

No. 783,090.

PATENTED FEB. 21, 1905.

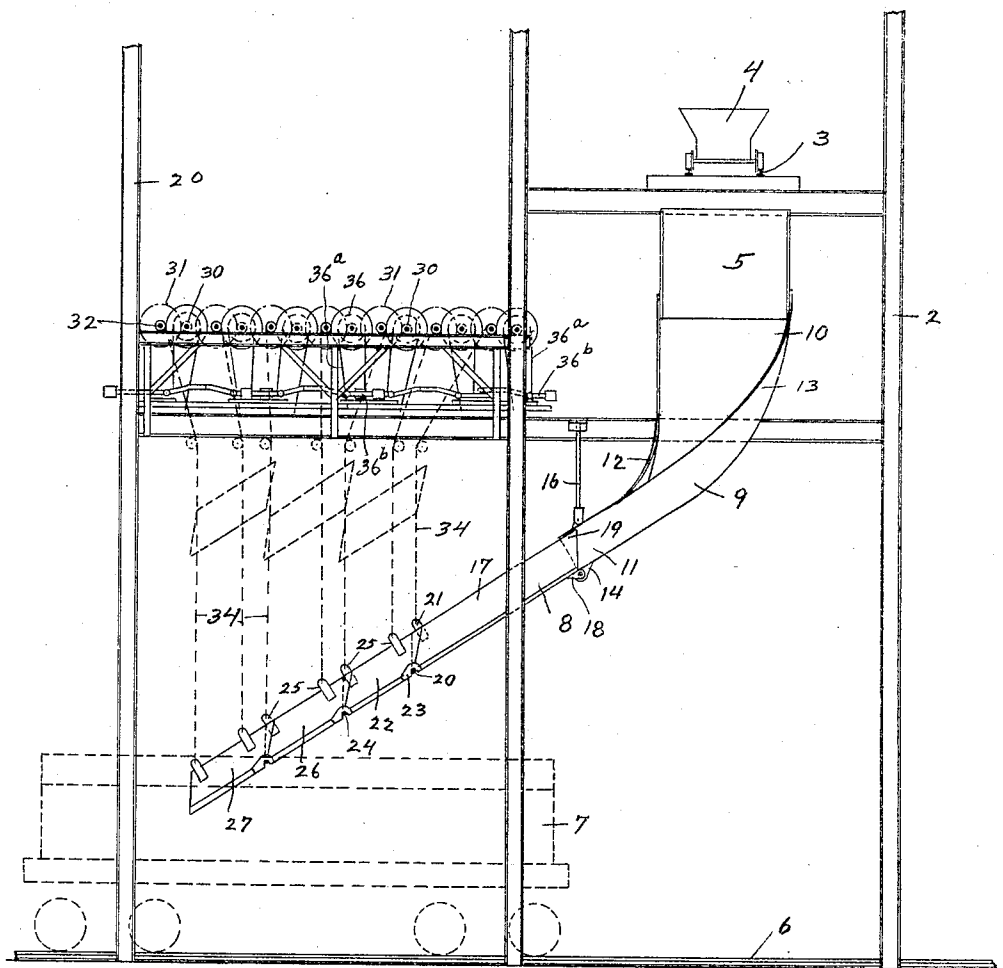
A. M. ACKLIN.

CHUTE.

APPLICATION FILED FEB. 5, 1903.

4 SHEETS—SHEET 1.

Fig: 1



Witnesses.

Fred D Sweet

Robert C. Zottner

Inventor.

Alfred M. Acklin

By Kay R. Nathan

Attorneys.

No. 783,090.

PATENTED FEB. 21, 1905.

A. M. ACKLIN.

CHUTE.

APPLICATION FILED FEB. 5, 1903.

