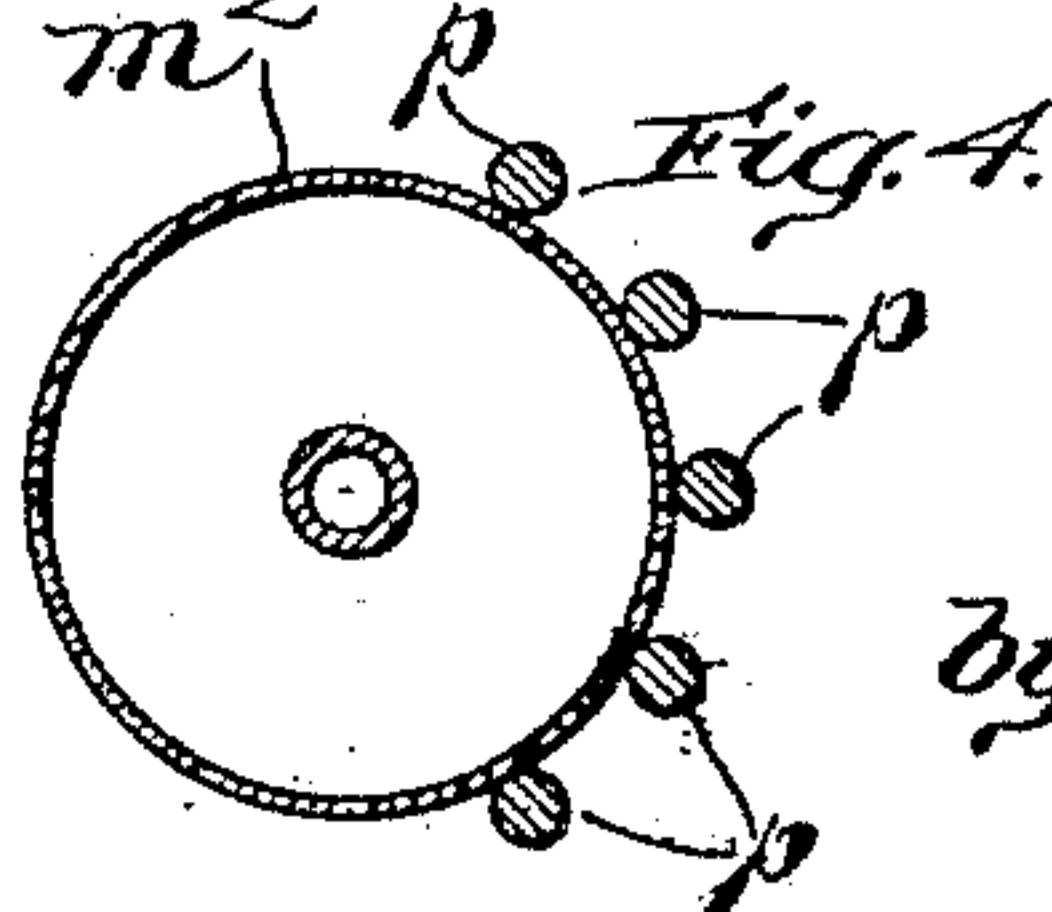
