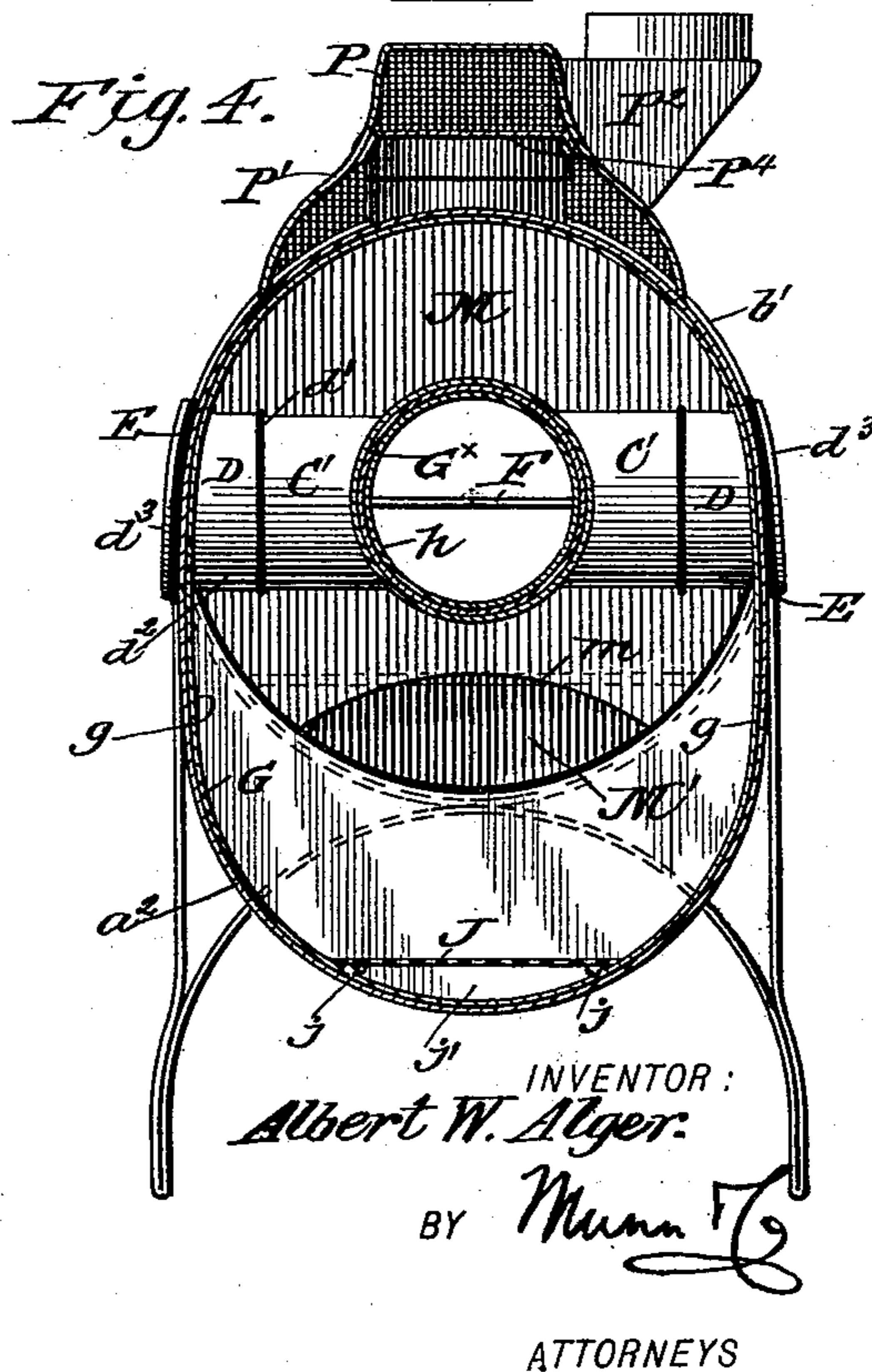
