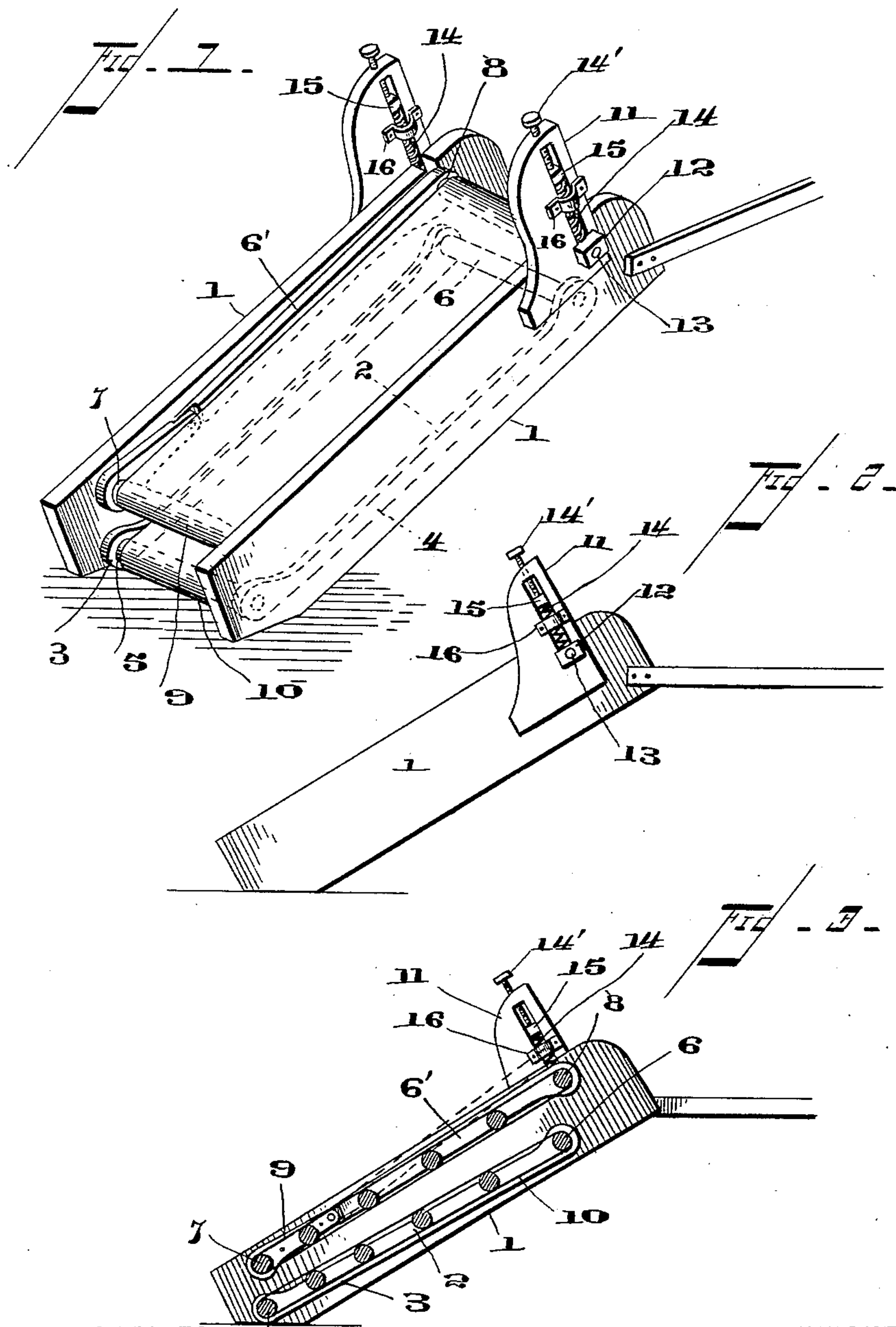


(No Model.)

W. F. GRIGSBY.  
BINDER.

No. 602,443.