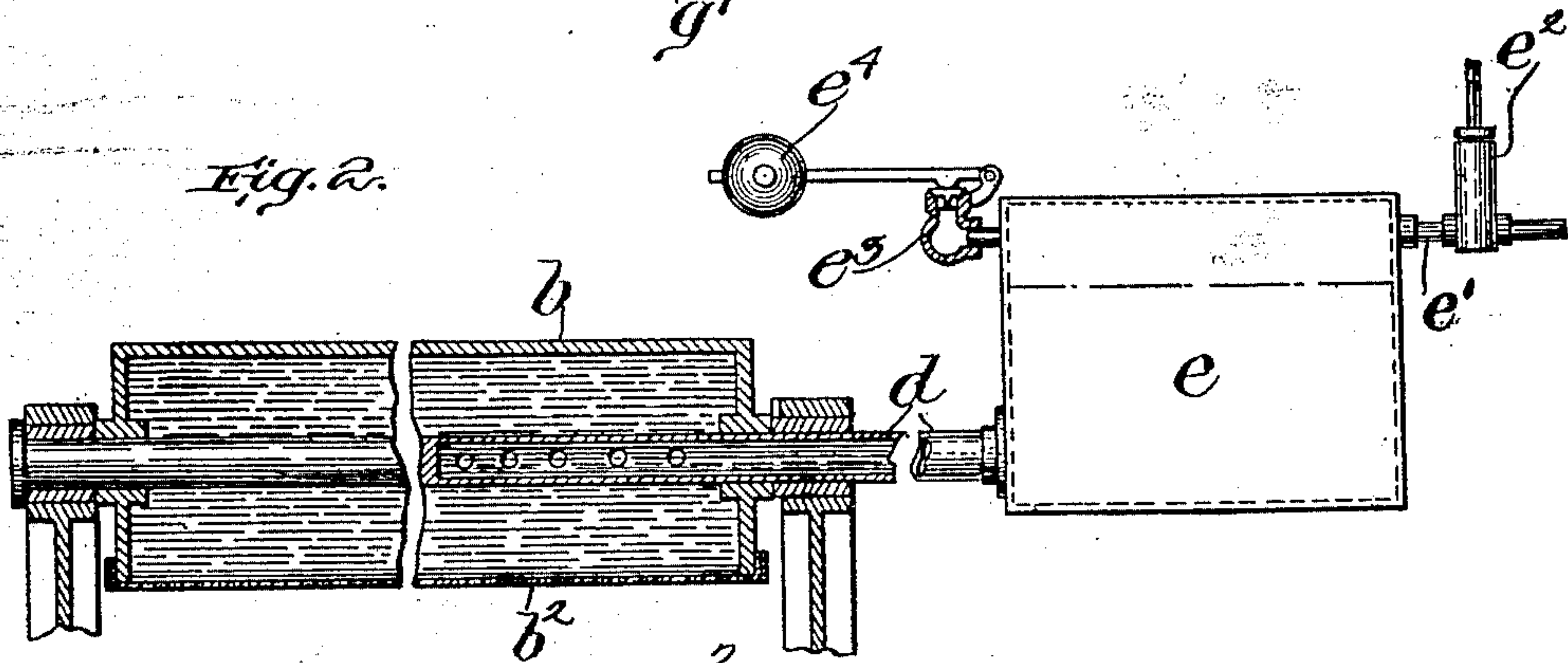
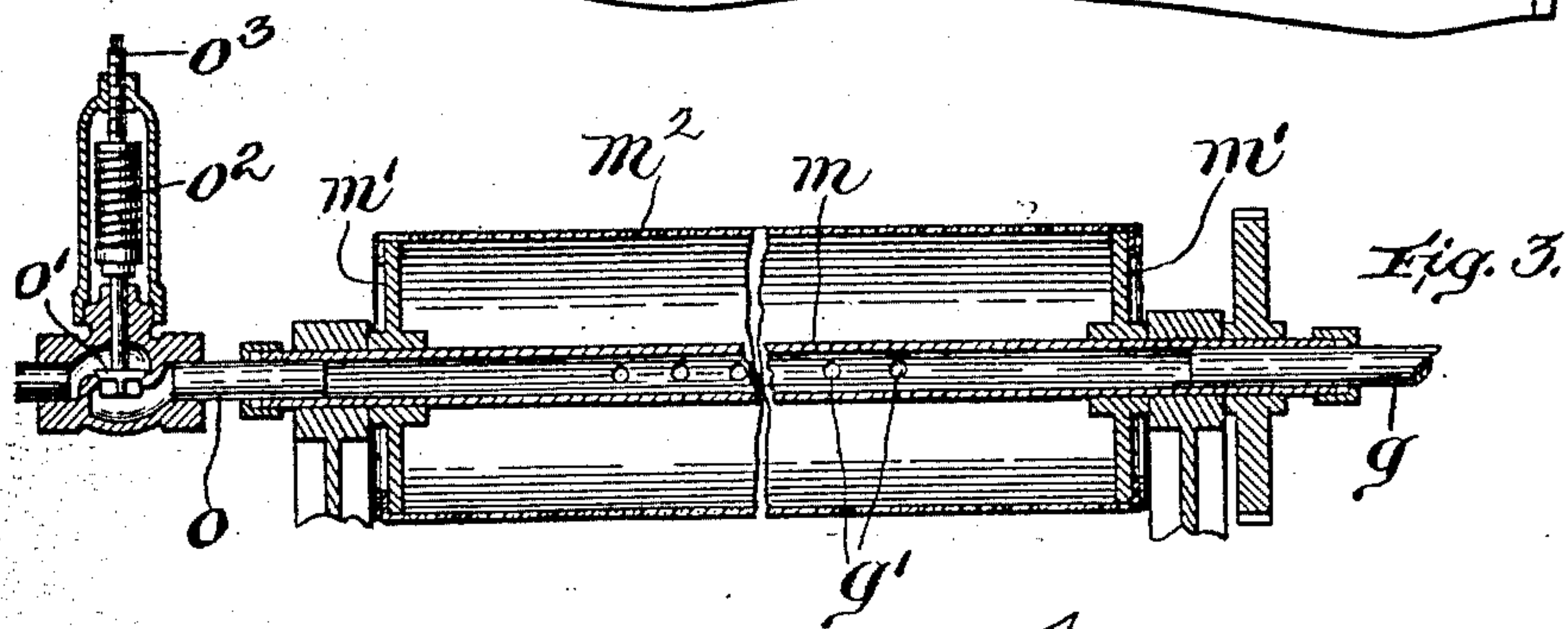
