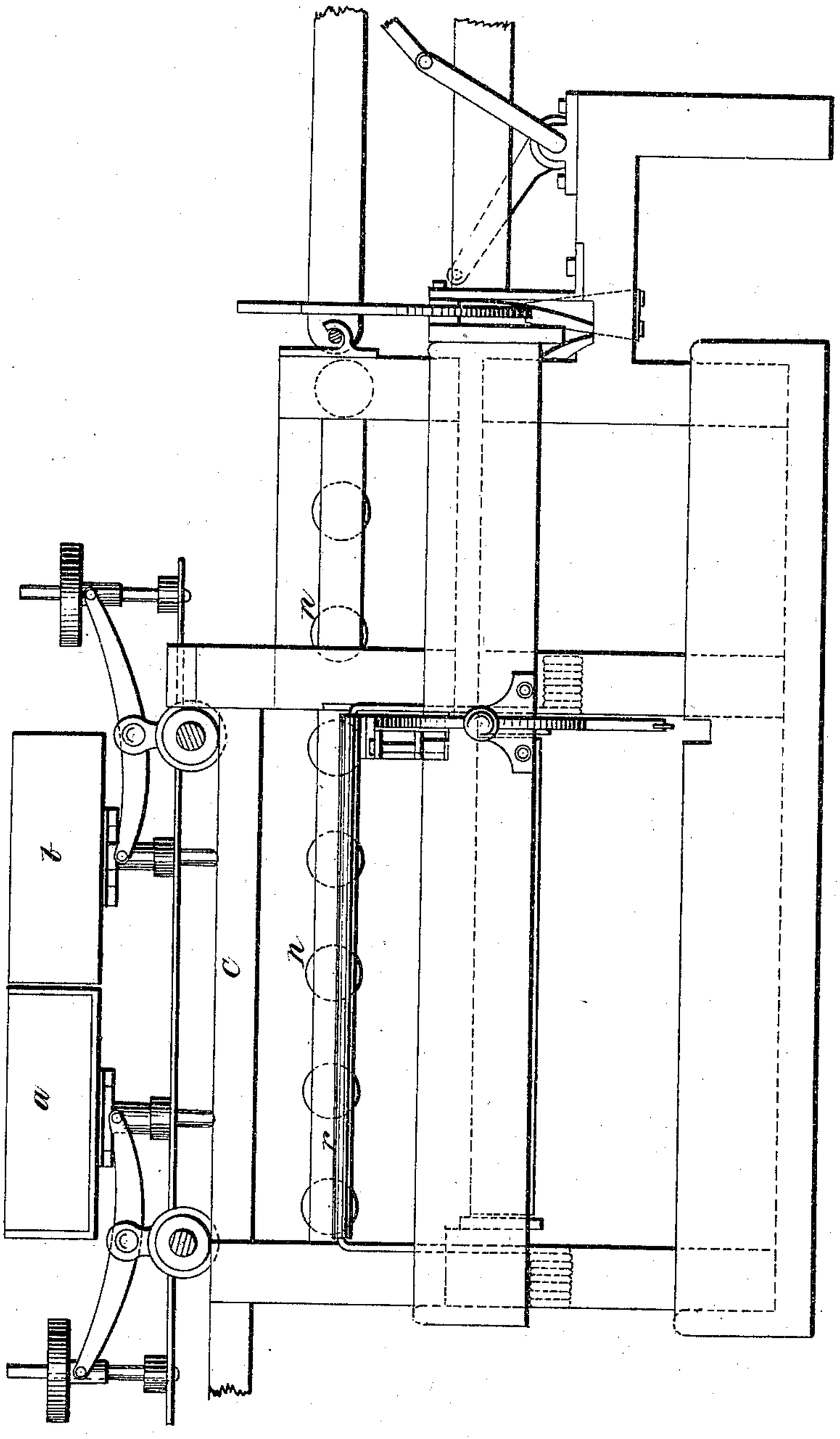
6 Sheets--Sheet 1.

JOAB SCALES.

Improvement in Tobacco Machines.

No. 124,979. Patented March 26, 1872.



Witnesses:

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6 Sheets--Sheet 2.

JOAB SCALES.

Improvement in Tobacco Machines.

No. 124,979. Patented March 26, 1872.

