

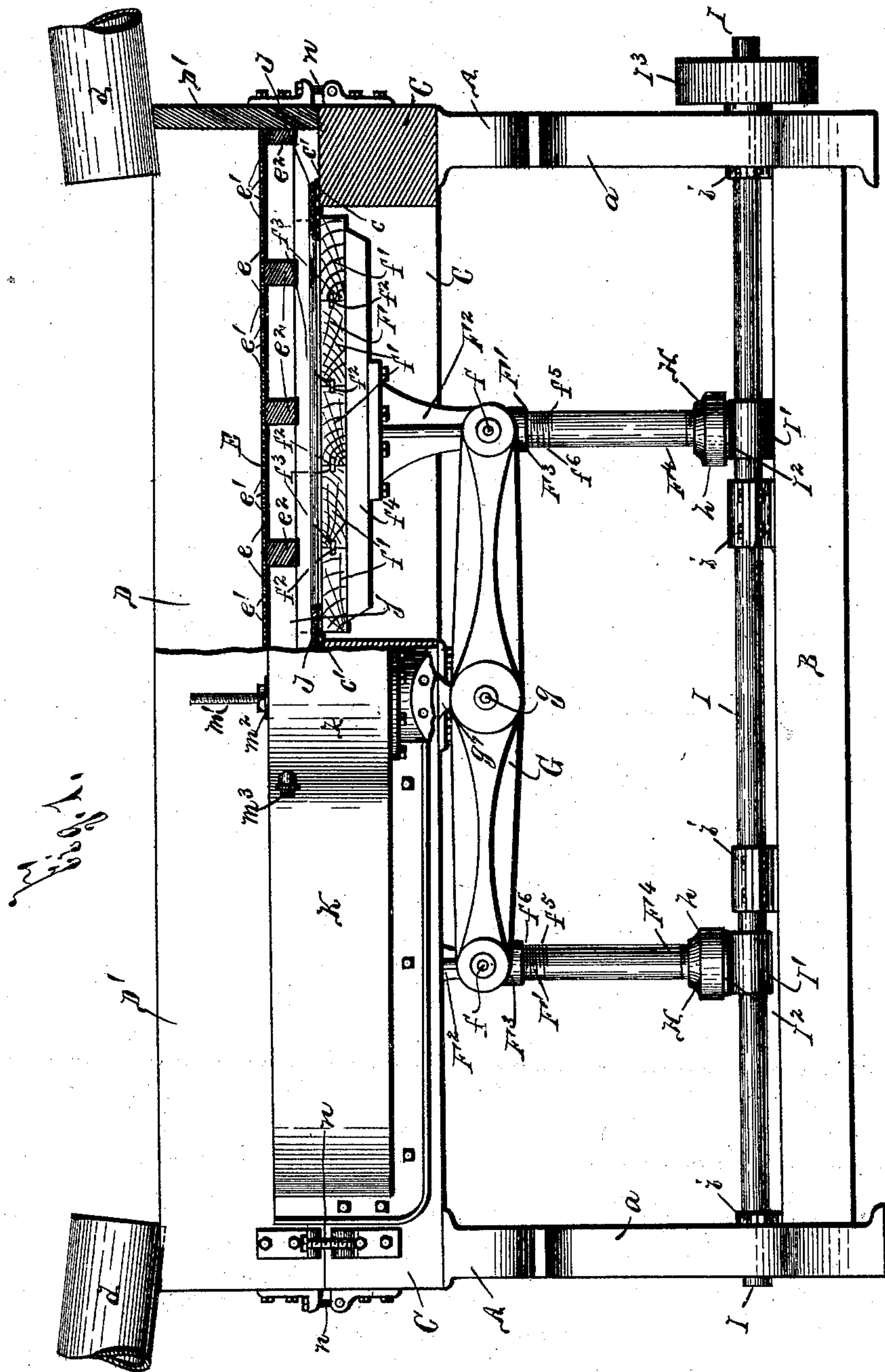
(No Model.)

3 Sheets—Sheet 1.

D. W. ROUNDS.
PULP STRAINER.

No. 505,483.

