No. 786,120. PATENTED MAR. 28, 1905.

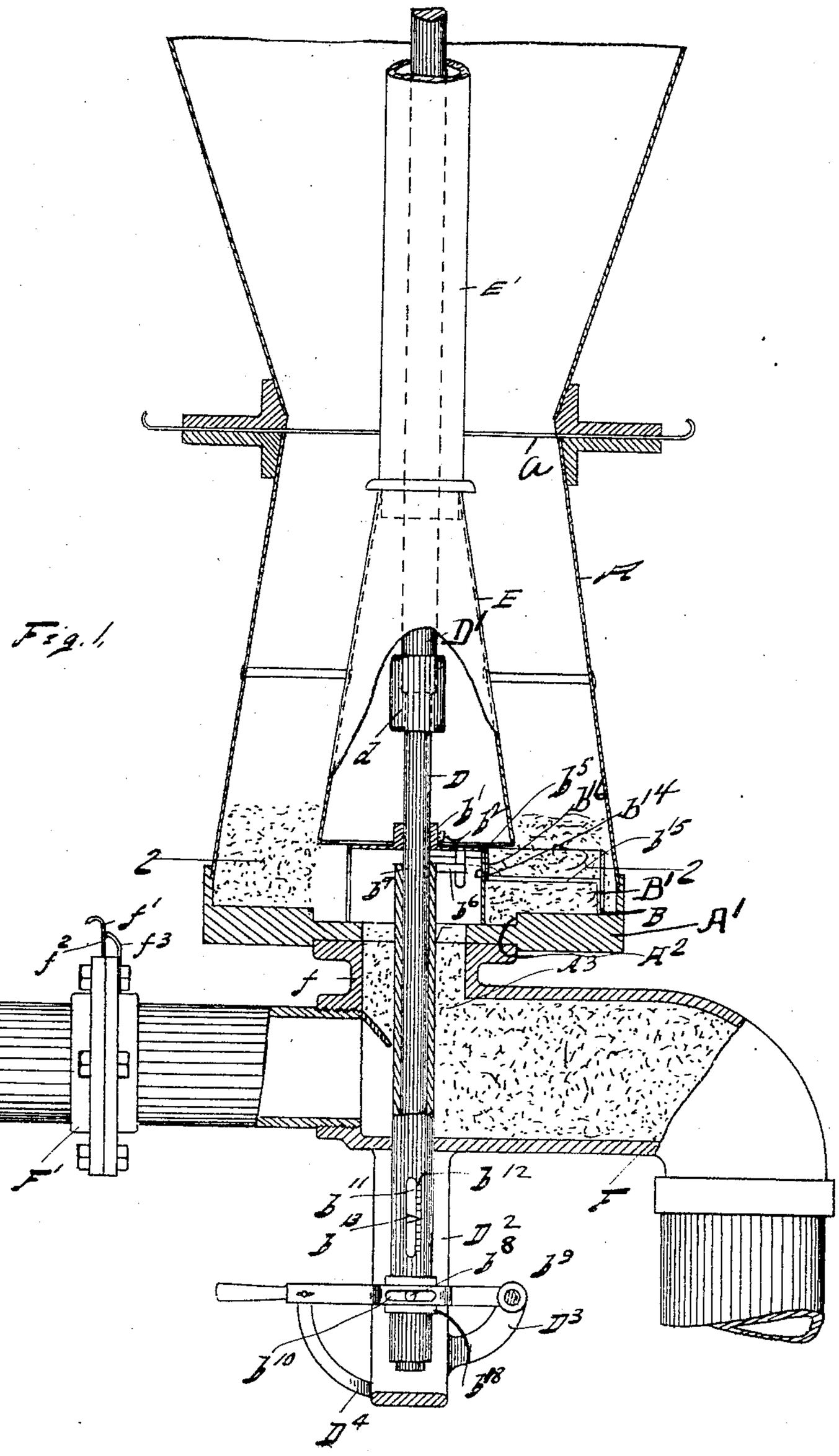
J. F. HAY.