Fig:1

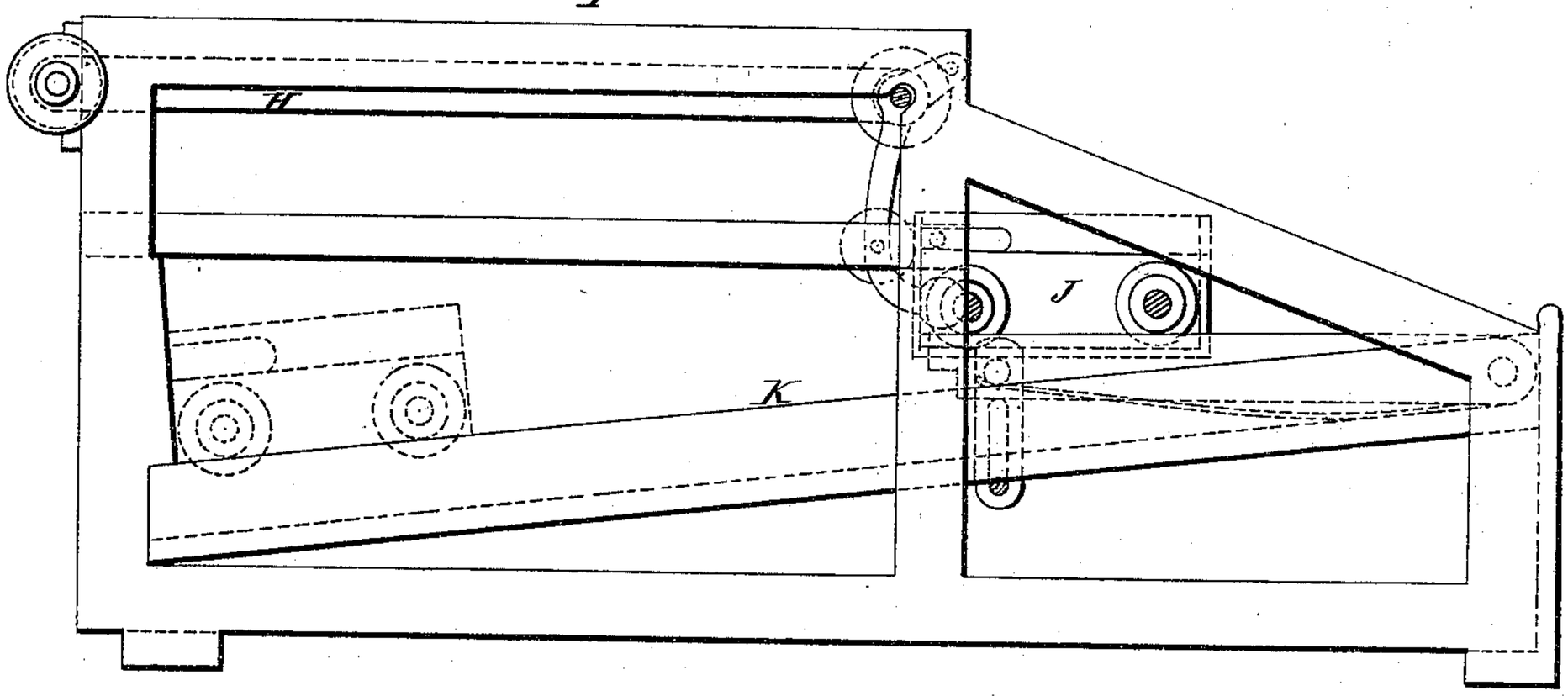
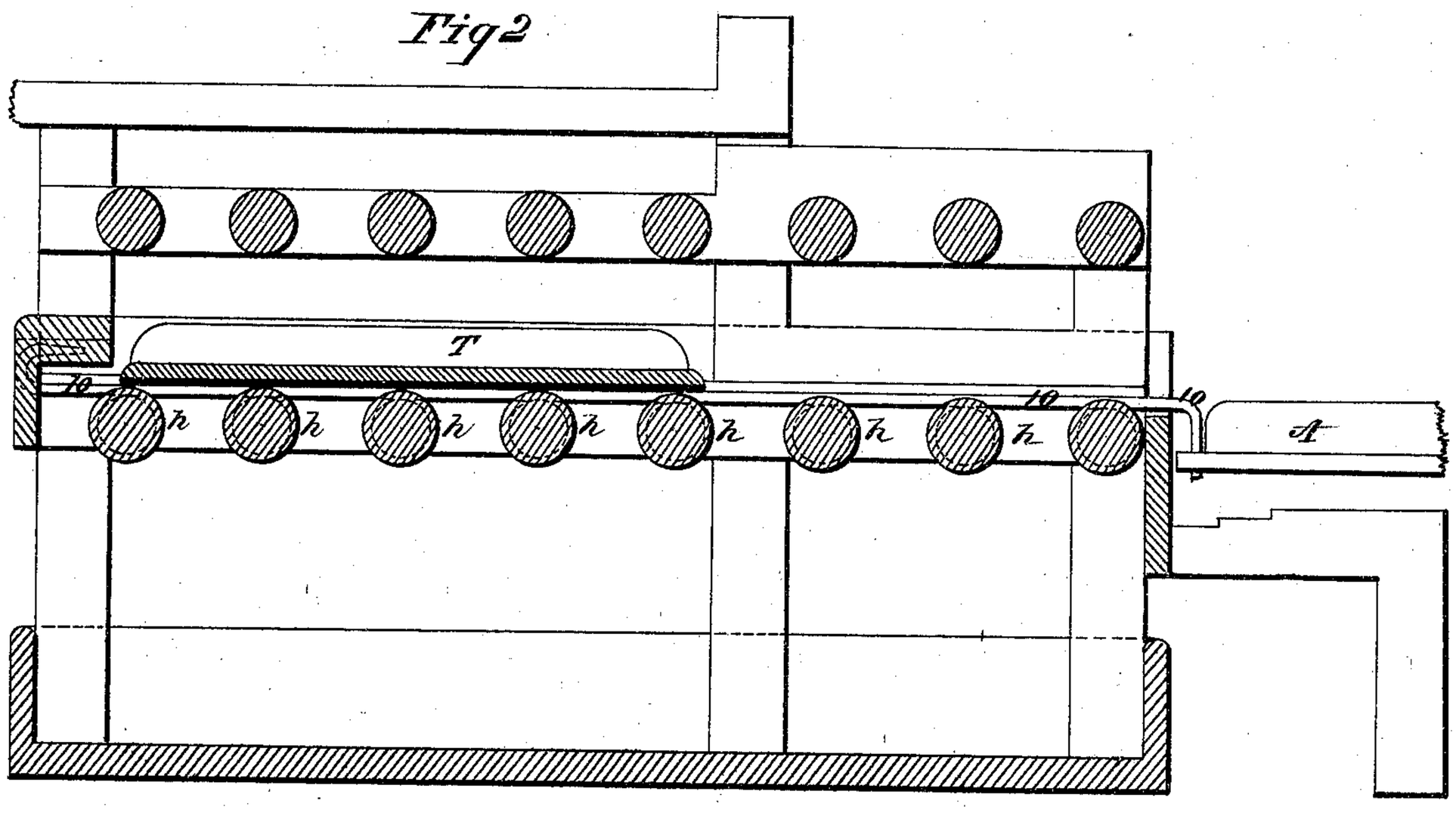


Fig2



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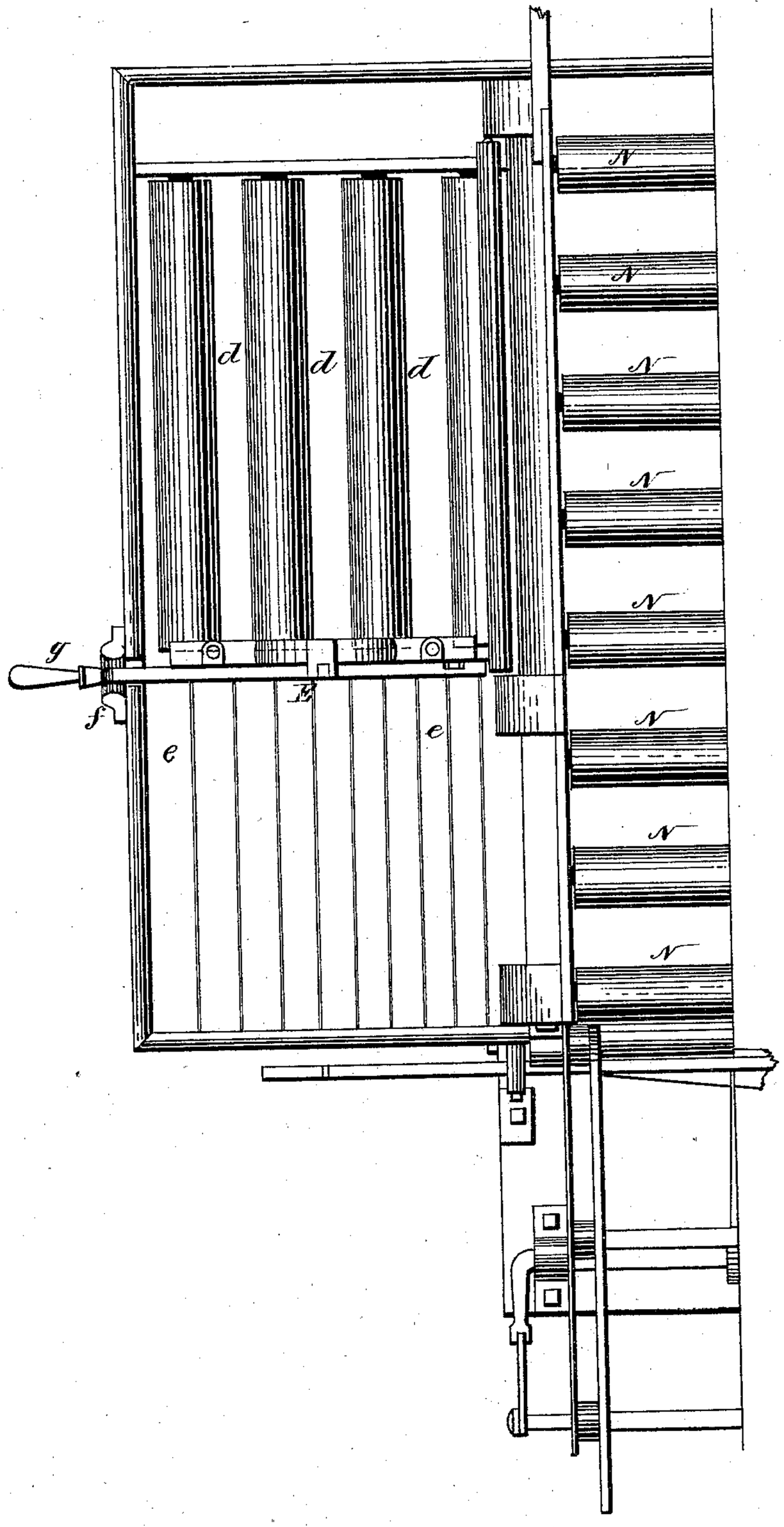
6 Sheets--Sheet 3.