Patented Sept. 26, 1893.



WITNESSES:

W. H. Randall
H. C. Chase

INVENTOR

D. Wellington Rounds

BY

Hay Wilkins & Parsons
ATTORNEYS.

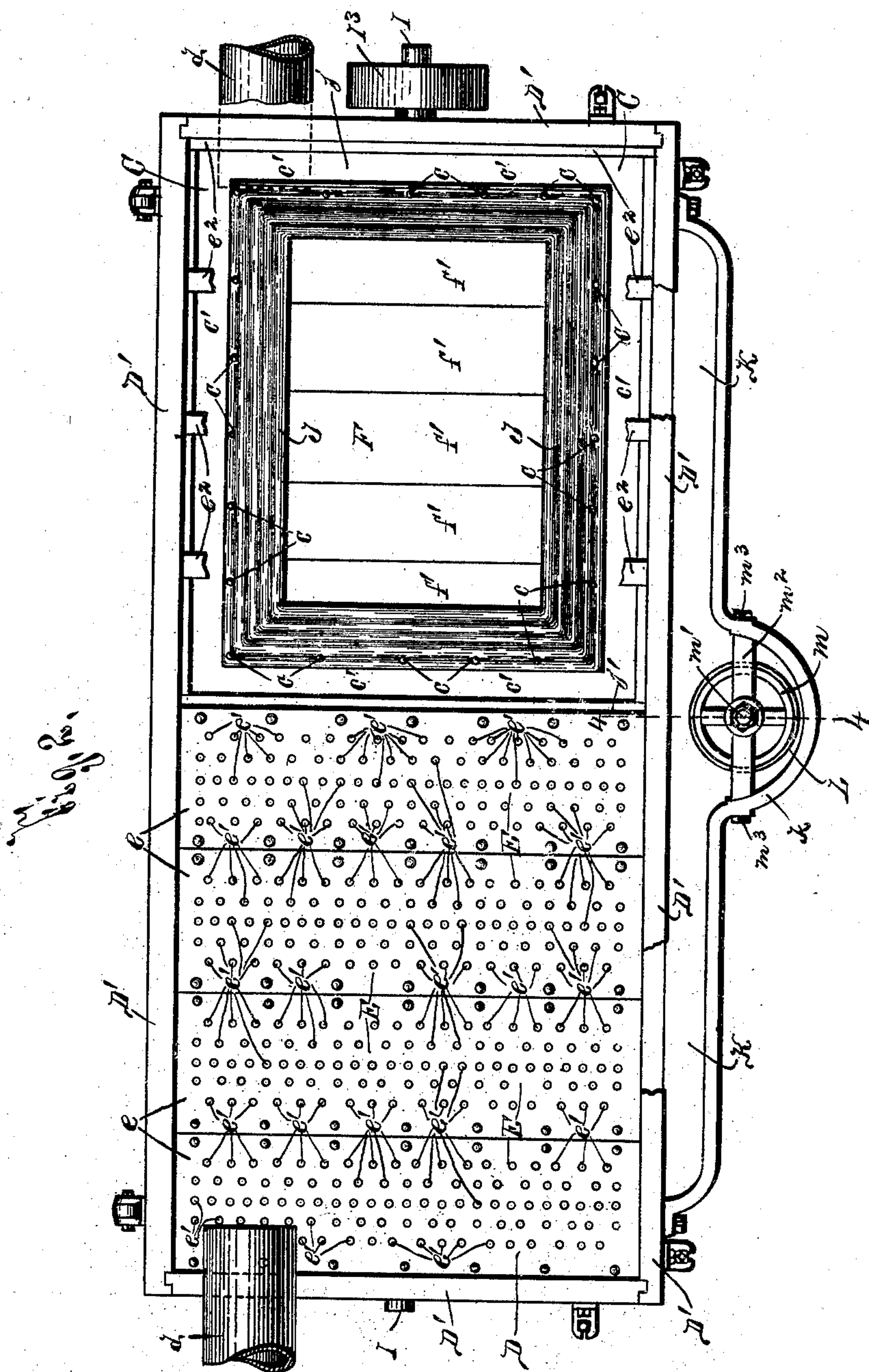
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WITNESSES:

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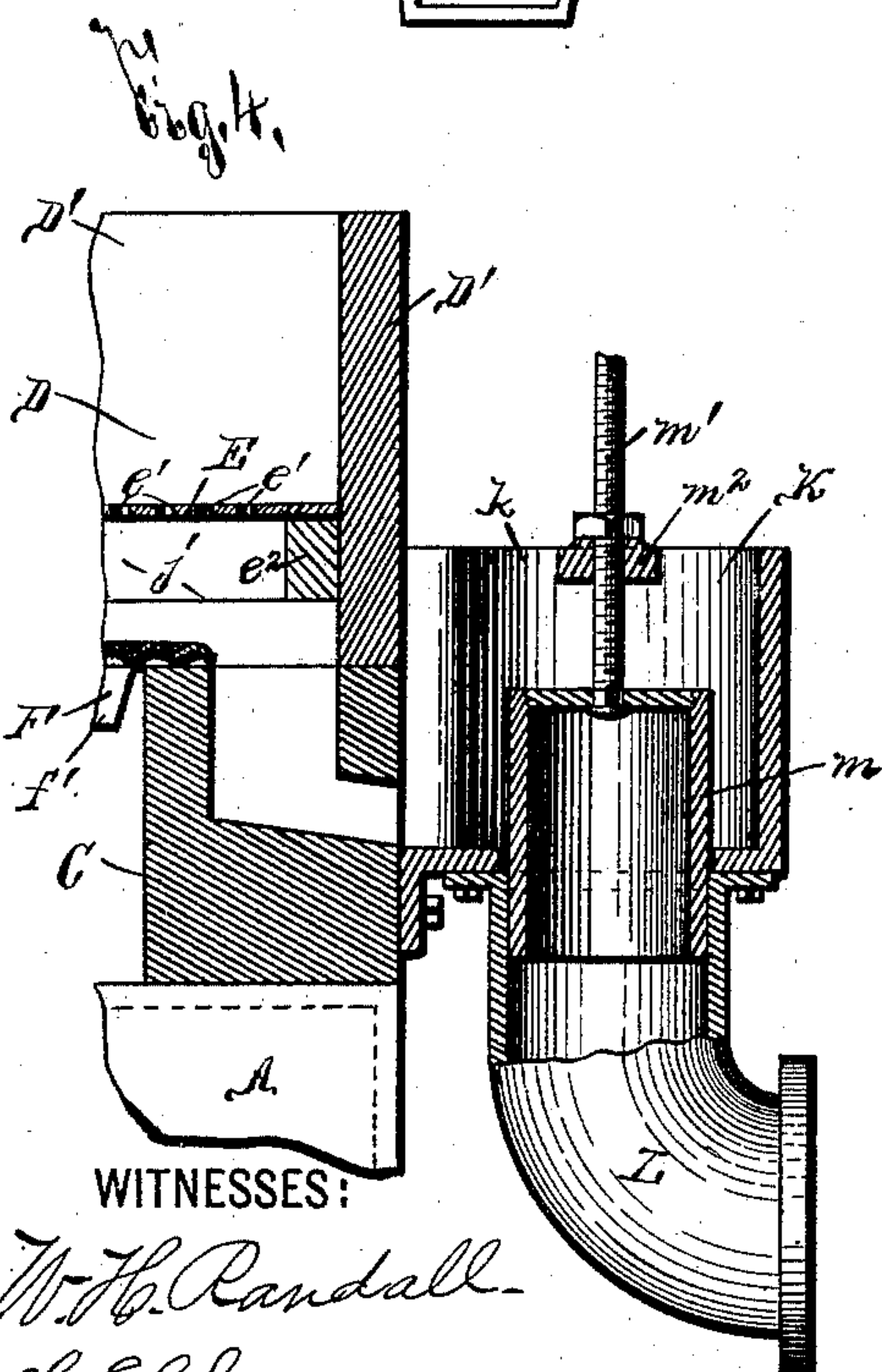
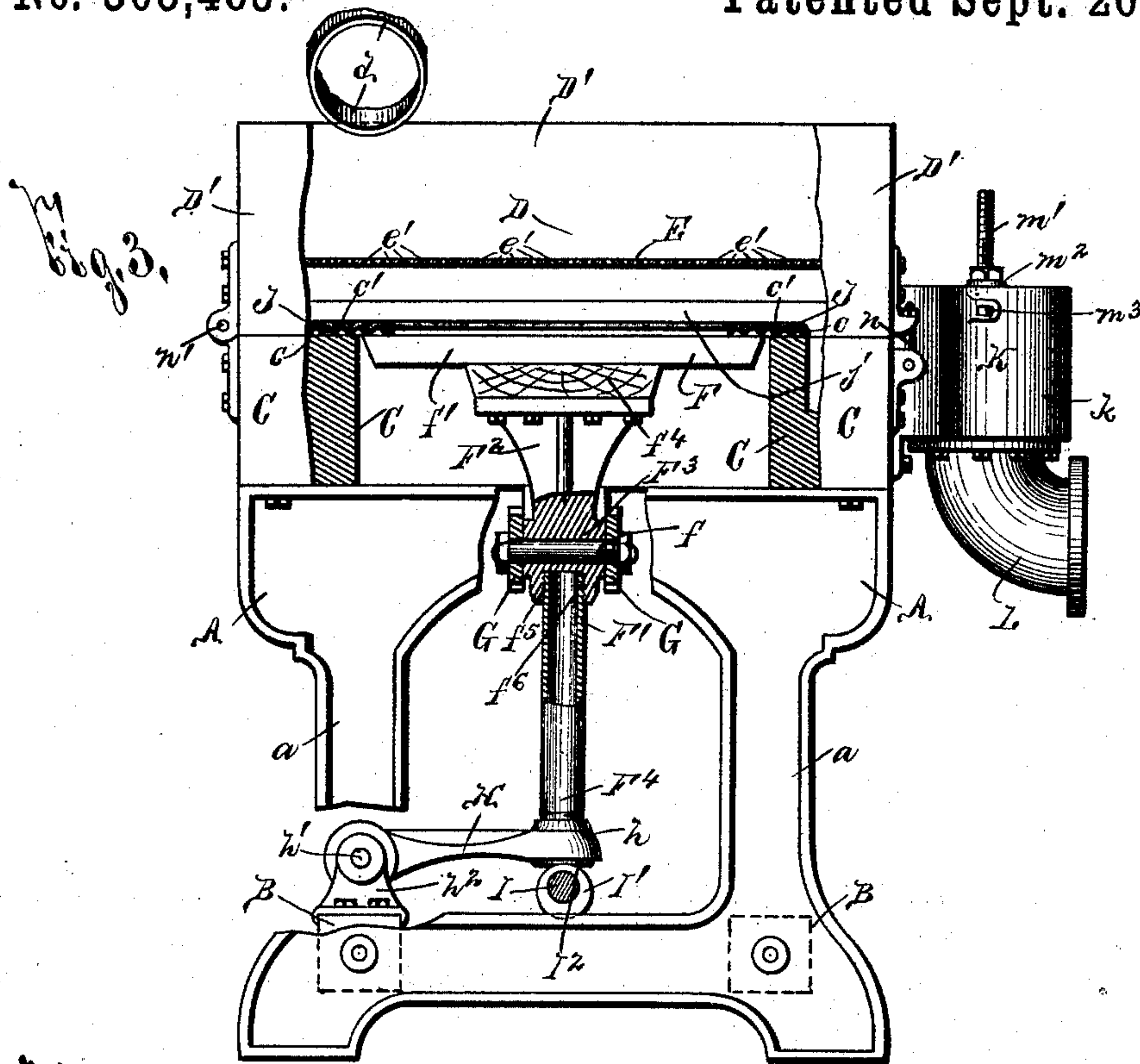