COMMINUTED FUEL FEEDER DEVICE.

APPLICATION FILED OCT. 17, 1902.

4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

Fig. 2.

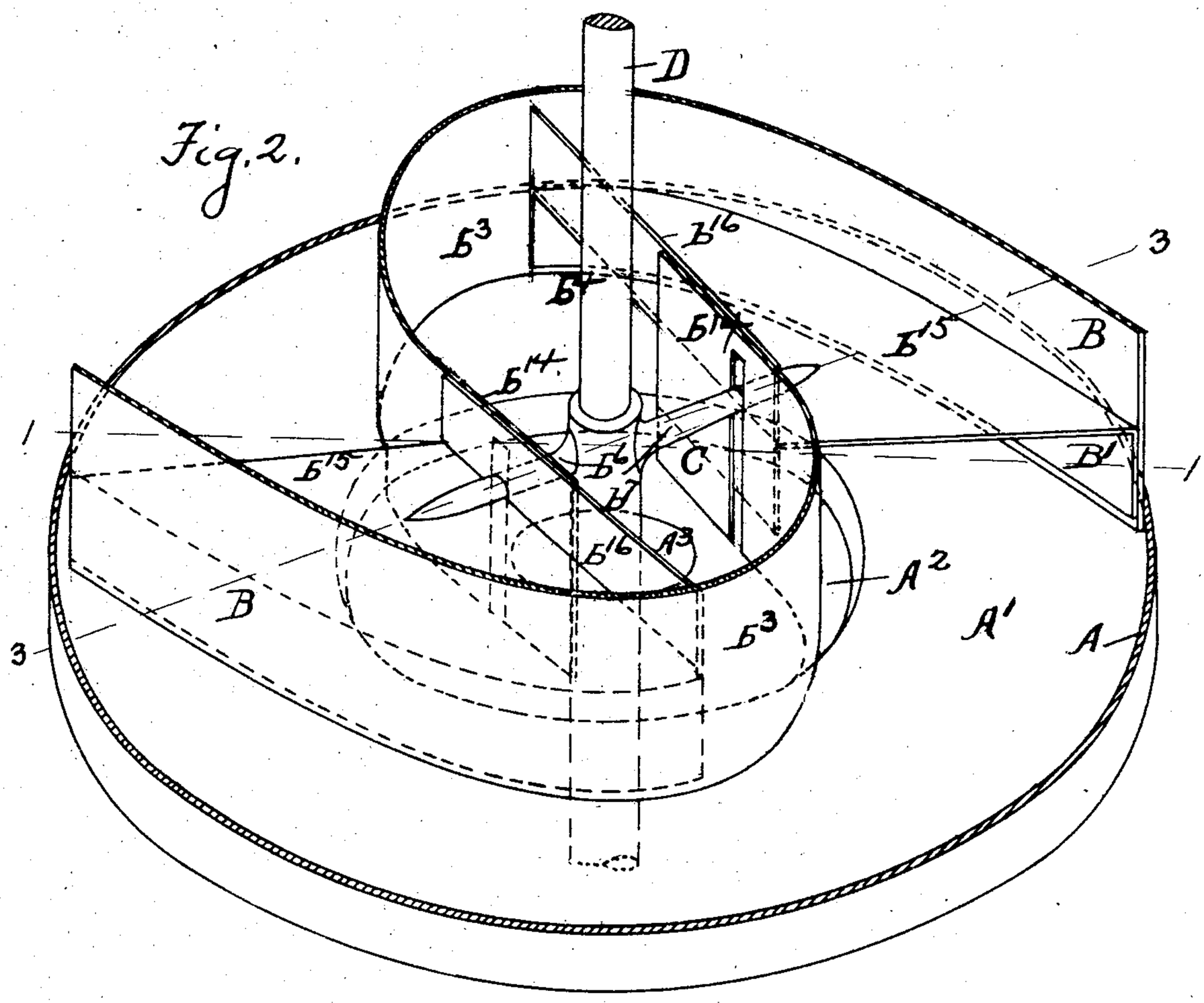
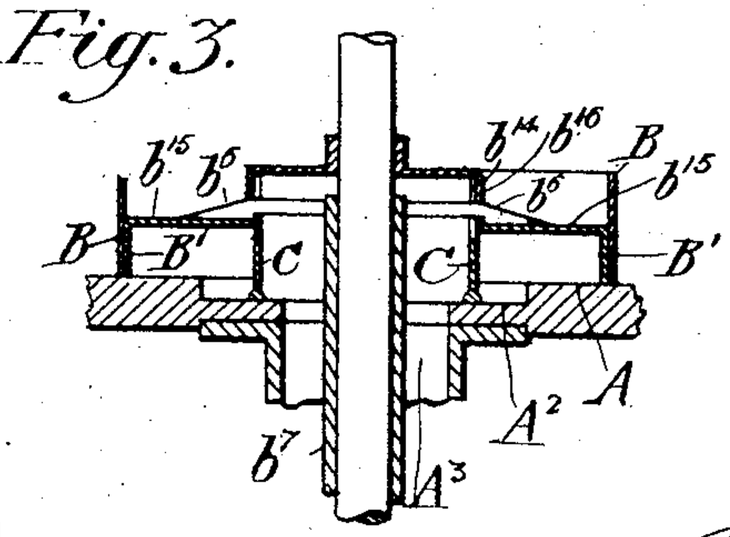


