

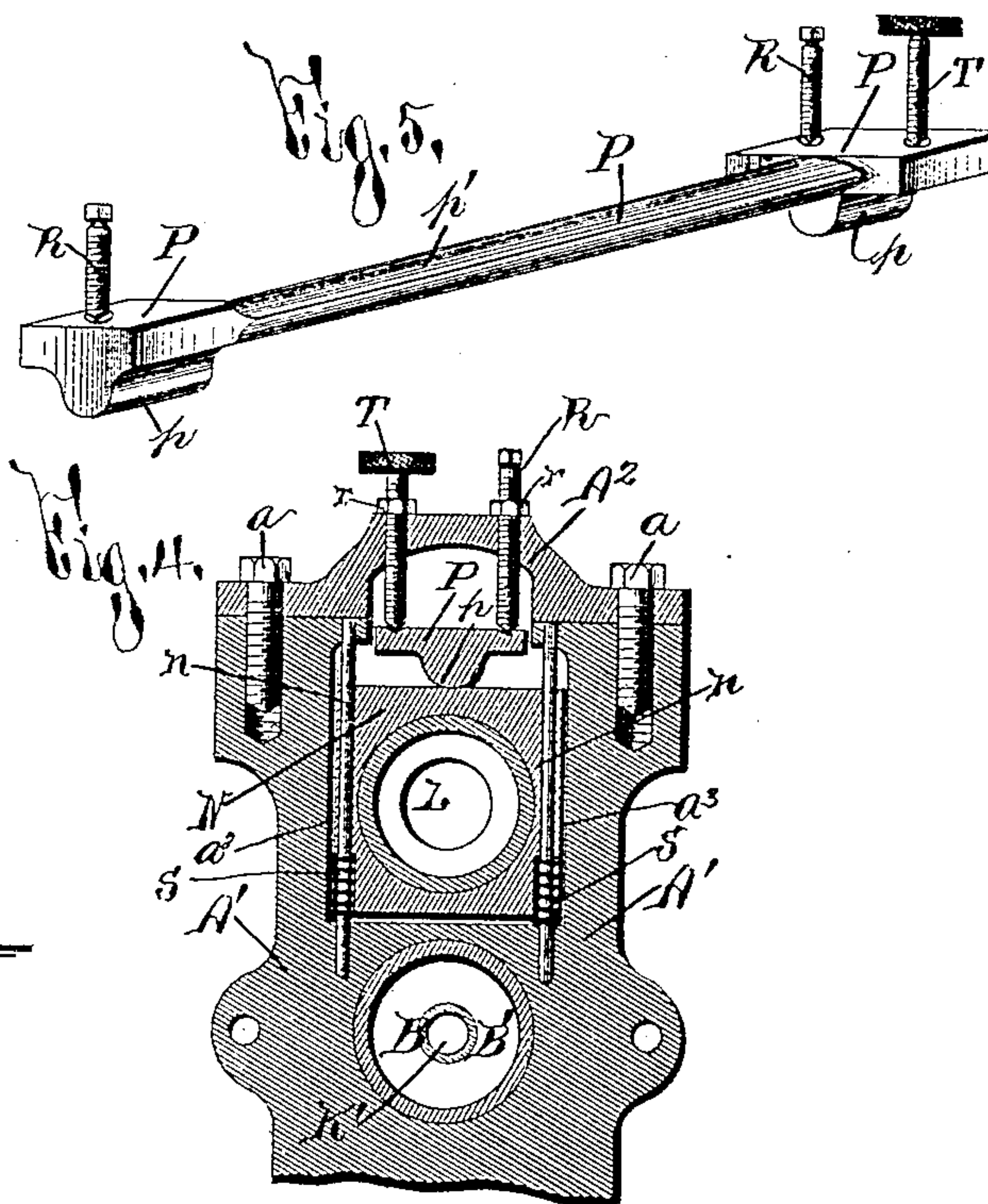