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D. W. ROUNDS.
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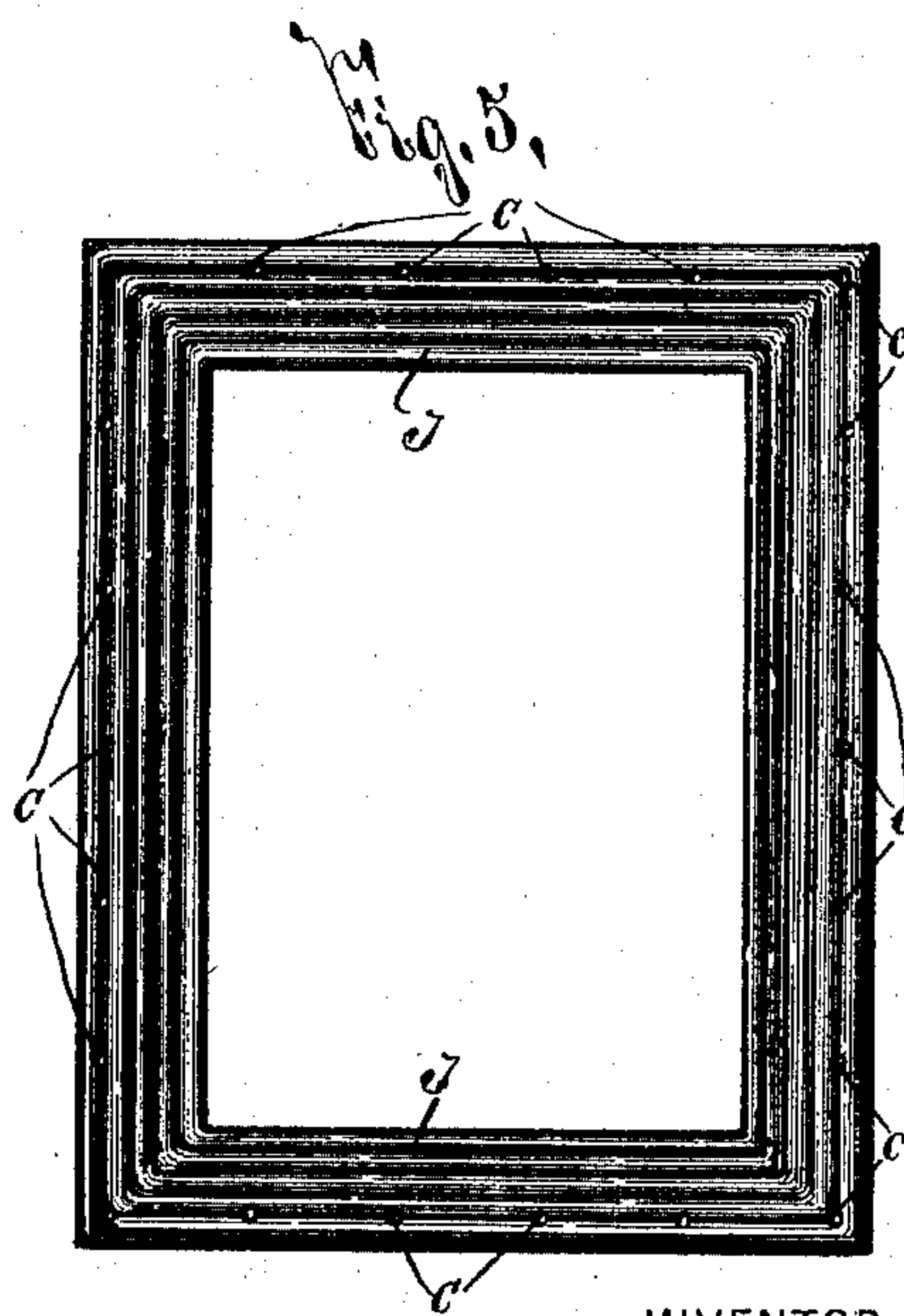
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UNITED STATES PATENT OFFICE.