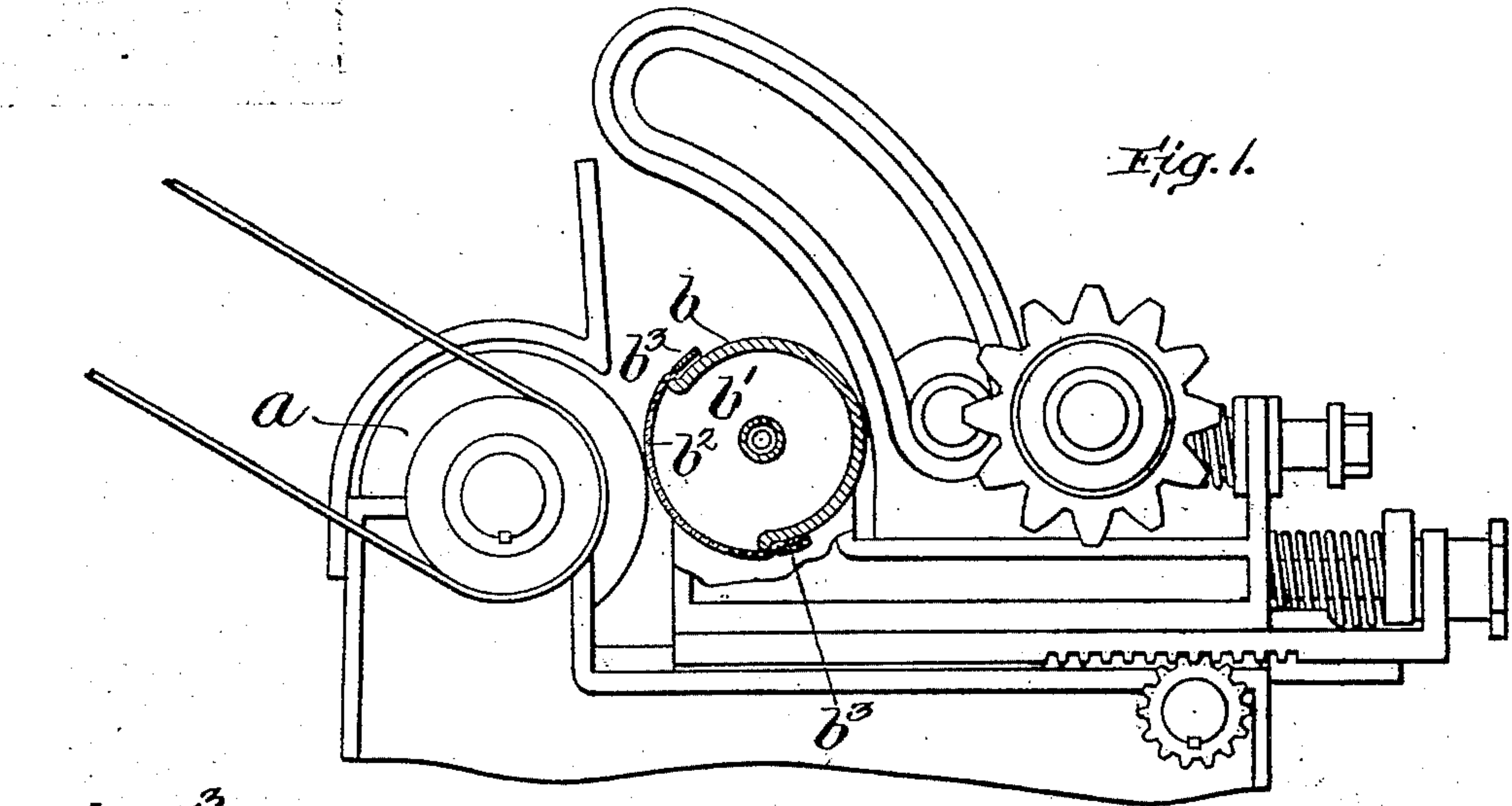


