

No. 791,959.

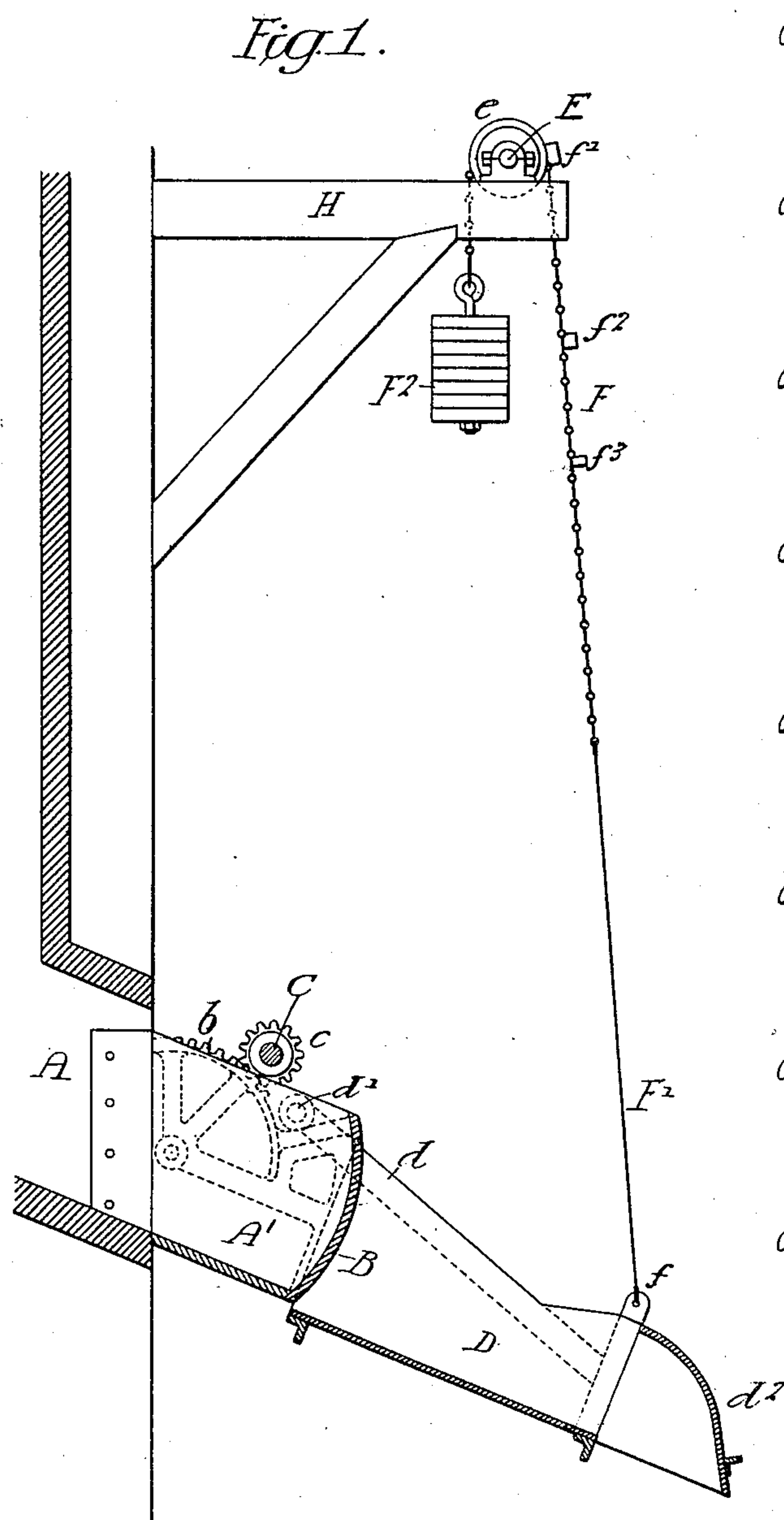
PATENTED JUNE 6, 1905.

