

*J.H. Hallely,*

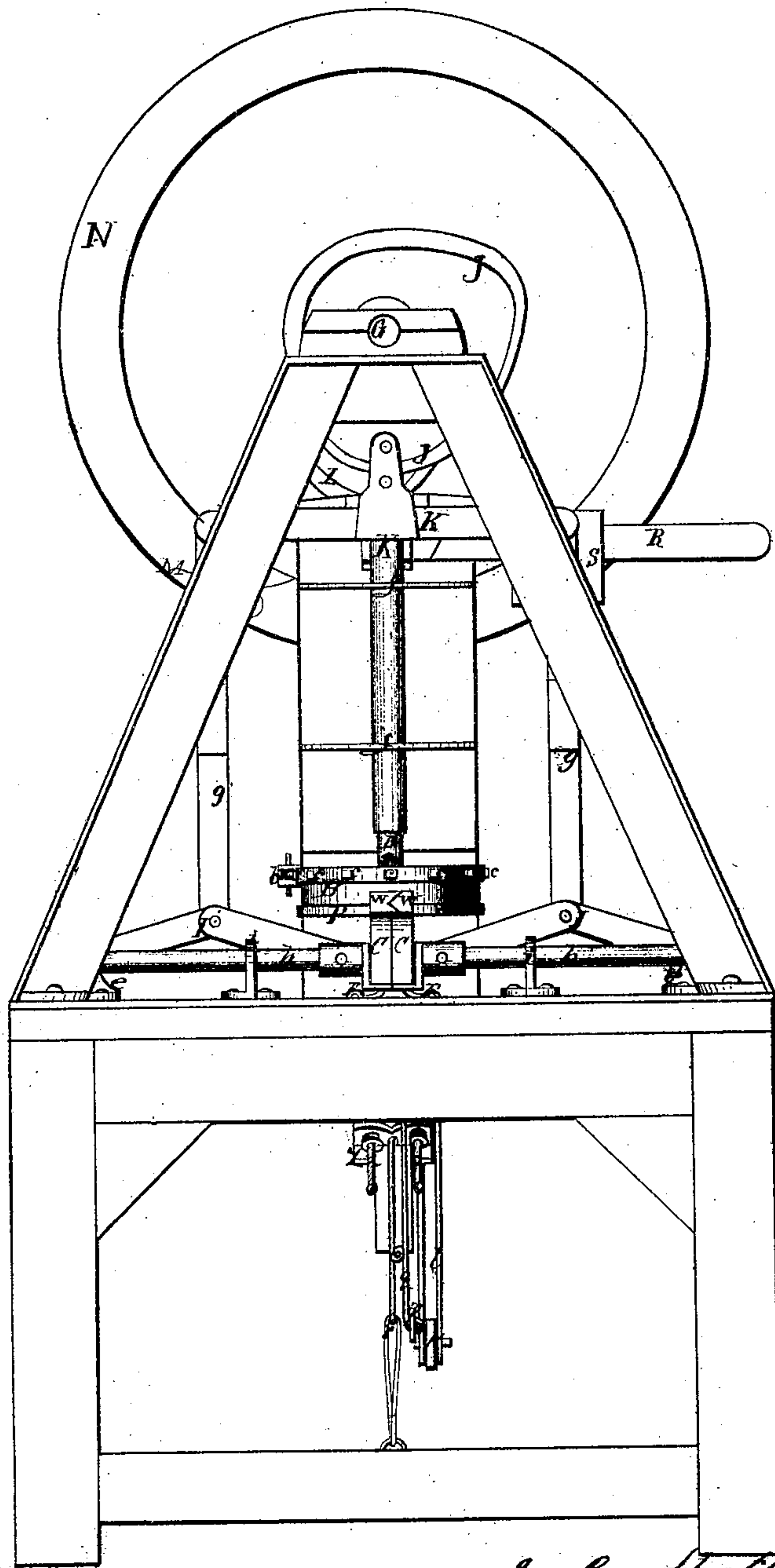
*3. Sheets. Sheet. 1.*

*Tobacco Pipe Machine.*

*No 104,850.*

*Patented June 28. 1870.*

*Fig. 1.*



Witnesses:-

*D. J. Brown*  
*C. A. Harkness*

*John H. Hallely,*  
*By his atty.,*  
*J. S. Brown*

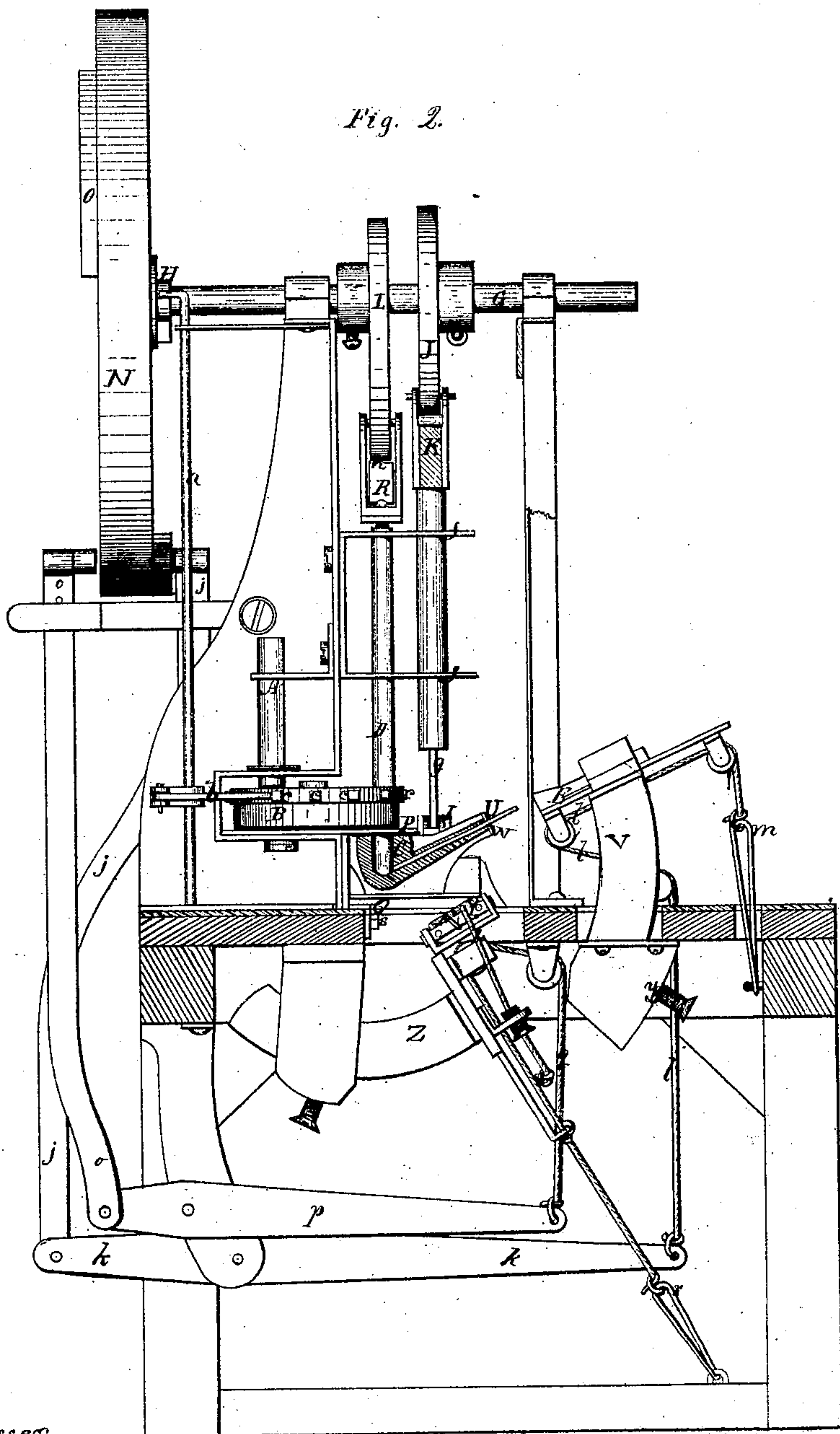
*J. H. Holley,*

*3. Sheets, Sheet 2.*

*Tobacco Pipe Machine.*

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Witnesses:-

*D. J. Brown*  
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J. H. Hallely,

3. Sheets, Sheet, 3

Tobacco Pipe Machine.

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Fig. 3.

