

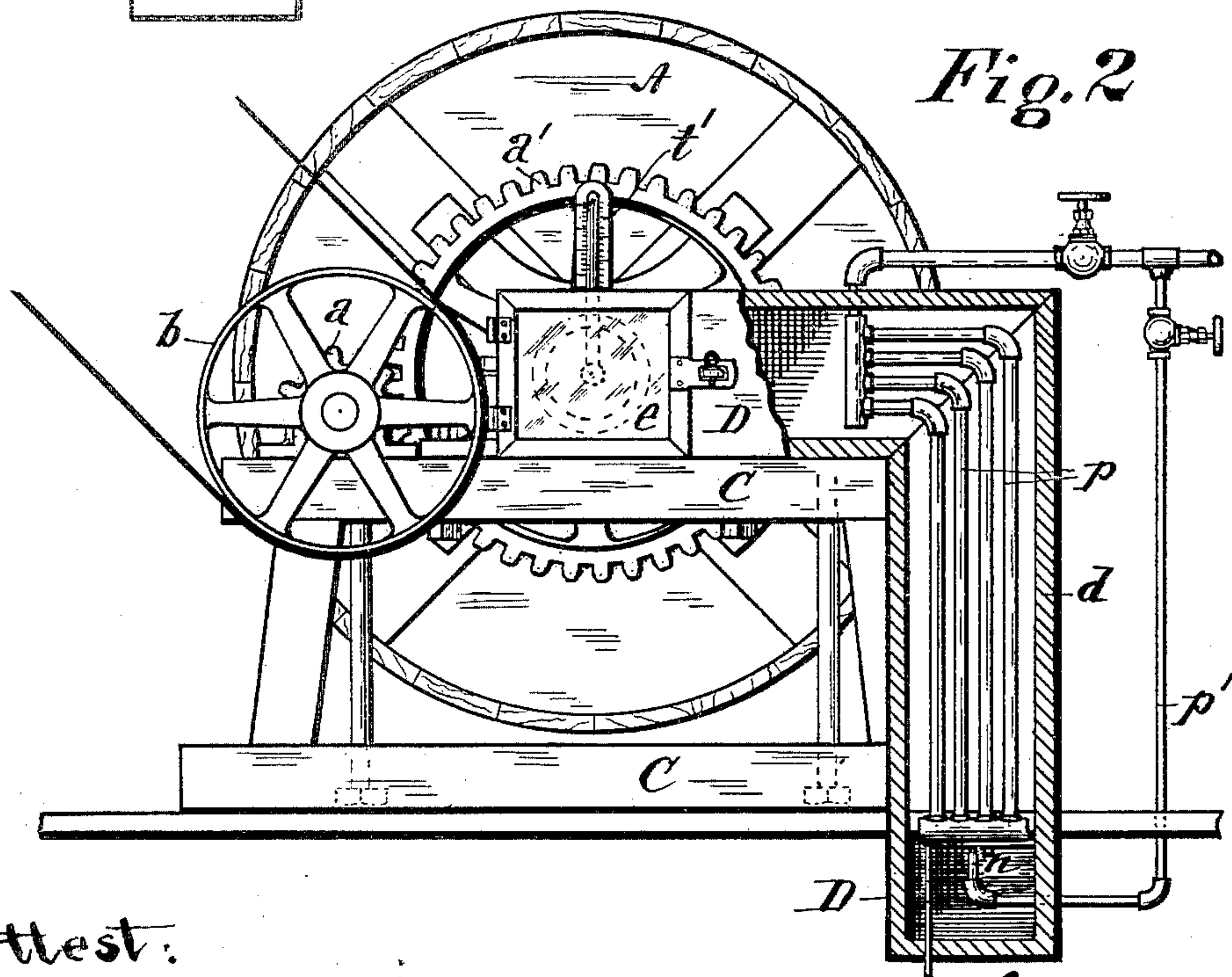
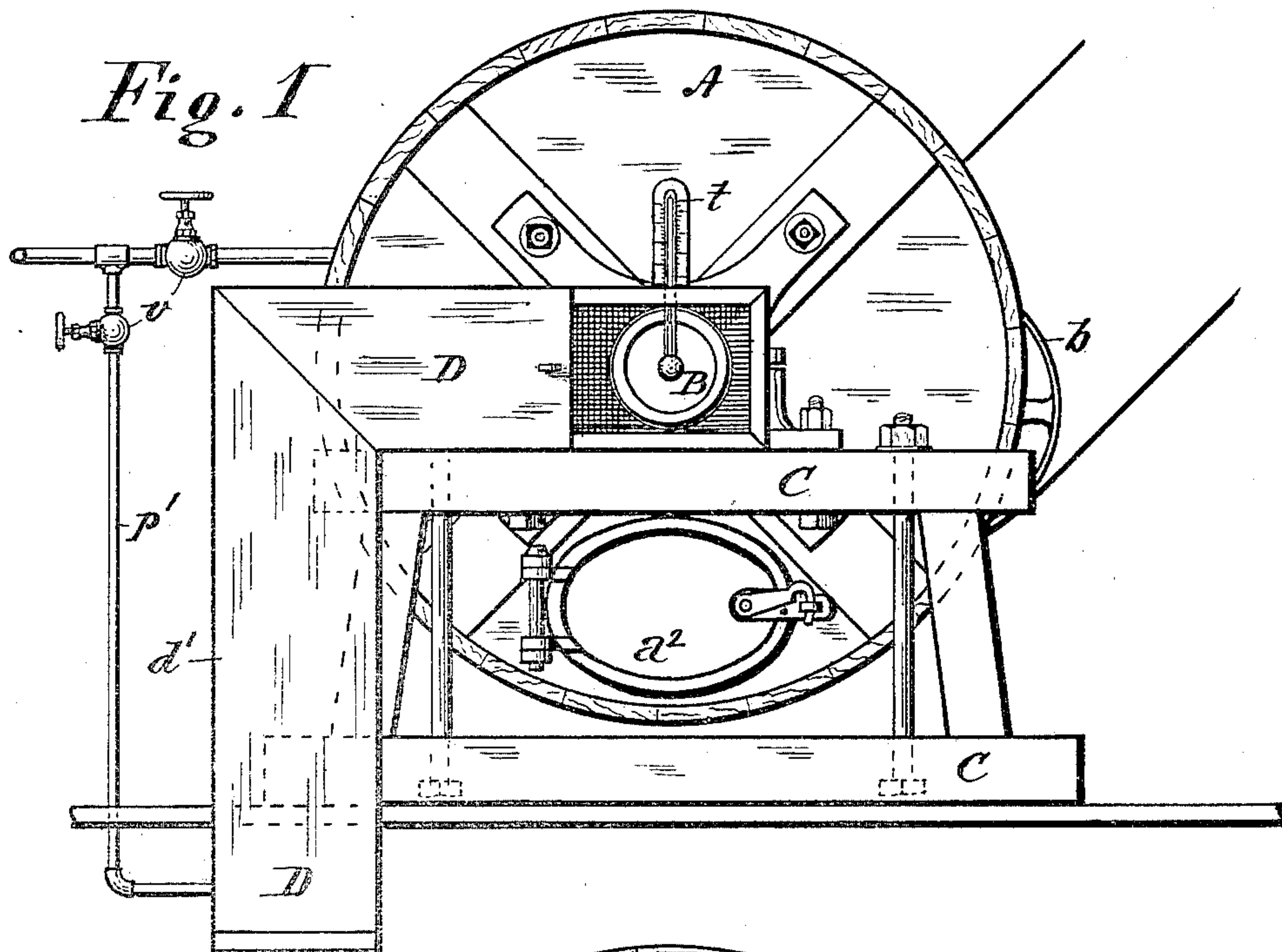
(No Model.)

