

(No Model.)

2 Sheets—Sheet 1.

A. RITSCHER.

COMBINED SINGLE ENDLESS CHAIN ELEVATOR AND DISTRIBUTING
CONVEYER.

No. 453,130.

Patented May 26, 1891.

Fig. I.

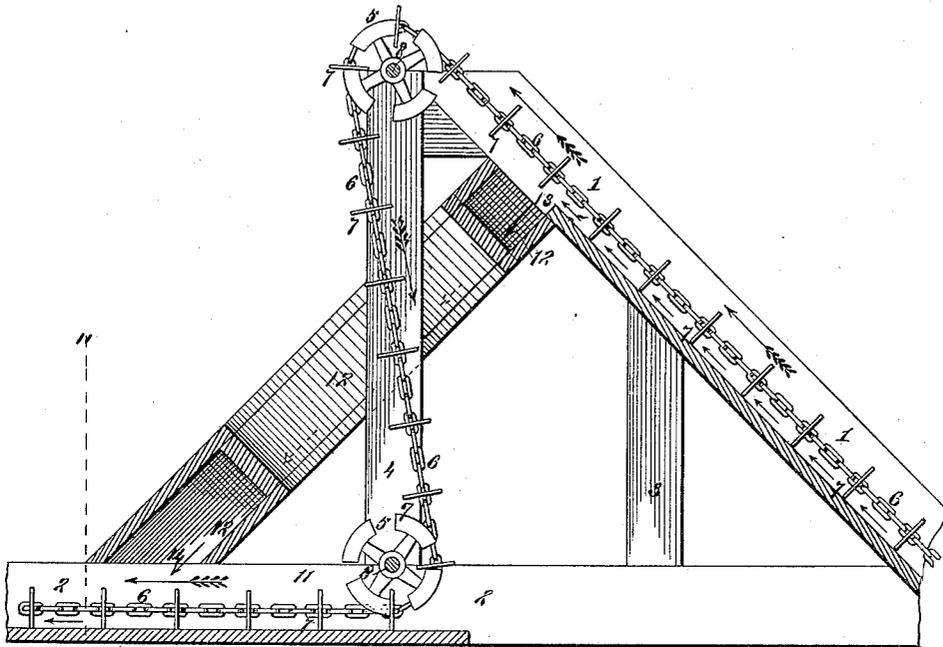
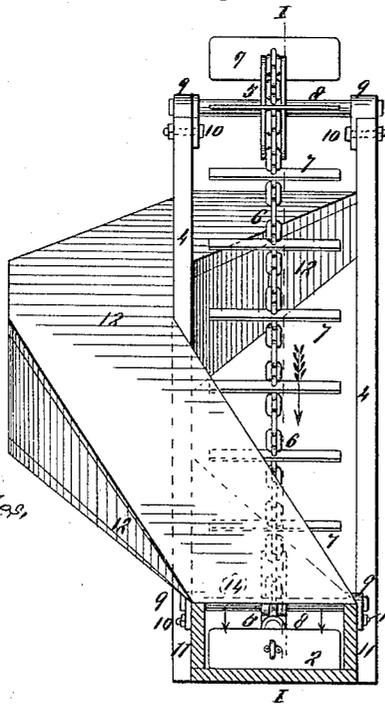


Fig. II.



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Attys.

