

(No Model.)

J. M. DODGE.
CHAIN CONVEYER.

No. 395,883.

Patented Jan. 8, 1889.

Fig. 1

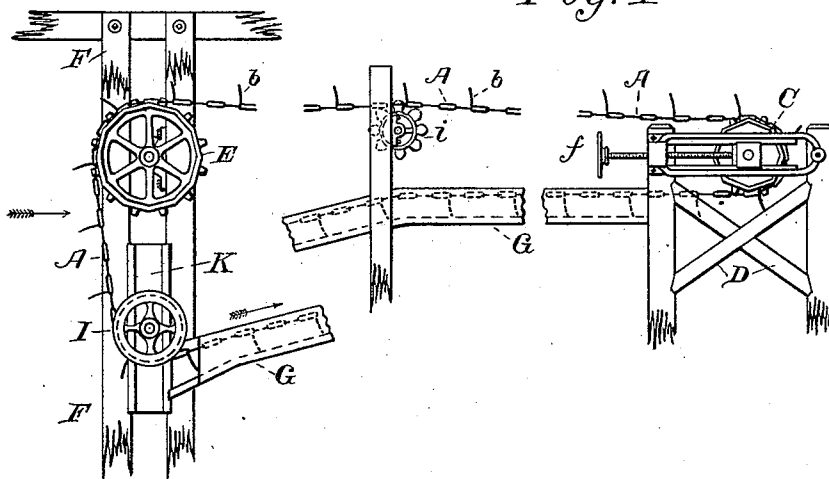
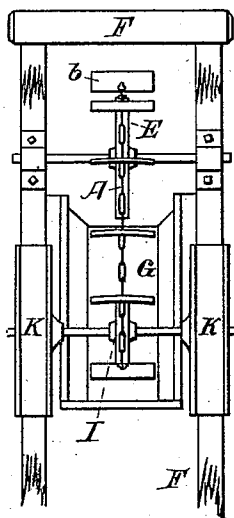


Fig. 2



WITNESSES:

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JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
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CHAIN CONVEYER.

SPECIFICATION forming part of Letters Patent No. 395,883, dated January 8, 1889.

Application filed October 6, 1887. Serial No. 251,565. (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 Improvement in Chain Conveyers; 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 chain conveyers of that type in which an endless chain provided with projecting flights is mounted to travel over chain or sprocket wheels arranged at each end of the double run of the endless chain, the lower run of the chain having its flights traveling or working within a suitable trough, within which the material is pushed along by said flights, all in a manner well known by those skilled in the art. In this type or sort of chain-conveyer apparatus, in which the trough of the conveyer is sometimes arranged in a horizontal and sometimes in an oblique plane, a great difficulty has heretofore been encountered, arising from the tendency of the lower run of the chain as it passes down from the driving chain-wheel to accumulate more or less slack, thus impairing the efficiency of the conveyer by reason of the incapacity of the flights which project downwardly from the flexible chain to properly push along the material to be conveyed when the lower run of the chain is not maintained in a comparatively taut condition. It is not difficult where the double run of the chain is of suitable length and weight to have the upper run properly supported at intervals by idlers, which operate to prevent any undue slack in this run of the conveyer-chain; but as the lower run has to co-operate with the conveyer-trough it is rather impracticable, if not impossible, to take up or avoid any undue slack occurring in said lower run by means of any of the expedients which may be easily applied to take up the slack in the upper run of the chain.

I propose by my invention to provide a simple and efficient means for always keeping the lower run of the chain under sufficient tension to prevent any undue slack therein, thus avoiding any impaired or imperfect ac-

tion of the flights projecting from said lower run of the chain and that have to work within the trough of the conveyer; and to this main end and object my invention may be said to consist in the combination, with the usual run of chain and the usual drive-wheel and driven wheel arranged, respectively, at the ends of the conveyer, of a third chain-wheel which acts after the fashion of an idler, but which is mounted to move vertically or nearly vertically, and the weight of which, together with that of its journal-supporting frame or carriage, acts by gravity on the lower run of the chain and at a point beneath the drive-wheel of the conveyer, so as to keep the chain distended or in a taut condition from the point at which it leaves the drive-wheel to that at which it passes onto the driven wheel or idler at the other end of the conveyer.

To enable those skilled in the art to which my invention relates to make and use the same, I will now proceed to more fully explain my improvement, referring by letters to the accompanying drawings, which form part of this specification, and in which I have illustrated my invention carried out in that form of machine or contrivance in which I have so far successfully practiced the same.