4 SHEETS—SHEET 2.

Fig. 3

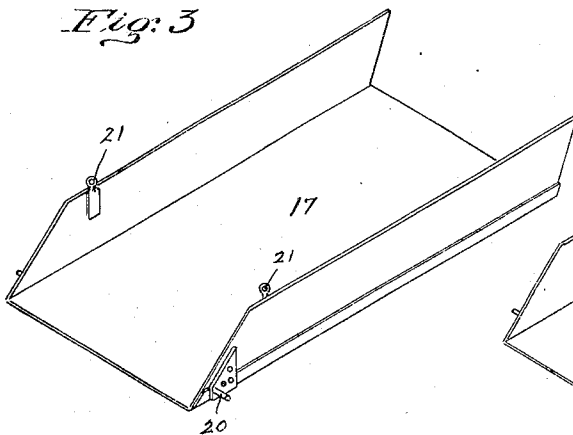


Fig. 4

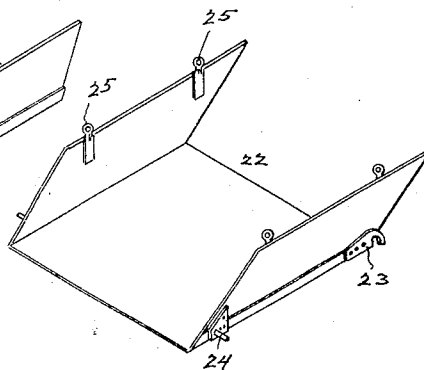
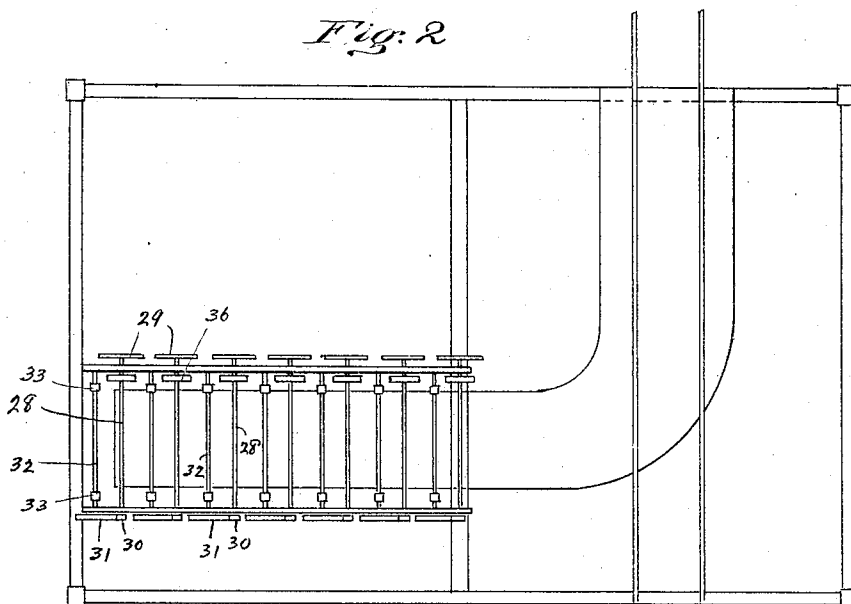


Fig. 2



Witnesses.

Fred H Sweet
Robert C Zoller

Inventor

Albert M. Acklin

By Key & Zoller
Attorneys.

No. 783,090.

PATENTED FEB. 21, 1905.

A. M. ACKLIN.
CHUTE.

APPLICATION FILED FEB. 5, 1903.