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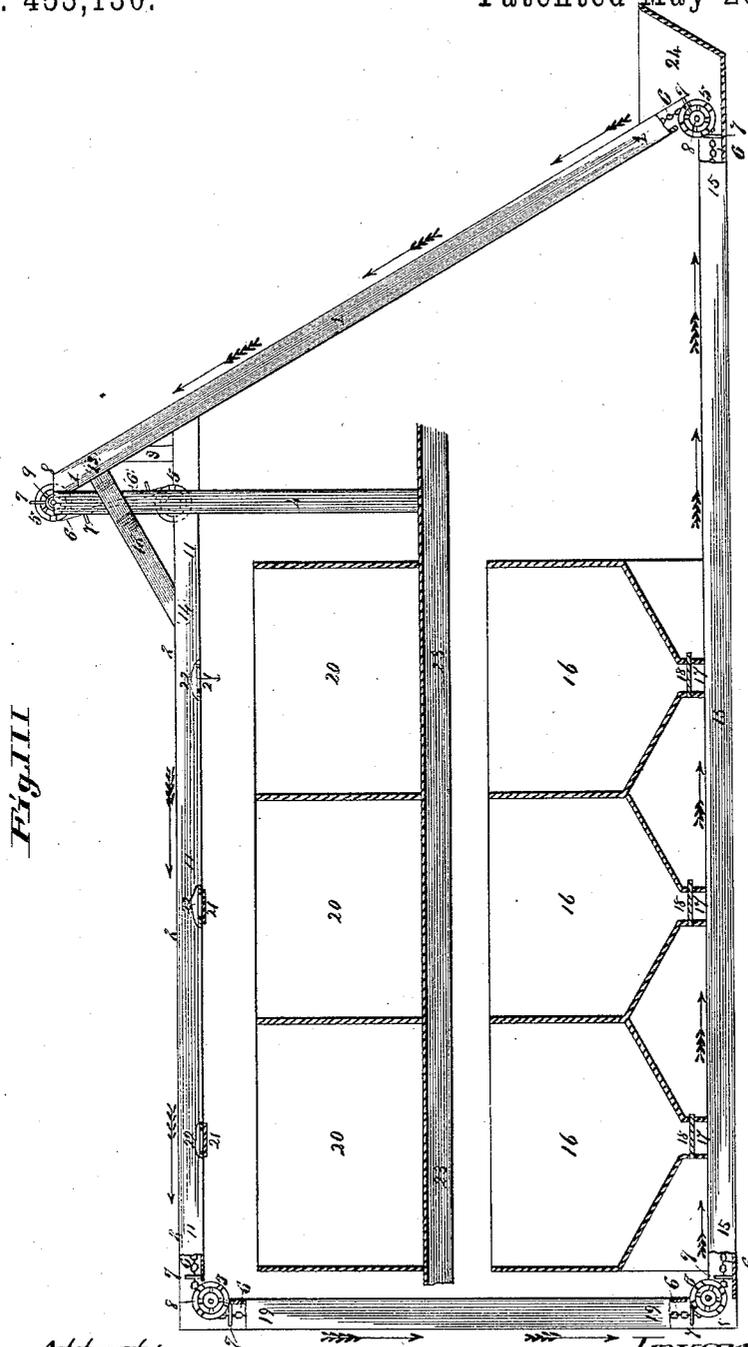


Fig. III

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UNITED STATES PATENT OFFICE.

ADAM RITSCHER, OF TAYLORVILLE, ILLINOIS.

COMBINED SINGLE-ENDLESS-CHAIN ELEVATOR AND DISTRIBUTING-CONVEYER.

SPECIFICATION forming part of Letters Patent No. 453,130, dated May 26, 1891.

Application filed October 28, 1890. Serial No. 369,565. (No model.)

To all whom it may concern:

Be it known that I, ADAM RITSCHER, of Taylorville, in the county of Christian and State of Illinois, have invented a certain new and useful Improvement in Combined Single-Endless-Chain Elevators and Distributing-Conveyers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to an improvement by means of which a single-circuit elevator and carrier effects the movement of the material, such as grain, coal, &c., by a novel device that carries the same past and above the usual angle between the summit of the customary idle chain and the upper horizontal trough, the material being elevated by the flights of said usually idle-chain sufficiently past the level of the upper angle and upper horizontal trough to gain a vantage-ground from which, descending by its own gravity via a crook-elbow chute, that conveys the same around the course of the endless chain, the material is delivered by said chute at the initial end of the upper horizontal trough, along which said endless chain travels; and the invention consists in features of novel construction hereinafter fully described, and pointed out in the claims.