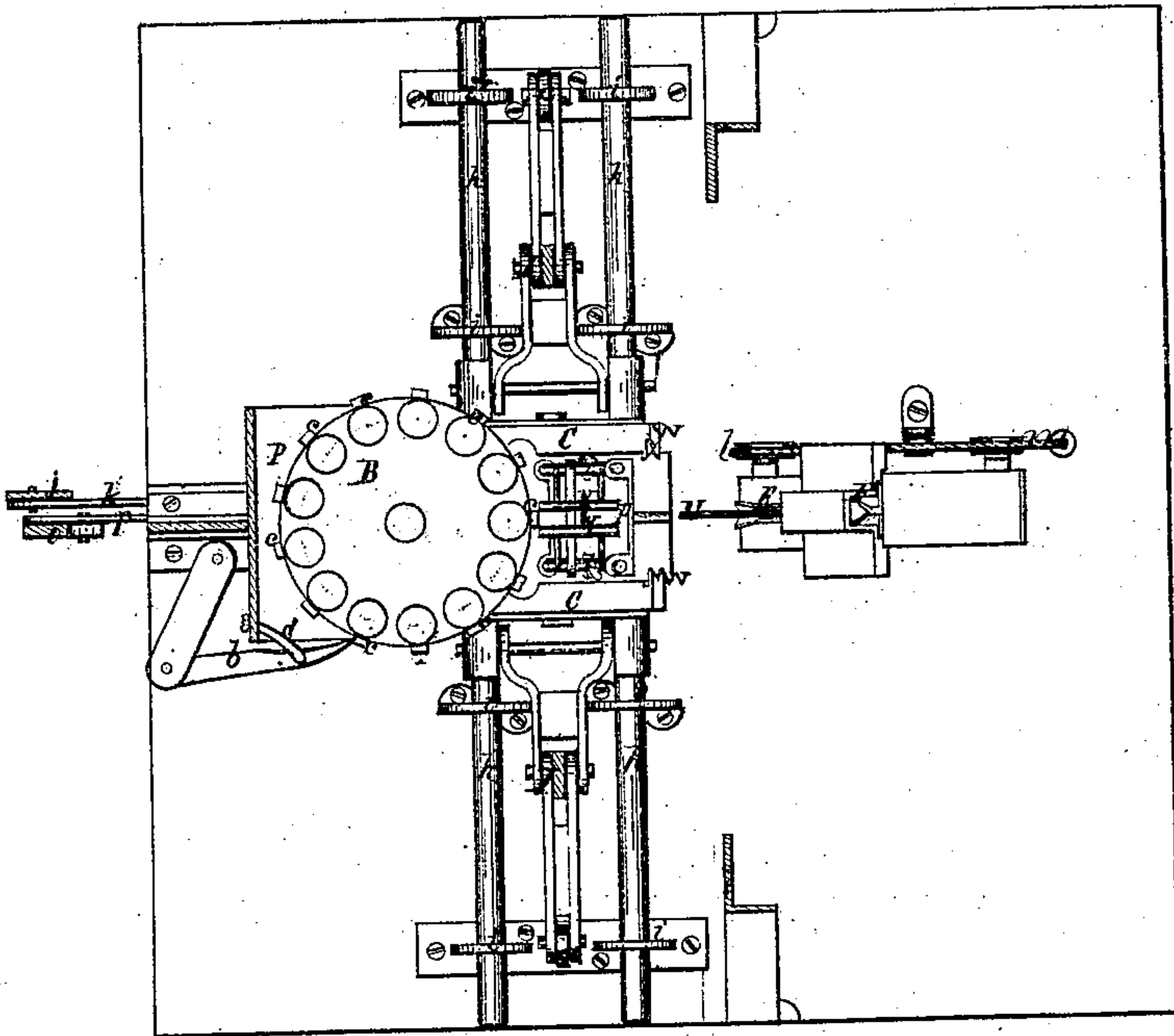
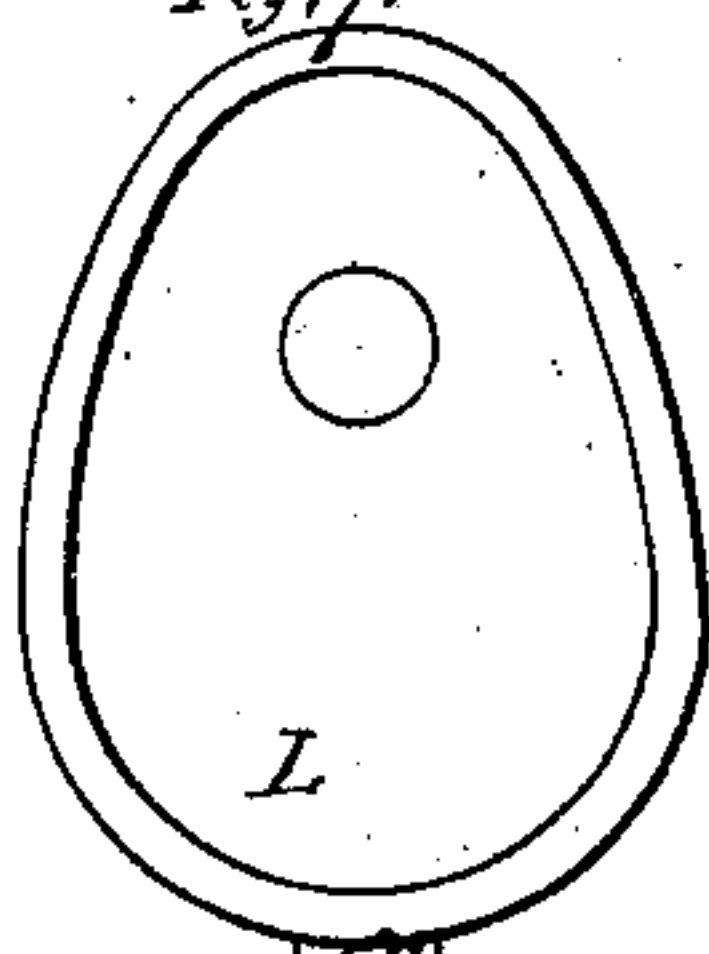


Fig. 7.