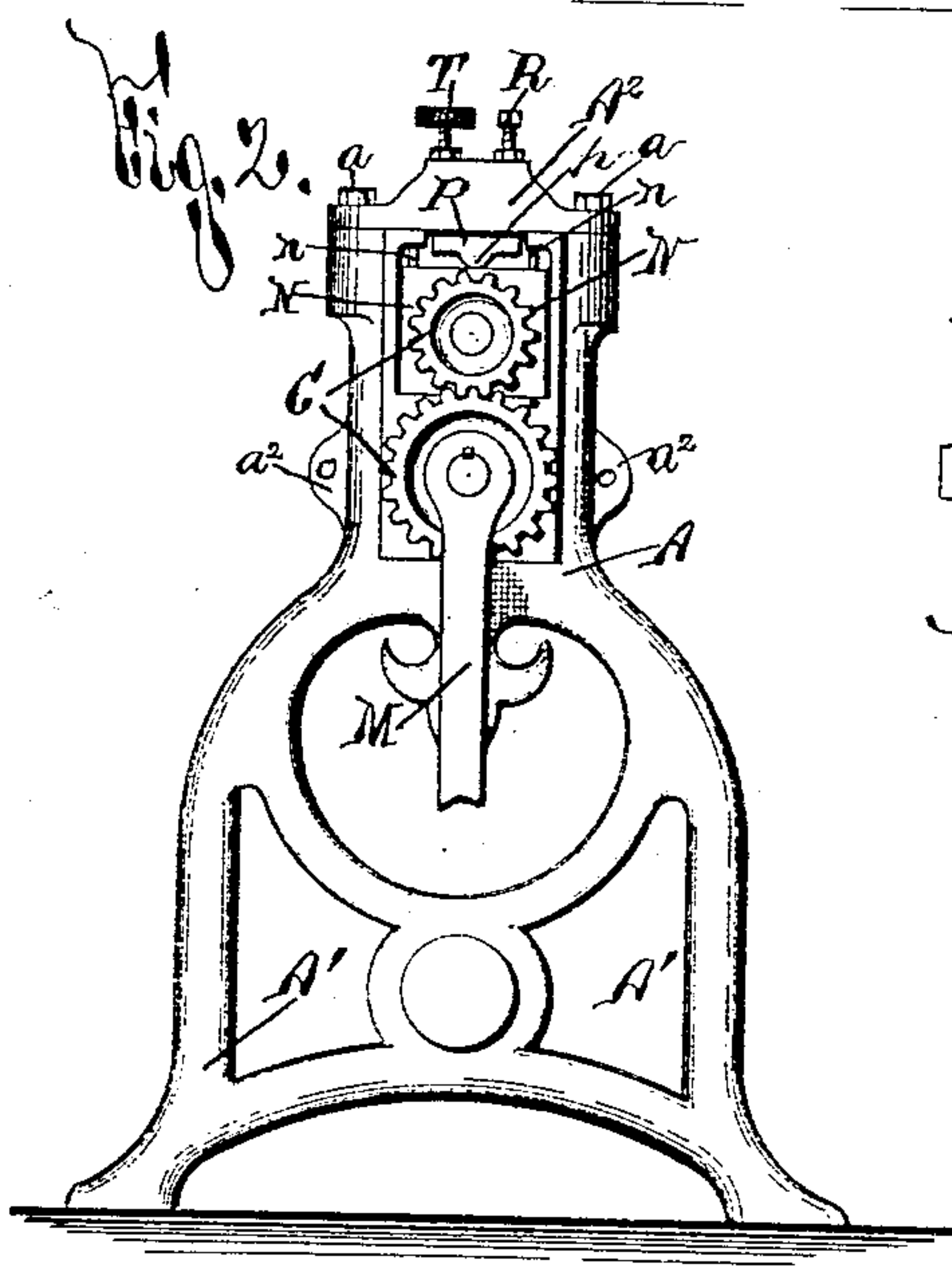