Patented Apr. 19, 1898.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

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## BINDER.

SPECIFICATION forming part of Letters Patent No. 602,443, dated April 19, 1898.

Application filed February 3, 1897. Serial No. 621,737. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM FRANKLIN GRIGSBY, a citizen of the United States, residing at Bruceville, in the county of Knox and State of Indiana, have invented certain new and useful Improvements in Binders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in elevators for grain-binders; and the object of the invention is to provide an improved elevator constructed to automatically adapt itself to various grades of grain without reference to the tangled condition or to the bulk of the grain and by which the elevator is capable of supplying grain to the binder in a manner to wholly obviate choking or obstruction of the binder.

A further object that I have in view is to hold the parts firmly and solidly in position while insuring proper guidance to the yielding elements, so as to prevent displacement or twisting out of position of the various working elements of the mechanism.

With these ends in view my invention consists in the novel construction and combination of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of the elevator detached or separate from the grain-binder. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal sectional elevation taken centrally through the improved elevator.

Like numerals of reference denote corresponding parts in the several figures of the drawings.

Referring by numerals to the drawings, 1 designates the stationary main frame of an elevator embodying my invention. This stationary main frame consists of suitable side pieces of proper width and length arranged in parallel relation to each other and attached by suitable braces or in any preferred manner to the frame of a grain-binder. (Not shown.) Within this main frame I provide a stationary apron-frame 2, consisting of parallel side bars fastened to the respective side

pieces of the main frame 1, one of the side bars of said stationary apron-frame being indicated at 3 in Figs. 1 and 3 of the drawings. In this stationary apron-frame 2 is journaled a series of rollers, the terminal rollers being indicated at 5 and 6 in Figs. 1 and 3 of the drawings, and around these rollers of the lower-apron frame passes an endless apron or conveyer 10 of any suitable construction.

As far as described, the main frame and the lower-apron frame, with the endless apron or conveyer supported therein, are ordinary, and no novelty therefor is claimed in this application; but in connection with said lower apron or conveyer I employ an upper traveling apron which under normal conditions is parallel to the lower apron or conveyer and is mounted or sustained in a manner to partake of a limited yielding movement relatively to said lower apron or conveyer for the purpose of yielding under the pressure of the bulk of grain passing through the space between said upper and lower conveyers or aprons. This upper apron or conveyer is indicated at 9, and it passes around suitable rollers 7 8, constituting the terminal rollers of a series of rollers provided for the reception and support of the upper apron or conveyer 9.

The upper series of rollers for the yielding pressure apron or conveyer 9 are carried by the members of a transversely-divided sectional frame. This frame consists of side bars each of which is divided at a point intermediate of its length and each side bar having its members pivoted together, as represented by Figs. 1 and 3. The lower section or member of this divided upper frame for the pressure apron or conveyer 9 has its side sections fastened to the inside of the main frame 1, while the lengths or sections of the other part of said upper frame (indicated at 6' in Figs. 1 and 3) are free to move or yield, said lengths or sections 6' of the upper frame being unattached to and independent of the main frame 1. The terminal rollers 7 for the upper pressure apron or conveyer, together with one or more of the series of rollers for said apron or conveyer, are journaled in the lower stationary section of the upper frame, (see Fig. 3,) while the other terminal roller 8 and the remaining rollers of the upper series are journaled in the lengths or sections 6' of said upper frame, whereby the major portion of



the rollers for the upper conveyer or apron are adapted to play or move with the pivoted section of the upper frame.