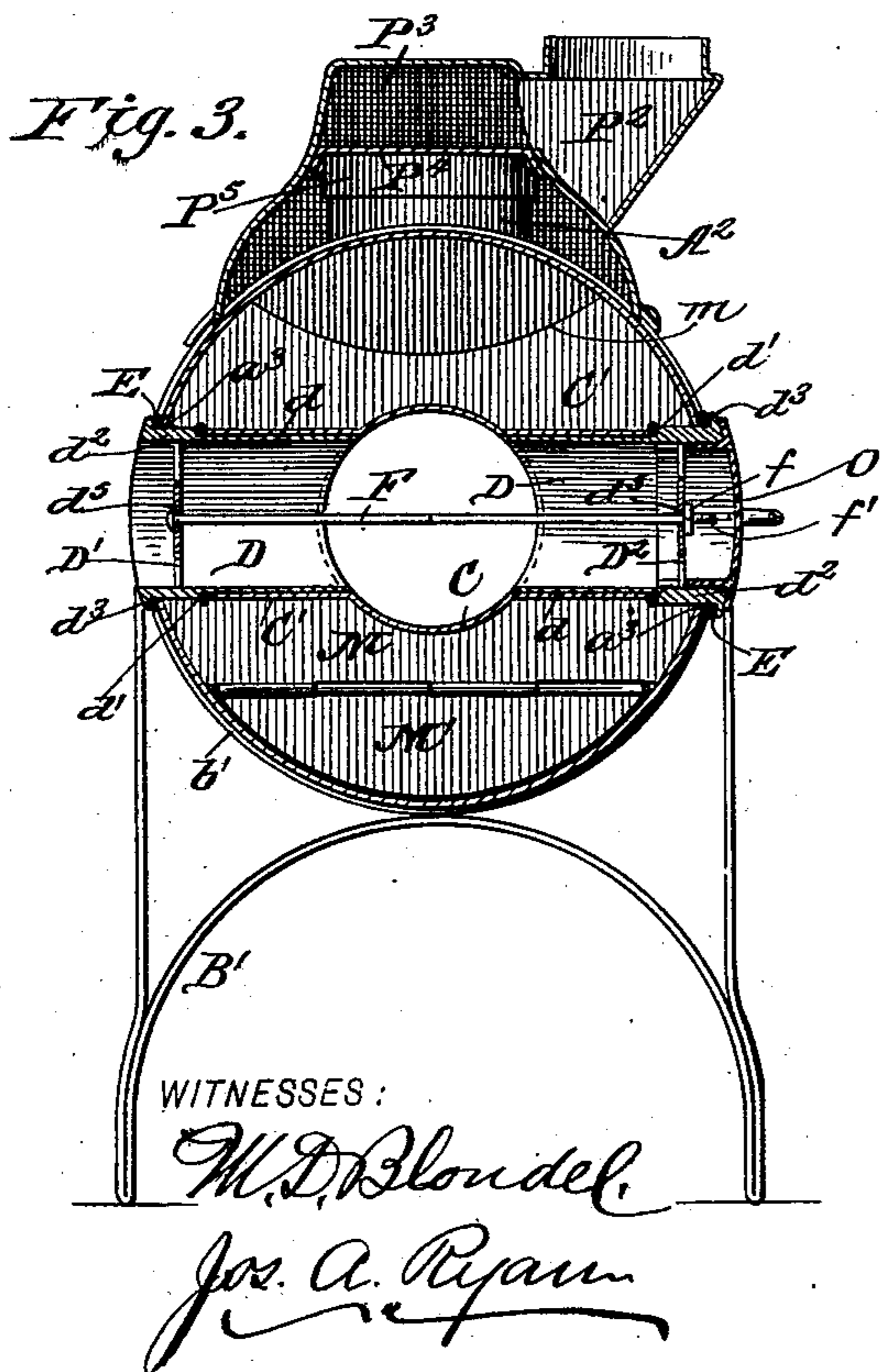