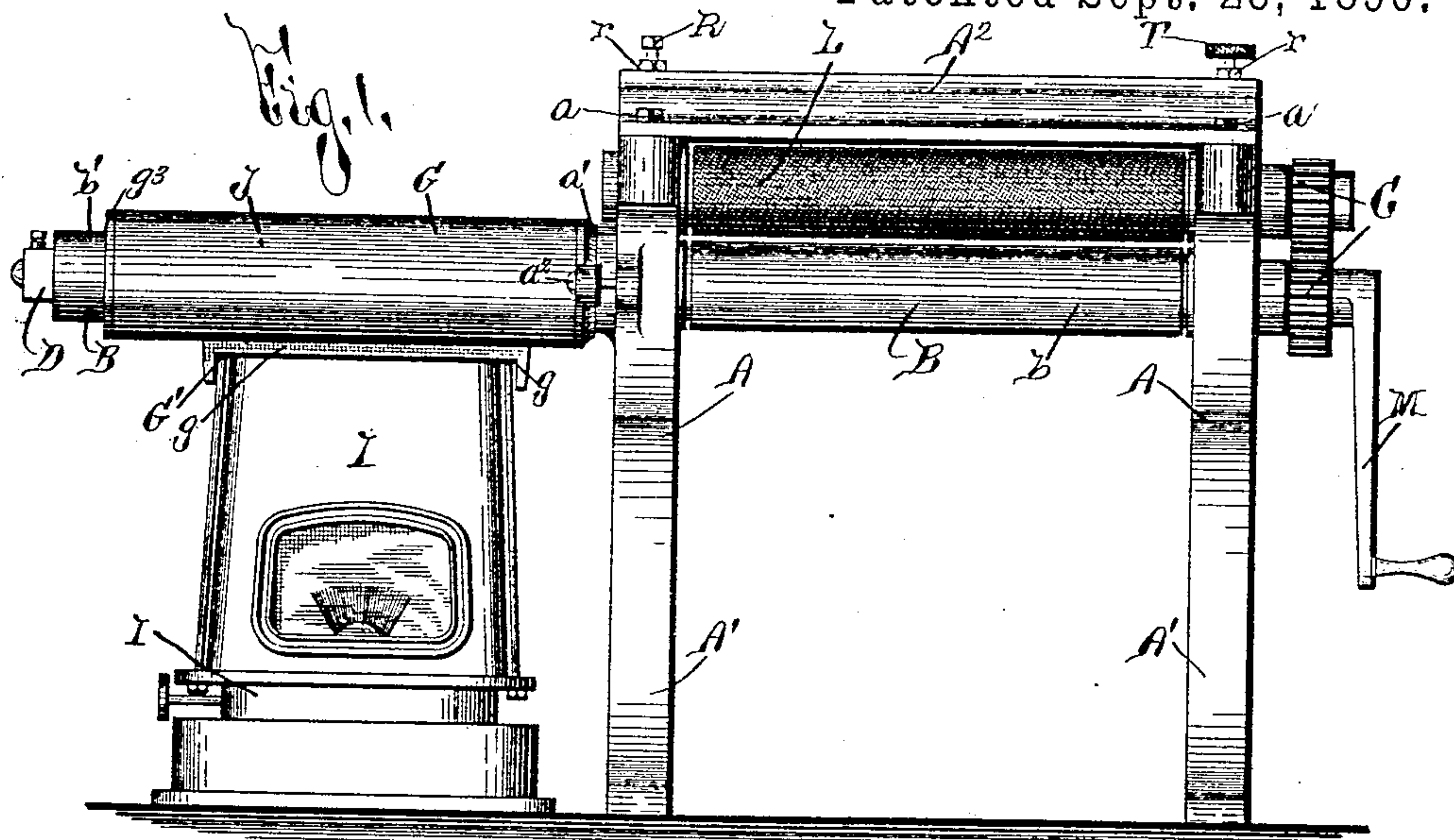
(No Model.)

