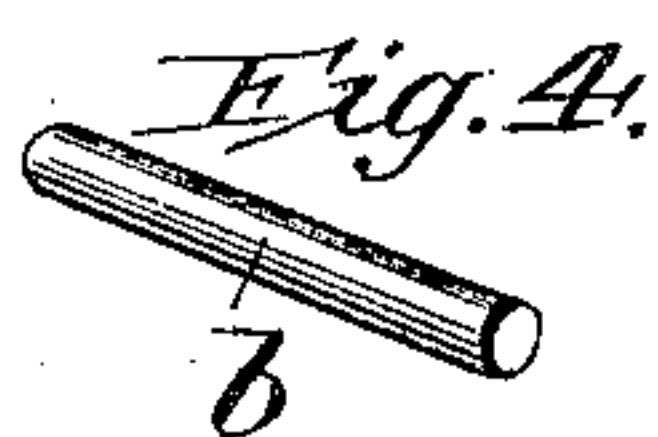
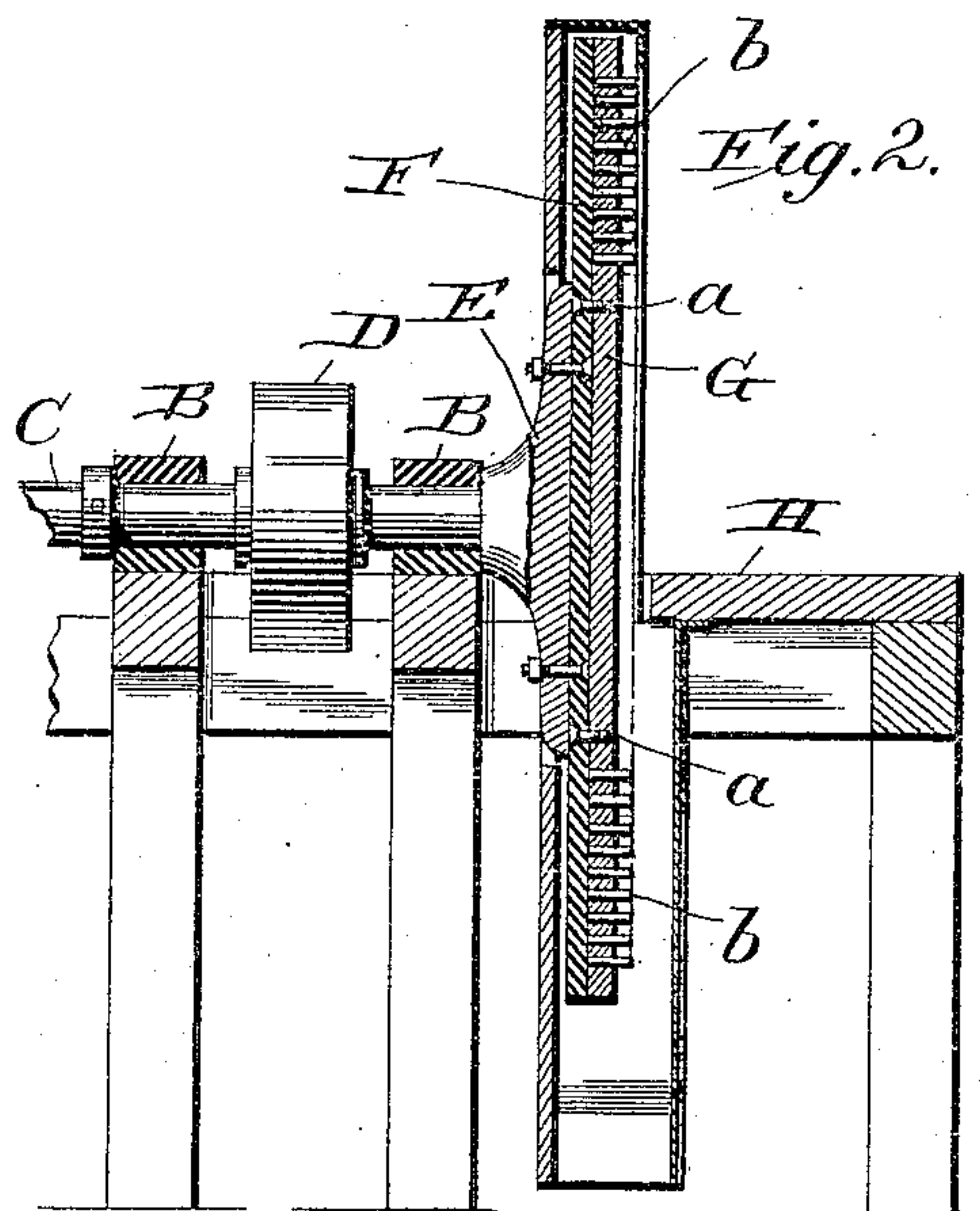
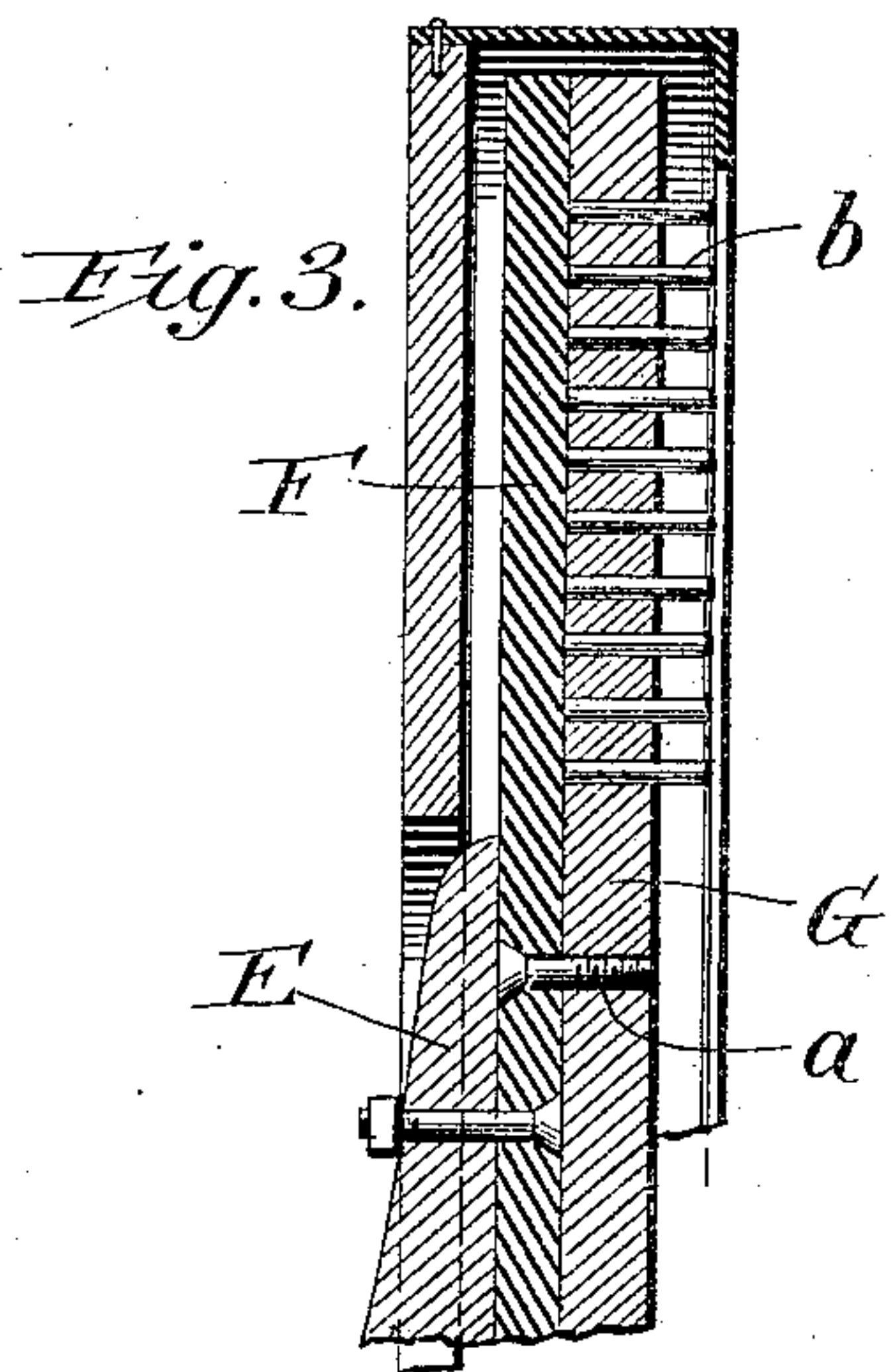