No. 854,419.

PATENTED MAY 21, 1907.

H. A. HOLDER.
HIDE AND LEATHER WORKING MACHINE.
APPLICATION FILED OCT. 4, 1904.



Witnesses:

Arthur F. Randall
Katharine C. Dugan

Inventor:
H. A. Holder

by Geo. N. Goddard
Attorney.

UNITED STATES PATENT OFFICE.

HENRY A. HOLDER, OF WEST LYNN, MASSACHUSETTS.

HIDE AND LEATHER WORKING MACHINE.

No. 854,419.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed October 4, 1904. Serial No. 227,102.

To all whom it may concern:

Be it known that I, HENRY A. HOLDER, a citizen of the United States, and a resident of West Lynn, Essex county, Massachusetts, have invented certain new and useful Improvements in Hide and Leather Working Machines, of which the following is a specification.

This invention has relation to machines for treating hides and leather and has for its object the providing of an improved flexible or yielding work support by which a uniform pressure of the hide against the operating tool may be obtained unaffected by different degrees of inequality or thickness of the hide or leather to be treated. While this improved work support is capable of advantageous use in nearly all kinds of machinery for operating upon hides, skins, and leather, for the purpose of illustrating one of the specific applications thereof to practical purposes, I have shown it applied in this instance to one type of machine used for fleshing hides or skins.

The accompanying drawings illustrate two forms of embodying the principles of my invention but it will be understood that other modifications may be employed to meet any special requirements met with in other styles of machines without departing from the invention which comprises essentially an airtight receptacle provided with a flexible wall or face capable of being yieldingly supported by fluid pressure, either air or liquid, the apparatus being constructed so that the pressure within the work support can be kept constant at any predetermined point that the operator may find desirable and so that the flexible wall or face of said support may be relieved from an excessive internal fluid pressure created by an excessive external pressure applied to the flexible wall or face. Provision is also made for automatically re-establishing the internal fluid pressure at a predetermined point, when the excessive external pressure is removed.

