June 8, 1926.

1,587,510

J. J. DAVIDSON

COAL CONVEYER

Filed Dec. 11, 1922

2 Sheets-Sheet 1

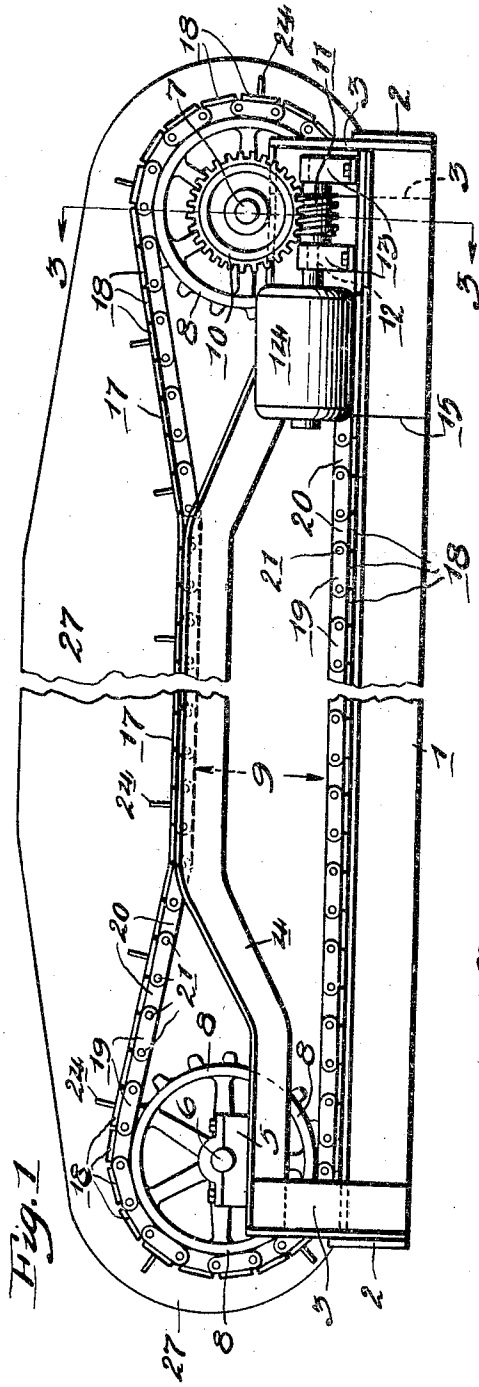


Fig. 1

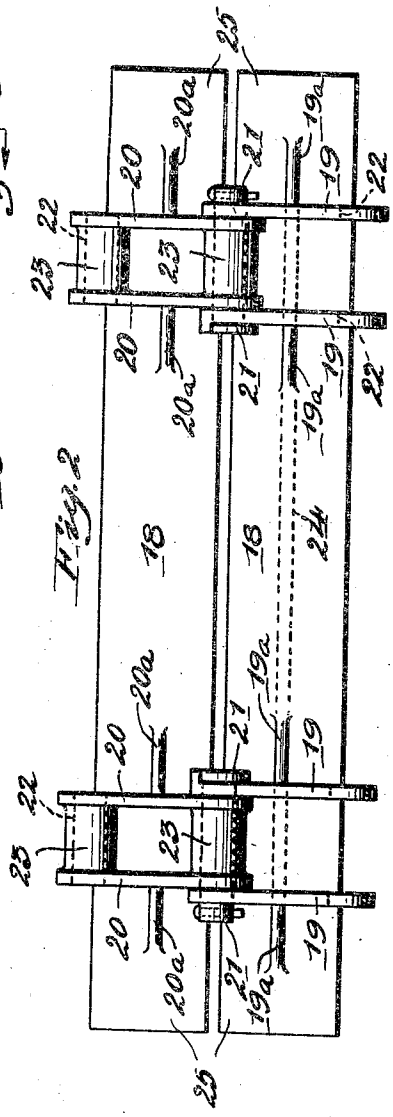


Fig. 2

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