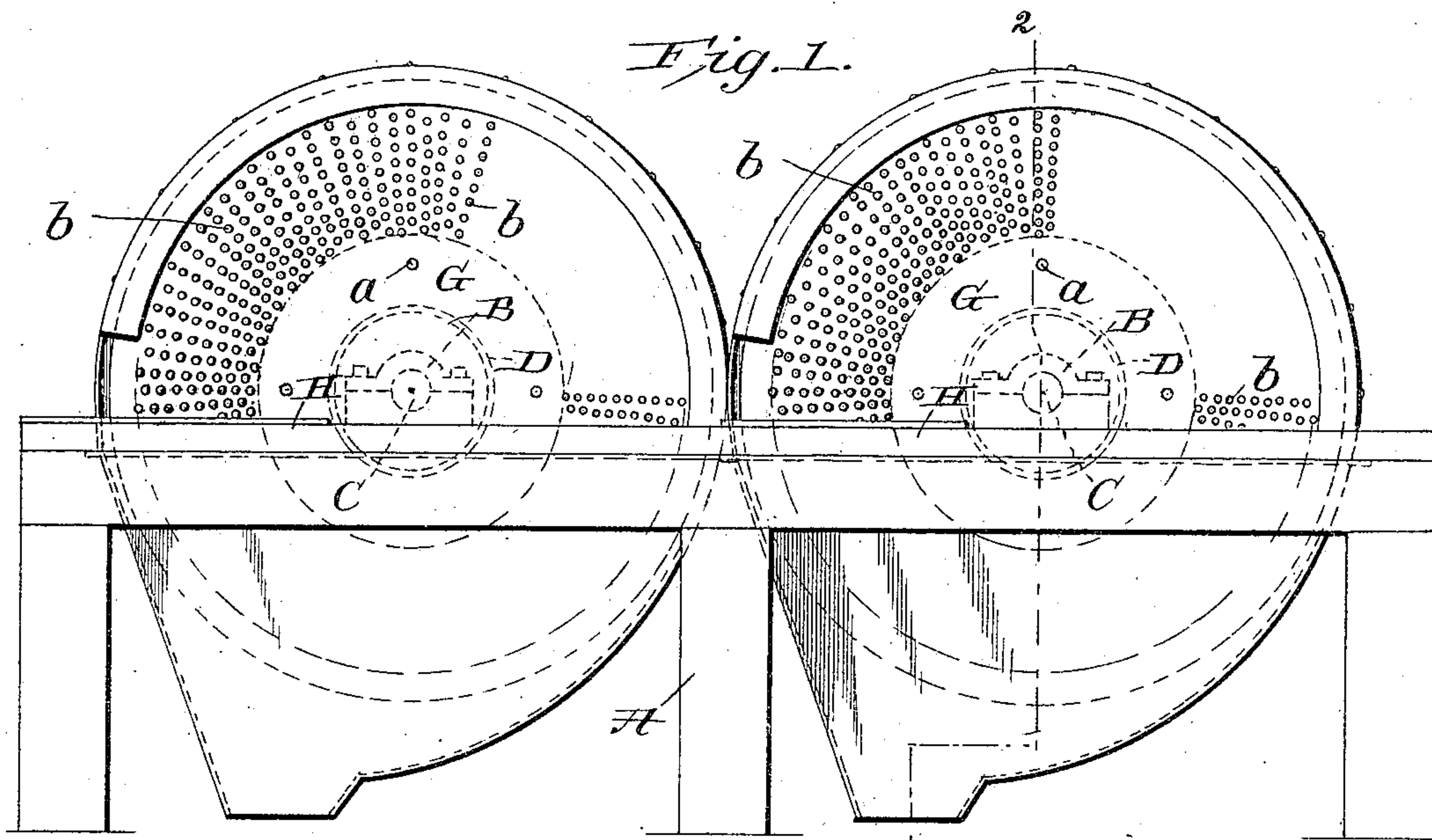