2 Sheets—Sheet 1.

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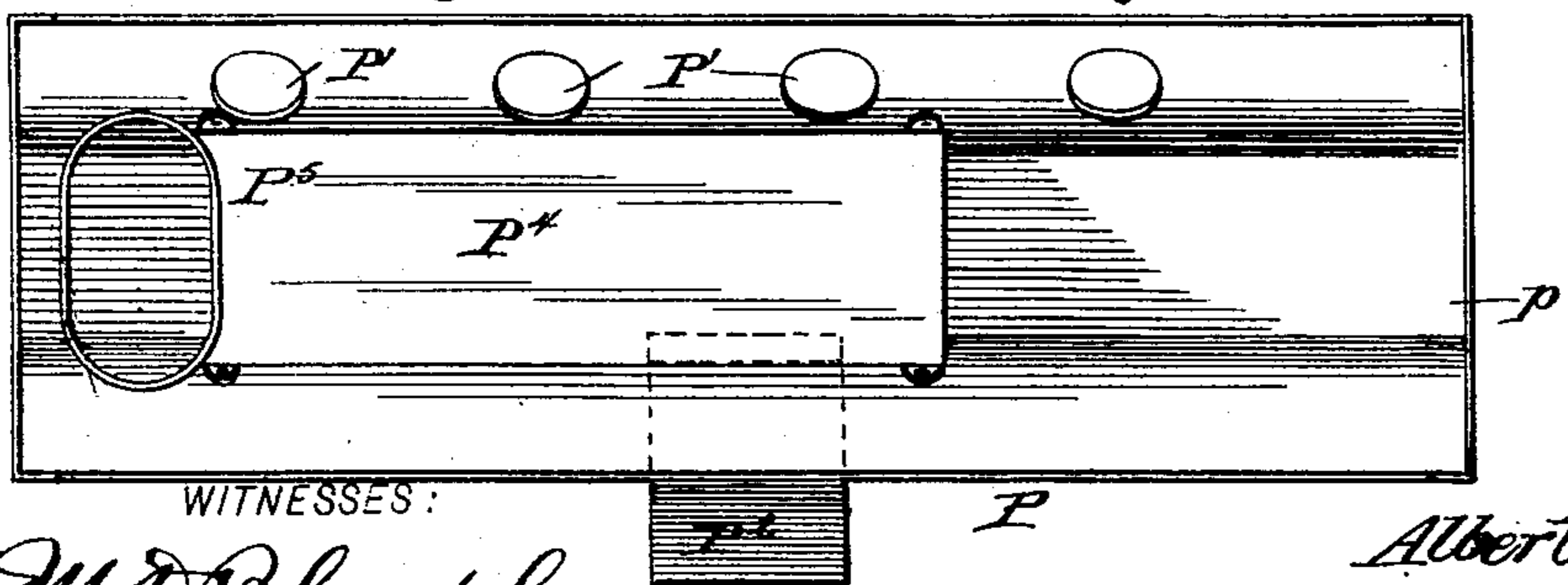