2 Sheets—Sheet 1.

G. HULSEMANN.  
STUFFING WHEEL.

No. 461,019.

Patented Oct. 13, 1891.



Attest:

Alfred M. Harrison  
Wm. J. H. H. H.

Gerhard Hulsemann  
by N. M. H. H. H.  
Atty

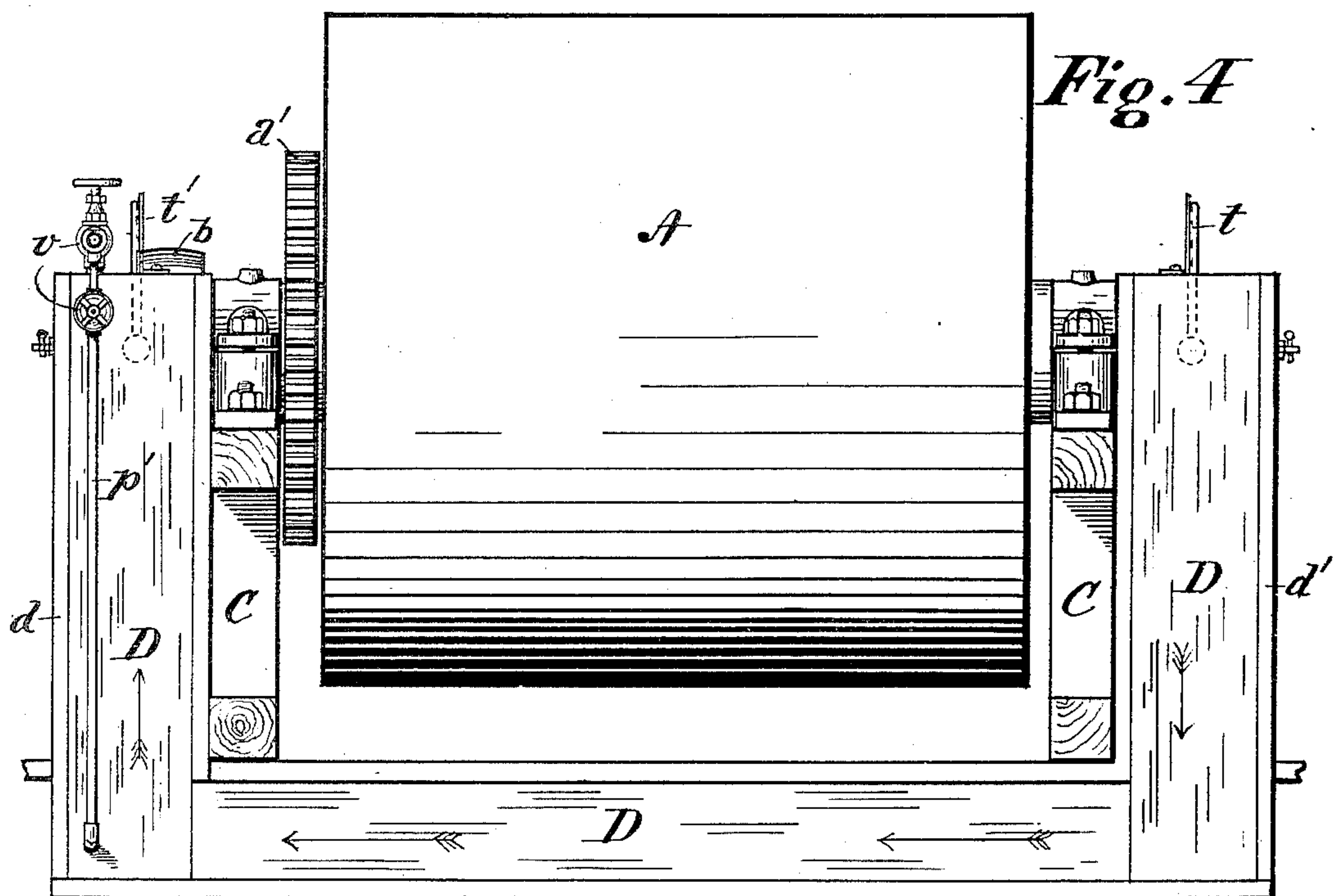
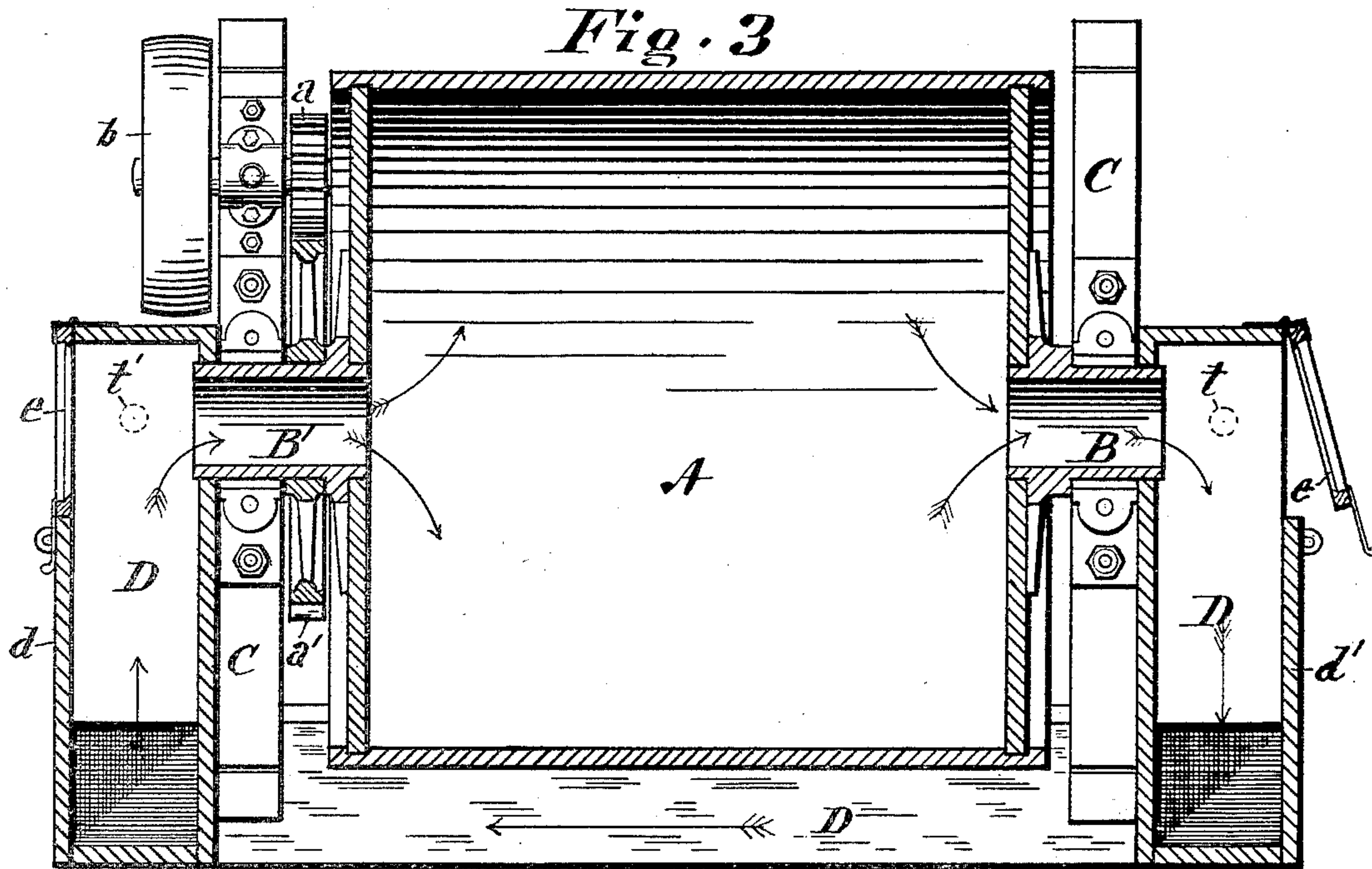
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2 Sheets—Sheet 2.