JOAB SCALES.

Improvement in Tobacco Machines.

No. 124,979. Patented March 26, 1872.



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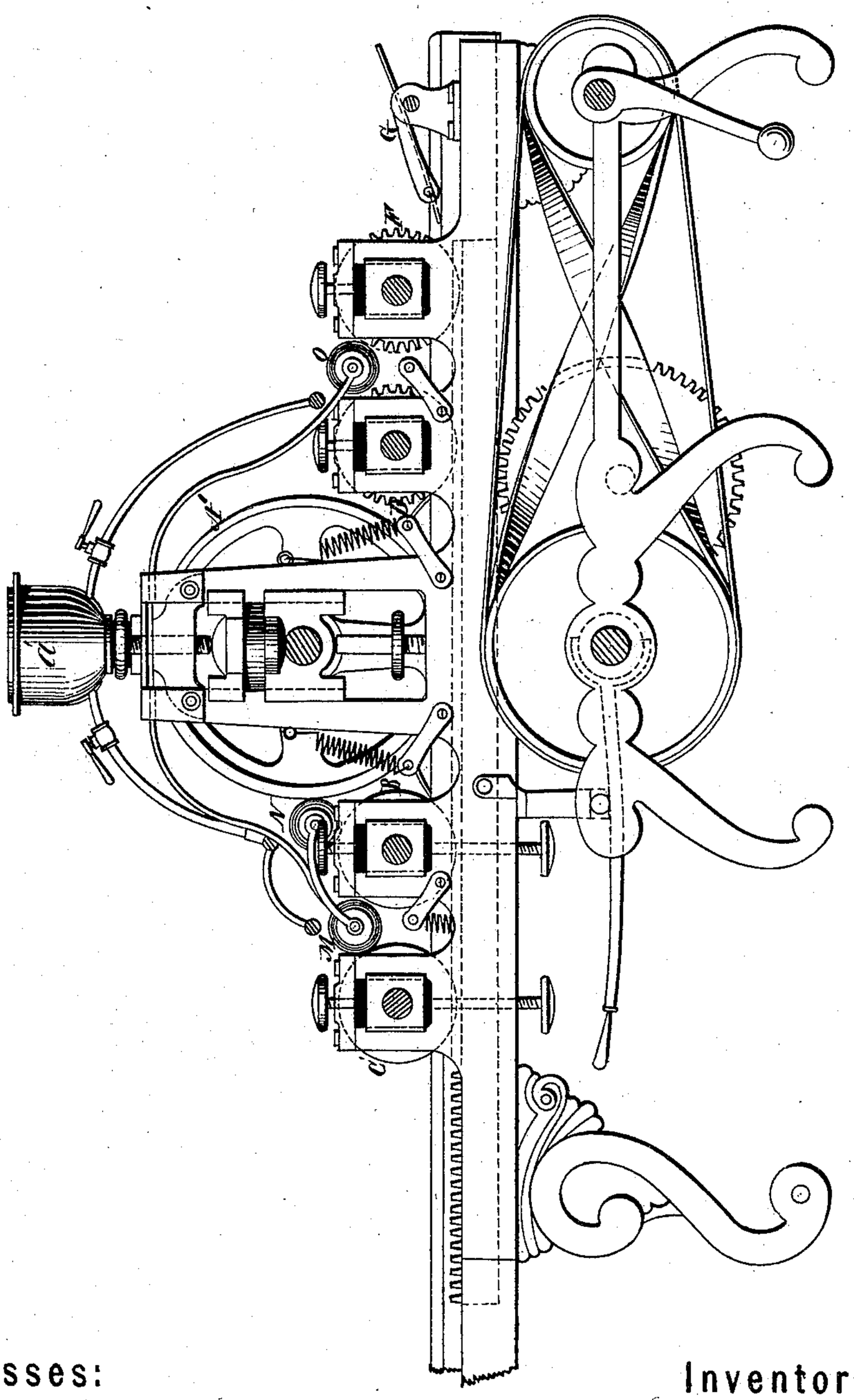
6 Sheets--Sheet 4.

JOAB SCALES.

Improvement in Tobacco Machines.

No. 124,979. Patented March 26, 1872.



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Improvement in Tobacco Machines.

No. 124,979. Patented March 26, 1872.