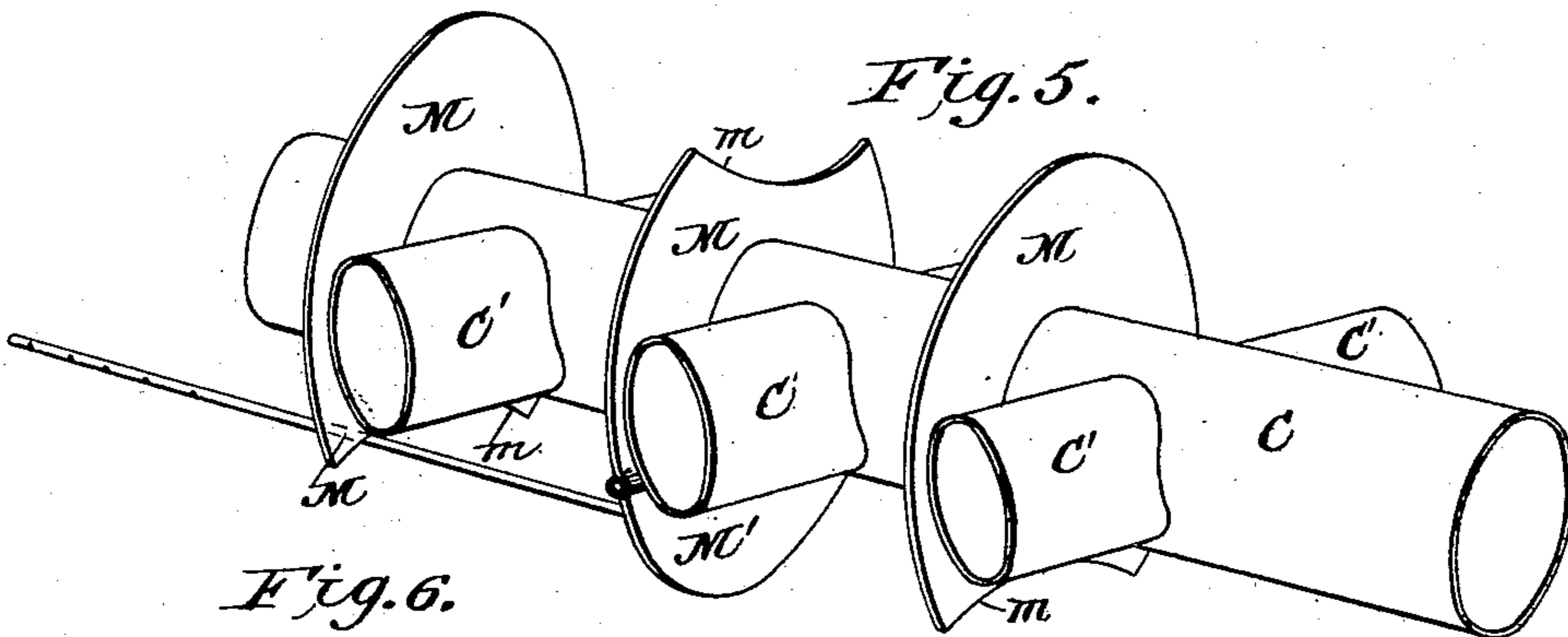
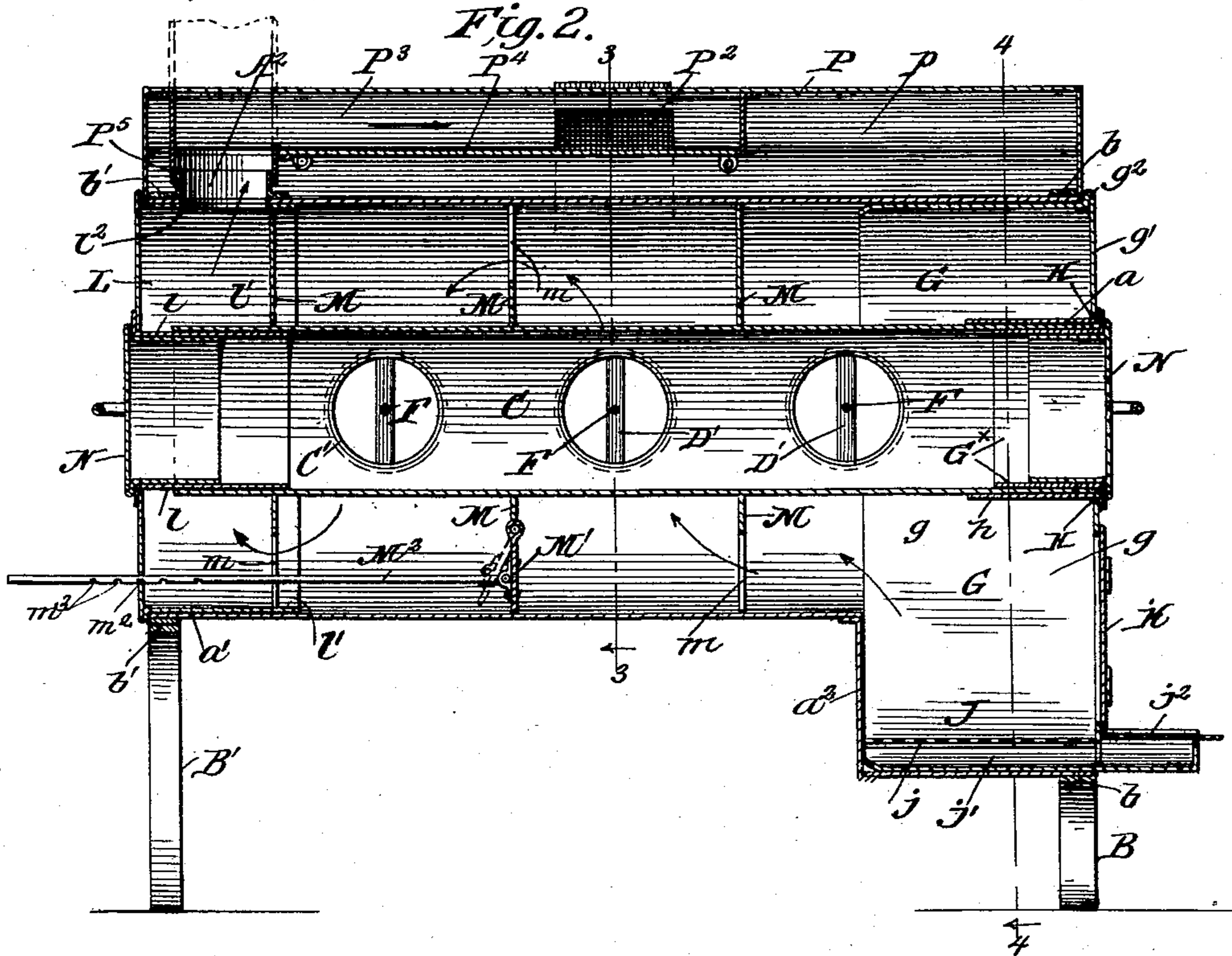
Patented Oct. 24, 1893.