In the drawings, Figure 1 is a side view or elevation of so much of a chain-conveyer apparatus as it is necessary to show for the purpose of illustrating the embodiment therein of my invention. Fig. 2 is an end view of the same, looking in the direction indicated by the arrow at Fig. 1.

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

A is the chain of an ordinary chain conveyer of that type in which the cable form of chain is employed, and from which project in the usual manner a series of flights, *b*, adapted to push or convey along any material conveyed or discharged into the trough of the conveyer. This conveyer-chain is mounted to run upon or in connection with two chain-wheels, C and E, which are mounted, respectively, and in the usual manner, in suitable supporting-frames, D and F, one of said chain-wheels, E, operating as a driving-wheel. The other one, C, operates (as usual) as the driven wheel or

idler for keeping the double run of chain distended.

G is the trough of the conveyer, which in the case shown is an ascending conveyer-trough for carrying obliquely upward and discharging in a horizontal direction the material to be operated upon. The driven wheel C is preferably provided with the usual take-up device (seen at *f*) for the purpose of taking up in the usual manner any slack in the chain; but the said chain, instead of simply passing, after the fashion of an endless band or drive-belt, over the driving or driven chain-wheels, passes beneath and partially around a sprocket-wheel, I, which is preferably located, as shown, a short distance below and immediately under the drive-wheel E, said wheel I having its axle mounted in a sliding and gravitating carriage, K, which is arranged to slide freely up and down on suitable ways within the main frame-work F of the conveyer, all as clearly shown at Fig. 1, in such manner that the gravity of the wheel I and its carriage K will operate to keep taut or in a distended condition the short descending run of the chain that passes from the periphery of the wheel E onto that of the wheel I, and to also keep in a strained or taut condition that portion (or the lower run) of the chain which passes from the periphery of wheel I obliquely upward to the wheel C, and from which project the flights *b*, that work within the conveyer-trough G. It will be understood, of course, that this tightening gravitating wheel I is preferably located relatively to the receiving end of the chain at the vicinity of the receiving end of the trough without causing any undue strain on the working or lower edges of the flights *b* as they enter the lower end of the trough G. Of course the wheel I and its carriage K may be either made of sufficient weight, (or should be properly weighted,) according to circumstances, so as to always produce the desired effect of keeping sufficiently taut or strained the lower run of the chain A to insure the perfect working of the flights in the conveyer-trough, and it will be understood that, while the usual take-up device, *f*, is employed and arranged so as to set the conveyer-chain and keep it in substantially the proper average degree of tightness, the automatically-operating tighteners (so to speak) I will perform the function of taking up or preventing any undue slack of the chain after it leaves the drive-wheel E and during the lower run

of the chain, where the flights *b* have, so to speak, to operate to push along the contents of the trough G.

At *i* is shown one of the usual idlers employed for properly suspending or taking up the slack in the upper run of the conveyer.

It will be understood that the details of construction, as well as all of the proportions and relative arrangements of the parts of the conveyer apparatus shown, may be varied more or less without departing from the spirit of my invention, so long as there be employed in connection with or be combined with the chain of the conveyer a gravitating wheel or tightener, I, which is properly located relatively to the drive-wheel to keep the chain taut at the locality where it passes from the drive-wheel and throughout the lower run of the chain in substantially the manner herein explained. I therefore wish it to be understood that I do not consider my invention as restricted to any details of construction or to any specific form and arrangement of the parts, so long as the construction of the apparatus be such, as shown, that any slack in the lower run of the chain tending to impair the efficient operation of the flights is automatically taken up or prevented by a gravitating wheel or its equivalent.

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

In a chain conveyer of the type shown and described, the combination of the following instrumentalities, to wit: first, the endless chain A, provided with the usual flights, *b*; second, the stationary driving sprocket-wheel E and the adjustable driven sprocket-wheel C, around which said endless chain passes; third, the usual conveyer-trough, G, arranged or located to permit the action therein of the flights of the lower run of the chain, and, fourth, the automatic or gravitating take-up sprocket-wheel I, arranged beneath the driving-wheel within the double run of the flighted conveyer-chain and in the vicinity of the point of co-operation between the flights and the trough, the said instrumentalities all arranged and operating together substantially in the manner and for the purposes hereinbefore set forth.

In witness whereof I have hereunto set my hand this 3d day of October, 1887.

JAMES M. DODGE.

Witnesses:

M. GETZ,

H. BACON.