D WELLINGTON ROUNDS, OF DEXTER, NEW YORK.

PULP-STRAINER.

SPECIFICATION forming part of Letters Patent No. 505,483, dated September 26, 1893.

Application filed October 6, 1891. Serial No. 407,912. (No model.)

To all whom it may concern:

Be it known that I, D WELLINGTON ROUNDS, of Dexter, in the county of Jefferson, in the State of New York, have invented new and useful Improvements in Pulp-Strainers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in strainers particularly adapted for use in the manufacture of various kinds of pulp and like materials, and has for its object the production of a simple and effective device which is extremely durable, practical and easy of adjustment.

To this end the invention consists in the detail construction and arrangement of the parts, all as hereinafter more particularly described and pointed out in the claims.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 represents an elevation, partly in section, of my improved strainer. Fig. 2 is a top plan view of the parts as shown in Fig. 1, a portion of the perforated base of the strainer receiving chamber being removed for the purpose of illustrating the flexible plate directly beneath the same and the plunger beneath the flexible plate. Fig. 3 is a side elevation, partly in section, of the parts as shown in Figs. 1 and 2. Fig. 4 is a sectional view, taken on line —4—4—, Fig. 2; and Fig. 5 is a top plan view of the enlarged flexible plate above the plunger.

—A— represents the frame of my improved strainer, consisting of a pair of vertical standards —a—, horizontal tie bars —B— at the base, and a bed —C— at the top of the standards composed of timber or other suitable material.

—D— represents the chamber for receiving from any suitable conductor, as the pipes —d—, the pulp mixed with a suitable amount of liquid. This chamber is formed with upright side walls —D'— and a perforated base —E— consisting preferably of a series of metallic plates —e— formed with perforations —e'— supported upon cross bars —e²— suitably secured to the upright walls —D'—.

—F— represents the plunger for forcing the pulp through the perforated base —E— of the chamber —D—. As preferably constructed, there are two of these plungers operating alternately with each other and connected by a lever —G— pivoted at —g— upon a suitable support —g'— secured to the bed —C— and hinged at its opposite ends to pins —f— projecting from the plunger rods —F'. The plungers —F— are preferably composed of a series of short planks —f'— suitably secured together as by tongues and grooves —f²— and —f³— and mounted upon the frame work —f⁴—. Secured to this frame work is the bracket —F²— formed with a hub —F³— for receiving the pivot pin —f— of the lever —G—. The lower end —F⁴— of the plunger rod —F'— is tubular for the sake of lightness and strength, and its upper end is screw threaded at —f⁵— for engaging a screw threaded socket —f⁶— in the hub —F³—, whereby the length of the plunger rod may be adjusted to regulate the amount of throw of the plunger —F—.

—H— represents an arm or lever rigidly secured at one end —h— to the lower extremity of the plunger rod —F'— and pivoted at its other extremity —h'— to a support —h²— suitably secured upon one of the frame tie bars —B—.

Directly beneath the end of the plunger rod is a shaft —I— journaled in bearings —i— and provided with cams —I'— for engaging suitable wearing plates —I²— on the plunger rods and thereby raising and lowering said rods, the cams being oppositely arranged in order to operate the plungers alternately. Power is transmitted to a pulley —I³— upon this shaft —I— in any desired manner, and it will be evident that as the shaft is revolved, the plungers —F— are continually and alternately raised and lowered, or in other words, forced toward and away from the perforated base —E— of the chamber —D—.