A. W. ALGER.
STOVE.

No. 507,093.

Patented Oct. 24, 1893.



WITNESSES:

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ALBERT W. ALGER, OF KANSAS CITY, MISSOURI.

STOVE.

SPECIFICATION forming part of Letters Patent No. 507,093, dated October 24, 1893.

Application filed January 31, 1893. Serial No. 460,340. (No model.)

To all whom it may concern:

Be it known that I, ALBERT W. ALGER, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Stoves, of which the following is a specification.

My invention relates to heating stoves and has for its object to provide a stove of this class, embodying certain constructions whereby to effect a great economy in fuel and yet obtain a greatly increased heat radiation. It also has for its object to provide a stove of this character, simple and cheap in its construction, which will effectually serve for the desired purpose and in which the several parts are so arranged as to be readily detachable, whereby worn out sections can be replaced by new ones.

With other minor objects in view all of which will hereinafter fully appear my invention consists in the peculiar combination and novel arrangement of parts all of which will be fully described in the specification and pointed out in the claims reference being had to the accompanying drawings in which—

Figure 1 is a perspective view of my improved stove. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a vertical transverse section on the line 3—3 Fig. 2. Fig. 4 is a similar view thereof on the line 4—4 Fig. 2. Fig. 5 is a detail perspective view of the internal heat deflecting devices hereinafter specifically referred to, and Fig. 6 is an inverted plan view of the crown flue or top section.

Referring to the drawings A indicates the shell or body portion of my improved stove constructed of any suitable metal, and formed preferably cylindrical in shape it being obvious however, that it may be square, oblong or of any other desired form. The body A has open ends a a' and the front portion thereof has a depending enlargement a^2 which forms the fire pot, extends a short distance rearward and communicates with the hollow cylindrical body portion.

B B' indicate the front and rear legs or supports, connected to bands b b' which pass around the front and rear ends of the body A as most clearly shown in Fig. 1 of the drawings.

Disposed within the body A is a heat radiating device, which consists of a longitudinal

tube C and a series of transverse tubes C', the longitudinal tube extending from end to end of the body while the transverse tubes C' extend to near the sides of the body (see Fig. 3). These transverse tubes C' communicate with a series of heat discharge openings a^3 in the sides of the body A, they being connected with such openings by means of the short flue sections D, which project into the transverse tubes C', and to provide for smoke tight joints each of the flue sections has a reduced portion d which fits into the tube section C', a shoulder d' which abuts the end of such section, an enlarged portion d^2 which passes through the heat aperture a^3 in the body A, and an annular flange d^3 which seats over the outer edge of such aperture as shown.