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# UNITED STATES PATENT OFFICE.

GERHARD HULSEMAN, OF CINCINNATI, OHIO.

## STUFFING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 461,019, dated October 13, 1891.

Application filed April 16, 1891. Serial No. 389,189. (No model.)

*To all whom it may concern:*

Be it known that I, GERHARD HULSEMAN, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful Improvements in Stuffing - Wheels, of which the following is a specification.

My invention relates to "stuffing-wheels" employed in treating leather with grease and other matters which, by absorption under proper conditions of heat, &c., permeate the cellular tissue of the leather, rendering the same soft and pliable. The stuffing-wheel now commonly employed is substantially a drum, into which the sides of leather are introduced, together with the stuffing material, (composed of tallow, oil, and other ingredients,) rendered liquid by the heat maintained during the process. The containing-wheel being revolved upon its axis, the leather is carried up at the sides and "tumbled" by its gravity, thus by attrition and repeated exposure of new surfaces causing the liquid ultimately to saturate the leather. It is essential to the proper result that the interior of the wheel and the contained materials shall be maintained at a moderately high and even temperature, since too great heat burns or chars the leather and too little impairs the fluidity of the stuffing liquid and fails to open the pores of the leather sufficiently for proper absorption and interpenetration. It is also essential that the contained air be neither so dry as to desiccate the leather nor so moist as to deposit an excess of moisture therein, either condition being detrimental to the result, as tending to impede the penetration of the oleaginous and fatty materials of the stuffing.