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MACHINE FOR DRESSING AND FINISHING WOOD, &c.
APPLICATION FILED SEPT. 2, 1908.

943,046.

Patented Dec. 14, 1909.



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UNITED STATES PATENT OFFICE.

JOHN W. SCHLEICHER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO MENGEL BOX COMPANY,
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MACHINE FOR DRESSING AND FINISHING WOOD, &c.

943,046.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed September 2, 1908. Serial No. 451,401.

To all whom it may concern:

Be it known that I, JOHN W. SCHLEICHER, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Machines for Dressing and Finishing Wood, &c., of which the following is a specification.

This invention pertains to means for dressing or smoothing wood and other substances, and is designed more particularly for finishing boxes.

The primary purpose of the invention is to provide means for rapid and efficient surfacing and cleaning of boxes, removing misprints therefrom, etc., without the use of sand paper, emery or like material, the employment of which is needlessly expensive, in consequence both of the quantity of sand or emery paper required, and of the loss of time incident to renewing or replacing the paper on wheels, cylinders, or other bodies employed to do the work. In the manufacture of boxes, and particularly such as have the well known "lock corner" construction, formed by interlocking tongues held together by glue, the boxes require to be dressed or surfaced after being assembled, and the protruding ends of the tongues need to be brought to plane with the faces of the boards forming the sides and ends of the boxes. Economy of time and space requires that the boxes pass in rapid succession through the different processes of assembling and gluing, and dressing or finishing, and hence they are commonly delivered to the finishing machines while the glue is still soft and the wood damp or even wet. In this condition the wood cannot be efficiently dressed by sand paper, emery paper or the like, and as a consequence, the boxes found to be in this condition must be set aside for further drying, or be imperfectly finished. It often happens too, that a misprint is made upon, or an unsuitable label is applied to a box board, and under methods now in vogue, such boards must be planed before the box can be finally assembled and completed. To overcome these serious practical difficulties and produce a machine capable of finishing satisfactorily freshly glued, damp or even wet work, of bringing to common plane all parts of the surface, knots, end grain, and face, and of removing misprints, labels, etc., after the box is com-

pletely assembled, I adopt the construction illustrated in the accompanying drawings, in which:—

Figure 1 is a front face view or elevation of the machine with a portion of the covering rim of each disk slightly broken away; Fig. 2, a vertical section on the line 2—2 of Fig. 1; Fig. 3, an enlarged section of like character, but of a portion only of the wheel; Figs. 4 and 5, perspective views of slightly variant forms of pins suitable for use in the wheel or disk.

In these drawings, which illustrate the preferred embodiment of my invention, I have shown two wheels or disks, the first designed to do preliminary surfacing and the second to give the finer or smoother finish, but I may use either more or less than two, according to the class of work to be done. As the two wheels are of like character and differ only in the fineness of the abrading points or teeth, a description of one and its mountings will answer for or apply to both.

A indicates a framework of any suitable character, provided with journal boxes or bearings B, in which is mounted a shaft C, provided with a belt pulley D, through which to receive motion by belt from any convenient prime motor. Other means of transmitting motion to the shaft may of course be employed.

Upon the shaft C is secured a boss or hub E, advisably of cast iron, to which is screwed or bolted a circular plate or disk F of iron or steel, of sufficient thickness to maintain its shape and to support the abrading or finishing disk G.

The disk G is advisably made of wood, and is secured to the metal plate or disk F by screws *a* or equivalent fastenings.

Without restricting myself to any definite proportions, I may state that in practice I have found it convenient and satisfactory to employ a disk of boiler iron about four feet in diameter and one quarter of an inch in thickness, and a disk or wheel of wood of like diameter and about an inch and three eighths in thickness.

The wooden disk is studded with metallic pins *b*, preferably arranged in radial lines extending from a circle about two feet in diameter to or nearly to the periphery of the disk, as indicated in the drawing. The studs or pins may be formed of wire nails or

the like, but I find it preferable to form them of piano wire. They are cut to proper length and driven tightly into and through the wooden disk and to the face of the metal disk, which serves as a gage and causes all of them to protrude a like distance from the face of the wooden disk, a projection of about three eighths of an inch being found suitable.

It is deemed expedient to arrange the pins or studs of each radial line or series in alternation with those on either side thereof, so that there may be no appreciable spaces between them not traversed by pins or studs when the wheel is in rotation.

After the pins are driven home, their protruding ends are dressed to common plane by any suitable means, as for instance by an emery wheel rotating close to the face of the wheel as the latter is itself rotated with the shaft. By thus dressing off the ends of the pins perpendicularly to their longitudinal axes, sharp edges are produced, which rapidly scrape or cut away the wood held against them during rotation of the wheel. The pins may be of any desired cross section, though if made of piano wire they will of course be circular, and they may be of uniform cross section or tapering, as preferred.

It is found advisable to drill holes in the wooden disk, of somewhat less diameter than the pins, and then to drive the pins into the holes, as greater regularity of spacing and greater certainty of placing the pins perpendicular to the face of the disk, can be thereby insured.