Fig 1

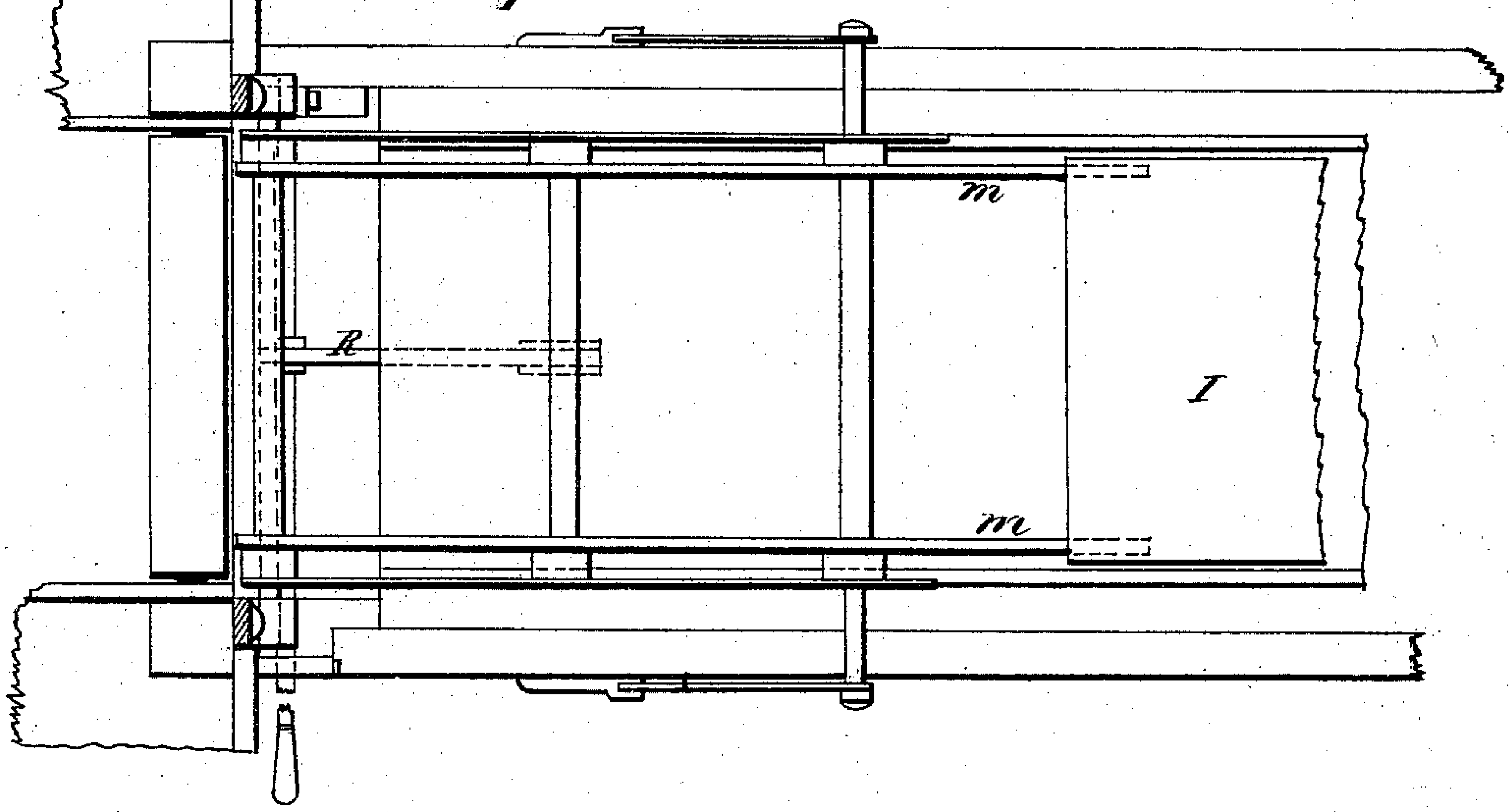
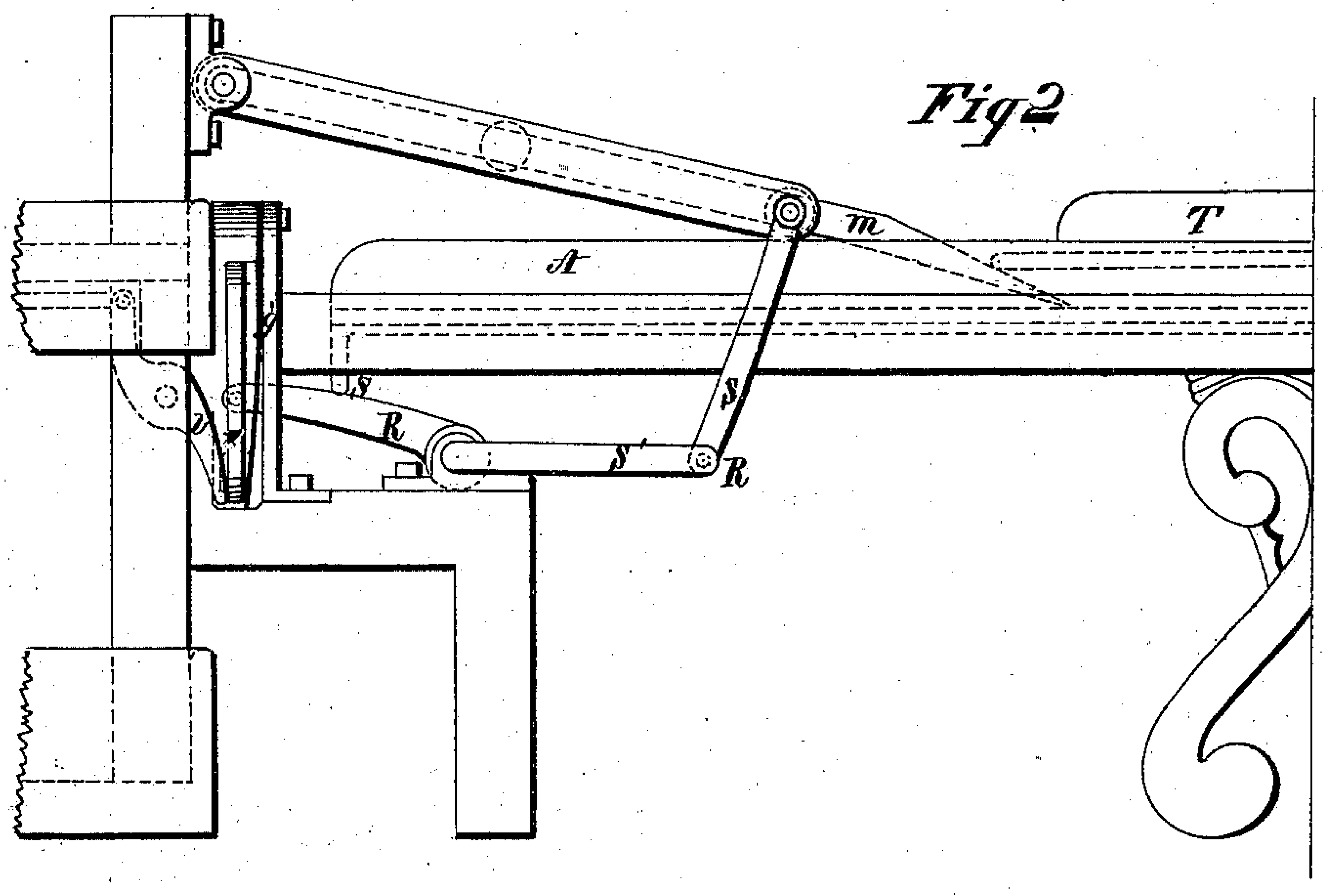


Fig 2



Witnesses

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Improvement in Tobacco Machines.

No. 124,979. Patented March 26, 1872.

Fig:1.