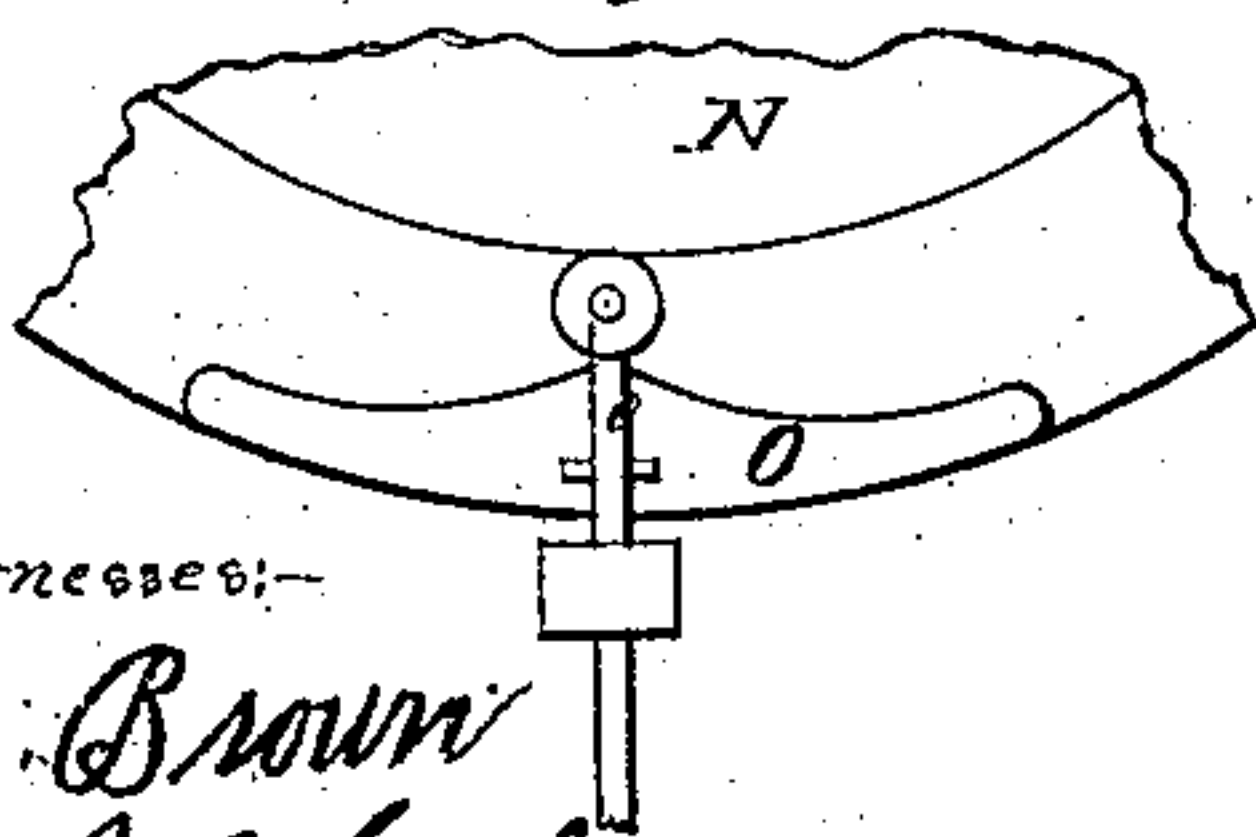


L

R

S

Fig. 4.



N

O

Witnesses:-

D. G. Brown

C. A. Markness

Fig. 10.

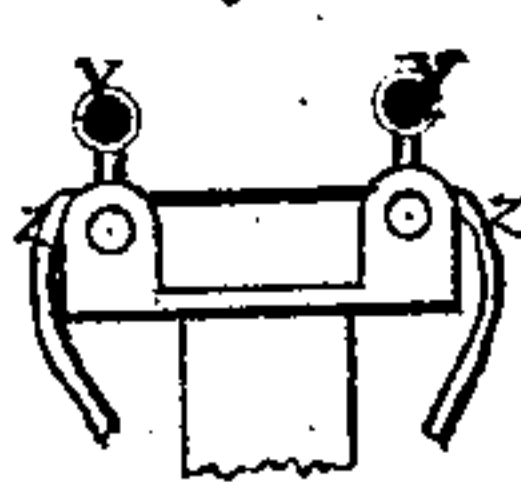


Fig. 11.

