

(No Model.)

W. WATSON.
GRAIN ELEVATOR.

No. 287,595.

Patented Oct. 30, 1883.

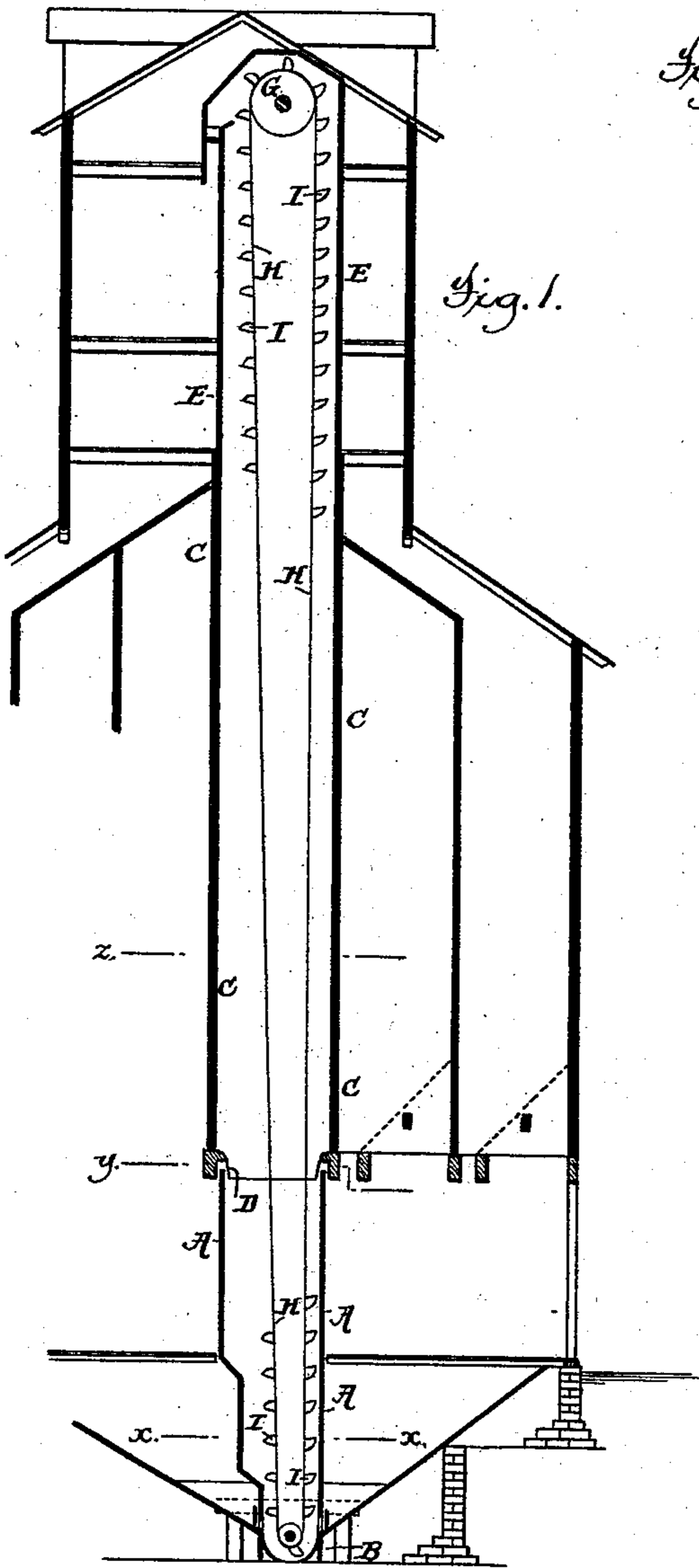


Fig. 2.