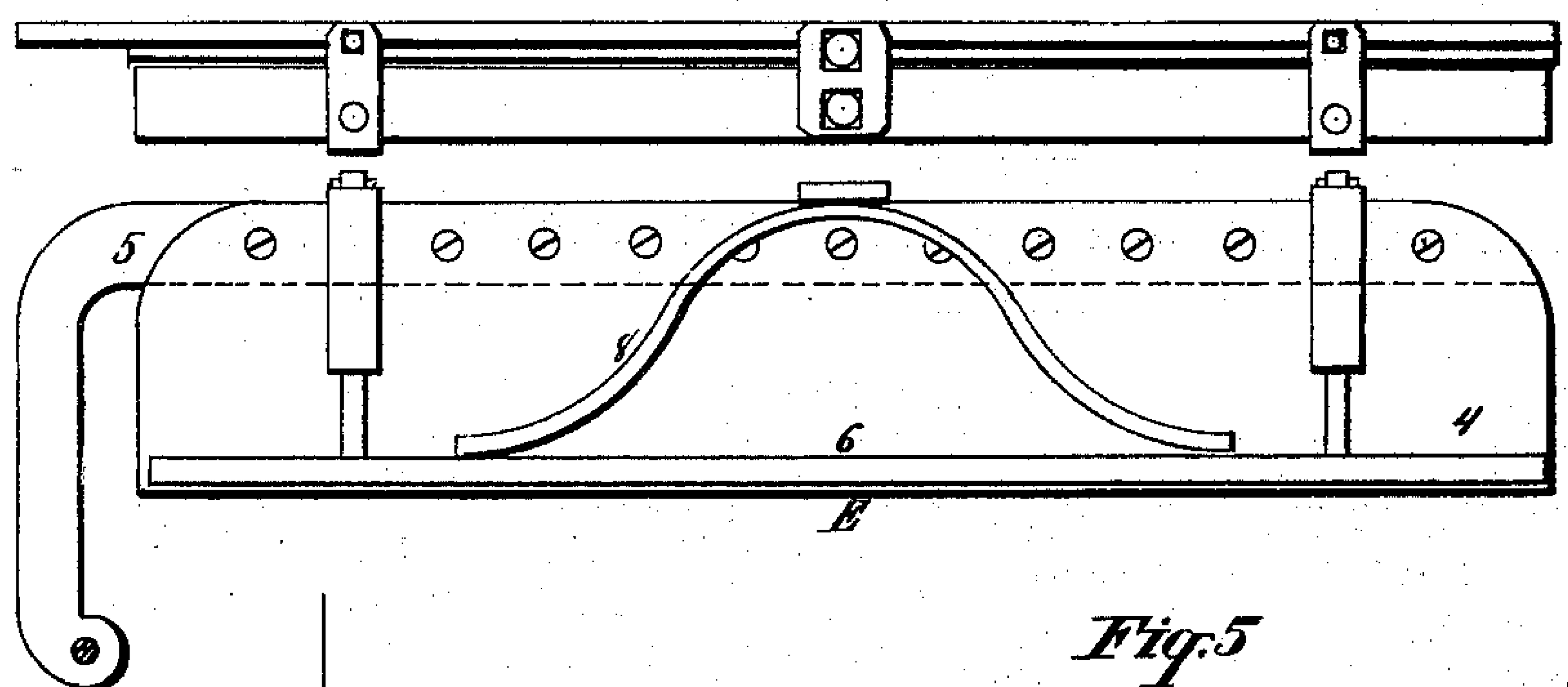


Fig:2

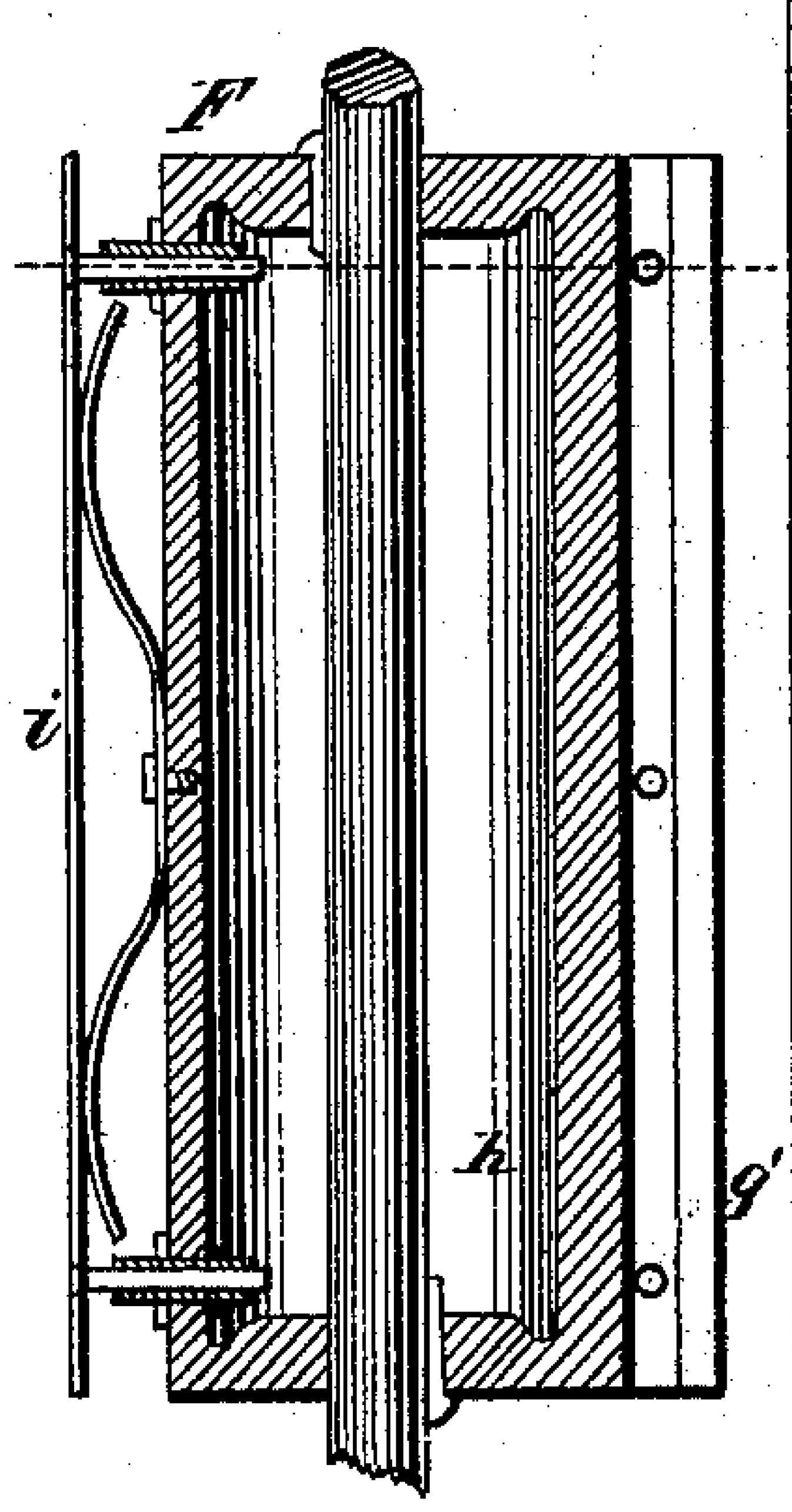


Fig:6

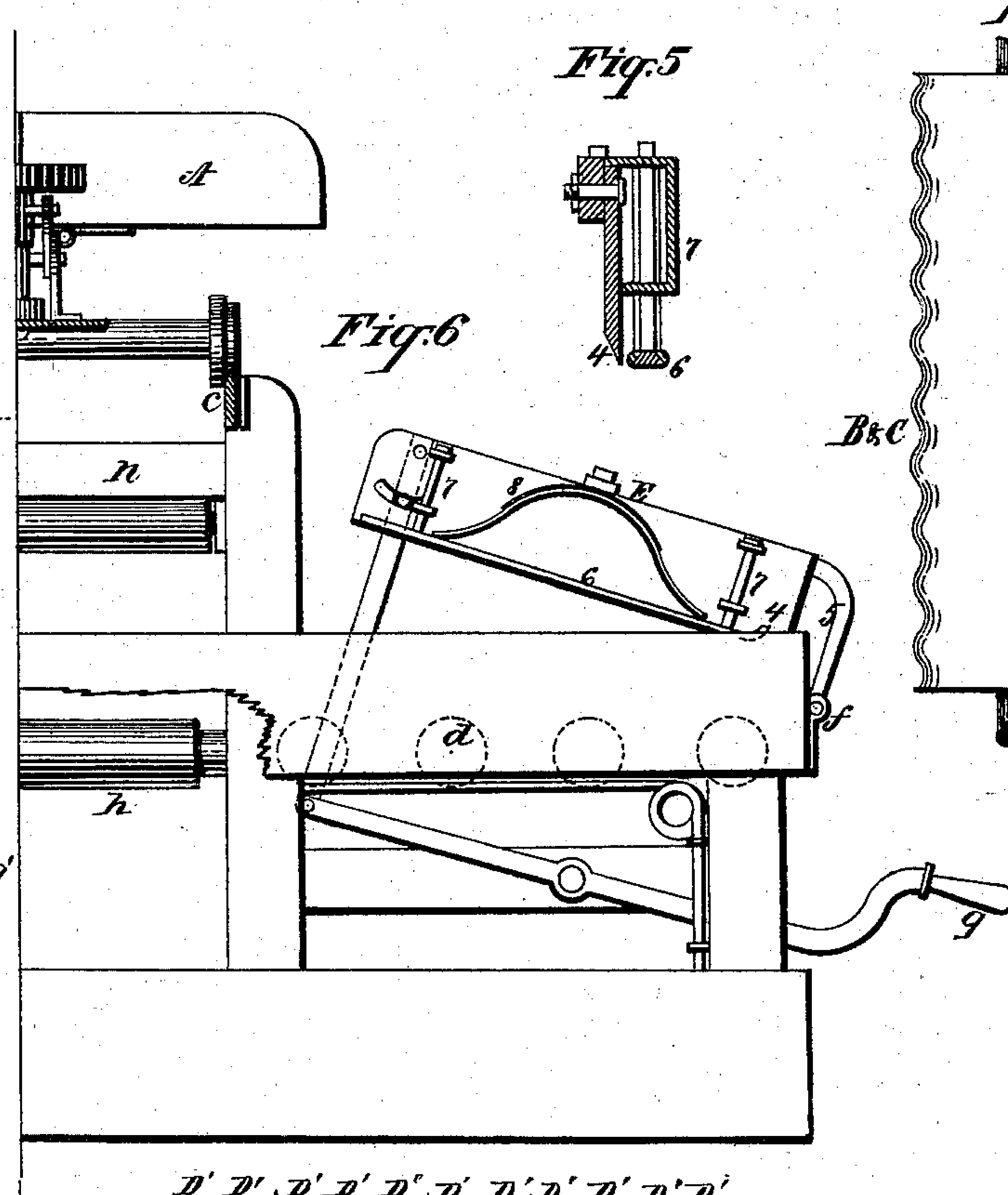


Fig:5

Fig:4

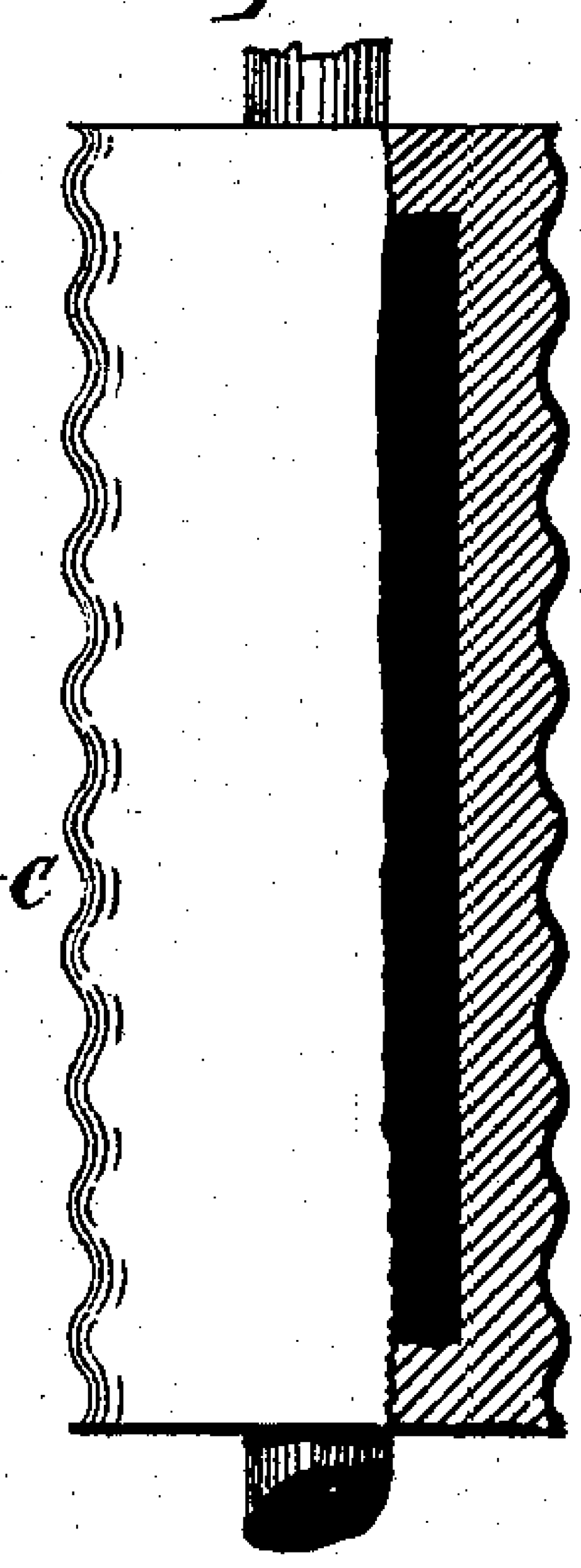
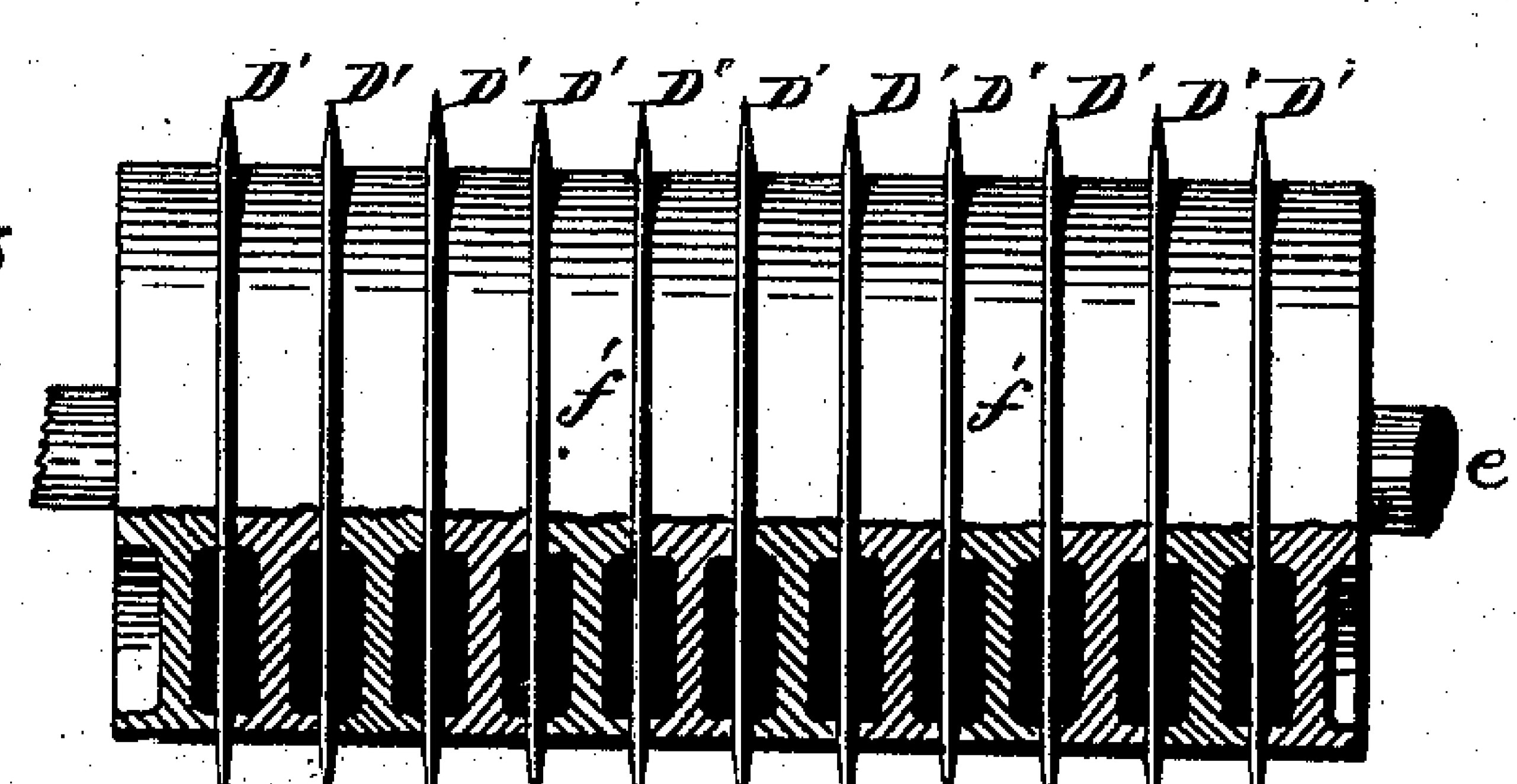


Fig:5



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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

124,979

UNITED STATES PATENT OFFICE.

JOAB SCALES, OF TORONTO, CANADA.

IMPROVEMENT IN TOBACCO-MACHINES.

Specification forming part of Letters Patent No. 124,979, dated March 26, 1872.

SPECIFICATION.

I, JOAB SCALES, of Covington, in the county of Kenton and State of Kentucky, at present residing in the city of Toronto, in the county of York, Province of Ontario and Dominion of Canada, tobacco manufacturer, have invented a certain Improved Tobacco-Lump Machine, of which the following is a specification:

Nature and Objects of the Invention.

