

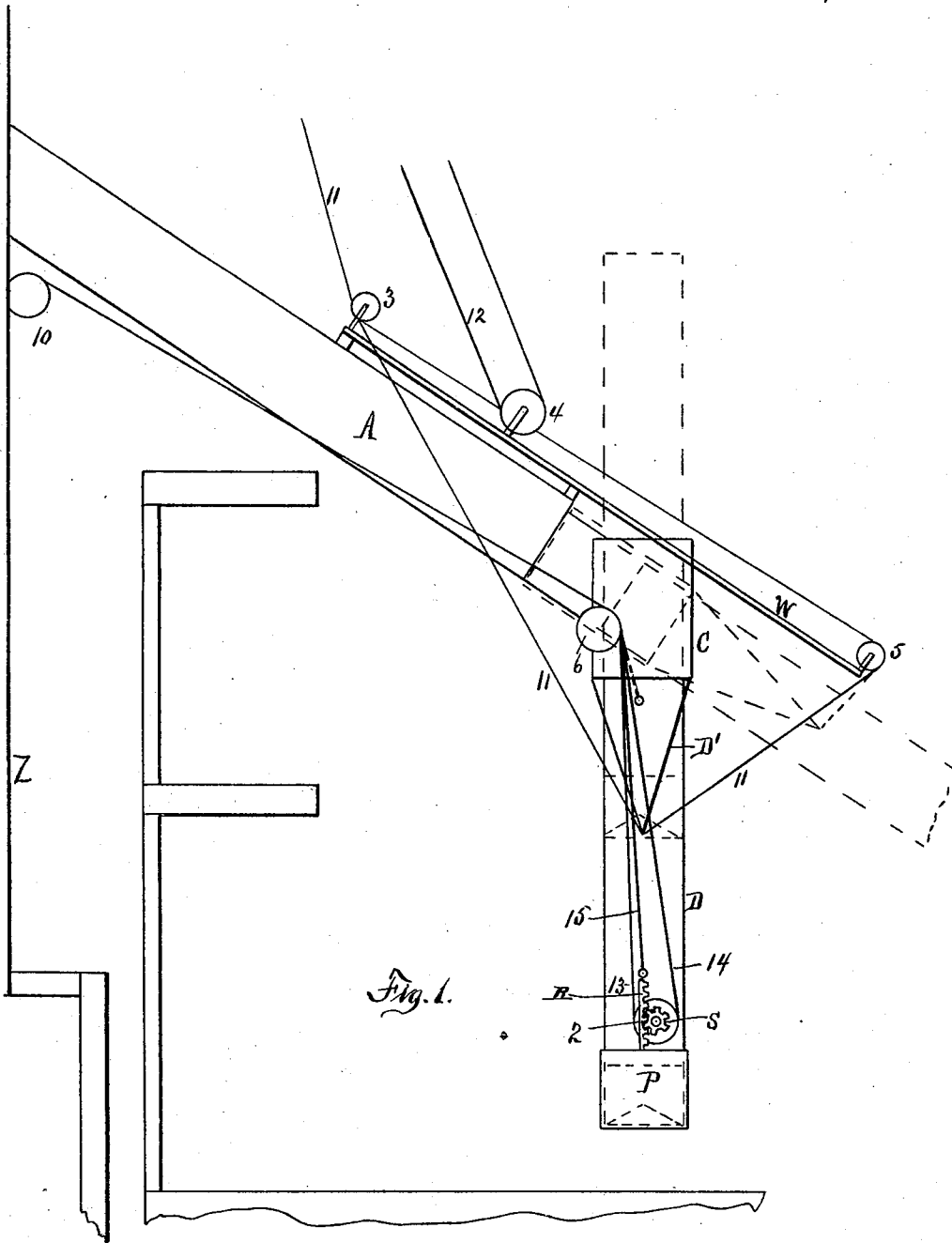
(No Model.)

3 Sheets—Sheet 1.

H. N. FLIEDNER.
DEVICE FOR HANDLING COAL.

No. 591,596.

Patented Oct. 12, 1897.