Fig. 3.



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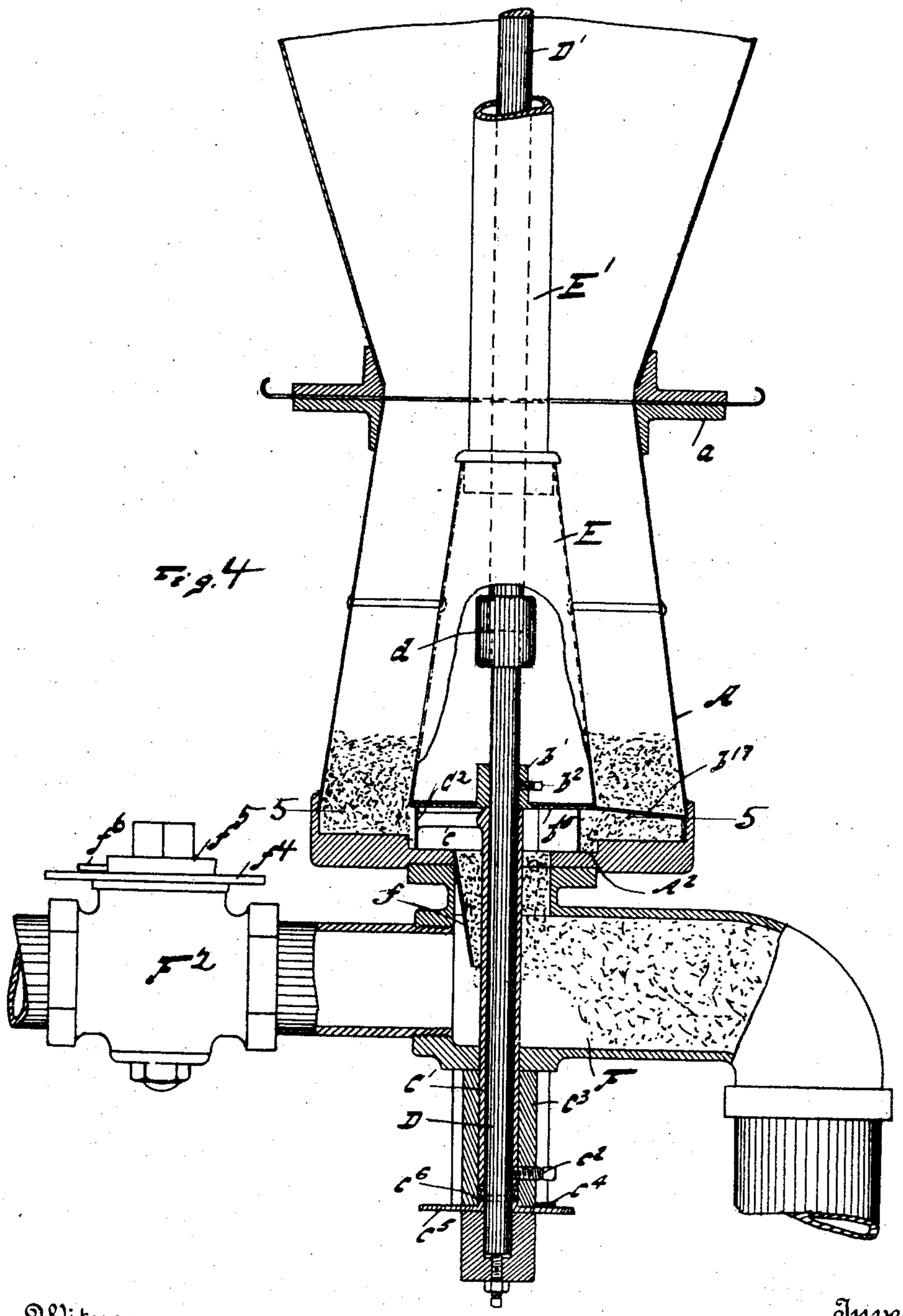
4 SHEETS—SHEET 3.