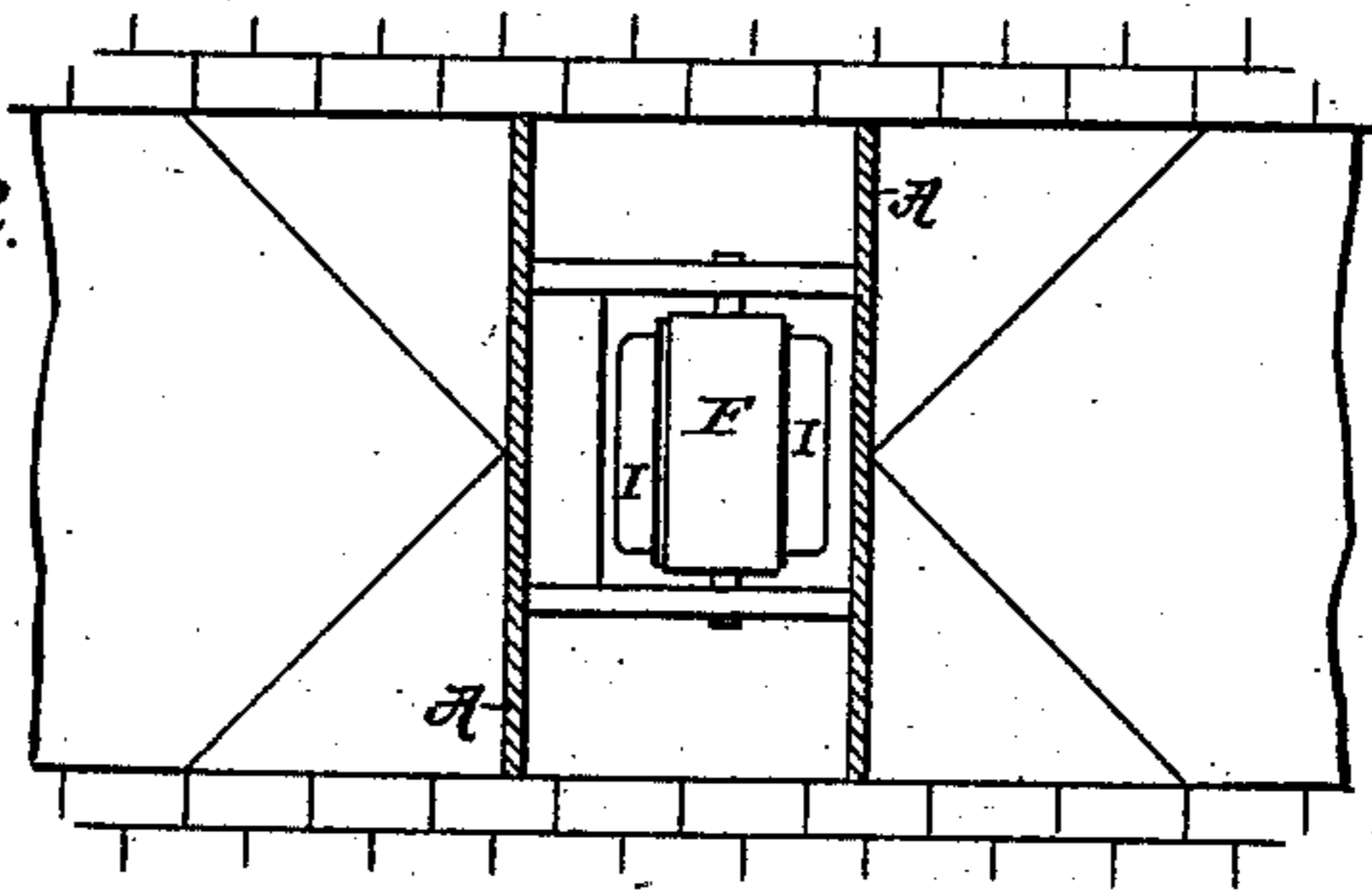


Fig. 3.