Attest:
S. H. Hain.
S. A. Cook

Inventor:
H. N. Fliedner
By H. S. Sprague
Atty

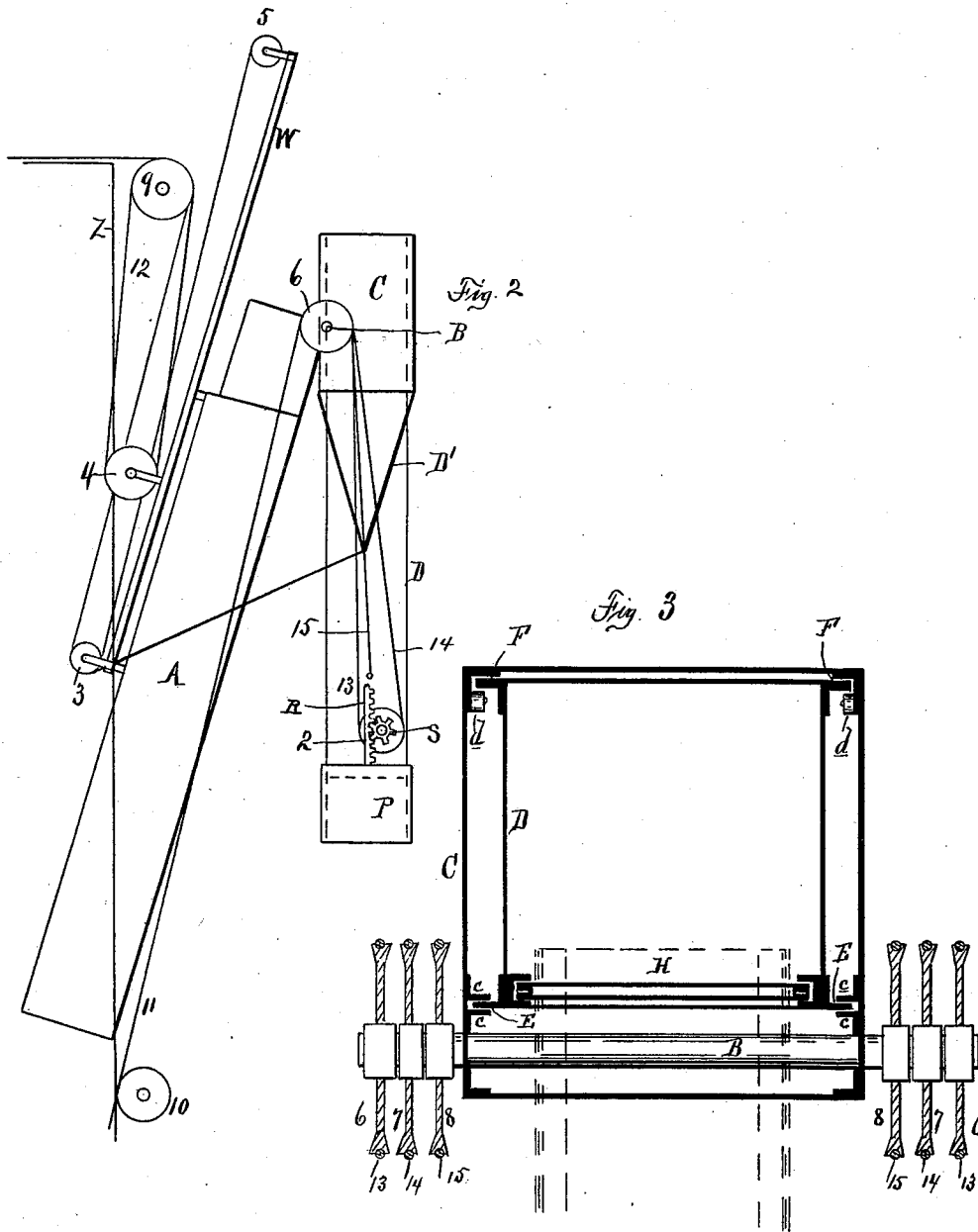
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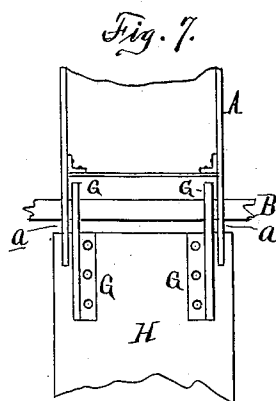
