

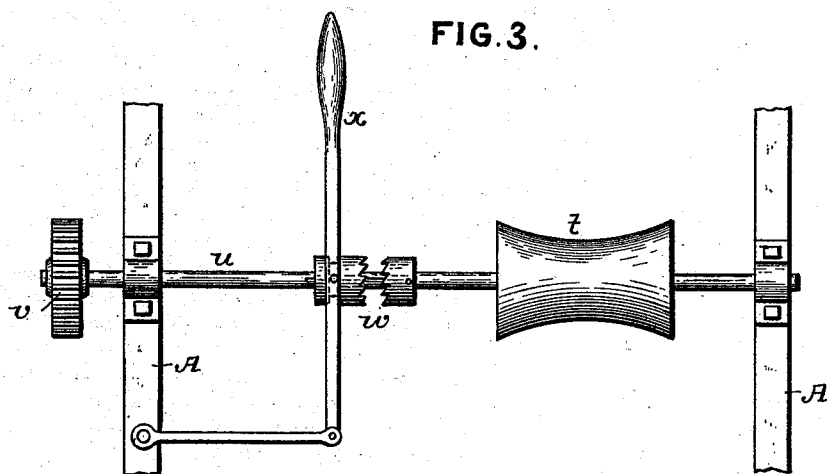
(No Model.)

2 Sheets—Sheet 2.

J. M. DODGE.
APPARATUS FOR UNLOADING BOATS.

No. 402,419.

Patented Apr. 30, 1889.



ATTEST.

J. Henry Kaiser
Louis Evans

INVENTOR.

James M. Dodge
By J. W. M. Entire
Att'y.

UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
DODGE COAL STORAGE COMPANY, OF SAME PLACE.

APPARATUS FOR UNLOADING BOATS.

SPECIFICATION forming part of Letters Patent No. 402,419, dated April 30, 1889.

Application filed December 3, 1888. Serial No. 292,516. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. DODGE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improved Conveyer for Unloading Boats; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this application.

My invention relates to certain new and useful improvements in trough-conveyer apparatuses or contrivances adapted specially to the purpose of taking coal and other material from the barges or boats in the water and conveying it ashore and to a suitable elevation, from which it may be conveniently discharged either in storage-heaps or into cars for transportation; and my invention consists, essentially, in a novel arrangement or combination of conveyer-chain in such apparatuses, with suitable means whereby the endless chain or circuit of flights may be increased or diminished in length from the point of supply to the point of discharge of the material to be conveyed, all as will be hereinafter more fully explained, and as will be more particularly pointed out and specifically defined in the claim of this specification.

To enable those skilled in the art to make and use my improvements, I will now proceed to more fully describe them, referring by letters to the accompanying drawings, which form part of this specification, and in which I have shown my invention carried out in that form in which I have so far practically used it, though it may be carried into effect, of course, under various modifications.

In the drawings, Figure 1 is a top or plan view of so much of my improved contrivance as is necessary to be shown in order to fully illustrate my invention. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a detail view on an enlarged scale of the winding-drum and clutch mechanism of the apparatus.

In all the figures the same parts will be found designated by the same letters of reference.

A represents a trestle-work or frame of any

desired height or length, and designed to properly support the horizontal portion of the trough *b* of a trough conveyer, and on which are also supported other working parts of the apparatus or contrivance, which will be presently described. This trestle-work is constructed with a descending portion, *A*², of much less width, (a part only of which is shown,) that extends onward a sufficient extent to properly support the inclined or obliquely-arranged portion of said conveyer-trough *b*, as clearly indicated.

c is an endless cable-chain (the lower portion of the double run of which is shown as broken away) that is provided in the usual manner with conveyer-flights *d*, and which is arranged and runs in a peculiar manner or direction in connection with suitable driving and supporting sprocket-wheels, as I will now explain. This flighted chain *c*, it will be understood by reference to the drawings, has its lower run extended from the lowermost point of the trough conveyer (not shown) along up over parallel with and in sufficiently close proximity to the floor of the obliquely-arranged portion of the conveyer-trough *b*, and thence along over and in similar proximity with the floor of the horizontal portion of said trough *b* to the driving sprocket-wheel *e*, around which wheel said chain makes a half-turn, and thence is run in the opposite direction, but parallel with the horizontal portion of the trough to an idler sprocket-wheel *g*, which is arranged in a horizontal plane or transversely to the driving sprocket-wheel *e* and making a half-turn in a lateral direction around said sprocket-wheel *g*. Said chain is thence run in a parallel but opposite direction to another idler sprocket-wheel *s*, (see particularly Fig. 1,) around which it makes a half-turn, and runs thence to the idler sprocket-wheel *h*, around which it makes a slight bend, passing thence to the idler sprocket-wheel *k*, around which it makes another slight bend, and from which said chain is extended down to the sprocket-wheel (not shown) to the lowermost point of the conveyer, around which sprocket-wheel (that, like the drive-wheel *e*, is arranged in a vertical plane) the chain completes its circuit.