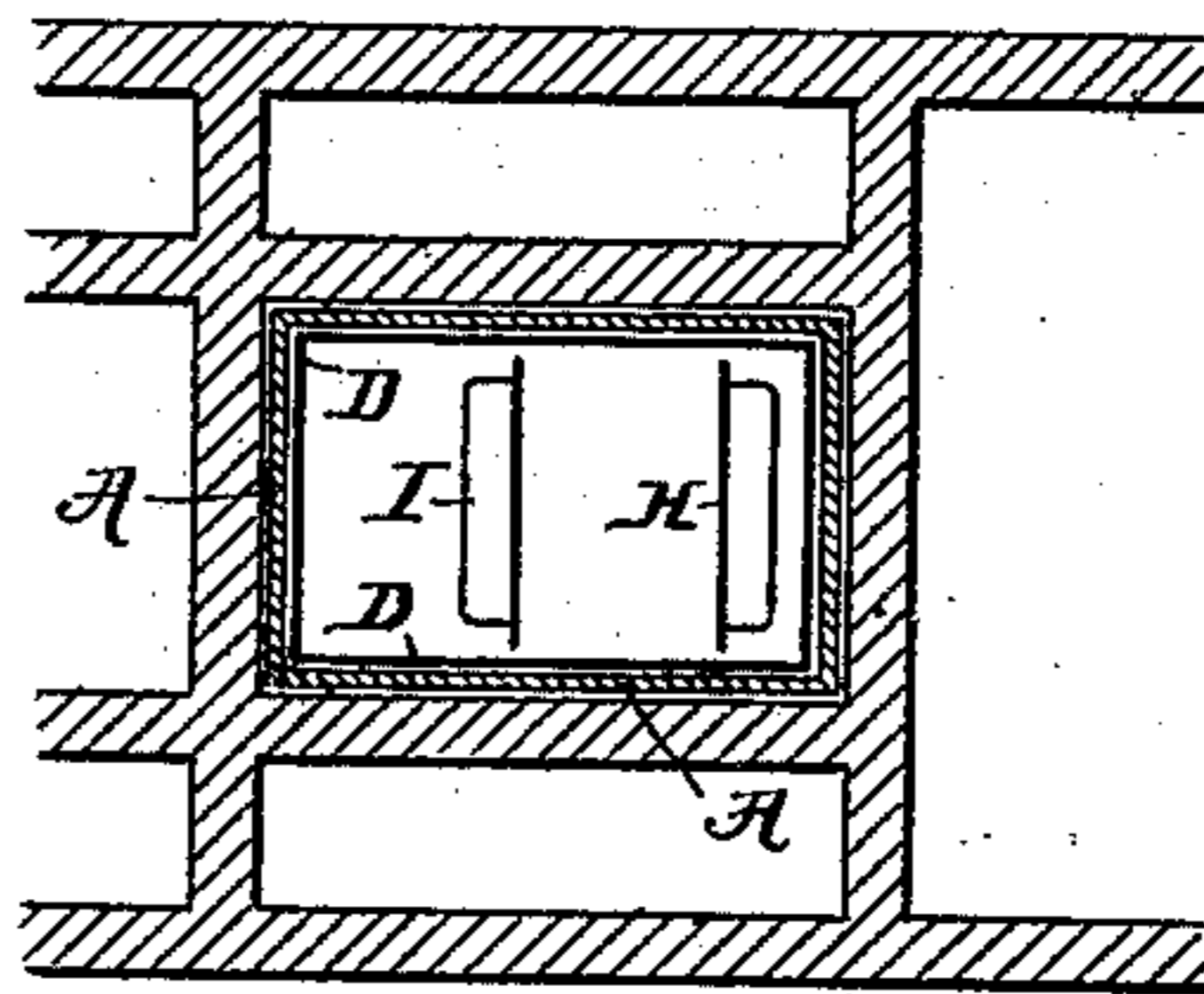
