No. 773,919. PATENTED NOV. 1, 1904.

B. BOULGER.

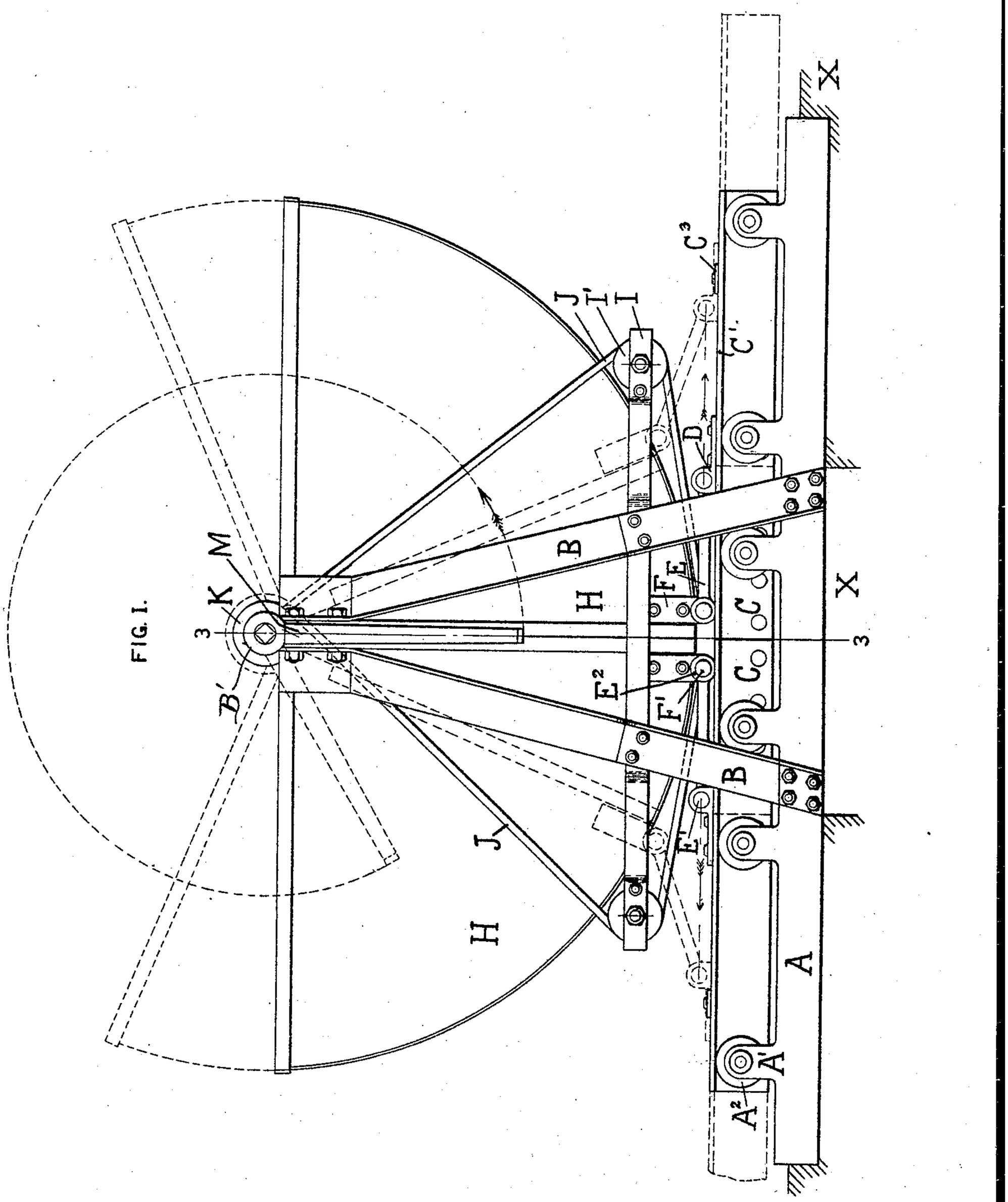
CHARGING HOPPER.

APPLICATION FILED JULY 29, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

FIG. I.