In order that my invention may be fully understood, I will now describe the drawings, in which—

Figure I is a vertical section of my improved apparatus, taken on the line I I, Fig. II, and shows the continuous course of the endless chain and the elevator-trough above the level of the upper horizontal trough and the crook-elbow gravity-chute that receives the material and discharges it into the initial end of the upper horizontal trough. Fig. II is a vertical section thereof, taken on the line II II, Fig. I, and shows the crook-elbow course of the gravitating-chute. Fig. III is a side elevation of the apparatus.

1 represents the elevator-trough, having its upper end extending above the level of the usual surmounting angle, in which the then usually-idle chain and flights are elevated.

2 is the horizontal upper trough for distributing the material; 3, the tie or brace-support between said two troughs; 4, the ver-

tical sprocket-bearer posts, and 5 the sprocket-wheels that carry the endless chain 6, which endless chain carries the flights 7, that elevate and convey the material, such as grain, coal, &c.

8 represents the axles on which said sprocket-wheels are mounted, and 9 are the journal-boxes in which said axles have their bearings, which journal-boxes are secured by screw-bolts 10, respectively, to the top of said posts 4 and to the upper edges of the side pieces 11 of the horizontal upper trough at points nearly vertical in relation to each other.

12 represents the crook-elbow chute, which connects from near the summit of the elevator-trough with the upper horizontal trough, the said crook-elbow chute receiving the material as it is elevated by the flights of the endless chain through the open discharge-port 13 near the top of the elevator-trough and passing it in its gravity descent via its crook-elbow chute around the sprocket-bearer frame and out of the line of interference with the endless chain and its flights, and is discharged by its own gravity at a lower level through the open discharge-port 14 into the near initial end of the upper trough.

15 is the horizontal lower trough or drift, into which the material in the bin 16 is discharged through the chute 17, controlled by slide-shutters 18.

19 is the vertical return-trough, in which an idle portion of the endless chain returns to its work in the lower trough or drift. The vertical sprocket-wheels 5, having journals 8, are also located at the juncture of the upper trough and vertical trough, at the juncture of the latter and the lower trough, and at the juncture of the lower trough and the elevator-trough.

20 are the pocket-bins, receiving the material from the upper or distributing trough through chutes 21, controlled by shutters 22. The pocket-bins are supported on beams 23.

24 is a ground-bin.

I will now describe the necessity that, according to the old saying, proves that "necessity is the mother of invention," because a true understanding of the great difficulty that has hitherto stood in the way of elevating and conveying material by a single endless chain will the best elucidate the novel features of the

invention by means of which the difficulty was overcome and a satisfactory result obtained that had been previously thought to be impracticable by elevator constructionists. Now what has been heretofore considered an insurmountable difficulty in the way of effecting said work with a single endless chain is that no means had been found for transmission of the material (let it be grain, or coal, or other material) from the summit of the elevator-trough to the upper horizontal trough. One of the sprocket-wheels that carries the chain in the present construction works in what is termed the "angle" at the summit of said elevator-trough between the same and the upper horizontal trough.

It has heretofore been thought impossible to get around this angle with the material to make the deposit on the upper horizontal level without interference with said sprocket-wheel. Consequently the endless chain, after conveying the material along the lower horizontal trough, passes up as an idler on the elevator-trough that belongs to said circuit, ready to again take up its work along the higher level. It will be seen that this necessitates a supplemental double-trough elevator with a distinct endless chain for the elevation of the material from the lower level to the higher, the said elevator discharging into the initial end of the upper horizontal trough, and said supplemental endless elevator-chain of necessity running idle during half its circuit. Thus the cost of construction is in the present elevating systems in excess of my present improvement to the extent of the cost to build said supplemental double-trough elevator minus my short extension of the elevator and the crook-elbow chute of my device, while also I secure a clear gain in the reduction of power necessary to work my simple endless chain in the place of the two-chain systems including the two stretches of idle chains of the present systems, (that my system avoids.)

Now, after the above explanation, the description that I now give of the operation of my single-endless-chain elevator may be clearly understood.

