Feb. 27, 1923. 1,446,985

C. A. NELSON

CONVEYER STRUCTURE

Filed Feb. 1, 1922 3 sheets-sheet 1

Fig. 1

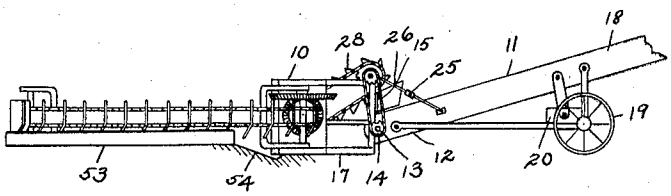


Fig. 2

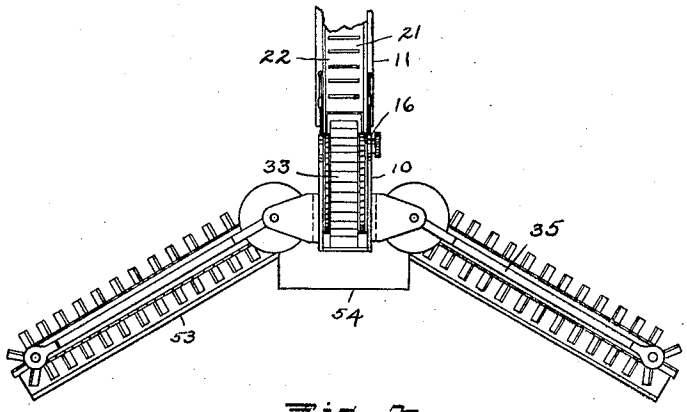
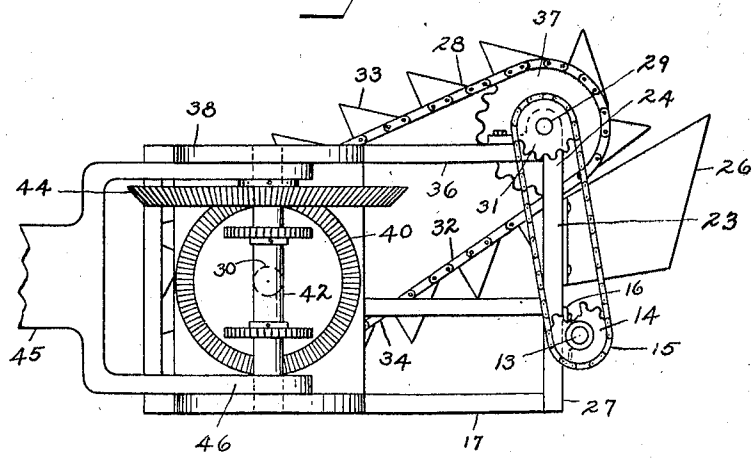


Fig. 3



Inventor:
Charles A. Nelson
By Louis M. Schmidt,
Atty.