Witnesses
Herman Meyer
Bartlett J. Smith

Benjamin Boulger Inventor
By His Attorney William R. Baird

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NO MODEL. 2 SHEETS—SHEET 2.

FIG. 2.

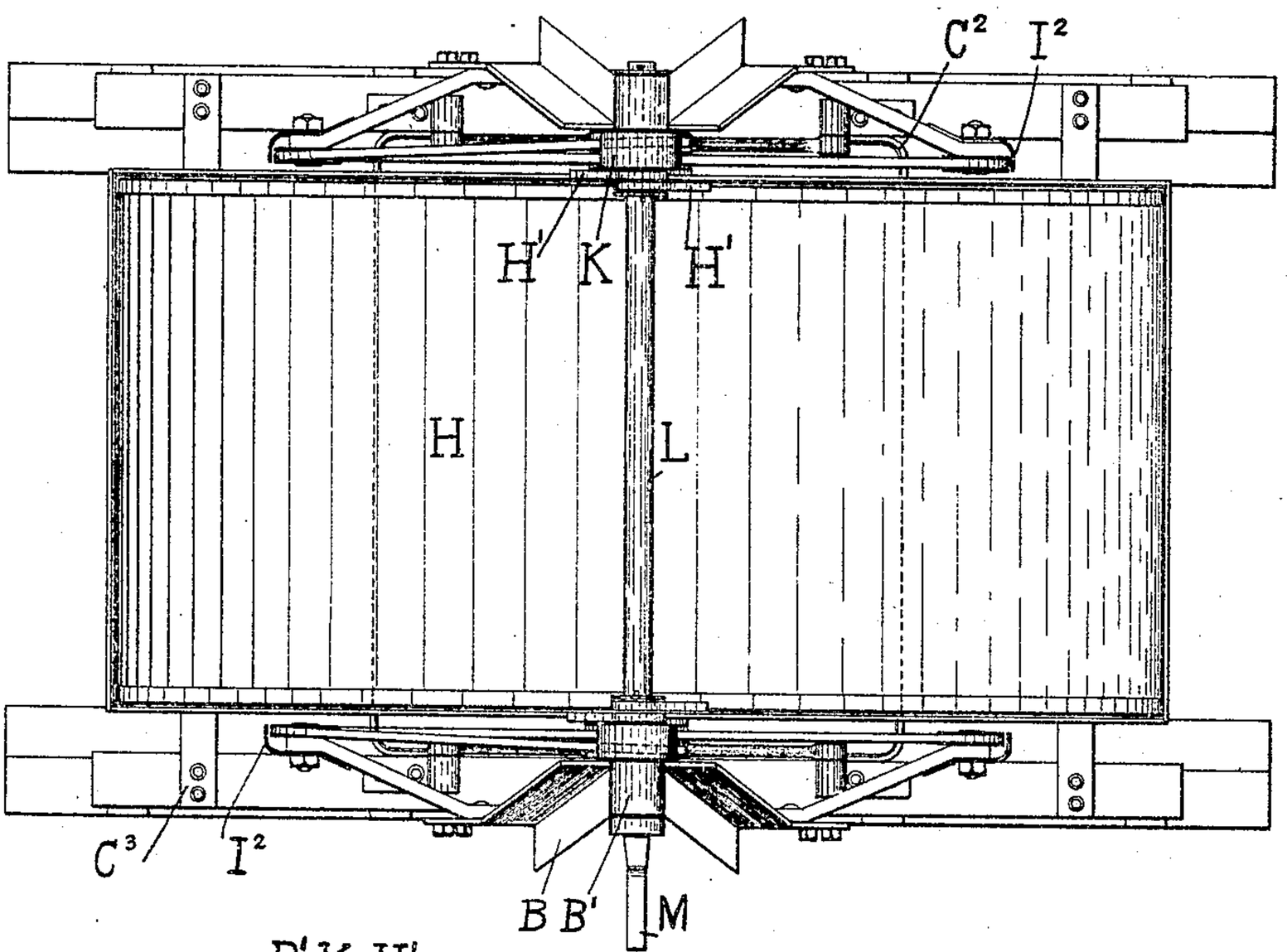
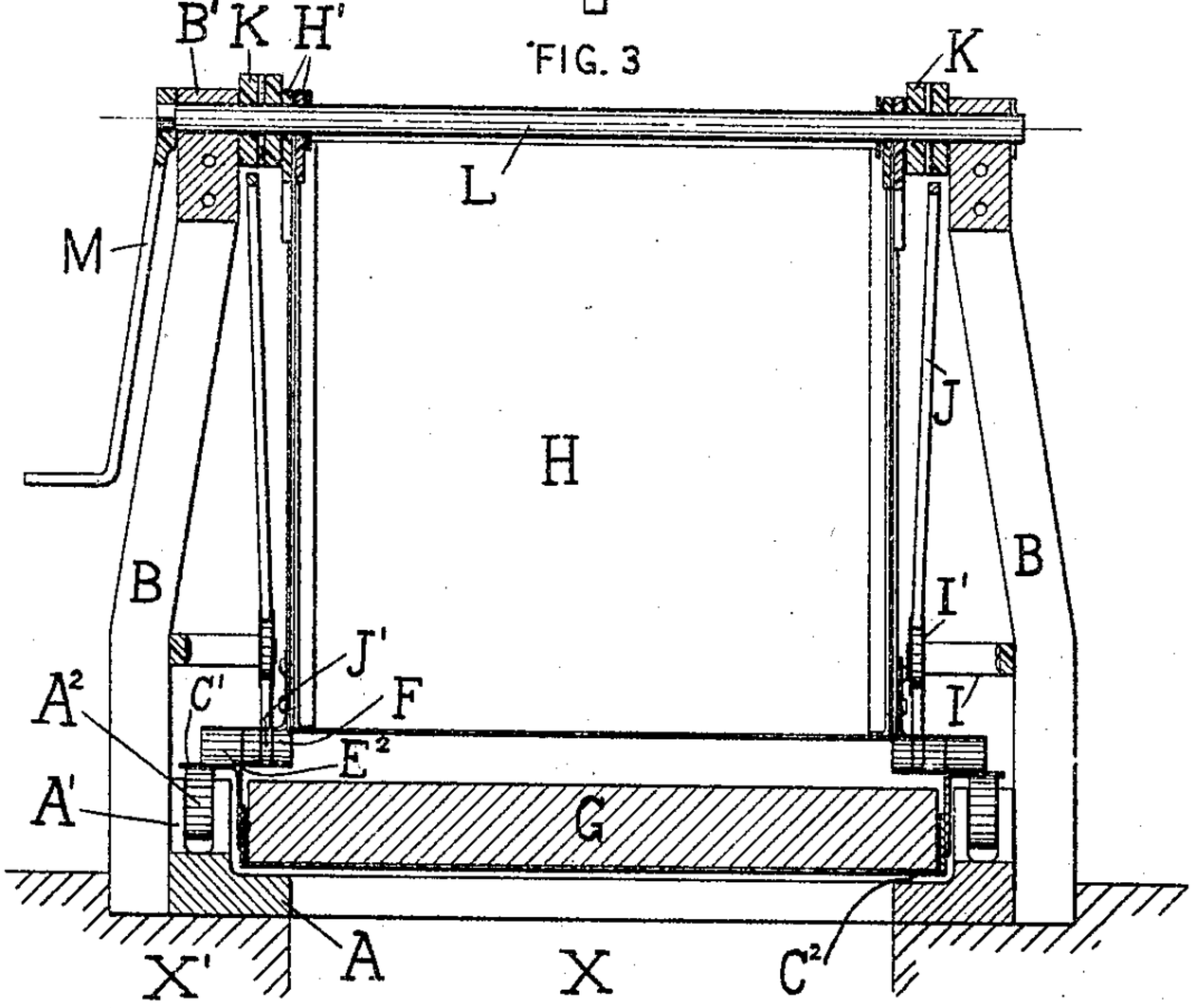


FIG. 3



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No. 773,919. Patented November 1, 1904.

UNITED STATES PATENT OFFICE.