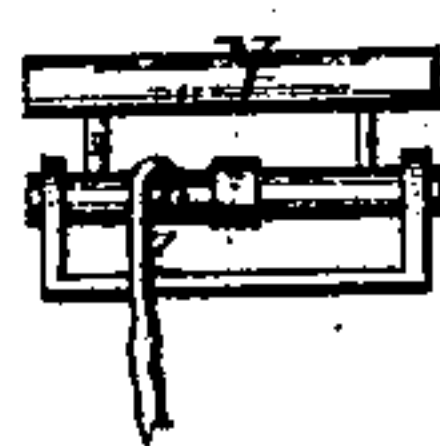


Fig. 5. Fig. 6. Fig. 8.

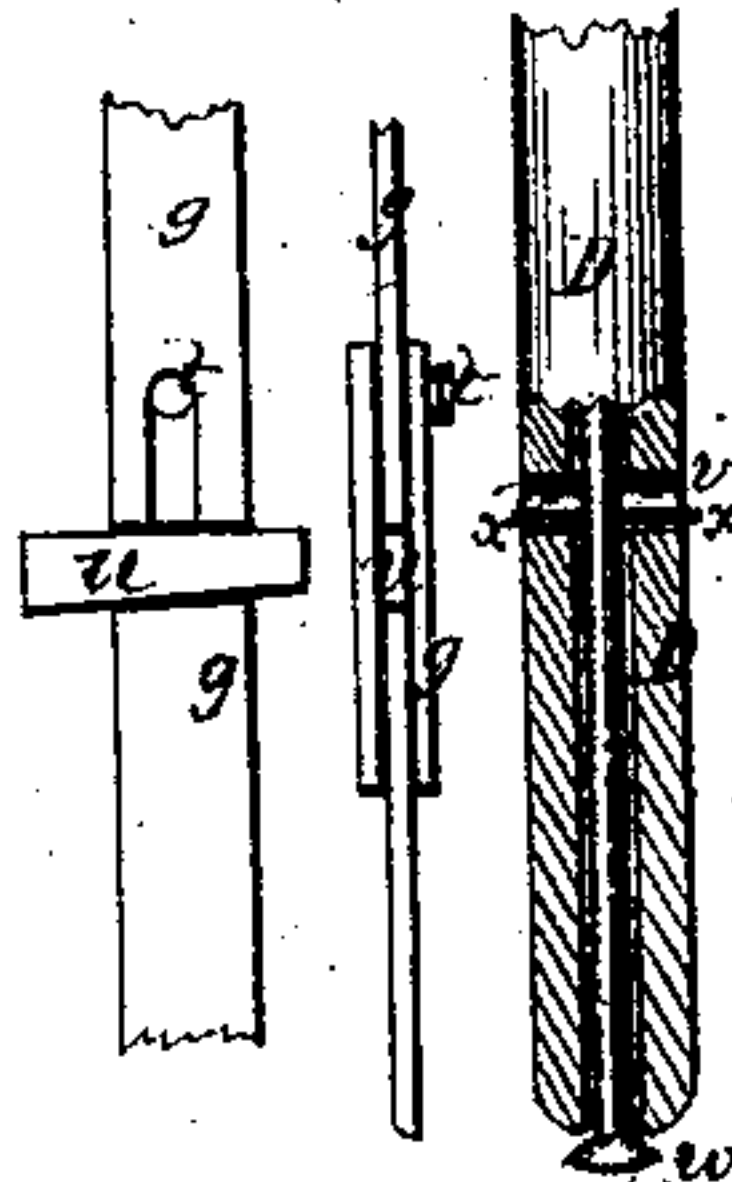
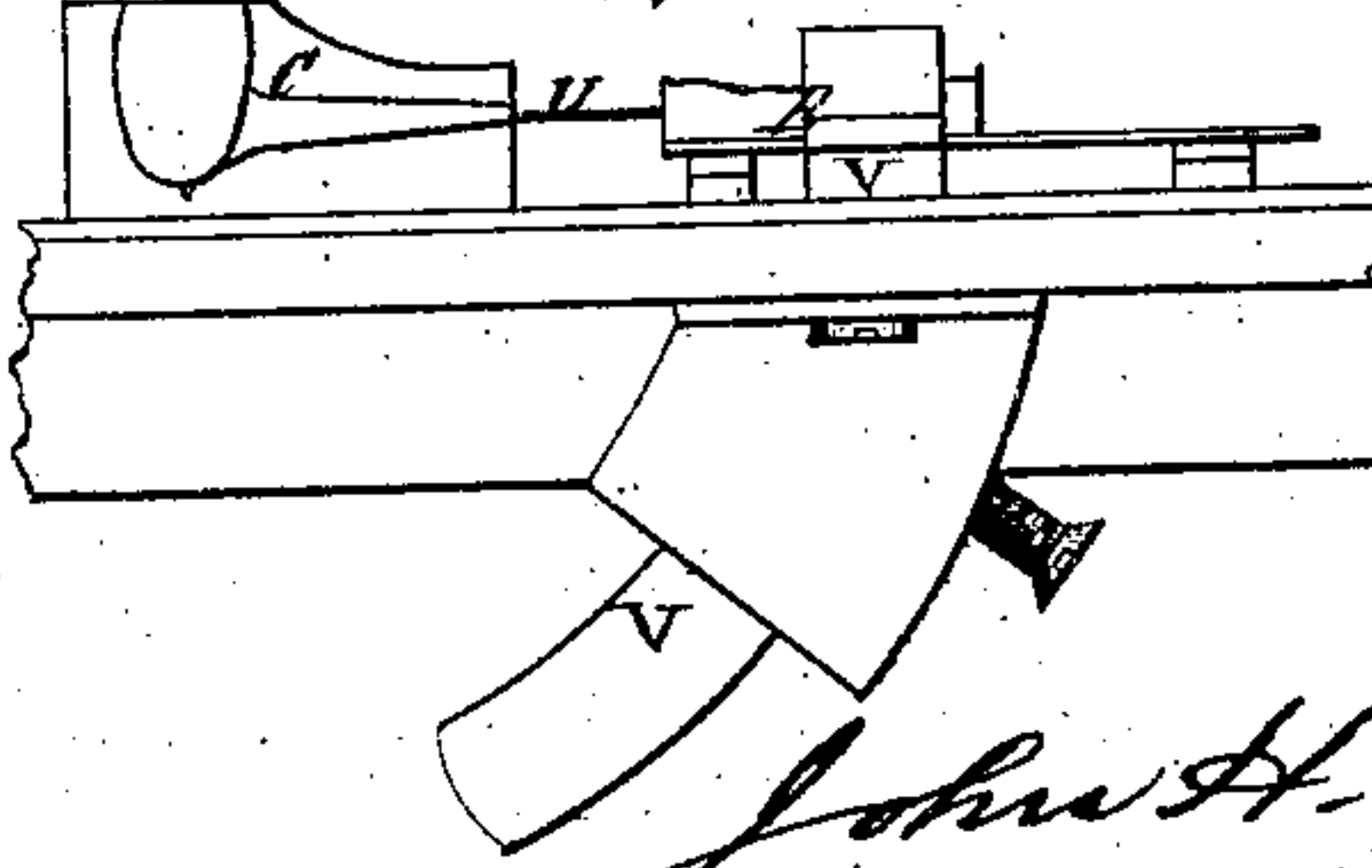