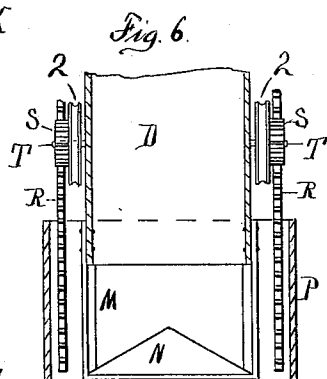
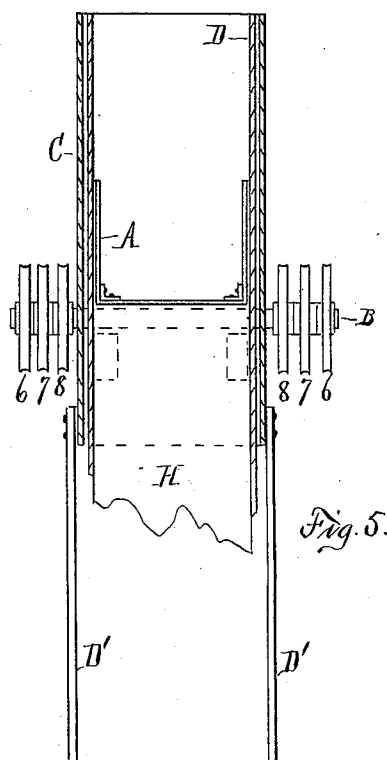
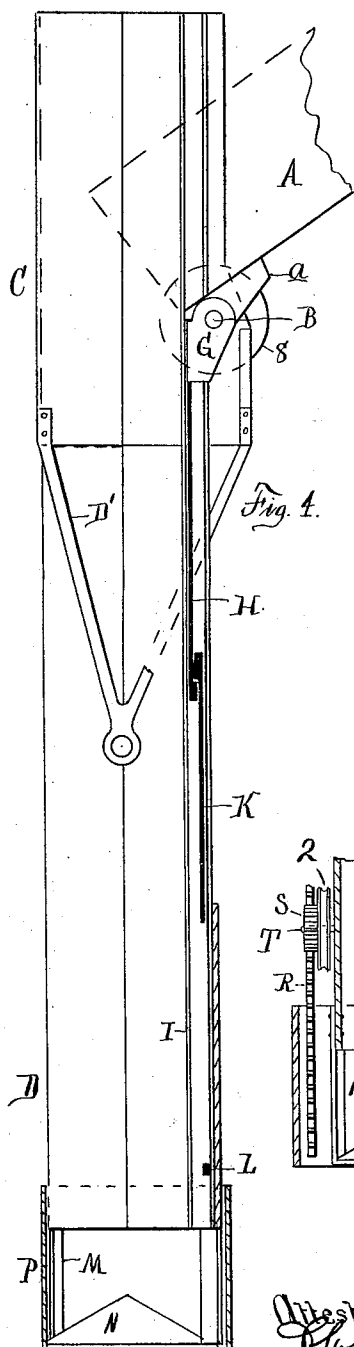
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3 Sheets—Sheet 3.