BENJAMIN BOULGER, OF NEW YORK, N. Y., ASSIGNOR TO MORSE-BOULGER DESTRUCTOR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CHARGING-HOPPER.

SPECIFICATION forming part of Letters Patent No. 773,919, dated November 1, 1904.

Application filed July 29, 1903. Serial No. 167,397. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN BOULGER, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Charging-Hoppers, of which the following is a specification.

My invention relates to devices for charging furnaces used for the purpose of destroying or cremating garbage, refuse, and the like; and its objects are, among others, to render the construction of such devices strong, durable, and easily operated, to preserve the same by protecting its metallic parts from the heat of the furnace, to make its operation quick and effective, and to prevent the escape of heat or products of combustion from the furnace during the charging operation.

The invention consists of the combination and arrangement of parts hereinafter described and claimed, and illustrated in the accompanying drawings.

In said drawings, Figure 1 is a side elevation of a charging-hopper and means for operating the same embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is a vertical cross-section on the line 3 3 of Fig. 1.

Parallel tracks or base-plates A are located one on each side of the charging-hole X, through which the furnace is supplied with garbage or the like, and are preferably embedded in the concrete forming the cover of the furnace or otherwise secured thereto. Posts B, of angle-iron or other suitable material, are fixed near the middle of each track A and extend upwardly on convergent lines a suitable distance and have a bearing-block B′ secured between their upper ends. In these blocks the shaft L, extending across from one side to the other of the framework, is journaled and the two-part hopper H is hung from the shaft, which passes through the overlapping bossed portions H′.

Trunnion-wheels A^2 are mounted in U-shaped studs A′, extending from the upper surface of the plates A, and on these wheels or rollers the sliding rails C are supported and operated. The sliding rails C are parallel and made in two sections, divided at the center of the charging-hole X. They are preferably made of angle-iron and so disposed that the horizontal upper flange C′ extends outwardly from the vertical flange and rests upon the rollers A^2. Cross-pieces C^3 are riveted to the horizontal flange C′ of both rails C and serve to connect and strengthen the section on one side and the opposite section on the other side. Angle-irons C^2 are secured to the vertical flanges of the rails C and project inwardly from a point at or near the lower edge thereof and in a horizontal plane to support the cover G, which is made in two parts, divided at the same point as the rails C, and which extends over the charging-hole X to close the same when the hopper and operating parts are at rest. This cover is made of fire-brick or other refractory material capable of resisting the intense heat of the cremating-furnace to which it is exposed.

On each section of each of the rails C, located a suitable distance from the point of separation, is a ring D, secured to the horizontal flange thereof and adapted to receive the pintle E′ of the rod E. The opposite end of the rod E is provided with a ring-head E^2, which receives the pin F′, extending from the cleat F, secured to the exterior of the hopper-section adjacent to the separating-point. To the pin F′ is also secured the lower end of the band J by means of a ring J′, which is passed over the said pin. This band extends over the pulley I′, mounted on the end of the bracket I, and has its upper end attached to the drum K, keyed to the shaft L. The brackets I are supported by the posts B on either side of the device, and each bracket has a pulley I′ at each end, one for each section of the rail C and band J, and the two bands on each side are secured to the one drum.

A crank M is fixed to one end of the shaft L, by means of which the said shaft is rotated.

This shaft and crank are the means through which the hopper and the connected mechanism are operated.

The rotation of the shaft and drums K by means of the handle M causes the bands J to wind around said drum and to draw the lower edges of the hopper-sections apart, thus opening the said hopper and allowing its contents to discharge therefrom. The action of the bands in drawing the hopper-sections apart also causes the rail-sections C and cover-sections G to recede from the point of separation in opposite directions, thus leaving the charging-hole of the furnace open to receive the contents of the hopper. The motion is imparted to the rail and cover sections through the rods E, which being pivotally connected to the rails and hopper-sections impart longitudinal motion to the former through the rotary motion of the latter, the parts when the hopper is opened assuming the positions indicated by dotted lines in Fig. 1.

A small guard I^2 is secured to each bracket I adjacent to the pulley I′ and prevents the band J from being thrown off the said pulley when the hopper is allowed to close by gravity.