4 SHEETS—SHEET 3.

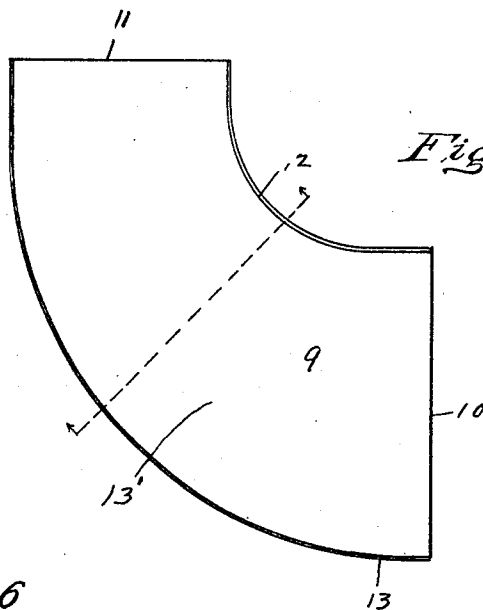


Fig. 5

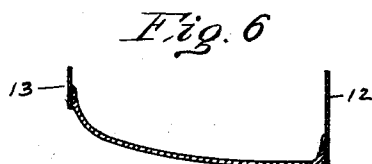


Fig. 6

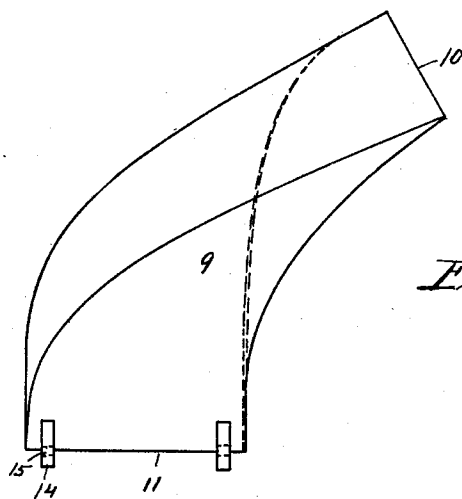


Fig. 7

Witnesses.

Fred D. Smith
Robert C. Zottow

Inventor.

Alfred M. Acklin

By Kay & Zottow
Attorneys.

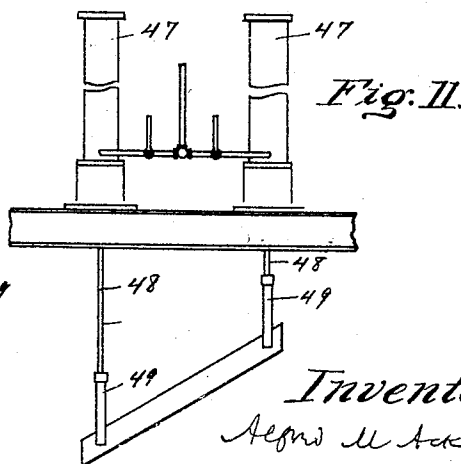
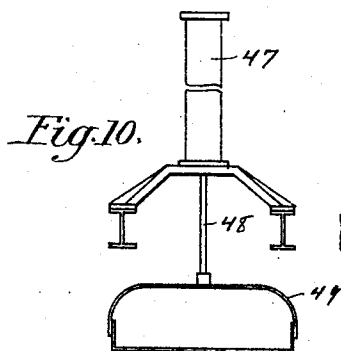
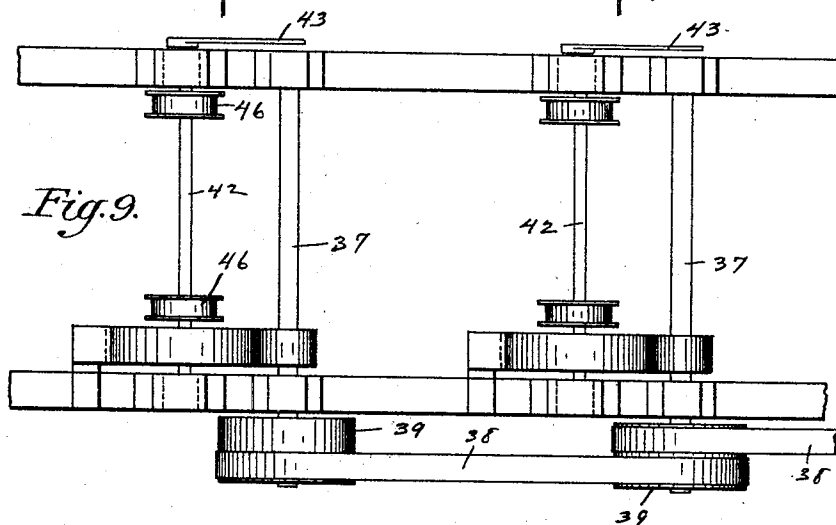
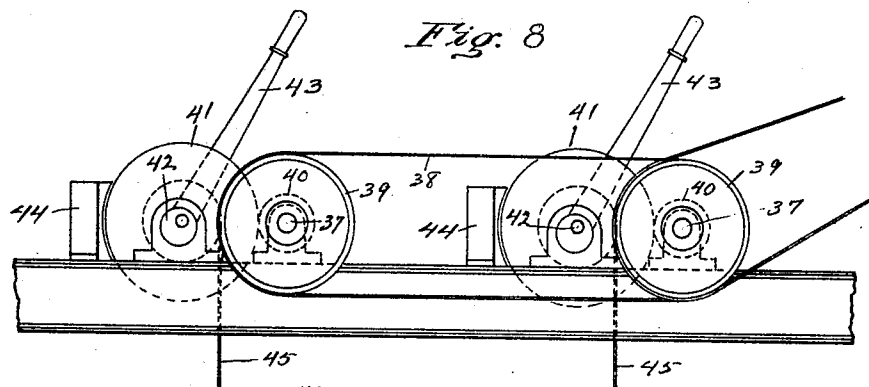
No. 783,090.