As a further means of rendering the several joints smoke tight asbestos or other fire proof packing rings E are interposed between the flange d^3 and the body A and the shoulder d' and the edges of the tubes C.

As a simple and effective means for securing the internal heat radiator to the body, I form the detachable flue sections D with transverse bars D' D² which have apertures d^5 through which pass the securing bolts F and which are securely held by the tightening nuts f which fit the threaded ends f' of the bolts as clearly shown in Fig. 3 of the drawings. While I have shown but three sets of transverse heat tubes and openings, it is manifest that a greater or less number may be used if desired.

G indicates the telescopic front section, which in transverse section is of a form similar to the front portion of the body (see Fig. 4) the side flanges g extending up to the inner end of the fire pot section of the body, the front g' of the front section being slightly larger than the body so as to form a lap flange g^2 . The upper portion of the front has an opening H formed with a rearward tubular extension which projects over the front end of the longitudinal radiating tube C. Upon flanges j secured to the sides g of the front section G is mounted the grate section J, below which is formed the ash pit j' , which extends beyond the front of such section G, and forms the hearth through which draft is obtained, and such hearth has an adjustable cover plate j^2 as shown.

K indicates the feed door.

The rear end of the stove is formed of a telescopic section L centrally apertured and formed with an inwardly extending tubular member l which fits into the rear end of the longitudinal radiating tube C and with an annular rim or flange l' which fits snugly into the body portion, the end proper also lapping the end of the body to form a smoke tight joint. The upper face of the rim l' has an aperture l^2 which registers with the smoke outlet A^2 in the rear end of the top of shell (see Fig. 2).

To prevent a possible escape of smoke at the front end of the longitudinal tube C I have provided an extra tube G^x flanged at its outer end, its inner end slipping into the front end of such tube C; this tube section G^x also serves the purpose of hiding the nearly projecting end of the said tube C, making as it were a neater finish at this part.

In operation fuel is fed through the door K to the fire box, and the products of combustion are carried rearward into the body or shell around the interior radiator, and escape out through the smoke exit A^2 .

To provide means for thoroughly distributing the heat, in the shell A, a series of deflector plates M is employed which in practice is secured at intervals on the longitudinal tube C, three being shown in the drawings, but a less or greater number may be employed if desired.

Each of the deflector plates has a cut away portion forming heat passages m such passages being arranged alternately, *i. e.*, at the bottom of the front and rear plates and at the top of the center plate. By thus arranging the deflector plates it will be readily seen that the heat and products of combustion are thoroughly disseminated within the shell or body A, such heat products passing up from the fire box after passing around the front end of the tube C and the front laterals C' escaping under the front plate M, then up over the middle plate M, and then under the rear plate, into the rear part of the body A, (see arrows in Fig. 2) and then up into the smoke exit. The center plate M has a hinged section or damper M' on its lower part with which a damper rod M^2 engages, which passes rearward through an aperture m^2 in the back section of the stove, such rod having notches m^3 which are adapted to lock over the edge of the said aperture m^2 and hold the damper to its adjusted positions. By thus providing a damper a direct draft can be obtained, which is sometimes required to prevent the smoke escaping while starting the fire.

As a means for diverting radiation from one or both ends of the central tube C I employ a cap or stop plate N adapted to be fitted to the ends of such tube, a similar cap or caps O being used for the side openings.

As an additional means for causing a complete heat radiation, and also to serve as an ornamentation for the stove body, I provide

an independent crown piece P, detachably connected by means of bolts and lugs to the rings $b b'$ such crown piece extending the entire length of the body, its shape in cross section being substantially as shown in Fig. 2.

By reference to the aforesaid figure of the drawings it will be noticed that an additional heat space p is formed on top of the stove body that collects the radiated heat from the said top, which discharges through the side apertures P' in the crown piece. Centrally of such crown piece is a lateral smoke exit P^2 which communicates with a smoke chamber P^3 formed by the bottom plate P^4 detachably connected to the top of the crown piece, the rear end of such chamber having a flue collar P^5 which fits over the smoke exit A^2 . By leading the smoke into the chamber P^3 an additional amount of radiated heat is obtained and collected within the crown chamber. While for the reasons stated I prefer to employ this crown piece it is manifest that its use may be dispensed with and the smoke pipe connected with the exit A^2 as shown in dotted lines in Fig. 2. I also desire it understood that without departing from the broad principle of my invention the several parts may be arranged for use as a perpendicular stove.

