeve, passing over the axle *b*, and carrying the ratchet-wheel *p*.

The letter *q* indicates a horizontal plate bolted upon the under side of the ratchet-wheel *p*, having one segmental end, furnished with teeth, which intermesh with rack-bar J, while its other end forms a tongue, *r*, which moves back and forth over the projecting rim D' of cylinder C.

The driving-wheel *c*, by means of the eccentric *d*, operates the rack-bar J, and causes the spring-pawls *n* to alternately fall between and pass over the teeth of the ratchet-wheel *p*, thus communicating a step-by-step motion to gear-wheel *m* and to the gear-wheel D of cylinder C, with which it intermeshes, while the tongue *r* passes back and forth over the upper surface of the rim D', and prevents the cylinder C from rising.

The letter *s* designates a shaft rotating in standards *t*, bolted to frame A, and operating beveled-gear wheels U, driving pulley P. The ratchet-wheels *u* are attached to the shafts T and *s*.

To the ends of bars *g'* are attached the slotted arms *v*, to which are fastened the pawls *w*, and by means of the bars *g* and the arms *v*, controlled by the ratchet-wheels *u* and pawls *w*, a step-by-step motion is communicated to the pulleys and to the belts.

Having thus described in detail the various parts of my device, I will now proceed to explain the operation of the machine as a whole. The wooden blocks being piled in the hopper horizontally, they are carried one by one into the trough between the cleats upon the belt O, and are carried forward until one of the awls, as it drops down in its slotted guide into depression J, transfixes it. The motion of the outer cylinder, C, carrying the arm and awl forward, causes it to rise over the ridge between depressions J and K, and lifts it above the belt O until it arrives at the depression K, when it falls with the block through opening T, immersing the block in the melted resin in the tank below the base-frame. The arm then rises over the second ridge between depressions K and L, lifts the

block out of the resin, and carries it forward until it reaches depression L, when it drops again, and the block rests upon the sawdust which has been discharged from the hopper R. The awl and block are then carried forward until, in rising up, the ridge between the depressions L and J, the projecting bent bar X, which strikes the block from above downward in passing, and detaches from the awl, when the belt O' carries it forward and beyond the frame A.

The step-by-step motion of my device is so contrived that a momentary pause occurs between each of the operations herein described.

I do not confine myself to the method of operating the arms as hereinbefore set forth, as they may be moved up and down by arms upon the cylinder; nor do I limit myself to the precise form of arm and awl set forth, as any suitable shape will answer.

The machine may be used either with the hoppers, as described, to feed the blocks and sawdust into the troughs, or they may be fed without the use of hoppers.

It will readily be seen that my device supplies a cheap, expeditious, and thorough method of dipping the blocks in combustible materials, such as has never before been invented, and which is a very great improvement upon the slow, cumbrous, and imperfect methods now in use.

Although I show in my drawings a reciprocating rack-bar imparting through intermediate mechanism a step-by-step motion to the rotating cylinder which carries the awls, I do not confine myself to this arrangement, as it is obvious that instead of the rack-bar a gear-wheel may be used and the intermediate mechanism easily arranged to communicate a continuous motion to the awl-carrying cylinder. This alteration of the machine is entirely within the scope of the machinists' art, and does not require invention.

The pins which project from the awl-carrying arms and ride upon the cam-shaped edge of the stationary cylinder may, if desired, be provided with friction-wheels adapted to travel on said edge, the pins forming the spindles or pivots of the wheels.

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

1. The combination, in a daubing-machine, of devices for seizing and lifting a kindling-block, immersing it first in resin or equivalent material, withdrawing it therefrom, and then removing it to a trough containing sawdust or similar material, substantially as described.

2. The combination, in a daubing-machine, of devices for seizing and carrying the kindling-block, a tank for resin or similar material, a receptacle for sawdust or equivalent substance, and mechanism for feeding the blocks to said seizing and carrying devices, and operating said devices to immerse the blocks in the resin-tank and remove them there-

from to the sawdust-receptacle, and to discharge them from said receptacle, substantially as described.

3. The combination, with the block-carrying devices of a daubing-machine, of an automatic device for detaching the blocks from said carrying devices, substantially as described.

4. The combination of the block-feeding mechanism, and the automatically-operated awls for engaging said blocks and transferring them, with the tank containing resin or similar material, the devices for operating said awls to immerse the blocks into and remove them from said tank, and devices for coating said blocks with sawdust or equivalent material, substantially as described.

5. The combination, with a rotating cylinder, C, having gear-wheel D and projecting flange D', of the rising and falling awls or block-carriers G and their projections H, with

the stationary cylinder C, provided with the cam-shaped projections J, K, and L.

6. The feed-belt O and resin-tank, in combination with the rotating cylinder D, the rising and falling awls or block-carriers G, and the stationary cylinder C, substantially as described.

7. The discharge-belt O', with sawdust-feeding apparatus, in combination with the bent bar X, for detaching the blocks, so that they can be carried forward and discharged from the machine, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

RUSSEL B. WHITZEL.

Witnesses:

DAVID D. ERWIN,
D. C. McLAUGHLIN.