In the drawings Figure 1 is a side elevation showing the mode of applying my improved work support to a well known type of fleshing or unhairing machine. Fig. 2 is a longitudinal section of one form of work support illustrating one type of construction that may be used. Fig. 3 is a modified form of my work support adapted to rotate against the work. Fig. 4 is a cross sectional view of said modified form of work support.

As is well known to those skilled in the art of treating hides, the portion of the hide along the back or middle is considerably thicker than on the skirts or flanks. Owing to this fact supporting rolls covered with yielding rubber have been employed in fleshing machines and other hide and leather working machines to permit the thick portions of the hide to sink into the yielding support so as to present that surface of the hide to be treated evenly to the operating tool. As the resistance of the rubber to compression increases with the depth of its indentation, the thick portions of the hide will be subjected to a much greater pressure than the thin portions in consequence of which either the thick or high portions of the hide are subjected to too much action of the tool or else the thin portions receive insufficient treatment or are not touched at all.

Prior to this invention it has been proposed to employ in lieu of the rubber covered work support, a hollow rubber roll containing a fluid such as air or water which was confined under pressure in said hollow rubber roll, but such roll has not been successful in operation, owing to the fact that an excessive external pressure, which is occasioned by the thicker portions of the hide or skin, created an excessive fluid pressure within the roll, which excessive internal pressure caused the operating tool, usually a bladed cylinder or roll, to act severely upon the hide or skin and remove a greater amount than required, and in cases where the hide or skin did not entirely cover the roll, those portions of the latter left uncovered, were forced outward or bulged to such extent as to bring them within the path of the revolving cutting cylinder, with the result that the distended portions of the roll were cut by the bladed cylinder and the pneumatic bed roll thus rendered useless.

My invention entirely overcomes these difficulties by making it possible to secure a constant or uniform internal pressure of any predetermined amount that may be desired, regardless of successive variations in the thickness of the same hide or in the thickness of different hides operated upon. For this purpose, I employ a hollow work support having a movable or yielding face or portion, which is normally subjected to an internal fluid pressure of a predetermined amount, and provide means for automatically relieving said movable face or portion of the hollow work support from an internal fluid pres-

sure in excess of said predetermined amount, which excess of internal pressure may be created by an external pressure caused by the interposition of the thicker portions of the hide or skin between said movable face or portion of the hollow work support and the operating tool or bladed cylinder. Provision is also made for automatically re-establishing the internal pressure at the predetermined or desired point or amount, when the excessive external pressure is removed from the movable portion of the work support.

By reason of the wide range of pressure to which the work support may be subjected, it is practical to make the same machine efficiently serve two different purposes without changing the bladed cylinder or operating tool. For example, in Fig. 1 of the drawings I have shown one form of my invention applied to a well known type of fleshing machine which as hereinafter explained may be easily converted into an unhairing machine by a simple regulation of the pressure in the work support.

In the machine shown the fleshing or unhairing roll a may be of any suitable construction for effecting its purpose and is mounted to be rotated in close proximity to the work support b which in this instance comprises a hollow receptacle or chamber b' provided with a wide slot or opening extending along that side adjacent to the operating tool a . This longitudinal slot or opening is covered by means of a flexible wall or face b^2 securely fastened by means of clamping plates b^3 or otherwise to the rigid part of the casing b' so as to prevent leakage of the air or water contained in the interior. This flexible face b^2 is preferably made of practically a non-elastic flexible material which is impervious to air or water and may consist of a tightly woven piece of canvas or duck properly coated with vulcanized rubber.

Suitable means are provided for conducting to the interior of this work support a supply of fluid such as water or air under pressure. Any suitable apparatus may be employed for this purpose. I have here shown an inlet pipe d communicating with the interior of the work support b , said pipe being in communication with a source of pressure such as a water tank e provided with an air inlet e' communicating with a compressor or pump e^2 and having also a safety valve or vent e^3 whose operative pressure may be varied by adjusting the weight e^4 or other device so as to vent the air from the top of the chamber at any predetermined point. The pressure of the air in the top of the chamber upon the water in the bottom of the chamber is thus kept constant. Of course instead of water, air may be used as the fluid medium for maintaining the pressure inside of the work support. Any excess pressure above the predetermined point that

may be due either to the compression or displacement of the flexible face b^2 of the work support, or to too rapid ingress of air from the pump, is taken care of through the regulating valve.