Fig. 4



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4 SHEETS—SHEET 4.

Fig. 5.

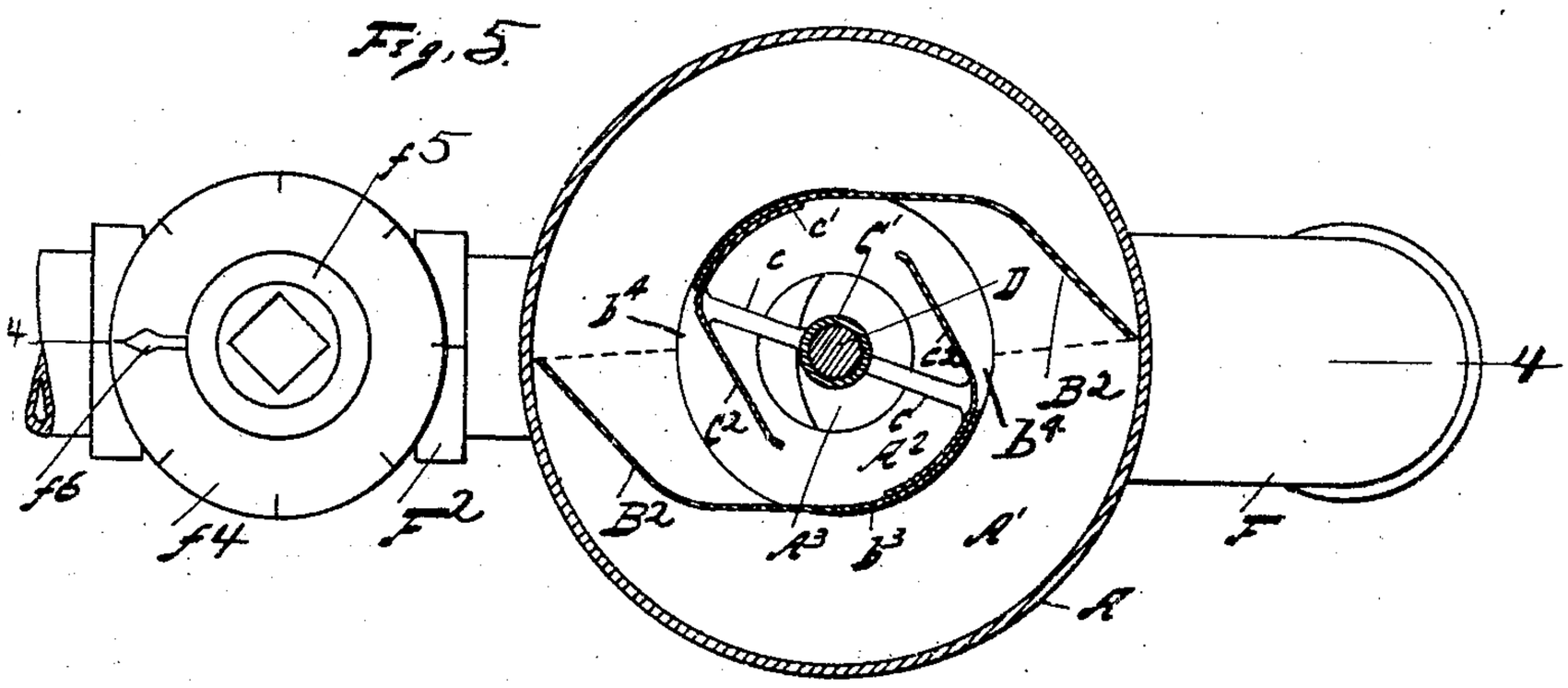
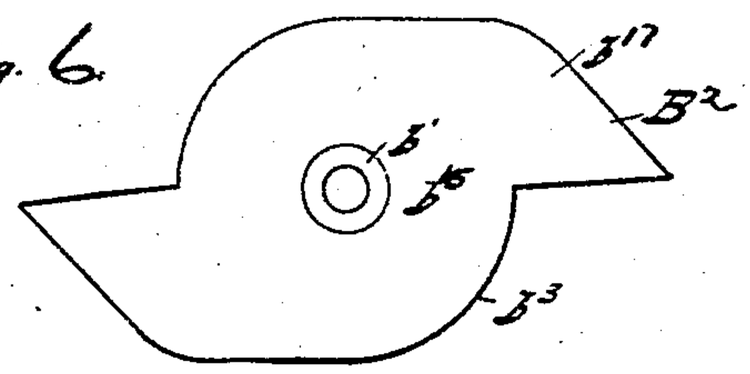


Fig. 6.



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No. 786,120. Patented March 28, 1905.

UNITED STATES PATENT OFFICE.

JOHN F. HAY, OF ERIE, PENNSYLVANIA.

COMMINUTED-FUEL-FEEDER DEVICE.

SPECIFICATION forming part of Letters Patent No. 786,120, dated March 28, 1905.

Application filed October 17, 1902. Serial No. 127,676.

To all whom it may concern:

Be it known that I, JOHN F. HAY, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Comminuted-Fuel-Feeder Devices, of which the following is a specification.

This invention relates to comminuted-fuel-feeding devices; and it consists in certain improvements in the construction thereof, as will be hereinafter fully described, and pointed out in the claims.

The object of the invention is to provide a device for feeding comminuted fuel with certainty and uniformity and also in quantities that may be regulated.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 shows a central section through the device, being a section on the line 1 1 in Fig. 2. Fig. 2 shows a perspective view of the device, partly in section. Fig. 3 shows a section on the line 3 3 in Fig. 2. Fig. 4 shows an alternative construction in section on the line 4 4 in Fig. 5. Fig. 5 shows a section on the line 5 5 in Fig. 4. Fig. 6 shows a plan view of the flight mechanism of the alternative construction.