In machines heretofore used of the type as to which my present invention is an improvement the interior of the drum and leather therein are kept at the desired temperature by means of heated air forced therein while the drum containing its charge of leather is being rotated, the air being heated in a furnace *en route* from the blower or pump to the wheel, into which it is introduced by a small pipe. In the use of the apparatus referred to it is necessary to introduce the air at a comparatively high temperature in order to raise the temperature of the large volume of air and the mass of contained material

within the drum, thereby frequently scorching the leather by direct contact. Moreover, as the wheel is in revolution it is impracticable to attach an efficient thermometer thereto or at any point where it gives a proper indication of the temperature within the wheel as a guide to maintain the same at the desired point. This difficulty attaches to all machines of this class as heretofore used.

In my machine the results are much improved and the construction is simplified and cheapened. I mount the drum upon hollow trunnions considerably enlarged, through which a large body of heated air is introduced and maintained in circulation, and connect the opposite trunnion-apertures by a box-conduit of like liberal dimensions carried downward and across the base of the wheel-structure at one side, and place in one of the vertical legs of the box-conduit a nest of steam-pipes extending over into the horizontal portion of the conduit. A steam-blast nozzle is introduced at the bottom of the heating-pipe system, which may be used upon occasion to stimulate the movement of the air-column while stuffing. The same air is thus used over again, being withdrawn from one side of the wheel and reintroduced at the other, the normal motive force for maintaining the circulation being the heat restored to the air-column in its passage in the ascending leg of the conduit around and in contact with the steam-pipes, aided by its gravity when cooled in the opposite descending leg. There is thus formed a continuous passage of considerable dimensions, connected through the wheel. A bulb thermometer placed in the boxing opposite the exit-trunnion of the wheel gives always a correct indication of the temperature within the wheel, as it is directly within the body of air emerging therefrom and immediately at the point of exit. The cubical area of the box-conduit being approximately equal to or even greater than that of the wheel and heat being applied to the entire column of air in its passage through the conduit, the temperature within the wheel is easily maintained at a comparatively uniform point with no danger of overheating. As the movement of the air-column is comparatively slow, it may be necessary upon occasion, in order to maintain the temperature against



loss of heat by radiation, to stimulate the flow by a steam-jet. Any moisture thus introduced, being thus distributed through the entire volume of contained air does not condense in or upon the leather in appreciable quantity and practically maintains the desired proportions against natural loss. For the purpose of cooling off, in case too great heat is attained, (which might occur through careless use of the apparatus,) openings in the boxing, preferably at the sides opposite the trunnions, are provided, furnished with hinged doors, which may be further provided with glass panes, through which the interior of the drum and its contents may be inspected, as a guide to the introduction of further stuffing material, when required, without stopping the rotation.

Some of the benefits of my invention may be derived from the application to other types of stuffing-wheels of the enlarged hollow trunnions entering a boxing at one or both sides—for example, to drums carrying heating pipes or devices as part of the drum mechanism—the facility afforded in ascertaining the temperature by a thermometer placed in the boxing opposite the exit-trunnion being of advantage, and such feature alone I deem within the spirit of my invention.

Mechanism embodying my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation with the side door removed to show the trunnion and the thermometer; Fig. 2, an opposite side elevation with the boxing partly sectioned to show the system of heating-pipes; Fig. 3, a plan section taken in the axis of the drum and omitting the pipes; Fig. 4, an external front elevation.

Referring now to the drawings, A designates the stuffing wheel or drum, and B B' its enlarged hollow trunnions supported in the usual manner upon the frame C. The wheel is rotated by gears  $a a'$ , driven by a band-pulley  $b$  from any convenient source of power. The hollow trunnions B B' extend axially through proper stuffing-boxes into a box-conduit D, continued horizontally beyond the supporting-frame C, thence downward to or below the supporting-floor, and thence across horizontally. In the vertical leg  $d$  thus formed at one side is placed a nest of steam-pipes  $p$ , arranged vertically in parallel lines with connecting bends and bent over in the horizontal portion of the conduit, as shown, forming an angle corresponding with the course of the conduit. A blast-nozzle  $n$ , supplied by a steam-pipe  $p'$ , is introduced at the lower end of the system of heating-pipes on the ascending leg of the conduit. Valves  $v$  control the admission of steam to the heating-pipes and blast-nozzle.