PATENTED FEB. 21, 1905.

A. M. ACKLIN.
CHUTE.

APPLICATION FILED FEB. 5, 1903.

4 SHEETS—SHEET 4.



Witnesses.

Fred D. Sweet
Robert C. Botten

Inventor.

Agnes M. Acklin
By Kay & Botten
Attorneys.

UNITED STATES PATENT OFFICE.

ALFRED M. ACKLIN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HEYL & PATTERSON, OF PITTSBURG, PENNSYLVANIA, A COPARTNERSHIP FORMED UNDER THE LAWS OF THE STATE OF PENNSYLVANIA.

CHUTE.

SPECIFICATION forming part of Letters Patent No. 783,090, dated February 21, 1905.

Application filed February 5, 1903. Serial No. 141,975.

To all whom it may concern:

Be it known that I, ALFRED M. ACKLIN, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Chutes; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to chutes, and more especially to chutes employed in the transfer of frangible material, such as coal, its object being to provide a chute whereby the coal or other material transferred from one point to another in unloading and loading may be so handled that the coal or like material may be discharged into the car or other receptacle without having to drop from any height which would tend to break the coal in its fall.

To these ends my invention comprises, generally stated, a chute supported at an angle sufficient to give the necessary impetus to the material to be discharged therefrom, the lower end of said chute having a movable section adapted to engage with the main chute, so as to be normally in proper relation to the discharge end thereof, and connections between said movable chute and mechanism for elevating the same, whereby said movable section may be lifted bodily to a point above the discharge end of said chute.

My invention further comprises other points of construction, all of which will be hereinafter set forth and claimed.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side view in elevation of my improved chute, illustrated in connection with a coal-tipple for the loading of the coal into cars. Fig. 2 is a plan view. Fig. 3 is an enlarged perspective view of one portion of the chute. Fig. 4 is a like view of one of the removable sections. Fig. 5 is a plan view of the curved connecting-piece connecting my improved chute with the main discharge. Fig. 6 is a cross-section. Fig. 7 is a bottom view, and Figs. 8 and 9 show a modified form of apparatus for raising and lowering the removable section of the chute, and Figs. 10 and 11

show still another modified form of apparatus for raising and lowering the movable section.

Like numerals indicate like parts.

I have illustrated and will describe my invention in connection with the handling of coal, although it is apparent that its application may be extended to the handling of any other material for which it may be found desirable.

The numeral 2 designates the portion of a framework of a suitable tippie on which is located the track 3, by means of which the pit-cars 4 are transported from the mine to the tippie, said cars being of any ordinary construction adapted to discharge the coal therefrom in any suitable manner. Supported by the frame in line with the track 3 is the main chute 5, into which the coal is discharged directly from the pit-cars, said chute being directly in line with the said cars. At the lower end of the tippie 2 is the track 6, upon which the cars 7 to be loaded are transported, said track being at right angles to the track 3 of the tippie.

The most convenient manner of handling coal in loading from the tippie is to have the pit-cars run out onto the tippie on a track at right angles to the track of the railway below, and it is desirable to have the loading-chute parallel to the railway-track and at right angles to the track of the tippie. Accordingly my improved chute 8 is arranged parallel with the railway-track at the foot of the tippie, and in order to provide connection between the main chute 5 and the chute 8 a curved connecting-chute 9 is employed, and for this purpose I prefer to employ the curved chute described and claimed in an application filed by W. J. Patterson, Serial No. 141,957, filed February 5, 1903. This curved chute 9 has the mouth 10 connected to the lower end of the chute 5, the discharge-opening 11 being connected to the upper end of the chute 8. The inner or short curved side of the chute 9 has the steep or abrupt wall 12 extending from one end to the other, while the outer or long side has the steep or abrupt wall 13 at each end thereof where said wall connects

with the corresponding sides of the chutes 5 and 8 and extending in the opposite direction a suitable distance, where it merges into the intermediate sloping bottom 13'. The slope of the bottom 13' extends substantially to the middle portion of the said chute. The sides of the chute 9 may be cast integral with the bottom or may be formed separate therefrom, as illustrated in Fig. 6, the bottom being formed of cast-iron and the sides of wrought metal riveted thereto.