The horizontally-arranged idler sprocket-

wheels *g*, *h*, and *k* have their vertically-arranged arbors or axles properly supported, as shown, in suitable frames or standards, marked, respectively, *i*, *j*, and *k*², and all three of these idler sprocket-wheels, it will be understood, are arranged in planes parallel with those portions of the conveyer-trough over which they are located and have their axes of motion unchangeable. The outer sprocket-wheel, *s*, however, has its shaft or arbor *y* mounted in suitable bearings on a truck, *m*, the wheels *n* of which rest and travel upon a suitable track or track-beams, *o*, which are properly secured to the top cross-beams of the trestle-work *A*, as clearly shown, (see particularly Fig. 1,) the said truck *m* being held in place against the draft-strain of the doubled-up conveyer-chain by a rope or cable, *r*, which has one of its ends preferably secured, as shown, to one of the cross-beams of the trestle-work, and which, being then wound around a windlass, *t*, passes through a series of sheaves or tackle-blocks, *p* *q*, one of which is made fast to the same cross-beam of the trestle-work to which one end of the cable is secured. (See particularly Fig. 1.) This windlass or winding-drum *t* is mounted fast on a shaft, *u*, the bearing-boxes of which are properly secured to the upper part of the trestle-work, as shown, and which is provided at *v* with a suitable gear, through the medium of which the necessary power and motion may be imparted to said shaft *u* from any desirable source.

w is a clutch, which is adapted in the usual manner to be thrown in and out of gear by a shipper handle or bar, *x*, and which serves to throw the winding-drum into and out of action and at the will of an operator, for a purpose to be presently explained.

The driving sprocket-wheel *e* is mounted, as shown, fast on a drive-shaft, *f*, the bearing-boxes of which are secured to the upper portion of the trestle-work, and which is provided with a drive-gear, *l*, at its idler, through the medium of which the necessary power may be applied to drive the flighted chain *c* of the trough conveyer. The flights *d* of said chain are made in about the usual manner and adapted to travel within and co-operate with the floor of the trough *b* in a well-known manner.

The chain *c* is of that species which is shown and described in Letters Patent granted to me September 12, 1882, and numbered 264,139, and which is adapted to work in conjunction with sprocket-wheels with which it may have various relative arrangements, and the arrangement of the chain in the case shown with the sprocket-wheels is such that the said chain comes into lateral contact with the peripheries of the sprocket-wheels *g*, *h*, *k*, and *s*, (with the flights traveling above the plane of the wheels,) and into contact in a transverse direction with the driving sprocket-wheel *e* and the similarly-arranged idler sprocket-wheel at the lower extremity of the double run of the chain, the flights *d* of

course traveling around or over the peripheries of these two last-named sprocket-wheels.

As that portion of the apparatus shown and so far described is designed to be supplied at the lowermost portion of the conveyer-trough with some sort of sliding or telescopic trough extension carrying the idler sprocket-wheel located at the lower end of the trough, it is necessary of course under certain circumstances during the operation of such a contrivance to take up the obliquely-arranged portion of the double run of conveyer-chain to a greater or less (and sometimes to a very great) extent; and to thus contract or permit the distention of the flighted chain it is only necessary to cause the truck *m*, which carries the idler sprocket-wheel *s*, to be moved in one direction or the other upon the track *o* upon which it is adapted to travel. To contract or shorten up the conveyer-chain, (usually while in motion,) the operative through the medium of the shipper-bar *x* and the clutch *w* throws the winding-drum *t* into operation, whereby the cable *r* is wound up, thus pulling or drawing the truck *m* in the direction indicated by the arrow at Fig. 1, while to permit the distention of the conveyer-chain (by the action of the gravity of the movable portion of the obliquely-arranged extension of the conveyer-trough) it is only necessary to permit the drum *t* to unwind and let out the cable *r*, which takes the draft-strain of the truck *m*.

In another application filed simultaneously by me, and numbered 292,515, I have fully shown and described one and a novel form of distensible conveyer-trough extension that may be employed in connection with such an apparatus or contrivance as I have shown and described in this case. I, however, deem it unnecessary to complicate this application with any illustration or description of such distensible trough-extension as the improvements or invention made the subject of this application may be successfully employed with more or less advantage in connection with any sort of telescopic or other extension at the lower end or portion of the obliquely-arranged portion of the conveyer-trough *b*.

Having now so fully explained the construction and general operation of the contrivance shown that those skilled in the art can make and use the same, what I claim, therefore, as new, and desire to secure by Letters Patent, is—

In an apparatus or contrivance for elevating and conveying coal or other material, the combination of the following instrumentalities, viz: first, a conveyer-trough mounted upon and supported by suitable frame-work, as specified; second, the conveyer-chain provided with suitable flights which co-operate with said trough and doubled on itself in a plane transverse to that in which lie those portions of the upper and lower runs of the chain, the flights of which lower run coact

with the conveyer-trough; third, a suitable driving sprocket-wheel in engagement with said chain and that is mounted on a fixed axis of motion, as specified; fourth, a series
5 of idler sprocket-wheels over which the loops or contractive turns of the chain are made, and which are in a plane transverse to that in which are located the upper and lower runs of the chain, the flights of which lower
10 run travel in the trough, and, fifth, a take-

up device and means for operating the same, the whole adapted to operate in substantially the manner and for the purpose hereinbefore set forth.

In witness whereof I have hereunto set my hand this 13th day of October, 1888.

JAMES M. DODGE.

In presence of—

E. A. TURNER,
M. GETZ.