A marks the fuel-receptacle. This it provided with a cut-off slide *a* and is mounted on the platform A′. This platform is preferably circular in shape and also is preferably provided with an annular step A^2. Arranged to rotate on the platform A′ is a flight B. This flight is arranged at such an angle as to force the material from the platform A′ onto the step A^2. The sweep is sufficiently large to sweep the entire platform. The flight B extends from the web b^5. The web b^5 is mounted, by means of a hub b', on the shaft D and is fixed on the shaft by the set-screw b^2. The shaft D is provided with the coupling *d*, by means of which a drive-shaft D′ is connected with the shaft D. The shaft D is continuously rotated by any suitable driving mechanism. Arranged to rotate over the steps A^2 are the second flights C. These flights force the material deposited on the steps by the flights B into the discharge-opening A^3. Arranged around the edge of the web is a wall b^3. This wall prevents the direct flow of material to the discharge-opening. The wall has the opening b^4 adjacent to the flights B and C. The flight C forms an extension of the wall b^3 and also tends to prevent the direct flow of material to the discharge-opening. The web b^5 is cut in line with the flights C and provided with a shoulder b^{14} along the line of the cut. Arranged inside of the flight B is a supplemental flight B′. A cover b^{15} forms a web through which the flight B′ is connected with an arm b^6, the flight B′ being thus supported. The arm b^6 is mounted on a sleeve b^7, and sleeve b^7 is slidingly mounted on the shaft D. On the inner edge of the cover b^{15} is a shoulder b^{16}, which is in contact with the shoulder b^{14} and makes a complete closure at this point.

It will be noted that by raising or lowering the sleeve b^7 the arm b^6, and with it the cover b^{15}, may be raised or lowered. This varies the area of the opening between cover and the platform and varies the amount of material which may be engaged by the flights B and B′. By this means of adjustment the quantity of fuel fed by the device may be regulated without changing the speed of the shaft D. I have provided a convenient mechanism for accomplishing this adjustment while the device is in motion. The sleeve b^7 extends with the shaft through the discharge-opening A^3 and the blast-pipe F and is supported by the yoke D^2, which extends from the blast-pipe. Arranged on the sleeve b^7 is a collar b^{18}. This collar is locked against axial movement, (locking device not shown,) but is free to rotate on the shaft. It has the pins b^8, which extend through the slots b^{10} in a lever b^9. The lever b^9 is pivoted on the arm D^3 and is arranged to operate on a quadrant D^4. In order that the position of the flight B′ and intermediate mechanism may be readily noted, I provide the sleeve b^7 with the slot b^{11}. A scale b^{12} is arranged on the sleeve adjacent to this slot, and a pin b^{13} is secured to the shaft D, extends through the slot, and is provided with a pointer which operates over the scale b^{12}, and thus indicates the position of the flight B′.

Arranged above the web b^5 is a shell E, and extending from this shell is a pipe E'. The purpose of this shell and pipe is to relieve the center of this feeding device from the weight of coal.

The blast is provided with a wing-gate F', which comprises the cut-off slide f'. The slide is provided with a scale f^2. A pointer is fixed with the body of the gate and arranged in such relation to this scale that the position of the slide may be readily ascertained. It is important that the amount of fuel fed should be properly proportioned with the amount of air delivered. This may be readily ascertained by means of the scales f^2 and b^{12}

It is preferable to provide the discharge-opening with a deflector f in order that the force of the blast may be directed by the discharge-opening and prevented from entering the receptacle A.

The operation of the device is as follows: The fuel by the action of gravity lodges on platform A', this platform being practically the full size of the receptacle, making it possible to form the receptacle with side walls having no obstructions to the free passage of fuel. This prevents any lodgment of the fuel in the upper part of the receptacle. Fuel is swept off the platform and forced in a radial direction by the flight B onto the step A^2 near the center of the discharge-opening A^3. The flight C then moves the material also in a radial direction toward the center into the discharge A^3. The wall b^3 and flights C prevent the direct flow of material to the discharge-opening, so that the entire amount of material which is fed into the discharge-opening is that which has been actuated by the flights. In this way the amount of material can be very accurately regulated. The quantity can be regulated by adjusting the cover b^{15} and the auxiliary flight B'.