The lower end of the chute 9 is provided with the lugs 14, having the openings 15 therein. The lower end of the chute 9 is supported by means of the bars or rods 16, secured to the framework of the tippie.

The chute 8 is composed of the upper portion 17, having the lugs 18 at the upper end thereof with openings therein adapted to coincide with the openings 15 of the chute 9, so that by passing bolts or pins through said coincident openings the section 17 is connected or hinged to the chute 9, the sides of section 17 with beveled ends extending beyond the sides of the chute 9, as at 19, so that the section 17 may be tilted, as hereinafter set forth, without leaving a gap or space between it and the chute 9. The lower end of the section 17 is provided with the outwardly-projecting pins or bearings 20 and the eyelets 21. The movable section 22 has at the upper end of its sides the hooks 23, adapted to engage the pins 20 on the section 17. The ends of the sides of the section 22 are beveled in the same manner as the sides of section 17, so that the sides of section 22 extend beyond the sides of section 17 in order to permit of the swinging or lowering of the section 22 without creating a gap or opening between it and section 17, as above set forth. The lower ends of the section 22 are also provided with pins or bearings 24, and the sides are provided with the eyelets 25. The sections 26 and 27 are constructed in like manner with the section 22, so that a detailed description of the same is unnecessary, it being understood that as many additional sections may be employed as is found desirable or necessary. The sections 22, 26, and 27 are thus freely detachable from each other and from the main section 17, so that by simply applying power to lift any one of said sections it disengages readily from the other section and may be readily lifted out of the way.

I will now describe the mechanism by means of which the different sections of the chute 8 may be raised, lowered, or tilted, as may be found necessary in the operation of the chute. Journaled in the frame 2 are a series of shafts 28, provided with hand-wheels 29. At the outer ends of the shafts 28 are the small pinions 30, adapted to mesh with the large gears 31 on the shafts 32. These shafts 32 are provided with the drums or spools 33. Chains or cables 34 are connected to the eyelets 21

on the section 17 and eyelets 25 of the sections 22, 26, and 27. These chains 34 pass up over the idle rollers 35 and around the drums 33, so that by turning the corresponding hand-wheel 29 the chains or cables 34 of any one of the movable sections of the chute may be raised or lowered or the front end only thereof raised and lowered to change the angle thereof, as will be fully hereinafter set forth. To provide for the retention of the sections in their raised or tilted position, braking mechanism is employed, and for this purpose each shaft 28 is provided with a hand-wheel 36, over which brake-band 36^a passes, one end of such band being secured to frame and the other end to the weighted lever 36^b. It is apparent that the operator by putting his foot on lever 36^b releases the brake and permits the chute to be raised or lowered.

In Figs. 8 and 9 I have illustrated another form of mechanism for raising and lowering the movable sections of the chute, in which the shafts 37 are driven continuously by the belt 38 passing around the pulley 39, the shaft 37 having the friction-wheel 40 thereon adapted to be thrown into engagement with the friction-wheel 41 on the eccentric shaft 42. The eccentric shaft 42 is operated by the lever 43. The stationary brake-block 44 is adapted to be engaged by the friction-wheel 41. The chain or cable 45, which passes down to the movable section of the chute, is wound around the spools 46. It is apparent that by throwing the lever 43 into the position shown in full lines the friction-wheel 41 is brought into engagement with friction-wheel 40, and the shaft 42 is revolved, together with the spools 46, carried thereby. When the lever 43 is thrown in the opposite position, the friction-wheel 41 is thrown out of engagement with the friction-wheel 40 and against the brake-block 44, thereby holding said wheel in a stationary position.

In Figs. 10 and 11 I have illustrated still another form of apparatus for raising and lowering the movable sections of the chute, in which hydraulic or steam cylinders 47, having piston-rods 48 connected to a suitable bail 49, adapted to engage with the sides of the movable section, are employed, so that by operating the cylinders 47 the bail will be raised or lowered in the same manner as above set forth.