Fig. 9.



John H. Hallely,

Attys atty.

A. S. Brown.



# United States Patent Office.

JOHN H. HOLLELY, OF BROOKLYN, NEW YORK.

Letters Patent No. 104,850, dated June 28, 1870; antedated June 17, 1870.

## IMPROVED TOBACCO-PIPE MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN H. HOLLELY, of Brooklyn, in the county of Kings and State of New York, have invented an Improved Machine for Automatically Molding Tobacco-Pipes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, making part of this specification—

Figure 1 being a front elevation of the machine.

Figure 2, a side elevation thereof, portions being in vertical section.

Figure 3, a plan of the same, some portions being removed by horizontal section.

Figures 4, 5, 6, 7, 8, 9, 10, and 11, various views of parts detached, to be designated in the course of the description.

Like letters designate corresponding parts in all of the figures.

The clay, properly prepared and of the right consistency, having been previously molded or formed into charges or pellets, preferably of a cylindrical form, each containing the quantity of material required to form a pipe, the machine receives these pellets, and automatically feeds them to the work and completely molds the pipes ready for drying and burning.

The principal functional parts of the machine are a hopper tube, A, into which the clay pellets are first placed; a feeding-wheel or cylinder, B, which conveys the pellets into position over the mold; the mold C; a plunger, D, which forces the pellets down into the molds, and forms the interior of the pipe-bowl; a device, E, for piercing the hole through the stem of the pipe; and an oiling device, F, for oiling the interior of the mold when opened between the moldings of the successive pipes.

These parts, except the hopper tube A, which fulfils its office simply by the gravity of the pellets, all severally derive their movements from a driving-shaft, G, conveniently situated above the operative parts, and having its bearings on standards, extending upward from the table or frame on which the other parts of the machine are mounted.