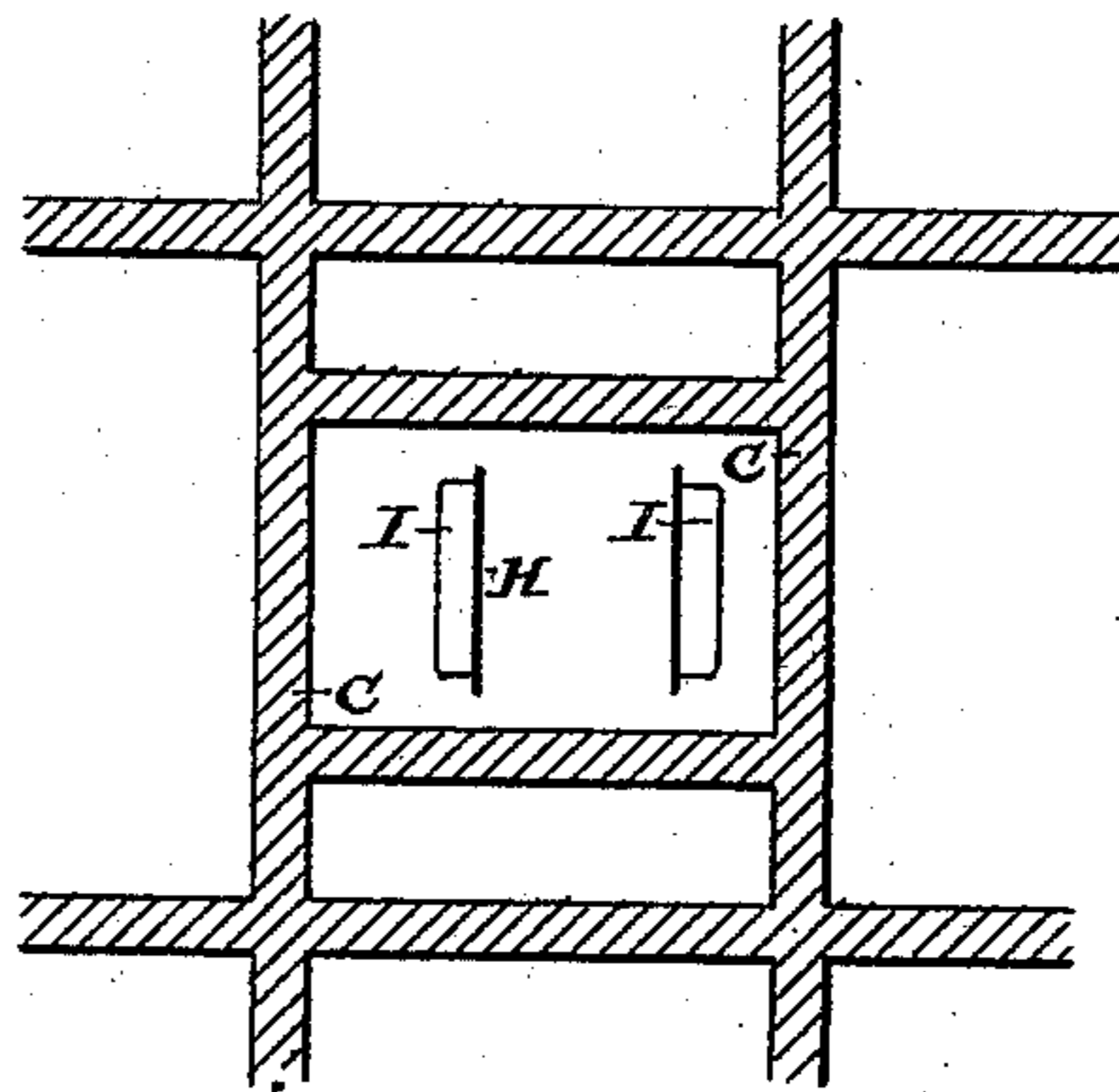