Feb. 27, 1923. 1,446,985

C. A. NELSON

CONVEYER STRUCTURE

Filed Feb. 1, 1922 3 sheets-sheet 2

Fig. 4

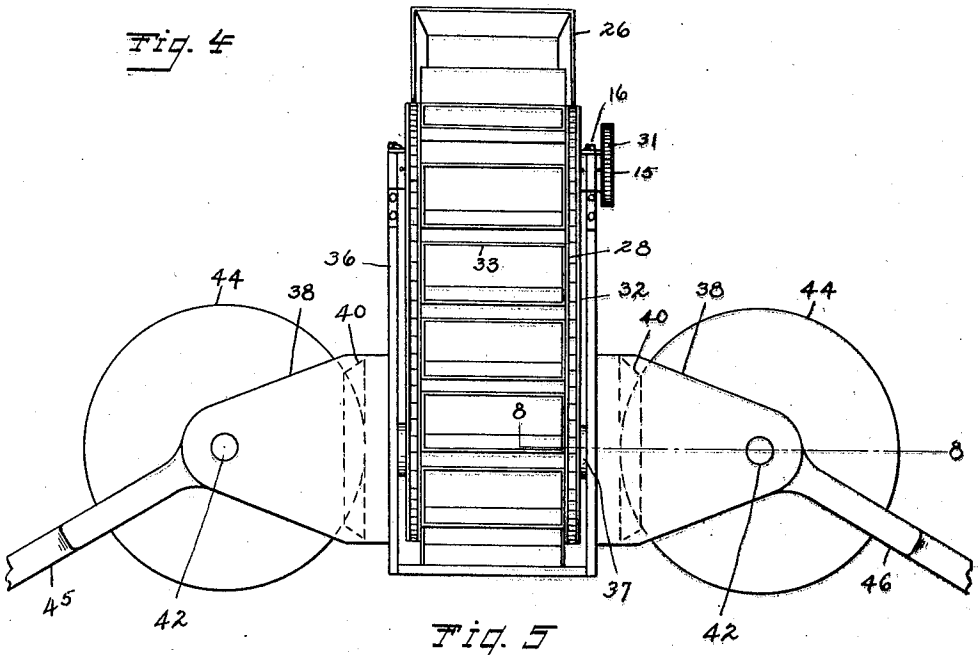


Fig. 5

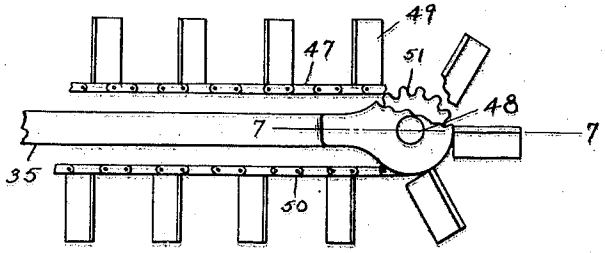
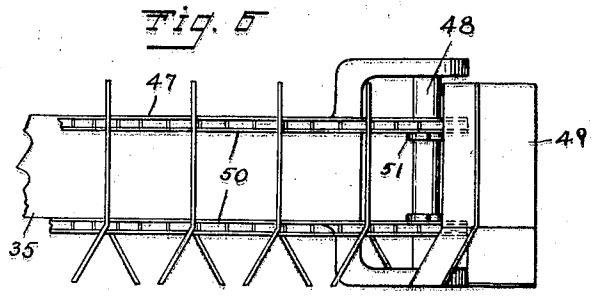


Fig. 6



Inventor:
Charles A. Nelson.
By Louis M. Schmidt
Atty.

Feb. 27, 1923. 1,446,985

C. A. NELSON

CONVEYER STRUCTURE

Filed Feb. 1, 1922 3 sheets-sheet 3

Fig. 7

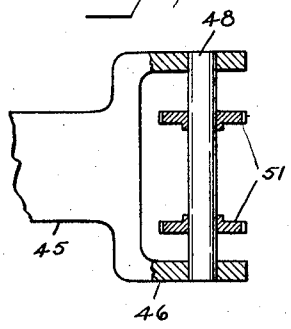
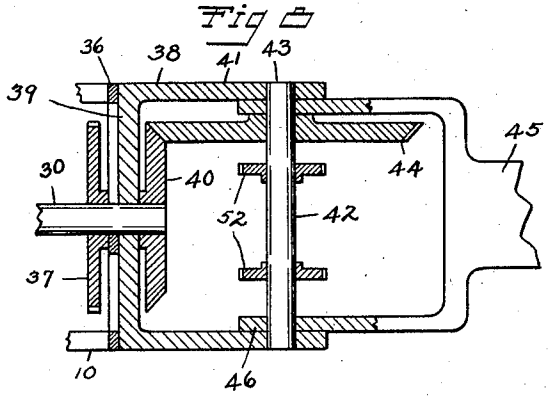


Fig. 8



Inventor:
Charles A. Nelson.
By Louis M. Schmidt
Atty.

Patented Feb. 27, 1923. 1,446,985

UNITED STATES PATENT OFFICE.

CHARLES A. NELSON, OF EAST BERLIN, CONNECTICUT.

CONVEYER STRUCTURE.

Application filed February 1, 1922. Serial No. 533,176.

To all whom it may concern:

Be it known that I, CHARLES A. NELSON, a citizen of the United States, residing at East Berlin, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Conveyer Structures, of which the following is a specification.

My invention relates to improvements in conveyer structures, of the form used for handling loose material, such as coal, cinders, crushed stone, sand, and gravel, and loading such material on a truck or car, and the object of my improvement is to produce a device that operates primarily as an auxiliary device or attachment for use with certain forms of material handling machinery that are already in use for such purposes as elevating material from the ground into a car or truck and similar uses, and known as portable conveyers, and which device is operatively incorporated with the said machinery or conveyer so that the combined structure operates as a unitary apparatus.

In the accompanying drawing:—

Figure 1 is a side elevation, of diagrammatic form, of my improved conveyer structure.