My invention relates to an improved machine for making leaf-tobacco into lump; and consists in making certain combinations by which much handling, as now necessary, is prevented, thus permitting the lump aforesaid to be economically, expeditiously, and efficiently prepared with a minimum amount of manual labor, the whole being arranged and constructed substantially as hereafter described.

Description of the Accompanying Drawing.

Sheet 1, side view of distributing-table; Sheet marked 2 7, Fig. 6, half-end view of distributing-table; and Fig. 1, knives E; Fig. 2, sectional side view of plug-divider F; Fig. 3, plug-divider D; Fig. 4, corrugated rollers; Fig. 5, vertical transverse section of knife E; Sheet 3, half plan of distributing-table; Sheet 4, side view of lump-machine; Sheet 5, elevation and plan, showing connection between distributing-table; Sheet marked 6 8, Fig. 1, side view of discharging-table; and Fig. 2, longitudinal section of distributing-table.

General Description.

Before proceeding to describe my machine in detail, I will give a slight outline of the general principle of its construction, and endeavor to explain the manner in which it manipulates the tobacco. The two feeding-trays *a* and *b* slide on and are conducted by the track *c*. By referring to Sheet 1, which is a side view of the distributing-table, it will be noticed that the track *c* extends behind the rest of the machine, being carried back over a table upon which the loose leaf-tobacco is first placed. Upon each side of this table there is a girl, whose duty it is to fill with this tobacco the two feeding-trays *a* and *b*, which open on opposite sides for that purpose, the front of *a* and the back of *b* being shown in drawing. These trays are placed upon scales, so that the tobacco can be weighed as it is placed in them. When the proper proportion of tobacco is placed in the trays they are shoved along the track *c*, from this table into the position shown in drawing, Sheet 1. I must now draw your attention to Sheet marked 2 7, Fig. 6, which is an half-end view of the distributing-table. There is a sort of table on each side of the track *c*, and by glancing at Sheet 3, which is a plan of the same, its general construction will be readily understood, the detail description of which will be given further on. As at the first table, there is a girl on each side of the distributing-table to remove the tobacco from the feeding-trays *a* and *b*, and place it lengthwise in conducting-trays, hereafter described, which rest upon the rollers marked *d*. As the tobacco is placed in these trays, it is, of course, evenly distributed by the girls over the whole surface of the same, so that the tobacco will be of even thickness, but as any one that is familiar with the manufacture of tobacco will understand, it is impossible to spread it so that the ends will be of even thickness with the rest. It is therefore necessary to place the tobacco in the trays so that the ends of the leaves will project over the edge of the same. The conducting-trays are such in length and so placed upon the rollers *d*, that the ends facing toward the knives E, (the knife on the opposite side is the same, though not shown,) fit up against shoulder formed by the sheeting *e;* the aforesaid ends will be immediately against the knives E. These knives, which I will describe further on in detail, are hinged at *f*, and as may be seen by reference to Sheet 2 7, Fig. 6, are opened by the handle *g*, and, of course, are made to cut by the same medium. The handle *g* is so poised that the knives E remain open, thus permitting the ends of the tobacco-leaf which project over the ends of the conducting-trays, as before mentioned, to pass in under them, (the knives,) when the girls who distribute the tobacco in the trays, draw up the handle *g*, which will force the knives E down and thus cut off the ends of the tobacco aforesaid.

This operation I consider of great importance, as the ends which must necessarily be ragged and of uneven thicknesses are cut off, and the leaf-tobacco is thus in a better condition to go through the next process, which I

will now proceed to describe: On Sheet 4, A is simply a traveling-table, made to travel backward and forward beneath the rollers A′, B, and C′, and "plug-dividers" D and F, carrying, of course, anything which may be secured to it. There is no necessity to explain the manner in which this table A is worked. It will be sufficient to say that any combination of gearing, or so forth, by which a reciprocating motion can be imparted, will answer, provided the said motion is readily governed.

Sheet 5 shows an elevation and plan of the connection between the distributing-table and the next part of the machine, in which I have shown the table A against the distributing-table 1, nearly in the position it stands when about to receive the conducting-tray, which, when sufficient quantity of tobacco has been placed in them, as before described, are shoved by the operators off the rollers *d* on to the rollers *h*. But, as the length of the rollers *h* is the same as the width of the conducting-trays, and as the operators are opposite to each other, it follows, that when one tray has been placed on the rollers *h*, the other must remain on the rollers *d* till the first has been removed, which is done in the following manner: Attached to the back of the table A are two steel rods or bars, (see 10, Fig. 2 of Sheet marked 6 8,) sufficiently long to reach, when the table A is in the position shown, beyond the first position of the conducting-trays aforesaid, the said rods resting in grooves cut to receive them in the rollers *h*, and at the end remote from the table A bent hook-shape. Thus when the table A moves away from the distributing-table, as hereafter described, the hooked ends of the said rods catch the tray which is on the rollers *h*, carrying it forward till the table A is reversed, as hereafter described; when the tray thus brought forward is left within reach of the boy in charge of the lump-machine, and the rods return to perform the same operation with the next tray. As before stated, the table A is in position ready to receive the tray which has been brought forward by the operation just described.

The boy in charge of the "lump-machine," Sheet 4, seizes it and draws it into place upon the table A, any suitable contrivance being used to hold it there. The machine is then thrown into gear, and the table A made to move from the distributing-table, carrying the tobacco-tray beneath the rollers, &c. The tobacco in the tray is, of course, loose before passing beneath the rollers. The first roller *c* presses the tobacco down a little, the next B more, preparing it for the large roller A, which finally compresses it sufficiently into mass to permit it to be cut by the plug-dividers F and D. The two rollers are corrugated for the purpose of spreading the tobacco. I will describe each of these further on in detail; but for the present it will be sufficient to say that D is a drum, with a number of circular knives projecting around its circumference, arranged so as to cut the tobacco into strips, as hereafter described; and F is formed of a number of knives and springs, arranged so as to hold and cut the tobacco crosswise, as hereafter described. They are driven by spur-wheels upon their shafts, which spur-wheels gear into a rack upon the upper side of the table A; consequently D and F will revolve as the table A is moved.

The tobacco is cut into strips by the knives in D, cross-cut by the knives in F, and the plugs thus made are forced up the inclined plane G, hereafter described, onto the endless belt H, Fig. 1, Sheet 6 8, which is driven by suitable means, carried by it, as indicated by arrows, and finally dropped into the box J. This box is held in a horizontal position by a spring tempered and arranged in such a manner, that it will support the box in that position till the quantity of tobacco which the tobacco-tray contains has been dropped in it, as before stated, by which time the box J has has sunk on to the track K, which is on an incline, as may be seen, when, of course, the box J will be carried by its own weight down the said incline, to be taken away when at the bottom by one of the wrappers. On the track K, which may be carried back much further than shown, I place a number of boxes, J, one after the other, so that as one is filled and moves off, another slides down to fill its place, and so on. When all the tobacco which was upon the tray has been forced up the inclined plane *g* in the shape of plugs, the driving-motion is reversed, and the table A made to return toward the distributing-table, carrying with it, of course, the empty tobacco-tray; in moving back, the lifting-rods *m* slide on the surface of the table slipping in under the empty tray; as the table moves back the motion of the table forces the tray up on to the said lifting-rods, (see Sheet 5;) and as the table moves back still further, these rods are lifted by some suitable contrivance taking with them the tray, which then may be run back on the rollers *n* opposite to the operator, whose full tray has just been moved on to the rollers *h;* the empty tray is then drawn by the said operator on to the rollers *d*, and the operation repeated, as before described.