2 Sheets—Sheet 1.

W. H. BOLES.
BURNISHER.

No. 436,866.

Patented Sept. 23, 1890.



WITNESSES :

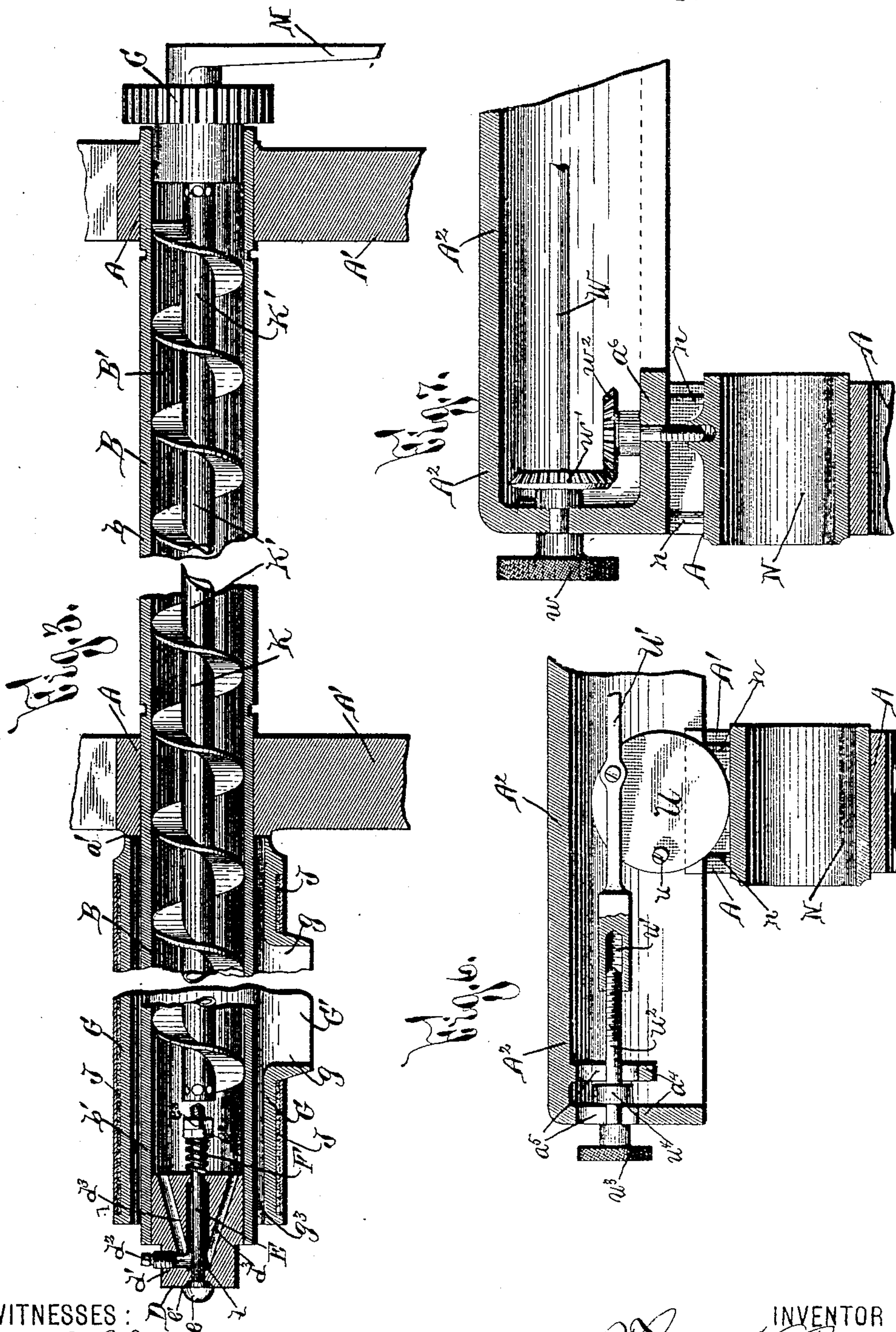
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UNITED STATES PATENT OFFICE.