The feed-wheel or cylinder B has an intermittent revolving motion on a vertical axis or pivot, by means of a cam, H, on the driving-shaft, G, acting on a vertical rock-shaft, a, which moves a pawl, b, to operate against ratchet-teeth or projections c c, on the periphery of the wheel or cylinder.

The pawl is retracted by a spring or elastic cord, d, shown in fig. 3.

The mold C is made in two parts, divided centrally in a vertical plane, and it opens to discharge the molded pipes by the two halves being moved horizontally from each other, and is closed by opposite movements of the same.

These movements of the mold-halves are effected by means of toggles I I, set at the outer ends against fixed fulcrums e e, and at the inner ends pivoted to the said mold halves, the toggles being actuated by a cam, J, on the driving-shaft G, operating on a cross-head, K, which has a vertical reciprocating motion in guides f f, and is connected with the toggles by rods g g.

The plunger D receives its vertical reciprocating movement also from a cam, L, of proper form, on the shaft G.

The stem-punching device E derives its forward movement from a cam, M, attached to a wheel, N, which is secured to the driving-shaft G, and serves also as a fly-wheel for the machine.

The motion from this cam is communicated through a connecting-rod, j, to a lever, k, and from that by a cord, band, or chain, l.

The return movement is effected by a spring and cord, m.

The operative motions of the oiling device F are received from another cam, O, on the fly-wheel N, through a connecting-rod, o, lever p, and cord, band, or chain, q; and the return motions are produced by a spring, r, and connecting-cord.

The feed-wheel or cylinder B has any convenient number of apertures or chambers through it, to receive the pellets and convey them to the proper position over the mold; and the arrangement of the hopper-tube is such that when the mold-wheel is in stationary position each time with a chamber over the bowl aperture of the mold, another chamber will be directly under the said hopper-tube to receive another pellet.

The feed-wheel rests on a stationary bed-plate, P, which hold the pellets in their chambers of the mold-wheel.

This bed-plate extends out over the main part of the mold C, which fits closely up thereto, to prevent the escape of any clay.

There is an aperture through this bed-plate, centrally over the bowl aperture of the same, and under the plunger D, and of the exact size to allow the plunger to pass through and fit closely therein, so that no clay will escape thereby.

When plungers of different sizes are used, different plates, P P, are also used, having apertures respectively to fit the plungers.

The mold-halves are secured to guide-rolls or bars h h, which move in guides i i.

The inner or bowl end of the mold, when closed, rests on a step or seat, Q, fig. 2, which sustains it and holds it up close to the bed-plate above.

This step is adjustable up and down by means of a set-screw, s.

The mold-halves must be brought into close con-



tact with each other and held there unyieldingly during the operation of molding.

The movements of the toggles I I are, therefore, nicely adjusted by lengthening or shortening the rods g g, which connect them with the sliding cross-head K.

A suitable mode of adjusting the length of the rods is indicated in figs. 5 and 6, which represent a rod divided, and the parts coupled together by a slot and set-screw, t, the adjustment being determined by a key, u.

The plunger D drives the pellets of clay into the mold, filling every part thereof by its pressure, and finally shaping the interior of the pipe-bowl therein.

Since all the clay of each pellet is driven into the mold, if there should be too much clay, as there frequently may be, to occupy the space in the mold, there must be a relief provided in order not to break the mold. I secure this relief by a device represented in fig. 7.

The driving cam L acts upon a cam-seat, n, which is the short arm of a pivoted lever, R, and the long arm thereof is counterweighted by a sliding weight, S. When there is an excess of clay, the weight S is raised and the cam-seat n yields to the action of the cam without further depressing the plunger. Thus all the clay is embodied in the pipe, even when it varies in quantity.

The pressure required to force down the plunger is adjusted by moving the weight S out or in on the lever R.

The plunger itself is adjusted by a screw-shank, which secures it to its seat.

Another more formidable difficulty to overcome in molding the pipes is to provide for the admission of air into the bowl of the pipes as the plunger is withdrawn therefrom. Unless this is effectually done the molding cannot be accomplished, since the withdrawal of the plunger would cause the pipe-bowl to collapse. I have been able to effect this object only by one method, substantially as represented in fig. 8.

The plunger is tubular at the lower end, and there is a vent or vents, r, outward from said tubular portion, at some distance from the end. In this tube plays a loose rod, provided with a head or valve, w, which will fit and shut against the lower end of the tube; but when the head drops a little, as represented, there is a free passage for air down through the tube and around the valve into the pipe-bowl. A cross-pin, x, or its equivalent, playing in the apertures r r, allows this slight up-and-down movement of the rod and valve. When the plunger descends, the valve w presses on the clay, and is pushed upward thereby, so as to close the tube in the plunger and prevent its filling with clay. But as soon as the pipe has been molded, and the plunger begins to be withdrawn therefrom, the air flows in through the tube, depresses the valve w, and occupies the space in the pipe-bowl as the plunger leaves it. It is entirely automatic and effective in its action. Any equivalent arrangement of the device may be employed.