From this description, it will be seen that my arrangements are systematic; and from the following, it will be noticed that the ingenious construction of the component parts of my machine contribute largely to its successful working. Feeding-trays *a* and *b* (see Sheets 1 and 2, Fig. 6 of Sheet 6 8) are attached on scales, as hereinbefore mentioned, to a truck or frame which runs upon the track *c c* in such a manner that the operator, who is opposite to the open side of either of the trays, may tip it so that the tobacco may be more easily removed. They may be made of any suitable material, and in any shape, so long as they can be moved easily on the track *c c*, (or rollers, if preferred,) and the tobacco which they contain readily removed. The main feature of the distributing-table, Sheet 1, can be understood by examining Sheet

2 7, Fig. 6, and Sheet 3. The distributing-table, lump-machine, and discharging-table, marked respectively, may be built upon a continuous frame, or simply arranged in the order described, and bound together by suitable means. The rollers *h* are on a line with the top of the table A, to facilitate the transfer of the conducting-tray from one table to the other. The system of rollers *n* work in a longitudinal piece held by uprights, at a sufficient distance from the system of rollers *h* to admit of the free passage of the conducting-trays between them. The said system of rollers *h* and *n* are parallel with each other. There are two systems of rollers *d*, one set on each side of the rollers *h*, at right angles to the same, but a little higher, so as to permit the tobacco-tray to slide off them more easily onto the rollers *h*, and also prevents the tray from running through onto the other side.

On Sheet 1, *r* are rods which run the full length of the rollers *d*, and are supported by springs, suitably attached to the frame of the distributing-table. These rods are for the purpose of "breaking the fall" of the conducting-tray when the operator draws it from the rollers *n* onto the rollers *d*, as hereinbefore described. The knives E are connected on each side of the distributing-table, as before described. Fig. 1 on Sheet 2 7 is a detail drawing, which shows clearly the construction of the knives E. 4 is the blade, which is, of course, made of steel, and the size, as also the rest of the details, is in proportion with the rest of the machine. The blade 4 is attached securely to a stiff bar, 5, the end of which is bent, as shown, so as to fit into a socket attaching it to a distributing-table. 6 is a light bar of steel, held against the blade 4 by guides 7, (see sectional view Fig. 6.) The object of this bar is to hold the tobacco-leaf while the knife is cutting, the spring 8 permitting the bar 7 to recede as the blade passes through the tobacco, and yet the said spring is strong enough to hold the bar 7 against the tobacco and prevent it from shifting while being cut. C and B, Fig. 4, are corrugated rollers, the same width as the large roller A′, Sheet 4. Their axle-boxes fit into jaws made in the frame, as shown. Over each axle-box I place a rubber or steel spring, so as to permit the said rollers to have a slight vertical motion as the tray of tobacco passes beneath them. The spur-wheels which drive these rollers must, of course, have long teeth, to permit the said vertical motion. The large roller A′ is driven by the motion of the table A, as before described, and it is so attached to its frame that it can be raised or lowered at will by hand-screws, as shown. Rubber or steel springs are also arranged in combination with it, as with the rollers C and B. Attached to the frame immediately over the large roller A′ is a suitable reservoir, *a′*, for holding the flavoring. A number of cocks, or one cock in connection with a distributing-trough, are arranged so as to keep the roller A′ moist with the said flavoring; and in order to do the same for the rollers C and B, I suspend, by suitable means, auxiliary rollers. The rollers A′, B, and C, are provided each with a scraper, held against their surfaces by springs properly adjusted. These scrapers run right across the full width of the rollers, and are for the purpose of preventing the tobacco from adhering to their surfaces. The plug-divider D I have shown in detail on sheet marked 2 7, Fig. 3, representing the same. The circular knives D′ are like circular saws without teeth, their edges being ground sharp instead. The knives D′ fit upon the shaft *e′*, as do also the drums *f′*, as may be seen by drawing. The knives D′ are between the drums *f′*, the whole being jammed together by nuts, or otherwise, to prevent them revolving upon the shaft *e′*.

Fig. 2 illustrates the construction of the plug-divider F, which is for cross-cutting the tobacco after it has been cut into strips by D′. *g′* are the knives, which are straight blades of steel attached to the cylinder *h′*, as clearly illustrated by drawing. These knives are placed apart the right distance, so as to cut the plugs into the required lengths. The bars *i′* are attached to the cylinder *h′*, as shown in drawing, between the knives, each one to hold the tobacco for the knife which follows it.

The drawing is sufficiently clear to explain the rest of the construction so as to enable those skilled in the art to manufacture it.

The inclined plane G, Sheet 4, is simply a piece of sheet-steel riveted to a bar running across the table A, and so arranged that, as the tobacco-tray passes F, it (G) grazes the bottom of the said tray, thus lifting the tobacco-tray, as before described. A spring may be used for the purpose of keeping G down, as may readily be understood from drawing. The plug-dividers D and F are lubricated solely by the flavoring contained in the reservoir *a*. The rollers M, N, and O, spread it both onto the plug-dividers D and F, and rollers A′, B, and C′, as may be understood by reference to Sheet 4.

By referring to Sheet 5, the arrangement I use for raising the lifting-rods *m* may be understood, with the assistance of the following description: As the traveling-table A moves toward the distributing-table, a lip, S, on the bottom of it, strikes the lever R, pressing it down as the table A moves closer to the distributing-table, and straightening the elbow R′, which has the effect of lengthening the rods S′, and raising the lifting-rods *m* correspondingly. On this sheet the tobacco-tray T is shown commencing to run upon the lifting-rods *m*, as before described. When the rods *m* are raised the handle *g′* falls down, and the spring *d′* forces it into the notch *l*, which holds the handle down, and the handle being connected to the lever R, the rods *m* are supported till the handle *g′* is thrown out of the notch *l* by the shifter *v*, which is operated on by the tobacco-tray T striking a catch connected to *v*, as it is being drawn by the rods, before referred to, toward the lump-machine.

From this the general construction of my lifting arrangement can be understood, and I feel confident that, with the assistance of the accompanying drawing, the foregoing specification describes the whole principle of my invention, and the construction of it in detail, sufficiently to enable any skilled mechanic to build my automatic tobacco-lump machine in accordance with the principle of my invention, without confining him to some of the minor mechanical details, which may be altered to suit the tastes of the various manufacturers.

Claims.

What I claim as my invention is—

1. The combination of the distributing-table, lump-machine, and discharging-table, working in conjunction with each other, and handling the tobacco automatically from the time the leaf is distributed in the tray T till the lumps are discharged into the box J, the whole being constructed substantially as and for the purpose specified.

2. The combination of the rollers A′, B, and C′ plug-dividers D and F, reservoir *a′*, rollers M, N, and O, inclined plane G, working in conjunction with the tray T and traveling-table A, substantially as and for the purpose specified.

3. The combination of the feeding-trays *a* and *b* with the scales 11, for the purpose of weighing the leaf-tobacco, substantially as described.

4. The combination of the feeding-trays *a* and *b* with the track *c c*, substantially as and for the purpose specified.

5. The combination of the rollers *d*, *h*, and *w*, track *c c*, rods *r*, knives E, forming the distributing-table, substantially as and for the purpose specified.

6. The combination of the lip S, lever R, rods S′, handle *g′*, spring *d′*, notch *l*, shifter *v*, for the purpose of raising and lowering the lifting-rods *m*, substantially as and for the purpose specified.

7. The combination of the endless belt H, box J, inclined track K, substantially as and for the purpose specified.

8. The combination of the blade 4, tobacco-holding bar 6, guide-pieces 7, and spring 8, substantially as and for the purpose specified.

9. The rollers B and C, having corrugated surfaces, for the purpose of spreading or equalizing the tobacco in the tray T, substantially as and for the purpose specified.

10. The combination of the rods or bars 10 with the table A, for the purpose of operating the trays T, substantially as described.

City of Toronto, Nov. 1, 1871.

JOAB SCALES.

Witnesses:

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