WARREN H. BOLES, OF SYRACUSE, NEW YORK.

BURNISHER.

SPECIFICATION forming part of Letters Patent No. 436,866, dated September 23, 1890.

Application filed October 7, 1889. Serial No. 326,201. (No model.)

To all whom it may concern:

Be it known that I, WARREN H. BOLES, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and
 5 useful Improvements in Burnishers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to an improved bur-
 10 nishing or surfacing machine of the same class referred to in my pending application, Serial No. 309,392, and has for its object the production of a simple and effective machine at a minimum cost of operation, which
 15 will provide cards or other articles with a smooth or glossy surface; and to this end it consists, essentially, in a novel polishing-roller formed or provided with a polishing-surface and a projecting end, and having an interior
 20 cavity containing a liquid and a lamp or heater for heating the said projecting end and generating steam in the interior of the roller, whereby the same is entirely heated:

My invention also consists in a novel jacket
 25 for protecting said roller and in a safety-gage for preventing excess of steam on the interior of the roller; and it furthermore consists in the detail construction and arrangement of parts, all as hereinafter more particularly de-
 30 scribed, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of the specification, in which, like letters indicating corresponding parts in all the
 35 views, Figure 1 is an elevation of my improved machine. Fig. 2 is an end elevation of the machine as illustrated in Fig. 1. Fig. 3 is a longitudinal section of the novel polishing-roller, a portion of the end projection
 40 and its inclosing-jacket being broken out for the purpose of increasing the scale. Fig. 4 is a sectional view illustrating the adjusting mechanism for regulating the distance between the rollers. Fig. 5 is a perspective of
 45 the detached adjuster of the adjusting mechanism, and Figs. 6 and 7 are enlarged sectional views illustrating modifications of the adjusting mechanism of the roller.

A represents the frame of the burnisher,
 50 which may be of suitable form, size, and construction, and, as illustrated, is composed of

a pair of legs A', connected together by a top tie-bar A², bolted thereto by bolts a.

The polishing-roller B is journaled in the frame A and is provided with an interior
 55 cavity B', which preferably extends the whole length thereof. As illustrated in Figs. 1 and 3, the roller B is provided with the polishing-surface b and the end extension b', here illustrated as of substantially the same length.
 60 As preferably formed, in order to increase its cheapness, the roller B consists of a tube mounted in the legs A', having one extremity closed by its actuating-gear C and the opposite extremity closed by the plug D.
 65

The liquid is inserted into the roller B by means of suitable inlet-openings, the arrangement of which forms one of the novel features of my invention. Provided in the central
 70 part of the end of said roller is the central opening d, into which opens the passage d', extending to the outside of the roller and filled or closed by a screw or other suitable plug d². Extending in opposite directions
 75 from the central opening d are the passages d³, which conduct the liquid from the opening d to the interior of the roller B. When the plug d² is removed and the liquid is poured into the opening d', the same descends down
 80 the lower passage d³ and forces the air from the opposite passage, which opens into the top of the cavity B'. The filling then continues until the level of the liquid within the cavity or chamber B' rises above the lower part of
 85 the upper opening d³, whereupon the outlet of the air is prevented, since the same would then necessarily be forced downward through the liquid and afterward upward through the opening d', which now becomes filled with the liquid. It will be understood that the roller
 90 is now a little more than half full, and that the passage d' may be closed by inserting the plug d². Experience, however, has demonstrated that the best results are obtained by turning the roller over and allowing the out-
 95 ward flow of the liquid, which continues until the roller is but half or a little less than half full.