Any kind of fuel can be used for generating the heat and when so desired a gasoline or coal oil burner can be set on the grate.

From the foregoing description taken in connection with the drawings the advantages and operation of my stove will be readily understood. By arranging the several parts as stated the same can be readily taken apart or quickly assembled.

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

1. In a heating stove in combination, a body portion having a fire chamber at one end and a smoke exit at the other, and formed with end and side heat discharge openings, an internal heat radiating device, comprising a longitudinal tube and a series of transverse heat tubes communicating with the end and side heat openings respectively in the body portion substantially as and for the purpose described.

2. In combination, a stove body having a fire chamber, and a smoke exit, and formed with end and side heat discharging openings, an internal heat radiating and deflecting device formed of a longitudinal tube communicating with the end heat openings, transverse tubes communicating with the side openings, and deflector plates fitting the interior of the stove body and having alternate heat passages, all substantially as and for the purpose described.

3. In a heating stove the combination with the stove body having a fire chamber at one end and a smoke exit at the other, and heat discharge apertures, at the ends and sides of an internal radiator formed of a longitudinal

tube, communicating with the end heat discharge openings, and having lateral heat tubes, communicating with the side openings in the body, transverse deflector plates fitting in the body internally and having alternate heat passages whereby to create an indirect draft, and a damper secured to the bottom of one of such plates, adapted to be set to open up a direct draft, all substantially as and for the purpose described.

4. A heating stove comprising a body portion open at both ends, and having a smoke exit near its rear end its front end depressed to form a fire chamber, front and rear end sections fitting in the open ends of the body, said sections having heat discharging apertures, the front end having a fuel door, grate portion and ash pit and hearth, a central heat radiating tube held in the body portion and communicating with the heat discharge apertures in the end sections all substantially as and for the purpose described.

5. The combination with the stove body A, having end and side heat discharge apertures, of the internal heat radiator, consisting of the longitudinal tube C extending from end to end of the body, and the transverse tubes C' extending to near the sides thereof and the tubular sections D, connecting the transverse tubes and the apertures in the sides of the body and means for tying such sections D in place substantially as and for the purpose described.

6. The combination with the body A, having side apertures a^3 , and the transverse radiator tubes C', of the tubular sections D, having a reduced portion fitting into the ends of the tubes C' a shoulder abutting such ends, an enlarged portion projected through the apertures a^3 and a flange member abutting the outer edges of such apertures and means for securing the sections in place all substantially as and for the purpose described.

7. The combination with the stove formed of a heat distributing body portion a fire chamber at one end and a smoke exit at the

other, said body having end and side heat discharging openings, of an internal heat radiator detachably held in the body, formed of longitudinal flue C, transverse flues C' communicating with the flue C and means for holding such radiator in the body, and for connecting the ends of the tubes C and C' with the end and side heat discharging apertures of the stove body all substantially as and for the purpose described.

8. The combination with a stove body having a fire chamber at one end, a smoke discharge at the other and a central heat or body portion and provided with heat discharge apertures in the ends and sides thereof of a detachable heat radiator, adapted to fit in the body portion, said radiator comprising a longitudinal tube, a series of transverse tubes, and a series of transverse deflector plates adapted to fit the transverse area of the body portion of the stove, said plates having heat passages arranged alternately at the top and bottom, and means for securing such radiator in the body, and for connecting the tubes C and C' with the end and side heat discharge apertures all substantially as and for the purpose described.

9. The combination with a stove having a fire box at one end a smoke exit at the other and an intervening heat portion, of a hollow crown piece, detachably mounted on the top of the stove body forming a heat chamber said crown piece having heat discharge apertures substantially as and for the purpose described.

10. The combination with the body A, and the exit A² of the crown piece P, having a detachable supplemental smoke flue communicating with the exit A² and extended toward the center and discharging into a lateral smoke outlet all arranged substantially as and for the purpose described.

ALBERT W. ALGER.

Witnesses:

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GEO. W. BOIES.