If the machine is to be used as a fleshing machine the operator may adjust the regulating valve so as to blow off at say 50 pounds pressure. The water is then admitted to the work support, the pump is started in operation until the desired pressure is reached, where it is maintained constantly at that point during the operation of the machine. The displacement of the fluid inside of the work support by the indentation or compression of the flexible face, which varies according to the thickness of the hide or that portion of the hide which is traveling between the supporting face and the operating tool, is permitted without varying the effective internal pressure over each portion of the flexible face and consequently without outward distention or bulging of the movable face beyond the normal position of said movable face or portion when said face is subjected to an internal pressure of a predetermined amount. This is due to the fact that the fluid escapes back into the pressure tank e where any excess of pressure is relieved through the regulating valve. When the excessive internal pressure due to the thicker portions of the hide or skin, is removed from the movable face or portion b^2 of the hollow work support, the fluid forced back into the pressure tank e again flows into the work support and re-establishes the fluid pressure within the work support at the predetermined point or amount, thereby restoring the movable portion or face of the work support into its normal position and condition. Any deficiency of pressure within the reservoir e caused by the fluid flowing therefrom into the hollow work support, is automatically made up by the pressure supplied by the pump e^2 , which in practice may be kept constantly running.

If it is desired to use the machine for unhairing, the regulating valve may be set to blow off at a pressure of say 8 or 10 pounds, and when thus set the pressure will remain constant during the further operation of the machine entirely unaffected by the passage of thick or thin portions of the hide through the machine. Since it is possible by the application of the principles of my invention to maintain an internal pressure at as low a point as may be desired without any increase thereof by varying degrees of compression caused by variations in the thickness of the hide treated, the work support may be set up so close to the operating tool as to indent a considerable area of the work support, thus giving it a concave bearing surface extending partly around the operating tool, without incurring the danger of cutting or injuring

either the grain of the hide or the flexible face of the work support even when sharp blades are used. This results in subjecting all portions of the hide to the action of the operating tool for a longer interval of time without decreasing the speed of the machine and also gives the operating tool a chance to partially work out the line of the hide, thus rendering the machine very thorough and highly efficient in the performance of its work.

Obviously this invention is capable of application to various kinds of machines in a great many different ways and under very different forms from that herein shown.

In Fig. 3 of the drawings I have shown how this principle may be applied to a rotary roll which may be either a work supporting roll or a roll for positively operating upon the hide or leather itself, as for example, a smoothing or polishing roll. In this case the shaft of the roll *m* is shown as being hollow to provide for the inflow of the fluid from the supply pipe *g* through the orifice *g'*. To the heads *m'* of the roll is secured a flexible cylindrical wall *m²* of non-stretchable material such as already described. The outlet passage *o* is provided with a variable pressure valve *o'* which is normally held to its seat by a spring *o²* whose tension or degree of compression can be varied by the adjusting screw *o³* so as to allow the valve to unseat or blow off at any desired pressure. If now the air or water be pumped into the roll through the inlet pipe *g*, when the roll is filled the pressure will be maintained at a constant point by the action of the regulating valve described.

Where the invention is applied to a revolving roll such as is shown in Fig. 3, it will be found advantageous to back up the roll on the side opposite to the application of the external pressure, by means of idle rolls or the like applied in close contact with the exterior face of the roll so as to support it from lateral displacement. Said supporting rolls are indicated in Fig. 4 of the drawings as shown at *p*.

It will be found in practice that my invention is applicable under various forms to nearly all machines for treating hides and skins.

Without attempting to set forth all the changes in form, construction and arrangement which may be made in the practice of my invention, or all the uses to which it may be applied, what I claim is:—

1. In a machine for treating hides and leather, the combination of an air-tight receptacle provided with a flexible wall or face, means for supplying and maintaining fluid at any predetermined pressure unaffected by the varying degrees of displacement of the fluid due to the treatment of different thicknesses of hide.