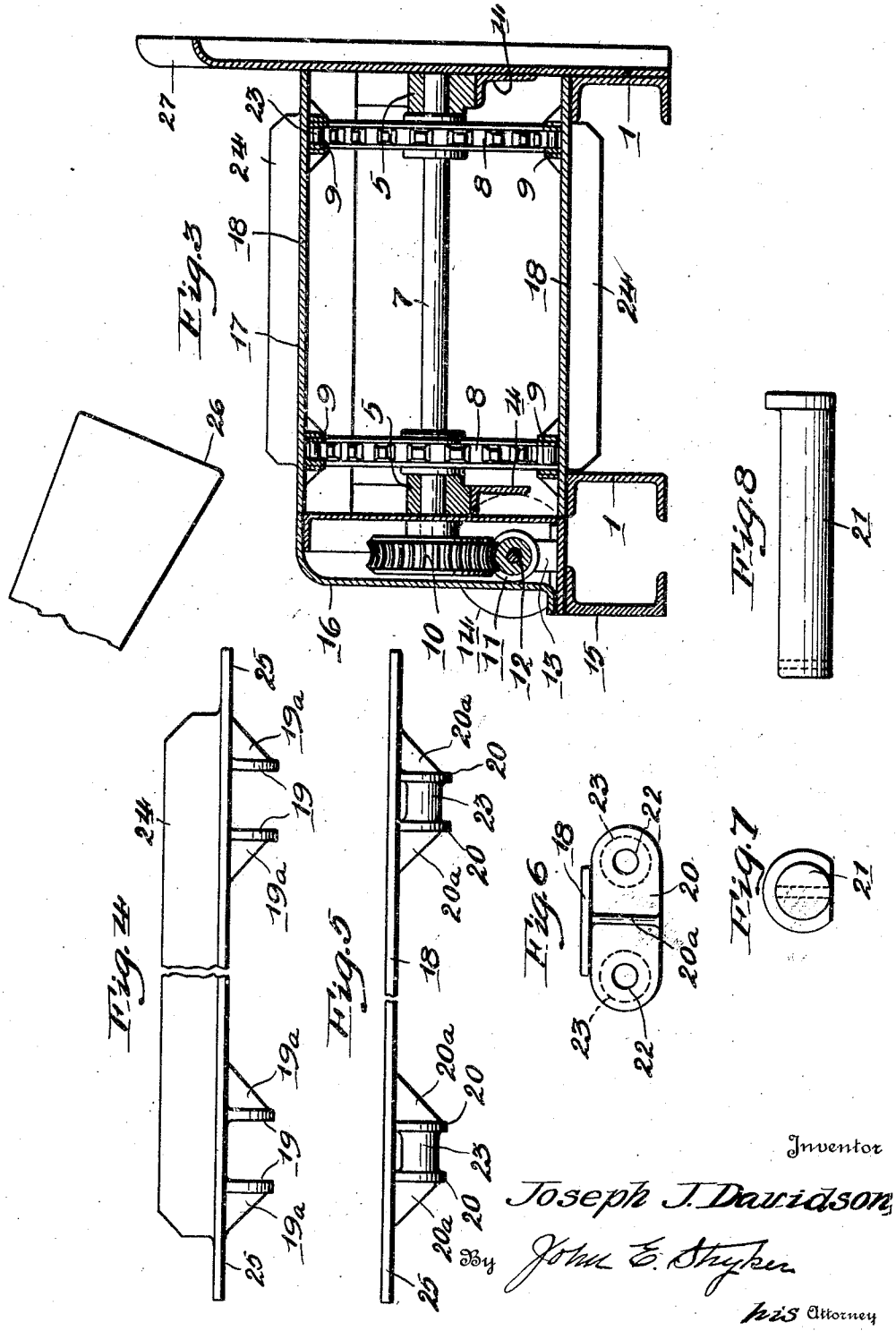
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2 Sheets-Sheet 2



Inventor

Joseph J. Davidson

By John E. Stryker

his Attorney

Patented June 8, 1926. 1,587,510

UNITED STATES PATENT OFFICE.