After the formation of the pipe by the plunger D, and while it is still in the mold, the stem is pierced by a wire, U, held in and operated by the device E. It consists of two jaws, for grasping and holding the punching-wire, attached to a holder, which has a reciprocating motion, in line with the pipe-stem, in a guide V, by means above described. These jaws open as they reach the extremity of their forward movement, leaving the wire free to be taken away. The projecting portion of the wire is then taken hold of by the hand of the operator, and, as the mold then opens, he, by means of the wire, lifts the pipe therefrom.

There are caps W W on the outer ends of the mold-halves, which, as the mold closes, shut together and close the end of the mold, except a central hole

just large enough to allow the entrance of the punching-wire. The wire, withdrawn from the pipe, is again set in the holding-jaws, which, as they begin to be drawn back, are closed by the guide V, in which they move, and thus seize and continue to hold the wire firmly till the next pipe-stem is pierced by it. The guide V is held in a socket, y, and adjusted in height by a set-screw therein. This guide has a curved form, and is adjusted in the arc of a circle, concentric with the central point of the pipe-bowl, where the line of the stem aperture coincides with it in the bowl, so that, as molds for forming pipes with stems at different angles to the bowl are used, the stem-punching device may be adjusted in proper relative position to said molds. Thus, in the principal figures of the drawing, the device is shown adjusted to a mold for producing pipes with stems set at an acute angle to the bowl; but in fig. 9 it is shown adjusted to a mold for producing pipes with stems at right angles to the bowl.

After the molding of each pipe, and when the mold-halves are separated to the greatest extent, as indicated in fig. 3, the mold is oiled. The oiling apparatus F is provided with two perforated cylinders or flies Y Y, covered with flannel, or other soft, porous, oil-absorbent material, and of the proper size to fit the mold-halves. Their form and arrangement are shown on an enlarged scale in figs. 10 and 11. These flies have a reciprocating movement with the carrier of the device to raise them up into proper position between the mold-halves at the proper time, and also an outward movement from each other, just at the close of the upward movement, to bring them into contact with the mold-halves. To effect this latter movement they are respectively pivoted on shafts, around which wind cords z z, as shown. These cords are secured at the other ends to stationary holders, made fast to the supporting-guide Z of the device. The length of the cords is such that their slack is taken up as the flies nearly reach the termination of their upward movement, and then, by drawing on the shafts thereof, they turn the flies outward, as required.

The cord-holders are adjustable by a screw on the supporting-guide Z, or otherwise. This guide is arc-shaped, and is adjusted by a set-screw in an arc-shaped socket, concentric with the same point in the molds as the guide V, and for a similar purpose, to suit molds for making pipes with different-angled stems.

The leading principles of this machine are applicable to machines for molding many other articles besides tobacco-pipes, and I intend to apply them all, or part of them, as each particular case may require, to such purposes, making such changes only in form, size, proportions, and arrangement as the objects may demand.

I claim as my invention—

The combination of the hopper-tube A, mold C, and feed-wheel or cylinder B, moved with an intermittent motion, and provided with pellet-chambers, arranged so as to have one over the mold and one under the hopper-tube at the close of each intermittent movement, substantially as specified.

Also, the bed-plate P, beneath the feed-wheel, and projecting over the mold, being provided with a perforation centrally beneath, and fitting the plunger, substantially as and for the purpose herein set forth.

Also, the mold C, formed of halves, which have an adjustable, reciprocating movement toward and from each other to open and close the mold, substantially as herein specified.

Also, the adjustable seat or step Q, beneath the closed mold, in combination therewith, for the purpose set forth.



Also, the weighted lever cam-seat *n*, arranged in combination with the cam *L*, plunger *D*, and mold *C*, in the manner and for the purpose herein specified.

Also, an air-supplying, tubular, or equivalent passage, in the lower end of the plunger *I*, provided with a self-acting valve, substantially as and for the purpose herein specified.

Also, the piercing-wire *U*, for punching the pipe-stems while still held in the mold, operated by an adjustable reciprocating device, *E*, substantially as herein set forth.

Also, the piercing-wire *U*, set free at the close of each punching operation, when afterward employed to lift the pipes from the mold, operated in the manner substantially as set forth.

Also, the device *F*, for oiling the mold between the operations of molding, constructed and operated substantially as herein specified.

JOHN H. HOLLELY.

Witnesses:

JAMES SWEET,  
PHILIP TRANZ.