In order to prevent an excess of steam within the roller B, I provide a safety-valve,
 100 which also forms a feature of my invention. Guided in the central passage d is a stem E,

having one extremity extended to the interior of the roller. Upon the opposite extremity I provide the valve e , which engages a valve-seat e' , provided at the outward extremity of the plug D. Mounted upon the inner extremity of the stem E is the nut e^2 , between which and the adjacent face of the plug D is interposed a suitable spring F, preferably composed of phosphor-bronze wire to prevent corroding thereof. A second or jam nut e^3 abuts against the nut e^2 and prevents its displacement. When steam is generated within the cavity B' by heating the extension b' , as will be presently described, the pressure thereof forces outward the stem E and disengages the valve e from the seat e' , whereupon the excess of steam escapes, keeping the roller at an even temperature and absolutely preventing bursting thereof. It will be understood, however, that the tension of the spring F is so regulated that the safety-valve will operate only when a greater degree of steam-pressure is attained than desired. By closing the opening d' the liquid within the roller is heated over and over again, and there is but little waste thereof, excepting such as would naturally occur from friction.

Surrounding the end extension b' of the burnishing-roller B is the jacket G, having a space interposed between said extension and the interior of the jacket. One extremity of the jacket is closed by being tightly abutted against a face or hub a' upon the leg A' by means of screws or bolts a^2 engaging a lug provided upon said jacket and leg. The opposite extremity of the jacket is open to allow the exit of the heat, and is preferably of greater diameter than the inner extremity, in order to produce a better draft.

Provided in the jacket G, and preferably in the lower part thereof, is the opening G', formed with the depending flange g , surrounding the extremity of a suitable lamp or heater I. As illustrated in the drawings, this heater consists of the ordinary photographer's petroleum-lamp; but it will be understood that, if desired, other styles and kinds of heater could be used without materially changing the construction of the jacket G.

The heated current produced by the lamp I encircles the end b' , produces steam within the roller, and then passes out through the open extremity g^3 . It will be understood that, as the roller is but partly filled, and as heat is applied to but one end, a perfect circulation is produced, which evenly heats the roller throughout its entire length. An even heating is further produced by revolving the roller, causing the entire periphery thereof to be subjected to the flame of the lamp.

It will be evident that besides minor advantages my improved burnisher-roller presents the important advantages of increased rapidity of heating, economy of manufacture, and freedom of the operator from the escaping heated current after its exits from the burnisher. Heretofore the heater or lamp for bur-

nishers has been directly beneath the polishing-surface of the same, and the operator, who is directly over the burnisher, is thus compelled to inhale the heated current therefrom, which is a feature of great disadvantage. However, by placing the heater at one side of the polishing-surface and providing the roller with an end extension this inhalation of the gases and heat is absolutely obviated.

An additional feature of advantage is the freedom of the burnisher from sweating, since as brought forth in my hereinbefore-referred-to application when there is a heated current of steam or water on the interior of the burnishing-roller there is no liability of sweating on the exterior thereof. Moreover, by arranging the heater at the side of the burnisher the space between the legs of the frame may be utilized for stacking cards, which is a further feature of advantage.

I also utilize to the greatest extent the amount of heat generated by the heater, since the top thereof closely fits the opening G' of the jacket G and absolutely prevents the entrance of cold air within said jacket. Moreover, the circulation of the heated current around the roller when within the jacket heats the same very rapidly, and the heat is applied to the identical point where it is desired and there is no loss from radiation. Radiation is further prevented by providing the jacket with an inclosing-case J, of asbestos or other suitable packing, which, if desired, is incased by a covering of tin or other suitable material.

As previously set forth, it will be understood that there is a perfect circulation within the burnishing-roller; but in order to aid this circulation I frequently deem it advisable to utilize the screw or propeller K, which is of suitable form and construction and secured within the roller so as to feed forward to the polishing-surface the heated liquid and steam from the end extension b' . Any suitable means may be utilized to secure the propeller within the roller B but as the same is revolved but slowly the desired object is produced by so forming the said propeller that the same tightly fits the interior of the cavity B'.

The return of the steam and water from the interior of the polished surface is allowed by forming the propeller with a central passage or tube K', having its forward extremity open to receive the said steam and water at one extremity of the roller and open at the opposite extremity to discharge the same into the end extension b' . It will, however, be noticed that my improved burnishing-roller will give very effective results without the use of this propeller K.