F. F. WAECHTER.

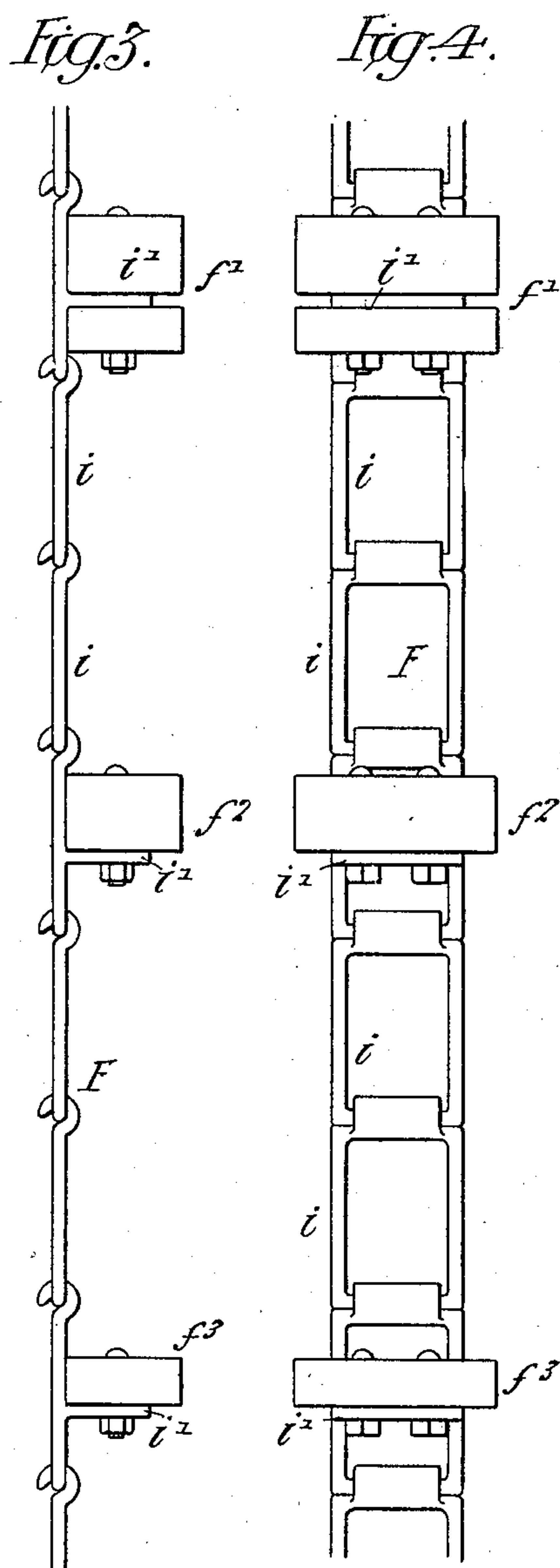
# COUNTERBALANCING MECHANISM FOR PIVOTED CHUTES, &c.

APPLICATION FILED JAN. 16, 1905.