Figure 2 is a plan view of the same.

Figure 3 is a side elevation on an enlarged scale of the auxiliary conveyer.

Figure 4 is a plan view of the same.

Figure 5 is a plan view of the free end portion of one of the sweeper arms.

Figure 6 is a front elevation of the same.

Figure 7 is a sectional view on the line 7—7 of Fig. 5.

Figure 8 is a longitudinal sectional view of the auxiliary conveyer on the line 8—8 of Fig. 4.

My improved conveyer structure comprises an auxiliary device or attachment 10 that is constructed and arranged to cooperate with a conveyer proper or main conveyer 11 of a form that is already in use and adapted to elevate loose material from the ground and deliver the same to a truck or for similar service, the said main conveyer operating substantially as usual for effecting the elevation of the material, which material, however, is delivered to the receiving end 12 of the main conveyer 11 for being elevated as mentioned.

Also, the attachment 10 and the main conveyer 11 are operatively connected and driven from a common source of power, in any suitable manner, so as to operate in unison and as a unitary operating mechanism.

As shown, the main conveyer 11 has a shaft 13 that serves to operatively support the receiving end 12. This shaft is changed to adapt it for use in my improved conveyer structure for effecting the mechanical connection of the parts and also supports a sprocket gear 14 that cooperates with a sprocket chain 15 for transmitting the driving power to the mechanism of the attachment 10. Said shaft 13 has the end portions extended and operatively housed in bearings that are provided in brackets 16 that are mounted on the rear face of some part of the skeleton frame structure 17 that is provided for the mechanism of the attachment 10.

The main conveyer 11, as shown, comprises a frame 18 that is supported on wheels 19 and is operative to be tilted and adjusted within prescribed limits and a motor for driving the moving parts is supported from the frame 18 in a suitable housing 20. On the upper side of the frame 18 is a trough structure 21 in which is operatively housed a conveyer device 22 consisting of some form of bucket conveyer of endless form. The conveyer device 22 shown is of the form known as a belt conveyer.

The shaft 13 serves to connect the lower, receiving end portions 12 of the trough structure 21 with the skeleton frame structure 17. The said skeleton frame structure 17 comprises at the rear a pair of uprights 23 in spaced relation.

The bearing brackets 16 are mounted at the lower portions generally of said uprights 23. The upper end portions 24 of said uprights 23 are connected individually by a cable and turn-buckle connection 25 with the side walls of the trough structure 21. This arrangement permits of changing the angular relation of the attachment 10 and the main conveyer 11, using the shaft 13 as the fulcrum.

A hopper or chute 26 is provided for directing the material that is received from the attachment 10 to the proper receiving position on the receiving end 12 of the conveyer 22.

The lower ends 27 of the uprights 23 rest on the ground and serve as the general supporting feet for the attachment 10.

A relatively short bucket conveyer 28 is supported in an inclined position on the upper portion of the skeleton frame structure 17 and serves to deliver the material to be transported to the hopper 26, being operatively supported by suitable shafts, comprising the shaft 29 at the upper end and the shaft 30 at the lower end. The sprocket chain 15 serves to drive the short bucket conveyer 28 in any proper manner, as through the medium of the sprocket gear 31 that is mounted on the laterally extending end portion of the upper shaft 29.

The lower shaft 30 is driven from the upper shaft 29 by the sprocket chains 32 that support the buckets 33 of the short bucket conveyer 28:

The lower end portion 34 of the short bucket conveyer 28 is relatively close to the ground and the material is fed thereto by means of a pair of sweeper devices 35 positioned one on each side thereof, and which are constructed and arranged so that they can be swung laterally through an appreciable angle, said angle being substantially ninety degrees for each individually.

Considering structural details, the short bucket conveyer 28 comprises a set of side stringers 36, one on each side, that serve as the means for operatively supporting the upper shaft 29 and the lower shaft 30, said stringers 36 being in spaced relation, and the shafts extending across the space and through suitable bearings that are provided in said stringers 36. The bucket conveyer 28 is positioned in the space between the stringers 36, the sprocket chains 32 that support the buckets 33, as mentioned, being themselves supported by the sprocket gears 37 that are mounted on said shafts 29 and 30, and the driving sprocket gear 31, on the protruding end of the upper shaft 29, is adjacent one of the stringers 36.