Fig. 4.



Attest:

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UNITED STATES PATENT OFFICE.

WILLIAM WATSON, OF MEMPHIS, TENNESSEE.

GRAIN-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 287,595, dated October 20, 1883.

Application filed March 30, 1883. (No model.)

To all whom it may concern:

Be it known, that I, WILLIAM WATSON, of Memphis, in the county of Shelby and State of Tennessee, have invented certain new and
5 useful Improvements in Grain-Elevators; 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.

10 My invention relates to certain new and useful improvements in the construction of grain-elevators, and has reference more particularly to a novel combination and arrangement of the bucketed belt and legs of the elevator proper
15 with the bin portion or storage part of the building.

Previous to my invention it has been customary in the construction of grain-elevators to have the belt which carries the buckets arranged in what are called "legs," one for each
20 side of the endless belt, or, in other words, one for the ascending and the other for the descending portion of the belt and buckets, said legs resting at their lower ends in the sinks or
25 receptacles from which the grain is to be elevated, and extending therefrom clear up to the upper wheel or pulley of the elevator-belt. Among the most serious objections to this
30 heretofore-practiced mode of construction are, the liability of one or both of the box-like portions of the elevator-leg to get sprung out of place by the settling of the building and unequal pressure of the grain in the bins through
35 which said boxes pass, the consequent liability of fire from the friction from the back of the belt on the box, when the latter may get sprung out of place, the expense and difficulty of properly bracing the box-like portions of the elevator-legs, and the necessity for having
40 the roof of the cupola considerably higher than would otherwise be necessary, in order to permit the inevitable settling of the crib-work relatively to the elevator-legs, (which usually retain their original height.) I propose to
45 overcome all these serious difficulties, and at the same time provide for use a grain-elevator which shall in other respects be much more desirable than any heretofore made; and to these main ends and objects my invention consists in the novel devices and combinations of

devices involved in my improved construction of grain-elevator, and more fully hereinafter explained, and particularly pointed out and specified in the claims of this application.

To enable those skilled in the art to which
55 my invention relates to understand and practice the same, I will now proceed to more fully describe the same, referring by letters of reference to the accompanying drawings, which make part of this specification, and in which
60 I have illustrated so much of a grain-elevator building as is necessary to be shown for the purpose of fully explaining my improvements.

In the accompanying drawings, Figure 1 is a vertical partial section of a grain-elevator
65 made according to my invention. Fig. 2 is a horizontal section at the line *xx* of Fig. 1. Fig. 3 is a similar section at the line *yy* of Fig. 1, and Fig. 4 is a similar section at the line *zz* of Fig. 1.
70

In the several figures the same parts of the contrivance will be found designated by the same letter of reference.

A represents the short trunk-like device, which extends from the boot B of the elevator
75 proper up to and slightly beyond the ceiling of the first story of the building, from which point (or, in other words, from the second floor of the building) extends upwardly in line with said trunk-like device a box or vertical
80 open space, C, formed within the bin-space or storage portion of the building, and of about the same size and shape in cross-section as the upper end of said trunk-like device. The upper
85 end of the trunk-like device A is adapted to fit and slide, when necessary, telescopically within the lower end of the space C, as clearly illustrated, and from the interior surface of the walls of said space C depends a sort of apron
90 or overhanging device, D, made of any suitable material, and so arranged, as shown, that its lower edge will overhang and pass downwardly slightly within the upper end of the
95 trunk-like device A, the length of said apron-like device D being such as to permit the settling down around the trunk device of the storage portion of the building to the greatest extent which can possibly occur during the use of the elevator-building.

It will be understood that by the use of the 100

devices just alluded to, arranged as shown, a sort of slip-joint connection is formed between the upper end of the trunk-like device A and the lower end of the space or box-like opening C, which in reality forms a continuation of the trunk. The box-like space C extends upwardly through the entire height of the storage portion or bins of the structure, and immediately over its upper open end is arranged another trunk-like device, E, which rests upon the top floor of the storage-compartments, (or upon the top of that bin in which happens to be formed the open space C,) said trunk-like device E extending upwardly past the upper pulley and end portion of the bucketed belt of the elevator proper.

F and G are respectively the lower and upper pulleys or wheels, over which passes the endless belt H, which carries the buckets I, said pulleys being mounted to turn freely on their axes, and operating substantially in the well-known manner. It will be seen that by the arrangement of the belt H within the trunk-like devices, and the space C, which forms a connection between said trunk-like devices, instead of having said belt arranged with its ascending and descending portions in separate boxes or wooden tubes, all possible danger from frictional contact of the back faces or adjacent surfaces of the belt H is entirely avoided, and that therefore the building can never take fire from this usually fruitful source of combustion. In the novel construction shown and described, there being no small long tubes for the accommodation of the ascending and descending portions of the belt, all the liability of the case containing the belt getting out of plumb or out of position is entirely avoided, and all the usual necessary braces for holding in place such tubes are entirely dispensed with.