JOSEPH J. DAVIDSON, OF ST. LOUIS, MISSOURI.

COAL CONVEYER.

Application filed December 11, 1922. Serial No. 606,073.

It is my object to provide an efficient and durable conveyer especially adapted for use in loading coal on railway cars.

Heretofore it has been common practice to load coal on railway cars by the use of a power driven, endless conveyer which is operated at a high rate of speed and arranged to throw the coal into the ends of the cars, the central part of the cars being filled directly from a chute. The conveyers usually employed consist of a pair of endless chains, carried on suitable sprocket wheels, and slats forming a deck on the chains upon which the coal is deposited and carried. These slats are severally riveted to the links of the chains and certain of the slats have blades riveted thereto for the purpose of engaging the coal. The great weight of the commodity transported and the high speed imparted to the endless conveyers, produce, in the old type, destructive strains and abrasions which shear the riveted slats and blades from the chains with consequent interruptions in the operation and expensive repairs.

In the present invention the above difficulties are obviated by providing an endless conveyer composed of flights formed integral with the links and push blades and arranged to secure durability and a minimum of abrasion.

Referring to the drawings, which illustrate the best form of my device at present known to me, Figure 1 is a side elevation of my improved conveyer, the gear casing being removed to show parts otherwise concealed; Fig. 2 is a detail bottom view of a pair of adjoining carrier units; Fig. 3 is a section taken on the line 3—3 of Fig. 1; Fig. 4 is a detail elevation of one of the carrier units formed with a blade for pushing the coal; Fig. 5 is a similar elevation of an adjoining unit without the blade; Fig. 6 is an end view of the same; and Figs. 7 and 8 are end and side elevations, respectively, of one of the link pins.

The frame of my device is composed of a pair of longitudinal channel beams 1 secured to each other at their ends by transverse members 2, and vertical angle beams 3 fastened to the beams 1 and members 2 at the corners of the frame. A pair of longitudinal angle beams 4 are mounted on the upper ends of the beams 3 and arranged to support pairs of journal bearings 5 and the upper run of the endless carrier proper. Shafts 6 and 7 are journalled in the bearings 5 in horizontal position so as to support four sprockets 8. These sprockets 8 are fast on the shafts 6 and 7 and arranged to engage and carry series of chain elements 9 which are integral with the hereinafter described flights composing the deck of the carrier. Fast on a projecting end of the shaft 7 is a worm wheel 10 which is adapted to be driven by a worm 11 on a shaft 12. The latter shaft is journalled in a pair of bearings 13 and arranged to be driven by a motor 14. This motor 14 is supported on a channel beam 15 extending parallel with the beams 1. As shown in Fig. 3 the wheel 10 and worm 11 are enclosed in a casing 16 to protect them from the coal dust.

A deck or carrier surface 17 is composed of a series of flights or plates 18 placed edge to edge extending transverse the sprockets 8 and uniting the chains 9 in parallel relation. Pairs of spaced ears 19 form the female link members of the chains 9 on half of the flights 18, while pairs of ears 20, provided with connecting bosses 21, form male link members on the remaining flights 18. Link pins 21 (Figs. 7, 8 and 2) are adapted to be inserted in suitable perforations 22 in the ears 19 and 20 and also through bosses 23 to connect the male and female link member in the pair of parallel, endless chains 9. The ears 19 and 20 are reinforced by triangular webs 19^a and 20^a, respectively. At suitable intervals on the carrier surface 17, the flights 18 are formed with projecting push plates or blades 24 whereby the coal is pushed and thrown from the carrier as hereinafter described. Ends 25 on the flights 18 project laterally from the chains 9 so as to support the upper runs of said chains on the off-set, central portions of the beams 4. These beams 4 sustain the upper run of the carrier in such a position that there is a pocket or depression from which the coal is directed upward toward the delivery end of the conveyer. Coal is delivered to the central depressed portion of the carrier by a suitable chute 26 (Fig. 3) and is prevented from being thrown transversely off the carrier by a guide wall 27 mounted longitudinally of said conveyer opposite the chute 26. This guide wall 27 is secured to one of the longitudinal channels 1 and the adjacent beam 4. I also insure great durability by making the flights 18,

the chain elements 9 and push plates 24 (all of which are integral with each other) and the pins 21 of manganese steel.