2. In a machine for treating hides or leather, a yielding work support combined

with means for supplying thereto liquid under pressure, and coöperating means for maintaining said fluid pressure at any predetermined point unaffected by the varying degrees of displacement of the fluid due to the treatment of different thicknesses of hides.

3. In a machine for treating hides or leather, the combination with an operating tool mounted to work upon the hide, and a work support arranged adjacent thereto, said work support being provided with a flexible yielding face supported in operative position by a fluid medium, means for forcing said fluid medium under pressure against the inside of said flexible face, and regulating means for maintaining said pressure constant at any predetermined point unaffected by the varying degrees of displacement of the fluid due to the treatment of different thicknesses of hide.

4. In a machine for treating hides, the combination with an operating tool of a work support arranged adjacent thereto and comprising a hollow receptacle having a yielding wall adapted to support the hide against the operating tool, means for supplying fluid under pressure to the inside of said receptacle, and a pressure regulating device for maintaining constant pressure at any predetermined point which may be desired unaffected by the varying degrees of displacement of the fluid due to the treatment of different thicknesses of hide.

5. A work rest for supporting hides in position to be treated by an operating tool comprising a stationary hollow casing provided with a lateral opening, and a flexible wall secured to said casing to close said opening, an inlet pipe for introducing fluid under pressure to the interior of the casing, and regulating devices for regulating the pressure by preventing it from rising above a predetermined point.

6. In a machine for treating hides and leather, in combination, a hollow work support provided with a movable portion normally subjected to an internal fluid pressure of a predetermined amount, and means to relieve said movable portion of said work support from an internal pressure in excess of the said predetermined amount created by an external pressure applied to said movable portion of said work support, substantially as described.

7. In a machine for treating hides and leather, in combination, a hollow work support provided with a movable portion normally subjected to an internal fluid pressure of a predetermined amount, means to relieve said movable portion of said work support from an internal pressure in excess of the said predetermined amount created by an external pressure applied to said movable portion of said work support, and means for automatically re-establishing said internal pres-

sure at said predetermined amount when said external pressure is removed from said movable portion of said work support, substantially as described.

5 8. In a machine for treating hides and leather, in combination, a hollow work support provided with a movable portion normally subjected to an internal fluid pressure of a predetermined amount, and means communicating with said hollow work support for automatically maintaining said internal fluid pressure at said predetermined point, in the absence of an excessive external pressure on said work support, substantially as described.

15 9. In a machine for treating hides and leather, in combination, a hollow work support provided with a movable portion normally subjected to an internal fluid pressure of a predetermined amount, a source of fluid pressure in constant communication with said hollow work support, and means to automatically relieve said hollow work support from an internal fluid pressure in excess of a predetermined amount, substantially as described.

20 10. In a machine for treating hides and leather, in combination, a hollow work support provided with a movable portion, a tank or reservoir in communication with said hollow work support, a pump to supply fluid

pressure to said reservoir, and means for relieving said pressure when it exceeds a predetermined amount in said reservoir, substantially as described.

35 11. In a machine for treating hides and leather, in combination, a hollow work support provided with a movable portion, a fluid pump in constant communication with said hollow work support to supply pressure thereto, and means to automatically relieve said work support from an internal pressure in excess of a predetermined amount, substantially as described.

40 12. In a machine for treating hides and leather, in combination, a hollow work support consisting of a rigid portion and a yielding portion composed of substantially non-extensible material, and means in communication with said work support for automatically maintaining a fluid pressure within the hollow work support at a predetermined point unaffected by the varying degrees of displacement of the fluid due to the treatment of different thicknesses of hide, substantially as described.

45 50 55 In witness whereof, I have hereunto set my hand, this first day of October 1904.

HENRY A. HOLDER.

In the presence of—

GEO. N. GODDARD,

KATHARINE A. DUGAN.