In the alternative construction shown in Figs. 4, 5, 6 the same general arrangement and mode of operation is maintained and the material change being in the manner of regulating the quantity. In this structure the web b^{16} takes the place of the web b^5, and secured to this web is the flight B^2. This flight sweeps the platform A' in the same manner as the flight B in the preferred construction. The flights C^2 of the alternative construction are carried by the arms c. These arms are mounted on a sleeve C'. The sleeve C' is rotatively mounted on the shaft D. Extending from the ends of the flights C^2 are the auxiliary walls c'. The amount of material which will be fed by the device is regulated by moving the flights C^2 rotatively. This varies the width of the opening b^4, and therefore varies the amount of material fed on the step A^2. In order that the adjustment of the flight C^2 may be accomplished from without the receptacle and their position ascertained, I provide the following mechanism: Arranged on the lower end of the sleeve is a collar c^3, and extending through this collar and the sleeve is a set-screw c^2. The sleeve C' may be fixed with the shaft D through the action of this set-screw. The dial c^5 is fixed by means of the pins c^6 with the shaft D. The pointer c^4 is carried by the collar c^3 and indicates by its relation to the dial c^5 the position of the flights C^2. Instead of the wing-gate of the preferred construction I have provided this construction with the ordinary cock F^2. Arranged on the edge of the cock is the dial f^4. The cock-plug f^5 is provided with the pointer f^6. The amount of opening through the cock may be readily ascertained by the position of the pointer f^6 on the dial f^4.

What I claim as new is—

1. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; and a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis.

2. In a comminuted-fuel feeder, the combination with a blast; a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening radially to its axis; and means for extending said flight to vary the amount fed.

3. In a comminuted-fuel feeder, the combination with a blast; a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening radially to its axis; and means for extending said flight vertically to vary the amount fed.

4. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; and a cover carried by said flight and extending radially therefrom.

5. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; and a wall for checking the direct flow of fuel from the platform to the opening, said wall having an opening adjacent to the flight.

6. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; a wall for checking the direct flow of fuel from the platform to the opening, said wall having an

opening adjacent to the flight; and means for varying the area of opening adjacent to the flight.

7. In a comminuted-fuel feeder the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; a cover extending radially from the flight and forming a web for supporting the flight; a wall carried by said cover, the cover and wall being arranged to prevent the flow of fuel to discharge-opening.

8. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; and a second flight arranged to actuate fuel moved by the first flight in a radial direction.

9. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; and a second flight arranged to actuate fuel moved by the first flight in a radial direction; and a cover bridging the space between the first and second flight.

10. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; and a second flight arranged to actuate fuel moved by the first flight in a radial direction; a wall extending from the second flight and preventing the direct flow of fuel to the discharge-opening.

11. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; a second flight arranged to actuate fuel moved by the first flight in a radial direction; a wall for preventing the direct flow of fuel through the discharge-opening, said wall having an opening adjacent to the said flights; and means for moving one of said flights to vary the extent of said opening adjacent to said flights.

12. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; and a second flight arranged to actuate fuel moved by the first flight in a radial direction; a wall for preventing the direct flow of fuel through the discharge-opening, said wall having an opening adjacent to the said flights; and means for extending one of said flights to vary the feed.

13. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered, having an opening leading to the blast; a flight rotatively mounted and arranged to move fuel on said platform toward said opening and radially to its axis; a second flight arranged to actuate fuel moved by the first flight in a radial direction; a wall for preventing the direct flow of fuel through the discharge-opening, said wall having an opening adjacent to the said flights; means for moving one of said flights to vary the extent of said opening adjacent to said flights; and a dial for indicating the amount of opening adjacent to said flights.

14. In a comminuted-fuel feeder the combination with a blast; of a platform onto which fuel is delivered; a connection between the platform and the blast arranged at the center of the platform; a flight rotatively mounted and arranged to move fuel on said platform toward the connection at the center; and a wall for checking the direct flow of fuel from the platform to the connection.

15. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which the fuel is delivered; a connection between the platform and the blast, said connection being arranged at the center of the platform; a flight rotatively mounted and arranged to move fuel on said platform toward said connection at the center; a wall for checking the direct flow of fuel from the platform to the connection, said wall having an opening adjacent to the flight and means for varying the area of the opening.

16. In a comminuted-fuel feeder the combination with a blast; of a platform onto which fuel is delivered; a connection between the platform and the blast arranged at the center of the platform; a flight rotatively mounted and arranged to move fuel toward said connection on said platform; and the second flight arranged to actuate fuel, moved by the first flight, into the connection.

17. In a comminuted-fuel feeder, the combination with a blast; of a platform onto which fuel is delivered; a connection between the platform and the blast, said connection being arranged at the center of the platform; a flight rotatively mounted, and arranged to move fuel on said platform toward said connection; a second flight arranged to actuate fuel moved by the first flight into said connection; a wall for preventing the direct flow of fuel through the discharge-opening, said wall having an opening adjacent to said flights, and means for extending one of said flights to vary the quantity fed by it.

18. In a comminuted-fuel feeder the combination of a platform onto which fuel is deliv-

cred; a flight arranged to sweep said platform; an auxiliary flight adjacent to the main flight; and means for adjusting one of said flights relative to the other to vary the working area of the combined flight.

19. In a comminuted-fuel feeder, the combination of a receptacle A; the flight mechanism comprising the flights B and C; the flight C being arranged to move fuel disposed by B, the flight B and the flight C being arranged to move on said platform; the auxiliary flight B; and the cover B secured thereto; and means for adjusting the auxiliary flight on the flight B.

20. In a comminuted-fuel feeder, the combination of a receptacle A; the flight mechanism comprising the flights B and C; the flight C being arranged to move fuel disposed by B, the flight B and the flight C being arranged to move on said platform; the auxiliary flight B; and the cover B secured thereto; a shaft carrying the flight B; a sleeve on said shaft and carrying the auxiliary flight; means for adjusting the sleeve on the shaft to adjust the auxiliary flight.

21. In a comminuted-fuel feeder, the combination of a receptacle A; the flight mechanism comprising the flights B and C; the flight C being arranged to move fuel disposed by B, the flight B and the flight C being arranged to move on said platform; the auxiliary flight B; and the cover B secured thereto; a shaft carrying the flight B; a sleeve on said shaft and carrying the auxiliary flight; and means for adjusting the sleeve on the shaft with the shaft in motion to adjust the auxiliary flight.

22. In a comminuted-fuel feeder, the combination of a receptacle A; the flight mechanism comprising the flights B and C; the flight C being arranged to move fuel disposed by B, the flight B and the flight C being arranged to move on said platform; the auxiliary flight B; and the cover B secured thereto; a shaft carrying the flight B; a sleeve on said shaft and carrying the auxiliary flight; means for adjusting the sleeve on the shaft with the shaft in motion to adjust the auxiliary flight; and an indicator for indicating the adjustment of the auxiliary flight.

23. In a comminuted-fuel feeder, the combination of a receptacle A having the platform A′ and step A^2; the flight mechanism comprising the flights B and C, the flight C being arranged to move on the step A^2, and the flight B arranged to move on the platform A′; a cover bridging the space between said flights; the discharge connection A^3; the blast arranged to cross said discharge connection.

24. In a comminuted-fuel feeder the combination with a platform having a feed-outlet at the center; a flight arranged to sweep said platform with a rotary motion, said flight having the front part of its operating-wall extending in a substantially straight line and in a tangent to the path of travel of a point on the flight whereby the material lying in its path may be forced in a radial direction toward the center as the flight is rotated.

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

JOHN F. HAY.

Witnesses:
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B. J. WALKER.