The side pieces of the main frame 1 are provided near their upper ends with transverse slots or recesses, (see Fig. 1,) and through these slots or recesses pass the journals 13 of the upper terminal roller 8 for the pressure apron or conveyer 9. Rigidly fastened in a suitable way to the sides of the main frame 1 are the upright brackets 11, which are situated on opposite sides of said main frame 1 and which project beyond the upper edges of said main frame, substantially at right angles thereto. These brackets 11 are preferably in the form of flat plates, and they are provided with longitudinal slots which aline or coincide with the slots in the side pieces of the main frame. In these slots of the brackets 11 are fitted slidable bearings 12, in which are journaled the journals 13 of the upper terminal roller 8, and said bearings 12 are constructed to fit snugly within the slots of the brackets 11, so as to slide freely therein in a direction substantially at right angles to the line of travel of the lower conveyer or apron 10. Upon the slidable bearings 12 for the hinged or pivoted section of the upper-conveyer frame rests the coil pressure-springs 14, which are compactly arranged or housed within the slots of the brackets 11 and are prevented from sidewise displacement therein by the employment of loop-shaped keepers 16, fastened rigidly to the brackets 11, on each side thereof, and in positions above the limit of the upward travel of the slidable bearings 12 for the terminal roller 8 of the upper pressure apron or conveyer. The pressure of the coiled springs 14 upon the bearings for the terminal roller 8 may be increased or diminished by the adjustment of tension-screws 14', which find suitable bearings in the upper terminals of the brackets 11, and said tension-screws are provided at their lower ends with the heads or followers 15, fitted loosely in the slots of the brackets 11 and forming seats against which bear the upper extremities of the pressure-springs 14.

It will thus be seen that I have provided a very simple and compact arrangement of parts by which the coiled pressure-springs are retained or housed within the brackets and that the tension-screws are readily accessible for the purpose of adjusting the same to vary the pressure of the springs upon the journal-boxes of the terminal roller 8. I prefer to construct the followers 15 of the tension-screws and the journal-boxes 12 for the roller 8 in a manner to receive and retain the ends of the springs, but such construction is optional. The pressure-springs are arranged or housed compactly within the slots of the brackets and they are prevented from sidewise displacement by the employment of the loop-shaped keepers which are fastened rigidly to said brackets.

Under normal conditions the pressure-springs force the slidable boxes or bearings 12 to the lower extremities of the slots in the brackets 11, and the hinged or pivoted frame-sections 6' sustain the upper pressure-apron 9 in parallel relation to the lower apron or conveyer 10. The grain as it passes between the upper and lower aprons 9 10 is subjected to pressure by the upper apron 9, and thus any tangled or bulky grain is compacted and straightened by the travel of the coacting parallel aprons or conveyers 9 10 of the elevator. If the grain passes through the elevator in a bulky or tangled condition, the upper apron 9 yields or gives slightly to the bulk of the grain; but as the aprons travel or move and as the upper apron is subjected to considerable pressure by the action of the springs the grain will be reduced in bulk and compacted into practically a length of uniform thickness, but it emerges from the elevator in condition to be delivered to the operative working parts of the binder. By having the adjusting-screws readily accessible to the operator the pressure of the upper apron or conveyer 9 upon the grain may be varied to enable the elevator to operate successfully under the varying conditions of service and according to the different kinds and grades of grain which it may be desired to supply to the binder.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

The combination with an elevator-frame, and a lower primary conveyor or apron supported therein, of an upper frame having its lower member fixed to the elevator-casing and its upper member hinged to said lower fixed member, a series of rollers journaled in said upper frame with certain rollers in the hinged section or member thereof, bracket-plates fixed to the elevator-frame at the upper end thereof and extending outwardly therefrom and provided with longitudinal slots coincident with slots in the elevator-frame, slidable bearings or boxes fitted and guided within the slots of the bracket-plates and receiving the journals of the upper terminal roller for the pressure apron or conveyer, pressure-springs arranged in the slots of the bracket-plates and bearing upon the slidable boxes or bearings, keepers fastened to the bracket-plates to span the slots therein and confine the pressure-springs in place, and the tension-screws supported in the bracket-plates and provided with followers that bear upon the pressure-springs, substantially as and for the purposes described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM FRANKLIN GRIGSBY.

Witnesses:

JULIUS BROOKS,  
ADAM FOX, Jr.