2. SHEETS—SHEET 1.



Witnesses:  
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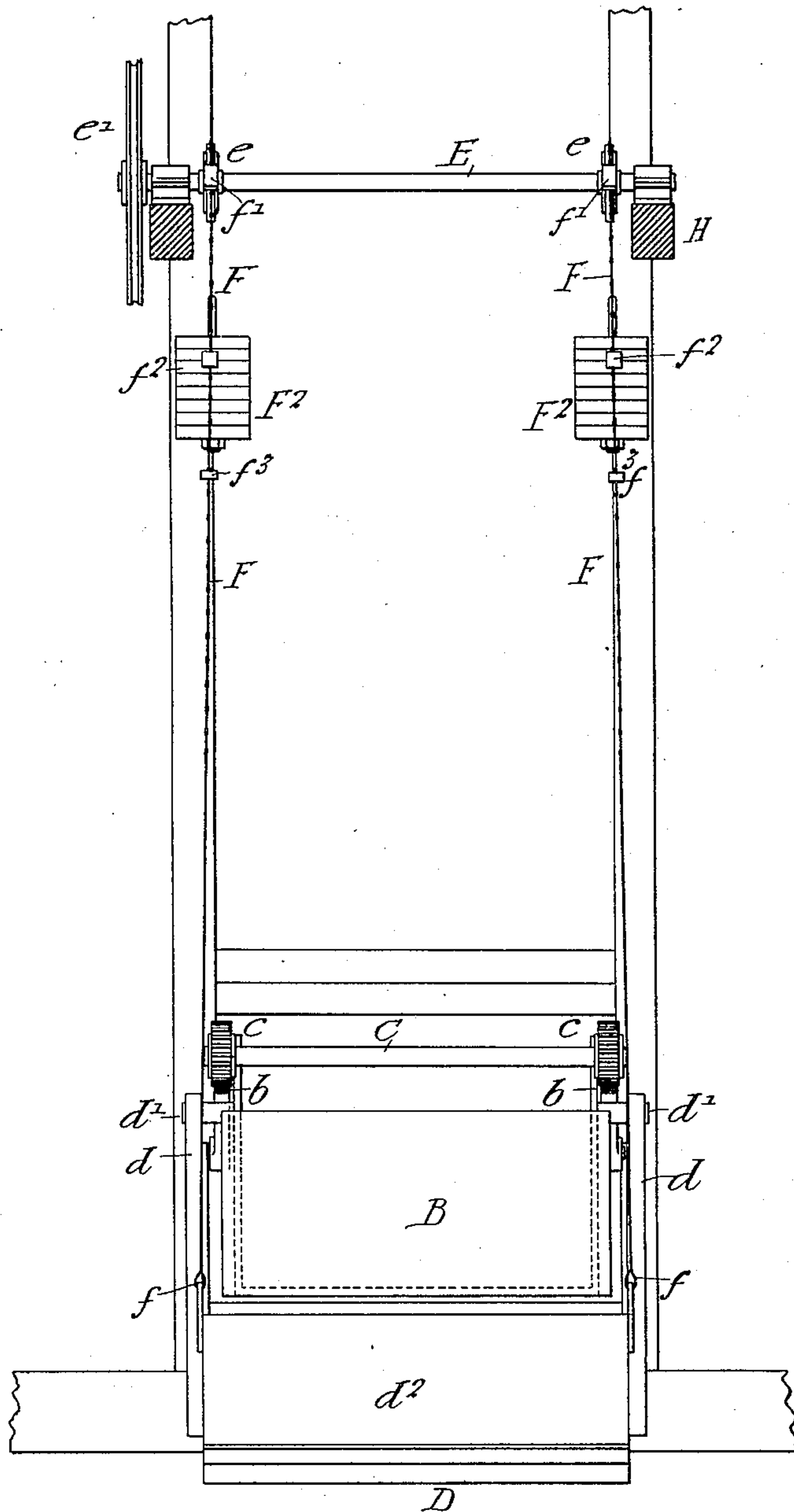
F. F. WAECHTER.

COUNTERBALANCING MECHANISM FOR PIVOTED CHUTES, &c.

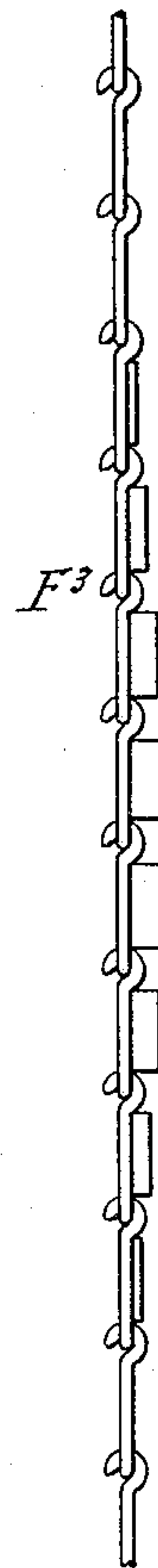
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2 SHEETS—SHEET 2.

*Fig. 2.*



*Fig. 3.*



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# UNITED STATES PATENT OFFICE.

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TO THE LINK BELT ENGINEERING COMPANY, OF PHILADELPHIA,  
PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## COUNTERBALANCING MECHANISM FOR PIVOTED CHUTES, &c.

SPECIFICATION forming part of Letters Patent No. 791,959, dated June 6, 1905.

Application filed January 16, 1905. Serial No. 241,286.

*To all whom it may concern:*

Be it known that I, FERDINAND F. WAECHTER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Counterbalancing Mechanism for Pivoted Chutes, &c., of which the following is a specification.

The object of my invention is to provide means for counterbalancing pivoted chutes, so that they will remain in any position in which they are placed.