H. N. FLIEDNER.
DEVICE FOR HANDLING COAL.

No. 591,596.

Patented Oct. 12, 1897.



Attest:
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UNITED STATES PATENT OFFICE.

HANNA N. FLIEDNER, OF CLEVELAND, OHIO.

DEVICE FOR HANDLING COAL.

SPECIFICATION forming part of Letters Patent No. 591,596, dated October 12, 1897.

Application filed April 1, 1897. Serial No. 630,267. (No model.)

To all whom it may concern:

Be it known that I, HANNA N. FLIEDNER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Devices for Handling Coal, of which the following, with the accompanying drawings, is a specification.

This invention relates to certain new and useful improvements in coal-handling machines, and it specially relates to that class of machines in which a loaded car is elevated and turned over, so as to discharge its load into an apron-chute, from whence it is discharged, by gravity, through a supplemental chute into the hold of a vessel.

The invention has for its object the construction of a device designed to act conjointly with the so-called "car-dumping machines" to facilitate the handling of coal and deliver the same into the hold of a vessel with the least possible amount of breakage.

To this end the invention consists in the novel features of construction and in the various combinations of the parts, all as more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1, Sheet 1, is an elevation of my improved device, showing the same as connected to the discharge end of a car-dumping apron-chute and with my attachment in its lowest position. Fig. 2, Sheet 2, is a similar view showing my attachment elevated and folded up, as when not in use. Fig. 3, Sheet 2, is an enlarged plan of my attachment, showing sheaves in section and the chute of the dumping-machine in dotted lines. Fig. 4, Sheet 3, is a slightly-enlarged sectional side elevation of my attachment. Fig. 5, Sheet 3, is a sectional elevation at right angles to and of the upper part of Fig. 4. Fig. 6, Sheet 3, is a similar view of the lower portion of Fig. 4. Fig. 7, Sheet 3, is a side elevation showing manner of connection as between the apron-chute and the sliding aprons or plates.

As the hoisting and dumping apparatus form no part of this present invention it is not deemed necessary to show any part there-

of other than the apron-chute, into which the coal is initially dumped.

A represents the apron-chute of a car-dumping or coal-handling apparatus of any of the known constructions wherein provision is made for swinging said chute vertically, and this apron-chute is provided with the ears *a* and through these ears the pivotal shaft B passes.

C represents a sleeve, which is hung upon the pivotal shaft B. Within this sleeve is placed the vertically-adjustable and supplemental chute D, the four corners of which are provided with the flanges E F, the former of which have vertical play between the guides *c*, secured to the sleeve C, while the latter have a similar movement between the rollers *d* and the adjacent corners of said sleeve, as and for the purpose hereinafter more fully explained. The construction of this sleeve C and its connections last above described are fully set forth in Fig. 3 of the drawings.

G, Figs. 4 and 7, represents hangers depending from the pivotal shaft B. To these hangers the upper edge of a plate H is secured, the edges of said plate being received between guide channel-irons I, secured in the adjacent corners of the supplemental chute D. K is a similar plate, which hangs upon the foot of the plate H, as shown in Fig. 4. L is a stop near the lower end of the channel-iron I. These plates are designed to close the opening in the rear side of the chute D, and as the latter is raised vertically through the sleeve C the plate K will strike against the stop and be pushed upward with the chute.

D' represents bifurcated levers secured to the sleeve C.

The lower end of the chute D terminates in a cage M, open upon its four sides, and this cage supports a pyramidal bottom N.

P represents a sleeve which incloses the cage M and the lower end of the chute D.

R represents rack-bars rigidly secured to the sleeve P. These rack-bars are designed to engage with the pinions S upon the stub-shafts T, projecting from opposite sides of the chute D, and these stub-shafts also carry the sheaves 2.

W represents overhanging arms secured to

the apron-chute A, and these arms carry the sheaves 3, 4, and 5 in pairs, the projecting ends of the arms W being sufficiently separated to allow the sleeve C to have its adjustment between them.

6, 7, and 8 represent sheaves upon the shaft B.

9 and 10 represent proper sheaves which are supported by the frame of the dumping-machine, such frame being represented by a single line, marked Z.

11 is a cable secured to the lower end of the lever D'. One end of this cable passes to and over the sheave 5, thence to the sheave 3, thence to sheave 9, and from the latter it leads to a proper drum located in the cab of the dumping-machine. The other end of this cable 11 leads back to the sheave 3, thence to sheave 9, and from thence to drum.

12 is a cable passing from sheave 4 to a proper drum.

13 is a cable one end of which is secured to the sheave 2 and passes from thence to sheave 6, thence to sheave 10 and to drum.

14 is a cable likewise secured to sheave 2, from whence it passes to sheave 7, thence to sheave 10, and thence to drum.