What I claim is—

1. In a device of the character described, the combination of a two-part hopper adapted to remain normally closed, a cover made in two sections meeting below the point of separation of the hopper-sections and means for simultaneously separating the said hopper and cover sections.

2. In a device of the character described, the combination of a two-part hopper adapted to remain normally closed, a cover made in two sections meeting below the point of separation of the hopper-sections and means for simultaneously separating the said hopper and cover sections, comprising a track upon which said cover-sections are mounted and a rotatable shaft operatively connected to said cover and hopper.

3. In a device of the character described, the combination of a two-part hopper adapted to remain normally closed, a cover made in two sections meeting below the point of separation of the hopper-sections and means for simultaneously separating the said hopper and cover sections comprising a crank, a shaft adapted to be rotated by said crank, a flexible connection between said hopper and cover and means for transmitting motion from said shaft to said hopper.

4. In a device of the character described, the combination of a two-part hopper adapted to remain normally closed, a cover made in two sections meeting below the point of separation of the hopper-sections and means for simultaneously separating the said hopper and cover sections comprising a rotatable shaft and connection between said hopper and cover and means for imparting motion to both hopper and cover through the rotation of said shaft.

5. In a device of the character described, the combination of a two-part hopper adapted to remain normally closed, a cover made in two sections meeting below the point of separation of the hopper-sections and means for simultaneously separating the said hopper and cover sections comprising a shaft, means for rotating the same, a drum on said shaft, a band connected to said drum and to one or more sections of the hopper and a connection between said hopper and the cover.

6. In a device of the character described, the combination of a two-part hopper adapted to remain normally closed, a cover made in two sections meeting below the point of separation of the hopper-sections and means for simultaneously separating the said hopper and cover sections, comprising means for separating said hopper-sections, a connection between one of said hopper-sections and one of said cover-sections, a track upon which said cover is operatively mounted constructed and arranged so that the opening of the hopper-sections causes the opening of the cover-sections.

7. In a device of the character described, the combination of a two-part hopper adapted to remain normally closed, a cover made in two sections meeting below the point of separation of the hopper-sections and means for simultaneously separating the said hopper and cover sections, comprising means for separating said hopper-sections, a connection between said sections and the cover-sections whereby motion of the former is transmitted to the latter, a track upon which said cover-sections are mounted, a rail upon said cover-sections and rollers upon which said rails operate, the said rollers being mounted on the track and supporting the cover-sections by means of the rail.

8. In a device of the character described, the combination of a two-part hopper adapted to remain normally closed, a cover made in two sections meeting below the point of separation of the hopper-sections and means for simultaneously separating the said hopper and cover sections comprising a shaft upon which said hopper-sections are supported, a drum fixed to said shaft, a band secured to said drum at one part and to a hopper-section at another part, a track upon which said cover-sections are mounted to move horizontally and a flexible connection between said cover-sections and hopper-sections whereby rotation of the shaft imparts rotary motion to the hopper-sections and horizontal movement to the cover-sections.

9. In a device of the character described, the combination of a hopper made in sections movable with relation to each other and adapted to remain normally closed, a cover below the point of separation of the hopper-sections and means for simultaneously separating the

said hopper-sections and withdrawing the cover.

10. In a device of the character described, the combination of a hopper made in two sections movable with relation to each other and adapted to remain normally closed, a cover below the point of separation of the hopper-sections and means for simultaneously separating the said hopper-sections and withdrawing the cover, comprising a track upon which said cover is mounted and a shaft operatively connected to said cover and hopper.

11. In a device of the character described, the combination of a hopper adapted to remain normally closed, a cover below the point of discharge of the hopper, and means for simultaneously opening the said hopper and cover comprising a crank, a shaft adapted to be rotated by said crank, a connection between said shaft, hopper and cover for transmitting motion from said shaft to said hopper and cover.

Witness my hand, this 22d day of July, 1903, at the city of New York, in the county and State of New York.

BENJAMIN BOULGER.

Witnesses:
HERMAN MEYER,
STEPHEN J. COX.