At the front of the machine or in front of the wheel there is provided a bed or table H, on which to support the box, board or body to be pressed, and it is advisable to form this bed of, or to face it with metal, to enable it to withstand wear, and to facilitate moving the work over it.

The pins being of relatively small diameter and very numerous, scrape, scratch or cut away the surface to be dressed, in minute particles, each pin removing but a small quantity of material; but owing to the number of pins, the rapidity of their travel, and the scraping character of their action it is found possible to dress and finish light boxes and boards without splitting, chipping or injuring them in the slightest degree.

The wheel being rapidly rotated, and the object held against its face, knots, soft places, the ends of interlocking tongues, dovetails, &c., and the faces of boards, are alike dressed and finished smoothly and perfectly and brought to common plane, with great rapidity, with slight expenditure of power, and without the exercise of any particular skill on the part of the attendant of the machine. Damp or fairly wet wood can be dressed practically as well as that which is perfectly

dry, and imprints, labels, &c., are removed with great rapidity and ease. The cost of manufacturing finished boxes is materially lessened by use of the machine, as compared with the use of sand papering machines, heretofore employed.

It is obvious that the manner of forming and securing in place the abrading points may vary considerably, the essential feature of the invention being the formation of an abrading surface through employment of a great number of metallic points having their effective ends in common plane, and traveling in different paths.

The pins being driven through the wood to the metallic backing disk, are not only accurately gaged as to their protrusion beyond the face of the disk, but are also precluded from working back and causing their outer ends to get out of common plane.

I am aware that pulp making machines have been devised wherein a radially channeled disk mounted upon a shaft, and caused to rotate with said shaft, has been provided with pins located in said channels, the pins serving to cut or tear small particles of wood from the faces of blocks or billets, which particles falling into the channels or depressions were carried off by water. Such machines are manifestly unsuitable to the work of finishing, dressing, or smoothing flat surfaces. Their purpose is to produce wood pulp, and not to finish or dress the surface of the block from which the particles are removed. Such smoothing or finishing would be precluded by the presence of water, were the pins designed and arranged to produce the same sort of cutting or abrading effect as is produced by my machine. It is important also that substantially the entire area of the disk within the annular working space or zone be provided with the studs or pins so as to produce a substantially continuous surface made up of the pin ends or faces, thus giving proper support to the board, block, or surface operated upon, and utilizing the maximum number of cutting or abrading edges. Instead of merely producing fine wood particles, and leaving the surface from which the particles are produced more or less rough and irregular, I aim to remove only so much as is necessary to produce a smooth finished surface for the block, board, or other object operated upon, and the matter removed is in the form not of shreds or fibers, but minute dust-like or powdery particles. I am also aware that tools or implements for producing figures by indentation of the receiving surfaces have been provided with pins, points, or needles, the butts or bases of which have rested against a metal plate to prevent their being forced back into the main supporting back or body. Under my construction, however, a metal disk is em-

ployed not merely to prevent the forcing
back of the abrading pins, but as a main
supporting body for the entire abrading
wheel. The metal disk being rendered true,
5 it serves as a backing and a gage for the
pins carried by the outer or wooden disk,
enabling their protruding or cutting ends
to be dressed to true perpendicular form,
and brought to common plane in the manner
10 above described.

Having thus described my invention, what
I claim is:—

1. In a machine for dressing and finishing
wood, a disk or wheel having the entire an-
15 nular working zone of its radial face closely
studded with metallic points, the working
ends of which stand in common plane.

2. An abrading or smoothing disk having
the entire working area of its flat side face
20 provided with metallic points, the working
ends of which are in a common plane per-
pendicular to the axis of rotation.

3. An abrading or smoothing disk having
substantially its entire flat working area

studded with metallic points arranged in 25
radial lines with their working ends in com-
mon plane perpendicular to the axis of ro-
tation, those of one line alternating with
those of other lines.

4. An abrading wheel or disk comprising 30
in combination a central hub; a metallic disk
carried by said hub; a wooden wheel or disk
secured to the face of the metallic disk; and
metallic studs or stems passing through the
wood and resting at their inner ends against 35
the metallic disk, their outer or working
ends being perpendicular to the axis of ro-
tation and in common plane, and occupying
substantially the entire working area of the
disk. 40

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

JOHN W. SCHLEICHER.

Witnesses:

A. J. MCGROARTY,
LOUISE R. WICK.