My invention is particularly adapted for use in connection with chutes for discharging coal from hoppers or coal-buckets into the tenders of locomotives or into cars or boats.

In the accompanying drawings, Figure 1 is a sectional view of a pivoted chute, illustrating my improved counterbalance. Fig. 2 is a front elevation. Fig. 3 is an enlarged side view of part of Fig. 1. Fig. 4 is a face view of Fig. 3, and Fig. 5 is a view of a modification.

A is the hopper or coal-pocket, having an extension-chute A', which is fixed in relation to the hopper. Pivoted to this extension-chute is a gate-valve B, having a segmental rack b, with which meshes a pinion c on an operating-shaft C.

D is the pivoted chute, having arms d, which are hung from the extension A' at d'. This chute is preferably open at the top and in the present instance has a hood d<sup>2</sup> at the extreme end for the purpose of directing the coal into the locomotive-tender, car, or boat.

H is a frame projecting from the framework of the hopper, and mounted in bearings on this frame is a shaft E, having chain-wheels e. An operating-wheel e' may be used in some instances, in connection with a hand-chain, for turning the shaft.

F F are counterbalance-chains attached to the chute at f by short sections of rope F' in the present instance; but chain or rope may be used for the entire length, if desired. The chains F pass over the chain-wheels e and are provided with constant weights F<sup>2</sup>. These weights counterbalance the chute D when in the lowest position, as shown in Fig. 1; but

when the chute is in mid-position it overbalances the constant weights F<sup>2</sup> and will not remain where placed. This is particularly the case when the chute is provided with a hood at the outer end. To overcome this difficulty, I secure to one or both of the counterbalance-chains F additional weights f' f<sup>2</sup> f<sup>3</sup>, three in the present instance, which are so adjusted on the chain that the chute is counterbalanced in any position. As shown in Fig. 1, the weights f', f<sup>2</sup>, and f<sup>3</sup> are all on the chute side of the sprocket-wheel, tending, with the chute, to counterbalance the weight F<sup>2</sup>. When the chute is raised, the weight f' passes over the sprocket-wheel, adding its weight to the weight F<sup>2</sup>, counterbalancing the chute, although it extends far beyond the position shown. As the chute is further raised the weight f<sup>2</sup> passes over the sprocket-wheel and then the weight f<sup>3</sup>, and I prefer to so arrange the weights that when the chute is fully raised the weights will slightly overbalance it, so that it will not accidentally work down in the path of the locomotive or car, passing along the track over which it hangs.

Figs. 3 and 4 show the counterbalance-chain in detail, which is made up of open links i, some of which having extensions i', to which the weights are attached. The weight f' in the present instance is made in two parts bolted to the extension i', and the weight f<sup>2</sup> is made in a single piece bolted to an extension i'. The weights in the present instance do not extend from one chain to the other; but they may do so when an extra heavy chute is to be counterbalanced.

In Fig. 5 I have shown a chain F<sup>3</sup> made up of links which gradually increase in weight to a certain point and then decrease. This is the ideal method of carrying out my invention; but in practice I prefer to use the construction as shown in Fig. 1.

I claim as my invention—

1. The combination of a pivoted chute, a wheel, a counterbalance-chain extending over said wheel and having a weight arranged to pass over the wheel when the chute is raised, substantially as described.

2. The combination of a pivoted chute, a wheel, a counterbalance-chain extending over the wheel and having a weight at one end and attached at its other end to the chute, with a  
5 supplementary weight secured to the chain and arranged to pass over the wheel when the chute is raised, substantially as described.

3. The combination of a pivoted chute, a wheel, a counterbalance-chain extending over  
10 the wheel and having a weight at one end and attached to the chute at the opposite end, and a series of supplementary weights on the chain and arranged to pass over the wheel when the chute is raised, substantially as described.

15 4. The combination of a pivoted chute, a

shaft, two wheels on said shaft, two chains hung from the wheels and each attached at one end near the outer end of the chute and having a weight at the opposite end, a series of supplementary weights attached to each  
20 chain and arranged to pass over the wheels when the chute is raised, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two sub-  
25 scribing witnesses.

FERDINAND F. WAECHTER.

Witnesses:

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WILL. A. BARR.