Interposed between the plungers —F— and the base —E— are flexible plates —J— having one edge suitably secured at —c— to the top face —c'— of the bed —C— and the other adapted to lap upon the plunger —F— for forming beneath the chamber —D— a receiving chamber —j—j'. The plates —J— are preferably formed with their central portions

cut away so as to produce rectangularly arranged side bars and are composed of metal as copper having lengthwise corrugations, which is extremely durable and flexible. It will readily be understood that as one of the plungers descends, the cubic volume of the corresponding chamber —*j*— is slightly increased, and as the yielding plate —*J*— rests firmly upon said plunger, the air is prevented from upward entrance into said chamber —*j*—, and the pulp is sucked or strained downwardly through the perforations —*e'*— of the base —*E*—. As some of the particles of pulp are somewhat larger than the perforations —*e'*— these openings become choked or filled up as the plunger descends, but upon its return movement these particles of pulp are forcibly thrown upward and the perforations cleared for further operation as the plunger again descends. The importance of the adjustment of the plunger rods will now become evident since in some cases when the pulp is rather coarse it requires a more forcible action of the plunger than when the pulp is reduced to a finer consistency and is more liable to pass through the perforations of the base —*E*— without choking the same.

—*K*— represents an outlet passage opening from the chamber —*j*—, and —*L*— represents an outlet pipe for withdrawing from the central portion of said passage —*K*— the material passed thereto from the chamber —*j*—.

Projecting upwardly from the base of the passage —*K*— is a ring or flange —*m*— formed with a projecting screw threaded nipple or rod —*m'*—, which is adjustably supported in the cross bar —*m²*— secured at —*m³*— to the frame —*k*— composing the passage —*K*—. The lower end of this ring —*m*— telescopes within the outlet pipe —*L*—. As the strained pulp passes from the extremities to the central portion of the outlet passage —*K*— it flows over the top of the flange —*m*— and thence downwardly through the pipe —*L*— thus causing the top of said flange to determine the height of the pulp within the chamber —*j*—.

When desired to clean or replace the plunger —*F*—, the flexible plate —*J*— or the perforated base —*E*—, the upper shell —*D'*— of the chamber —*D*— may be readily removed from position by disengaging and forcing downwardly its securing eye bolts —*n*— and swinging said shell —*D'*— upwardly upon the hinges —*n'*— secured at its side.

The operation of my invention is particularly practical and effective, since the alternate action of the plungers produces a great agitation of the pulp, rendering the straining thereof positive and effective. The peculiar construction of the flexible plate —*J*— also adds to the efficiency of operation and long life of the strainer and the adjustability of the plunger rod enables the operation of the strainer to conform to the consistency of the pulp. It is evident, however, that instead of

the corrugated metallic plate —*J*—, a suitable rubber or other plate may be used and instead of cutting away the central portion of said plate, the same may be left intact.

The operation of my invention will be perceived from the foregoing description and upon reference to the drawings, and it will be particularly noted that I do not herein limit myself to the precise detail construction and arrangement of the parts thereof, as the same may be somewhat changed without departing from the spirit of my invention.

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

1. In a strainer, the combination of a perforated plate, a plunger movable toward and away from said plate, and a corrugated flexible plate between the plunger and the perforated plate, substantially as and for the purpose described.

2. In a strainer, the combination with a frame containing a chamber provided with a perforated plate above its bed, two plungers within said bed below the plate, and flexible plates connecting the bed with the edges of the plungers; of brackets depending from said plungers, a lever mounted on a central support and pivoted to said brackets, rods depending from the brackets, arms pivoted to the main framework and connected with the lower ends of said rods, a rotating shaft below said arms and rods, and cams on said shaft for lifting the arms alternately, as and for the purpose set forth.

3. In a strainer, the combination with a chamber containing a horizontal perforated plate above its bed, vertically movable plungers beneath said plate, and flexible plates connecting the bed with the edges of the plungers, said bed having outlet passages around the plungers leading to a common delivery; of a main outlet communicating with said delivery and having a vertical pipe at its lower end, a ring movable vertically within the upper end of said pipe, a rod across said ring, a bar across said main outlet, and an adjusting bolt connecting said rod and bar, as and for the purpose set forth.

4. In a strainer, the combination of a perforated plate and a plunger movable toward and away from said plate; of a flexible upper plate arranged between the perforated plate and the plunger and formed with its central portion cut away, and with lengthwise corrugations in its sides, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Dexter, in the county of Jefferson, in the State of New York, this 19th day of September, 1891.

D WELLINGTON ROUNDS.

Witnesses:

FRED E. WOOD,
T. J. STRAINGE.