Mounted above the roller B and adjacent thereto, is the feed-roller L, having its periphery provided with a suitable knurled or frictional face for readily engaging the card or other article to be burnished. Connecting these two rollers L and B is a suitable pair of

gears C, one of which is revolved by a handle M and serves to convey motion to the other.

In order to adjust the feed and burnishing rollers toward and away from each other to adapt the same for different thicknesses of articles, I mount the extremities of the feed-roller in suitable boxes N, sliding in ways α^3 of the frame A, and preferably guided, as in my previous application, upon rods n , secured in said frame.

Bearing upon the top of the boxes is the adjuster P, provided with suitable bearing-faces p , connected together by the tie-bar p' . One edge of this adjuster is preferably pivoted, and the opposite edge is movable toward and away from the said boxes N for adjusting the rollers. As best illustrated in Figs. 4 and 5, the preferable manner of pivoting said adjuster consists in mounting suitable screws R in the tie-bar A^2 and engaging their lower extremities with the said adjuster and preferably with a countersink provided in the upper face thereof.

Interposed between the boxes N and the frame A are springs S, which are preferably mounted upon the rods n and constantly force upward the said boxes to separate the rollers B and L. As is well known, the tension of these springs frequently varies, and the screws R, which are independently adjustable, thus allow the adjuster to be adjusted to any differences in the tension of the springs, whereupon a jam-nut r retains the same in its adjusted position.

Provided at the end of the adjuster and at the opposite side of the center thereof to the pivotal screw R is the adjusting-screw T, by which the position of the adjuster can be varied at will. It will thus be seen that by operating the screw T the rollers L and B can be adapted to any desired thickness of card or other article.

At Fig. 6 I have shown a modified form of the adjusting device, in which the adjuster consists of a disk U, eccentrically pivoted at u to the tie-bar A^2 . Pivoted to the separate eccentrics U is the connecting-bar U' , having at one extremity a threaded socket u' , engaging a spindle u^2 , having a knurled extremity u^3 . Depending from the tie-bar A^2 are lugs a^4 , provided with slots α^5 , in which said spindle u^2 is guided. Secured to the spindle u^2 is a washer or shoulder u^4 , interposed between the separate lugs a^4 , and preventing the said spindle from longitudinal movement.

At Fig. 7 I have shown a further modified form of the adjusting device, in which a rod W is journaled in the tie-bar A^2 and is revolved by a suitable knurled extremity w . Secured to this rod is a bevel-gear w' , engaging a like bevel-gear w^2 , prevented from longitudinal movement by abutment with a shoulder α^6 of the tie-bar A^2 , and provided with a depending screw-threaded spindle engaging a threaded socket in the box N.

It will be understood that, if desired, as stated in my previous application, Serial No. 309,392,

the roller L might be provided with a yielding face, which would adapt the same for polishing or surfacing articles of varying thickness, as laundry, leather, &c.

The operation of my invention will be readily perceived from the foregoing, and it will be understood that the same is very cheaply constructed, efficient in operation, and presents many desirable features of advantage. It will also be understood that considerable change may be made in the detail construction and arrangement of the parts without departing from the spirit of my invention. Hence I do not limit myself to its precise form and construction.

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

1. In combination, a hollow surfacing-roller having a liquid inclosed therein, and a heater for heating said roller, and producing a circuit within the roller of said inclosed liquid, substantially as and for the purpose specified.

2. In combination, a hollow surfacing-roller having a liquid contained therein, a heater for heating said roller and generating steam, and a safety-valve for preventing excess of steam in said roller, substantially as specified.

3. In combination, a hollow surfacing-roller having one extremity provided with a polishing-face and the other adapted to be subjected to a heater, and a cavity in said roller partially filled with liquid, whereby the generation of steam is allowed, substantially as and for the purpose specified.

4. In combination, a supporting-frame, a polishing-roller journaled in said frame and provided with a polishing-surface, an extension on said roller projecting beyond the polishing-surface, and a heater registered with said extension for heating the same and thus transmitting heat to the polishing-surface, substantially as described.