The leather and stuffing materials are introduced into the wheel or drum A by the hand-hole  $a^2$ , provided with a suitable cover. The inner periphery of the wheel or drum A

may be provided with a series of radial pins or projections to assist the proper tumbling of the leather. The operation is as follows: The wheel, being first heated and the charge introduced, is revolved and the circulation of air maintained by the heat imparted by contact of the air-column with the steam-pipes  $p$  in the ascending leg  $d$  and by gravity of the cooled air in the descending leg  $d'$  at the opposite side. The nozzle  $n$  may be used as required, its effect being enhanced by the introduction of the blast in the midst of the nest of steam-pipes  $p$ . A thermometer  $r t$ , placed in the boxing opposite the exit-trunnion B', is thereby in the circulating-air column emerging from the wheel and gives a correct indication of the temperature within the wheel. Hinged doors  $e e$  in the exterior walls of the boxing opposite the trunnions afford a convenient mode of cooling the interior in case of overheating, (which can only occur through inattention or carelessness,) and the steam-nozzle  $n$  furnishes a means of moving the air-column more rapidly when necessary to increase the temperature, as in starting or after introducing new material. An additional thermometer  $t'$  may be placed in a corresponding position opposite the inlet-trunnion to enable the operator to regulate the temperature of the heated air introduced. In ordinary practice (depending somewhat upon the external atmospheric temperature) the natural levitation of the heated-air column at one side, aided by the weight of the cooler-air column at the other side, will be sufficient to maintain the desired circulation of air, the action of the drum itself with the tumbling of the contained masses of leather securing a thorough distribution and mixing of the air within the drum. A very minute steam-jet is therefore all that is required at any time, managed by the proper controlling-valve, to raise and maintain the temperature at any desired point. Sufficient moisture is also supplied thereby.

It will be obvious that the benefits of my invention may be attained in a degree in that type of stuffing apparatus before referred to, where the air heated externally to the apparatus is introduced by a small pipe directly into the machine, but at one side, with a corresponding exhaust-pipe at the other, by employing so much of the boxing at each side as will serve, in connection with the enlarged hollow trunnions, as chambers independent of the immediate chamber of the drum itself. Such chambers, independently of the connecting-conduit, form at one side a mixing-chamber, whereby the too-highly-heated air introduced is to some extent mixed with the contained air of the drum before coming in contact with the leather, and at the other an exit-chamber in and by which the general temperature of the contained air is tested with a view to its proper regulation.

The same advantages would be realized by the same partial use of my invention in those



drums in which the heating apparatus is contained in a surrounding jacket or secured to the periphery of the main drum, the external chambers communicating freely with the interior through the large openings formed by the enlarged hollow trunnions and affording a ready means of ascertaining and regulating the temperature. I therefore deem such construction and use within the spirit of my invention.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In a leather-stuffing apparatus, the combination of a closed rotating drum having axial openings, independent hollow trunnions extending said openings outward, air-chambers in which said trunnions rotate with approximately-tight joints, mechanism for heating and forcing a current of air into one of said chambers, and an exit-conduit in the other of said chambers, substantially as set forth.

2. The improved leather-stuffing apparatus embodying, in combination, a rotating stuffing-wheel with independent hollow trunnions, a conduit connecting said hollow trunnions

exteriorly to the wheel, and means for heating and maintaining a circulation of air through said wheel and connecting conduit, substantially as set forth.

3. In a leather-stuffing apparatus, the combination of a rotating stuffing-wheel having hollow trunnions, a conduit connecting said trunnions from outside to outside at a lower elevation, and heating pipes or surfaces in the ascending leg of said conduit, substantially as set forth.

4. In a leather-stuffing apparatus, the combination of a wheel having hollow trunnions, an air-conduit connecting the same from outside to outside at a lower elevation, a nest of steam-heating pipes in the ascending leg of said conduit, and a steam-blast nozzle arranged in connection therewith, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GERHARD HULSEMANN.

Witnesses:

H. HAGEN,  
E. HOSEA.