When my improved chute is installed and ready for operation, the car 7 is run into position for loading, and if said car is an ordinary gondola car, such as illustrated, the full number of sections of the chute will be employed in order to bring the chute down within the body of the car, so as to prevent the coal dropping from a height sufficient to break it when it is discharged from the chute into the car. The coal dumped from the pit-cars 4 passes down through the main chute 5 into the curved chute 9, where in its descent it strikes the outer side of said curved chute

and where its course is changed. The tendency of the coal is to crowd toward the long side of chute 9 and prevent the even distribution of the coal in said chute, as well as create danger of the coal overflowing the chute along that side. The sloping bottom 13' tends to direct the coal toward the short side 12, thus acting to distribute the coal properly and prevent its collecting unduly on the side 13. The coal then passes from the curved chute 9 into the chute 8 and passing down through the several sections of the said chute is discharged from the end section into the car 7. It will be found desirable to have the car run in under the chute, so as to begin the loading at one end of the car, and as that end becomes filled move the car along until the coal has been distributed properly throughout the length of the car. In case it is found that the angle of the chute is too great the sections may all be raised slightly by turning the hand-wheels 29 until the proper adjustment has been made, or if in the case of filling a car with high sides, such as shown in dotted lines, the lower chute 27 projects too far into the body of the car as the car is filled said section 27 may be raised out of the way by again turning the hand-wheels 29, said section being elevated to the position shown in dotted lines, Fig. 1. In the same manner if it is found necessary the sections 26 and 22 may also be lifted out of the way. By this construction the movable sections may be lifted up out of the way, so as not to interfere with the discharge of the coal from the chute, and the coal may be discharged evenly for the entire length of the car without moving the car and when desired may be lowered back into proper position with reference to the chute, while at the same time the freely-detachable hinged connection between the movable sections and the main chute permits of the tilting of the different sections or the entire chute at such different angles as may be required for the proper distribution and fall of the coal. In this manner I provide for the discharge of the coal into cars of different heights and at different angles, as may be found necessary, the distance the coal has to fall being regulated to prevent its falling from a height which will tend to break the coal in its fall.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a suitable frame, of a chute having an upper section, a movable section normally in proper relation to the discharge end of said upper section, and coupled thereto by a part on the former section overlapping a part on the latter, mechanism for elevating said movable section, and connections from said movable section to said mechanism, whereby said movable section may be

lifted bodily to a point above the discharge end of said upper section.

2. The combination with a suitable frame, of a chute having an upper section, a movable section having a freely-detachable hinged connection with the lower end of said upper section, mechanism for elevating said movable section, and connections from said movable section to said mechanism, whereby said movable section may be lifted bodily to a point above the discharge end of said upper section.

3. The combination with a suitable frame, of a chute having an upper section, a movable section normally in proper relation to the discharge end of said upper section, and coupled thereto by a part on the former section overlapping a part on the latter, mechanism for elevating said movable section, and connections from both ends of said movable section to said elevating mechanism, whereby said movable section may be lifted equally at both ends to a point above the discharge end of said upper section.

4. The combination with a suitable frame, of a chute having an upper section, two or more movable sections in line with said upper section and each other, mechanism for elevating said movable sections, and individual connections from each of said movable sections to said mechanism, whereby one or both of said movable sections may be lifted bodily to a point above the discharge end of said upper section.

5. The combination with a suitable frame, of a chute consisting of two or more sections, pins or projections on one of said sections, hooks on the other section adapted to engage the pins of the other section to form a freely-detachable hinged connection, mechanism for elevating one or more of said sections, and connections from said sections to said mechanism, whereby one or more of said sections may be lifted bodily to a point above the discharge end of said chute.

6. The combination with a suitable frame, of a chute consisting of two or more sections, pins or projections on the lower end of the upper section, hooks on the upper end of the lower section adapted to engage said pins to form a freely-detachable hinged connection between the sections, mechanism for elevating one or more of said sections, and connections from said sections to said mechanism, whereby one or more of said sections may be lifted bodily to a point above the discharge end of said chute.

In testimony whereof I, the said ALFRED M. ACKLIN, have hereunto set my hand.

ALFRED M. ACKLIN.

Witnesses:

ROBERT C. TOTTEN,
FRED D. SWEET.