5. In combination, a supporting-frame, a polishing-roller journaled in said frame and provided with a polishing-surface, an extension on said roller projecting beyond said polishing-surface, a jacket incasing said extension, and a heater for passing a heated current within said jacket, substantially as specified.

6. In combination, a hollow surfacing-roller having an inlet-opening to the central portion of the end thereof and having inlet-openings inclining at an angle with each other from the said central portion to the interior of the roller, substantially as and for the purpose described.

7. In combination, a hollow surfacing-roller having one extremity open, a plug for said open extremity, an inlet-opening leading to the central part of said plug, and passages inclining in opposite directions from said inlet-opening, substantially as specified.

8. In combination with a feed-roller, a polishing-roller adjacent to said feed-roller, an inlet-opening at one extremity of said roller

to the interior portion thereof, and passages inclining in opposite directions from said inlet-opening to the interior of the hollow roller, substantially as described.

5 9. In combination, a hollow polishing-roller having one extremity open, a plug at said extremity, a safety-valve guided in said plug, an inlet-opening from the outside to the interior of the plug, and passages inclined in opposite directions from said inlet-opening, substantially as described.

10. The combination of a polishing-roller having a cavity for containing a liquid, a stem extending into said roller, a valve upon said stem, a valve-seat for said valve, and a spring secured to said stem for tensioning the same, substantially as described.

11. In combination, a hollow polishing-roller, an inlet-opening at one extremity of said roller leading from the outside to the interior thereof, passages leading from the inner end of said inlet-opening to the interior of the hollow roller and inclined in opposite directions, a valve-stem guided in said roller, a valve at one extremity of said stem engaging a valve in the roller, and a spring at the opposite extremity of said stem for tensioning the same, substantially as described.

12. The combination of a pair of rollers adjustable toward each other, a heating extension provided upon one of said rollers, a liquid-containing receptacle in said roller, and a heater for heating said extension, substantially as described.

13. The combination of a supporting-frame, a feed-roller mounted in said frame, a polishing-roller mounted in the frame adjacent to the feed-roller, an extending end provided on said polishing-roller, a jacket around said extending end, and a heater for passing a heated current between the jacket and extension, substantially as described.

14. The combination of a supporting-frame, a feed-roller mounted in said frame, a polishing-roller mounted in the frame adjacent to the feed-roller, an extending end provided on said polishing-roller, a jacket around said

extending end and having one extremity closed and the other provided with an outlet-opening, an inlet-opening in said jacket, and a heater registered with said inlet-opening, substantially as specified.

15. The combination of a pair of burnishing-rollers, sliding boxes for one of said rollers, an adjuster for regulating the distance between said rollers, a pivot for one extremity or edge of said adjuster, and a clamp or screw for raising or lowering the opposite extremity or edge, substantially as set forth.

16. The combination of a pair of burnishing-rollers, sliding boxes for one of said rollers, an adjuster for regulating the distance between said rollers, a pivot for one extremity or edge of the adjuster, a clamp or screw for raising or lowering the opposite extremity or edge of said adjuster, an end heating-extension upon one of said rollers, and a heater for heating said extension, substantially as set forth.

17. The combination of a pair of burnishing-rollers, sliding boxes for one of said rollers, a cross-bar above said roller, projecting points on said cross-bar for engaging said boxes, a pivot for one extremity or edge of said cross-bar, and a clamp or screw for raising or lowering the opposite extremity or edge of said cross-bar, substantially as described.

18. The combination of a pair of burnishing-rollers, sliding boxes for one of said rollers, a cross-bar above said roller having faces for engaging said boxes, separate pivot pins or screws for engaging one side of said cross-bars at the opposite extremities thereof, and an adjusting-screw for raising or lowering, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 4th day of October, 1889.

WARREN H. BOLES.

Witnesses:

CLARK H. NORTON,
A. E. PARSONS.