The entire building being free to settle down around the upper end of the lower trunk-like device, by reason of the sort of slip-joint arrangement shown and described, there is no liability of the said lower trunk-like device and the space or box C getting out of line, although if they should do so slightly no serious consequence would follow, inasmuch as the belt of the elevator would not, in any such event, be likely to scrape or rub against any portion of either the said trunk-like device or the said box C, and by having the upper trunk-like device supported by the top floor of the building or on top of the crib-work, of course the upper end of said trunk-like device, together with the upper pulley of the elevator proper and its supporting frame-work, will all settle or descend together, and hence there is no necessity, in the construction of the building, for having the roof of the cupola any higher than is sufficient merely to clear the uppermost fixtures of the elevator-legs. By this feature of my invention the building may be made considerably lower, and consequently may be constructed at less cost, while equally as desirable as or more desirable than the more ex-

pensive structures which it has been heretofore necessary to make.

Of course the details of construction, as well as the sizes and proportions of the parts shown and described, may be varied more or less, according to surrounding circumstances and the judgment of the skilled constructor, without departing from the spirit of my invention, the main features of which, it will be seen, consist, essentially, in the use of a continuous open space or box-like compartment, extending from the elevator-boot up to the upper end of the elevator proper, that is large enough in cross-section to encompass both the ascending and descending portions of the elevator-belt and its buckets, thus leaving an entirely open space between the walls or wooden surfaces, so to speak, which lie near to the outer or bucketed portions of the belts; also, in having that portion of said single space which is constructed and located within the crib-work of the structure separate from, and capable of settling down around, the lower trunk-like device referred to, for the purposes explained; also, in having the upper trunk-like portion, together with the upper pulley and its supports, all arranged to descend with the crib-work and the roof of the cupola supported thereon, so as to avoid the necessity of allowing, at the time of constructing the building, for any movement of the roof of the cupola relatively to the upper end of the elevator-leg.

The apron-like device arranged at the vicinity of the slip-joint union between the upper end of the lower trunk-like device and the lower end of the space or box C is necessary, of course, to avoid the possibility of the entrance into the said joint of any falling grain, dirt, or other matter which might operate to clog or otherwise injuriously affect the devices, which are designed to work freely together.

Those familiar with the construction and use of grain-elevators will of course understand that great advantage is gained by my improvements in the particular of eliminating out of the structure one of the heretofore most dangerous sources of fire from frictional contact of the backs and edges of the elevator-belts with their wooden casings, when the latter may have gotten sprung or warped, or the belts may have gotten so loose as to sway and strike against the sides of said case.

Having now so fully explained the several features of my novel construction of elevators, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a grain-elevator, the combination, with the bucketed belt for lifting the grain, of a single surrounding chamber or case sufficiently large to contain both the ascending and descending portions of the belt, substantially as and for the purposes described.

2. In combination with a storage-space or crib-work elevated above the foundation or ground-surface of the building, a trunk-like device arranged with its base at the boot of the

elevator-leg, and with its upper end adapted to slide telescopically in a space or compartment formed within the said crib-work or storage portion of the elevator.

- 5 3. In combination with the upper portion of the crib-work or bin-space, a short trunk adapted to contain both the ascending and descending portions of the elevator-belt, and supported upon the said crib-work or upper end of the
10 bin-space, substantially as and for the purposes set forth.

4. In combination with the compartment C and the lower trunk-like device, A, an apron arranged and operating substantially in the manner and for the purposes specified.

In testimony whereof I have hereunto set my hand and affixed my seal this 26th day of February, 1883.

WILLIAM WATSON. [L. S.]

In presence of—

F. P. POSTON,
D. H. POSTON.