Operation.

In operation the carrier is driven at a high rate of speed by the motor 14 through the shaft 12, worm 11, wheel 10, shaft 7 and sprockets 8. The flights 18, on the upper run or deck of the carrier, are supported on the beams 4, and the flights on the lower run are supported on the channels 1. The conveyer is placed near the middle of the car to be filled with the delivery end of the conveyer so directed as to throw or deposit coal in the desired end of the car. The end toward which the coal is delivered is determined by the direction in which the motor 14 is operated. Coal is now deposited by the chute 26 on the central, depressed portion of the conveyer and carried upon the plates 18 to the end of the conveyer where it is thrown or driven by the blades 24 into the car. When one end of the car has been loaded the motor 14 is reversed to fill the other end of the car. The central portion of the car is finally filled directly from the chute 26 after removing the conveyer.

Having described my invention what I claim as new and desire to protect by Letters Patent is:

1. In a high speed conveyer, adapted for use in carrying and throwing coal and other heavy bulk material, the combination with a plurality of parallel flights arranged edge to edge in an endless carrier surface, of chain links formed integral with each of said flights on one face thereof, each chain link extending across the face of a flight, pins joining the links on each flight to the links of the adjacent flights, blades formed integral with and extending longitudinally on the opposite face of certain of said flights for engagement with the material to be conveyed and means for driving said carrier surface and blades at a high speed, whereby the material conveyed thereby may be thrown free of the conveyer at the delivery end thereof.

2. In a high speed conveyer, adapted for use in carrying and throwing coal and other heavy bulk material, the combination with a frame, a pair of parallel shafts journalled in opposite ends respectively of said frame, a pair of toothed sprocket wheels carried by each of said shafts, a plurality of parallel flights consisting of steel plates arranged edge to edge in an endless carrier surface, chain links formed integral with each of said flights on one face thereof, each chain link being formed from a pair of ears extending across the flights, and certain pairs of the links being formed to engage the teeth of said sprocket wheels and adapted to be driven by rotation of the sprocket wheels in either direction, pins joining the links on each flight to the links of the adjacent flights to form two endless chains adapted to run upon said pairs of sprocket wheels, and means for driving said sprocket wheels at a high speed, whereby material carried on said flights may be thrown free of the conveyer at either end of the frame, dependent upon the direction of rotation of said sprocket wheels.

3. In a device of the class described, a plurality of parallel flights arranged edge to edge in an endless carrier surface adapted to be operated by sprocket wheels, pairs of ears formed integral with certain of said flights on one face thereof, a pair of bosses connecting the ears of each pair near their ends and arranged to receive the teeth of said sprocket wheels between them, pairs of ears formed on the flights at both edges of said first mentioned flights to abut against the lateral faces of said first mentioned ears, integral, reinforcing webs extending transverse said ears on all of said flights, and means for joining the ears on said flights to the ears of the adjacent flights.

In testimony whereof, I have hereunto signed my name to this specification.

JOSEPH J. DAVIDSON.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,587,510, granted June 8, 1926, upon the application of Joseph J. Davidson, for an improvement in "Coal Conveyers," an error appears requiring correction as follows: In the grant and in the heading to the printed specification the residence of the patentee is erroneously given as "St. Louis, Missouri," whereas said residence should have been given as *Duluth, Minnesota;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of August, A. D. 1926.

[SEAL.]

M. J. MOORE,
Acting Commissioner of Patents.