A pair of bracket frames 38 are positioned one on each side of the stringers 36, at the lower portion thereof, adjacent the lower shaft 30 and comprise a plate-like yoke portion 39 in each case that is opposed to and secured to the outer face of the stringer 36. The lower shaft 30 is extended outwardly on each side through the stringer 36 and also through the yoke portion 39 and, as shown, supports by the free end portion a bevel gear 40.

The yoke portion 39 is generally vertically directed and supports by the upper and lower ends in each case a laterally directed arm 41, the two arms 41 being in spaced relation, one above the other and the bevel gear 40 being positioned in the space between said arms 41.

A vertical shaft 42 is positioned across the space between the arms 41, is operatively supported from the arms 41 by means of suitable bearings that engage with the end portions of said shaft 42, and supports by the body portion a bevel gear 44 that cooperates with the bevel gear 40.

The two arms 41 and the yoke 39 that compose the structure of the bracket frames 38 are, as described, in the form of a bifurcated or forked structure.

The end portions 43 of the shaft 42 are supported by the arms 41 so as to be operative to serve as bearing supports for the sweeper device 35 and the fulcrum for the same for swinging back and forth relatively to the bucket conveyer 28.

Said sweeper device comprises, as shown, a supporting arm structure of forked form having an upper and a lower arm member 46 that are generally similar and positioned in spaced relation, one above the other, and that connects with the main arm 45.

The inner end portions of the arm members 46 overlap the arms 41 and have perforations for receiving the end portions 43 of the shaft 42 and are operatively supported by these parts.

Encircling the main arm 45 is a sweeper conveyer 47 that operates generally in a horizontal plane, being supported at the inner end by the vertical shaft 42 and at the outer end by a vertically directed idler shaft 48.

The sweeper conveyer 47 comprises structurally a plurality of sweeper buckets 49 in the form of laterally directed blades of any suitable form for digging into the side of a pile of loose material and propelling the same along by a sweeping or scraping movement and supported by a suitable sprocket chain structure that is operative to properly position and guide said sweeper buckets 49.

In the present instance I have provided for said sprocket chain structure a pair of sprocket chains 50 positioned in spaced relation, one above the other.

Idler sprocket gears 51 on the idler shaft 48 support the outer ends of the chains 50 and the inner ends thereof are supported by and driven by the sprocket gears 52 on the body portion of the vertical shaft 42.

The direction of movement of the sweeper buckets 49 is such that the blades or buckets 49 on the front side move towards the bucket conveyer 28, the chains 50 on the right side moving clockwise and those on the left side moving counterclockwise.

Thus with a pile of material in the immediate foreground before the bucket conveyer 28 the two sweeper devices 35 will be operative to work against opposite sides of the pile and deliver material in the vicinity of and adjacent the lower end portion of said bucket conveyer 28.

To facilitate the operations of the conveyer devices there may be provided suit-

able backing or guiding structures of sheet metal.

Thus for the sweeper devices 35 there are provided for each a sheet metal trough structure 53 on the front portion, extending along the major portion of the length thereof, and positioned immediately back of the sweeper blades 49.

The trough structures 53 are constructed and arranged so that the inner end portions terminate above and adjacent an intermediate trough 54 that is positioned underneath the lower end portion of the bucket conveyer 28, so that material will be deposited thereon from the sweeper devices 35 suitably to be operated upon by the bucket conveyer 28.

I claim as my invention:—

1. In combination in a conveyer-sweeper structure, a main conveyer for elevating loose material, an auxiliary conveyer for delivering such material to said main conveyer, and a sweeper conveyer structure for gathering material from a pile and delivering the same to said auxiliary conveyer, said structure comprising a pair of similar individual sweeper devices, symmetrically arranged relatively to the receiving portion of said auxiliary conveyer, and positioned one on each side of said receiving portion, so that said conveyer-sweeper structure is operative to gather material from the opposite sides of said pile, and the parts being constructed and arranged so that the material will be delivered from said pile by an inward movement along the space between the individual sweeper devices from the pile to said receiving portion of the auxiliary conveyer.

2. A conveyer-sweeper structure comprising a sweeper structure that is composed of a pair of sweeper devices that are symmetrically arranged and operative to be swung towards and away from one another by a substantially horizontal movement for operating upon a pile of material that is positioned between said devices and to deliver material from said pile directly inwardly from said pile towards the space between the axes of said devices, and an elevating conveyer structure having the receiving end located so as to receive such material from between said axes, whereby said pile serves to position said devices without other positioning means.

CHARLES A. NELSON.