15 is a cable leading from a pin on the side of the supplemental chute D to the sheave 8, thence to sheave 10 and drum.

It will be readily understood that the cables 11, 12, 13, 14, and 15, with their respective sheaves, are in duplicate upon the opposite side of the device. (Shown in Figs. 1 and 2.)

As all coal-handling devices are provided with a suitable engine and drums for operating the device it is thought to be sufficient in this connection to state that the various cables designated lead to proper drums within the cab of such dumping device, so that the entire apparatus shall be at all times under the control of the engineer.

The parts being constructed and arranged substantially as herein shown and described, the operation is as follows: The apron-chute A and supplemental chute D are lowered so that the latter may be entered into the hold of a vessel through one of its hatchways, the sleeve P being in its lowest position and the chute D lowered close to the floor of the hold. Coal now being delivered from any source into the apron-chute A by gravity is discharged into the chute D and falls to the bottom thereof until said chute is full. The sleeve P is now raised through the medium of the cable 13, causing the gears S to rotate, and, by their engagement with the rack-bars R, said sleeve P is raised, disclosing the cage M and allowing the coal to discharge therefrom.

It is designed that coal shall be delivered to the chute A at sufficiently close intervals to keep the chute D full all the time or until the desired amount of coal has been loaded,

the sleeve P being adjusted so as to regulate the discharge from the crate and cause the coal to slowly discharge in comparatively a solid body, thus reducing the breakage to the minimum. This is a feature that will be thoroughly appreciated by the coal-shipper.

By means of the cable 11 the supplemental chute D may be swung to the right or left to aid in trimming the vessel, and as the hold is filled it may be vertically adjusted by means of the cable 15, so that the load may be gradually built up, or it may be readily folded up under the apron-chute A, so that the latter may be used alone. In the various vertical adjustments of the supplemental chute D the plates H and K prevent the escape of coal through the side opening in said chute.

The cables 13 and 14 should be secured to the sheaves 2 in any such manner as will cause said sheaves to rotate in either direction, so as to raise or lower the sleeve P. If preferred, a single cable may be employed, making a turn or two around the sheave, the two ends of the cable taking the places of the separate cables. In this case the cable would not necessarily be secured to the sheave.

I do not desire to confine myself to the exact construction shown, as there are various changes the device might take on and still be clearly within the spirit of my invention, such as employing a cable for raising the lower sleeve, and dispense with the rack-bars and pinion, or the sleeve C might be formed as a shoe pivotally hung to the apron-chute and carry an apron or plate upon the outside of the chute D.

What I claim as my invention is—

1. In a coal-handling apparatus, and in combination with the apron-chute thereof, a sleeve, pivotally secured to the discharge end of said apron-chute, and a supplemental chute engaging with and vertically adjustable in said sleeve, substantially as and for the purpose specified.

2. In a coal-handling apparatus, and in combination with the apron-chute thereof, a sleeve pivotally secured at the discharge end of said apron-chute, a supplemental chute engaging with and vertically adjustable in said sleeve, a cage at the lower end of said supplemental chute, said cage having a pyramidal bottom, and an adjustable sleeve around said cage, substantially as and for the purpose set forth.

3. In combination with a main chute, a supplemental chute for a coal-handling device and an adjustable inclosing sleeve P at the lower end of the supplemental chute, as a means for enlarging or diminishing the discharge-opening from said supplemental chute, substantially as and for the purpose set forth.

4. In combination with a main chute, a supplemental chute adapted to have a vertical and radial adjustment in relation to said

main chute, and plates H and K, slidingly engaging said supplemental chute, substantially as and for the purpose set forth.

5 In combination with a main chute, a sleeve C, pivotally secured to the discharge end of said main chute, a supplemental chute D, vertically adjustable in said sleeve, the plates H and K, a cage M, at the lower
10 end of said supplemental chute, and an adjustable inclosing sleeve P, the parts being

constructed, arranged and operating substantially in the manner and for the purpose specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 16th day of 15 February, 1897.

H. N. FLIEDNER.

Witnesses:

H. S. SPRAGUE,

H. P. BAILEY.