The endless chain, worked by its sprocket-wheels, conveys the material along the lower horizontal trough, as in the usual construction, to the foot of the elevator, up which it ascends, instead of dumping at near the foot of said elevator, as in the present systems, and being elevated by a supplemental elevator. The elevator-trough in my system, unlike those now in use, extends beyond the usual so-termed "angle-joint," where as at present constructed is located the elevating sprocket-wheel, to a point sufficiently elevated above the upper horizontal trough (when the chain is run by my summit sprocket-wheel) for the material which is discharged through the open port 13 into my crook-elbow chute to slide by its own gravity, and is discharged into near the initial end of the upper hori-

zontal trough, traveling through said chute without the assistance of the chain. Now it will be seen that there is a short stretch of vertical idle chain between said summit sprocket-wheel and a subordinate sprocket-wheel, the bearings of which latter wheel are secured to said horizontal trough, and the crook-elbow of said gravity-chute carries the material around said chain and it avoids interference with either the chain or sprocket-wheels. It is thus evident that the hitherto-considered insurmountable pass past the sprocket-wheel and chain at the usually-termed "angle-joint" at the summit of the elevator is overcome, and the hitherto idle chain in said elevator becomes a working-chain, thus avoiding the use of a supplemental elevator with its circuit of endless chain, and my crook-elbow gravity-chute carries the material from the elevated vantage-ground of my upwardly-extended elevator around said chain to the objective point into the upper horizontal trough, where the usual supplemental elevator at present discharges the load, the said crook-elbow of the gravity-chute avoiding interference with said vertical stretch of the chain. From the discharge-point of said chute in the upper horizontal trough the endless chain conveys the grain, coal, or whatsoever material is being moved, as by the present system of conveyers, discharging it at any open valves or ports where it is required to make the deposit into separate bins, pockets, or cans, &c., and the chain passing in the usual manner over a sprocket-wheel at the far end of said horizontal trough down the usual vertical return-trough and sprocket-wheel at its foot to its starting-point at the initial end of the lower horizontal trough. It will be seen that the whole work of both elevating and conveying is consummated by a single endless chain in conjunction with a crook-elbow gravity-chute. My gravity-chutes for carrying the grain around the chain and around the sprocket-wheel that carries said chain can be used also at the lower levels or shallows as well as at the upper levels.

I do not confine myself to a closed crook-elbow gravity-chute, for it is evident that one of the main essential features of the invention, after elevating the material to a higher level than the upper horizontal trough, is the carriage from that raised vantage-ground by its own gravity around said chain and its deposit in said upper horizontal trough, which, as also its transference from the lower horizontal trough or shift to the elevator-trough, can be effected by hoppers whose chutes crook around said curvilinear course, avoiding interference with said chain, as well as by said closed chute.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A combined single-endless-chain elevator and distributing-conveyer having a crook-

elbow chute for carrying the material by its own gravity around the chain from a higher to a lower level thereof, substantially as described.

5 2. In an elevator, the combination of an elevator-trough having a discharge-port beneath its upper end, the upper and lower wheels adjacent to the upper end of the elevator-trough, a single endless chain working
10 through the elevator-trough, over the upper wheel, between the wheels, and under the lower wheel, and a crook-elbow chute extending from the discharge-port around the portion of the chain between the wheels, substantially as described.

15 3. The combination of an elevator-trough, a distributing-trough beneath the top of the elevator-trough, a crook-elbow chute connecting the elevator-trough and distributing-

trough, and a single endless chain working 20 through the elevator-trough and through the distributing-trough, substantially as described.

4. The combination of the distributing-trough, the elevator-trough extending above 25 the distributing-trough, having a discharge-port, the single endless chain working through the troughs, the wheels over and under which the idle portion of the chain passes, and a crook-elbow chute extending from the discharge-port of the elevator-trough around 30 the idle portion of the chain and having a discharge-port connecting with the distributing-trough, substantially as described.

ADAM RITSCHER.

In presence of—

BENJN. A. KNIGHT,
A. M. EBERSOLE.